

**2-year
warranty**

forza[®]
POWER TECHNOLOGIES



User Manual

Uninterruptible Power Supply System

FDC-1502R / FDC-3002R

Rack/Tower Online UPS

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1. Introduction

Thank you for purchasing the Forza FDC-1502R and FDC -3002R Online UPS. To enjoy all the features and benefits of this unit, please read and follow all installation and operation instructions thoroughly before unpacking, installing or operating this device. After you have read this manual, keep it in a safe place for future reference.

The information contained in this manual covers the 1500VA and 3000VA uninterruptible power system, its basic functions, operating procedures, options available and troubleshooting guide. It also includes information on how to ship, store, handle, and install the equipment.

1-1. Transportation

- Make sure to transport the UPS system only in the original package to protect it against shock and impact.

1-2. Preliminary steps

- Water condensation may occur if the UPS is unpacked in a very cold environment and then moved to a warmer location.
- The UPS must be thoroughly dry before being installed. Failure to do so may increase the risk of electric shock.
- Do not install the UPS system near water or in moist environments.
- Do not install the UPS system where it would be exposed to direct sunlight or near a heater or heating vent.
- Do not block ventilation holes in the UPS housing.

1-3. Initial setup

- Do not connect appliances or equipment that may overload the UPS system (such as a laser printer) to the output sockets.
- Place cables in such a way that no one can step on or trip over them.
- Do not connect domestic appliances, such as hair dryers, to the UPS output sockets.
- Connect the UPS system only to an earthed shockproof outlet which must be easily accessible and close to the UPS system.
- Use only CE-marked mains cable (e.g. the mains cable of your computer) to connect the UPS system to the building wiring outlet (shockproof outlet).
- Use only CE-marked power cables to connect the loads to the UPS system.
- During the installation of this equipment, make sure that the sum of the leakage currents of the UPS and the connected loads shall not exceed 3.5 mA.

CAUTION: The unit is heavy. Lifting the unit requires a minimum of two people.

1-4. Important safety instructions

- Do not disconnect the mains cable on the UPS system or the building wiring outlet (shockproof socket outlet) at any time, since this would cancel the protective earth of the UPS system and of all connected loads.
- Connect the UPS only to a grounded socket that meets electrical safety guidelines.
- Locate the UPS near a wall socket. Do not use an extension cord between the UPS and the socket.
- In the event of an emergency, press the OFF/Enter button and disconnect the power cord from the AC mains to properly disable the UPS.
- Do not allow any kind of liquid or foreign object to enter this UPS unit. Do not place beverages or any other containers with liquid on or nearby the unit.
- The UPS can be operated by any individual with no previous experience.

1-5. Maintenance, service and faults

- The voltage used by this UPS may be hazardous. The unit contains no user serviceable parts; do not attempt to disassemble the unit. Only qualified service technicians can perform maintenance on the unit. Failure to adhere to this could cause personal injury or equipment malfunction and void the warranty.
- **Caution:** - risk of electric shock. Even after the unit is disconnected from the mains, components inside the UPS system are still connected to the battery packs which are potentially dangerous.
- Before carrying out any kind of service and/or maintenance, disconnect the batteries and verify that no current is present and no hazardous voltage exists in the terminals of high capacity capacitors, such as BUS-capacitors. Servicing of batteries should be performed or supervised by experts who possess the knowledge to closely follow all required precautions.
- To avoid electrical shock, turn off the unit and unplug it from the AC power source before servicing the battery.
- **Caution:** potentially hazardous voltages from the battery can still be present even after disconnecting the UPS from the AC mains. Therefore, the positive and negative terminals of the battery shall be disconnected prior to performing any maintenance or repair inside the unit.
- A battery can present the risk of short-circuit current and electrical shock. The following precautions should be taken:
 - Remove wristwatches, rings and other metal objects
 - Use only tools with insulated grips and handles.
 - Wear rubber gloves and boots.
 - Do not lay tools or metal parts on top of batteries.
 - Disconnect charging source prior to connecting or disconnecting battery terminals.
 - Determine if battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance.
- When replacing the battery, make sure to use the same type and number of sealed lead-acid batteries specified. We recommend using the Forza FUB-1290, a 12V 9A cell.
- Do not dispose of batteries in a fire. Batteries may explode if exposed to high temperatures.
- Never try to open a battery. The cell contains a toxic electrolyte which is harmful to the skin and eyes.
- Replace the fuse only with the same type and amperage in order to avoid fire hazards.
- Do not dismantle the UPS system.

2. OPERATION

2-1. Unpacking and inspection

Remove the UPS from its package and make sure that all the following items are included:

- One UPS unit
- Two detachable input cables per model*
- One user manual
- One monitoring software CD (ForzaTracker)
- One USB cable
- Rack mounting hardware
- Tower support base
- Warranty certificate

***FDC-1502R:** One 10A cable IEC C13 to 5-15P and one 10A cable IEC C13 to CEI 23-50

FDC-3002R: One 16A cable IEC C19 to 5-15P and one 16A cable IEC C19 to CEI 23-50

Carefully inspect the UPS to check for any damages that may have occurred during shipping.

Should any evidence of damage be found or if some parts are missing, do not turn the UPS on; you must immediately notify the carrier or dealer where you purchased the unit.

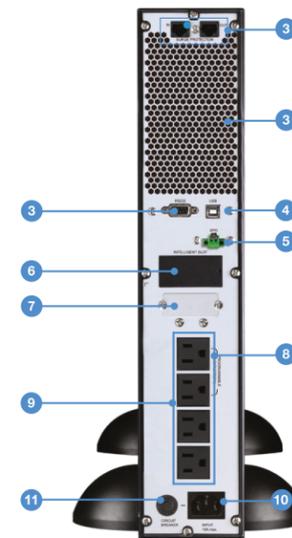
2-2. UPS diagram

Front view



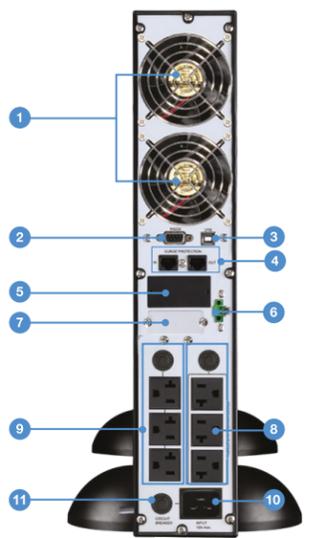
Rear view

1. Modem/Phone/Network surge protection
2. Cooling fan
3. RS-232 communication port
4. USB communication port
5. Emergency Power Off connector
6. SNMP intelligent slot
7. Battery bank terminal
8. Programmable outlets for non-critical loads
9. Dedicated outlets for critical loads
10. AC power input
11. Input circuit breaker



FDC-1502R

1. Cooling fans
2. RS-232 communication port
3. USB communication port
4. Modem/Phone/Network surge protection
5. SNMP intelligent slot
6. Emergency Power Off connector
7. Battery bank terminal
8. Programmable outlets for non-critical loads with input circuit breaker
9. Dedicated outlets for critical loads with input circuit breaker
10. AC power input
11. Input circuit breaker



FDC-3002R

2.3. Installation procedure

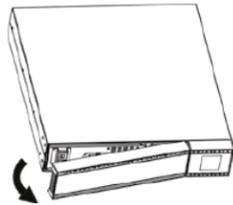
Choose location

Install the UPS unit in any protected environment that provides adequate airflow around the unit, and free from excessive dust, corrosive fumes and conductive contaminants. Do not operate your UPS in an environment where the ambient temperature or humidity is high. For best performance, keep the indoor temperature between 32°F and 104°F. Place the UPS unit at least 20 cm away from monitors to avoid interference.

2.3.1 Initial setup

- For safety considerations, the UPS is shipped out from the factory with battery wires disconnected.
- Before installing the UPS, the user must first reconnect the wires. To do so, follow the steps illustrated below.

Step 1
Remove the front panel.



Step 2
Connect the AC input and then reconnect battery wires.



Step 3
Replace the front panel.

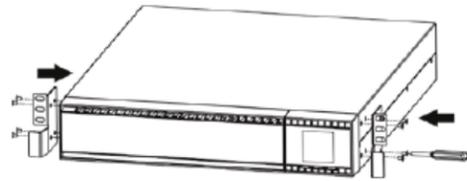


This UPS can be either placed on a desktop, mounted in a rack or installed in an upright position. Define the proper display orientation based on the configuration chosen to install this UPS.

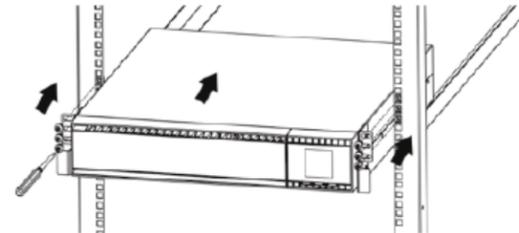
Rack-mount installation

The unit comes with mounting brackets for the standard 19-inch (46.5cm) rack.

Step 1



Step 2

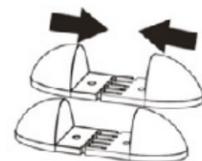


CAUTION: Do NOT use the mounting brackets to lift the unit. The mounting brackets are only for securing the unit to the rack.

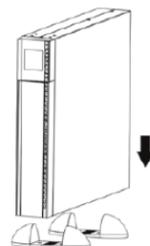
Tower installation

Allows the user to install the UPS in the upright position.

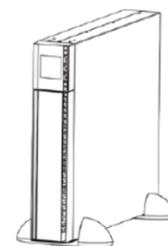
Step 1
Unfold and align the tower support base.



Step 2
Place the UPS vertically on the base.



Step 3
Verify that the UPS is stable and firmly attached to the base.



2-4. UPS connections

2-4.1 UPS input connection

- Plug the UPS into a two-pole, three-wire, grounded receptacle only.
- Avoid using extension cords or adapter plugs.

CAUTION: For 1.5K model, to reduce the risk of fire, connect only to a circuit provided with 20 amperes maximum branch circuit overcurrent protection in accordance with the National Electric Code, ANSI/NFPA 70.

CAUTION: For 3K model, to reduce the risk of fire, connect only to a circuit provided with 30 amperes maximum branch circuit overcurrent protection in accordance with the National Electric Code, ANSI/NFPA 70.

2-4.2 UPS output connection

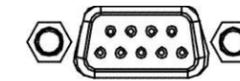
- For socket-type outputs, there are two kinds of outputs: programmable outlets and general outlets. Connect non-critical devices to the programmable outlets and critical devices to the general outlets. During power failure, you may extend the backup time to critical devices by setting shorter backup times for non-critical devices.

Communication ports

USB port



RS-232 port



Intelligent slot



To allow for unattended UPS shutdown/start-up and status monitoring, connect one end of the communication cable to the USB/RS-232 port, and the other end to the communication port of your PC. With the monitoring software installed, you can schedule UPS shutdown/start-up and monitor its status through a PC.

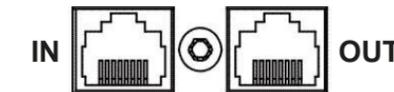
The UPS is equipped with an intelligent slot perfect for either SNMP or AS400 card. When installing either SNMP or AS400 card in the UPS, it will provide advanced communication and monitoring options.

Note: The USB port and RS-232 port cannot be used at the same time.

Connect the network surge protection

The UPS has two network cable RJ45 connectors for network lines.

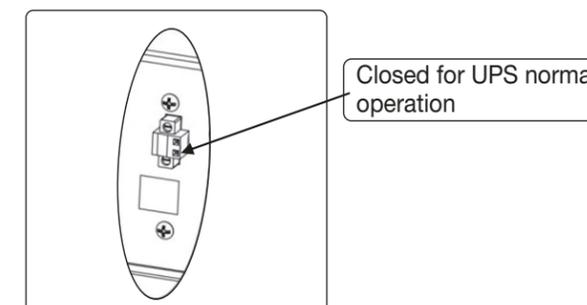
Network/Fax/Phone port



- Connect a single line modem/phone/fax cable into the network surge-protection "IN" jack on the rear panel of the UPS.
- Connect a network cable from the OUT jack on the rear of the UPS to a port on a PC or network device such as a router.

2.4.3 Disabling and enabling the EPO function

Keep pins 1 and 2 closed for UPS normal operation. To activate the EPO feature, remove the wire between pin 1 and 2.



2.5 Turning on the UPS

Press the **ON/Mute** button on the front panel for two seconds to power on the UPS.

Note: The battery charges fully during the first five hours of normal operation. Do not expect full battery run capability during this initial charge period.

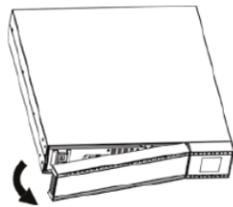
2.6 Battery replacement (Service personnel only)

NOTICE: This UPS is equipped with internal batteries and only qualified service personnel shall be allowed to replace the batteries.

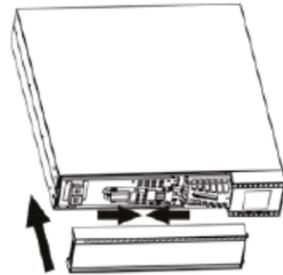
Note: Once the batteries are removed, the connected equipment is no longer protected from power outages.

CAUTION!! Make sure to follow all safety precautions and warnings during the replacement procedure.

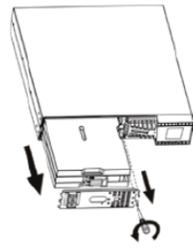
Step 1
Remove the front panel of the UPS.



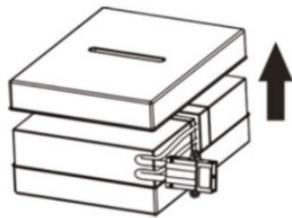
Step 2
Disconnect the battery wires.



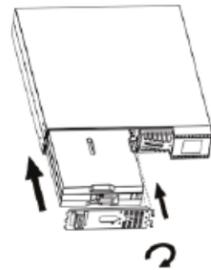
Step 3
Remove the two screws and proceed to pull out the battery compartment.



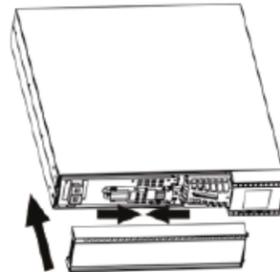
Step 4
Remove the top cover of the compartment and replace the batteries.



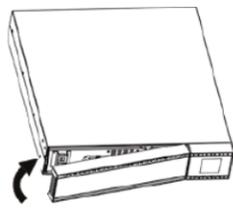
Step 5
When done, replace the cover of the battery compartment and screw it to the unit chassis.



Step 6
Reconnect the battery wires.



Step 7
Replace the front panel of the UPS.



2-7 ForzaTracker monitoring software

ForzaTracker is a new generation of UPS monitoring software, which provides user-friendly interface to monitor and control your UPS system. This unique software provides safe auto-shutdown for multi-computer systems during power failures. With this software, users can monitor and control any UPS on the same LAN no matter how far they might be from the UPS.

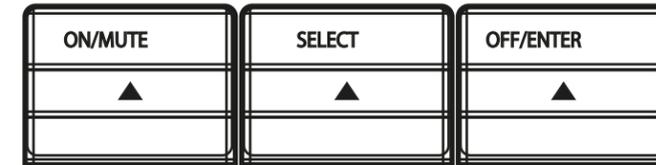
Installation procedure for Windows users:

1. Use the supplied CD or go to the website: <https://www.forzaups.com/downloads>
2. After clicking the software icon, choose the required operation system.
3. Follow the on-screen instructions to install the software.
4. When you finished downloading all required files, enter the serial No (installation password): **5242-87f6-64re-di8d-986u** to install the software (include the hyphens).
5. In order to access as Administrator, input the password: **111296**.
6. When your computer restarts, the management software will appear as a light blue round icon located in the system tray, near the clock.

Note: For Mac and Linux users, please refer to the ForzaTracker user guide found in our website.

3. Advanced operation

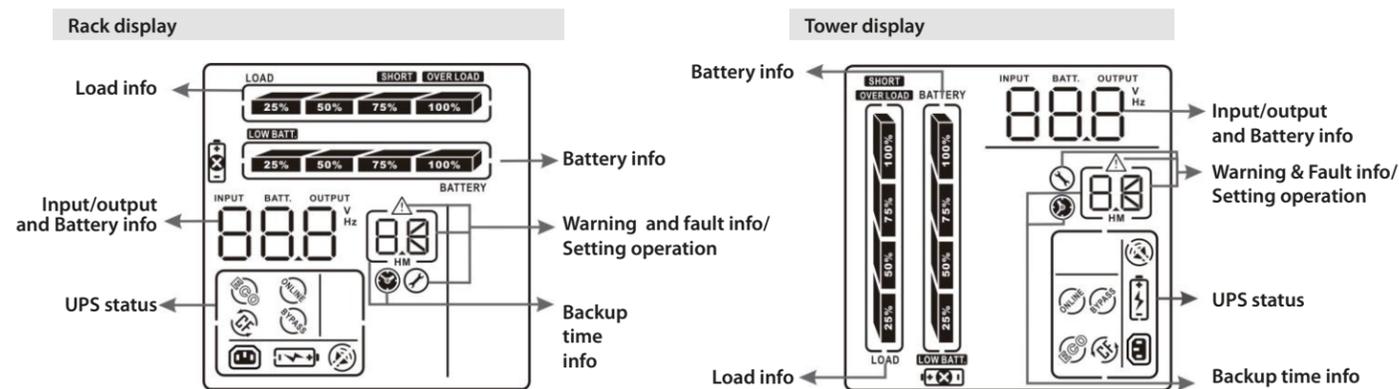
3-1. Description of buttons and functions



Button	Function
ON/Mute button	<ul style="list-style-type: none"> • Turn on the UPS: Press and hold the ON/Mute button for at least 2 seconds to turn on the UPS. • Mute the alarm: When the UPS is on battery mode, press and hold this button for at least 3 seconds to disable or enable the alarm system. This command would not apply when warnings or errors occur. • Up key: Press this button to display previous selection in the UPS configuration menu. • Switch to UPS self-test mode: Press and hold ON/Mute button for 3 seconds to perform the self-test in AC mode, ECO mode, or converter mode.
OFF/Enter button	<ul style="list-style-type: none"> • Turn off the UPS: Press and hold this button for at least 2 seconds to turn off the UPS in battery mode. The UPS will remain in standby mode under normal power conditions or transfer to Bypass mode provided it has been enabled previously by pressing this button. • Confirm selection key: Press this button to confirm the selection in the UPS configuration menu.
Select button	<ul style="list-style-type: none"> • Switch LCD message: Press this button to change the LCD message for input voltage, input frequency, battery voltage, output voltage and output frequency. • Setting mode: Press and hold this button for 3 seconds to enter the UPS configuration menu while UPS is in standby or bypass mode. • Down key: Press this button to display the next selection in the UPS configuration menu.

Button	Function
ON/Mute + Select button	<ul style="list-style-type: none"> Switch to bypass mode: When the utility power is normal, press ON/Mute and Select buttons simultaneously for 3 seconds to transfer the UPS to bypass mode. This action will be ineffective if the input voltage is not within an acceptable range. Exit setting mode or return to the upper menu: When the UPS is on setting mode, press the ON/Mute and Select buttons simultaneously for 0.2 seconds to return to the upper menu. If it is already in top menu, press these two buttons at the same time to exit the setting mode
Select + OFF/Enter Button	<ul style="list-style-type: none"> Rack or Tower display switch: Press the Select and OFF/Enter buttons simultaneously for 3 seconds. The display changes from/to Rack to/from Tower.

3-2. LCD panel



Display	Function
Backup time information	
Load information	
	Overload indicator
	Indicates the load or the UPS output is short circuited.
UPS status	
	Indicates that the programmable management outlets are working.
	The UPS is on and supplying utility power to the connected equipment.
	Indicates that the UPS is working in converter mode.
	Indicates the UPS is working in bypass mode.
	Indicates the UPS is supplying power to the loads directly from the mains.
	Indicates that the UPS alarm is disabled.
	Indicates the battery charger is working.
Battery information	
	Battery level indicator at 0-24%, 25-49%, 50-74%, and 75-100% of its capacity.
	Low battery level and low voltage indicator.
	Battery fault indicator.

Display	Function
Backup time information	
	Indicates the remaining backup time in pie chart.
	Indicates the remaining backup time in numbers. H: hour, M: minute.
Fault information	
	Warns that an internal fault has been detected.
	Warning and fault code indicators. The meaning of the codes is listed in the section below.
Settings	
	Indicates that configuration parameters are being set.
Input/Output & Battery information	
	Indicates input voltage, input frequency, battery voltage, output voltage and output frequency. V: voltage, Hz: frequency
Load information	
	Load level indicator at 0-24%, 25-49%, 50-74%, and 75-100% of its capacity

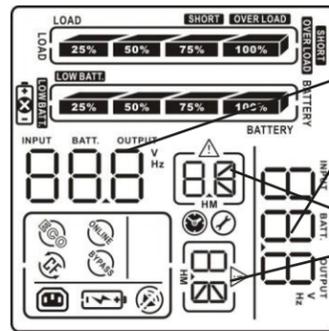
3-3. Audible alarm

Battery mode	Sounds every 5 seconds
Low battery	Sounds every 2 seconds
Overload	Sounds every second
Fault	Continuous sound
Bypass mode	Sounds every 10 seconds

3-4. Abbreviations on the LCD display

Abbreviation	Display content	Meaning
ENA	ENA	Enable
DIS	DIS	Disable
ESC	ESC	Escape
HS	HS	High loss
LS	LS	Low loss
ON	ON	ON
OK	OK	OK
SF	SF	Site fault
EP	EP	EPO
TP	TP	Over temperature
CH	CH	Charger failure
FU	FU	Frecuency is unstable in bypass mode
EE	EE	EEPROM error
FA	FA	Fan failure
BR	BR	Battery replacement

3-5. UPS parameter settings



Parameter 2

Parameter 1

Two parameters need to be configured in order to set up the UPS. Refer to following diagram.

Parameter 1: it is used for the different configuration options. Please refer to the table below.

Parameter 2: it represents the setting information or values of each program.

01: Output voltage settings

Interface	Setting
	<p>For 200/208/220/230/240 VAC, you may choose any of the following output voltages</p> <p>200: the output voltage is 200VAC 208: the output voltage is 208VAC 220: the output voltage is 220VAC 230: the output voltage is 230VAC (Default) 240: the output voltage is 240VAC</p> <p>For 100/110/150/120/127 VAC you may choose any of the following output voltages</p> <p>100: the output voltage is 100VAC 110: the output voltage is 110VAC 115: the output voltage is 115VAC 120: the output voltage is 120VAC (Default) 127: the output voltage is 127VAC</p>

02: Frequency Converter enable/disable

Interface	Setting
	<p>Activates or cancels the converter mode.</p> <p>CF ENA: Enable converter mode CF DIS: Disable converter mode (Default)</p>

03: Output frequency settings

Interface	Setting
	<p>Use this menu to define the initial frequency on battery mode:</p> <p>BAT 50: The output frequency is set to 50Hz BAT 60: The output frequency is set to 60Hz If the converter mode is enabled, the following options will be available: CF 50: The output frequency is set to 50Hz CF 60: The output frequency is set to 60Hz</p>

04: ECO enable/disable

Interface	Setting
	<p>Activates or cancels the ECO mode.</p> <p>ENA: the ECO mode is enabled DIS: the ECO mode is disabled (Default)</p>

05: AECO enable/disable

Interface	Setting
	<p>Activates or cancels the advanced ECO mode.</p> <p>ENA: the advanced ECO mode is enabled DIS: the advanced ECO mode is disabled (Default)</p>

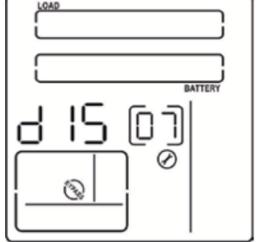
06: ECO voltage range setting

Interface	Setting
	<p>Use this menu to set the acceptable high voltage point and low voltage point for ECO & AECO mode by pressing Down key or Up key.</p> <p>HS: High loss voltage in ECO & AECO modes. For 200/208/220/230/240 VAC models, the setting range in parameter 3 is from +7V to +24V of the nominal voltage. (Default: +12V) For 100/110/115/120/127 VAC models, the setting range in parameter 3 is from +3V to +12V of the nominal voltage. (Default: +6V)</p> <p>LS: Low loss voltage in ECO & AECO modes. For 200/208/220/230/240 VAC models, the setting range in parameter 3 is from -7V to -24V of the nominal voltage. (Default: -12V) For 100/110/115/120/127 VAC models, the setting voltage in parameter 3 is from -3V to -12V of the nominal voltage. (Default: -6V)</p>

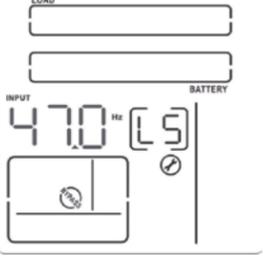
08: Bypass voltage range setting

Interface	Setting
	<p>Parameter 2 & 3: Press the UP or Down key to choose the acceptable high and low voltage values for Bypass operation</p> <p>HS: High voltage adjustment in bypass mode For 200/208/220/230/240 VAC: 230-264: High voltage setting ranges from 230VAC to 264VAC as set in parameter 3. (Default: 264VAC)</p> <p>LS: Low voltage adjustment in bypass mode For 200/208/220/230/240 VAC: 170-220: Low voltage setting ranges from 170VAC to 220VAC as set in parameter 3. (Default: 170VAC)</p>

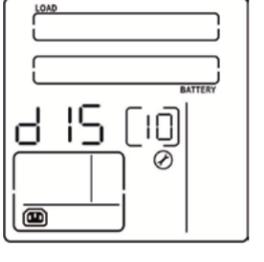
07: Bypass enable/disable

Interface	Setting
	<p>Parameter 3: Use it to activate or cancel the Bypass mode.</p> <p>ENA: Bypass enabled DIS: Bypass disabled</p>

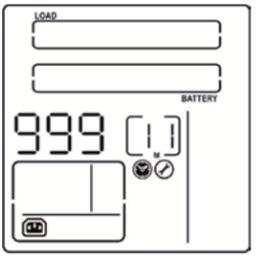
09: Bypass frequency range setting

Interface	Setting
	Use this menu to set the acceptable high frequency point and acceptable low frequency point for Bypass mode by pressing the Down key or Up key. HS: Bypass high frequency point For 50Hz output frequency models: 51-55Hz: Sets the frequency high loss point from 51Hz to 55Hz (Default: 53.0Hz) For 60Hz output frequency models: 61-65Hz: Sets the frequency high loss point from 61Hz to 65Hz (Default: 63.0Hz)
	LS: Bypass low frequency point For 50Hz output frequency models: 45-49Hz: Sets the frequency low loss point from 45Hz to 49Hz (Default: 47.0Hz) For 60Hz output frequency models: 55-59Hz: Sets the frequency low loss point from 55Hz to 59Hz (Default: 57.0Hz)
	

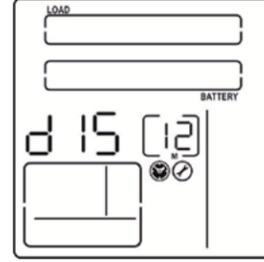
10: Programmable outlets enable/disable

Interface	Setting
	Parameter 3: Activates or cancels the programmable outlet feature. ENA: Programmable outlets enabled DIS: Programmable outlets disabled (Default)

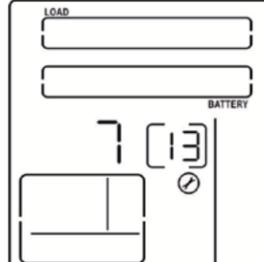
11: Backup time setting for programmable outlets

Interface	Setting
	Parameter 3: Sets the backup time limits for the programmable outlets. 0-999: Use this setting to define the programmable outlets backup time in minutes, from 0-999, in order to connect non-critical devices on battery mode. (Default:999)

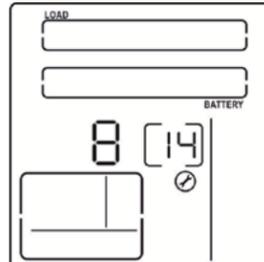
12: Backup time setting for general outlets

Interface	Setting
	Use this setting to configure the backup time on battery mode for general outlets. 0-999: Sets the backup time in minutes, from 0-999 for general outlets on battery mode. DIS: Disables the runtime limit timer, in which case backup time will depend on battery capacity. (Default) Note: When setting this parameter to "0", the backup time will only last 10 seconds.

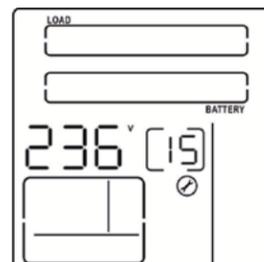
13: Battery total Ah setting

Interface	Setting
	Use this setting to configure the total battery capacity in Ah for the UPS system. 7-999: Sets the battery total capacity from 7-999 in Ah. Please set the correct battery total capacity if an external battery bank is connected.

14: Maximum charger current setting

Interface	Setting
	Use this setting to configure the charger current to be applied. When the UPS is equipped with an additional charge, the available setting options are 2/3/4. 2/3/4: Sets the maximum charger current in 2/3/4 amperes. Long-run models have settings of 1/2/4/6/8. available. 1/2/4/6/8: Sets the maximum charger current in 1/2/4/6/8 amperes. (Default: 8A)

15: Charger boost voltage setting

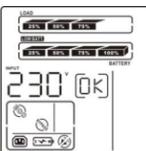
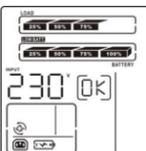
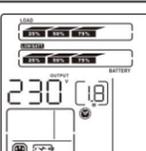
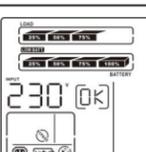
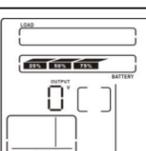
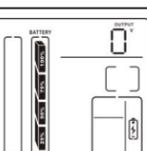
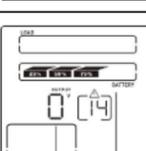
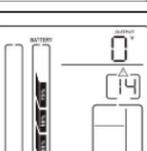
Interface	Setting
	Use this setting to configure the boost voltage level. 225-240: Sets the charger boost voltage from 225 to 240 (unit: 0.01V/cell). (Default: 236)

16: Charger float voltage setting

Interface	
	<p>Use this setting to determine the float voltage level. 220-233: Sets the charger float voltage from 220 to 233 (unit: 0.01V/cell). (Default:228)</p>

00: Exit setting

3-6. Operation mode description

Operation mode	Description	LCD display	
		Rack display	Tower display
Online mode	When the input voltage is within acceptable range, the UPS will supply pure and stable AC power to connected loads. The UPS will also charge the battery in online mode.		
ECO mode (Efficiency Corrective Optimizer)	Energy saving mode: When the input voltage is within the voltage regulation range ($\pm 3\%V$ max), the UPS will bypass voltage to loads for energy saving. PFC and INVERTER are still active in this mode.		
AECO mode (Advanced Efficiency Corrective Optimizer)	When the input voltage is within the voltage regulation range ($\pm 3\%V$ max), the UPS will bypass voltage to loads for energy saving. PFC and INVERTER are disabled in this mode.		
Frequency Converter mode	When input frequency is between 40Hz and 70Hz, the UPS can be set at a constant output frequency, of 50Hz or 60Hz. The UPS will still charge the battery when operating in this mode.		
Battery mode	When the input voltage exceeds the acceptable range or during a power failure, the UPS will start supplying power from the battery while the alarm will beep every 5 seconds.		
Bypass mode	When input is within acceptable voltage range but the UPS is overloaded, the UPS will transfer to bypass mode or it can be manually changed to bypass mode using the front panel controls. The alarm will sound once every 10 seconds in this case.		
Standby mode	The UPS is powered off and there is no power supplied to the loads, but batteries can still be charged.		
Fault	The UPS is in fault mode when it fails to provide output power to the loads. The fault icon flashes on the LCD display even though the UPS information is still being displayed on the screen.		

3-7. Fault codes

Fault event	Fault code	Fault event	Fault code	Icon
Bus start failure	01	Inverter output is short circuited	14	
Bus over	02	Battery voltage too high	27	
Bus under	03	Battery voltage too low	28	
Inverter soft start failure	11	Excessive temperature	41	X
High inverter voltage	12	Overload	43	X
Low inverter voltage	13	Charger failure	45	

3-8. Warning indicators

Warning	Icon (blinking)	Code	Alarm
Low battery	LOW BATT.		Beeps once every 2 seconds
Overload	OVER LOAD		Beeps once every second
Battery is not connected			Beeps once every 2 seconds
Overcharge			Beeps once every 2 seconds
Site wiring fault		SF	Beeps once every 2 seconds
EPO enable		EP	Beeps once every 2 seconds
Over temperature		TP	Beeps once every 2 seconds
Charger failure		CH	Beeps once every 2 seconds
Battery fault			Beeps once every 2 seconds
Bypass out of range			Beeps once every 2 seconds
Unstable bypass frequency		FU	Beeps once every 2 seconds
EEPROM error		EE	Beeps once every 2 seconds
Fan failure		FR	Beeps once every 2 seconds
Battery replacement		bt	Beeps once every 2 seconds

4. Troubleshooting guide

If the UPS system does not operate correctly, use the table below to troubleshoot the problem.

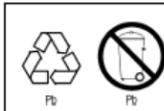
Symptom	Possible cause	Remedy
Even though the mains supply is normal, there are no status indicators or alarms.	The AC input cable is not properly connected.	Check to make sure the power cord is firmly connected to a AC wall socket
	The AC input is connected to the UPS outlet.	Plug the power cord to a wall socket.
The and the warning code EP become illuminated on the LCD display, and the alarm starts beeping once every 2 seconds.	EPO function is enabled	Set the circuit in its closed position to disable the EPO function
The and the SF icons become illuminated on the LCD display, and the alarm starts beeping once every 2 seconds.	Line and neutral conductors of UPS input are reversed.	Rotate mains power socket by 180° and then connect to UPS system
The and icons become illuminated on the LCD display and the alarm starts beeping once every 2 seconds.	The external or internal battery connection is incorrect.	Check if all batteries are properly connected.
Fault code 27 and the become illuminated on the LCD display, and the alarm starts beeping continuously.	Battery voltage is too high or the charger is fault	Contact your dealer or service center
Fault code 28 and the icon become illuminated on the LCD display and the alarm starts beeping continuously.	Battery voltage is too low or the charger fails	Please contact the dealer or service center
The and OVERLOAD icons become illuminated on the LCD display, and the alarm starts beeping every second.	UPS is overloaded	Remove excess loads from UPS output
	UPS is overloaded. Devices connected to the UPS are fed directly from utility power via the Bypass	Remove excess loads from the UPS output
The and OVERLOAD icons become illuminated on the LCD display, and the alarm starts beeping every second.	After repetitive overloads, the UPS is locked in Bypass mode. Connected devices are fed directly from utility power.	Remove excess loads from the UPS output first. Shut down the UPS completely before restarting the unit once again
	Fault code 43 becomes illuminated along with the OVERLOAD icon on the LCD display, and the alarm starts beeping continuously	The UPS shuts down automatically upon detecting the overload condition in the output

6. Technical specifications

Symptom	Possible cause	Remedy
Fault code 14 becomes illuminated and the alarm starts beeping continuously.	The UPS shuts down automatically upon detecting the overload condition in the output.	Check the output wiring and if connected devices are short-circuited.
Fault codes 01, 02, 03, 11, 12, 13 and 41 become illuminated on the LCD display, and the alarm starts beeping continuously.	A UPS internal fault has occurred. There are two possible causes: 1. Power is continued to be supplied to the load, but is done directly from the AC grid via a bypass. 2. Power is no longer supplied to the load	Please contact the dealer or service center.
Battery backup time is shorter than its nominal value.	Batteries are not fully charged.	Charge the batteries for at least 5 hours and then check their capacity. If the problem persists, consult your dealer.
	Defective batteries	Contact your dealer for a replacement
Fault code is shown as 45 on LCD display. At the same time, the alarm starts beeping continuously.	There is no output voltage from the charger and the battery voltage is below 10V/PC.	Please contact the dealer or service center.

5. Storage and maintenance

The UPS system contains no user-serviceable parts. If the battery service life (3~5 years at 25°C ambient temperature) has been exceeded, the batteries must be replaced. In this case, please contact your dealer or service center.



Batteries must not be discarded as regular household waste! As part of the company's eco-friendly approach, we encourage you to follow all applicable local waste regulations to dispose of your used devices and batteries properly.

Storage

Charge the UPS for at least 5 hours before storing the unit. Cover the UPS, and place it upright in a cool, dry location. During storage, recharge the battery in accordance with the following table:

Storage temperature	Recharge frequency	Runtime
-25°C - 40°C	Every 3 months	1-2 hours
-40°C - 45°C	Every 2 months	1-2 hours

MPN	FDC-1502R	FDC-3002R
General		
Capacity	1500VA/1350W	3000VA/2700W
Topology	Double conversion	Double conversion
Input		
Nominal voltage	208-240VAC	208-240VAC
Voltage range (low line transfer)	110VAC	110VAC
Voltage range (low line comeback)	125VAC	125VAC
Voltage range (high line transfer)	300VAC	300VAC
Voltage range (high line comeback)	290VAC	290VAC
Frequency	40-70Hz	40-70Hz
Power factor	0.99 at 100% load	0.99 at 100% load
Total harmonic distortion (THDi)	≤5% at 100% load THDU <1.6%	≤5% at 100% load THDU <1.6%
AC plug style	NEMA 5-15P/CEI 23-50	NEMA 5-15P/CEI 23-50
Output		
Nominal voltage	220VAC	220VAC
Frequency (synchronized)	47-53Hz at 50Hz system / 57-63Hz at 60Hz system	47-53Hz at 50Hz system / 57-63Hz at 60Hz system
Frequency (battery)	50Hz ± 0.1Hz or 60Hz ± 0.1Hz	50Hz ± 0.1Hz or 60Hz ± 0.1Hz
Voltage regulation (battery)	±1%	±1%
Power factor	0.9	0.9
Efficiency (AC mode)	>90%	>91%
Efficiency (battery mode)	>89%	>90%
Overload (AC mode)	100%-110%, only warning 110%-130%, transfer to bypass after 5min 130%-140%, transfer to bypass after 30s >140%, transfer to bypass after 1.5sec	100%-110%, only warning 110%-130%, transfer to bypass after 5min 130%-140%, transfer to bypass after 30s >140%, transfer to bypass after 1.5sec
Overload (battery mode)	100%-110%, only warning 110%-130%, transfer to bypass after 1min 130%-140%, transfer to bypass after 30s >140%, transfer to bypass after 1.5sec	100%-110%, only warning 110%-130%, transfer to bypass after 1min 130%-140%, transfer to bypass after 30s >140%, transfer to bypass after 1.5sec
Transfer time (line to battery)	0ms	0ms
Transfer time (inverter to bypass)	4ms	4ms
Crest ratio	3:1 (max)	3:1 (max)
Harmonic Distortion	≤2% THD (linear load) / ≤4% THD (non-linear load)	≤2% THD (linear load) / ≤4% THD (non-linear load)
Waveform	Pure Sine Wave	Pure Sine Wave
Total outlets	4 NEMA 5-15R	6 NEMA 5-20R
Battery		
Battery type and quantity	12V / 9AH (3)	12V / 9AH (6)
Recharge time	4 hours to 90% capacity	4 hours to 90% capacity
Charging current	1.5A ± 10% (max)	1.5A ± 10% (max)
Charging voltage per battery	13.68V ± 1%	13.68V ± 1%

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