



XC SERIES

2-3 kVA

ON-LINE

UNINTERRUPTIBLE POWER SUPPLIES



USER MANUAL

IMPORTANT NOTICES

- 1 . Read instructions carefully before operating the UPS
- 2 . All warnings in the manual should be adhered to.
- 3 . All operating instructions should be followed.
- 4 . The unit should be supplied by a grounded outlet.
DO NOT operate the unit without ground source .
- 5 . Power cord of the UPS should be routed carefully so that they are not to be walked on.

WARNING

- 1 . DO NOT OPEN THE COVER. THERE ARE NO USER SERVICEABLE PARTS INSIDE.
- 2 . DO NOT INSERT ANY OBJECT INTO VENTILATION HOLES OR OTHER OPENINGS.
- 3 . INTENDED FOR INSTALLATION IN A PROTECTED ENVIRONMENT.

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I. INTRODUCTION

1.1 System Description

XC Series Uninterruptible Power Supplies are advanced true On-Line Sinewave UPS with static transfer switch which provide reliable, regulated, transient-free AC power to sensitive equipment, ranging from computers, telecommunication systems to computerized instruments.

Because the UPS is a true On-Line system, conditioned power is provided continuously to the connected equipments. Unlike standby power systems, the UPS is constantly regulating and filtering the output power. When incoming power is interrupted, the UPS protects the computers instantaneously without any transfer time.

The XC Series has high nonlinear load capability (i.e. Crest Ratio 3:1) and this is suitable for powering special loads such as switching power supplies or highly capacitive inputs.

The system's static transfer switch (S.T.S) provides by-pass power as its standby source. During an overload condition, the S.T.S will switch the customer's load over to the bypass line with no interruption. The S.T.S will transfer back to the inverter automatically when the overload condition has been cleared. If the inverter fails internally, the unit switches to bypass within milliseconds.

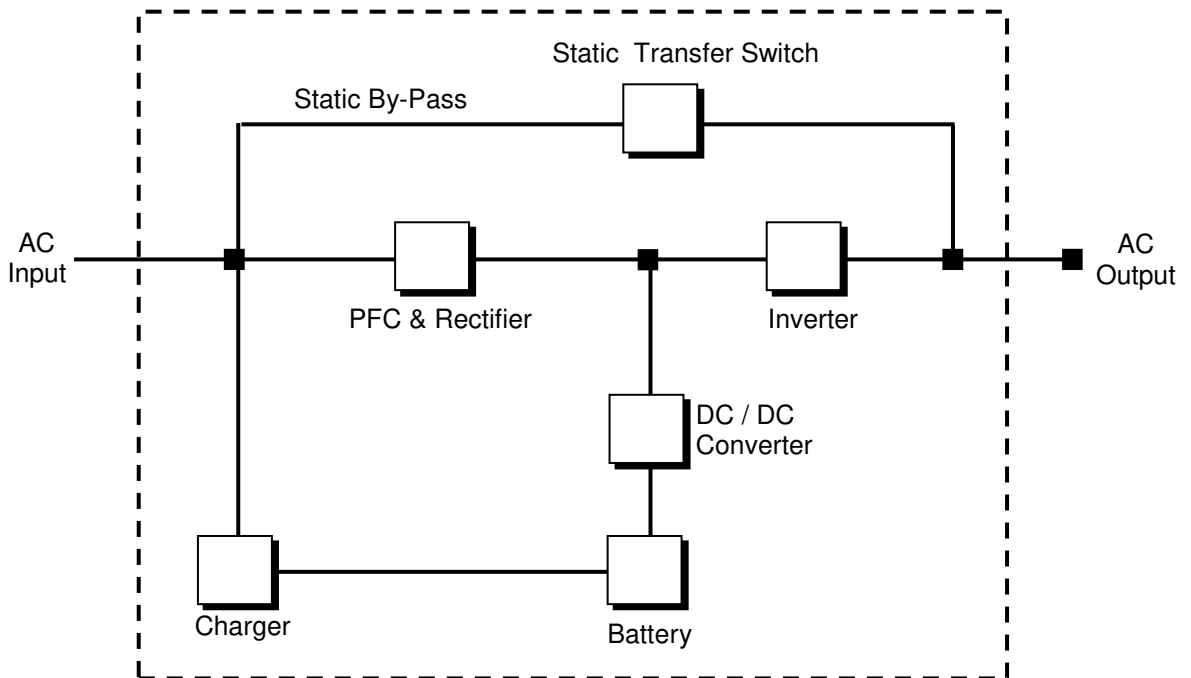


Figure 1.1 Ups Block Diagram

To choose the XC Series as your equipment protector was a wise investment. It includes many features to protect your critical equipments:

Full Protection

- Built-in battery to protect from power outage
- S.T.S to protect when UPS fails
- On line operation to condition output continuously
- Sinewave output waveform

High Nonlinear Load Capacity

- Special for Computers

Easy operation and installation.

1.2 Technical Specifications

	XC-102	XC-103
Output Power (pf 0.7)	2 kVA - 1400W	3 kVA - 2100W
INPUT		
Voltage	220 Vac or 230Vac 1 Ph+N ± 20%	
Frequency	50 Hz. ±5 %	
Current	10 A	16 A
Power Factor	≥0,9	
OUTPUT		
Voltage	220 Vac or 230Vac	
Voltage tolerance	± 1%	
Frequency	50 Hz.	
Frequency tolerance	Free running	± 0,2 %
	Line synchronized	± 1 %
Efficiency (100% Load)	> 85 %	
Crest factor	3:1	
Overload capacity	100%-125% load 1 min 125%-150% load 10 sec >150% direct by-pass	
Batteries	6 (12V 7Ah.)	8 (12V 7Ah.)
Floating charge voltage	81 Vdc	108 Vdc
End of discharge voltage	60 Vdc	80 Vdc
Automatic battery testing	Optional	
Operating Temperature	0 °C - 40 °C	
Humidity	90%	
Altitude	max. 1000 meter	
Dimensions (HxWxD)	385x160x575 mm	

NOTE : The input cable lengths should be 1.5m max. (not more)
The output cable is not included in the UPS packages.

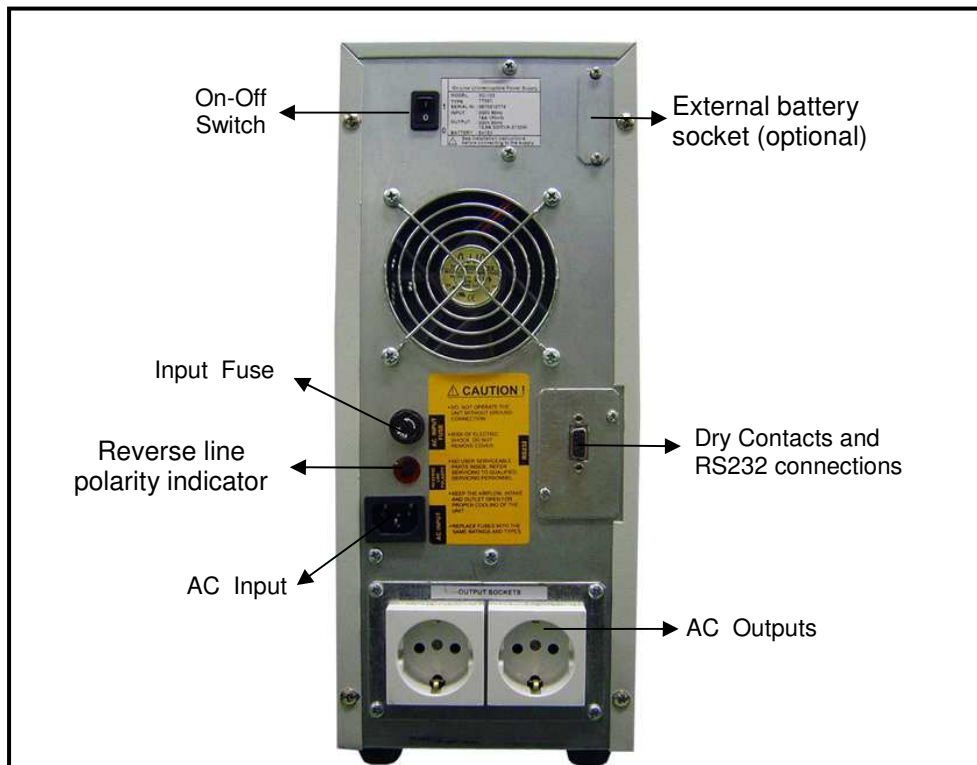


Figure 1.2 Rear View

II. SETTING UP THE UPS

2.1 Unpacking

The UPS is packed and enclosed in a structural cardboard carton to protect it from danger.

1. Inspect for damage that may have occurred during the shipment. If any damage is noted, call the shipper immediately and retain the shipping carton and the UPS.
2. Carefully open the carton and take the UPS out.
3. Retain the carton and packing material for future use.

2.2 Location Selection

The UPS is designed to be installed in a protected environment. The following conditions should be prohibited.

1. Blocking the airflow intake and outlet. (It is recommended to retain 10 cm.(4 in.) between the rear side and the wall.)
2. Environment temperature and humidity out of specification.
3. Location subject to excessive moisture, dust and corrosion.
4. Location exposed to heat source or direct sunlight.

2.3 Installation

It is recommended that the UPS should be connected to a dedicated outlet protected by a circuit breaker. The UPS has a built in power cord with a ground and 2 receptacles on the rear panel.

1. Make sure that the on-off switch the rear panel is in the "0" position.
2. Plug in the input power cord to a wall outlet.
3. If the "Reverse Line Polarity Indicator" is on, reverse the AC input phase and neutral lines.
4. Turn on the On-Off Switch, into "1" on position.

WARNING : DO NOT DEFEAT GROUND CONNECTIONS

2.4 Start-Up

1. Turn on the on-off switch on the rear panel to "1" .
2. The red LED indicator "**BYPASS**" should light on.
3. In a few seconds the cooling fan will start to operate, then the "**BYPASS**" indicator will be off and the green LED indicator "**UPS**" will turn on and will start to give the UPS power to the output.
4. Disconnect the input power cord from the power outlet. The "**LINE FAILURE**" will appear on the LCD panel and audible alarm will sound intermittently. Now the load is supplied from the battery source.
5. Plug in the power cord again and see that "**LINE FAILURE**" alarm is off.
6. Now your UPS is ready to operate. Plug in the critical loads to the output receptacles of the unit.

NOTE

If any condition is different from the above situation, call our local service representative for assistance.

CAUTION

After initial start-up , keep power continuously to the unit for at least 8 hours to ensure that the batteries are fully charged.

III. OPERATION PROCEDURE

3.1 Turn On procedure

- 1 . Turn On the PK1 on-off switch on the rear panel to "I" position.
- 2 . Turn on the power switches on your critical load after the "UPS" indicator will light on.

3.2 Turn Off procedure

1. Turn off all the power switches on your critical equipments that are connected to the UPS.
2. Turn Off the PK1 on-off switch on the rear panel to "O" position.

CAUTION

A . The UPS charges its battery whenever it is connected to utility power.

B . For daily **TURN ON / TURN OFF** operation , it is recommended to keep the on to ensure proper battery operation.

WARNING:

When the UPS connected to utility power, the line power will be supplied to output receptacles directly. DO NOT insert objects other than equipment power cords into outlets.

3.3 When utility power is interrupted

In case the utility power is interrupted, the UPS converts the built-in battery source to output receptacles immediately to protect your critical loads from loss of data or damage. Battery back-up time is 10 minutes for full load and can be extended by removing non-critical loads. After an utility power blackout, the audible alarm and "**LINE FAILURE**" will appear on the LCD panel. When the "**BATTERY LOW**" alarm will appears you have to shut down all your loads immediately.

CAUTION

- A. Follow the application software in use as well as the computer manufacturer's instructions for saving data and turning off the computer. The remaining of battery discharge will be enough for you to complete the job. All computer operations should be terminated as soon as possible.

3.4 Manual Battery Test System

If you push the two buttons together on the front panel for 2 sec. , the UPS will start the battery test operation and the "**BATT.CHK.**" will appear on the LCD panel . At the end of the test the system will turn to normal position.

During the battery test operation, the inverter power will be supplied from batteries . At the end of this test ,if the battery voltage is below a predetermined value, "**FAULT..:6**" , "**BATTERY LOW**" Fault messages appear on the LCD panel and the UPS starts operating in By-Pass position.

In this case you have to call your service.

If the batteries are in normal conditions the system will start operating in normal mode.

This test protects your operation against unexpected battery failures, and indicates you if there are any damaged batteries. It also discharges the batteries periodically which is a good thing for extending battery life.

IV. CUSTOMER SERVICE

WARNING

There are no customer serviceable components inside. **DO NOT** open the cover or attempt to service the unit. High voltage may remain when the unit is shut down. Unauthorized service will void the warranty and could cause serious injury.

4.1 Maintenance

The unit is designed for easy maintenance. Very little customer maintenance is required. The following will help to ensure trouble-free operation for several years:

- 1 . Vacuum the dust from the ventilation intake on the front panel.
- 2 . Wipe the cover with a damp cloth.
- 3 . Periodically unplug the power cord of the UPS from the wall outlet to test the batteries condition

CAUTION

It is recommended to test the battery discharging capability only after the software in use has been saved and all files have been closed.

Due to the unique design, the unit can be serviced only by authorized people. In case of the UPS fails to operate properly turn off the unit first. Then please call the service.

WARNING

About The Battery:

Only qualified personnel should install or service batteries.

A battery can present a risk of electric shock or burn from high short circuit currents.

The batteries in this UPS are recyclable.

Batteries must be disposed of according to local environmental laws.

Do not dispose of batteries in a fire. The batteries will explode.

The batteries contain lead and pose a hazard to the environment and human health if not disposed of properly.

Do not open or mutilate the batteries. They contain an electrolyte which is toxic and harmful to the skin and eyes. If electrolyte comes into contact with the skin the affected area should be washed immediately.

4.2 LCD DISPLAY

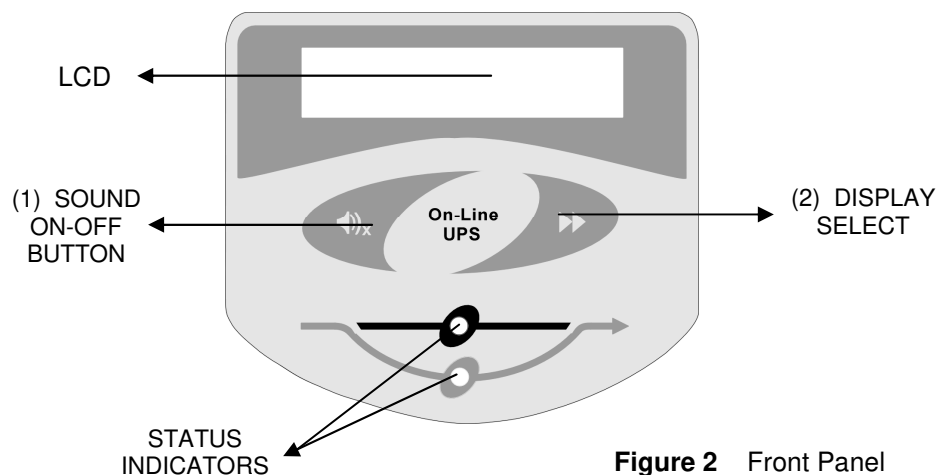


Figure 2 Front Panel

This panel shows the systems operation such as input and output Voltages, Frequency, load status etc.

FIRST MESSAGE LINE	
LOAD	: It shows the percentage of the load connected to the UPS output
OUTPUT	: It shows the UPS output Voltage
BATTERY	: It shows the UPS battery Voltage
LINE	: It shows the Line Voltage at the UPS input.
FREQ	: It shows the UPS output frequency.
FAULT	: It shows the ERROR Codes that mentioned in chapter 4.3
COMM. NOT ACTIVE	: It shows the communication status of UPS.
BATT.CHK	: It shows that the UPS is performing Battery test.
LINE SYNC	: It shows the UPS and LINE synchronization status.
TO B.TEST	: It shows in how many hours it will perform the next battery Test.
BATT.USED	: It shows battery operation time (the time passed after the last line failure alarm)
SOUND ON	: It shows that audible alarm is active.
SOUND OFF	: It shows that audible alarm is not active.
MAXLOAD	: It shows the maximum load recorded by the UPS since you started it.

SECOND MESSAGE LINE	
LOAD ON UPS	: It shows that the load power is supplied by UPS
LOAD ON BY-PASS	: It shows that the load power is supplied by By-pass supply (line).
OVERLOAD	: It shows that you have a load more than 100% at the UPS output.
LINE FAILURE	: It shows that you have no AC input at the UPS input .
OUTPUT HIGH	: It shows and sounds that UPS output Voltage is Higher than the limits.
OUTPUT LOW	: It shows and sounds that UPS output Voltage is Lower than the limits.
BATTERY LOW	: It shows and sounds that UPS Battery Voltage is below the Lower limit.
BATTERY HIGH	: It shows and sounds that UPS Battery Voltage is above the upper limit.
OVERTEMP.	: It shows and sounds that UPS Temperature is Higher than the limits
VERSION	: It shows the Microcontroller program version of the UPS.

PUSH BUTTONS

1. **SOUND ON-OFF BUTTON** : When you push this button it will disable the audible alarm on the UPS. If you want to enable the sound alarm again you have to push the DISPLAY SELECT button .
2. **DISPLAY SELECT BUTTON** : Each time you push this button, you can see one of the parameters of the FIRST MESSAGE LINE .

4.3 Error Codes

FAULT xx / F xx

1	An AC voltage exists at the output of the UPS, although the inverter is not in operation . In such a case , disconnect all the critical equipment from the UPS and turn it off and on again. If it doesn't start operating , please call for service.
2	Inverter can not generate AC output. Turn-off the UPS and then turn it on again . If it doesn't start , please call for service.
3	The temperature on the heatsink inside the UPS cabinet has exceeded 90 °C three times in the last 30 minutes.In such a case , the UPS should be turned-off and on again to resume normal operation.
4	"Output Failure " alarm has occurred 4 times in the last 10 minutes . Please call for service.
5	Inverter is not generating AC output since the battery voltage is below the lower limit . Turn-off the UPS and on again.
6	"Possible Battery Failure" Please call service for checking the batteries.
8	Inverter failure. Please call for service.
9	The UPS stopped by software or emergency power off (EPO) switch. Should be turned-off and on again to resume normal operation.
10	The UPS output short circuit , input fuse open. Please call for service
11	Inverter failure. Please call for service.

V. LIMITED WARRANTY

The UPS is warranted against all defects in workmanship and materials under normal use for a period of one (1) year from the date of shipment to the original user. The conditions of this warranty and the extent of responsibility of () corporation under this warranty are as follows.

1. The warranty does not apply if the product has been subjected to physical abuse, improper installation, unauthorized service or modification.
2. The sole responsibility of () corporation under this warranty shall be limited to the repair or replacement of the product, at the sole discretion of () corporation.
3. If it becomes necessary to send a defecting unit to () corporation, the product should be shipped in its original carton or in suitable equivalent, and with shipping charges prepaid. () corporation will not assume any responsibility for any loss damage incurred in shipping.

AGKK1860 12/2001