

Uninterruptible Power Supply User Manual



SSW UPS Series

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What's Included

The UPS is shipped with the following items:

- User manual
- USB cable: High speed 2.0 Standard Type A-B, 6 ft (1.8 m)

NOTE: UPSwatch - Power Monitoring and Control Software is available for download at www.solahd.com.

The software is compatible with: Windows 7, 8, 10, Windows 2008, 2012, 2016, Windows 2008/2012 Server Core, Hyper-V 2008/2012, Linux OpenSUSE 11.4, Linux ubuntu 10.04, Linux Fedora 3.1.9, CentOS 5.8, Citrix XenServer 6.0.0, Linux KVM.

Accessory (Optional)

- **SSWSNMPCARD:** SNMP card for SSW1500 models only. This SNMP card provides an advanced, yet easy-to-use network management function which supports both SNMP and HTTP. Features include: multiple system shutdown, event notification, scheduling, and control and configuration of the UPS remotely. The SNMP card must be inserted into the Communication Port on the rear panel of the UPS. Please visit www.solahd.com for more information.

1.0 Introduction

Thank you for selecting the SSW Uninterruptible Power System. This manual contains important safety instructions that should be followed during the installation and operation of your UPS.

- Please read all safety, installation and operating instructions before attempting to install or operate the UPS.
- Please adhere to all warnings on the unit and in this manual during installation and operation.

This UPS is designed for industrial or commercial use. The UPS features a compact design that fits into a limited-space working environment.

This product features the following:

- LCD display
- User-replaceable battery
- High reliability
- Auto restart during AC recovery
- AC overload protection
- Over temperature thermal protection
- Battery overcharge protection
- AVR (Auto Voltage Regulation)
- Input voltage out-of-range protection
- Remote monitoring and control software via UPSwatch
- Site wiring fault indicator

2.0 Important Safety Instructions

 **WARNING - Risk of electric shock, fire and personal injury.**

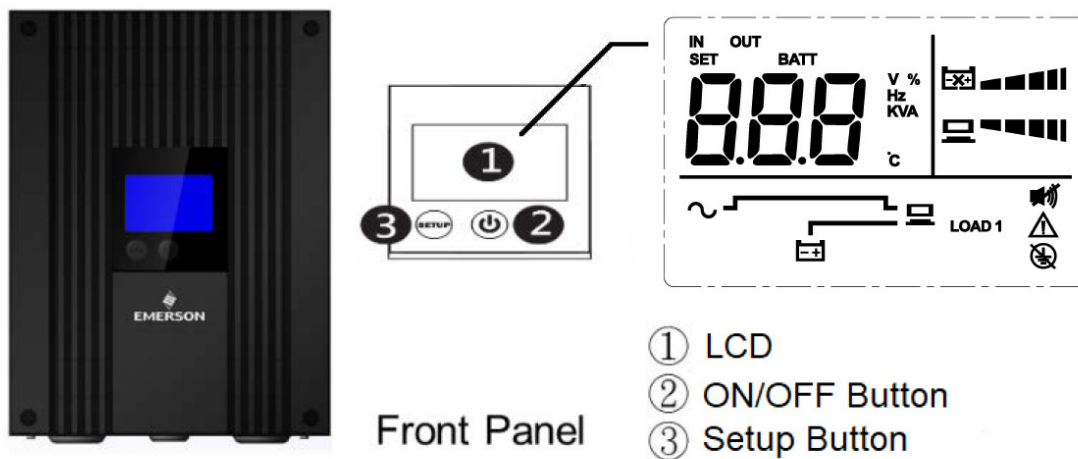
SAVE THESE INSTRUCTIONS - This manual contains important instructions that should be followed during installation and maintenance of the UPS and batteries.

The UPS is intended for installation in a controlled environment.

- Install the UPS in an indoor temperature- and humidity-controlled environment, free of conductive contaminants.
- Do not install the UPS in or near water.
- In order to avoid overheating the UPS, allow proper ventilation of the unit. Do not block or cover the top, bottom or sides of the UPS.
- Do not expose the UPS to direct sunlight or install the unit near any heat sources.
- Install the UPS onto a level surface in an upright position. Do not place the UPS on an unstable surface such as a cart, stand or table.
- The UPS must be installed near the socket receptacle so that the cord can be easily disconnected. To properly turn off the UPS, press the ON/OFF button for three (3) seconds, then disconnect the input power supply cord from the AC power outlet.
- Connect the AC input power cord to a properly grounded AC supply source.
- Connect the UPS to a grounded supply circuit with proper branch circuit protection. Follow all applicable National Electrical Codes® (NEC®) and Canadian Electrical Codes (CEC) as well as all local codes.
- This UPS is not for use in a computer room as defined in the Standard For the Fire Protection of Information Technology Equipment, NFPA 75.
- Do not plug the UPS into a power strip. Do not daisy-chain one UPS power cord into another UPS output receptacle.
- Do not place the UPS power cord where it may be damaged.
- Do not dispose of the UPS in a fire as the battery may explode.
- Do not open or damage the battery. Released electrolyte is harmful to the skin and eyes and may be toxic.
- Turn off the UPS and disconnect the input cord from the AC power supply before cleaning. Do not use liquid or aerosol cleaners. Use only a dry cloth on the exterior of the UPS. Do not open the unit.

3.0 General Description

3.1 Front Panel



① LCD

- The LCD will show functions of the UPS operation status.

② ON/OFF Button

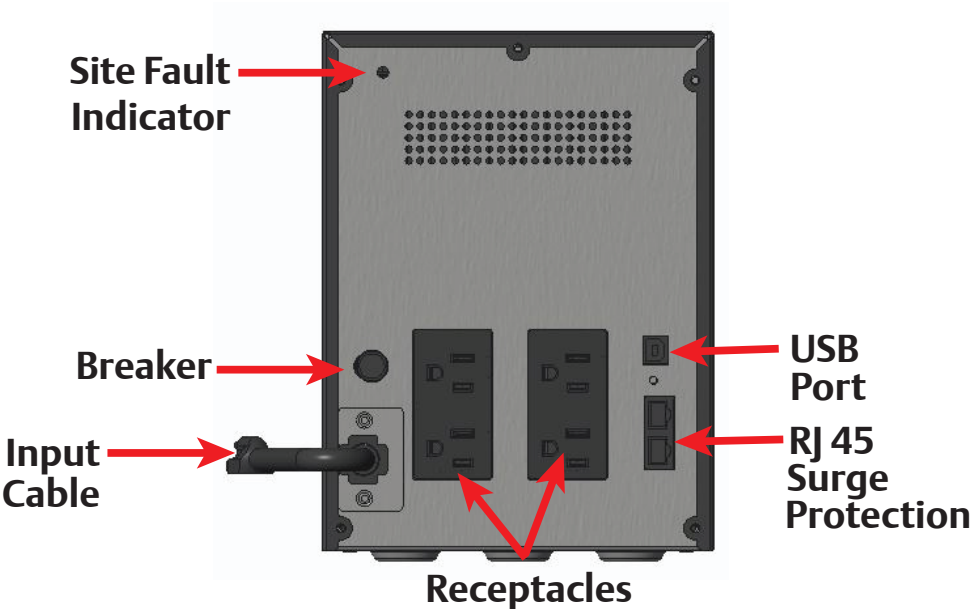
- To turn the UPS on, press the ON/OFF button for two (2) seconds and the LCD will display UPS status.
- To turn the UPS off, press the ON/OFF button for two (2) seconds and LCD display will shut off.

③ Setup Button

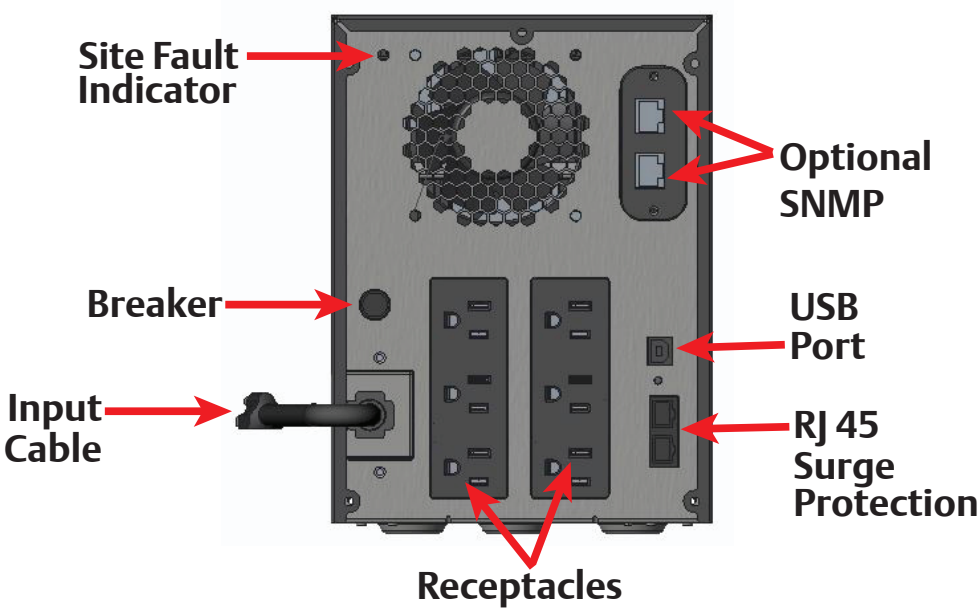
When you press the setup button, the LCD screen will display the functions below in the following sequence:

- Input Voltage (V)
- Input Frequency (Hz)
- Output Voltage (V)
- Output Frequency (Hz)
- Output Load (%)
- Output Load (kVA)
- Battery Voltage (%)
- Battery Voltage (V)

3.2 Rear Views

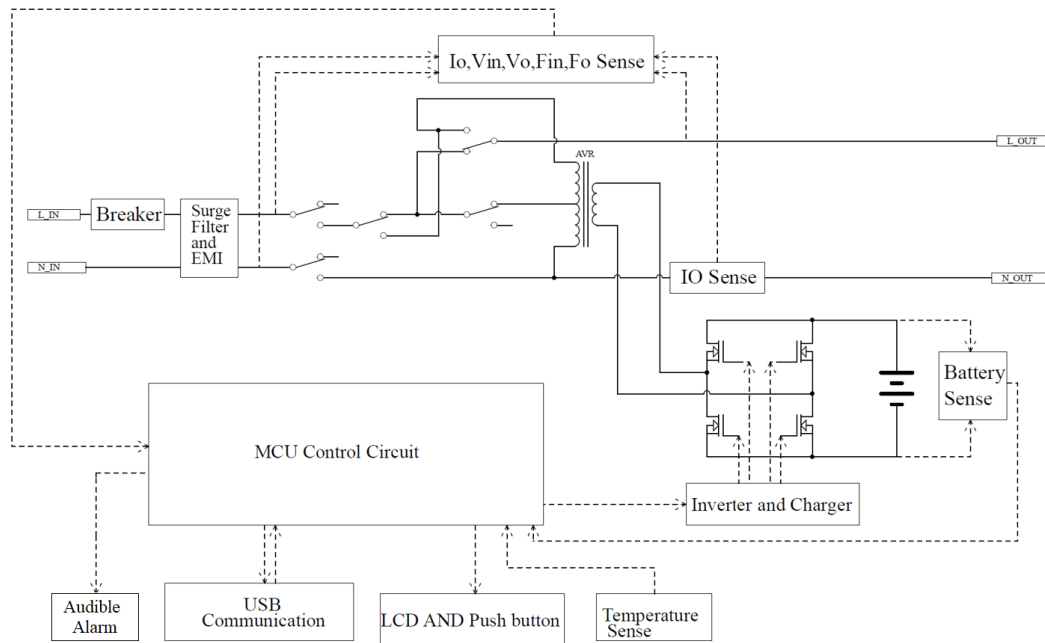


Rear View of SSW700 and SSW1000

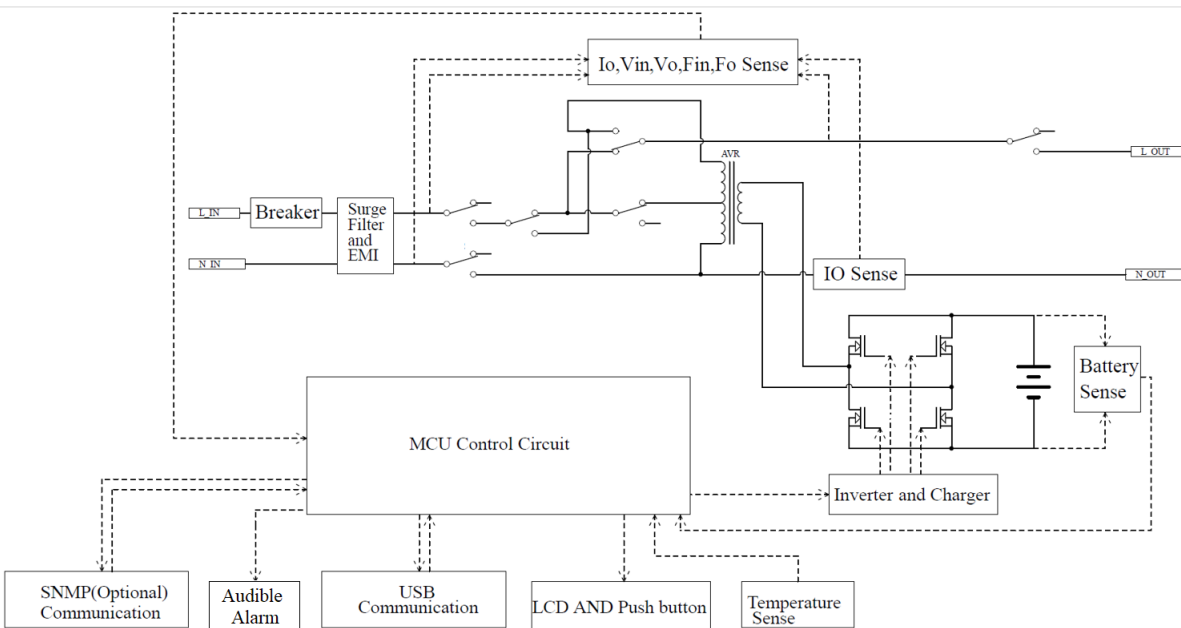


Rear View of SSW1500

4.0 System Block Diagrams



SSW700 and 1000 System Block Diagram



SSW1500 System Block Diagram

5.0 Installation and Operation

5.1 Installation Requirements

- Install the UPS in a controlled environment with adequate ventilation that is free of excessive dust and high humidity.
- Avoid direct sunlight.
- Maintain a clearance of 4 inches (100 mm) between the UPS rear panel and the wall and 1 inch (25.4 mm) between the UPS sides and the wall. Keep the air inlets unobstructed to facilitate ventilation and heat dissipation.

5.2 Connect to Utility Power

Connect the power cord to the AC input power outlet.

5.3 Check the Site Wiring Fault Indicator

Check the site wiring fault indicator on the rear panel of the UPS. The light will be illuminated if the UPS is plugged into an improperly wired AC power outlet. Detected wiring faults include ground and hot-neutral polarity reversal.

5.4 Charge the Battery

The UPS charges its battery whenever it is connected to utility power, even when the unit is off. For best results, charge the battery for eight (8) hours before initial use.

5.5 Turn On the UPS

Press the ON/OFF button for 2 seconds.

5.6 Set Up Audible Alarm On/Off

When the UPS powers on, the audible alarm may sound. The steps below outline how to turn the audible alarm on or off.

- Step1: Press and hold the ON/OFF button for three (3) seconds to set up audible alarm ON/OFF
- Step2: Press the setup button once to set up audible alarm ON/OFF
- Step3: Press the ON/OFF button to exit

5.7 Connect the Loads

Connect the loads to the output receptacles on the rear panel of the UPS.

5.8 Connect Computer Interface

UPS monitoring software and an optional interface kit can be used with this UPS. If used, connect the interface cable to the REMOTE PORT on the rear panel of the UPS and to the host computer (either COM 1 or COM 2).

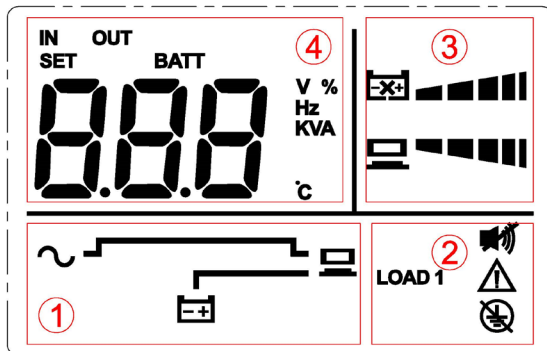
5.9 Install the Optional SNMP Card (SSW1500 Models Only)

- Remove the Communication Port cover. Insert the SNMP card and secure with
- Use network cables (supplied by user) to connect the UPS to the computer network port.
- Please refer to the SNMP card operation website at www.SolaHD.com for configuration settings and further instructions.



6.0 LCD Screen Diagnostics

Operation and Overview of LCD Panel



- ① Operation Mode
- ② Status
- ③ Load and Battery capacity
- ④ Number will be displayed in the following order Vin, Vo, load, battery capacity



UPS Power On

To turn on the UPS unit, press the ON/OFF button lightly for 2 seconds then the LCD will display on.



UPS Power Off

To turn off the UPS unit, press the ON/OFF button lightly for 2 seconds then the LCD will display off.



AC Start Mode

AC start mode, the back light will flash once every 0.5 second.

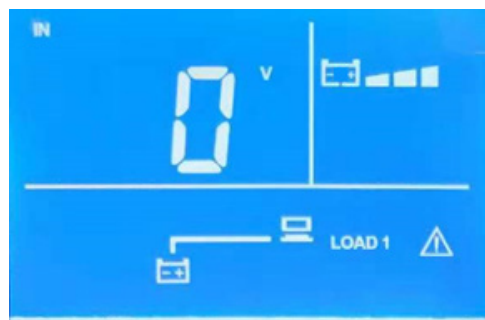


Line and AVR Mode

AVR mode, the bottom icon will flash once every 0.5 second.



Battery Mode



Low Battery

Battery voltage low, the battery alarm icon will flash once every 0.5 second.



Battery Sleep Mode

Battery voltage UVP, the battery stops to provide power, and the battery alarm icon will flash once every 0.5 second.



Battery Voltage Over Charge

Battery voltage over charge, the battery alarm icon will flash once every 0.5 second and display HI.



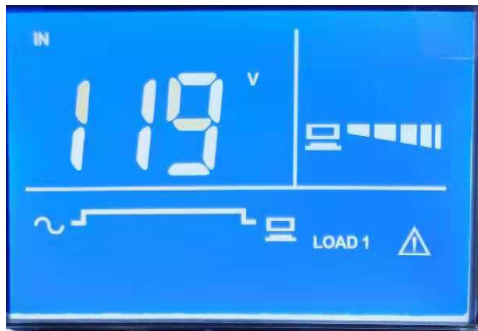
Short for Line and AVR Mode

LCD display SP, when UPS operates in LINE or AVR mode.



Short for Battery Mode

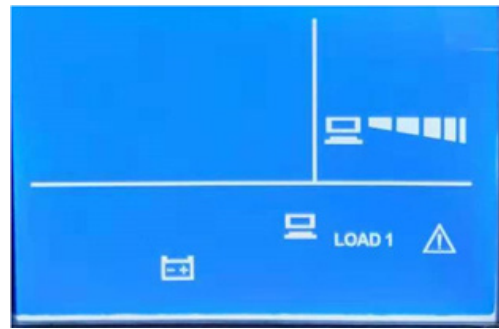
LCD display SP, when UPS operates in battery mode.



OverLoad for Line and AVR Mode

When the UPS is within the overload limit, the alarm icon will flash once every 0.5 seconds.

When the UPS is beyond the overload limit, the setup button will be locked.



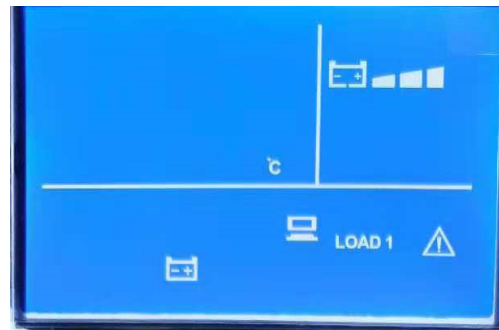
OverLoad 110% for Battery Mode

When the UPS is within the overload limit, the alarm icon will flash once every 0.5 seconds.

When the UPS is beyond the overload limit, the setup button will be locked.



Over Temperature for Line and AVR Mode



Over Temperature for Battery Mode



Setup Audible Alarm On



Setup Audible Alarm Off

7.0 Battery Replacement

CAUTION

Caution- risk of electrical shock. Battery circuit is not isolated from AC input. Hazardous voltage may exist between terminals and ground. Test before touching.

Caution- risk of energy hazard. Qualified service personnel only. Refer to installation manual for battery replacement proper handling and disposal.

The battery may be replaced by qualified service personnel only. Replace the battery with the same type and ratings.

Do not open or damage the battery.

Released electrolyte is harmful to the skin and eyes and may be toxic.

A battery presents a risk of electrical shock and high short circuit current. The following precautions should be adhered to when replacing the batteries:

- 1) Remove watches, rings, or any other metal objects from the hands.
- 2) Use tools with insulated handles.
- 3) Wear rubber gloves and boots.
- 4) Do not lay tools or metal parts on top of batteries.
- 5) Disconnect charging source prior to connecting or disconnecting the battery terminals.

Do not dispose of the battery in as fire as the battery may explode.

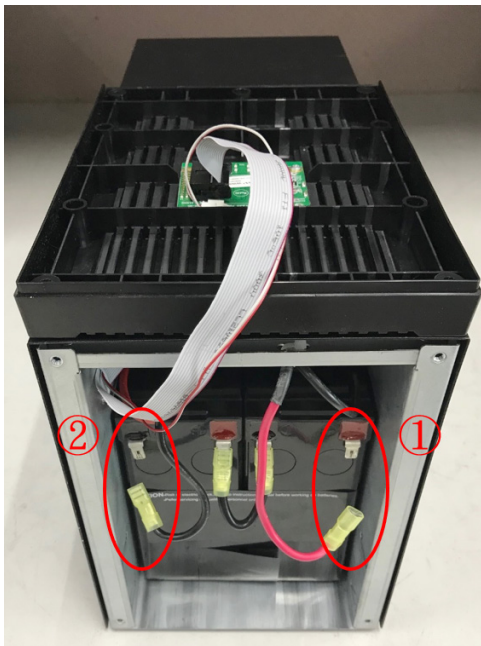
7.1 SSW700 and SSW1000 Battery Replacement Instructions



Step 1: Using a Phillips head screwdriver, remove the four (4) black screws located on the corners of the front plate.



Step 2: Place the faceplate on top of the UPS for easy access to the battery connections.



Step 3: First, disconnect the red connector (positive); then disconnect the black (ground) connector from the battery pack.



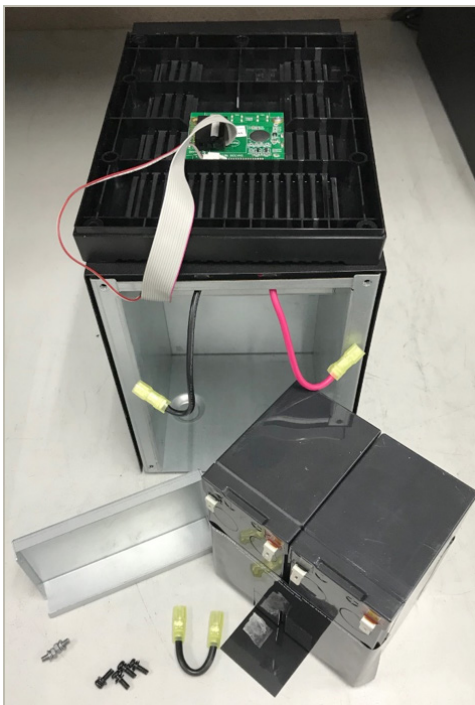
Step 4: Using a Phillips head screwdriver, remove the four (4) silver screws from the silver battery pack retaining plate.



Step 5: Pull on the white plastic tab in order to slide the battery pack out of the SSW UPS.



Step 6: Disconnect the jumper between the battery packs.



Step 7: After completing the previous steps, the result should resemble the image above.



Step 8: Be sure to dispose of the batteries properly at a recycling center. If you need assistance, please contact technical support. They will assist you in finding the closest battery recycling center to your location.

7.2 SSW1500 Battery Replacement Instructions



Step 1: Using a Phillips head screwdriver, remove the four (4) black screws located on the corners of the front plate.



Step 2: Place the faceplate on top of the UPS for easy access to the battery connections.



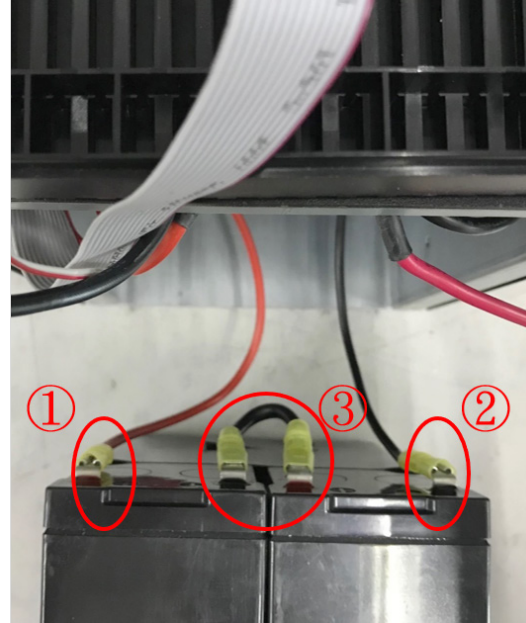
Step 3: First, disconnect the red connector (positive); then disconnect the black (ground) connector from the battery pack.



Step 4: Using a Phillips head screwdriver, remove the four (4) silver screws from the silver battery pack retaining plate.



Step 5: Pull on the white plastic tab in order to slide the battery pack out of the SSW UPS.



Step 6: Slide the battery pack out, refer to Step 3 to disconnect the battery wire, then disconnect the jumper wires.



Step 7: After completing the previous steps, the result should resemble the image above.



Step 8: Be sure to dispose of the batteries properly at a recycling center. If you need assistance, please contact technical support. They will assist you in finding the closest battery recycling center to your location.

8.0 Troubleshooting

Trouble	Probable cause	Solution
UPS nonresponsive (No alarm and no light)	UPS is powered off	Press ON/OFF button for two (2) seconds.
	Battery is defective	Replace the battery.
	UPS fault	Contact Tech Support.
The UPS is always on battery mode	Power cord is loose	Re-plug the power cord.
	Input breaker or fuse is open	Before reconnecting equipment, please verify that the load matches the UPS capability specified and output has short circuit protection. Reset the breaker or replace the fuse.
Actual backup time cannot be achieved	Battery voltage is too low	Charge the battery at least eight (8) hours.
	Overload	Remove some unnecessary loads. Before reconnecting equipment. Please verify that the load matches the UPS capability specified in specs.
	Battery defect	Replace the battery.
	UPS fault or charger failure	Contact Tech Support.
Fault code displayed	Overload	Remove some unnecessary loads. Before reconnecting equipment. Please verify that the load matches the UPS capability specified in specs.
	UPS short-circuit	Contact Tech Support.
	UPS over temperature	Remove some unnecessary loads. Before reconnecting equipment. Please verify that the load matches the UPS capability specified in specs. Make sure the UPS is installed in a protected area that is free of excessive dust and has adequate air flow. Place the UPS away from other units at least 20 cm to avoid interference. For best performance, keep the indoor temperature between 0°C and 40°C.

9.0 Technical Specifications

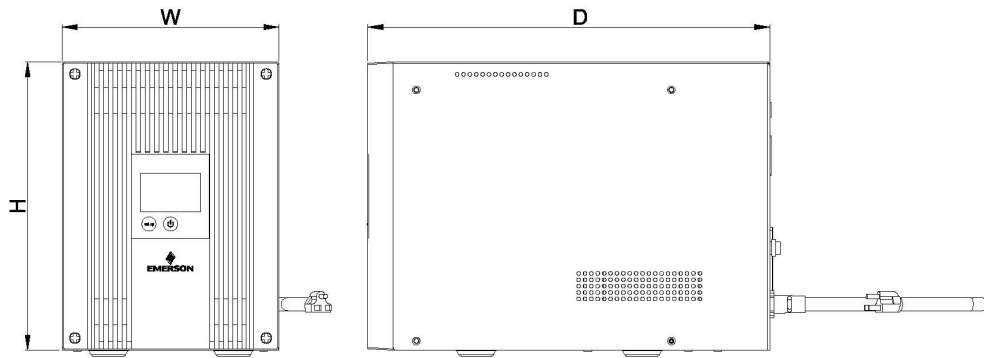
Catalog Number	SSW700	SSW1000	SSW1500
Topology	Line Interactive sinewave		
Capacity (VA/W)	700/480	1000/750	1440/1200
Dimensions			
Unit (H x W x D) - in. (mm)	9.09 x 6.69 x 12.4 (231 x 170 x 315)	9.09 x 6.69 x 12.4 (231 x 170 x 315)	9.09 x 6.69 x 16.97 (231 x 170 x 431)
Ship Weight - lbs (kg)	28.44 (12.9) ± 10%	32.41 (14.7) ± 10%	50.71 (23.0) ± 10%
Input Parameters			
Voltage	120 Vac -23%/+29%		
Frequency	50/60 Hz +/-10% (auto sensing)		
Input Power Cord	5 ft. with NEMA 5-15P		
Output AC Parameters			
Voltage (Battery Mode)	120V±10%		
Frequency (On Battery)	50/60 Hz		
Auto Voltage Regulation (AVR function under Normal Mode)	V_{out} = Input 102VAC x 118% at Boost mode V_{out} = Input 138VAC x 85% at Buck mode		
Overload Protection	Line Mode: 1. 110%±5% load for 5 minutes. After 5 minutes at 110%±5%, power will not be provided to the load. Then, every 10 minutes, auto recovery will be attempted. 2. 120%±5% load for 10 seconds. After 10 seconds at 120%±5%, power will not be provided to the load. Then, every 10 minutes, auto recovery will be attempted. 3. 130%±5% load for 1.5 seconds. After 1.5 seconds at 130%±5%, power will not be provided to the load. Then, every 10 minutes, auto recovery will be attempted.		
Short Circuit	1. The output current continues over 125% within 60ms to OSCP* and then goes to Battery Mode. 2. UPS goes to retry mode every 10 seconds until Battery Voltage (V_b) <11V/cell. 3. The battery recharges when the V_b > 12.7V/cell, then UPS continues retry mode every 10 seconds. 4. UPS goes into auto recovery mode until the short circuit disappears then goes back to Line Mode.		
Battery Parameters			
Battery Type	VRLA, maintenance free,sealed, lead-acid cells		
Transfer Time	Typical: 8ms, Max<10ms@AC mode to backup mode		
Typical Recharge Time	8 hours		
Environmental			
Operating Temperature	0°C to +40°C		
Storage Temperature	-15°C to +50°C		
Relative Humidity	0% to 90% relative humidity, non-condensing		
Audible Noise	Models SSW700 and SSW1000: ≤40dBA without audible alarm beyond 1m at rated load Model SSW1500: ≤45dBA without audible alarm beyond 1m at rated load		
Standards			
Certifications	cULus Listed, UPS Equipment UL 1778, CSA C22.2 No. 107.3		
EMC	FCC Part 15, Subpart B, Class A; EN62040-2; EN55032; CISPR22		
Surge Protection	Meets IEEE C62.41, Category A & B L-L:1kV; L-E: 2kV		

NOTE: 1200W at 0.75 power factor equals 1600 VA. Line cord limits total load to 1440 VA (max.).

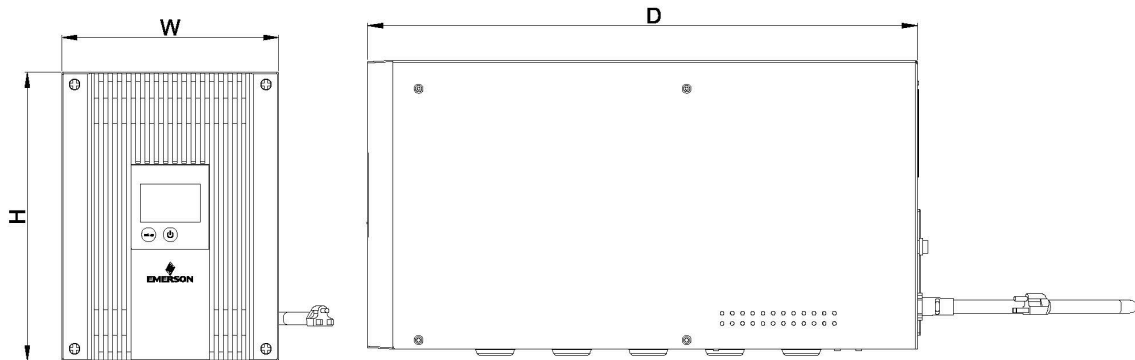
Battery Run-Time Chart (minutes)*			
	SSW700	SSW1000	SSW1500
Load (%)	Run-Time (minutes)		
20%	40	30	40
40%	20	14	18
50%	15	11	12
70%	10	7	5.5
100%	5	3	2.6

*NOTE: Run times in this table are approximate. Based on new, fully charged standard batteries at a temperature of 25°C (77°F) with 100% resistive UPS loading. Run times listed above can vary by ±5% due to manufacturing variances of the batteries.

SSW700 & SSW1000 ASSEMBLY



SSW1500 ASSEMBLY



Catalog Number	Dimensions H x W x D in. (mm)
SSW700	9.09 x 6.69 x 12.4 (231 x 170 x 315)
SSW1000	9.09 x 6.69 x 12.4 (231 x 170 x 315)
SSW1500	9.09 x 6.69 x 16.97 (231 x 170 x 431)

The information in this manual is provided as a guide for installation, operation, and maintenance. It does not affect or exceed our obligations under the Terms and Conditions of Sale.

Note that unit specifications are subject to change without notice.

Technical Support

Website: www.solahd.com

Technical Support E-Mail: solahd.technicalservices@emerson.com

Toll-Free: (800) 377-4384

USA: (847) 268-6651

Warranty

Please see the “Terms & Conditions of Sale” document within the UPS packaging.

While every precaution has been taken to ensure accuracy and completeness in this manual, Appleton Grp LLC d/b/a Appleton Group assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions.

SSW UPS Series

A272-320 Rev. 1 12/2019

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