

EGS

Electrical Solutions

**SOLA/
HEVI-DUTY**

Series 2000

**350-700 VA
115V & 230V**

USER MANUAL English



IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual contains important safety instructions that should be followed during the installation and maintenance of the UPS and batteries. Please read this manual thoroughly before attempting to install or operate this UPS.

WARNING:

- To prevent the risk of fire or electric shock, install the UPS in a temperature and humidity controlled room, free of conductive contaminants.
- Operate the UPS only from a properly grounded/earthed AC supply.
- To reduce the risk of electric shock, do not remove the cover, as it has no user-serviceable parts inside. Some components are live, even when AC power is disconnected. For service, contact a qualified technician.
- To reduce the risk of fire, use the proper rating when replacing the fuse.

CAUTION:

Although your UPS has been designed and manufactured to assure personal safety, improper use can result in electrical shock or fire. To insure safety, please observe the following rules:

- Turn off and unplug your UPS before cleaning. Do not use liquid or aerosol cleaners. A dry cloth is recommended to remove dust from the surface of your UPS.
- Do not install or operate your UPS in or near water.
- Do not place UPS on an unstable cart, stand, or table.
- Do not place UPS under direct sunlight or close to heat emitting sources.
- To allow proper ventilation of UPS, do not block or cover sides of unit.
- Do not place UPS power cord in any area where it may get damaged by heavy objects.
- Follow all warnings and instructions marked on the UPS. Do not attempt to service the UPS, as it has no user-serviceable parts inside. Refer all repairs to qualified service personnel.

ATTENTION:

Turn off and unplug your UPS from the outlet and contact qualified service personnel if:

- The power cord or plug is damaged.
- Liquid has been spilled on the UPS.
- The fuse blows frequently.
- The UPS does not operate even when user follows the operating instructions.

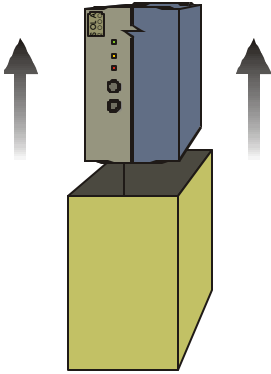
CONDITIONS OF USE: The input receptacle must be within 6 feet (1.8 meters) of the UPS.

Your UPS provides conditioned power to connected equipment. Maximum load must not exceed that shown on UPS rating label. If uncertain, consult your distributor or Sola.

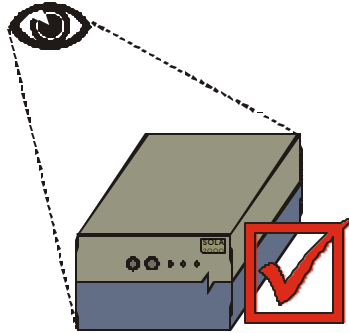
Placing magnetic storage media on top of the UPS may result in data corruption.

This equipment can be operated by individuals without previous training.

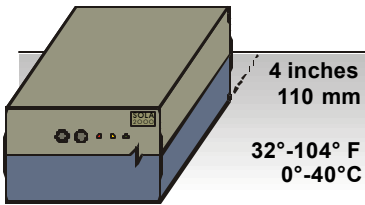
GENERAL INSTALLATION



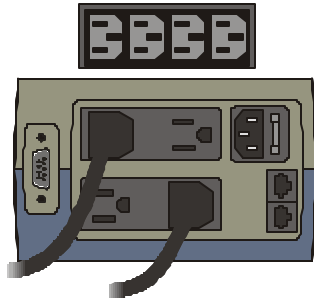
Remove from Box



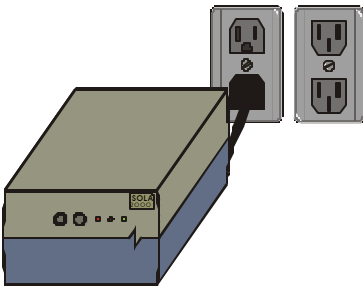
Check for Damage



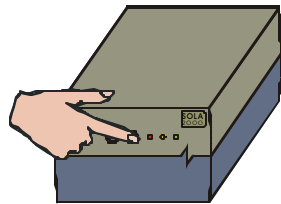
4 inches
110 mm
32°-104° F
0°-40° C



Plug in Loads



Plug UPS into AC / Mains



Press ON Button

INTRODUCTION & SYSTEM DESCRIPTION

Congratulations on your choice of the Sola Series 2000 Uninterruptible Power System (UPS). It provides conditioned power to microcomputers and other sensitive electronic equipment.

The Series 2000 is a compact, "Automatic Voltage Regulation" UPS. It offers "line-interactive" features by continuously conditioning and regulating output voltage, whether the utility power is present or not. It supplies connected equipment with stepped approximation to sinewave power to simulate the power generated by the utility.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment uses, generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

BATTERY OPERATION

Battery mode occurs in event of extreme input conditions or complete utility failure. During battery mode the Utility LED will flash every second and an alarm will sound every 3 seconds. This will change to a beep every second when battery runs low (approximately 2 minutes remaining).

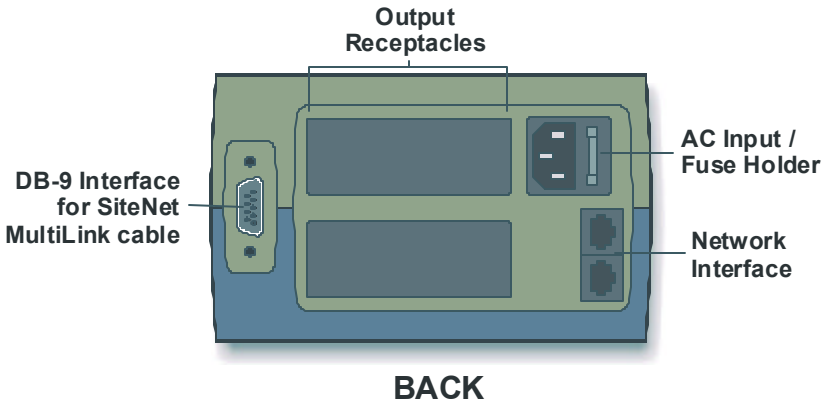
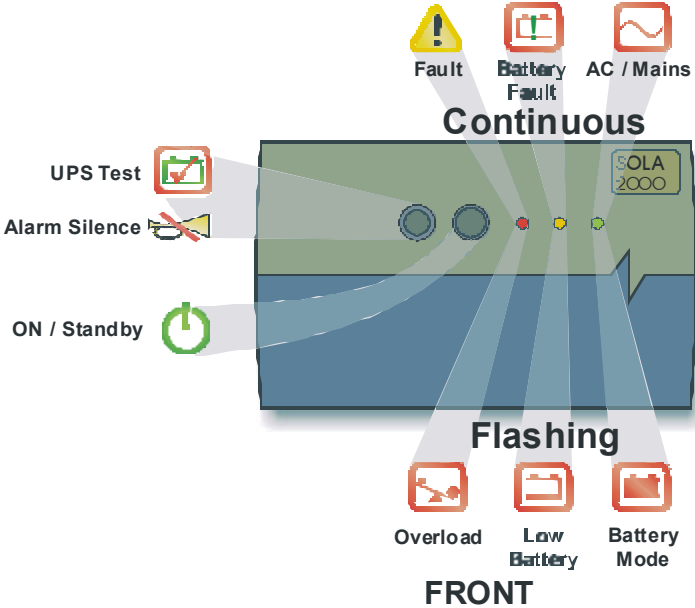
WARNING: Turning off the UPS while in battery mode will result in loss of output power.

Press Battery Test button occasionally to ensure battery is fully charged.

AUDIBLE ALARM CONDITIONS

CONDITION	ALARM
Battery mode (utility failure)	One short beep every three seconds; more than two minutes of run time remaining
Low battery	One beep every second; less than two minutes of run time remaining
Battery replacement	Two second beep every minute
UPS output overload	Continuous tone
UPS fault	Continuous tone

MAJOR COMPONENTS / ALARM CONDITIONS



MAINTENANCE

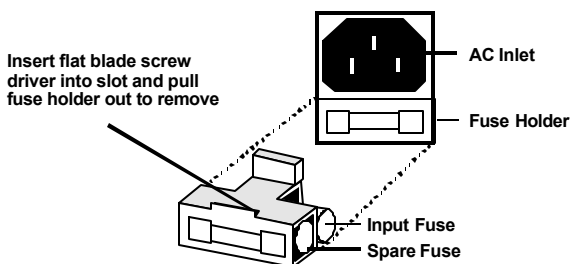
The Series 2000 UPS requires very little maintenance. The batteries are valve regulated, nonspillable, lead acid, and require that they be kept charged to obtain their designed life. When ON, the UPS continuously charges the batteries when connected to the utility supply.

When storing the UPS for any length of time, it is recommended to plug in and turn on the UPS for at least 24 hours every four to six months to ensure full recharge of the batteries.

The following will help ensure trouble-free operation for years to come:

- Vacuum dust from the ventilation intake occasionally.
- Wipe the cover periodically with a dry cloth.
- Occasionally press the UPS test button to test the condition of the batteries.

FUSE REPLACEMENT PROCEDURES



CAUTION: Before changing the supply fuse, turn off the UPS, and unplug the input cord from the AC input power supply and from the UPS.

1. Remove the fuse holder by inserting a flat blade screwdriver into the slot and pulling out as indicated in the figure above.
2. Remove the input fuse.
3. Remove the spare fuse from its position by using the screwdriver to push it out.
4. Place spare fuse in the input fuse position, and replace the fuse holder. The fuse holder will lock into position.
5. Reconnect the input power lead to the UPS, and the input power lead to the input AC supply.
6. Restart the UPS. The UPS is ready for normal operation.

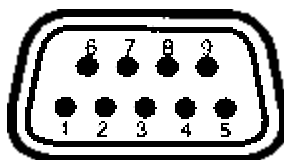
	Model #	Fuse Type
115V	S2350	5A / 125V
	S2470	6A / 125V
	S2700	8A / 125V
230V	S2350	3.15A / 250V
	S2470	4A / 250V
	S2700	6.3A / 250V

COMMUNICATIONS

You can use SiteNet® MultiLink™ to allow your UPS to communicate to your computer via your DB-9 communications port.

Pin Configuration	
Pin #	Function
9	On Battery (N.O.)
8	On Battery (Common)
6	On Battery (N.C.)
1	Low Battery
7	Low Battery
5	UPS Ground
4	UPS Off

PIN ASSIGNMENT



TROUBLESHOOTING

If the UPS fails to operate properly, turn off the unit and repeat the steps in the installation section of this manual. If the problem persists, refer to the chart below:

PROBLEM	CAUSE	SOLUTION
UPS will not start	Overload/Short Circuit	Check fuse at rear of UPS. If blown, replace it and restart the UPS. For further help, call your Sola representative.
UPS starts on battery, but will not switch to AC	UPS not plugged in	Plug in power cord securely.
	Fuse blown	Replace fuse and restart UPS.
	Power not available at utility receptacle	Call a qualified electrician.
	Input voltage below threshold	Wait until voltage rises to appropriate level
UPS shuts down	AC overvoltage	AC voltage must be less than 144 VAC for 115V, 270 VAC for 230V.
	Overload/Short Circuit	Check the fuse holder at rear of UPS. If fuse is blown, replace it and restart the UPS. If problem persists, disconnect some of the equipment from your UPS - the total wattage of your equipment may exceed the capacity of the UPS. For further help, call your representative.
	Low Battery	Turn OFF equipment and recharge UPS battery for at least 8 hours. If problem persists, contact your representative.

115V SPECIFICATIONS

Model Number	S2350	S2470	S2700
Model Rating VA/W	350VA/210W	470VA/282W	700VA/420W
DIMENSIONS: in (mm)			
Unit H x W x D	6.5 x 4.5 x 13.9 (166 x 115.5 x 352.5)	6.5 x 4.5 x 13.9 (166 x 115.5 x 352.5)	6.5 x 4.5 x 13.9 (166 x 115.5 x 352.5)
Shipping H x W x D	8.8 x 6.2 x 15.8 (226 x 156 x 404)	8.8 x 6.2 x 15.8 (226 x 156 x 404)	8.8 x 6.2 x 15.8 (226 x 156 x 404)
WEIGHT: lbs (kg)			
Unit	13.2 (6)	15.4 (7)	22 (10)
Shipping	15 (6.8)	17.2 (7.8)	23.8 (10.8)
INPUT AC PARAMETERS			
Voltage Range without Battery Operation	87 to 144VAC		
Line to Boost Transfer	104VAC		
Line to Buck Transfer	124VAC		
Frequency	47-53 Hz or 57-63 Hz; auto sensing		
Input Power Cord	6 ft. detachable, w/ NEMA 5-15 P		
OUTPUT AC PARAMETERS			
Output Receptacles	(4) 5-15R		
Voltage (Battery Mode)	115 VAC \pm 5%		
Waveform (Battery Mode)	Stepped Sinewave		
Voltage (Normal)	V_{IN}^* (1.0)		
Voltage (Boost Mode)	V_{IN}^* (1.16)		
Voltage (Buck Mode)	V_{IN}^* (0.84)		
Frequency	50 Hz or 60 Hz; auto sensing		
Overload Warning (Utility and Battery Modes)	101 – 120%		
Overload Shutdown (Utility and Battery Modes)	Overload + (15 – 30W)	Overload + (20 – 40W)	Overload + (30 – 60W)
BATTERY PARAMETERS			
Type	Valve-regulated, nonspillable, lead acid		
Quantity x Voltage x Rating	(1) x 12V x 7.0 Ah	(1) x 12V x 7.0 Ah	(1) x 12V x 10 Ah
Approved Battery Manufacturers:	CSB, Panasonic, and Yuasa		
Transfer Time	4 – 6 ms typical		
Back-up Time:	At 77°F (25°C), resistive loading, with fully charged batteries:		
Full load	> 5 minutes typical		
Half load	> 15 minutes typical	> 12 minutes typical	> 13 minutes typical
Recharge Time	7-10 hours to 90% capacity, after full discharge into 100% resistive load		
ENVIRONMENTAL			
Operating Temperature	+32° F to + 104° F (0° C to +40° C)		
Storage Temperature	+5° F to + 122° F (-15° C to +50° C)		
Relative Humidity	0% to 90%, non-condensing		
Operating Elevation	Up to 10,000 ft. (3000 m) at 95° F (35° C) without derating		
Audible Noise	< 40 dBA, at 1 meter		
AGENCY			
Safety	UL 1778, c-UL Listed		
Surge	IEEE C62.41 Category A		
ESD	IEC 801-2, Level 3, Criterion \leq 2		
Susceptibility	IEC 801-3, Level 3, Criterion \leq 2		
Electrical Fast Transient/Burst	IEC 801-4, Level 4, Criterion \leq 2		
Emissions	FCC Part 15, Subpart B, Class B		
Transportation	ISTA Project 1A		

230V SPECIFICATIONS

Model Number	S2350	S2470	S2700
Model Rating VA/W	350VA/210W	470VA/282W	700VA/420W
DIMENSIONS: mm (in)			
Unit H x W x D	166 x 115.5 x 352.5 (6.5 x 4.5 x 13.9)	166 x 115.5 x 352.5 (6.5 x 4.5 x 13.9)	166 x 115.5 x 352.5 (6.54 x 4.55 x 13.9)
Shipping H x W x D	226 x 156 x 404 (8.8 x 6.2 x 15.8)	226 x 156 x 404 (8.8 x 6.2 x 15.8)	226 x 156 x 404 (8.8 x 6.2 x 15.8)
WEIGHT: kg (lbs)			
Unit	6 (13.2)	7 (15.4)	10 (22)
Shipping	6.8 (15)	7.8 (17.2)	10.8 (23.8)
INPUT AC PARAMETERS			
Voltage Range without Battery Operation	166 to 275VAC		
Line to Boost Transfer	198VAC		
Line to Buck Transfer	250VAC		
Frequency	47-53 Hz or 57-63 Hz; auto sensing		
Input Power Receptacle	EN60320/C14 recessed plug		
OUTPUT AC PARAMETERS			
Output Receptacles	(4) EN60320/C13 sockets, (2) detachable EN60320-2-2 1.8m (6') power cords		
Voltage (Battery Mode)	230 VAC \pm 5%		
Waveform (Battery Mode)	Stepped Sinewave		
Voltage (Normal)	V_{IN}^* (1.0)		
Voltage (Boost Mode)	V_{IN}^* (1.13)		
Voltage (Buck Mode)	V_{IN}^* (0.85)		
Frequency	50 Hz or 60 Hz; auto sensing		
Overload Warning (Utility and Battery Modes)	101 – 120%		
Overload Shutdown (Utility and Battery Modes)	Overload + (15 – 30W)	Overload + (20 – 40W)	Overload + (30 – 60W)
BATTERY PARAMETERS			
Type	Valve-regulated, nonspillable, lead acid		
Quantity x Voltage x Rating	(1) x 12V x 7.0 Ah	(1) x 12V x 7.0 Ah	(1) x 12V x 10 Ah
Approved Battery Manufacturers:	CSB, Panasonic, and Yuasa		
Transfer Time	4 – 6 ms typical		
Back-up Time:	At 25°C (77°F), resistive loading, with fully charged batteries:		
Full load	> 5 minutes typical		
Half load	> 15 minutes typical	> 12 minutes typical	> 13 minutes typical
Recharge Time	7-10 hours to 90% capacity, after full discharge into 100% resistive load		
ENVIRONMENTAL			
Operating Temperature	0° C to +40° C (+32° F to + 104° F)		
Storage Temperature	-15° C to +50° C (+5° F to + 122° F)		
Relative Humidity	0% to 90%, non-condensing		
Operating Elevation	Up to 3000 m. (10,000 ft) at 35° C (95° F) without derating		
Audible Noise	<40 dBA, at 1 meter		
AGENCY			
Safety	EN50091-1, TUV/GS listed, CE Compliance Mark		
Surge	IEC 801-5, Level 3		
ESD	IEC 801-2, Level 3, Criterion \leq 2		
Susceptibility	IEC 801-3, Level 3, Criterion \leq 2		
Electrical Fast Transient/Burst	IEC 801-4, Level 4, Criterion \leq 2		
Emissions	EN50091-2, EN55011 Class B		
Transportation	ISTA Project 1A		

LIMITED WARRANTY

Sola / Hevi-Duty extend the following LIMITED WARRANTY to the purchaser and to its customer (collectively referred to as the "Purchaser"): the enclosed Uninterruptible Power System (UPS) and components are free from defects in materials and workmanship under normal use, service, and maintenance FOR A PERIOD OF TWO YEARS FROM THE DATE OF ORIGINAL PURCHASE from Sola / Hevi-Duty or the Sola / Hevi-Duty dealer or retailer. THE FOREGOING WARRANTY IS THE ONLY WARRANTY GIVEN AND NO OTHER WARRANTY IS PROVIDED, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Certain aspects of disclaimers are not applicable to consumer products acquired by individuals and used for personal, family, or household purposes (as distinguished from industrial or other purposes). Local laws may not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary according to local law.

Certain repairs or services are the responsibility of the Purchaser and the Purchaser is expected to pay for them. This warranty does not extend either to products with removed or altered serial numbers or to any losses or damages due to act of God or source external to the product, misuse, accident, abuse, neglect, negligence, unauthorized modification, alteration, or repair, use beyond rated capacity, or improper installation, maintenance, application or use, including, without limitation, use in a manner contrary to the accompanying instructions or applicable codes. WARNING: Warranty is void if the battery is allowed to discharge below the minimum battery cutoff point. To prevent such discharge DO NOT leave the unit power switch "ON" for more than two (2) days without AC power being supplied to the UPS. The battery must be recharged every four (4) to six (6) months when not in use.

If the UPS fails to conform with the above warranty within the two year warranty period, Sola / Hevi-Duty will repair or replace the UPS, at Sola's option. Repairs or replacements are warranted for the remainder of the original warranty period. To make a warranty claim, purchaser should call a Sola / Hevi-Duty Representative to obtain a Returned Goods Authorization number and shipping instructions. Return transportation costs to Sola / Hevi-Duty are the responsibility of the Purchaser.

"LIFE SUPPORT" POLICY

This product is not recommended, and the Company will not knowingly sell this product, for use with life support and other designated "critical" devices. ANY SUCH USE BY A USER AUTOMATICALLY VOIDS AND DISCLAIMS ANY AND ALL WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND EXPRESS WARRANTIES THAT THIS PRODUCT WILL CONFORM TO ANY AFFIRMATION OR PROMISE, FOR THIS PRODUCT AND THE USER AGREES THAT IN NO EVENT SHALL THE COMPANY BE LIABLE FOR CONSEQUENTIAL OR INDIRECT DAMAGES.



**SOLA/
HEVI-DUTY**

Series 2000

**350- 700 VA
115V & 230V**

Technical Support

U.S. & Canada..... 1-800-377-4384

While every precaution has been taken to ensure accuracy and completeness in this manual, General Signal assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions.

©1999 Sola / Hevi-Duty All rights reserved throughout the world. Specifications subject to change without notice.

© Sola / Hevi-Duty name and logo are registered trademarks of General Signal, Inc. All names referred to are trademarks or registered trademarks of their respective owners.

SOI-23256 (8/99) Rev. 4