

**2 Year
Warranty**

forza[®]
POWER TECHNOLOGIES



User Manual

Uninterruptible Power Supply System

FDC-003K Online UPS

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1. Introduction

Thank you for purchasing the Forza Atlas 3000 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 3000 VA 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 CE-marked cables for connections between mains, the UPS and equipment (shockproof outlet).
- Use 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.

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 individuals 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.
- **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.
- When replacing the battery, make sure to use the same type and number of sealed lead-acid batteries specified.
- 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.
- Please 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:

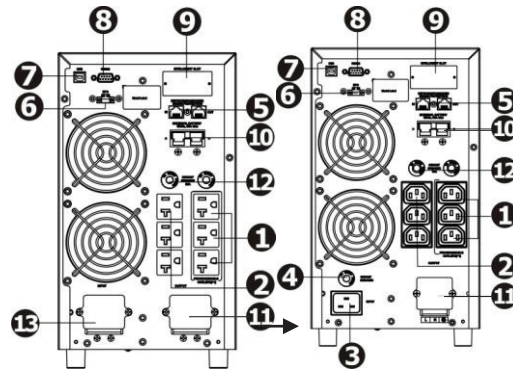
- One UPS unit
- One user manual
- One monitoring software CD (ForzaTracker)
- One USB cable
- Warranty certificate

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 front and rear panel views

UPS front view picture





Rear panel view

1. Programmable outlets: connect to non-critical loads.
2. Output receptacles: connect to high critical loads.
3. AC input
4. Input circuit breaker
5. Network/Fax/Modem surge protection
6. Emergency power off (EPO) connector
7. USB communication port
8. RS-232 communication port
9. SNMP intelligent slot
10. Output terminal
11. Output circuit breaker
12. Input terminal

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 0° C and 40° C. Place the UPS unit at least 20 cm away from monitors to avoid interference.

Step 1: UPS input connection

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

- For 200/208/220/230/240VAC models: The power cord is supplied in the UPS package.
- For 100/110/115/120/127VAC models: The power cord is attached to the UPS. The input plug is a NEMA L5-130P.

Note: Check if the site wiring fault indicator lights up in LCD panel. It will be illuminated when the UPS is plugged into an improperly wired utility power outlet (refer to the troubleshooting section). A circuit breaker (40A) must also be provided between the mains and AC input.

Step 2: UPS output connection

- For socket-type outputs, there 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 time for non-critical devices.
- For terminal-type input or outputs, please follow the steps below for the wiring configuration:
 - a) Remove the terminal block cover by unscrewing the two screws.
 - b) We recommend using an AWG 14 or 2.1mm² power cord, a AWG12-10 or 3.3mm²-5.3mm² power cord for the NEMA type.
 - c) Once the wiring configuration is complete, verify that the wires are securely attached.
 - d) Finally, replace the terminal cover and secure it using the screws.

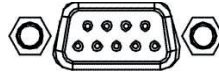
Step 3: Communication connection

Communication port:

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 UPS status through PC.

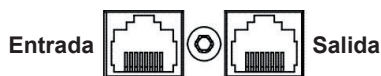
The UPS is equipped with intelligent slot perfect for either SNMP or AS400 card. When installing either SNMP or AS400 card in the UPS, it will provide advanced communication and monitoring options.

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

Step 4: Connect the network surge protection

The UPS has two network cable jacks for network lines

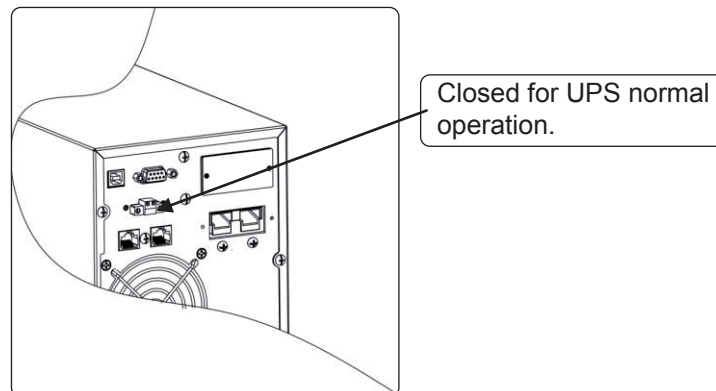
Network/Fax/Phone port



- 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 route.

Step 5: Disabling and enabling the EPO function

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



Step 6: 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.

2-4. 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: <http://www.forzaups.com>.
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.

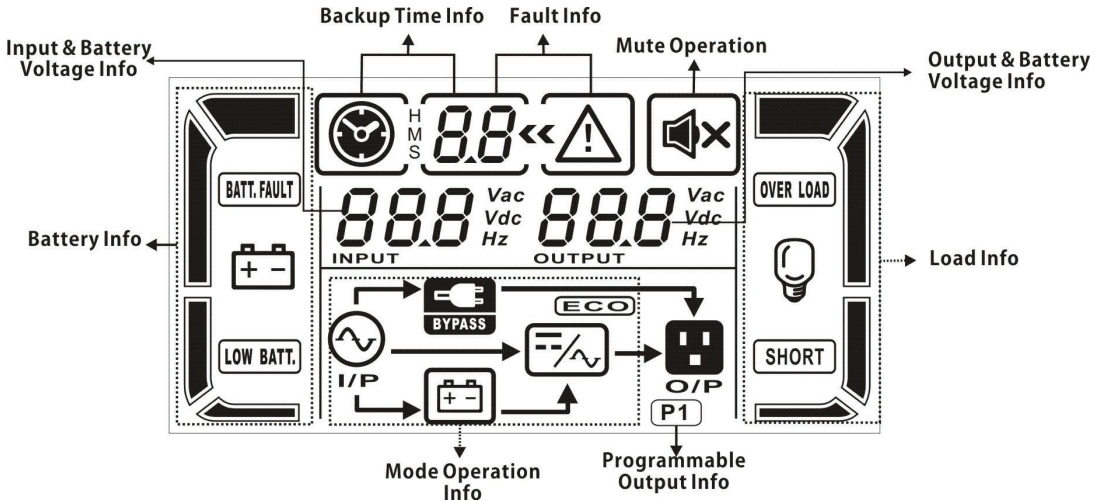
For Mac users, please refer to the ForzaTracker QIG inside the Mac folder.





















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 5 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 5 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. The default display will be restored when pausing for 10 seconds.• Setting mode: Press and hold this button for 5 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.
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 5 seconds to transfer the UPS to bypass mode. This action will be ineffective if the input voltage is not within an acceptable range.

3-2. LCD panel



Display	Function
Backup time information	
	Indicates the remaining backup time in pie chart.
	Indicates the remaining backup time in numbers. H: hour, M: minute, S: second
Fault information	
	Indicates that the warning and fault occurs
	Warning and fault code indicators. The meaning of the codes is listed in the section below.
Mute operation	
	Indicates that the UPS alarm is disabled.
Output & battery voltage information	
	Output voltage, frequency or battery voltage. VAC: output voltage VDC: battery voltage Hz: frequency
Load information	
	Load level indicator at 0-25%, 26-50%, 51-75%, and 76-100% of its capacity
	Overload indicator
	Indicates the load or the UPS output is short circuited.
Programmable outlet information	
	Indicates that programmable management outlets are working
Mode operation information	
	Indicates the UPS is connected to the mains
	Indicates the battery is working
	Indicates the bypass circuit is working
	Indicates the ECO mode is enabled
	Indicates the Inverter circuit is working
	Indicates the output receptacle is working
Battery information	
	Battery level indicator at 0-25%, 26-50%, 51-75%, and 76-100% of its capacity
	Battery fault indicator
	Low battery level and low voltage indicator
Input & Battery voltage information	
	Input voltage or frequency or battery voltage indicator. VAC: Input voltage, VDC: battery voltage, Hz: input frequency

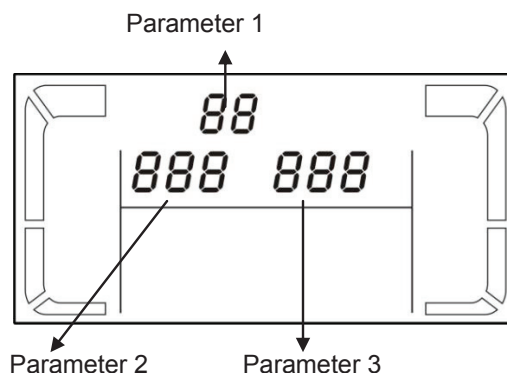
3-3. Audible alarm

Battery mode	Beeps once every 4 seconds
Low battery	Beeps once every second
Overload	Beeps twice every second
Fault	Beeps continuously
Bypass mode	Beeps every 10 seconds

3-4. Abbreviations on the LCD display

Abbreviation	Display content	Meaning
ENA	<i>ENR</i>	Enable
DIS	<i>diS</i>	Disable
ESC	<i>ESC</i>	Escape
HLS	<i>HLS</i>	High line transfer
LLS	<i>LLS</i>	Low line transfer
BAT	<i>bAt</i>	Battery
CF	<i>CF</i>	Converter
EP	<i>EP</i>	EPO
TP	<i>tP</i>	Temperature
CH	<i>CH</i>	Charger

3-5. UPS parameter settings




Three 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. There are 10 programs to set up. Refer to the table below.

Parameter 2 and parameter 3: they represent the setting options or values of each program.


01: Output voltage settings

Interface	Setting
	<p>Parameter 3: Output voltage For 200/208/220/230/240 VAC, you may choose any of the following output voltages in parameter 3: 200: The output voltage is 200VAC 208: The output voltage is 208VAC 220: The output voltage is 220VAC 230: The output voltage is 230VAC 240: The output voltage is 240VAC For 100/110/150/120/127 VAC, you may choose any of the following output voltages : 100: The output voltage is 100VAC 110: The output voltage is 110VAC 115: The output voltage is 115VAC 120: The output voltage is 120VAC 127: The output voltage is 127VAC</p>


02: Frequency Converter enable/disable

Interface	Setting
	<p>Parameter 2 & 3: Activates or cancels the converter mode CF ENA: Enable converter mode CF DIS: Disable converter mode</p>


03: Output frequency settings

Interface	Setting
	<p>Parameter 2 & 3: Output frequency setting. Use this menu to define the initial frequency on battery mode: 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>Parameter 3: Activates or cancels the ECO mode: ENA: ECO mode enabled DIS: ECO mode disabled</p>


05: ECO voltage range settings

Interface	Setting
	<p>Parameter 2 & 3: Press the UP or Down key to choose the acceptable high and low voltage values for the ECO mode.</p> <p>HLS: High line transfer in ECO mode as set in parameter 2. For 200/208/220/230/240 VAC, the setting in parameter 3 ranges between +7V and +24V of the nominal voltage. For 100/110/115/120/127 VAC, the setting in parameter 3 ranges between +3V and +12V of the nominal voltage.</p> <p>LLS: Low line transfer in ECO mode as set in parameter 2. For 200/208/220/230/240 VAC, the setting in parameter 3 ranges between -7V and -24V of the nominal voltage. For 100/110/115/120/127 VAC, the setting in parameter 3 ranges from -3V to -12V of the nominal voltage.</p>


06: Bypass enable/disable when UPS is off

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


07: 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>HLS: High voltage adjustment in bypass mode For 200/208/220/230/240 VAC: 230-264: High voltage setting from 230VAC to 264VAC as set in parameter 3. For 100/110/115/120/127 VAC: 120-132: High voltage setting from 120VAC to 132VAC as set in parameter 3.</p> <p>LLS: Low voltage adjustment in bypass mode For 200/208/220/230/240 VAC: 170-220: Low voltage setting from 170VAC to 220VAC as set in parameter 3. For 100/110/115/120/127 VAC: 85-115: Low voltage setting from 85VAC to 115VAC as set in parameter 3</p>


08: Enable/Disable programmable outlets

Interface	Setting
	<p>Parameter 3: Activates or cancels the programmable outlet feature.</p> <p>ENA: Programmable outlets enabled</p> <p>DIS: Programmable outlets disabled</p>

09: Backup time setting for programmable outlets

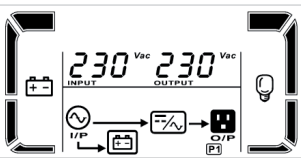
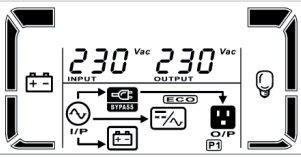
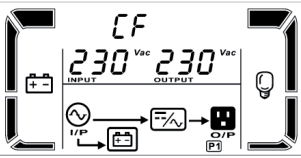
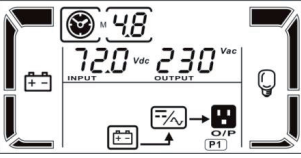
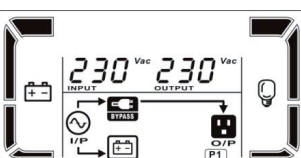
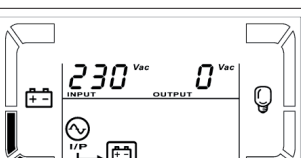
Interface	Setting
	<p>Parameter 3: Sets the backup time limits for the programmable outlets.</p> <p>0-999: Use this setting to define the programmable outlets backup time in minutes, from 0-999, in order to connect non-critical devices on battery mode.</p>

10: Backup time setting for outlets

Interface	Setting
	<p>Parameter 3: Sets up backup interval on battery mode for default outlets.</p> <p>0-999: Use this setting to define the default outlets backup interval in minutes, from 0-999, to operate on battery mode.</p> <p>0: When this parameter is set to "0", the backup interval will only last 10 seconds.</p> <p>999: When this parameter is set to "999", the backup interval will be disabled.</p>

00: Exit setting



















3-6. Operation mode description

Operating mode	Description	LCD 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	Energy saving mode: When the input voltage is within the voltage regulation range, the UPS will bypass voltage to loads for energy saving.	
Frequency Converter mode	When input frequency is between 40 Hz and 70 Hz, the UPS can be set at a constant output frequency, 50 Hz or 60 Hz. 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 4 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.	

3-7. Fault codes











Fault event	Fault code	Fault event	Fault code	Icon
Bus start failure	01	Low inverter voltage	13	X
Bus over	02	Inverter output is short circuited	14	SHORT
Bus under	03	Battery voltage too high	27	BATT. FAULT
Bus unbalance	04	Battery voltage too low	28	BATT. FAULT
Inverter soft start failure	11	Excessive temperature	41	X
High inverter voltage	12	Overload	43	OVER LOAD


3-8. Warning indicators

Warning	Icon (flashing)	Alarm
Low battery	 	Beeps once every second
Overload	 	Beeps twice every second
Battery not connected	 	Beeps once every second
Overcharge	 	Beeps once every second
Site wiring fault	 	Beeps once every second
EPO enable	 	Beeps once every second
Over temperature	 	Beeps once every second
Charger failure	 	Beeps once every second
Out of bypass voltage range	 	Beeps once every second

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  icon and the warning code EP become illuminated on the LCD display, and the alarm starts beeping once every second.	EPO function is enabled	Set the circuit in its closed position to disable the EPO function
The  and the  icons become illuminated on the LCD display, and the alarm starts beeping once every second.	Live 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 second.	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 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  icons become illuminated on the LCD display and the alarm starts beeping twice 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
	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  icon on the LCD display, and the alarm starts beeping continuously	The UPS shuts down automatically upon detecting the overload condition in the output	Remove excess loads from the UPS output and restart the unit once again

Symptom	Possible cause	Remedy
Fault code 14 becomes illuminated along with the icon on the  LCD display, 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 code 1, 2, 3, 4, 11, 12, 13 and 41 become illuminated on the LCD display, and 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.

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.

 	<p>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.</p>
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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

6. Specifications

Model		FDC-003K	
CAPACITY*		3000 VA / 2400 W	
INPUT			
Voltage range	Low line transfer	160VAC / 140VAC / 120VAC / 110VAC \pm 5 % or 80VAC / 70VAC / 60VAC / 50VAC \pm 5 % (based on load percentage 100% - 80 % / 80 % - 70 % / 70 - 60 % / 60 % - 0)	
	Low line comeback	High line transfer voltage - 10V	
	High line transfer	300 VAC \pm 5 % or 150 VAC \pm 5 %	
	High line comeback	290 VAC \pm 5 % or 145 VAC \pm 5 %	
Frequency range		40Hz ~ 70 Hz	
Phase		Single phase with ground	
Power factor		\geq 0.99 @ 220-230 VAC (input voltage)	
OUTPUT			
Output voltage		200/208/220/230/240VAC or 100/110/115/120/127 VAC	
AC voltage regulation		\pm 3% (batt. mode)	
Frequency range (synchronized range)		47 ~ 53 Hz or 57 ~ 63 Hz	
Frequency range (batt. mode)		50 Hz \pm 0.25 Hz or 60Hz \pm 0.3 Hz	
Overload		100%~110%: audible warning 110%-130%: UPS shuts down in 30 seconds in battery mode or transfers to bypass mode when utility power is normal. >130%: UPS shuts down immediately in battery mode or transfer to bypass mode when utility power is normal	
Current crest ratio		3:1	
Harmonic distortion		\leq 3 % THD (linear load) \leq 6 % THD (non-linear load)	\leq 4 % THD (linear load) \leq 7 % THD (non-linear load)
Transfer time	AC mode to batt. mode	Zero	
	Inverter to bypass	4 ms (typical)	
Waveform (batt. mode)		Pure sine wave	
EFFICIENCY			
AC mode		~ 85%	~ 88%
Battery mode		~ 83%	
BATTERY			
	Battery type	12 V / 9 Ah	
	Quantity	6	
	Recharge time	4 hours to 90% capacity (typical)	
	Charging current	1.0 A (max.)	
	Charging voltage	82.1 VDC \pm 1%	
PHYSICAL			
Tower case	Dimensions (mm)	421 X 190 X 318	
	Net weight (kg)	28	
ENVIRONMENT			
Humidity		20-90 % RH @ 0- 40°C (non-condensing)	
Noise level		Less than 45dBA @ 1 meter	
MANAGEMENT			
Smart RS-232 or USB		Supports Windows® 2000/2003/XP/Vista/2008/7, Linux, Unix and MAC	
Optional SNMP		Power management from SNMP manager and web browser	

* Derate capacity to 60% of capacity in Frequency converter mode and to 80% when the output voltage is adjusted to 208VAC.