

ups

LEVEL 3

CENTOR UNINTERRUPTIBLE POWER SUPPLY

ONLINE DOUBLE CONVERSION TECHNOLOGY

1000VA - 3000VA



USER'S MANUAL

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Revision 3

Revised May 07

Introduction

Save these instructions

Please read and save this manual

Thank you for selecting this uninterruptible power supply (UPS). The manual is a guide to the correct installation and use of the UPS system. It includes important safety instructions for operation and correct installation of the UPS. If you should have any problems with the UPS, please refer to this manual before calling the Powertecnicque customer service department for further assistance.

Please save or recycle the packaging materials

The UPS's shipping materials have been designed with great care to provide protection whilst in transit. As these materials will be invaluable should you ever have to return the UPS for service, we would recommend that they be kept in a safe place for future use.

Intelligent microprocessor control

The Centor series is a true on-line double conversion UPS, based on dual-microprocessor control system. The system has been designed utilising the newest technology providing high performance and powerful functions. The Centor series is an intelligent protector and provides pure, reliable AC power to the critical loads - protecting them from utility power blackout, swells, sags, surges and interference.

The loads could include sensitively medical instruments, computers, telecommunication systems, and industrially automatic equipment. Under power normal condition, the on-line design enables the system to adjust and filter power fluctuations continuously and automatically. In the event of power failure, it can provide immediate backup power from the batteries without any interruption. When there is an overload or UPS malfunction, the system will automatically transfer into bypass mode and keep supplying output equipment with utility power; if overload situation is relieved, it will automatically transfer back to inverter mode when the malfunction is resolved by restarting the UPS. Complete transference will be achieved within 4m seconds, with no interruption. In addition to this, when the utility power is connected, the charger would work automatically even under power switch is OFF. Furthermore, in order to save battery energy, the UPS can automatically turn itself off under backup mode if none of the connected loads is operating.

Advanced battery management

The visual and audible indications of the UPS present the battery's status including capacity degree and battery condition. The Centor is fitted with a Self-test function, which will indicate any failures within the battery source requiring remedial works. The Centor UPS will perform a self-test during initial start up procedures and can also be manually conducted via the ON/TEST switch at any time.

Advanced monitoring software

The Centor UPS and UPS-MON series monitoring software (optional kits) allows the status of the UPS system to be monitored via remote computer systems. The software is available for most operating platforms and is supplied with a communication cable that connects between the UPS system and computer serial port.

Interference

There is no guarantee that interference to radio/TV will not occur in a particular installation. If this UPS causes interference to radio or television reception, which can be determined by turning the UPS off and on, the user is encouraged to try to correct the interference by one or more of following measures:

Connect the equipment to an outlet at a circuit different from the connected radio/TV.

Increase the separation between the equipment and the receiver.

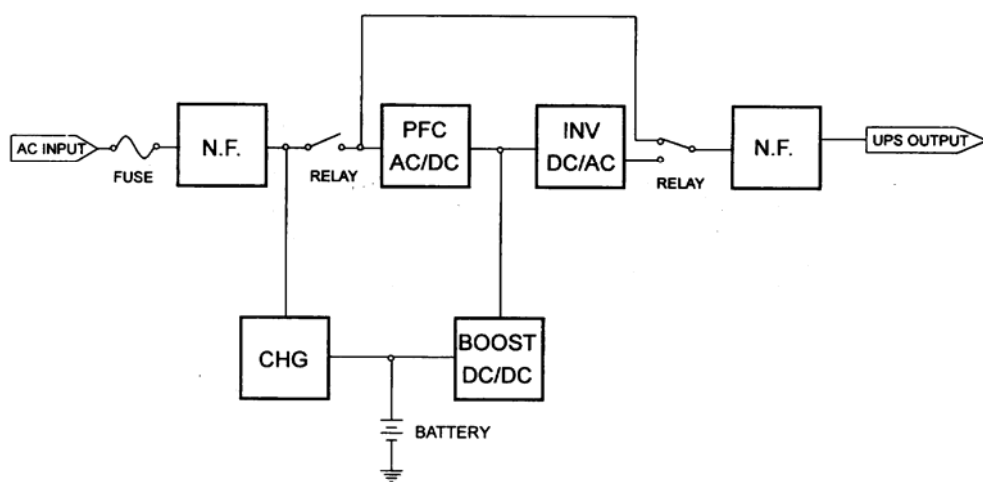


Figure. System block diagram

1. Important Safety Instructions

CAUTION: (UPS contains internal batteries):

Risk of electric shock - Hazardous live parts exist within this unit, which are energised from the battery supply even when the input AC power is disconnected.

CAUTION: (No user serviceable parts):

Risk of electric shock - do not remove cover. No user serviceable parts inside. Refer servicing to approved, qualified service personnel only.

WARNING (Fuses):

To reduce the risk of fire, replace only with the same type and rating of fuse.

WARNING:

Installation is intended within a controlled environment.

CAUTION:

Do not dispose of the batteries in a fire, as they are liable to explode.

CAUTION:

Do not open or tamper with the battery, as released electrolyte can be harmful to the skin and eyes.

CAUTION:

A battery can present a risk of electric shock and high short circuit current. The following precautions should be observed when working on batteries:

- Remove watches, rings or other metal objects.
- Use insulated tools
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of batteries.

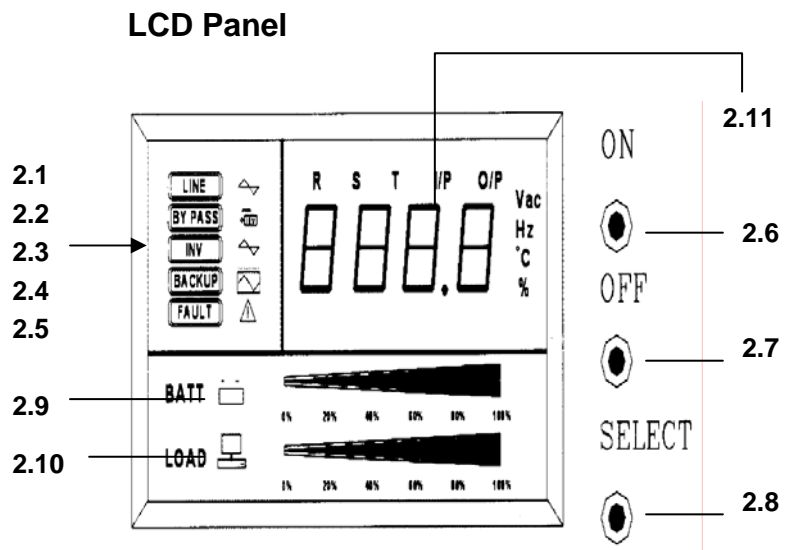
Disconnect charging source prior to connecting or disconnecting battery terminals

Trained engineers should perform servicing of the batteries only.

The correct procedure to de-energise the UPS system in an emergency is to press and hold the OFF button until the UPS switches off, then disconnect the input power from the mains supply.

2. Presentation

Front View



2.1 LINE indicator

The indicator illuminates when the input voltage is normal.

2.2 BYPASS indicator

The indicator illuminates when the loads are supplied from the utility power, through the by-pass direction.

2.3 INV or INVERTER indicator

The indicator illuminates when the output power of UPS is supplied from the inverter circuit.

2.4 BACKUP indicator

The indicator illuminates when the power is supplied from the batteries.

2.5 FAULT indicator

The LED illuminates when a failure within the UPS system has occurred.

2.6 ON/TEST/SILENCE button

With the UPS plugged in, press the ON button to turn on the UPS and power the loads. ON/TEST also activates the UPS's self-test.

2.7 OFF button

Press and hold the OFF button to turn off the UPS its loads off

2.8 SELECT button (LCD Panel only)

The relevant value appears on the upper screen. There are four display modes can be selected.

- Output voltage display
- Input voltage display
- Input frequency
- Temperature inside the UPS

2.9 POWER bar graph (rectangle indicator)

The rectangle indicator shows the present battery charge as percentage of the battery's capacity.

2.10 LOAD bar graph (rectangle indicator)

The indicator shows the power being drawn by the load.

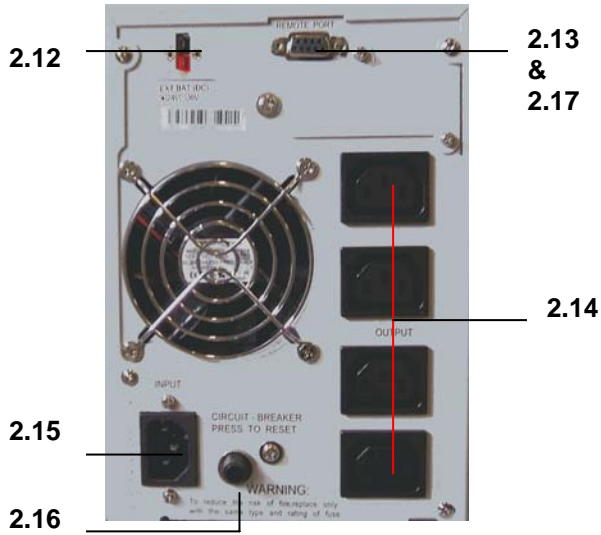
Load Indicator	% of Load Value	Battery Indicator	% of Bat Level
Light no.5	over 96%	Light no.5	over 91 %
Light no.4	76-95 %	Light no.4	76-90 %
Light no.3	51-75 %	Light no.3	51-75 %
Light no.2	26-50 %	Light no.2	26-50%
Light no.1	10-25 %	Light no.1	0-25%

2.11 FAULT codes (LCD Panel only)

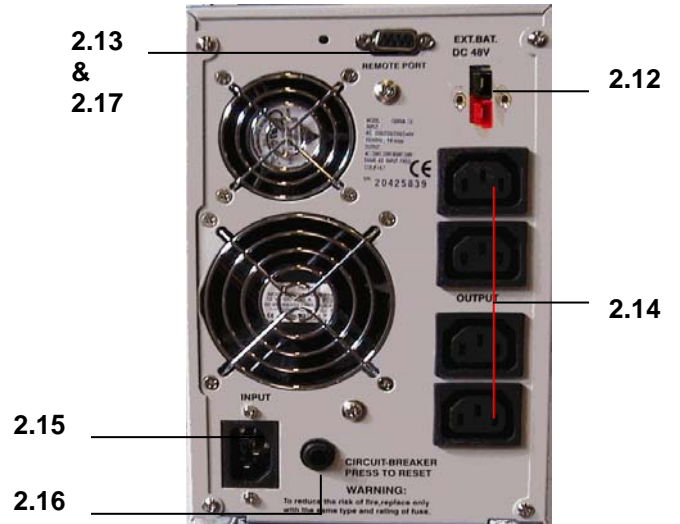
The relevant value appears at the upper screen. There are seven kinds of fault modes can be displayed.

- E01: Warning of output failure
- E02: Warning of temperature outside normal parameters
- E03: Warning of output short circuit
- E04: Warning of overload (exceeding 150%)
- E05: Warning of incorrect +/- DC Bus
- E06: Warning of incorrect charging voltage
- E07: Warning of battery failure

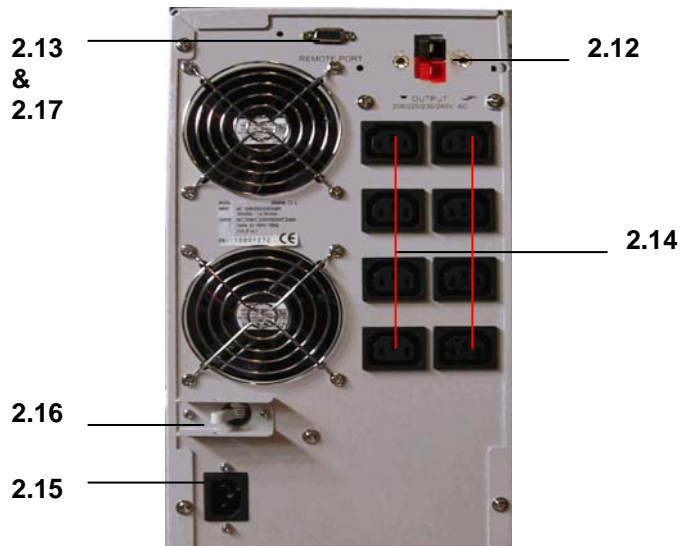
Rear View



1000VA (230v)



1500VA (230v)



2000VA - 3000VA (230v)

2.12 EXTERNAL BATTERY PACK connector

Batteries: Can be connected with external battery pack.

Caution: The external battery cabinets should only be connected to the UPS system using the authorised cables provided.

2.13 SNMP interface port (optional)

Provide the SNMP adapters for 10-BaseT Ethernet and Token Ring connectors. Through the RS232 communication port, the network adapter allows SNMP interfacing and provides real time UPS and power status information for the network manager.

Note: The computer interface connection is optional. The UPS works properly without a computer interface connection.

Caution: Use only factory supplied or authorised SNMP monitoring cables.

2.14 UPS OUTPUT POWER SOCKETS

2.15 AC INPUT POWER SOCKET

2.16 CIRCUIT BREAKER

The circuit breaker will trip should the connected loads exceed the maximum rated power. The centre plungers of the circuit breakers extend when tripped.

2.17 REMOTE PORT/COMPUTER INTERFACE

This provides both RS232 and relay signals offering support to most operating platforms. For further details please contact the Powertecnicque sales department.

2.18 SITE WIRING FAULT INDICATORS (110V model only)

The red LED will illuminate when the UPS is connected to an incorrectly wired AC power outlet.

2.19 TERMINAL BLOCK (110V models only)

Input: Connection of the input supply cabling.

Output: Connection of the output supply cabling.

3. Installation

Please inspect the UPS upon receipt. The packaging is recyclable and should be kept for future use or disposed of properly.

3.1 Positioning of the UPS

Install the UPS in a protected environment. It must be free of excessive dust and with adequate airflow. Do not operate the UPS where the temperature and humidity is outside the specified limits.

3.2 Battery charging

The battery is fully charged before the UPS is shipped from the factory. However it is recommended that the battery is charged for at least six hours before use. To recharge the battery, simply plug it into an AC outlet. To maintain optimal battery condition, make sure that the UPS is always plugged in.

3.3 Connect to utility power

1000VA to 3000VA (230v)

Check that the UPS voltage is 230v. The power cable supplied should be plugged into the AC input power socket on the UPS and into a 13A-socket outlet.

2000VA to 3000VA (110V)

3.3.1. The capacity of the breaker on the wiring board must be over 50A(3KVA);
35A(2KVA).

3.3.2. Adequate sized cabling should be used when installing the UPS system, in accordance with relevant wiring regulations.

3.4 Connect the loads

700VA to 3000VA (230v)

Plug your equipment (e.g. computer, monitor and critical data storage device etc.) into the battery power-supplied outlets

2000VA to 3000VA (110V)

Connect the loads using the terminal block at the rear of the UPS. To use the UPS as a master on/off switch, make sure all of the loads are switched on.

Caution: It is recommended that laser printers are not connected to the UPS system as they can periodically draw significantly more power during start up which may cause an overload condition.

3.5 Connect computer interface (optional)

UPS-MON series software (or other power management software) and interface kits can be used with this UPS. Only kits supplied or approved by Powertecnicque should be connected. If used, connect the interface cable to the 9-pin computer interface port on the back panel of the UPS.

Note: The computer interface connection is optional. The UPS works properly without a computer interface connection.

Caution: Use only Powertecnicque supplied or authorised UPS monitoring cables.

3.6 Connect external battery pack (optional)

The expected battery life is 3 to 5 years depending on the environment and ambient temperature.

To install the battery cabinet, firstly switch off the UPS and remove the connector metal cover from the back panel of the UPS. Connect the battery cabinet's DC cable to the UPS and clamp the plug in place using the clamps supplied.

Connect the power cable supplied into the AC input power socket and into the 13A-socket outlet. Finally switch on the UPS and plug the loads into the back of the UPS as illustrated below.

CAUTION: When connecting external battery pack, please ensure that you only connect black connections to black and red connections to red.

4. Operation

4.1 Check the power requirement of your equipment

4.1.1 Make sure that the total power of your equipment does not exceed the capacity of the UPS.

4.1.2 Check that the equipment plugged into the battery power-supplied outlet does not require total power exceeding the capacity of the UPS. Otherwise overload may occur and cause the circuit breaker to trip. You can convert Watts (W) or Amps (A) into VA by doing the following calculations.

220-240V model $_Watt (W) \times 1.67 = _VA$, or $_Amps (A) \times 230 = _VA$

4.2 Switch on

With the utility input power connected to the UPS, press the ON button, keeping it pressed until the beep stops. After which, loads can be connected to the UPS.

In the event that the UPS system is overloaded an audible alarm will sound indicating a fault condition. The UPS system may also automatically shutdown whilst in this condition.

Attention: If utility power is unavailable, the UPS system can be cold started, using its internal battery. To cold start the system, press and hold the ON button for more than 3 seconds.

4.3 Simple test

It is recommended that the user perform a simulation test when using the UPS for the first time or adding an additional piece of equipment. To conduct a simulation-test: first, switch on the UPS and wait for the power indicator to light up, then simply unplug the UPS to simulate the event of a power failure.

4.4 Switch off

By pressing and holding the OFF button until the LINE NORMAL or BACKUP LED turns off.

4.5 Silence

When the UPS system is in the BACKUP mode, press and hold the SILENCE button for more than 1 second to silence the audible alarm. (This function is disabled when the UPS system is under a LOW BATTERY or OVERLOAD condition).

Note: During backup mode the UPS system can be automatically turned off if none of the connected output loads is operating.

5. Alarms

5.1 BACKUP (slow alarm)

When the UPS is working in BACKUP mode, the UPS will emit an audible alarm. The alarm stops when the UPS is returned to LINE mode operation.

Attention: The BACKUP audible alarm will sound every four seconds. (Slow-speed beep).

Attention: The UPS system provides a mute function for this condition. When the beeping sound occurs, pressing ON will silence the alarm; pressing ON again will once again sound the alarm.

5.2 LOW BATTERY (rapid alarm)

If the battery capacity should become too low (about 20% - 30%) whilst in the BACKUP mode the UPS system will emit an audible alarm. When the battery has discharged to a pre-set level the UPS system will automatically shutdown.

Attention: The LOW BATTERY alarm will sound every second. (Fast-speed beep).

Attention: The LOW BATTERY alarm cannot be silenced.

5.3 FAULT (continuous alarm)

Examples of some possible FAULT conditions are:

5.3.1 FAULT code E04 An audible alarm will be emitted should the UPS system be overloaded.

5.3.2 FAULT code E07 An audible alarm will be emitted and the FAULT LED will illuminate should the battery fail during the self-test procedure. Please contact the Powertecniqe service department for further details.

6. Software Options & Computer Interface Port

6.1 Power monitoring software

The UPS-MON series software (or other power monitoring software) is a standard RS232 interface used to perform monitoring functions, and/or orderly shutdowns of computer systems in the event of prolonged power failures. The UPS-MON can also be used to remotely monitor the UPS Voltage, Frequency, Battery level etc. The software is available for most operating platforms such as Windows 3.1x, Windows 95, Windows NT, Novell NetWare etc. For further details please contact the Powertecnicque sales department.

6.2 Interface kits

Additional interface kits for the UPS system are available on request, subject to specification.

Caution: Only factory supplied interface kits should be used with the UPS system.

6.3 The characteristics of computer interface port

The computer interface port has the following characteristics:

The communication port on the back of the UPS system may be connected to a host computer. This port allows the computer to monitor the status of the UPS and control the operation of the system in some cases. Its major functions normally include some or all of the following:

- To broadcast a warning that the utility power has failed.
- To systematically shutdown any open files.
- To turn the UPS system off.

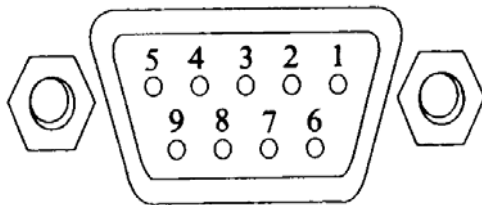
6.4 Computer interface port pin out configuration

The pin out configuration of the interface port is as follows:

- 6.4.1 Pins 5 and 2 are open collector outputs that must be pulled up to a common referenced supply no greater than +40VAC. The transistors are capable of a maximum non-conductive load of 25mA DC. Pin 7 only should be used as the common.
- 6.4.2 Pin 5 generates a High to Low signal when the internal battery has less than 5 minutes autonomy time left.
- 6.4.3 Pin 2 generates a High to Low signal when a mains failure condition is present.
- 6.4.4 The UPS will shut down when a high RS232 level is sustained on pin 6 for >0.36 seconds.
- 6.4.5 Pin 9 is the RS232 data output.
- 6.4.6 Pin 6 is RS232 data input (Rx/D)

NOTE:

- 1. Switch rating +40V, 0.15A non-inductive.
- 2. Pin 7 should be connected to ground only.



6.5 Communicating Interface Port

A standard RS232 serial port is available on the rear panel of UPS. The serial port provides various signals as explained below:

Pin#	Function	I/O
2	Power Failure - normally open status which will become closed during active	OUTPUT
4	Reference GND for pin 2 & 5	OUTPUT
5	Battery Low - normally open status which will become closed during active	OUTPUT
6	Remote shutdown UPS - keep this pin at high voltage (+5V to +12V) 500ms to shutdown UPS. Available whilst in battery mode	INPUT
7	Reference GND for pin 6	INPUT

7. Maintenance & Storage

7.1 Maintenance

- 7.1.1 The unit should be kept clean.
- 7.1.2 The unit should be wiped clean with a soft damp cloth.
- 7.1.3 The UPS connections should be regularly inspected.
- 7.1.4 The UPS should not be used on uneven surfaces.
- 7.1.5 The UPS system should be positioned with at least 10cm of clearance between the rear panel and the wall. The ventilation intake areas should be clear at all times.
- 7.1.6 Avoid direct sunlight, rain and high humidity.
- 7.1.7 The UPS unit should be positioned away from open fires and extremely hot environments.
- 7.1.8 Materials should not be stacked on top of the UPS unit.
- 7.1.9 The unit should not be exposed to corrosive air.
- 7.1.10 The normal operating temperature of the UPS unit is between 0-40°C.

7.2 Storage conditions

The UPS system should be stored upright in a cool and dry location, with its battery fully charged. Before storing the battery should be charged for at least 4 hours.

7.3 To extend the storage

Where the ambient temperature of the environment is between -15 to +30°C the battery should be charged every 6 months.

Where the ambient temperature of the environment is between +30 to +45°C the battery should be charged every 3 months.

7.4 Battery replacement

Trained personnel should carry out replacement of the batteries only. Please contact the Powertecnicque service department for further details.

8. Warranty

All Powertecnicque UPS systems have been designed and manufactured to the highest standards. Each unit and all its components have been extensively tested and Powertecnicque guarantees that your UPS is free from manufacturing defects for a period of 24 months as of purchase.

The Powertecnicque warranty covers the replacement or the repair of components where a manufacturing defect has occurred. To benefit from the repair warranty, the fault should be reported to our Powertecnicque customer service department.

Please include the following information:

- Order number
- Date of Purchase
- Name and address of installation
- Contact name, address and telephone number
- Model of the faulty UPS
- VA Rating
- Serial Number
- Fault symptoms

Once this information has been provided you will be allocated a call log number. Shortly afterwards you will be contacted by one of our service engineers, who will then provide the necessary support.

The warranty does not apply:

- to products that have been misused; mishandled; modified; damaged by act of God or any other sources external to the product; repaired by others or whose serial number has been removed or altered.
- to replacement or extension of warranty when assistance has previously been given.
- to claims for damages whether direct or indirect of any nature whatsoever to persons, animals and things during the use or non-use of the equipment.

Contact details

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	Email	international@powertecnicque.com

Appendix A Troubleshooting

Problems	Possible reasons	Solutions
UPS will not operate after pressing On/Off switches No lights on, no warning sounds	Incorrect input power supply	Check input power supply
	Time of pressing the ON button is too short	Press and hold the ON button for more than 1 second
	Output short circuit or overload on UPS	Switch off the UPS and remove all loads. Press and hold the ON button for more than 1 second
Indicates no utility power is available with an audible alarm	No input power supply	Check input power supply
Fault LED is illuminated with an audible alarm	UPS is unserviceable	Contact the Powertecnique service department for assistance
Audible alarm continues to sound	Overload	Remove non essential load
Battery autonomy is too short	Batteries haven't been charged	Keep the UPS switched ON for over 3 hours to ensure that the batteries are fully charged. Check that the UPS system is not overloaded and remove any non essential equipment, if necessary
	UPS overload	
	Batteries require investigation	Contact the Powertecnique service department for assistance
The battery LED is flashing when the UPS system is being supplied via utility power	The charger is faulty	Check that the batteries have been connected correctly.
	The voltage of batteries is too low or the batteries haven't been connected	

Appendix B Specifications

Tower model		CEN1000	CEN1500	CEN2000	CEN3000
Power Rating	P.F.=0.7	1KVA/ 700W	1.5KVA/ 1050W	2KVA/ 1400W	3KVA/ 2100W
AC Input	Voltage	100V:76V-130V 110V:80V-138V 115V:83.5V-140V 120V:87V-140V 208V:152V-260V 220V:160V-276V 230V:167V-280V 240V:174V-280V			
	Frequency	50Hz or 60Hz \pm 3Hz			
	Phase	Single phase			
	Power factor	0.98			
Battery	DC voltage	36V	48V	72V	96V
	Backup time full load	7min	5min	9min	7min
	Half load	20min	17min	20min	15min
	Type	Sealed lead acid battery, free maintenance			
	Protection	Cut off without draining any current when battery low			
	Recharge time	About 8 hours to 90% after fully discharged			
AC output	Frequency	50Hz/60Hz (Auto detection)			
	Voltage	100/110/115/120V or 208/220/230/240V			
	Voltage regulation	\pm 2% (except 3000VA/110V \pm 3%, 3000VA RM/110V \pm 3%)			
	Frequency stability	\pm 0.5%			
	Power factor	0.7 (lagging)			
	Harmonic distortion	<3% of T.H.D. at linear load			
	Overload detection	105% for 10 seconds and 130% \pm 10% for 300ms			
	Crest factor ratio	3:1			
Efficiency	AC to AC	>85%			
Transfer	Power failure or recovery	0ms			
	Overload disappear	Auto transfer to UPS			
Noise Level	1m. distance	<45dBA		<52dBA	
LED Indicators	Status	Line input (green), inverter output (green), bypass (yellow), fault (red)			
	Battery capacity	4 green, 1 red LED and red bar LED's indicate low capacity			
	Load level	4 green, 1 red LED and red bar LED's indicate overload capacity			
Alarm	Battery discharge	The first warning will beep every 4 seconds to indicate battery in use. The second warning will beep every 1 second to signal battery low condition.			
	UPS fault	Continuous beeping sound			
Environment	Temperature	0°C -40°C			
	Humidity	0%-95% (Non condensing)			
Interface	Support both RS232 & dry contact signal	Provide power management & diagnostic functions including power status, Battery low, schedule UPS ON/OFF, battery-load level display and more. Compatible with Windows 95/98/NT, Novell, Unix and other popular systems.			
Physical size	Dimensions WxDxH mm/inches	145x400x220 (5.7"x15.7"x8.7")		192x460x385 (7.6"x18.1"x15.2")	
	Net weight (kg)	11.3 (24.9lb)	13.9 (30.6lb)	28.1 (61.8lb)	33.3 (73.3lb)

Tower model		CEN1000B0	CEN1500B0	CEN2000B0	CEN3000B0
Power Rating	P.F.=0.7	1KVA/ 700W	1.5KVA/ 1050W	2KVA/ 1400W	3KVA/ 2100W
AC Input	Voltage	100V:76V-130V 110V:80V-138V 115V:83.5V-140V 120V:87V-140V 208V:152V-260V 220V:160V-276V 230V:167V-280V 240V:174V-280V			
	Frequency	50Hz or 60Hz \pm 3Hz			
	Phase	Single phase			
	Power factor	0.98			
Battery	DC voltage	36V	48V	72V	96V
	Backup time full load	Upon Request	Upon Request	Upon Request	Upon Request
	Half load	Upon Request	Upon Request	Upon Request	Upon Request
	Type	Sealed lead acid battery, free maintenance			
	Protection	Cut off without draining any current when battery low			
	Recharge time	About 8 hours to 90% after fully discharged			
AC output	Frequency	50Hz/60Hz (Auto detection)			
	Voltage	100/110/115/120V or 208/220/230/240V			
	Voltage regulation	\pm 2% (except 3000VA/110V \pm 3%, 3000VA RM/110V \pm 3%)			
	Frequency stability	\pm 0.5%			
	Power factor	0.7 (lagging)			
	Harmonic distortion	<3% of T.H.D. at linear load			
	Overload detection	105% for 10 seconds and 130% \pm 10% for 300ms			
	Crest factor ratio	3:1			
Efficiency	AC to AC	>85%			
Transfer	Power failure or recovery	0ms			
	Overload disappear	Auto transfer to UPS			
Noise Level	1m. distance	<45dBA		<52dBA	
LED Indicators	Status	Line input (green), inverter output (green), bypass (yellow), fault (red)			
	Battery capacity	4 green, 1 red LED and red bar LED's indicate low capacity			
	Load level	4 green, 1 red LED and red bar LED's indicate overload capacity			
Alarm	Battery discharge	The first warning will beep every 4 seconds to indicate battery in use. The second warning will beep every 1 second to signal battery low condition.			
	UPS fault	Continuous beeping sound			
Environment	Temperature	0°C -40°C			
	Humidity	0%-95% (Non condensing)			
Interface	Support both RS232 & dry contact signal	Provide power management & diagnostic functions including power status, Battery low, schedule UPS ON/OFF, battery-load level display and more. Compatible with Windows 95/98/NT, Novell, Unix and other popular systems.			
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