



# OWNER'S OPERATING MANUAL

## SG Series™ UPS Plus®

Uninterruptible Power Supply Models:

SG800-1T, SG800-2T

SG1K-1T, SG1K-2T, SG1.5K-1T & SG1.5K-2T

SG2K-1T, SG2K-2T, SG2K-1TX & SG2K-2TX & SG2K-1TXI & SG2K-2TXI

SG3K-1T, SG3K-2T, SG3K-1TX & SG3K-2TX & SG3K-1TXI & SG3K-2TXI

-1T & -2T Models



-1TX & -2TX & -1TXI & -2TXI



Detailed SG Series product specifications are available in PDF format at [www.falconups.com](http://www.falconups.com)

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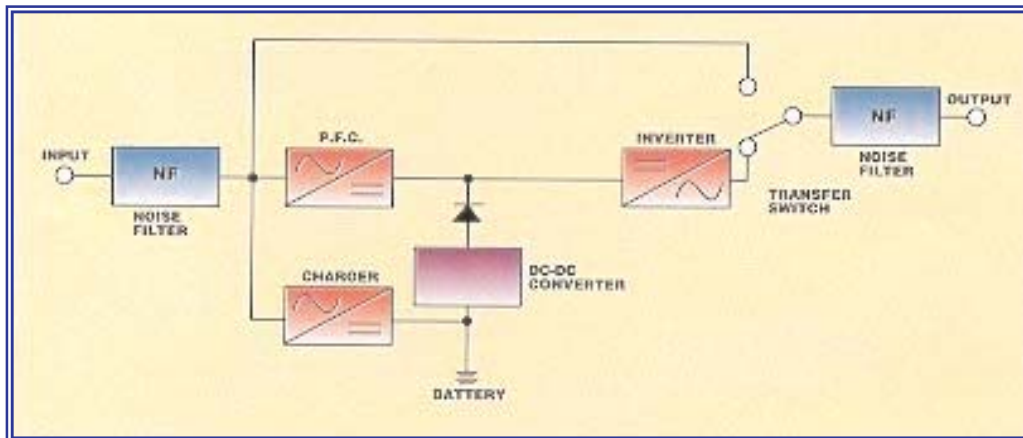
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## SG SERIES UPS FEATURES

- True Double Conversion On-Line Design
- Input Power Factor Correction
- Wide Input Voltage Window
- Pure Sinewave Output
- Precision Output Voltage Regulation
- Superior Brownout, Surge and Transient Protection
- Internal System Bypass
- Eliminates Generator Frequency & Voltage Drift
- Microprocessor Control & RS-232 Communications
- UPSILON® Monitoring & Shutdown Software
- Optional Frequency Conversion
- Optional Extended Battery Packs & Chargers
- Optional External Maintenance Bypass Switch
- Optional Internal SNMP/HTTP Interface Card
- Two-Year Warranty

### SG SERIES ON-LINE UPS SYSTEM BLOCK DIAGRAM



# IMPORTANT SAFETY INSTRUCTIONS

## SAVE THESE INSTRUCTIONS

This manual contains important instructions which must be followed during the installation, operation and maintenance of this UPS and its batteries. Please read all instructions before operating this equipment and save this manual for future reference.

### CAUTION

All of the models presented herein are designed for installation and use in a temperature-controlled environment, free of contamination.

### CAUTION

This UPS utilizes voltage that may be hazardous. Do not attempt to disassemble. This unit contains no user replaceable parts. **Refer all servicing to Falcon Electric, Inc.**

### CAUTION

**THIS UPS IS NOT INTENDED TO BE USED IN CONJUNCTION WITH LIFE SUPPORT OR OPERATING ROOM EQUIPMENT.**

### CAUTION

Always unplug this UPS and remove the UPS battery fuse prior to cleaning and never apply liquid or spray detergent on the UPS.

### CAUTION

**Never attempt to service batteries.** High voltage exists within the unit, which could cause electrical shock. Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from batteries. When replacing the UPS batteries, use the same number and type of batteries.

### IMPORTANT

Allow at least 24 hours, after the UPS is first installed and turned on, to fully charge the internal battery and assure the maximum backup time is available.

### DO NOT

**DO NOT** plug this UPS into its own output as this may damage the UPS. The maximum UPS output load (in watts) must never exceed that shown on the UPS rating label. **NEVER CONNECT** equipment that could overload the UPS or demand half-wave rectification from the UPS, for example: electric drills, vacuum cleaners or hair dryers. Never connect surge protected plug strips to the UPS output.

### CAUTION

**NEVER CONNECT** equipment that could overload the UPS or demand half-wave rectification from the UPS, for example: electric drills, vacuum cleaners or hair dryers. Never connect surge protected plug strips to the UPS output.

### CAUTION

**DO NOT** remove or unplug the input cord when the UPS is turned on. This removes the safety ground from the UPS and the equipment connected to the UPS.

### IMPORTANT

**This UPS contains its own energy source (batteries). The output receptacles may carry live voltage even when the UPS is not connected to an AC source.**

# CHAPTER 1

## SG Series UPS - Overview

### **True Regenerative On-Line Design**

As new and innovative technologies have become the backbone of today's businesses, maximum system availability is critical and downtime is more expensive than ever. Increasingly, businesses need a UPS that not only protects against blackouts, but also virtually eliminates more frequent and subtle power disturbances. Surges, sags, line noise and brownouts can disrupt proper operation of sensitive equipment. These disturbances may also create unnecessary production, service, and data recovery costs.

A True Regenerative On-Line UPS provides the highest level of protection against the widest spectrum of power problems. The incoming AC utility source is converted to a regulated DC voltage. From this DC voltage, a new AC voltage is regenerated, providing continuous, clean, tightly regulated power to your equipment. Line-interactive and Off-line designs leave your equipment connected directly to dirty utility power. They only provide minimal transient, voltage and backup protection. If your equipment operation is "Mission Critical", a true double conversion On-Line UPS, such as Falcon® Electric's SG Series™ UPS Plus®, is the only clear choice.

### **Input Power Factor Correction**

All SG Series UPS Plus models include state-of-the-art Input Power Factor Correction. This greatly reduces the amount of current demanded from your building wiring system, yielding a highly efficient, "building friendly" UPS.

### **Microprocessor Control**

Falcon Electric's SG Series UPS incorporates advanced microprocessor technology. This technology makes possible a high level of internal UPS control and management. With the supplied UPSILON® software, all SG Series UPS models support unattended shutdown, management, data logging, and self-diagnostics. The software supports MS Windows® 95, 98, NT, 2000, 2000 Server, ME, XP, Novell Netware® 5 & 6, LINUX and FreeBSD. UPSILON for UNIX supports most popular UNIX platforms and OS versions.

### **SNMP/HTTP Remote Management Support**

Our SNMP/HTTP Agent board provides remote management and monitoring over any Ethernet LAN, WAN or the Internet utilizing a 10BaseT-type connection. The optional SNMP/HTTP agent installs via an option slot located behind a cover plate on the back panel of every SG Series model.

### **Extended Battery Bank Option**

All SG Series models have a continuous duty inverter and support the addition of optional external battery/charger packs. Whether your application requires a few additional minutes or hours, the SG Series will be ready. Falcon also offers optional battery charger upgrades for faster recharging. Please specify your extended battery and charger requirements at the time of your initial order.

### **Frequency Converter Option**

With a factory modification at the time of order, any SG Series model can be configured for use as an international frequency converter. This makes the SG Series UPS Plus an ideal choice for worldwide power applications. Without this modification, all SG series models will detect the incoming utility line frequency and automatically set its output frequency to match.

# CHAPTER 2

## INSTALLATION INSTRUCTIONS

1. Verify the following is included in the UPS shipping carton:  
(1) UPS, (1) Software Diskette(s) & Manual, (1) Power Cord (800VA-1KVA models only),  
(1) Owners Manual & (1) UPS/Computer Cable.
2. Verify the UPS unit is configured for the proper input/output voltage and frequency. This information is stated on the nameplate label located on the rear or the side panel of the unit. If any special input plug and output receptacle configurations were specified at the time of order, verify for proper configuration.
3. Set the dip switches located on the UPS rear panel for the nominal UPS output voltage desired. **See the dip switch setting tables located on page 6.**

In most cases the nominal UPS output voltage should be set to match the incoming utility voltage. This will assure a close matching voltage in the event the UPS is placed on bypass. **NOTE: Disregard the "ON" marking on the side of the actual dip switch housing; use the tables in this manual or the silkscreen on the UPS rear panel only.**

**Dip switch 3 "enables" or "disables" the "Green Mode" function.** The UPS is shipped from the factory with the switch set in the "disabled" position (up). If SW3 is switched down or to the "enabled" position, the Green Mode function is activated. When the load connected to the output of the UPS drops to under 10% of the full rated UPS output for 30 seconds, the UPS is automatically placed into bypass and the inverter is turned off. **NO BATTERY BACKUP IS PROVIDED AFTER THE GREEN MODE HAS ACTIVATED.**

Dip switch settings must be made while the UPS is turned off. Any changes made while the UPS is turned on will not take effect until the UPS is turn off and back on again since the switch settings are read by the microprocessor only during initial UPS power up.

4. To prevent accelerated battery discharge during shipment, the 1-3kVA models have had the battery fuse removed. **INSTALL THE BATTERY FUSE PRIOR TO TURNING ON THE UPS INPUT CIRCUIT BREAKER OR PLUGGING IN THE UPS. Prior to installing the battery fuse, depress the battery pre-charge button located on the UPS rear panel for two seconds prior to inserting the battery fuse. Not applicable to 1kVA models.**

### **CAUTION**

**NEVER REMOVE THE BATTERY FUSE WHILE THE UPS AC CIRCUIT BREAKER IS TURNED ON AND OPERATING FROM THE UTILITY VOLTAGE OR UPS DAMAGE MAY RESULT. THE UPS MUST BE COMPLETELY SHUT DOWN PRIOR TO DISABLING THE INTERNAL BATTERY SUPPLY.**

### **CAUTION**

In the event this UPS is to be turned off or stored for more than four weeks, the battery fuse must be removed to prevent excessive battery discharge. If placed in long-term storage, every four months the UPS must be plugged in and turned on for 24 hours to allow the batteries to recharge and prevent battery damage due to the normal battery self-discharge associated with sealed lead-acid batteries. Failure to follow these procedures may cause battery damage and invalidate your warranty.



5. For SG800VA - SG1kVA and 208-240V models, connect the power cord to the UPS inlet located on the UPS rear panel. On SG1.5K - SG3K 120V models the line cord is permanently attached to the UPS.
6. Select a suitable location for the UPS, near enough to the computer or equipment to be protected. Connect the power cord(s) for the equipment to be protected to the UPS output receptacles.

**VERIFY THE TABLE OR SURFACE SUPPORTING THE UPS WILL SUPPORT THE WEIGHT OF THE UPS AND ANY OPTIONAL EXTENDED BATTERY BANKS.**

800VA-1KVA UPS MODELS = 33 lbs. (14.9 kg)

1.5KVA- 2KVA UPS MODELS = 68.4 lbs. (31 kg)

3KVA UPS MODELS = 81.4 lbs. (37 kg)

2 & 3KVA-1TX, -1TXI, -2TX & -2TXI models = 150 lbs. (68 kg)

MINI-TOWER EXTENDED BATTERY BANKS = 123 lbs. (55.8 kg) MAX. (EACH BANK)

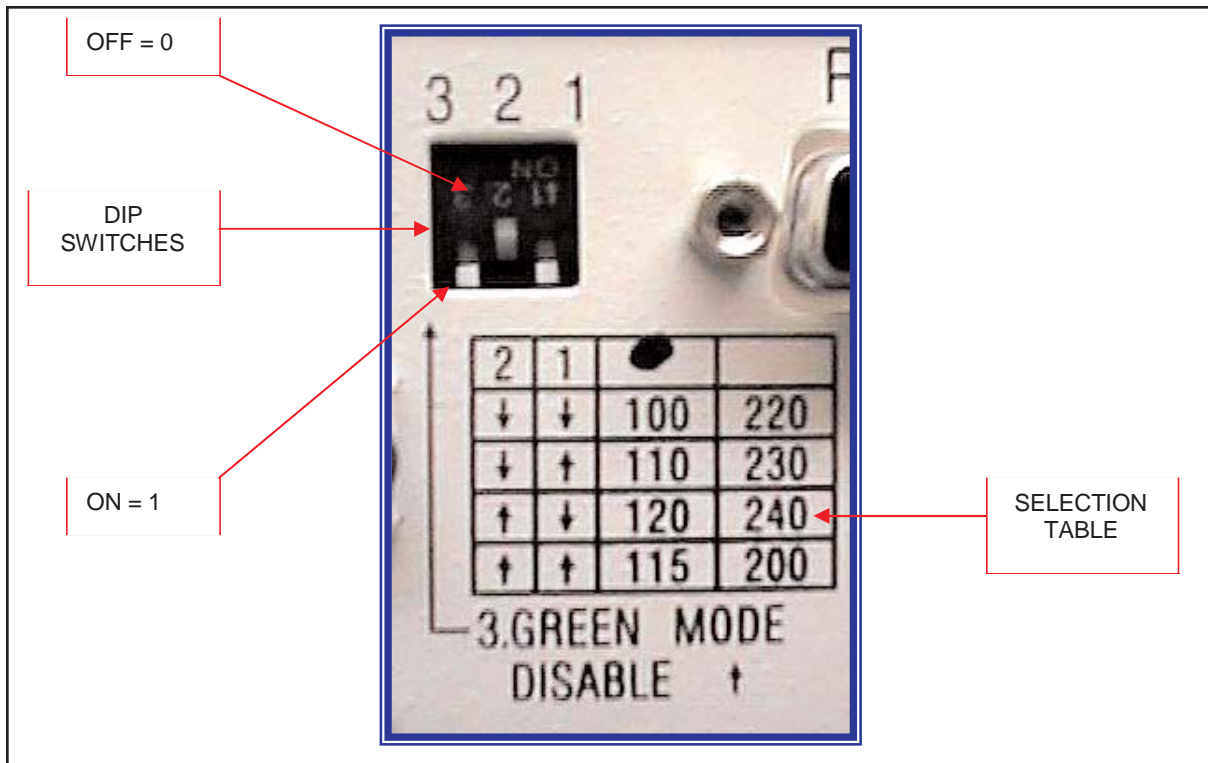
FLOOR STANDING EXTENDED BATTERY BANKS = 363 lbs. (165 kg) MAX. (EACH BANK)

7. If extended battery banks are to be connected to the UPS, please refer to page 8 for further instructions.
8. If unattended computer shutdown and monitoring are desired, connect the green UPS/Computer cable to the DB-9 connector located on the UPS rear panel. Then install the shutdown and monitoring software provided with the UPS. For your reference, UNIX shutdown and monitoring software is available from Falcon Electric at an additional cost.
9. Verify the location selected has adequate ventilation to allow for the proper cooling of the UPS.  
**DO NOT BLOCK UPS FANS OR AIR VENTS. THE UPS MUST NOT BE INSTALLED IN AN ENCLOSED AREA.**
10. Plug the UPS power cord into the nearest grounded wall outlet. SG1K-2T 208-240V models will automatically turn on since they do not have an input circuit breaker. For all other SG models, go to step 12.
11. Turn the input circuit breaker located on the UPS rear panel to the "on" position. The internal UPS fan and front panel "line" indicator should turn on, followed by the "bypass" LED, and after several seconds, the "inverter" LED.
12. Turn on the connected equipment and verify the UPS does not go into overload by observing the front panel load indicator LEDs.
13. The UPS, optional external battery bank(s) and additional chargers should be plugged in and turned on for 24 hours to charge the batteries. During this initial 24 hour charging period, battery backup time may be substantially reduced.

**IMPORTANT**

**TO TURN OFF THE UPS, SWITCH OFF THE INPUT CIRCUIT BREAKER LOCATED ON THE UPS REAR PANEL AND PRESS THE ON/OFF BUTTON LOCATED ON THE UPS FRONT PANEL UNTIL THE UPS BEEPS. THE UPS WILL RUN FOR ABOUT 30 SECONDS AND SHUTDOWN. DO NOT PRESS THE ON/OFF BUTTON OR TURN THE CIRCUIT BREAKER ON AGAIN DURING THE SHUTDOWN PROCESS OR THE UPS WILL GO TO AN ALARM CONDITION, WARNING THAT THE UPS WAS NOT SHUTDOWN PROPERLY. SHOULD THIS OCCUR, TURN OFF THE INPUT CIRCUIT BREAKER AGAIN AND WAIT UNTIL THE UPS SHUTS DOWN.**

**VIEW OF DIP SWITCHES LOCATED ON THE UPS REAR PANEL**



**SWITCH SETTINGS FOR -1 MODELS**

| SW2  | SW1  | VOLTAGE                |
|------|------|------------------------|
| Down | Down | 100V                   |
| Down | Up   | 110V                   |
| Up   | Down | 120V (Factory default) |
| Up   | Up   | 115V                   |

**SWITCH SETTINGS FOR -2 MODELS**

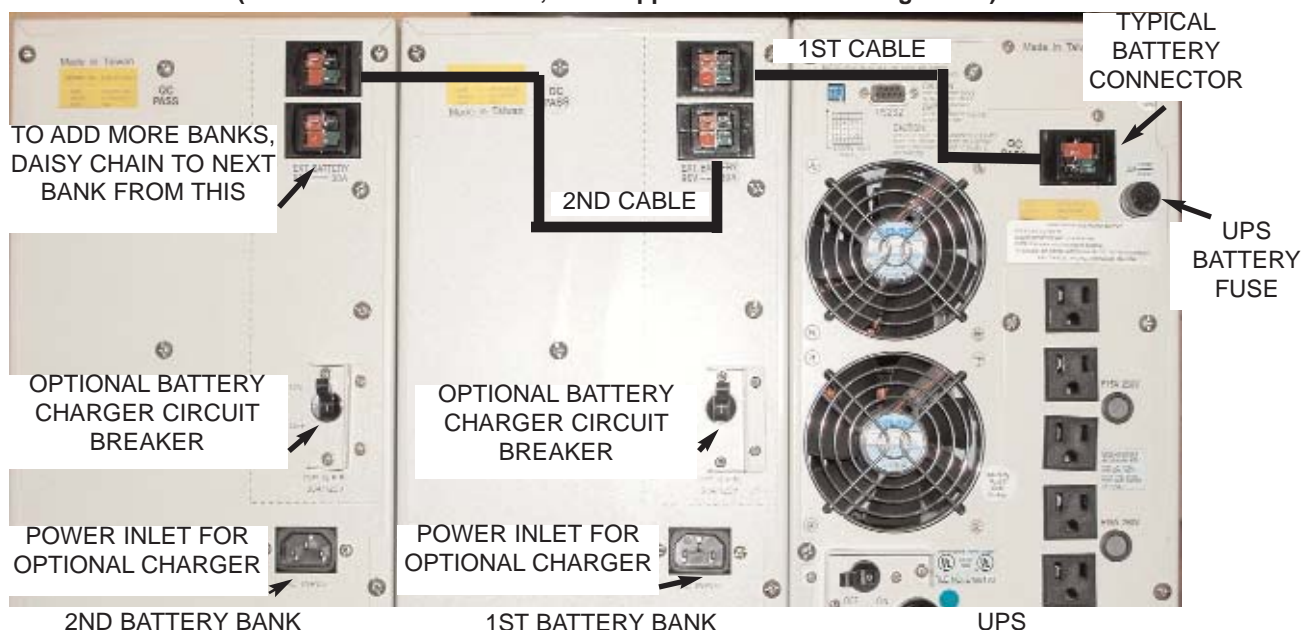
| SW2  | SW1  | VOLTAGE                |
|------|------|------------------------|
| Down | Down | 220V                   |
| Down | Up   | 230V (Factory Default) |
| Up   | Down | 240V                   |
| Up   | Up   | 200V                   |

**GREEN MODE SWITCH SETTINGS FOR ALL MODELS**

| SW3  | FUNCTION       |
|------|----------------|
| Down | GREEN MODE ON  |
| Up   | GREEN MODE OFF |



**TYPICAL EXTENDED BATTERY BANK & UPS INTERCONNECTION**  
(Mini-tower models shown; same applies for floor standing banks)



**INSTALLATION PROCEDURE FOR EXTENDED BATTERY BANKS**

1. Remove the battery fuse located on the UPS rear panel. See illustration above.
2. Locate the battery interconnect cable(s).
3. Connect one end of the battery interconnect cable to the the UPS battery connector. Connect the other end of the cable to the top battery connector on the first battery bank. See illustration above.
4. If a second battery bank is to be connected, connect one end of the second battery interconnect cable to the bottom battery connector on the first battery bank and connect the other end of the cable to the top battery connector of the second battery bank. (See illustration above.)
5. Follow the instructions in the proceeding step for additional battery banks.
6. Reinstall the battery fuse. **A popping sound may be heard when inserting the fuse. This is normal as the battery banks are pre-sharing the UPS.**
7. For all battery banks that have the battery charger option installed from the factory, perform the following:
  - a. Verify the battery charger circuit breaker is in the off (down) position.
  - b. On the battery bank nameplate label located on the rear panel, verify the battery charger input voltage matches your utility source (120Vac or 230Vac).
  - c. Connect the input line cord(s) to the battery bank(s) power inlet.
  - d. Plug the other end of the power cord into a utility receptacle.
  - e. Turn on the battery charger circuit breaker(s) (up).
  - f. The batteries in the external battery banks are now being charged.

**NOTE:** Internal battery bank chargers do not charge the batteries inside the UPS.

**NOTE:** When the battery banks and UPS need placed shutdown for more than two weeks, turn off the battery charger circuit breaker, disconnect the interconnecting cables and remove the battery fuse from the UPS battery or damage may occur.

8. RETURN TO PAGE 5, Paragraph 8 FOR FURTHER INSTALLATION INSTRUCTIONS.

## SG800VA-3kVA TOWER EXTENDED BATTERY BANK SELECTION GUIDE

### FOR 800VA-1KVA MODELS

|   |  |  |  |   |   |
|---|--|--|--|---|---|
| BATTERY OPTION MODELS W/O Charger             | SGB2S7-1K3   | SGB4S7-1K3   | SGB5S7-1K3   | SGB10S7-1K6   | SGB10S7-1K6   |
| BATTERIES                                     | 6 Pieces 12V, 7AH                                      | 12 Pieces 12V, 7AH                                     | 15 Pieces 12V, 7AH                                     | 30 Pieces 12V, 7AH  | 60 Pieces 12V, 7AH  |
| BATTERIES IN UPS                              | 3 each of 12V, 7AH                                     |  |  |   |   |
| # of CASES<br>Inches (mm)                     | 1 Mini-Tower<br>13.8 x 7.6 x 18.9<br>(350 x 193 x 480) | 1 Mini-Tower<br>13.8 x 7.6 x 18.9<br>(350 x 193 x 480) | 1 Mini-Tower<br>13.8 x 7.6 x 18.9<br>(350 x 193 x 480) | 1 Floor Standing<br>32.1 x 10.2 x 21.8<br>(814 x 259 x 554) | 2 Floor Standing<br>32.1 x 10.2 x 21.8<br>(814 x 259 x 554) |
| RUN TIME @ 100W                               | 215 Min.   | 390 Min.   | 480 Min.   | 960 Min.  | 2000 Min.   |
| RUN TIME @ 200W                               | 107 Min.   | 210 Min.   | 255 Min.   | 520 Min.  | 1070 Min.   |
| RUN TIME @ 400W                               | 49Min.   | 96 Min.  | 120 Min.   | 255 Min.  | 550 Min.  |
| RUN TIME @ 700W                               | 23Min.   | 50 Min.  | 80 Min.  | 140 Min.  | 260 Min.  |
| CHARGER OPTION INFORMATION                    |  |  |  |   |   |
| BATTERY OPTION MODELS With 120Vac Charger     | SGB2S7-1K3-1   | SGB4S7-1K3-1   | SGB5S7-1K3-1   | SGB10S7-1K6-1   | SGB10S7-1K6-1   |
| BATTERY OPTION MODELS With 200-240Vac Charger | SGB2S7-1K3-2   | SGB4S7-1K3-2   | SGB5S7-1K3-2   | SGB10S7-1K6-2   | SGB10S7-1K6-2   |
| CHARGER OUTPUT                                | 41.1Vdc @ 4.5A   | 41.1Vdc @ 4.5A   | 41.1Vdc @ 4.5A   | 41.1Vdc @ 4.5A  | 41.1Vdc @ 4.5A  |
| # OF CHARGERS                                 | 1  | 1  | 1  | 2   | 4   |

### FOR 1.5KVA-2KVA MODELS

|   |  |   |   |   |   |   |
|---|--|---|---|---|---|---|
| BATTERY OPTION MODELS W/O Charger             | SGB2S7-2K3   | SGB2S7-2K3  | SGB5S7-2K6  | SGB2S7-2K3  | SGB5S7-2K6  | SGB5S7-2K6  |
| BATTERIES                                     | 12 Pieces of 12V, 7AH                                  | 24 Pieces of 12V, 7AH                                   | 30 Pieces of 12V, 7AH                                       | 36 Pieces of 12V, 7AH                                   | 60 Pieces of 12V, 7AH                                       | 90 Pieces of 12V, 7AH                                       |
| BATTERIES IN UPS                              | 6 each of 12V, 7AH                                     |   |   |   |   |   |
| # of CASES<br>Inches (mm)                     | 1 Mini-Tower<br>13.8 x 7.6 x 18.9<br>(350 x 193 x 480) | 2 Mini-Towers<br>13.8 x 7.6 x 18.9<br>(350 x 193 x 480) | 1 Floor Standing<br>32.1 x 10.2 x 21.8<br>(814 x 193 x 554) | 3 Mini-Towers<br>13.8 x 7.6 x 18.9<br>(350 x 193 x 480) | 2 Floor Standing<br>32.1 x 10.2 x 21.8<br>(814 x 193 x 554) | 3 Floor Standing<br>32.1 x 10.2 x 21.8<br>(814 x 193 x 554) |
| RUN TIME @ 300W                               | 170 Min.   | 310 Min.  | 390 Min.  | 470 Min.  | 760 Min.  | 1200 Min.   |
| RUN TIME @ 500W                               | 95 Min.  | 180 Min.  | 225 Min.  | 260 Min.  | 465 Min.  | 690 Min.  |
| RUN TIME @ 700W                               | 63 Min.  | 120 Min.  | 155 Min.  | 185 Min.  | 320 Min.  | 490 Min.  |
| RUN TIME @ 1000W                              | 39 Min.  | 79 Min.   | 100 Min.  | 120 Min.  | 215 Min.  | 330 Min.  |
| RUN TIME @ 1400W                              | 24 Min.  | 51 Min.   | 64 Min.   | 80 Min.   | 140 Min.  | 225 Min.  |
| CHARGER OPTION INFORMATION                    |  |   |   |   |   |   |
| BATTERY OPTION MODELS With 120Vac Charger     | SGB2S7-2K3-1   | SGB2S7-2K3-1  | SGB5S7-2K6-1  | SGB2S7-2K3-1  | SGB5S7-2K6-1  | SGB5S7-2K6-1  |
| BATTERY OPTION MODELS With 208-240Vac Charger | SGB2S7-2K3-2   | SGB2S7-2K3-2  | SGB5S7-2K6-2  | SGB2S7-2K3-2  | SGB5S7-2K6-2  | SGB5S7-2K6-2  |
| CHARGER OUTPUT                                | 82.5Vdc @ 4A   | 82.5Vdc @ 4A  | 82.5Vdc @ 4A  | 82.5Vdc @ 4A  | 82.5Vdc @ 4A  | 82.5Vdc @ 4A  |
| #. OF CHARGERS                                | 1  | 1   | 1   | 1   | 2   | 3   |

### FOR 3KVA MODELS

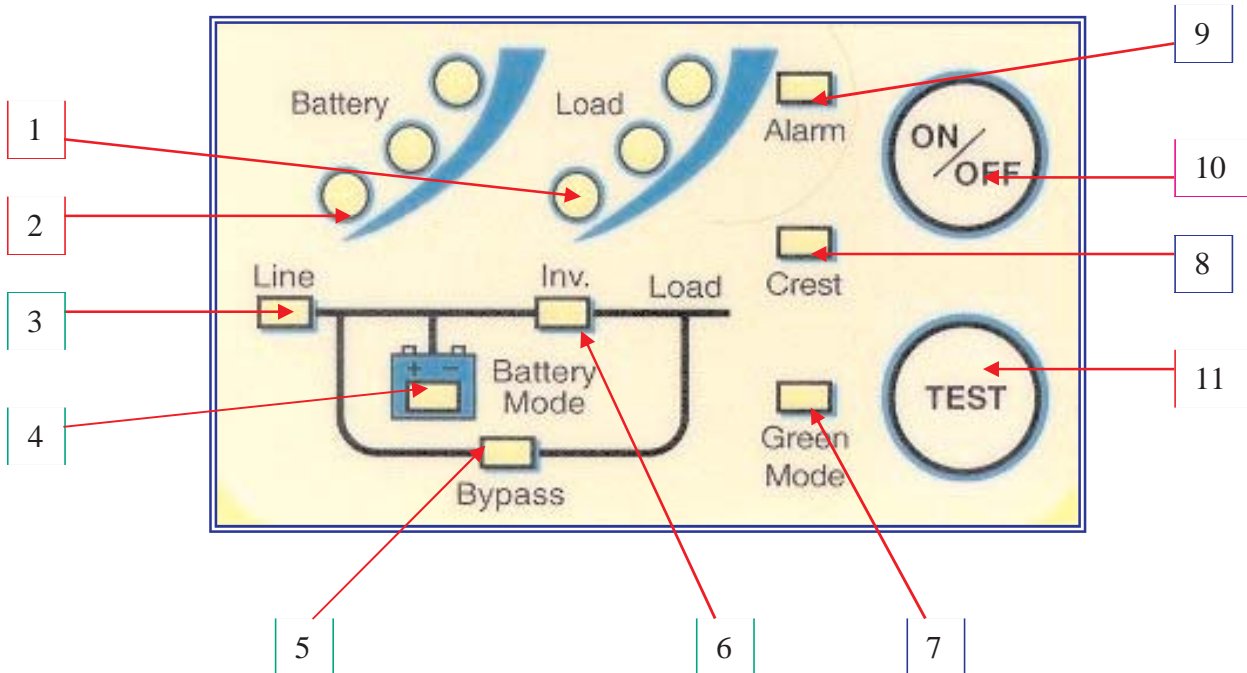
|   |  |   |   |   |   |   |
|---|--|---|---|---|---|---|
| BATTERY OPTION MODELS W/O Charger             | SGB2S7-3K3   | SGB2S7-3K3  | SGB5S7-3K6  | SGB2S7-3K3  | SGB5S7-3K6  | SGB5S7-3K6  |
| BATTERIES                                     | 16 Pieces 12V,7AH                                      | 32 Pieces 12V, 7AH                                      | 40 Pieces 12V, 7AH  | 48 Pieces 12V, 7AH                                      | 80 Pieces 12V, 7AH  | 160 Pieces 12V, 7AH   |
| BATTERIES IN UPS                              | 8 each of 12V, 7AH                                     |   |   |   |   |   |
| # of CASES<br>H x W x D<br>Inches (mm)        | 1 Mini-Tower<br>13.8 x 7.6 x 18.9<br>(350 x 193 x 480) | 2 mini-Towers<br>13.8 x 7.6 x 18.9<br>(350 x 193 x 480) | 1 Floor Standing<br>32.1 x 10.2 x 21.8<br>(814 x 259 x 554) | 3 Mini-Towers<br>13.8 x 7.6 x 18.9<br>(350 x 193 x 480) | 2 Floor Standing<br>32.1 x 10.2 x 21.8<br>(814 x 259 x 554) | 4 Floor Standing<br>32.1 x 10.2 x 21.8<br>(814 x 259 x 554) |
| RUN TIME @ 500W                               | 135 Min.   | 260 Min.  | 310 Min.  | 380 Min.  | 640 Min.  | 1350 Min.   |
| RUN TIME @ 1000W                              | 59 Min.  | 115 Min.  | 140 Min.  | 170 Min.  | 300 Min.  | 620 Min.  |
| RUN TIME @ 1500W                              | 33 Min.  | 68 Min.   | 84 Min.   | 105 Min.  | 190 Min.  | 400 Min.  |
| RUN TIME @ 2100W                              | 20.5 Min.  | 43 Min.   | 57 Min.   | 69 Min.   | 125 Min.  | 270 Min.  |
| CHARGER OPTION INFORMATION                    |  |   |   |   |   |   |
| BATTERY OPTION MODELS With 120Vac Charger     | SGB2S7-3K3-1   | SGB2S7-3K3-1  | SGB5S7-3K6-1  | SGB2S7-3K3-1  | SGB5S7-3K6-1  | SGB5S7-3K6-1  |
| BATTERY OPTION MODELS With 208-240Vac Charger | SGB2S7-3K3-2   | SGB2S7-3K3-2  | SGB5S7-3K6-2  | SGB2S7-3K3-2  | SGB5S7-3K6-2  | SGB5S7-3K6-2  |
| CHARGER OUTPUT                                | 110Vdc @4.5A   | 110Vdc @4.5A  | 110Vdc @4.5A  | 110Vdc @4.5A  | 110Vdc @4.5A  | 110Vdc @4.5A  |
| # OF CHARGERS                                 | 1  | 1   | 1   | 1   | 2   | 4   |

**NOTE:** The backup times stated are for reference only. Backup time may vary due to the type of load, battery age or condition, environmental conditions, etc.

# CHAPTER 3

## OPERATION

UPS FRONT PANEL INDICATOR AND FUNCTION KEYS



### 1. LOAD LEVEL INDICATOR LEDS

- \*The first or bottom LED is lit when the output load is greater than 25% of the rated output of the UPS.
- \*The second LED is lit when the output load is greater than 50% of the rated output of the UPS.
- \*The third LED is lit when the output load is greater than 75% of the rated output of the UPS.

### 2. BATTERY LEVEL INDICATOR LEDS

- \*The third or top LED is lit when the battery is fully charged.
- \*The Second LED is let when the battery level is above the low battery warning level.
- \*The first LED is lit when the battery level is above the battery cutoff voltage.

### 3. LINE / SITE WIRING FAULT INDICATOR LED

For models configured for standard 120 volt domestic usage, this LED is lit to a steady on state when utility voltage is present. However, should the LED flash on and off, it is an indication that the HOT and NEUTRAL wires are reversed somewhere in the building wiring. Typically at the wall outlet. It is normal for this LED to flash with 208 and 240 volt domestic models as these voltages are normally LINE to LINE, without a neutral.

### 4. BATTERY MODE INDICATOR LED

This LED is lit when the unit is operating from battery.

5. **BYPASS INDICATOR LED**

When this LED is lit the UPS bypass is active. Should the Alarm LED be lit at the same time, the UPS detected an internal failure and the UPS must be serviced.

6. **INVERTER INDICATOR LED**

When this LED is lit, the UPS inverter is operating and powering the connected load.

7. **GREEN MODE LED INDICATOR**

This LED is lit when the connected output load of the UPS drops to under 10% of the full rated output of the UPS, providing SW3 is in the "down" position (Green Mode Enabled) as shown on page 6. The UPS is automatically set to bypass mode and the inverter is turned off, reducing the power requirement. **NO BATTERY BACKUP IS PROVIDED IN THIS MODE.** (The UPS is shipped from the factory with SW3 in the "up" or disabled position.)

8. **OVER CREST INDICATOR LED**

This LED lights when the connected load getting close to the peak current rating of the UPS.

9. **ALARM INDICATOR LED**

This LED is lit during the following conditions:

- a. The inverter voltage is too high or low.
- b. UPS over-temperature condition.
- c. The battery voltage is too high.
- d. The internal DC Bus has an under or over voltage condition.
- e. The internal microprocessor or memory has failed.

10. **ON / OFF BUTTON**

**The following describes the different modes of operation for this button:**

- a. Depressing this button when the UPS is off, and the utility voltage is not present, or with the UPS input circuit breaker in the off position, will cause the UPS to DC start and run on internal battery until the ON/OFF button is depressed again.
- b. Pressing this button while the UPS is on, and utility is present, will place the UPS into bypass mode.
- c. Pressing this button when with the UPS input circuit breaker off, or when the utility voltage is not present, will turn off the UPS.

**TO TURN UPS ON:** CONNECT THE UPS TO UTILITY POWER AND TURN ON THE MAIN CIRCUIT BREAKER LOCATED ON THE REAR PANEL. DO NOT PRESS THE "ON" BUTTON LOCATED ON THE FRONT PANEL OR THE UPS WILL BE PLACED INTO BYPASS MODE.

**TO TURN UPS OFF:** TURN OFF THE MAIN CIRCUIT BREAKER LOCATED ON THE REAR PANEL AND DEPRESS THE "ON/OFF" BUTTON UNTIL THE UPS BEEPS AND WAIT FOR THE UPS TO SHUTDOWN AND TURN OFF (ABOUT 30 SECONDS).

11. **TEST BUTTON**

The following describes the different modes of operation for this button:

- a. Pressing the Test button while in Green Mode will disable Green Mode.
- b. Pressing the Test button while utility is present will put the UPS through a self-test diagnostic.
- c. Pressing the Test button while in battery mode will turn the battery audible alarm off. Depressing it again will turn the audible alarm back on.

## AUDIBLE ALARMS

Audible alarm signals are divided into two different levels of alarm status. Category one alarms represent normal or correctable operational alarms. Category two alarms are sounded in the event of abnormal operation.

### 1. Category one alarms:

- a. Two short beeps followed by three short beeps.  
Notifies the user that the SG UPS is configured with the optional battery pack and is in BATTERY MODE.  
**-- --- = SG UPS IS IN BATTERY MODE**
- b. A continuous short beep.  
The SG UPS is operating from battery and is in a LOW BATTERY operation.  
**----- = SG UPS IS IN A LOW BATTERY CONDITION**
- c. One long beep prior to a short beep.  
The SG UPS is in an OVERLOADED, OVER CREST CONDITION. Remove some load from the UPS output to correct this condition.  
**-- = SG UPS IS IN OVERLOAD OR OVER CREST**
- d. One short beep is sounded when either the ON/OFF or TEST buttons are pressed and held. This notifies the user the associated actions have been initiated by the UPS.  
**- = WHEN SG UPS FRONT PANEL ON/OFF AND TEST BUTTONS ARE DEPRESSED.**
- e. One short beep is sounded when the SELF-TEST button has been pressed and held. This notifies the user that the self test has been started.  
**- = WHEN SG UPS FRONT PANEL TEST BUTTON DEPRESSED.**

### 2. Category two alarms:

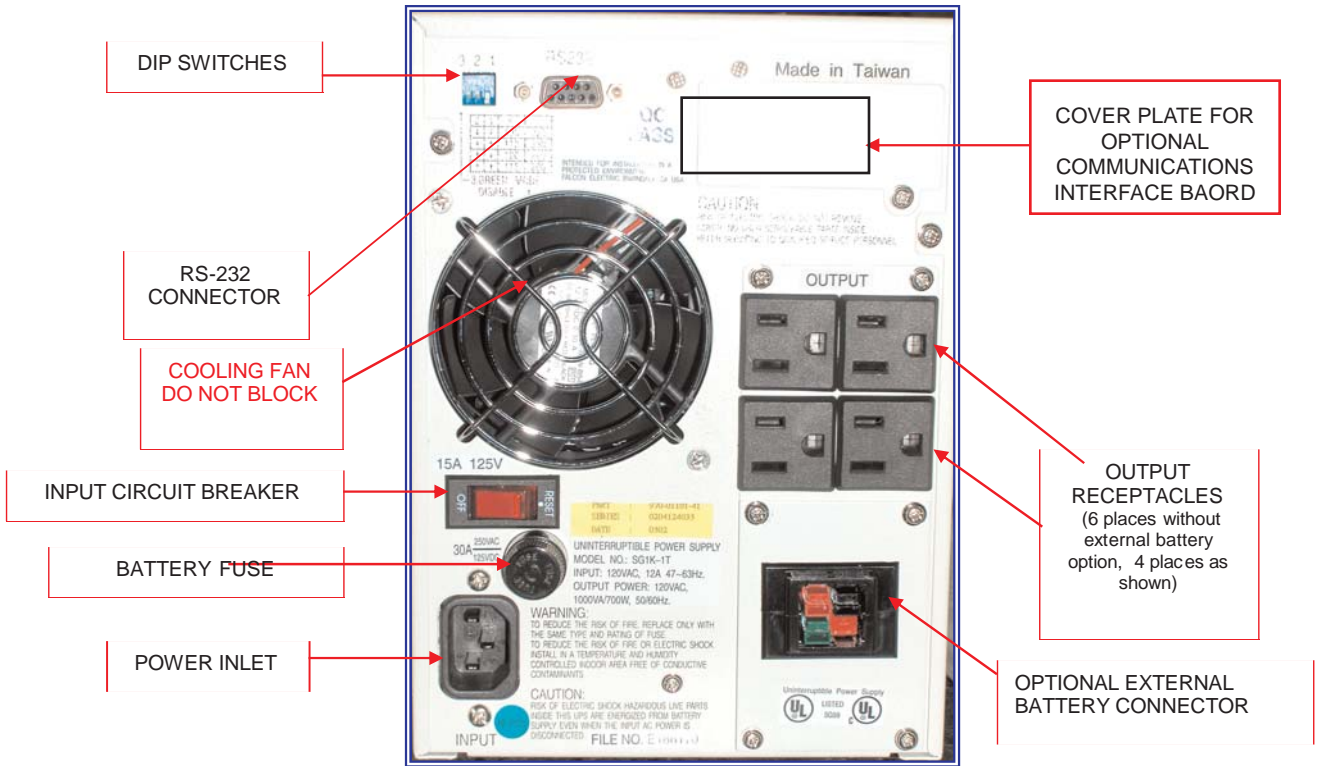
- a. Three short beeps indicate the SG UPS output voltage is out of proper operating range.  
**--- = SG UPS OUTPUT VOLTAGE IS OUT OF PROPER RANGE.**
- b. Four short beeps indicate the SG UPS output frequency is out of proper operating range. The UPS must be repaired.  
**---- = SG UPS OUTPUT FREQUENCY IS OUT OF PROPER RANGE.**
- c. Five short beeps indicate the SG UPS is in an over-temperature condition. Check for proper UPS cooling fan operation or blockage.  
**----- = SG UPS INTERNAL TEMPERATURE IS TOO HIGH.**
- d. Should the internal POWER UP SELF-TEST fail, the SG UPS will sound the following alarms denoting the failure mode:
  - \* A continuous rapid beeping for about 5 seconds, then the SG UPS shuts down - The UPS output voltage is out of range.  
**----- = UPS OUTPUT VOLTAGE IS OF RANGE.**
  - \* A continuous rapid beeping for about 2 seconds and the SG UPS shuts down - The SG UPS performed a DC start, but there is no output frequency set in the UPS memory. Plug the UPS into your local utility power and turn the UPS on to set it for your local utility power frequency.  
**----- = The SG UPS performed a DC start, but there is no output frequency set in memory. Connect the UPS to your local utility power and turn on the UPS. Your local utility frequency is now set into the UPS memory. The next time the UPS is DC Started, its output frequency will be set automatically.**



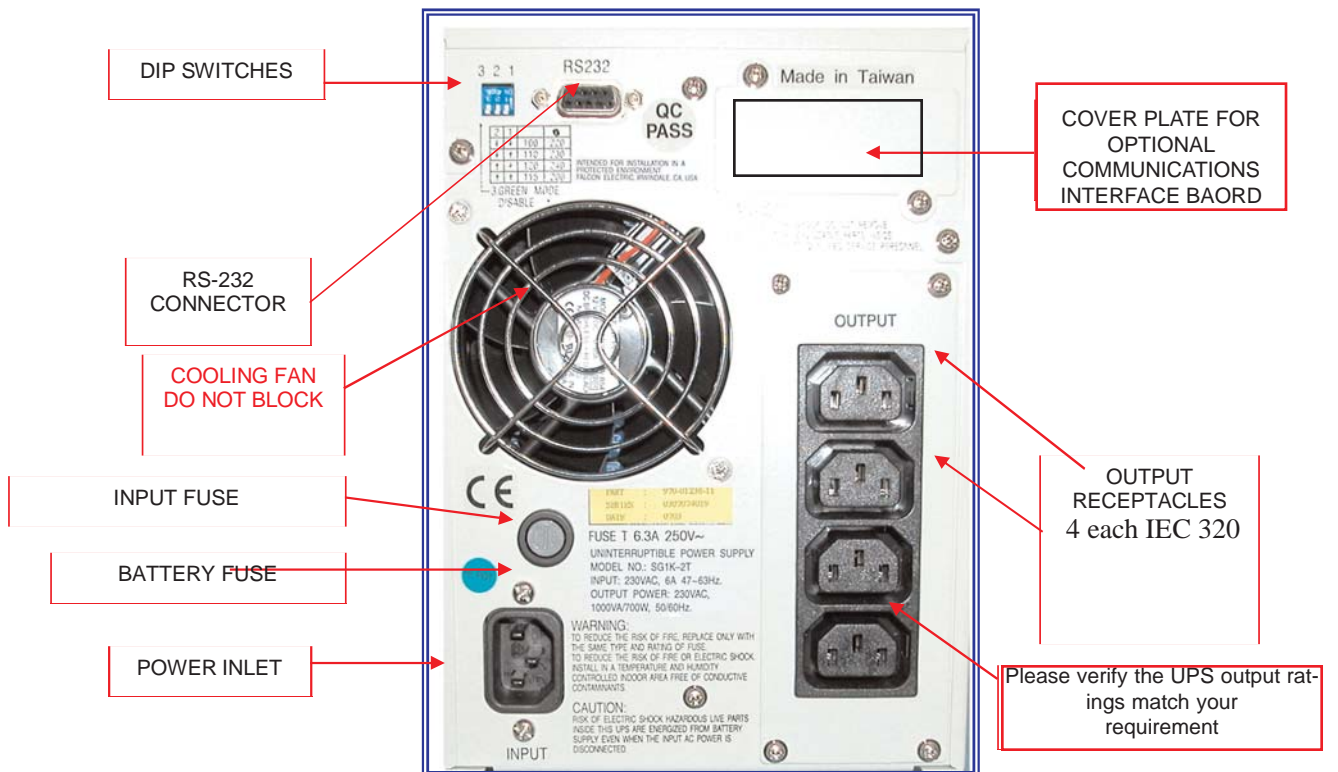
# CHAPTER 4

## REAR PANEL DETAILS

### SG800-1T & SG1K-1T Typical Rear Panel Overview

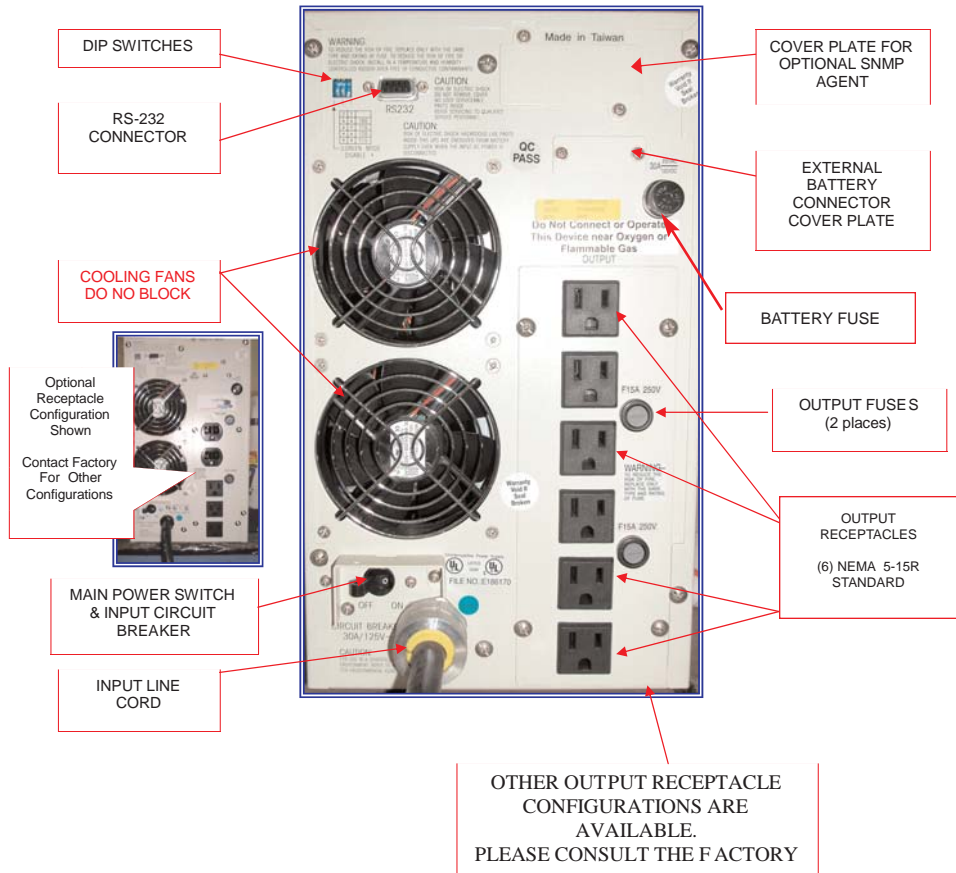


### SG800-2T & SG1K-2T Typical Rear Panel Overview

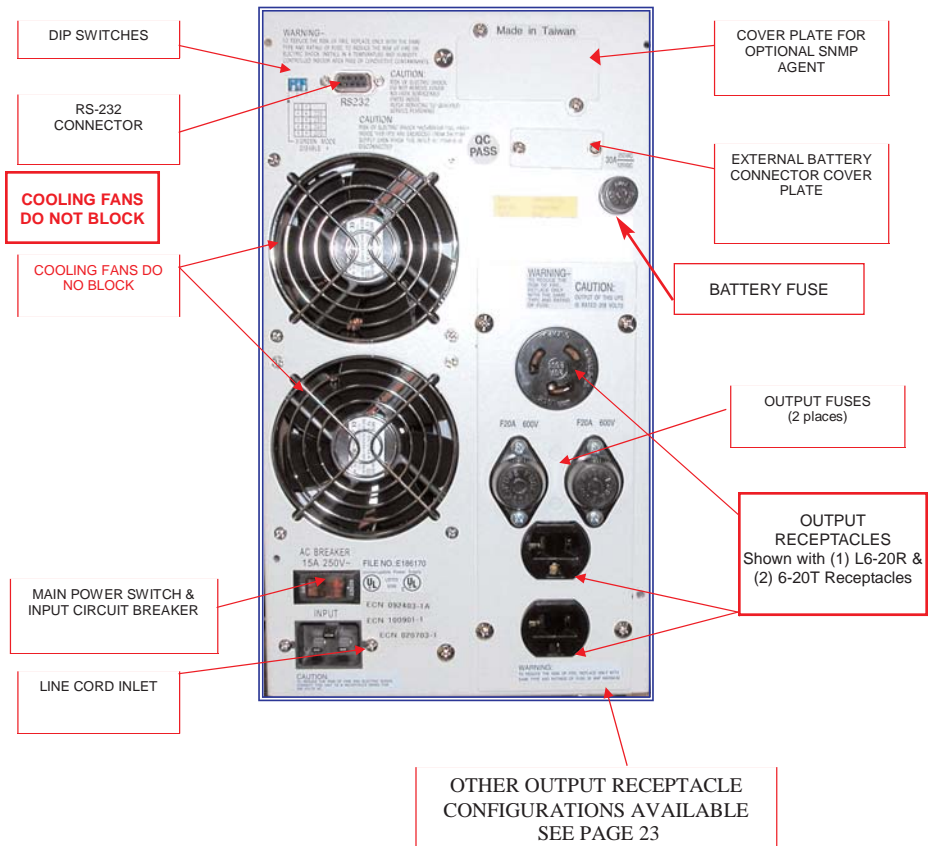




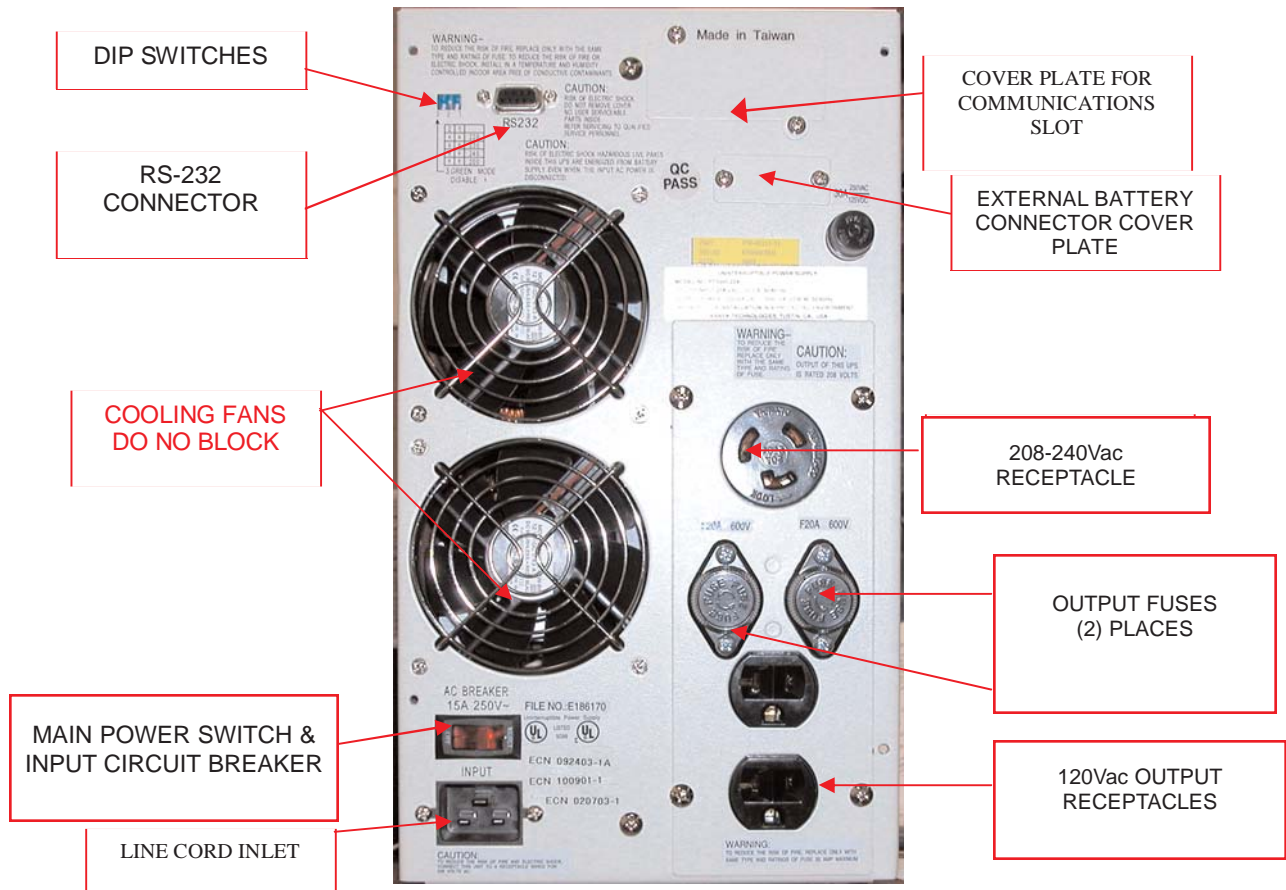
## SG1.5K-1T, SG2K-1T & SG3K-1T Typical Rear Panel Overview



## SG1.5K-2T, SG2K-2T & SG3K-2T Typical Rear Panel Overview



**SG2K-1TX, SG2K-2TX, SG2K-1TXI, SG2K-2TXI, SG3K-1TX, SG3K-2TX, SG3K-1TXI & SG3K-2TXI**  
**Typical Rear Panel Overview**



**SG2K-1TXI, SG2K-2TXI & SG3K-1TXI, SG3K-2TXI Output Configuration**

The SG -2TXI models provide three galvanically isolated 240Vac and 120Vac outputs. The two 120Vac receptacles are an isolated and are derived split phase from the isolated, center tapped 240Vac output. The center tap has been grounded to provide a derived neutral for both 120Vac outlets. The 120V load must be split between the two 120Vac receptacles. The combined power of all 208-240Vac and 120Vac receptacles must never exceed the maximum rated output power of the UPS

**WARNING: never attempt to connect the outputs from each of the duplex 5-15R or 5-20R receptacles together as they are connected to opposing 120Vac phases.**

**SG2K-2TX, SG3K-2TX & SG2K-1TX, SG3K-1TX Output Configurations**

The SG -2TX models provide galvanic isolation only on the 120Vac outlets. The 120Vac outlets have been limited to a 1400 watt maximum output. The 208-240Vac output is supplied directly from the UPS inverter, which is not isolated. The 120V load must be split between the two 120Vac receptacles. The SG -1TX models provide galvanic isolation only on the 208-240Vac outlet. The 120Vac outlets are wired directly to the 120Vac inverter output and up to 100% of the load may be connected to the 120Vac outlets. As an alternate configuration, both -1TX and -2TX models can provided with a single 120Vac output with a derived neutral, please specify at the time of order. Note: The combined load of all outputs must never exceed the total UPS output rating.

# CHAPTER 5

## COMMUNICATIONS INTERFACES

### RS-232 INTERFACE

#### Location:

The RS-232 interface is standard on all SG series UPS models. The port is located on the UPS rear panel, via a DB-9 female connector.

#### Supported Protocols:

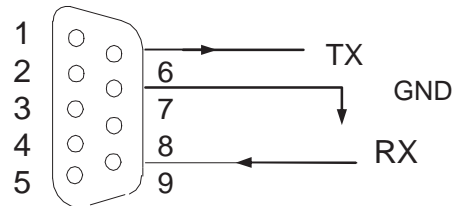
UPSILON 2000 & SEC Smart Mon

BAUD RATE ----- 2400bps

DATA LENGTH---- 8 bits

STOP BIT----- 1 bit

PARITY----- None



DB-9 Connector Pin Assignment

| Pin # | Function explanation | I/O    |
|-------|----------------------|--------|
| 9     | RS 232 Rx            | INPUT  |
| 6     | RS 232 Tx            | OUTPUT |
| 7     | Ground               |        |

#### CAUTION

When making a connection between a computer and the UPS RS-232 port, always use the green cable supplied with the UPS.

#### CAUTION

There are communications options that WILL DISABLE the RS-232 port and render it inoperable. The options are as follows:

- Internal SNMP/HTTP agent option installed into the UPS communications option slot.

The following options WILL NOT affect the operation of the RS-232 port:

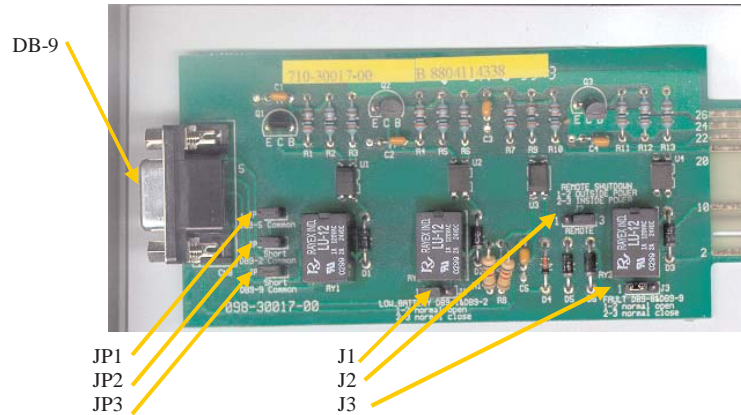
- Falcon Opto Coupler based signal interface board installed to the communications option slot.
- Any Falcon relay based, dry contact signal interface board installed into the communications option slot.

#### CAUTION

DB-9 Signals are not isolated and intended for connection to like RS-232 interfaces. **DO NOT APPLY ANY OTHER VOLTAGES TO THESE PINS!**

## DRY CONTACT & OPTO COUPLER INTERFACE BOARD OPTIONS

### Typical Falcon Dry Contact Relay Board



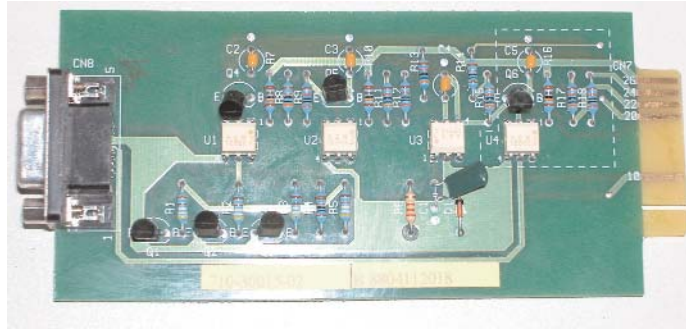
### PIN & JUMPER ASSIGNMENT FOR THE FALCON UA88374 RELAY OPTION BOARD (no on-bypass signal)

| PIN | DESCRIPTION   |
|-----|---|
| 1   | Low Battery ( When UPS reaches low battery, contact activates)<br>(J1, 1-2 short = N.O) (J1, 2-3 short = N.C)   |
| 2   | JP2 shorted = Low Battery common & all other shorted JP commons<br>JP2 open = common for low battery only   |
| 3   | Utility Loss N.O. ( At loss of utility voltage, contact activates)  |
| 4   | Utility Loss N.C. ( At loss of utility voltage, contact activates)  |
| 5   | JP1 shorted = Utility Loss common & all other shorted JP commons<br>JP1 open = Utility Loss common only   |
| 6   | Remote Shutdown common  |
| 7   | Remote Shutdown<br>(J2, 1-2 short = outside power) (J2, 2-3 short = inside power)<br>1-2 shorted. Applying an external 12V signal across the DB-9, pins six and seven, while the UPS is on battery, will turn the UPS off.<br>2-3 shorted. Applying a short directly across the DB-9, pins six and seven, while the UPS is on battery, will turn the UPS off. |
| 8   | Alarm (Upon a UPS fault or failure the contact activates)<br>(J3, 1-2 short = N.O.) (J3, 2-3 short = N.C.)  |
| 9   | JP3 shorted = Alarm common & all other shorted JP commons<br>JP3 open = Alarm common only   |

### PIN & JUMPER ASSIGNMENT FOR THE FALCON UA88376 RELAY OPTION BOARD (with on-bypass signal)

| DB-9F PIN & JUMPER ASSIGNMENTS |   |
|--------------------------------|---|
| PIN                            | DESCRIPTION   |
| 1                              | Low Battery ( When UPS reaches low battery, contact activates)<br>(J1, 1-2 short = N.O) (J1, 2-3 short = N.C)   |
| 2                              | JP2 shorted = Low Battery common & all other shorted JP commons<br>JP2 open = common for low battery only   |
| 3                              | Utility Loss N.O. ( At loss of utility voltage, contact activates)  |
| 4                              | Utility Loss N.C. ( At loss of utility voltage, contact activates)  |
| 5                              | JP1 shorted = Utility Loss common & all other shorted JP commons<br>JP1 open = Utility Loss common only   |
| 6                              | Remote Shutdown common  |
| 7                              | Remote Shutdown<br>(J2, 1-2 short = outside power) (J2, 2-3 short = inside power)<br>1-2 shorted. Applying an external 12V signal across the DB-9, pins six and seven, while the UPS is on battery, will turn the UPS off.<br>2-3 shorted. Applying a short directly across the DB-9, pins six and seven, while the UPS is on battery, will turn the UPS off. |
| 8                              | On Bypass or Alarm (Upon the UPS going to bypass or a UPS failure the contact activates)<br>(J3, 1-2 short = N.O.) (J3, 2-3 short = N.C.)   |
| 9                              | JP3 shorted = On bypass, Alarm common & all other shorted JP commons<br>JP3 open = On bypass, Alarm common only   |

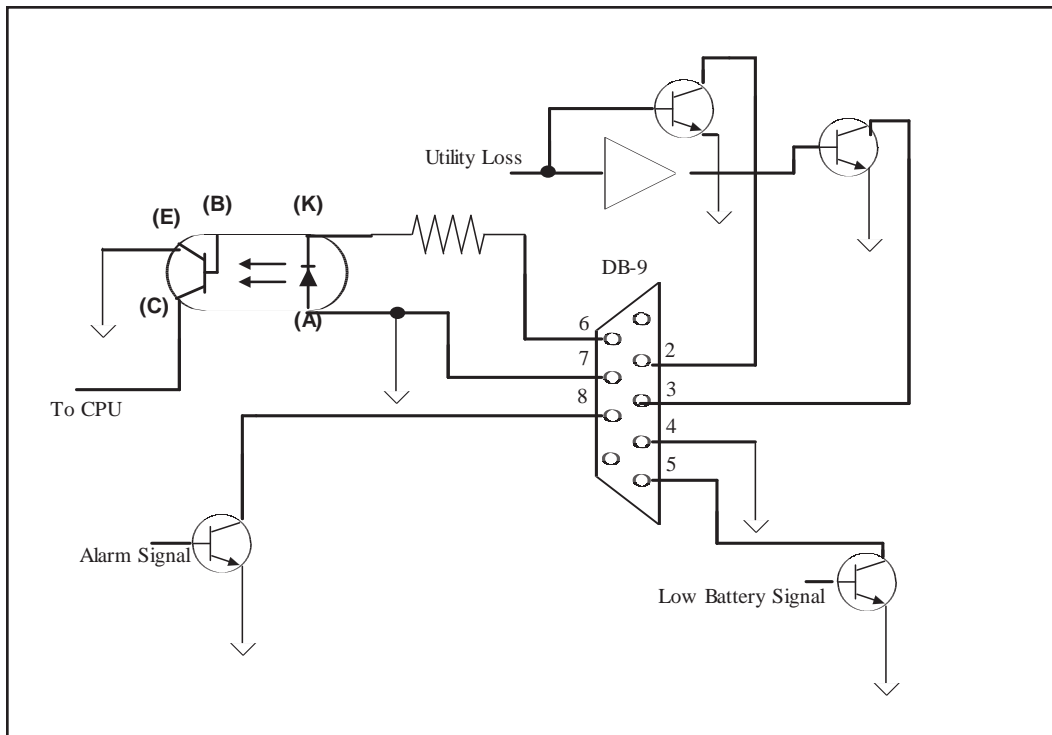
## Typical Falcon Opto-coupler Interface Card



### PIN ASSIGNMENT FOR THE FALCON UA88373 OPTO-COUPLER OPTION BOARD (no-bypass signal)

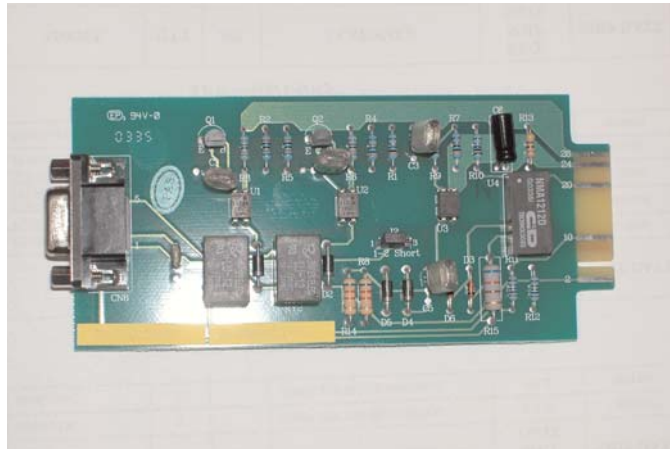
| PIN | DESCRIPTION   |
|-----|---|
| 1   | Not Used  |
| 2   | Utility Loss (N.O.) (Closes upon utility loss)  |
| 3   | Utility Loss (N.C.) (Opens upon utility loss)   |
| 4   | Common for pins 2, 3 & 5  |
| 5   | Low Battery (N.O.) (Closes at low battery)  |
| 6   | Remote Shutdown<br>Applying a +5-+12Vdc voltage level for >500ms,<br>while the UPS is on battery will shutdown the<br>UPS |
| 7   | Not Used  |
| 8   | Not Used  |
| 9   | Not Used  |

### OPTO Board Internal Circuitry





## APC Style Dry Contact Relay Board



### PIN & JUMPER ASSIGNMENT FOR THE FALCON UA88377 RELAY OPTION BOARD (APC Style Board)

| PIN | DESCRIPTION                                 |
|-----|---|
| 1   | Remote Shutdown (on battery operation only) |
| 2   | Remote Shutdown Common                      |
| 3   | Not Used                                    |
| 4   | Low Battery Common                          |
| 5   | Low Battery (N.O.)                          |
| 6   | Not Used                                    |
| 7   | Not Used                                    |
| 8   | Utility Fail (+/- 10Vdc)                    |
| 9   | Utility Fail (+/- 10Vdc)                    |



## Maintenance & Technical Support

### 1. **Care & Maintenance**

Falcon® SG Series UPSs are designed to be maintenance-free. They can be cleaned with a damp cloth or non-abrasive cleanser, providing the UPS is turned off and the input plug is disconnected from the utility source.

On a regular basis, check the vents to make sure they are kept free from accumulation of dust, dirt or lint.

### 2. **Battery Life vs. Temperature**

For full battery life, keep the UPS close to an ambient temperature of 77°F.

The batteries should never be exposed to temperatures below 40°F and above 104°F.

### 3. **Battery Replacement**

This UPS contains sealed maintenance-free batteries (VRLA). When situated in a typical office environment, with the proper charging and limited cycling, the batteries can last many years. **In home, office or computer room environments, the batteries should be replaced every three to five years.**

**Should you require battery replacement, contact the Falcon Service Department (see page 21 for contact information).**

#### **WARNING**

Never attempt to service batteries. High voltage exists within the unit, which could cause electrical shock. **Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions.** Keep unauthorized personnel away from batteries.

When replacing the UPS batteries, use the same number and type of batteries.

#### **NEVER**

- a. **NEVER** dispose of batteries in a fire, as batteries will explode.
- b. **NEVER** dispose of used batteries or the UPS in the trash or landfill as it is against federal and state laws. **The UPS and Batteries must be recycled.** For UPS and battery recycling information, please contact our service department for the name and address of the nearest battery recycling facility.

#### **CAUTION**

- a. Do not open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.
- b. A battery can present a risk of electrical shock and high short circuit current. **REFER ALL BATTERY SERVICING OR REPLACEMENT TO A QUALIFIED SERVICE TECHNICIAN. NEVER ATTEMPT TO REPLACE THE BATTERIES YOURSELF.**

The following precautions should be observed by a qualified technician when working with batteries:

1. Remove watches, rings, or other metal objects.
2. Use tools with insulated handles.
3. Wear rubber gloves and boots.
4. Do not lay tools or metal parts on top of batteries.

4. **Storing the UPS and Batteries**

Should you need to store the UPS for a long period, fully recharge the battery just prior to storage and recharge the battery every 4 months by plugging the UPS into a power outlet. It is recommended that the batteries charge for 24 hours after long-term storage.

5. **FCC Considerations**

This equipment generates and uses radio frequency energy and if not installed and used properly in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. All models covered in this manual have been tested and found to comply with the limits for a Class A computing device, in accordance with the specifications in FCC regulations, Part 15, Subpart J, which are designed to provide reasonable protection against such interference.

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:

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

## 6. Technical Support

Your FALCON® Electric SG Series UPS is backed by one of the finest customer service teams assembled. Write, call, fax or email should you require technical assistance or service.

Falcon Electric Inc.  
5106 Azusa Canyon Road  
Irwindale, CA. 91706  
Service 800.842.6940  
Voice 626.962.7770  
Fax 626.962.7720  
Email: [service@falconups.com](mailto:service@falconups.com)  
[WWW.FALCONUPS.COM](http://WWW.FALCONUPS.COM)

Please have your UPS model, serial numbers and date of purchase on hand prior to your call. This information is located on the identification label on the rear panel of the unit. This information is essential in retrieving your unit's historical records. Should our service department determine service is required, you will be given a Return Material Authorization number (RMA) along with return shipping instructions.

The RMA number issued must appear on the outside of the shipping carton. The original shipping container must be used when returning any SG Series product. Falcon Electric will not assume any responsibility for shipping damage. In the event of shipping damage, you will be notified of the damage and be instructed to file a claim with the freight carrier. You will be billed for all repairs caused by the shipping damage. You must submit a copy of our repair invoice to the carrier for reimbursement.

All units must be returned prepaid. The address and shipping instructions will be given to you at the time the RMA is issued.

## 7. Requesting Technical Information or Support

You may request technical information or support by email or telephone.

Please send your technical or support questions by email to:

**[SUPPORT@FALCONUPS.COM](mailto:SUPPORT@FALCONUPS.COM)**

You may contact a FALCON support engineer directly by calling the FALCON support line between 9:00 am and 4:00 pm PST.

**800.842.6940**

## 8. FALCON Web Support

Product data sheets, specification and owner's manuals are available in Adobe® Acrobat .PDF format on our corporate website.

**[WWW.FALCONUPS.COM](http://WWW.FALCONUPS.COM)**

# FALCON ELECTRIC, INC.

## NEW PRODUCT LIMITED WARRANTY

**Limited Warranty:** Falcon warrants that this product will be free from defects in materials and workmanship for a period of two years from the date of shipment by Falcon.

**Procedures:** Any defective product must be returned to Falcon. No product can be returned without first obtaining a Return Material Authorization (RMA) number from Falcon. Falcon will repair, replace or refund the purchaser price, at Falcon's sole discretion, for any defective product that is returned to Falcon with an RMA number. For defective product returned within 30 days of shipment, Falcon will pay for shipping costs to and from its service center. For defective product returned after 30 days but within 90 days of shipment, Falcon will only pay for shipping costs in sending the new or repaired product back to the end-user. For defective product returned more than 90 days after shipment, all shipping costs will be borne by the end-user.

**Exclusions:** This limited warranty does not cover damage caused by: (i) improper installation, misuse or neglect; (ii) unauthorized repairs or modifications or use of unauthorized parts; (iii) acts or events outside of Falcon's control, such as fire, accidents, impacts; (iv) normal wear and tear, such as cleaning and replacement of batteries. The warranty is null and void if: (i) the product is used in conjunction with life support equipment; (ii) the factory seal is broken or shows signs of tampering; or (iii) the battery is allowed to discharge below the minimum battery cutoff point. To prevent this discharge, remove the battery fuse, or switch the battery disconnect to the "off" position when the unit is to be stored without the AC power being supplied to the UPS for more than two days. The battery must be recharged every four to six months when not in use. This limited warranty is not transferable.

**Limitations:** **IN NO EVENT IS FALCON RESPONSIBLE FOR ANY SPECIAL, INDIRECT, SECONDARY OR CONSEQUENTIAL DAMAGES, SUCH AS PERSONAL INJURY, DAMAGE TO PROPERTY, LOSS OF DATA, LOST PROFITS, ETC. IN NO EVENT WILL FALCON'S LIABILITY UNDER THIS LIMITED WARRANTY EXCEED THE PURCHASE PRICE PAID FOR THE PRODUCT IN QUESTION.**

**Disclaimers:** The limited warranties set forth in this document are the only warranties that apply to Falcon's products. **ALL OTHER WARRANTIES ARE EXPRESSLY DISCLAIMED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY HAVE OTHER LEGAL RIGHTS THAT VARY FROM STATE TO STATE.**

2007-04 Rev. C

| Model Number | SG800-1T | SG1K-1T | SG1K-2T | SG1.5K-1T |
|--------------|----------|---------|---------|-----------|
| Nominal VA   | 800      | 1000    | 1000    | 1500      |

### Electrical Input

|                         |                                 |         |          |         |
|-------------------------|---------------------------------|---------|----------|---------|
| Nominal AC Voltage      | 120V                            | 120V    | 230V     | 120V    |
| AC Voltage Range        | 87-140V                         | 87-140V | 170-275V | 87-140V |
| Current-Amps            | 5.5                             | 6.9     | 3.6      | 10.7    |
| Frequency               | 50/60 Hz ± 5% (Auto – Tracking) |         |          |         |
| Power Factor Correction | > 0.95                          |         |          |         |
| Efficiency (Typical)    | > 86%                           |         |          |         |

### Electrical Output

|                         |   |                              |                              |                              |
|-------------------------|---|------------------------------|------------------------------|------------------------------|
| Watts                   | 560                                     | 700                          | 700                          | 1050                         |
| AC Voltage (Switchable) | 100V<br>110V<br>115V<br>120V            | 100V<br>110V<br>115V<br>120V | 200V<br>220V<br>230V<br>240V | 100V<br>110V<br>115V<br>120V |
| Frequency               | 50/60 Hz (Auto Tracking)                |                              |                              |                              |
| Frequency Stability     | ±0.3% (Battery Mode)                    |                              |                              |                              |
| Voltage Regulation      | ± 2%                                    |                              |                              |                              |
| Step Load Change        | ± 7% for 100% load variation            |                              |                              |                              |
| Harmonic Distortion     | < 3% Linear Load, < 5% Non -Linear Load |                              |                              |                              |
| Overload                | 105% load for 50 Seconds                |                              |                              |                              |
| Crest Ratio             | 3:1                                     |                              |                              |                              |

### Battery

|                          |   |            |  |            |
|--------------------------|---|------------|--|------------|
| DC Voltage               | 36V   |            |  | 72V        |
| Type                     | 12V, 7AH Sealed Lead Acid Maintenance -Free |            |  |            |
| Back Up Time @ Full Load | 9 Minutes                                   | 6 Minutes  |  | 11 Minutes |
| @ 1/2 Load               | 25 Minutes                                  | 19 Minutes |  | 30 Minutes |
| Recharge Time            | 8 Hours to 90%                              |            |  |            |

Battery times are approximate.

### Transfer Time

|                          |                      |
|--------------------------|----------------------|
| Line Fails/Recovers      | Zero                 |
| UPS to Bypass or Reverse | < 4ms                |
| After Overload           | Auto Transfer to UPS |

### Electrical Connections

|        |                    |                    |                              |                    |
|--------|--------------------|--------------------|------------------------------|--------------------|
| Input  | 6' Cord with 5-15P | 6' Cord with 5-15P | 6' Cord with Schuko or 6-15P | 6' Cord with 5-15P |
| Output | (6) 5-15R          | (6) 5-15R          | (4) IEC 320                  | (6) 5-15R          |

Contact the factory for other input/output options.

### Environmental

|                         |                                |
|-------------------------|--------------------------------|
| Operating Temperature   | 0° C - 40° C (32° F to 104° F) |
| Humidity                | 10% to 95% Non – Condensing    |
| Altitude                | 7,000 Feet                     |
| Cooling                 | Low Velocity Forced Air Fans   |
| Audible Noise @ 1 Meter | <45dBA                         |

### Controls and Indicators

|                |   |
|----------------|---|
| LED            | Line, Inverter, Battery Reserve, Load, Bypass, Alarm, Crest, Battery & Load Capacity Level          |
| Audible Alarms | DC Mode, Low Battery, Over/Under Voltage, Over/Under Frequency, High Temp., Over Load, Fau It Alarm |
| Communications | RS-232 Serial Port (Bundled UPSilon 2000 Software)  |

### Mechanical

|                      |             |  |   |
|----------------------|-------------|--|---|
| Dimensions H x W x D | inches (mm) | 8.7 x 6.0 x 15.8 (220.9 x 152.4 x 401.3) | 13.8 x 7.6 x 18.9 (350.5 x 193.0 x 480 .0)                      |
| Weight               | lb. (kg)    | 33 (14.9)                                | 68 (30.9)   |
| Agency Listing       |             | UL 1778, CUL, FCC Class A                | CE available with Schuko plug only<br>UL 1778, CUL, FCC Class A |

### Available Options

|                        |  |
|------------------------|--|
| Option A               | 60 Hz to 50 Hz Frequency Conversion  |
| Option B               | 50 Hz to 60 Hz Frequency Conversion  |
| Option C               | SNMP/HTTP Network Card (Internal)  |
| Option D               | Standard Contact Closure Interface Card  |
| Maintenance Bypass     | Make-Before-Break External Wrap Around   |
| External Battery Packs | Extended Run Time Battery Packs (minutes to hours)   |
| Fast Battery Charger   | Fast Charger internal to the Extended Battery Pack Cabinet (Required for battery times 2 hours or more.) |

# SG Series™ UPS PLUS® -1TX & -1TXI 2kVA - 3kVA

| Model Number | SG2K-1TX<br>SG2K-1TXI | SG3K-1TX<br>SG3K-1TXI |
|--------------|-----------------------|-----------------------|
| Nominal VA   | 2000                  | 3000                  |

## Electrical Input

|                         |                                 |      |
|-------------------------|---------------------------------|------|
| Nominal AC Voltage      | 120Vac                          |      |
| AC Voltage Range        | 80 – 138V                       |      |
| Current – Amps          | 14.2                            | 21.4 |
| Frequency               | 50/60 Hz ± 5% (Auto – Tracking) |      |
| Power Factor Correction | > 0.95                          |      |
| Efficiency (Typical)    | > 83%                           |      |

## Electrical Output

|                     |   |      |
|---------------------|---|------|
| Watts               | 1400  | 2100 |
| Galvanic Isolation  | -1TX = 120Vac output with derived neutral<br>-1TXI = 120/240Vac Split-Phase               |      |
| AC Voltages         | -1TX = 100, 110, 115 or 120Vac (Switch Selectable)<br>-1TXI = 120/240Vac Split-Phase Only |      |
| Frequency           | 50/60 Hz (Auto Tracking)  |      |
| Frequency Stability | ± 0.3% (Battery Mode)   |      |
| Voltage Regulation  | ± 2%  |      |
| Step Load Change    | ± 7% for 100% load variation  |      |
| Harmonic Distortion | < 3% Linear Load, < 5% Non-Linear Load  |      |
| Overload            | 105% load for 50 Seconds  |      |
| Crest Ratio         | 3:1   |      |

## Battery

|               |  |             |
|---------------|--|-------------|
| DC Voltage    | 72Vdc                                      | 96V         |
| Type          | 12V, 7AH Sealed Lead Acid Maintenance-Free |             |
| Back Up Time  | @ Full Load<br>7 Minutes                   | 5.5 Minutes |
|               | @ 1/2 Load<br>20 Minutes                   | 15 Minutes  |
| Recharge Time | 8 Hours to 90%                             |             |

Battery times are approximate.

## Transfer Time

|                          |                      |
|--------------------------|----------------------|
| Line Fails/Recovers      | Zero                 |
| UPS to Bypass or Reverse | < 4ms                |
| After Overload           | Auto Transfer to UPS |

## Electrical Connections

|                  |   |   |
|------------------|---|---|
| Input            | Fixed & Strain Relieved 6' Cord with 5-20P                                  | Fixed & Strain Relieved 6' Cord with L5-30P |
| Output           | (3) 5-15R & (2) 5-20R   | L5-30R & (1) Duplex 5-20R                   |
| External battery | (1) Anderson style battery connector with cover plate on the UPS rear panel |   |

Contact the factory for other input/output options.

## Environmental

|                         |                                |
|-------------------------|--------------------------------|
| Operating Temperature   | 0° C - 40° C (32° F to 104° F) |
| Humidity                | 10% to 95% Non – Condensing    |
| Altitude                | 7,000 Feet                     |
| Cooling                 | Low Velocity Forced Air Fans   |
| Audible Noise @ 1 Meter | <50dBA                         |

## Controls and Indicators

|                |  |
|----------------|--|
| LED            | Line, Inverter, Battery Reserve, Load, Bypass, Alarm, Crest, Battery & Load Capacity Level         |
| Audible Alarms | DC Mode, Low Battery, Over/Under Voltage, Over/Under Frequency, High Temp., Over Load, Fault Alarm |
| Communications | RS-232 Serial Port   |

## Mechanical

|                                  |                                     |
|----------------------------------|-------------------------------------|
| Dimensions H x W x D inches (mm) | 15.1 x 7.6 x 30.0 (384 x 193 x 720) |
| Weight lb. (kg)                  | 138.7 (63) 150 (68)                 |
| Agency Listing                   | UL 1778 & CUL Listed, FCC Class A   |



| Model Number | SG2K-1T | SG2K-2T | SG3K-1T | SG3K-2T | SG2K-2TX<br>SG2K-2TXI <sup>1</sup> | SG3K-2TX<br>SG3K-2TXI <sup>2</sup> |
|--------------|---------|---------|---------|---------|------------------------------------|------------------------------------|
| Nominal VA   | 2000    |         | 3000    |         | 2000                               | 3000                               |

### Electrical Input

|                         |                                 |            |           |            |            |      |
|-------------------------|---------------------------------|------------|-----------|------------|------------|------|
| Nominal AC Voltage      | 120V                            | 230V       | 120V      | 230V       | 230V       |      |
| AC Voltage Range        | 87 – 140V                       | 170 – 275V | 87 – 140V | 170 – 275V | 170 – 275V |      |
| Current – Amps          | 14.2                            | 7.4        | 21.4      | 11.2       | 7.5        | 11.3 |
| Frequency               | 50/60 Hz ± 5% (Auto – Tracking) |            |           |            |            |      |
| Power Factor Correction | > 0.95                          |            |           |            |            |      |
| Efficiency (Typical)    | > 86%                           |            |           | > 85%      |            |      |

### Electrical Output

| Watts                      | 1400                                   |                              | 2100                         |                              | 1400   |                              | 2100   |                              |
|----------------------------|--|------------------------------|------------------------------|------------------------------|--|------------------------------|--|------------------------------|
| AC Voltage<br>(Switchable) | 100V<br>110V<br>115V<br>120V           | 200V<br>220V<br>230V<br>240V | 100V<br>110V<br>115V<br>120V | 200V<br>220V<br>230V<br>240V | 120V<br><sup>1</sup> (700W<br>split-<br>phase,<br>each<br>5-20R) | 208V<br>220V<br>230V<br>240V | 120V<br><sup>2</sup> 1050W<br>split-<br>phase,<br>each<br>5-20R) | 208V<br>220V<br>230V<br>240V |
| Frequency                  | 50/60 Hz (Auto Tracking)               |                              |                              |                              |  |                              |  |                              |
| Frequency Stability        | ± 0.3% (Battery Mode)                  |                              |                              |                              |  |                              |  |                              |
| Voltage Regulation         | ± 2%                                   |                              |                              |                              | ± 5%   |                              | ± 3%   |                              |
| Step Load Change           | ± 7% for 100% load variation           |                              |                              |                              |  |                              |  |                              |
| Harmonic Distortion        | < 3% Linear Load, < 5% Non-Linear Load |                              |                              |                              |  |                              |  |                              |
| Overload                   | 105% load for 50 Seconds               |                              |                              |                              |  |                              |  |                              |
| Crest Ratio                | 3:1                                    |                              |                              |                              |  |                              |  |                              |

### Battery

|               |  |  |             |  |            |  |             |
|---------------|--|--|-------------|--|------------|--|-------------|
| DC Voltage    | 72V  |  | 96V         |  |            |  |             |
| Type          | 12V, 7AH Sealed Lead Acid Maintenance-Free |  |             |  |            |  |             |
| Back Up Time  | @ Full Load<br>7 Minutes                   |  | 5.5 Minutes |  | 7 Minutes  |  | 5.5 Minutes |
|               | @ 1/2 Load<br>20 Minutes                   |  | 15 Minutes  |  | 20 Minutes |  | 15 Minutes  |
| Recharge Time | 8 Hours to 90%                             |  |             |  |            |  |             |

Battery times are approximate.

### Transfer Time

|                          |                      |  |
|--------------------------|----------------------|--|
| Line Fails/Recovers      | Zero                 |  |
| UPS to Bypass or Reverse | < 4ms                |  |
| After Overload           | Auto Transfer to UPS |  |

### Electrical Connections

|        |                                    |                                      |                                    |                                      |                                      |
|--------|------------------------------------|--------------------------------------|------------------------------------|--------------------------------------|--------------------------------------|
| Input  | 6' Cord with 5-20P                 | 6' Cord with 6-20P, L6-20P or Schuko | 6' Cord with L5-30P                | 6' Cord with 6-20P, L6-20P or Schuko | 6' Cord with 6-20P, L6-20P or Schuko |
| Output | (6) 5-15R or (3) 5-15R & (2) 5-20R | (6) IEC 320 or (1) L6-20R            | (6) 5-15R or (3) 5-15R & (2) 5-20R | (6) IEC 320 or (1) L6-20R            | (2) 5-20R & (1) L6-20R               |

Contact the factory for other input/output options.

### Environmental

|                         |                                |  |
|-------------------------|--------------------------------|--|
| Operating Temperature   | 0° C - 40° C (32° F to 104° F) |  |
| Humidity                | 10% to 95% Non – Condensing    |  |
| Altitude                | 7,000 Feet                     |  |
| Cooling                 | Low Velocity Forced Air Fans   |  |
| Audible Noise @ 1 Meter | <50dBA                         |  |

### Controls and Indicators

|                |  |  |
|----------------|--|--|
| LED            | Line, Inverter, Battery Reserve, Load, Bypass, Alarm, Crest, Battery & Load Capacity Level         |  |
| Audible Alarms | DC Mode, Low Battery, Over/Under Voltage, Over/Under Frequency, High Temp., Over Load, Fault Alarm |  |
| Communications | RS-232 Serial Port (Bundled UPSilon 2000 Software)   |  |

### Mechanical

|                                  |   |  |                                     |  |
|----------------------------------|---|--|-------------------------------------|--|
| Dimensions H x W x D inches (mm) | 13.8 x 7.6 x 18.9 (350 x 193 x 480)   |  | 13.8 x 7.6 x 30.0 (350 x 193 x 720) |  |
| Weight lb. (kg)                  | 68.4 (31)   |  | 81.4 (37)                           |  |
| Agency Listing                   | -1T Models: UL 1778, CUL, FCC Class A -HW Models: UL 1778 & CUL pending<br>-2T Models: UL 1778, CUL, CE available with Schuko plug only |  |                                     |  |

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