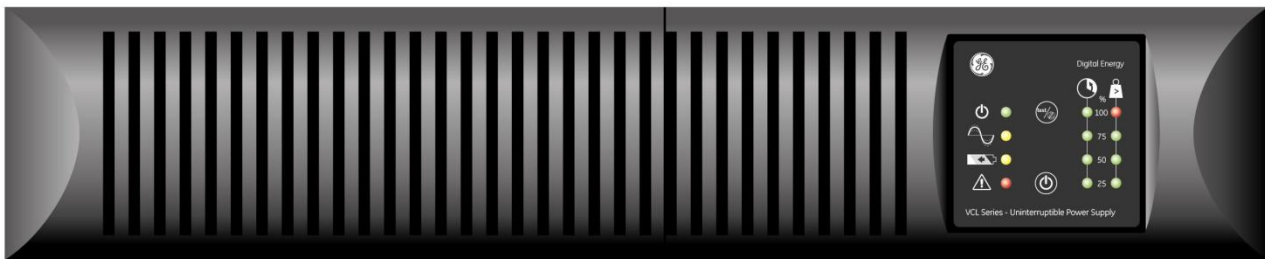


GE

USER MANUAL

Uninterruptible Power Supply
Line-interactive VCL Series UPS
800 – 1100 – 2000 – 3000 VA



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User manual

Uninterruptible Power Supply

Line-interactive VCL Series UPS 800 - 1100 – 2000 - 3000 VA

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

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Due to technical improvements, some of the information contained in this manual may be changed without notice.

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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 VCL800 UL, VCL1100 UL, VCL2000 UL and VCL3000 UL. 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 WARNINGS AND SYMBOLS

The text of this manual contains warnings to avoid risk to persons, to avoid damages to the UPS system and the supplied critical loads. Do not proceed beyond these warnings if you do not fully understand or are not able to meet the mentioned conditions. The non-observance of the warnings reminding hazardous situations could result in human injury and equipment damage.

Please pay attention to the meaning of the following warnings and symbols.

Safety warnings

- WARNING!** Refers to procedures or operations which, when not correctly performed, could cause personal injury or serious damage to the system.
- CAUTION** The product may be in danger: when procedures or operations are not correctly performed, damage to the product may be the result.
- NOTE** Warns the user about important operations or procedures described in this manual.

Safety Symbols



DANGER OF ELECTRICALLY LIVE PARTS



Related to all situations with potentially hazardous voltage.



SAFETY WARNING

This symbol is used for Warnings, Cautions and Notes.

1.3 SAFETY INSTRUCTIONS

 	<p>WARNING! RISK OF ELECTRIC SHOCK The UPS contains batteries. The appliance outlets may be electrically live, even when the UPS is disconnected from the mains.</p>
	<p>WARNING! 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.</p>
	<p>CAUTION There may be damage to the equipment if procedures and practices are not strictly observed and followed.</p>

- The UPS is intended to be used in normal domestic and office situations.
- Not for use in a computer room as defined in the Standard for the Protection of Electronic Computer/Data Processing Equipment, ANSI/NFPA 75.
- Use of the UPS product in life support applications where failure of this equipment can reasonably be expected to cause failure of life support equipment or to significantly affect its safety or effectiveness is NOT recommended.
- Connect only to short circuit and over-current protection branch circuit rated in accordance with the National Electric Code, ANSI/NFPA 70, see following table:

UPS model	Branch protection	UPS model	Branch protection
VCL800 UL	10A	VCL2000 UL	20A
VCL1100 UL	15A	VCL3000 UL	30A

	<p>CAUTION To reduce risk of fire, connect the UPS only to a circuit provided with fuse values according to the above</p>
--	--

- 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 104°F (40°C). Optimal battery lifetime is obtained if the ambient temperature does not exceed 86°F (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.
- Always disconnect the input power cord from the wall outlet before replacing the 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.

1.4 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.

1.5 DIAGRAM

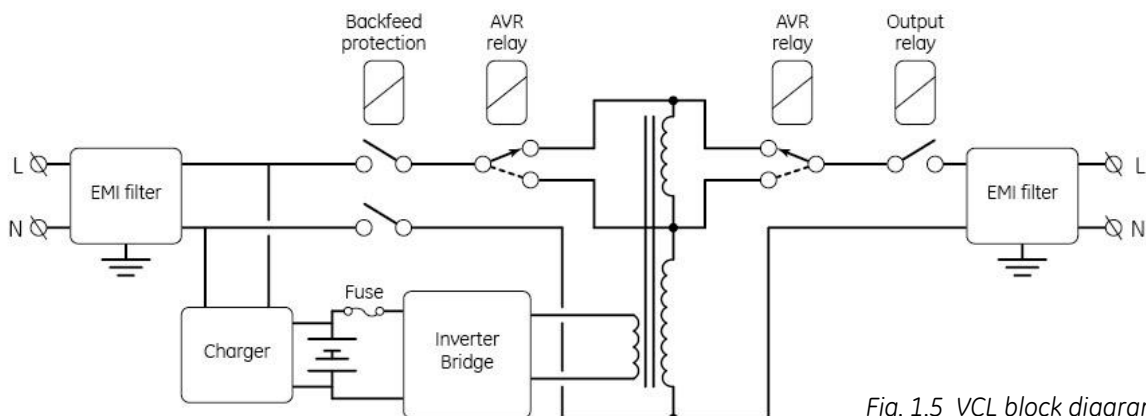


Fig. 1.5 VCL block diagram

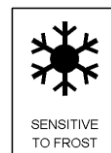
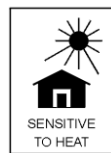
1.6 STORAGE

- Store the UPS in a dry location with the batteries in a fully charged state. Storage temperature must be within -4°F and 140°F (-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 77°F (25°C).
- If the unit is stored for an extended period of time, the batteries must be recharged every 2 months.



CAUTION

In case of storage, pay attention to:



1.7 FCC COMPLIANCE STATEMENT

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.

2 INSTALLATION

2.1 INTRODUCTION

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

When the mains supply is present the UPS is charging the battery and providing power to the connected equipment from the AC line directly. In case of a mains failure the reliable battery can provide the stable power to complete your work, save the data and safely shut down your system.

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:

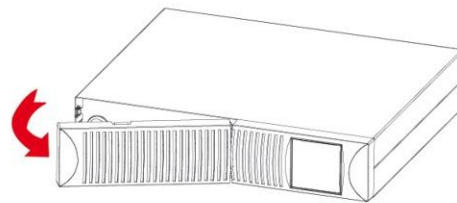
DO NOT connect any voltage to the unit
DO NOT put the unit into operation.

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.

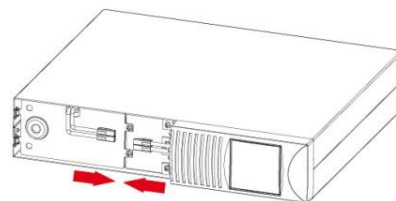
2.2 INSTALLATION

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

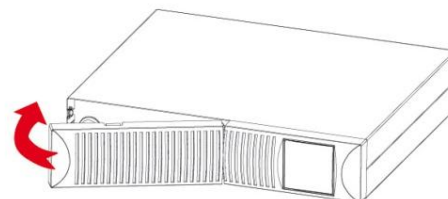
- 1.a. Open and remove the left part of the front panel, the "battery door"



- 1.b. Connect the battery wires



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



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. All required items are included in the package.

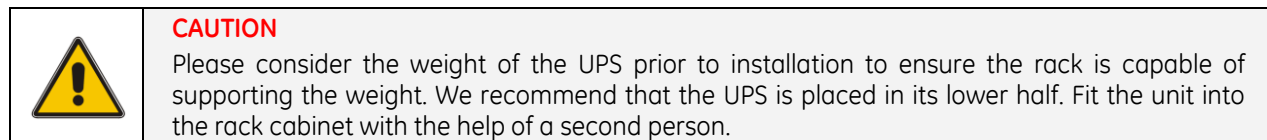
2.a. Vertical installation: tower

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" 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.



3. Connect the mains cord of the UPS to a working, grounded AC wall socket outlet.
4. 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.
5. Connect the load to the appliance outlets (6, fig. 2.2.2) of the unit. Spread the loads over the appliance outlets as equally as possible.

Fig. 2.2.1. Front panel

- 1 Operating panel
See section 2.3
- 2 Battery door

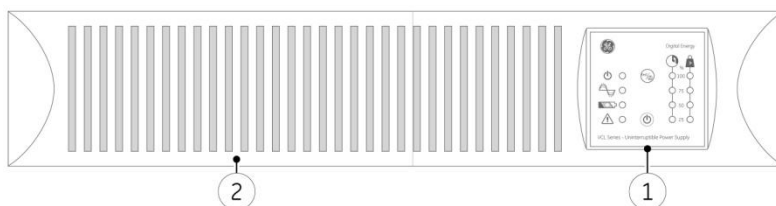
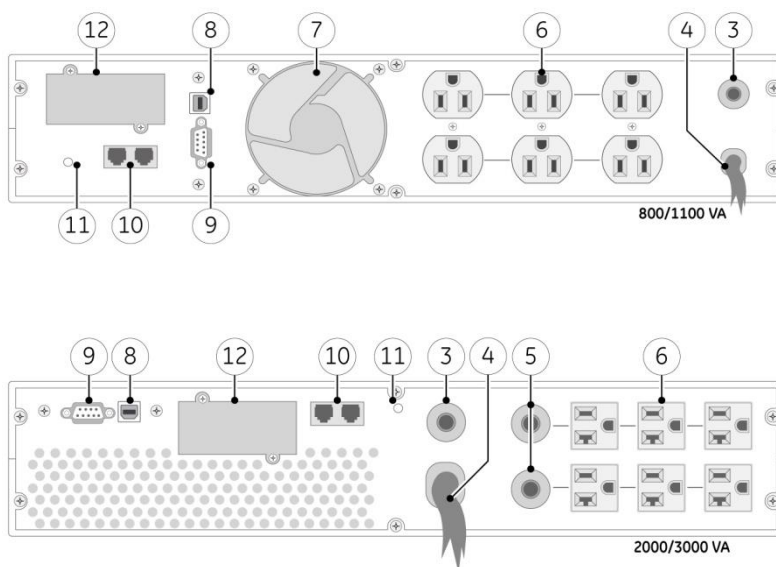


Fig. 2.2.2. Rear panel

- 3 Input breaker
- 4 Input power cord
- 5 Output breakers
- 6 Appliance outlets
- 7 Fan
- 8 USB Communication port *
- 9 RS232 Communication port *
- 10 RJ45 Port
Can provide protection against surges and spikes on your data line. Plug the network cable into the "IN" jack. Plug the network cable from your equipment into the "OUT" jack.
- 11 SWF LED - Site Wiring Fault
The SWF LED illuminates if the UPS detects a fault in the wiring of the wall outlet the UPS is connected to.
- 12 Slot for optional communication card *



* See section 3.3 "Communication".

3 OPERATION

3.1 SWITCHING ON

1. With the connected equipment still switched off, push and hold the ON/OFF button for one beep to switch on the UPS.
2. When the "Power" LED illuminates, switch on the connected equipment.

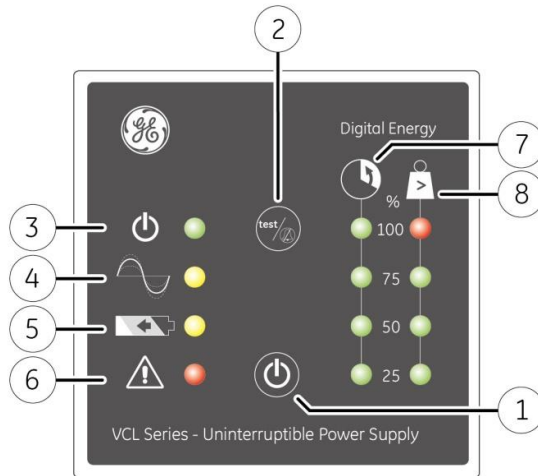


Fig. 3.1 Operating panel

3.2 CONTROLS AND INDICATORS

1. **ON/OFF button**
Press and hold the ON/OFF button for one beep, then release it to turn on (or turn off) the UPS. The UPS will charge the battery as long as the mains power is present.
NOTE: When you turn on the UPS it will perform a self-test during which the LED 'Power' will blink.
2. **Self-test / silence button**
Press the button for 1 second to turn off the audible alarm. Press the button again to restore the audible alarm function. Press the button for 3 seconds to perform a self-test of the UPS.
3. **LED 'Power'**
4. **LED 'AVR Mode'**
5. **LED 'Battery status'**
6. **LED 'Alarm'**
7. **LED bar 'Runtime'**, indicates during battery operation the remaining available battery runtime for the actual load, in % of the initial runtime. If the lower LED starts blinking the remaining runtime is less than 20%, and if all LEDs are off the remaining runtime is less than 10%.
8. **LED bar 'Load'**, indicates to what extent the output capacity of the UPS is used by the actual load, as a percentage of the nominal load.

all LEDs off	0-24%
1 LED on	25-49%
2 LEDs on	50-74%
3 LEDs on	75-99%
4 LEDs on	100-110%
top LED blinks	>110%

If all LEDs are on and the upper LED blinks, the unit operates in overload. As this is an abnormal situation the alarm LED (6) will blink as well. See below for more information on overload.

LED functions, overview

Power	ON - output power is on BLINKING - input is available, but output is off OFF - no input and no output	Battery	BLINKING - batt. low, recharging, or problem ON - output supplied by battery OFF - battery currently not used
AVR	ON - output boosted or reduced OFF - normal input or no input	Alarm	OFF - everything is OK BLINKING - warning, situation not critical (yet) ON - situation is critical

In detail: LED display & buzzer alarm list

LED 'Power'	LED 'AVR Mode'	LED 'Battery status'	LED 'Alarm'	Buzzer alarm	UPS Status
OFF	OFF	OFF	OFF	OFF	Switched off, no input voltage present
ON	OFF	OFF	OFF	OFF	AC mode - normal operation
ON	ON	OFF	OFF	OFF	AC mode - AVR active
ON	X	Blinking	Blinking	1 beep / 5 seconds	AC mode - no battery detected
ON	X	Blinking	OFF	OFF	AC mode - battery charging
ON	X	Blinking	ON	1 beep / 1 minute	AC mode - replace battery
ON	X	OFF	Blinking	1 beep / 5 seconds	AC mode - output overload (110-120%)
ON	X	OFF	Blinking	continuous	AC mode - output overload (>120%)
ON	OFF	ON	OFF	1 beep / 1 minute	DC (battery) mode
ON	OFF	Blinking	OFF	1 beep / 5 seconds	DC mode - battery low
ON	OFF	ON	Blinking	1 beep / 5 seconds	DC mode - output overload (110-120%)
ON	OFF	ON	Blinking	continuous	DC mode - output overload (>120%)
Blinking*	OFF	OFF	Blinking	1 beep / 5 seconds	Off - due to output overload
Blinking*	OFF	OFF	ON	1 beep / 1 minute	UPS requires service

* blinking if AC input power available, OFF if no AC input power available

3.3 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.

3.3.1 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 port.

3.3.2 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.

4 MAINTENANCE

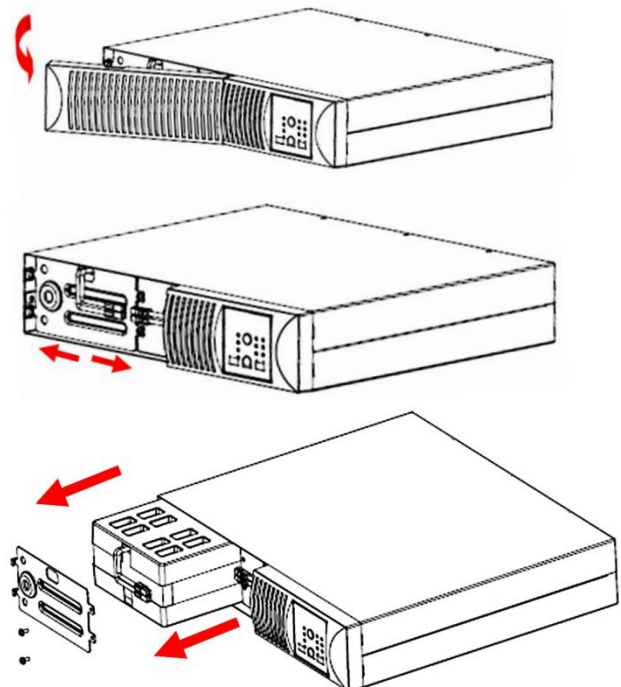
4.1 BATTERY REPLACEMENT

4.1.1 SAFETY

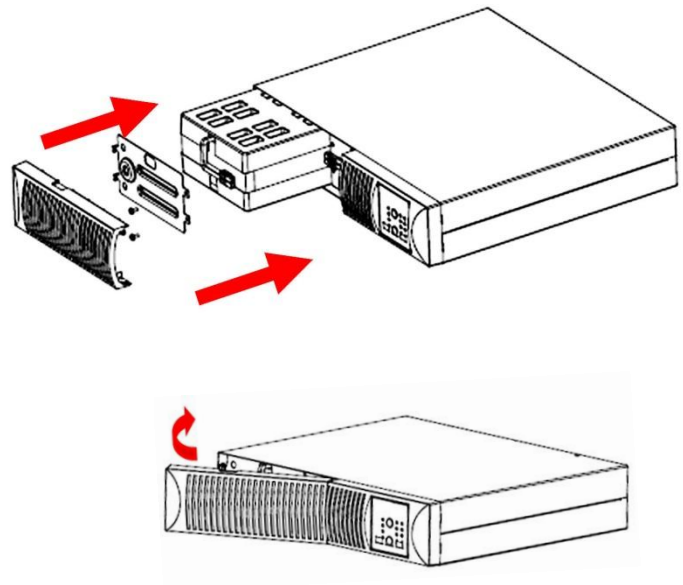
- Servicing of batteries should be performed or supervised by personnel knowledgeable about batteries and the required precautions.
- When replacing batteries, replace with the same type and number of batteries or battery packs. See step 3 below.
- **CAUTION:** Risk of energy hazard. VCL UPS contains the following batteries:
 - VCL800: 24V, 7.2Ah
 - VCL1100: 24V, 9Ah
 - VCL2000: 48V, 9Ah
 - VCL3000: 72V, 9Ah
- **CAUTION:** RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE
- **CAUTION:** Never dispose of batteries in a fire: they may explode
- **CAUTION:** Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic
- A battery can present a risk of electrical shock and high short-circuit current. The following precautions should be observed when working on batteries:
 - Remove conductive jewelry such as chains, wrist watches, rings, or other metal objects. High energy through conductive materials could cause severe burns
 - Use tools with insulated 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.

4.1.2 BATTERY REPLACEMENT PROCEDURE

1. Carefully pull the front panel away from the unit. The panel should pop loose,
2. Disconnect the black and red connectors from each other.
3. Loosen the two thumb screws that attach the battery door to the unit.
4. Remove the battery door.
5. Carefully slide the old batteries out and put them aside.



6. Replace with a fresh battery (ensure that same battery type and size are used (see 4.1.1 step 2 - 4).
7. Reinstall the battery door and tighten the thumb screws.
8. Reconnect the red and black connectors: red to red, black to black.
9. Carefully reinstall the front panel, ensure that none of the battery wires is pinched.



4.2 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.

5 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.

PROBLEM	POSSIBLE CAUSE	SOLUTION
UPS will not switch on	UPS line cord not connected and/or UPS is not switched on	Plug the line cord of the UPS into an AC wall outlet and switch on the UPS. If the wall outlet is dead, make sure the building branch circuit breaker is not accidentally turned off or contact a qualified electrician
	UPS circuit breaker tripped	Reduce the load, reset the circuit breaker
Continuous buzzer, upper "system load" LED blinks	UPS overload	Turn off the UPS and reduce the load connected to the outlets
UPS does not provide the expected runtime	The battery is not fully charged	Charge the battery for at least 8 hours. If possible remove the load and turn off the UPS to avoid unnecessary discharging.
	Aging battery	Have the battery replaced
Connected equipment loses power while connected to the UPS	UPS overload	See above
	VCL2000/3000: overload on one group of appliance outlets, corresponding output circuit breaker tripped	Reduce / rearrange the load, reset the circuit breaker
	Battery depleted	The UPS will turn off when the battery has been depleted during the mains failure. Allow the UPS to recharge the battery
	The UPS may be faulty	Contact your dealer or consult www.gecriticalpower.com

6 SPECIFICATIONS

UPS Model	:	VCL800 UL	VCL1100 UL	VCL2000 UL	VCL3000 UL
Power factor	:	0.8			
Ratings					
Voltage Amperes (VA)	:	800	1100	1920	2880
Watts (W)	:	640	880	1600	2400
Input					
AC input voltage	:	120V			
AC input voltage window	:	90 - 150V			
Input frequency range	:	50 / 60 Hz \pm 5 Hz, auto sensing			
Minimum start-up AC voltage	:	90 V (at any load)			
AC leakage current	:	<1.0mA at full rated non-linear load			
Input TCB (A)	:	10	15	20	30
Input connection cord	:	NEMA 5-15P	NEMA 5-15P	NEMA 5-20P	NEMA L5-30P
Output					
AC output voltage	:	120 V			
AC output voltage tolerance (until Low Battery)	:	\pm 5%			
Output frequency	:	50 / 60Hz \pm 1% (auto-select)			
Output frequency stability	:	< \pm 0.1Hz (battery operation)			
Output waveform	:	sine wave			
Crest factor	:	3:1			
Output THD	:	< 8% with linear load			
Output connection	:	6 x NEMA 5-15R		6 x NEMA 5-20R	
Batteries					
Nominal voltage (Vdc)	:	24	24	48	72
Number x capacity (Ah) of batteries	:	2x7	2x9	4x9	6x9
Type	:	12V, sealed lead acid, maintenance free			
Runtime in minutes at typical load (60%)	:	8	8	9	9
General					
Weight UPS (kg)	:	13.5	15	25	33
Weight UPS (Lbs)	:	30	33	55	73
Dimensions UPS (h \times w \times d, mm)	:	88(2U) \times 440 \times 405		88(2U) \times 440 \times 620	
Dimensions UPS (h \times w \times d, inch)	:	3.5 \times 17.3 \times 16.0		3.5 \times 17.3 \times 24.4	
Enclosure / protection	:	steel - plastic / IP20			
Environment					
Ambient temperature	:	32°F to 104°F (0°C to 40°C)			
Storage temperature	:	-4°F to 140°F (-20°C to 60°C)			
Sound at 1 meter	:	< 55 dB(A)			
Altitude	:	0-10,000ft (0-3000m)			
Maximum relative humidity	:	95% (non-condensing)			