

## Installation and user manual

**5SC 500**  
**5SC 750**  
**5SC 1000**  
**5SC 1500**  
**5SC 500G**  
**5SC 750G**  
**5SC 1500G**

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**Service and support:**  
Call your local service representative

619-00470-00-us (en)



## IMPORTANT SAFETY INSTRUCTIONS

**SAVE THESE INSTRUCTIONS.** This manual contains important instructions that should be followed during installation and maintenance of the UPS and batteries.

The 5SC models that are covered in this manual are intended for installation in an environment within 0 to 40°C, free of conductive contaminant.

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 commercial 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## Certification Standards

- UPS directives: UL 1778 4<sup>th</sup> edition (UL listed).
- Performance: IEC 62040-3: 2001.
- Radiated emission: FCC CFR 47 part 15 subpart B, Class A, VCCI.
- Surges withstand ability: IEEE ANSI C62.41 Category A2 (UL Listed).

## VCCI Notice

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

## Special Symbols

The following are examples of symbols used on the UPS or accessories to alert you to important information:



**RISK OF ELECTRIC SHOCK** - Observe the warning associated with the risk of electric shock symbol.



Important instructions that must always be followed.



Do not discard the UPS or the UPS batteries in the trash. This product contains sealed lead acid batteries and must be disposed as it's explain in this manual. For more information, contact your local recycling/reuse or hazardous waste center.



This symbol indicates that you should not discard waste electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.



Information, advice, help.

## Safety of Persons

- The system has its own power source (the battery). Consequently, the power outlets may be energized even if the systems is disconnected from the AC power source.
- Dangerous voltage levels are present within the system. It should be opened exclusively by qualified service personnel.
- The system must be properly grounded.
- The battery supplied with the system contains small amounts of toxic materials.  
To avoid accidents, the directives listed below must be observed:
  - 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.
  - do not dispose of batteries in a fire. The batteries may explode.
  - batteries constitute a danger (electrical shock, burns). The short-circuit current may be very high.

Precautions must be taken for all handling:

- 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 (applicable to equipment and remote battery supplies not having a grounded supply circuit).

## Product Safety

- The UPS connection instructions and operation described in the manual must be followed in the indicated order.
- A protection circuit breaker must be installed upstream and be easily accessible.  
The system can be disconnected from the AC power source by opening this circuit breaker.
- Check that the indications on the rating plate correspond to your AC powered system and to the actual electrical consumption of all the equipment to be connected to the system.
- For PLUGGABLE EQUIPMENT, the socket-outlet shall be installed near the equipment and shall be easily accessible
- Never install the system near liquids or in an excessively damp environment.
- Never let a foreign body penetrate inside the system.
- Never block the ventilation grates of the system.
- Never expose the system to direct sunlight or source of heat.
- If the system must be stored prior to installation, storage must be in a dry place.
- The admissible storage temperature range is -15 °C to +50 °C.
- The system is not for use in a computer room AS DEFINED IN the standard for the Protection of Information Technology Equipment, ANSI/NFPA 75 (US installations only).  
Contact Eaton resellers to order a special battery kit, if needed to meet the ANSI/NFPA 75 requirement.

## Special Precautions

- All handling operations will require at least two people (unpacking, installation in rack system).
- Before and after the installation, if the UPS remains de-energized for a long period, the UPS must be energized for a period of 24 hours, at least once every 6 months (for a normal storage temperature less than 25 °C). This charges the battery, thus avoiding possible irreversible damage.
- During the replacement of the Battery Module, it is imperative to use the same type and number of element as the original Battery Module provided with the UPS to maintain an identical level of performance and safety. In case of doubt, don't hesitate to contact your EATON representative.

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# 1. Introduction

Thank you for selecting an EATON product to protect your electrical equipment.

The 5SC range has been designed with the utmost care.

We recommend that you take the time to read this manual to take full advantage of the many features of your UPS (Uninterruptible Power System).

Before installing your 5SC, please read the booklet presenting the safety instructions. Then follow the instructions in this manual.

To discover the entire range of EATON products and the options available for the 5SC range, we invite you to visit our web site at [www.eaton.com/powerquality](http://www.eaton.com/powerquality) or contact your EATON representative.

## 1.1 Environmental protection

EATON has implemented an environmental-protection policy. Products are developed according to an eco-design approach.

### Substances

This product does not contain CFCs, HCFCs or asbestos.

### Packing

To improve waste treatment and facilitate recycling, separate the various packing components.

- The cardboard we use comprises over 50% of recycled cardboard.
- Sacks and bags are made of polyethylene.
- Packing materials are recyclable and bear the appropriate identification symbol



Materials	Abbreviations	Number in the symbols
Polyethylene terephthalat	PET	01
High-density polyethylene	HDPE	02
Polyvinyl chloride	PVC	03
Low-density polyethylene	LDPE	04
Polypropylene	PP	05
Polystyrene	PS	06

Follow all local regulations for the disposal of packing materials.

### End of life

EATON will process products at the end of their service life in compliance with local regulations. EATON works with companies in charge of collecting and eliminating our products at the end of their service life.

### Product

The product is made up of recyclable materials.

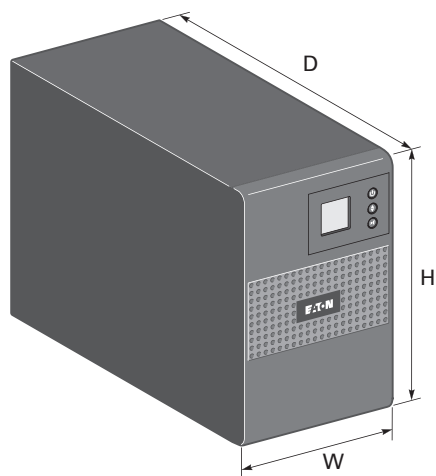
Dismantling and destruction must take place in compliance with all local regulations concerning waste. At the end of its service life, the product must be transported to a processing center for electrical and electronic waste.

### Battery

The product contains lead-acid batteries that must be processed according to applicable local regulations concerning batteries.

The battery may be removed to comply with regulations and in view of correct disposal.

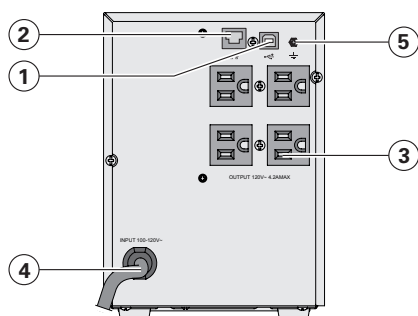
## 2.1 Standard installations



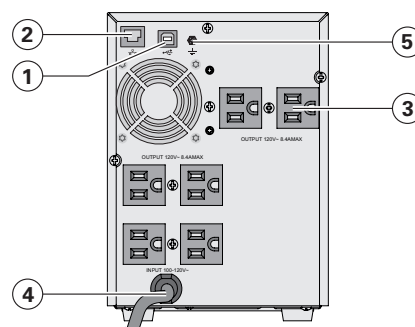
Description	Weights (lb/kg)	Dimensions (inch/mm) D x W x H
5SC 500	15.0 / 6.8	9.4 x 5.9 x 8.3 / 240 x 150 x 210
5SC 750	23.6 / 10.7	13.4 x 5.9 x 8.3 / 340 x 150 x 210
5SC 1000	25.1 / 11.4	13.4 x 5.9 x 8.3 / 340 x 150 x 210
5SC 1500	34.4 / 15.6	16.1 x 5.9 x 8.3 / 410 x 150 x 210
5SC 500G	14.6 / 6.6	9.4 x 5.9 x 8.3 / 240 x 150 x 210
5SC 750G	22.9 / 10.4	13.4 x 5.9 x 8.3 / 340 x 150 x 210
5SC 1500G	33.5 / 15.2	16.1 x 5.9 x 8.3 / 410 x 150 x 210

## 2.2 Rear panels

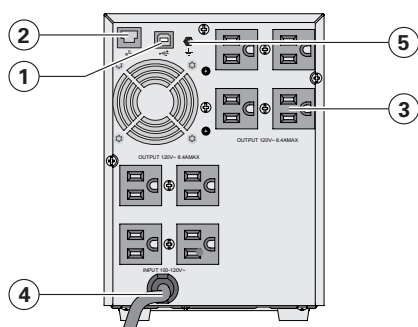
**5SC 500**



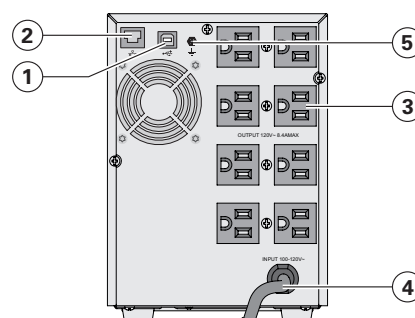
**5SC 750**



**5SC 1000**



**5SC 1500**

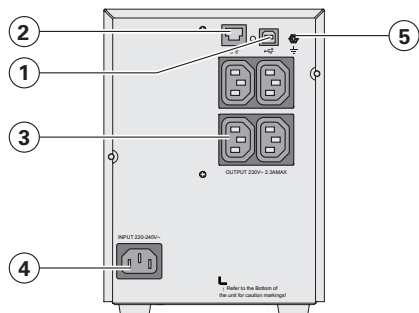


- (1) USB communication port
- (2) RS232 communication port
- (3) Outlets for connection of critical equipment
- (4) Attached 6 ft. input power cord for AC-power source
- (5) Ground screw

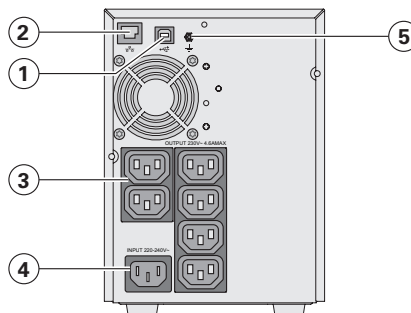
## 2. Presentation

### 2.2 Rear panels

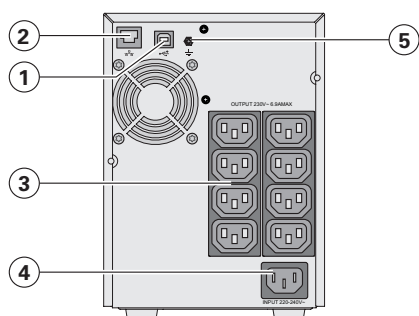
#### 5SC 500G



#### 5SC 750G



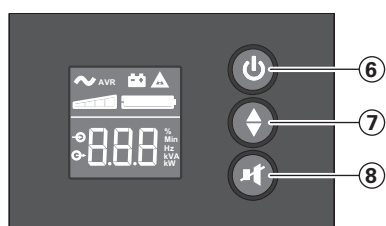
#### 5SC 1500G



- (1) USB communication port
- (2) RS232 communication port
- (3) Outlets for connection of critical equipment
- (4) Socket for connection to AC-power source
- (5) Ground screw

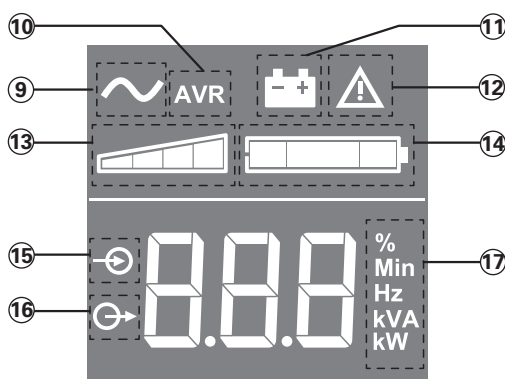
### 2.3 Control panel

The UPS has a three-button LCD. It provides useful information about the UPS itself, load status, events, measurements and settings.



- (6) ON/OFF button for the battery backup outlets
- (7) Scroll down
- (8) Mute alarm

### 2.4 LCD description



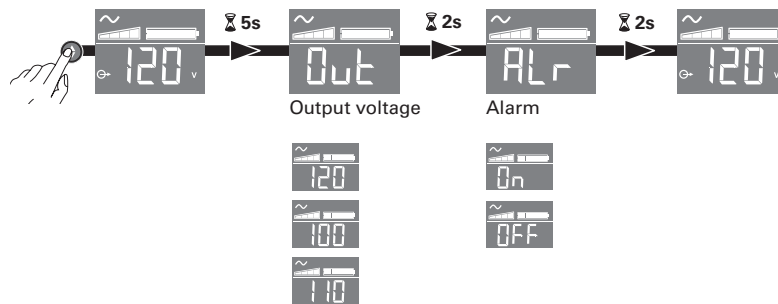
- (9) UPS ON
- (10) AVR mode
- (11) Battery mode
- (12) Internal fault
- (13) Output load level
- (14) Battery level
- (15) Input measurements
- (16) Output measurements
- (17) Measuring unit



## 2.5 UPS setting through the LCD

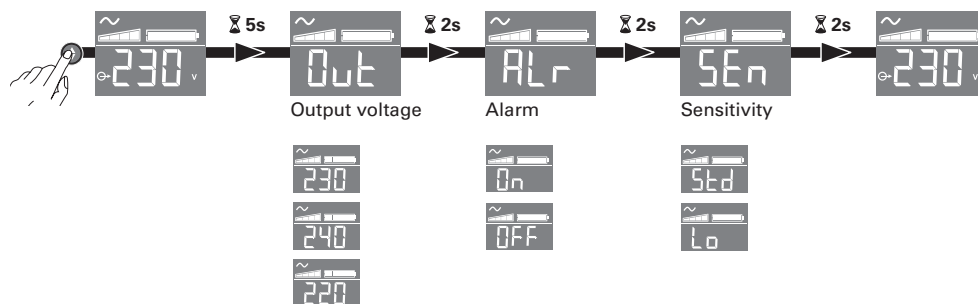
5SC 500 / 750 / 1000 / 1500

Release scroll down button to select menu



5SC 500G / 750G / 1500G

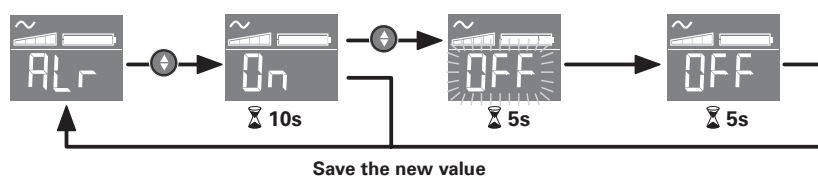
Release scroll down button to select menu



### Sensitivity

In low sensitivity mode (Lo) UPS will tolerate more fluctuations in power and will go on battery power less often. If the connected load is sensitive to power disturbances, keep the sensitivity as Standard (Std).

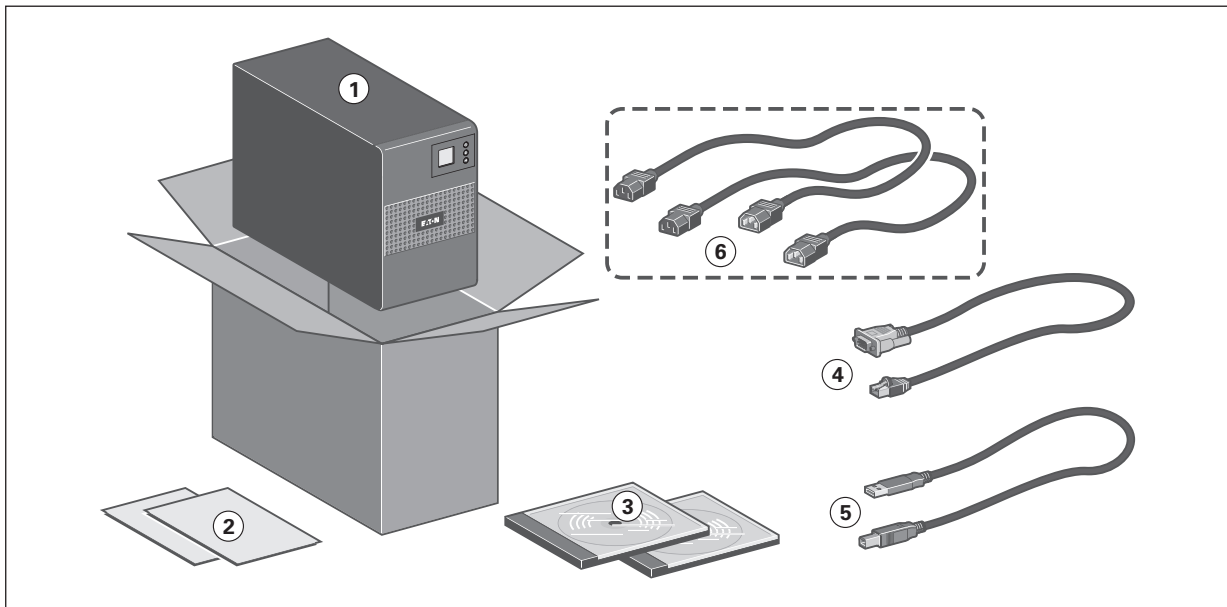
### Example of setting



- LCD shut off if no activity for 3 minutes.

## 3. Installation

### 3.1 Unpacking and contents check



(1) 5SC UPS

(2) Quick start and safety instructions

(3) User manual and IPSS (Intelligent Power Software Suite) CD-ROM

(4) RS232 communication cable

(5) USB communication cable

(6) 2 connection cables for the protected equipments (500G, 750G and 1500G models)



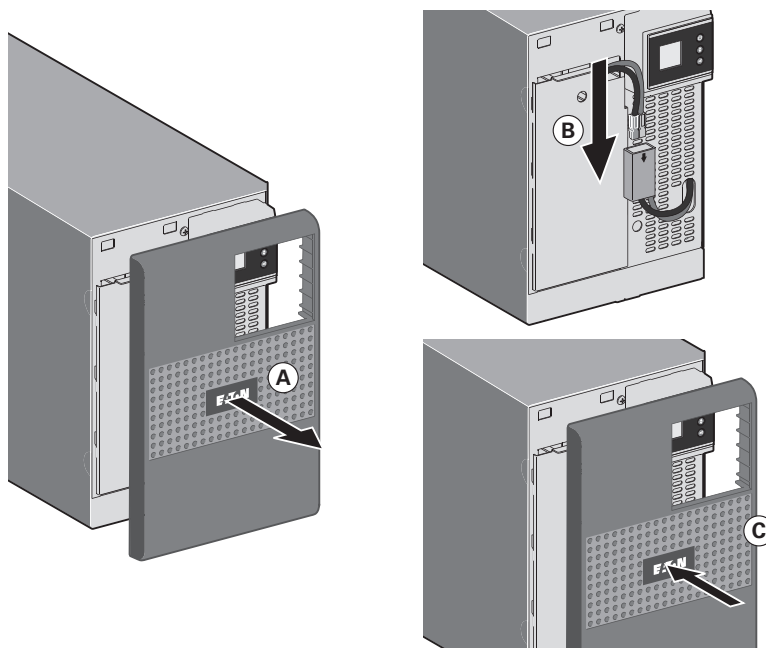
Packing materials must be disposed of in compliance with all local regulations concerning waste. Recycling symbols are printed on the packing materials to facilitate sorting.

### 3.2 Battery module connection

**Caution:** Before starting the UPS, please connect the internal battery.

**Note:** A small amount of arcing may occur when connecting the batteries.

This is normal and does not damage the UPS or present any safety concern.



**A** - Remove front panel.

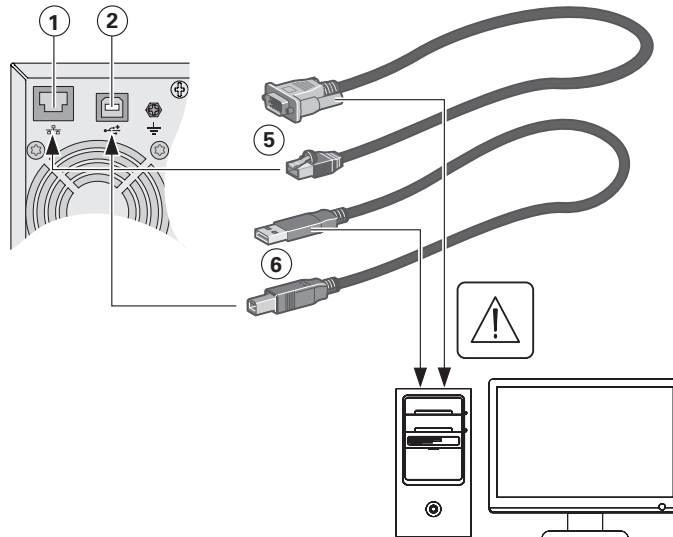
**B** - Connect the battery module  
(never pull on the wires).

**C** - Attach the front panel.

### 3.3 Communication ports

#### Connection of RS232 or USB communication port

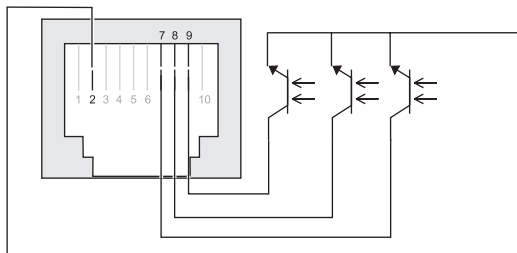
The RS232 and USB communication ports cannot operate simultaneously.



1. Connect the RS232 (5) or USB (6) communication cable to the serial or USB port on the computer equipment.
2. Connect the other end of the communication cable (5) or (6) to the USB (1) or RS232 (2) communication port on the UPS.

The **UPS** can now communicate with EATON power management software.

#### Characteristics of the optocouplers communication port (optional)



- Pins 1, 3, 4, 5, 6, 10: not used
- Pin 2: common (user)
- Pin 7: low battery
- Pin 8: operation on battery power
- Pin 9: UPS ON, equipment supplied

n.o.: normally open contact

When a signal is activated, the contact is closed between the common (pin 2) and the pin for the corresponding signal.




#### Contact characteristics (optocoupler)

- Voltage: 48 V DC max
- Current: 25 mA max
- Power: 1.2 W

## 4. Operation

### 4.1 Start-up and Normal operation

To start the UPS:



1. Verify that the UPS power cord is plugged in.
2. Press the  button on the UPS front panel for at least 2 seconds.
3. Check the UPS front panel display for active alarms.  
If the  indicator is on, do not proceed until all alarms are clear.  
Correct the alarms and restart if necessary.
4. Verify that the  indicator illuminates solid, indicating that the UPS is operating normally and any loads are powered and protected.

### 4.2 Starting the UPS on Battery




Before using this feature, the UPS must have been powered by utility power with output enabled at least once.


To start the UPS on battery:

1. Press the  button on the UPS front panel until the UPS front panel display illuminates.  
The UPS cycles through Standby mode to Battery mode. The  indicator illuminates solid.  
The UPS supplies power to your equipment.
2. Check the UPS front panel display for active alarms. Resolve any active alarms before continuing.  
See "Troubleshooting" on page 21.

### 4.3 UPS Shutdown


To shut down the UPS:

Press the  button on the front panel for three seconds.

The UPS starts to beep. The UPS then transfers to Standby mode, and the  indicator turns off.

### 4.4 Operation on Battery Power


#### Transfer to battery power

- The connected devices continue to be supplied by the UPS when AC input power is no longer available. The necessary energy is provided by the battery.
- The  indicator illuminates solid.
- The audio alarm beeps every ten seconds.



The connected devices are supplied by the battery.

#### Low-battery warning

- The  indicator illuminates solid.
- The audio alarm beeps every three seconds.



The remaining battery power is low. Shut down all applications on the connected equipment because automatic UPS shutdown is imminent.

#### End of battery backup time

- All the LEDs go OFF.
- The audio alarms stops.

### 4.5 Return of AC Input Power

Following an outage, the UPS restarts automatically when AC input power returns (unless the restart function has been disabled) and the load is supplied again.

## 5.1 Troubleshooting

Operation status	Possible cause	Action
Overload OL	Power requirements exceeds the UPS capacity (greater than 105 % of nominal).	Remove some of the equipment from the UPS. The UPS continues to operate, but may shutdown if the load increases. The alarm resets when the condition becomes inactive.
Site wiring fault SF	A Site Wiring Fault has occurred. The outlet that the UPS is plugged into is not properly grounded or properly wired.	Have a qualified electrician correct the wiring.
Short-circuit fault SC	A short-circuit occurred on the application.	Check application connection or integrity.  If error persists, note the alarm message and the UPS serial number, and then contact your service representative.
Battery fault BAT	The batteries in the UPS are disconnected.	Verify that all batteries are properly connected. If error persists, note the alarm message and the UPS serial number, and then contact your service representative.
	The end of battery life is reached.	Contact your service representative for battery replacement.
Fan fault FAn	The UPS has a fan fault.	Check that no object is blocking fan.  If error persists, note the alarm message and the UPS serial number, and then contact your service representative.
Charger fault Chr	The UPS has a charger fault.	The UPS does not charge the battery anymore.  <b>Note:</b> note the alarm message and the UPS serial number, and then contact your service representative.

# 5. Maintenance

## 5.2 Battery-module replacement

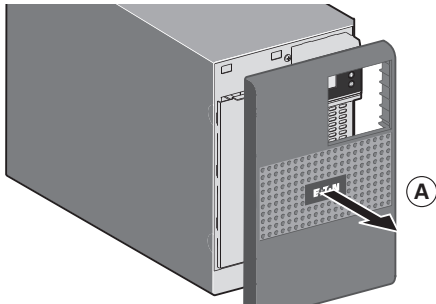
### Safety recommendations

The battery can cause electrocution and high short-circuit currents. The following safety precautions are required before servicing the battery components:

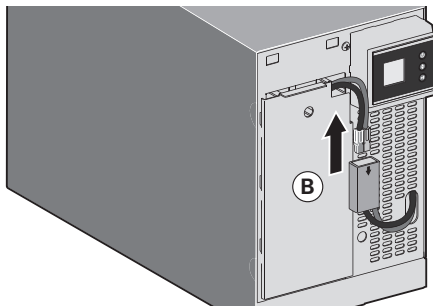
- remove watches, rings, bracelets and all other metal objects from the hands and arms,
- use tools with an insulated handle.

### Battery tray removal on tower models

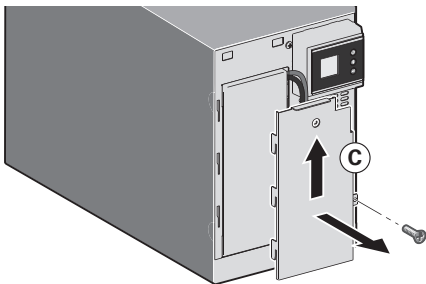
This operation must be performed when the UPS is switched OFF, and unplugged from AC source.



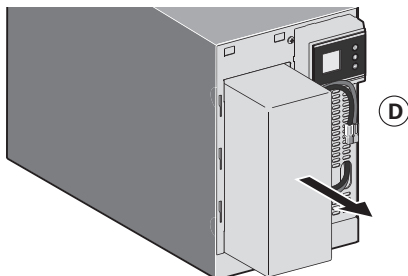
**A** - Remove the front panel.



**B** - Disconnect the battery-module by separating the town connectors (never pull on the wires).



**C** - Remove the plastic protection cover in front of the battery (one screw).



**D** - Pull the plastic tab to remove the battery block and replace it.

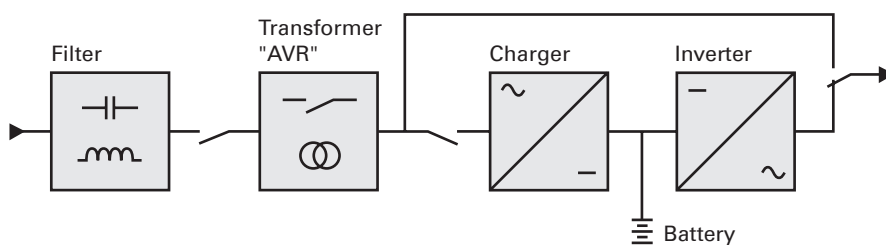
### Mounting the new battery module

Carry out the above instructions in reverse order.



- To ensure safety and high performance, use only batteries supplied by EATON.
- Take care to firmly press together the two parts of the connector during remounting.

## 6.1 Technical specifications



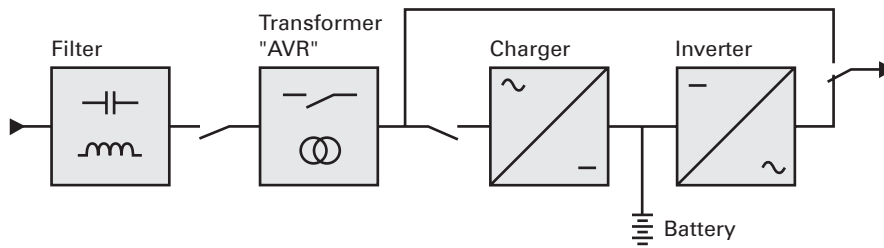
	5SC 500	5SC 750	5SC 1000	5SC 1500
<b>Output Power @ 120 V</b>	500 VA 350 W	750 VA 525 W	1000 VA 700 W	1440 VA 1050 W
<b>Output Power @ 110V</b>	460 VA 325 W	690 VA 485 W	920 VA 645 W	1320 VA 990 W
<b>Output Power @ 100 V</b>	415 VA 290 W	620 VA 435 W	830 VA 580 W	1200 VA 900 W
<b>AC Input power</b>				
• Rated input voltage	Single phase 100-125 V			
• Input voltage range	96 to 144 V			
• Input frequency range	45 to 55 Hz (50 Hz system), 55 to 65 Hz (60 Hz system)			
<b>Output on battery power</b>				
• Voltage	100/110/120 V (-10/+6 %) <sup>(1)</sup>			
• Frequency	50/60 Hz ±0.1 Hz			
<b>Battery (sealed lead acid, maintenance free)</b>				
• Standard	1 x 12 V 7 Ah	2 x 12 V 7 Ah	2 x 12 V 9 Ah	3 x 12 V 9 Ah
<b>Environment</b>				
• Operating temperature range	0 to 35 °C / 32 to 95 °F			
• Storage temperature range	-15 to +40 °C / 5 to 104 °F			
• Relative humidity	0 to 90 % (without condensation)			
• Noise level	< 40 dBA			

(1) Adjustable to 100/120/125 V, must be set to the identical AC power source value.

For 5SC Models - "CAUTION -To reduce the risk of fire, connect only to a circuit provided with 20 amperes maximum branch circuit overcurrent protection in accordance with the National Electric Code, ANSI/NFPA 70".

This product is designed for IT power distribution system.

## 6. Appendices



	5SC 500G	5SC 750G	5SC 1500G
<b>Output Power @ 230 V</b>	500 VA 350 W	750 VA 525 W	1500 VA 1050 W
<b>AC Input power</b>			
• Rated input voltage	Single phase 220-240 V		
• Input voltage range	184 to 276 V		
• Input frequency range	45 to 55 Hz (50 Hz system), 55 to 65 Hz (60 Hz system)		
<b>Output on battery power</b>			
• Voltage	220/230/240 V (-10/+6 %) <sup>(1)</sup>		
• Frequency	50/60 Hz ±0.1 Hz		
<b>Battery (sealed lead acid, maintenance free)</b>			
• Standard	1 x 12 V 9 Ah	2 x 12 V 7 Ah	3 x 12 V 9 Ah
<b>Environment</b>			
• Operating temperature range	0 to 35 °C / 32 to 95 °F		
• Storage temperature range	-15 to +40 °C / 5 to 104 °F		
• Relative humidity	0 to 90 % (without condensation)		
• Noise level	< 40 dBA		

(1) Adjustable to 220/230/240 V, must be set to the identical AC power source value.

When the appliance is used in EU area, use an external circuit breaker in front of line with rating 16 A, 250 V which is IEC/EN 60898-1 standard compliant;

When the appliance is used in America area, use an external circuit breaker in front of line with rating 20 A, 250 V.

This product is designed for IT power distribution system.