

# **OWNER'S OPERATING MANUAL**

**UNINTERRUPTIBLE POWER SYSTEM**

**FOR MODEL:  
SSG500VA-1**

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## **INTRODUCTION**

Congratulations! You have selected the highest quality protection for your computer today. This unit offers a quiet and compact package with superior performance you can count on. You now own a member of the SSG family which is a proud part of the very reliable and versatile Falcon series of UPS products.

This Users Manual is provided with your new SSG unit. It will enhance your understanding of the product and its functions. Read this handbook carefully in the order it is presented prior to operating your unit. This will save you time and effort in your installation and application. The illustrations will also familiarize you with the SSGs operating modes and indications. Always operate the unit within the guidelines and specifications given to

maximize the units efficiency and lifetime. Also, your understanding of the product is essential in providing you years of service for your back-up power requirements. Refer to the cross-reference table below to understand which unit corresponds to your particular model number.

### **CROSS REFERENCE TABLE**

<b>MODEL NUMBER</b>	<b>OLD REFERENCE</b>
SSG500VA-1	PC500-1

## **IMPORTANT SAFETY INSTRUCTIONS, SAVE THESE INSTRUCTIONS**

This manual contains important safety instructions that should be followed during installation and maintenance of the UPS and batteries.

The SSG SERIES represents the smallest and most compact units of the Falcon (UPS) product line. In the tradition of all Falcon products, it maintains the highest reliability and the most complete on-line, sinewave power protection available. An on-line, sinewave UPS is the only total solution to virtually any power problem. It effectively provides just what it says, Uninterruptible Power. There is no break, transient or glitch in source transfer on a power outage because THERE IS NO TRANSFER.

The SSG is engineered with the latest MOSFET/PWM technology for high efficiency and reliability.

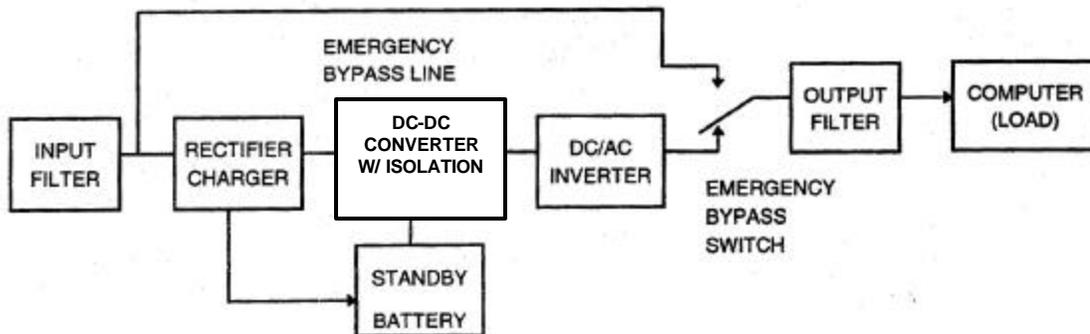
Refer to the simplified block diagram, Figure 1, for system description. The AC source is rectified and provides energy for the DC - DC Converter and a float charge to a standby Battery. The DC Converter then supplies the power to operate the PWM DC/AC Inverter. During a utility power-loss, the AC rectification and battery charging capabilities of the UPS become inactive. The fully charged battery, however,

supplies the necessary power requirement to maintain the remaining system blocks.

The SSG on-line topology is unique to other on-line systems in that it is designed to meet the needs of non-linear loads. Your computer, with its switching power supply, is considered a nonlinear load which can be very abusive to most power protection equipment and could decrease its life-expectancy. The SSG is specially devised to accept these loads and protect them efficiently without any of the output waveform degradation common to other UPS.

If the unit inadvertently experiences an extreme over temperature situation that causes inverter malfunction, it will switch over to a filtered emergency bypass line to insure continuous power to the computer load. If the unit is overloaded, it will shutdown completely if the overload is not corrected within 15 seconds.

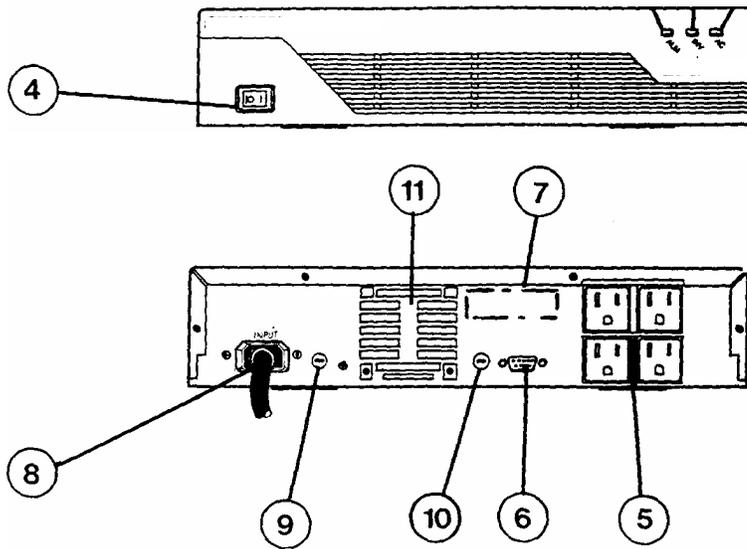
The SSG500 offers complete isolation input to output.



**FIGURE 1: SSG500 BLOCK DIAGRAM**

## THE SSG UNIT

The following illustrations depict the SSG500 unit.  
Please reference the SUMMARY OF INDICATORS AND CONTROLS for a further description of the call-outs.



**FIGURE 3: FRONT AND REAR VIEW  
SSG500**

- |                                       |  |
|---------------------------------------|--|
| 1. <b>AC-</b> AC LINE INDICATOR       | 5. <b>UPS OUTPUT-</b> INVERTER OUTPUT TO CRITICAL LOAD |
| 2. <b>INV-</b> INVERTER OPERATING     |  |
| 3. <b>ALM-</b> ALARM STATUS INDICATOR | 6. <b>SIGNAL-</b> 9 PIN "D" SUBMINIATURE CONNECTOR     |
| 4. <b>POWER ON/OFF SWITCH</b>         | 7. <b>IDENTIFICATION LABEL</b>                         |
|                                       | 8. <b>INPUT-</b> INPUT CORD INLET                      |
|                                       | 9. <b>FUSE-</b> INPUT LINE FUSE                        |
|                                       | 10. <b>FUSE-</b> OUTPUT LINE FUSE                      |
|                                       | 11. <b>COOLING FAN</b>                                 |

**AC** - A green L.E.D. that is illuminated when both the power On/Off is "ON" and there is utility power present at the input of the input of the SSG500. The FILTERED load outlets, if available, will be active if this L.E.D. is "ON"

**INV** - A green L.E.D. that illuminates when the SSG500's Inverter is operating and powering the UPS load outlets.

**ALM** - A red L.E.D. that illuminates if the inverter malfunctions and is no longer supplying power to the UPS load outlets. During this condition, UPS load outlets will be powered by filtered utility bypass power.

**Power ON~OFF Switch** The system power switch that allows utility power to activate the Inverter and Battery circuits.

**SIGNAL** - A DB-9 subminiature female connector provided for sophisticated computer monitoring systems..

**UPS OUTPUT** Continuous power is provided at the UPS output receptacles.

**Identification Label** - The SSG500's model and serial numbers are located here. Always refer to this information during correspondence with the factory.

**INPUT** -. The SSG500 comes with removable line cord.

**INPUT FUSE** - This is the input protection line fuse to the SSG500. It also provides protection to the critical load if on the emergency bypass line.

**FUSE** - This is the output protection fuse to the load.

**COOLING FAN** - This device forces cool air into the SSG500 so it can maintain longer and more efficient operation.

## **STORAGE & INSTALLATION**

If the unit is to be stored, it is recommended to refresh the internal battery at least once every 90 days. To do this, plug the system in, turn the power On/Off switch "ON" and allow to idle for at least 24 hours.

The SSG is designed for installation in a protected environment. The system is lightweight and can be easily moved. Some important points to consider when positioning a unit for operation:

- A 15A (preferably dedicated) outlet is accessible for the eight foot power cord supplied with the unit. It is not recommended to modify the supplied cord in any way nor should an extension cord of any kind be used.
- The cord paths in the system installation should remain clear of foot traffic or anything else that may disturb permanent connection.
- The installation site should maintain an ambient air temperature of less than 104°F (40°C). When the environment for the

system remains cooler during operation, there is less stress on the batteries and the internal electronics.

- The air inlets, vents and fan should not be obstructed or blocked in any way. The more breathing space the system has, the cooler it operates.
- The air should remain free from excessive dust and chemical fumes.
- The unit may be placed on a desktop with your computer equipment or along side the desk or console. It may be placed in any position, except upside down, provided that all the above requirements are maintained.

Once a location has been selected and the unit is installed, it is ready for operation.

**ALLOW AT LEAST 24 HOURS, AFTER THE SYSTEM IS FIRST INSTALLED, TO FULLY CHARGE THE INTERNAL BATTERY TO A MAXIMUM STATE**

## OPERATION

The SSG500 is very simple to use.

- Be sure the power cord is plugged into the nearest available, appropriately rated wall outlet.
- Activate the power switch to the “ON” position.
- The green AC light illuminates.
- The green INV light illuminates.

Leave the power switch “ON” and unplug the power cord from the wall. This will simulate a power loss to test battery operation.

- The green AC light will shut off.
- An intermittent audible alarm will sound.
- As time passes in this condition, the battery discharges and when a low battery condition is present, the beep rate increases. The SSG500 will automatically shut itself off to avoid excessive battery discharge- When power returns, normal operation of the UPS resumes without any operator adjustment.

The duration of actual battery back-up time and the low battery condition varies depending on the amount of load, charge on the battery, and condition of the battery. See SPECIFICATIONS Section for approximate hold-up times at 100% and 50% loads.

Plug the system power cord in again and turn the power switch “OFF”.

Turn off the devices you wish to plug into the UPS. Plug them into the outlets labeled UPS OUTPUT at the rear of the SSG500.

- Activate the SSG power switch to the “ON” position.
- Turn ON each of your devices.

If the UPS is overloaded it will beep at a 1 one beep per second rate and will shutdown after 10 seconds if the overload is not removed.

If the system overheats or the Inverter should fail, the unit automatically transfers the load to a filtered bypass line, sounds a continuous alarm and the red ALM light will illuminate.

To escape this condition, the problem must first be corrected then turn the UPS power switch “OFF”, then back “ON”.

It is recommended that you leave the SSG power switch “ON” at all times and switch your devices off individually. This will insure that your batteries are always fully charged.

The power switch acts as a system ON/OFF switch. When this switch is turned “OFF”, power is lost to the entire unit including all outlets at the rear of the UPS, since the battery circuit is also disabled. An optional switch guard may be ordered for added protection.

# WARRANTY

## GENERAL PROVISIONS

FALCON® ELECTRIC INC. hereby warrants product shipped under this agreement to be free from defective workmanship for a period of one year following date of shipment. This Limited New Product Warranty Agreement only applies to covered repairs to the product occurring within the United States and Canada.

### EXCLUSIONS:

The following are not covered by the Falcon Electric Limited New Product Warranty.

1. **DAMAGE DUE TO ACCIDENTS, FRAUD, INTENTIONAL NEGLIGENCE, MISUSE, IMPROPER INSTALLATION, UNAUTHORIZED ADJUSTMENTS, MODIFICATION, ALTERATIONS, DISCONNECTION, TAMPERING:** Accidents or acts of nature or other events beyond the control of Falcon Electric, damage from impact, contaminants, fire, or water, misuse of the product such as sustained overloading, improper installation or operation, operation in an un-controlled environment.
2. **DAMAGE DUE TO IMPROPER INSTALLATION OR LACK OF MAINTENANCE:** Lack of proper maintenance as outlined in the owner's manual.
3. **NORMAL MAINTENANCE:** Cleaning, replacement of leaking or outdated batteries.
4. **DAMAGE DUE TO ALTERATIONS:** Alterations by changing or adding to the product by any unauthorized personnel or service organization.
5. **DAMAGE CAUSED BY OTHER THAN ORIGINAL EQUIPMENT PARTS.** Any malfunctions caused by the use of other than Falcon Electric original equipment parts such as batteries, line cords and plugs, output receptacles, or any other part.
6. **BROKEN OR TAMPERED WARRANTY SEALS:** Falcon Electric will deem all warranties null and void in the event warranty seals are broken or show signs of removal or tampering.
7. **CONSEQUENTIAL DAMAGES:** This Limited New Product Warranty does not cover any consequential or secondary damages that may be suffered as a result of usage of the product or the need to repair or replace a warranted part except to the extent coverage of such damage is required by the state whose law governs the Falcon Electric Limited New Product Warranty.
8. **REPAIRS BY UNAUTHORIZED SERVICE ORGANIZATIONS OR PERSONNEL:** Otherwise covered repairs when the prescribed repair is not performed by the Falcon Electric Service Center or by a Falcon Electric authorized third party service organization.
9. **LIABILITY FROM USE OF THE PRODUCT:** Liability for damage to property or injury or death of any person arising out of the operation, maintenance, or use of the product weather.
10. **Warranty void if the battery is allowed to discharge below the minimum battery cutoff point.** The battery must be recharged every four to six months when not in use.
11. **This product is not recommended, and Falcon Electric inc. 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 FALCON ELECTRIC INC. BE LIABLE FOR CONSEQUENTIAL OR INDIRECT DAMAGES.**

### LIMITS OF LIABILITY:

**LIMITATION OF LIABILITY:** THERE IS NO LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL LOSS OR DAMAGE UNDER THESE WARRANTIES INCLUDING BUT NOT LIMITED TO, LIABILITY FOR INJURY, LOSS OF LIFE, PROPERTY DAMAGE, LOSS OF USE, LOSS OF DATA, LOSS OF TIME, INCONVENIENCE OR COMMERCIAL LOSS, OR BREACH OF IMPLIED OR EXPRESSED WARRANTIES. ANY AND ALL SUCH LIABILITY IS EXPRESSLY EXCLUDED. IN NO EVENT SHALL FALCON ELECTRIC BE RESPONSIBLE FOR ANY AMOUNT EXCEEDING THE ACTUAL MARKET VALUE OF THE PRODUCT. Some states do not permit the exclusions of limitations of incidental or consequential damages, so these limitations may not apply to you.

### TRANSFER:

This Falcon Electric Limited New Product Warranty is not transferable in the event of the product ownership being transferred during the warranty coverage period.

### ITEM COVERAGE:

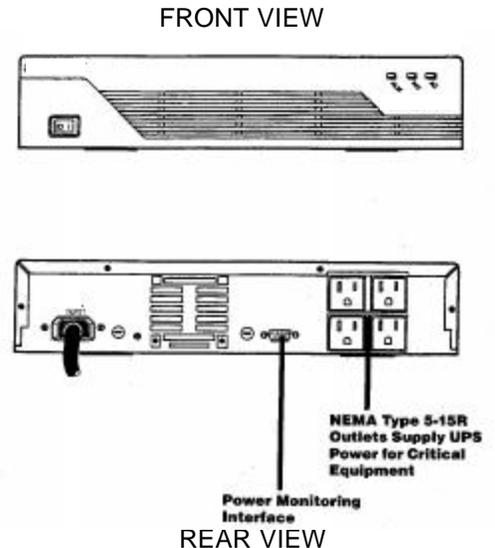
Effective January 1, 2000 FALCON® ELECTRIC hereby warrants product shipped under this Agreement to be free from defective workmanship for a period of one year following date of shipment. Coverage under this Falcon Electric New Product Warranty Agreement commences with the date of shipment defined as the date on the Bill of Lading. If no Bill of Lading is issued the date of shipment shall be shown on seller's shipping document. The Falcon Electric Limited New Product Warranties expire one year from the aforementioned commencement date. Falcon Electric Inc. Reserves the right to make changes, additions, and/or other improvements in its products without incurring any obligation to install them on its products previously sold. This Warranty is valid for product as sold.

1. For product located in the continental United States and Canada deemed by Falcon Electric to be covered under this warranty, Falcon Electric will pay shipping costs associated with the return and repair of product under the following conditions only:
  - a. Falcon Electric will pay shipping costs both to and from our US Service Center for the first 30 days from the original date of invoice. During this 30 day period Falcon Electric may elect to ship a new unit to replace the defective product.
  - b. After the first 30 days and up to 90 days from the original date of invoice the end-user is responsible for shipping costs associated with sending the defective unit to the Falcon Electric US Service Center. Falcon Electric will pay shipping costs associated with returning the repaired product to the end-user. During this 60 day period Falcon Electric may elect to offer a loaner unit, providing the end-user agrees to pay for all shipping costs associated with transportation of the loaner unit both from and return to the Falcon Electric US Service Center.
  - c. All shipping costs for product submitted beyond 90 days of the original date of invoice is the responsibility of the end-user.

# SSG500VA SERIES

## SPECIFICATION

MODEL		SSG500VA-1	
RATED POWER	@ p.f. = 0.7	500VA	
	Voltage	120Vac, +10%, -30% (Without battery discharge)	
	Current	8A	
	Frequency	45Hz - 65Hz (45-400Hz optional)	
INPUT	Voltage	120Vac ±3%	
	Current	4.2A (RMS), 11A Repetitive Peak	
	Frequency (Sync) (Internal)	50/60 Hz ±0.1% 50/60 Hz ±0.5Hz	
OUTPUT	Harmonic Distortion	Linear <4% Typical	
	Dynamic Response	±4% for 100% Step Load Change ,05 ms Recovery Time	
	Overload (UPS)	110% Continuous; 200% for 0.5 seconds; Sustained excessive overload causes safe shutdown without equipment damage	
	Output Protection	Short circuit & overload Excessive battery discharge	
	Efficiency	85% (Typical)	
	DC Voltage	48Vdc	
	Type	12V, 7AH Sealed Lead Acid	
	BATTERY	Backup time.	4 min.
		Full Load Half Load	10 min.
	Recharge Time	8 Hours to 90%	
FEATURES	Visual Indicators	Utility Present Inverter On Summary Alarm	
	Audible Alarms	Low Battery, Utility Interrupt, Inverter Failure, Over Temp.	
	Computer Interface	(DB-9) Utility Interrupt Low Battery	
ENVIRONMENT	Audible Noise	43-46dBA at five feet	
	Operating Temperature	32°F (0°C to 40°C)	
	Humidity	10% to 90%	
	Altitude	Sea Level to 7,000 Feet	
MECHANICAL	Cooling	Low Velocity Forced Air	
	Input	8' Cord with NEMA Type 5-15P	
	Output	Four NEMA Type 5-15R	
APPROVALS	Weight	22 lbs. (10kg)	
	Dimensions (H x W x D)	2.8 x 13.4 x 15.0 Inches 7 x 34 x 38 cm	
APPROVALS	Agency	UL Listed, CSA, FCC Class A	



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