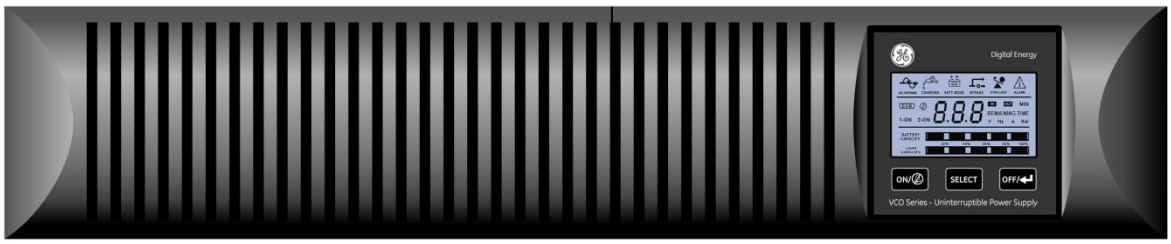
GE
Critical Power

USER MANUAL

Uninterruptible Power Supply

On-Line VCO Series UPS

1000 – 2000 – 3000 VA



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User manual

Uninterruptible Power Supply

On-Line VCO Series UPS
1000 - 2000 - 3000 VA

Please read these instructions carefully before installation and start-up of the VCO Series UPS. Keep this manual in a safe place for future reference.

Model:	***VCO Series 1000 – 3000 VA***
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1 IMPORTANT SAFETY INSTRUCTIONS

1.1 SAVE THESE INSTRUCTIONS

This manual contains important instructions that should be followed during installation and maintenance of the UPS. It also gives all necessary information about the correct use of the UPS.
Before attempting to install and start up the UPS, carefully read this manual. Keep this manual next to the unit for future references.

> Full understanding of and compliance with the safety instructions and warnings contained in this manual are the
>
> **ONLY CONDITIONS**
>
> to avoid any dangerous situation during installation, operation and maintenance work, and to preserve the maximum reliability of the UPS system

GE refuses any responsibility in case of non-observance, unauthorized alterations or improper use of the delivered UPS.

The instructions in this manual are for UPS models VCO1000, VCO2000 and VCO3000. You can find the model name at the rear panel of your UPS.

While every care has been taken to ensure the completeness and accuracy of this manual, GE accepts no responsibility or liability for any loss or damage resulting from the use of the information contained in this document.

1.2 SAFETY RULES

CAUTION! RISK OF ELECTRIC SHOCK

The UPS contains batteries. The appliance outlets may be electrically live, even when the UPS is disconnected from the mains.
The UPS contains potentially hazardous voltages. Do not open the unit, there are no user serviceable parts inside.
All maintenance and service work should be performed by qualified service personnel.

- Make sure that voltage and frequency of your mains supply match the input specifications of the UPS.
- The UPS is intended to be used in normal domestic and office situations.
- The branch circuit supply has to be protected with a 16 A building fuse.
- The UPS must be powered from a single phase grounded wall outlet. This wall outlet must be easily accessible and close to the UPS. Do not use extension cords.
- Place cables in such a way that no one can step on or trip over them.
- Avoid locations that are excessively humid, near water, near heat sources or in direct sunlight.
- The ambient temperature should not exceed 40°C. Optimal battery lifetime is obtained if the ambient temperature does not exceed 30°C.
- It is important that ventilation air can move freely around and through the unit. Do not block the air vents.
- Do not plug appliances such as electric heaters, toasters and vacuum cleaners into the UPS. The UPS output can be used only for electronic loads such as computers and telecommunications equipment.
- The sum of the leakage currents of the UPS and the connected loads should not exceed 3.5mA.
- Always disconnect the input power cord from the wall outlet before replacing the battery.
- When replacing the batteries, use only the same type and size battery
- Never dispose of batteries in a fire: they may explode.
- Never disassemble or reassemble batteries; their contents (electrolyte) may be extremely toxic.
- Never short the battery terminals. Shorting may cause the battery to burn. When working with batteries remove watches, rings or other metal objects and only use insulated tools.
- Proper disposal of batteries is required: refer to your local codes for disposal requirements.

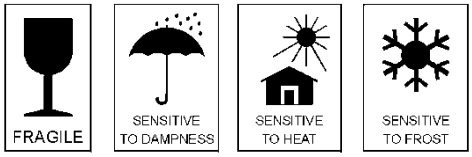
1.3 WARRANTY

GE, operating through its authorized agents, warrants that the standard products will be free of defects in materials and workmanship for a period as per contract specifications.

	**NOTE** This warranty does not cover failures of the product which result from incorrect installation, misuse, alterations by persons other than authorized agents, or abnormal operating conditions.

1.4 STORAGE

- Store the UPS in a dry location with the batteries in a fully charged state. Storage temperature must be within -20°C and +60°C. If the unit is stored for a period exceeding 3 months, optimal battery lifetime is obtained if the storage temperature does not exceed 25°C.
- If the unit is stored for an extended period of time, the batteries must be recharged every 2 months. Connect the unit to a wall outlet and recharge the batteries for 24 hours.

	**CAUTION** In case of storage, pay attention to:	

2 INSTALLATION

2.1 INTRODUCTION

The **GE (General Electric) VCO Series UPS**, a truly on-line double conversion uninterruptible power supply, has been designed to protect your sensitive electronic equipment such as computers and telecommunications equipment from all forms of power interference, including complete power failures.

When the mains supply is present the UPS keeps the battery in a fully charged state and supplies a completely new and clean AC power to the connected equipment. In the event of a mains power failure (i.e. absent or outside tolerance) the system uses the energy reserve stored in the battery to continue to produce AC power, ensuring unbroken output. No interruption or alteration will ever be noticed in the output power.

The UPS is equipped with an automatic bypass switch. This switch automatically transfers the load to the mains if the UPS is unable to deliver the demanded output power due to overload or over temperature. The UPS will switch back to normal operation when the overload has been removed or the temperature has dropped below alarm level.

2.2 UNPACKING

The UPS shipping box contains:

- a VCO Series UPS
- USB cable (type B)
- Input power cord
- Mounting parts for tower and rack use
- RJ11 cable
- CD ROM with UPS monitoring software (see 2.5) and its manual
- this manual

Inspect the UPS for damage after unpacking. If any damage is present please immediately notify the carrier and place of purchase.

	**WARNING! In case of recognizable damage:** **DO NOT** connect any voltage to the unit **DO NOT** put the unit into operation.

Condensation may occur if the UPS system is moved directly from a cold to a warm environment. The UPS system must be absolutely dry before being installed. Please allow an acclimatization time of at least two hours prior to installation. Save the original packing material. No liability can be accepted for any transport damage when the equipment is shipped in non-original packaging.

2.3 INSTALLATION

2.3.1 PREPARATIONS

1. Connect the batteries.
   For safety reasons the batteries are not connected during transportation. To reconnect the batteries:

1.a. Open and remove the left part of the front panel, the “battery door”

1.b. Connect the battery wires

1.c. Re-install and close the battery door.

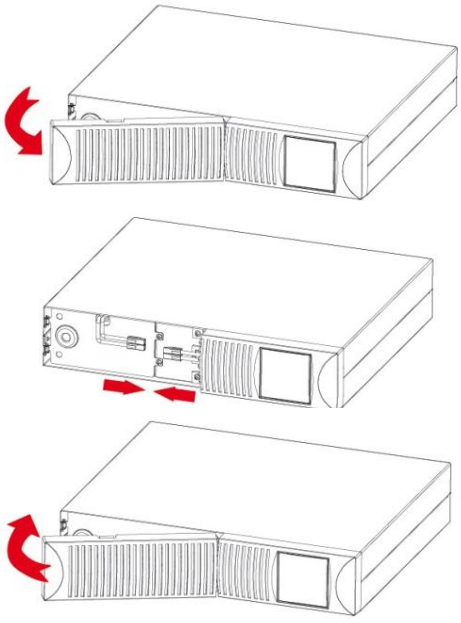


Fig. 2.3.1.a: connecting the battery

2. The UPS can be used as stand alone tower format by using the two supporting stands or can be mounted in a 19 inch rack using the two mounting brackets.

2.a. Vertical installation: Tower

Assemble the two supporting stands at the bottom side of the UPS cabinet.

2.b. Horizontal installation: Rack mount

Install the two mounting brackets at the sides of the UPS cabinet.
Install the UPS into a 19 inch rack. The UPS cabinet must be supported by mounting rails, do not mount it by using the mounting brackets only. Fix the mounting brackets on the 19 inch enclosure with screws.

	**CAUTION** Please consider the weight of the UPS prior to installation to ensure the rack is capable of supporting the weight. We recommend that the UPS is placed in its lower half. Fit the unit into the rack cabinet with the help of a second person.

3. ***3000VA model only***: a battery extension pack can be connected to the UPS. Remove the battery door (2, fig. 2.3.2) and create an opening for the battery cable by cutting/breaking off the piece indicated in figure 2.3.1.b. Connect the DC connector of the battery pack to the DC connector of the UPS. Using the DC socket of the battery pack you can install a second, third, etc. pack. As the battery pack is equipped with an integrated battery charger it must be connected to an AC wall outlet. Reinstall the battery door.

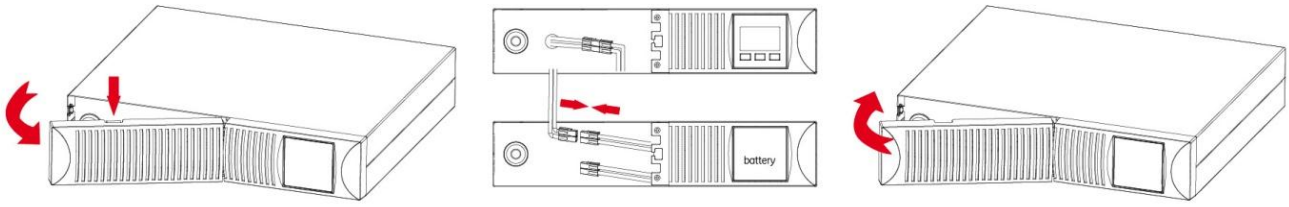


Fig. 2.3.1.b: connecting battery extension pack to 3000VA model

2.3.2 FRONT AND REAR PANEL

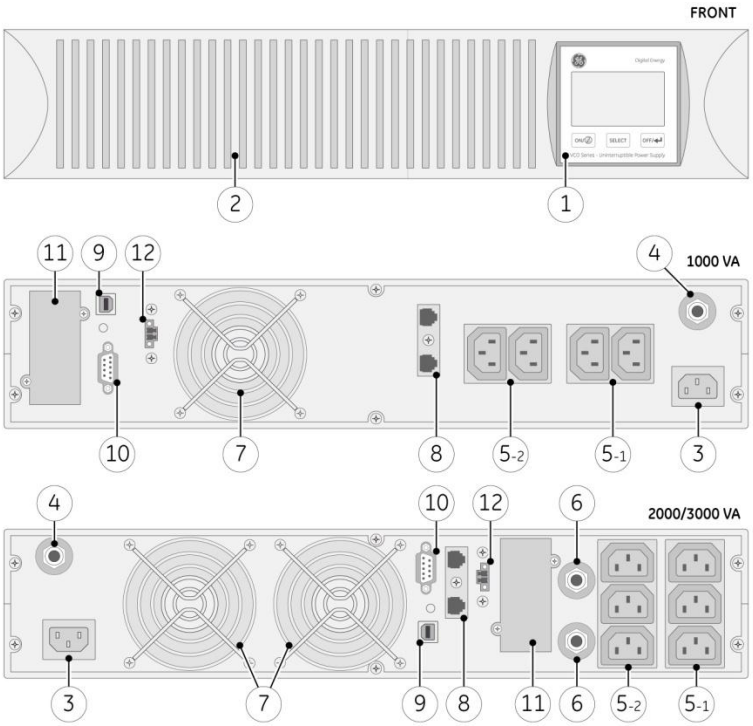


Fig. 2.3.2: front and rear panels

1. **Operating panel**
   See section 2.4.1.

2. **Battery door**
   Covering the DC connector

3. **Input socket**
   AC mains supply to the UPS. VCO3000 model differs slightly from illustration.

4. **Input circuit breaker**
   Protects the UPS from damage caused by high input currents.

5. **Appliance outlets**
   To connect the loads to the UPS. Group 5-1 is always on, group 5-2 can be switched on or off. By switching off group 2 during a power failure you can increase the remaining runtime for the essential equipment connected to group 1. See 2.4.5.

6. **Output circuit breakers (VCO3000 only)**
   In case of a severe overload the output breaker may trip. The button will come out, the UPS is disconnected from the mains and output power is lost. In this situation reduce the load connected to the outlets of the UPS. Subsequently reset the circuit breaker by pushing the button back in.

7. **Fan(s)**

8. **Phone/FAX/Modem protection**
   The RJ11 jacks can provide protection against surges and spikes on your phone line.

9. **USB port***

10. **RS232 port***

11. **Slot for optional communication card***

12. **EPO port - Emergency Power Off interface**
    See 2.3.5 for more information.

* See 2.5 for more information.

2.3.3 CONNECTING POWER AND LOAD

1. Switch off your computer, and unplug it from the socket-outlet.

2. Connect power cord provided to the male input socket (3) at the rear of the UPS and to a working, grounded AC wall socket outlet. The UPS is in Standby mode now, and though the unit is still switched off it will now start recharging the battery. On the display the symbols “Charging” and “AC Normal” are lit.

3. For best results, allow the UPS to recharge the batteries during a period of approx. 8 hours. It is acceptable to use the UPS without first charging the battery, but the runtime may be reduced.

4. Add up the power consumption (in VA) of the appliances that will be protected by the UPS (‘the load’) and make sure that the resulting value does not exceed the VA output rating of the UPS. This way you ensure that the UPS is able to supply the required output and prevent that an overload situation will happen.

5. Plug the load (e.g. computer, monitor, critical data storage device, etc.) into the appliance outlets (5-1 and 5-2) of the unit. Spread the loads over the appliance outlets as equally as possible. If you use a distribution box to connect more than one appliance per outlet, please note that the maximum AC-current rating of each appliance outlet is 7A for VCO1000 and 10A for VCO2000 & VCO3000. Outlets 5-1 are always on, outlets 5-2 can be switched off.

CAUTION!

Do NOT plug LASER PRINTERS into any of the appliance outlets. These devices have a much higher power demand than typical peripherals.

NOTE

The UPS output sockets can be live as soon as the UPS is connected to the main power supply, even if the UPS has not been switched on via the front panel.

2.3.4 CONNECTING INTERFACE DEVICES

The UPS is equipped with two interface ports: a USB port and an RS232 port, allowing advanced communication between the UPS and a computer (network). Refer to section 2.5 for more detailed information.

2.3.5 CONNECTING EPO - EMERGENCY POWER OFF

EPO - Emergency Power Off may be created by replacing the link with a switch with the characteristics of a ‘power off’ button. Under normal conditions the switch has to be closed, when it opens the UPS will transfer to stand-by mode and **output power is lost**.
It is not possible to restart the unit while the EPO switch is open. After closing the EPO switch press 'ON/mute' button for 2 seconds in order to restart the unit.

2.4 OPERATION

2.4.1 OPERATING PANEL

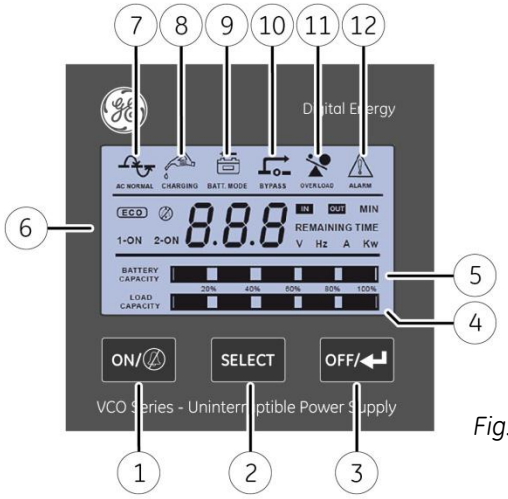


Fig. 2.4.1: operating panel

1. **Button "ON/Mute"**
   Turns the UPS ON and mutes the alarm during battery operation, see 2.4.2.
   NOTE: The alarm cannot be muted if generated during abnormal operating conditions.
   Starts a self-test: see 2.4.4.

2. **Button "SELECT"**
   Switch LCD message: Press this button to switch between voltage (input/output), frequency (input/output), current (output) and power (output).
   Setting mode: see 2.4.5.

3. **Button "OFF/Enter"**
   Turns off the UPS: See 2.4.2.
   Confirm "Select": press the button to confirm the selection made with button "SELECT". See 2.4.5.

4. **Bar "Load capacity"** – shows the actual load as a % of the nominal load.

5. **Bar "Battery capacity"** – shows the battery charge level in 20% steps. When the UPS operates in Battery mode this bar counts down, indicating that the battery is being discharged.

6. **ECO:** the ECO function is enabled. See 2.4.3.5.
   MUTE: the audible alarm is muted. See 2.4.2.2.
   1-ON: the appliance outlet group 1 is on. This group is always on.
   2-ON: the appliance outlet group 2 is on. This group can be switched off. See 2.3.2 and 2.4.5.
   XXX: three digits show the actual value of the parameter selected
   IN/OUT: parameter shown refers to input or output respectively
   MIN: minutes (**REMAINING TIME** during battery operation)
   V/HZ/A/KW: parameters of voltage (input/output), frequency (input/output), current (output) and power (output).

7. **AC NORMAL** – the incoming mains power is present and within voltage and frequency tolerances.

8. **CHARGING** – the batteries are being charged.

9. **BATT. MODE** – the UPS operates in battery mode: it uses the energy stored in the batteries.
   The "Battery capacity" bar shows the remaining battery capacity.

10. **BYPASS** - the UPS operates in bypass mode. See 2.4.3.4.

11. **OVERLOAD** – the load connected to the UPS exceeds the nominal rating of the unit.

12. **ALARM** – indicates an abnormal situation.

Display and buzzer alarm list

# Symbol	Buzzer alarm	UPS operating status
7 + 8	OFF	Standby mode: UPS switched off, input voltage present, battery charging
7	OFF	AC mode – normal operation
9	1 beep / 4 seconds	DC (battery) mode - battery capacity >= 40%
7 + 11	2 beeps / second	AC mode – output overload (102-129%), after 15 secs transfer to bypass
9 + 11	2 beeps / second	DC mode – output overload (102-129%) after 15 secs shutdown
9 + 12	1 beep / second	DC mode – battery capacity <= 20%
7 + 11	2 beeps / second	AC mode – output overload (130-149%), after 2 secs transfer to bypass
9 + 11	2 beeps / second	DC mode – output overload (130-149%), after 2 secs shutdown
7 + 11	2 beeps / second	AC mode – output overload (>150%), immediate transfer to bypass
9 + 11	2 beeps / second	DC mode – output overload (>150%), immediate shutdown
12	continuous	abnormal operating condition: output short circuit; Inverter over/under voltage; Over temperature; Charger over voltage; Charger fault; Bus over/under voltage

2.4.2 USE: START-UP AND SWITCH OFF

2.4.2.1 Start-up the UPS, mains available

To switch on the UPS press and hold the "ON/Mute" button (1) for at least 2 seconds. On the display the symbols "AC NORMAL" (7) and "CHARGING" (8) are lit. **NOTE:** When you turn on the UPS it will perform a self-test.

2.4.2.2 Start-up the UPS, mains not available

If you switch on the UPS if mains power is not available, the UPS is started up in battery mode: it discharges the batteries. The symbol "BATT MODE" (9) lights and an alarm sounds. To mute this alarm press and hold the "ON/Mute" button for at least 4 seconds to toggle between alarm on/off. This switch does not mute the alarm in case of low battery voltage or abnormal operating conditions.

2.4.2.3 Switch off the UPS

Press and hold the OFF/Enter button (3) for at least 2 seconds. If the UPS operates in AC mode it will switch to standby, if the unit operates in battery mode it will switch off.

2.4.3 USE: OPERATING MODES

2.4.3.1.Standby Mode

Mains supply is connected, battery is charging but UPS is not switched on yet. On the display the symbols "AC NORMAL" (7) and "CHARGING" (8) are lit.

2.4.3.2 AC Mode (normal operation)

On the display the symbols "AC NORMAL" (7) and "CHARGING" (8) are lit.
The mains voltage is present, the UPS supplies the connected equipment and keeps the battery in a fully charged state. The load is isolated from surges and electrical noise brought by the mains wiring.

2.4.3.3 DC Mode (Battery Mode)

On the display the symbol "BATT. MODE" (9) is lit. The mains power fails and the UPS uses the energy stored in the batteries until either they are depleted or mains power returns. The "Battery capacity" bar (5) shows the remaining battery capacity and the buzzer sounds. To mute this alarm press and hold the "ON/Mute" button for at least 4 seconds to toggle between alarm on/off.

2.4.3.4 Bypass Mode

If the UPS is unable to deliver the demanded output power (most probably due to overload or over temperature) it automatically switches to bypass mode: the incoming mains power is channeled directly to the load. The UPS will switch back to normal operation when the overload has been removed or the temperature has dropped below alarm level.
If a power failure occurs during this ***automatic*** bypass mode, the UPS will most probably not be able to deliver the demanded output power and ***output power is lost***.
The load can be switched to bypass manually: press the two buttons "ON/Mute" (1) and "SELECT" (2) simultaneously for 4 seconds. The unit switches to bypass mode and symbol "BYPASS" (10) is lit. In this state the UPS operates on bypass regardless of the input. Press the two buttons "ON/Mute" and "SELECT" simultaneously for 4 seconds again to switch the UPS back to normal operation. If a power failure occurs during ***manual*** bypass mode ***output power is lost***.

2.4.3.5 ECO Mode

For energy saving purposes the unit can be switched into ECO mode. See 2.4.5 for instructions.
During ECO Mode, the symbol "ECO" will be lit. The UPS operates on bypass (without alarms) as long as input voltage and frequency are within limits. If a power failure occurs during ECO Mode the UPS switches to battery operation. If the mains returns the unit will switch back to ECO Mode.

2.4.4 USE: SELF-TEST FUNCTION

To start a self-test: when the UPS is in AC mode or ECO mode press the "ON/Mute" button for 4 seconds.
The self-testing function includes load detection, battery capacity and abnormal state.

2.4.5 USE: OPERATING PARAMETER SETTING

Enter the configuration mode
When the UPS is in Standby or operates in Bypass mode, press and hold the "SELECT" button (2) for 4 seconds.
When the UPS enters the configuration mode, status indicator symbols will light that represent the actual parameter being programmed.
Select the parameter by pressing the "ON/MUTE" button once.
Select the setting by pressing the "SELECT" button once.
Confirm the setting by pressing the "OFF/Enter" button once.

Parameters and settings

1. Output frequency
   - 50Hz (default setting)
   - 60Hz
   - Auto Select
2. Output voltage
   - 208V
   - 220V
   - 230V (default setting)
   - 240V
3. ECO Mode
   - Disabled (default setting)
   - Enabled
4. Outlets group 2
   - On (default setting)
   - Off

Exit the configuration mode
Press and hold the "OFF/Enter" button (3) for 2 seconds. The UPS will return to normal operation.

2.5 COMMUNICATION

You can communicate with the UPS via either SNMP, USB or RS232. Simultaneous communication via more than one interface is not possible. The priority is SNMP > USB > RS232. The hardware will detect the connection port to select the communication interface.

2.5.1 USB AND RS232 COMMUNICATION PORTS

The USB and RS232 ports are plug-in interface ports that enable advanced communication between the UPS and the computer (UPS software required). The interface ports are operative as soon as the mains power cord is plugged into a live wall outlet, even if the UPS is switched off.
For more information please refer to the user manual that comes with the interface software. We strongly recommend to use only original GE software products in combination with the interface ports.

Pin #	**Function**
1	Battery low
2	RS-232 transmission pin (TXD).
3	RS-232 receive pin (RXD). Remote Shutdown
4	Not used
5	Common & Signal Ground
6	Bypass Active
7	Not used
8	Mains failure
9	General alarm

2.5.2 COMMUNICATION CARD (OPTION)

The SNMP card makes the UPS 'SNMP manageable': it allows the data interface to be connected directly to an Ethernet network. For more information please refer to the user manual that comes with the interface card.

3 MAINTENANCE

3.1 BATTERY REPLACEMENT

3.1.1 GENERAL GUIDELINES

- When replacing the batteries, use only the same type and size battery.
- Never short the battery terminals. Shorting may cause the battery to burn. When working with batteries remove watches, rings or other metal objects and only use insulated tools.
- Avoid charging in a sealed container.
- Never dispose of batteries in a fire: they may explode.
- Never disassemble or reassemble batteries; their contents (electrolyte) may be extremely toxic. If exposed to electrolyte, wash immediately with plenty of water, if eye contact occurs flush with water and contact a physician.

3.1.2 BATTERY REPLACEMENT PROCEDURE

(Qualified service personnel only)

1. Turn off the equipment that is connected to the output sockets of the UPS.
2. Turn off the UPS.
3. Unplug the UPS power cord from the AC wall outlet.
4. Unplug the equipment from the output sockets of the UPS.
5. Remove the front panel (fig. 5).
6. Disconnect the battery wires (fig. 6).
7. Loosen the screws that hold the cover of the battery compartment.
8. 8.a - VCO1000/2000/3000: Remove the battery box (fig. 8.a and 8.a.1).
   8.b - VCO3000 only: Remove the additional battery box (fig 8.b).
9. Remove the top cover of the battery box, replace the batteries inside (fig. 9).
10. Reinstall the top cover of the battery box, reverse of step 9.
11. 11.a – VCO3000 only: Insert the new additional battery box, reverse of step 8b.
    11.b – VCO1000/2000/3000: Insert the new battery box, reverse of step 8a.
12. Reinstall the cover of the battery compartment and fasten the screws, reverse of step 7.
13. Reconnect the battery wires, reverse of step 6.
14. Reinstall the front panel, reverse of step 5.

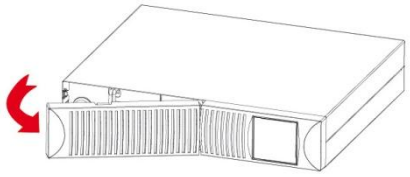


Fig. 5

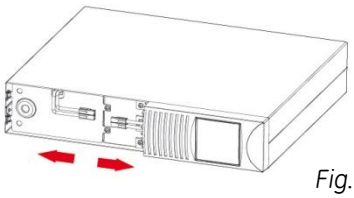


Fig. 6

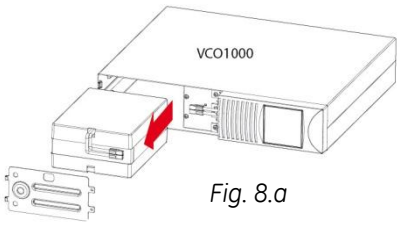


Fig. 8.a

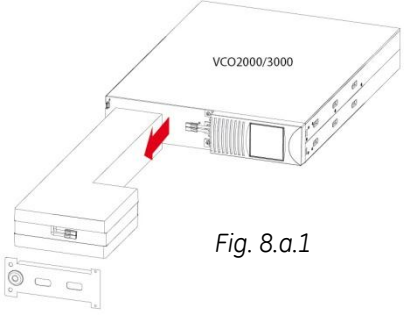


Fig. 8.a.1

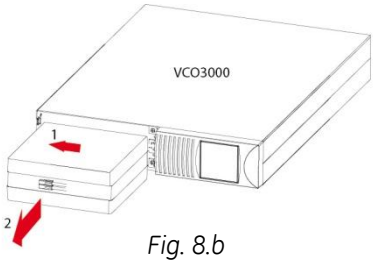


Fig. 8.b

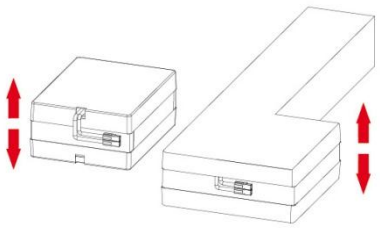
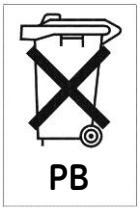


Fig. 9

3.2 RECYCLING THE UPS AT THE END OF SERVICE LIFE

The batteries contain lead, which is a harmful substance for the environment.
Proper disposal or recycling of the batteries is required. Refer to your local codes for disposal requirements!



GE, in compliance with environment protection recommends that the UPS equipment, at the end of its service life, must be recycled conforming to the local applicable regulations.

4 TROUBLESHOOTING

Whenever a malfunction occurs, first check external factors (e.g. connections, temperature, humidity or load) to determine whether the problem is caused by the unit itself or by its environment. Subsequently check the thermal circuit breaker: it may be tripped. If so: reset it and be sure that the UPS is not overloaded.
The following chart is a simple troubleshooting checklist only. If the suggested solution does not succeed, or if the information is insufficient to solve the problem, please contact your dealer or consult www.gecriticalpower.com.
Make sure you have the following information available when you call for service: Model number / serial number, date of purchase and full description of the problem.

PROBLEM	POSSIBLE CAUSE	SOLUTION
UPS will not switch on and symbol "AC normal" is not lit	UPS line cord not connected and/or UPS is not switched on	Press and hold the "ON/Mute" button for at least 2 seconds
	Battery voltage is too low	Recharge the battery for at least 4 hours
UPS always in Battery mode	Power cord not connected	Connect power cord
	Input circuit breaker tripped	Reduce the load, reset the circuit breaker
	Dead wall socket outlet, or mains voltage out of limits	Contact qualified electrician
UPS does not provide the expected runtime	The battery is not fully charged or aging battery	Remove non-critical load, charge the battery for at least 6 hours and re-test the runtime. If the situation persists replace the battery.
	UPS slightly overloaded	Reduce the load
During mains failure the UPS automatically turns off	The battery is not fully charged or aging battery	Remove non-critical load, charge the battery for at least 6 hours and re-test the runtime. If situation persists, have the battery replaced.
	UPS overload	Remove non-critical load, re-start the UPS and charge the battery for at least 6 hours
During mains failure buzzer sounds 1x/4sec and symbol "Overload" is lit	UPS is overloaded during DC mode, unit will (or already has) shut down within max. 15 seconds	Reduce the load (and re-start the UPS)
Mains is present, buzzer sounds 2x/sec, symbol "Overload" is lit	UPS is overloaded during AC mode, UPS will switch (or already has switched) to Bypass mode	Reduce the load

5 SPECIFICATIONS

Model	:	VCO1000	VCO2000	VCO3000
Rating VA/W	:	1000/800	2000/1600	3000/2400
Input				
AC input voltage	:	208 / 220 / 230 / 240Vac		
AC input voltage range	:	120 ~ 280Vac		
Frequency	:	50 / 60 Hz (auto-sensing)		
Power factor	:	> 0.95 at full load		
Output				
AC output voltage	:	208 / 220 / 230 / 240Vac (selectable)		
AC output voltage tolerance	:	±3% at linear load		
Output frequency	:	50 / 60 Hz (selectable)		
Output frequency stability	:	nominal ±0.3Hz unless synchronized to the mains		
Output waveform	:	sine wave		
Power factor	:	0.8 lagging		
Harmonic distortion	:	3% at linear load		
Overload capability	:	102~129% for 15 sec./ 130~149% for 2 sec./ >150% immediately: - if in AC mode: transfer to bypass - if in DC mode: UPS shutdown		
Battery				
Battery type	:	12V, sealed lead acid, maintenance free		
Nominal voltage (Vdc)	:	24	48	72
Number x capacity of battery	:	2x9Ah	4x9Ah	6x9Ah
Battery recharge time	:	< 8 hours for 90% capacity (standard battery)		
Runtime in minutes at typical load (60%)	:	7	8	8
General				
Weight (kg)	:	16	32	38
Dimensions (hxwxd)	:	88x440x405mm	88x440x620mm	88x440x620mm
Enclosure / protection	:	steel-plastic / IP20		
Communication				
Communication ports	:	USB and RS232		
Environment				
Safety	:	IEC/EN 62040-1		
Electromagnetic compatibility	:	IEC/EN 62040-2		
Ambient temperature	:	0°C ~ 40°C		
Sound at 1 meter	:	< 55 dB(A), load and temperature dependent		
Maximum relative humidity	:	95% (non-condensing)		
Filtering				
Power line surge suppression	:	768 / 476 Joules; max. peak 4500A; clamping rate 180/330Vrms; response time normal mode 0ns, common mode <1ns		
EMI/RFI noise filter (at 1MHz)	:	up to 60dB		
Internet / phone / fax protection	:	RJ-11 (One pair), 2C; 114 joules; clamping rate 330V		