

# User & Service Manual

## SP SERIES CONTINUOUS POWER SYSTEM

MODELS COVERED:

SP-1400LT

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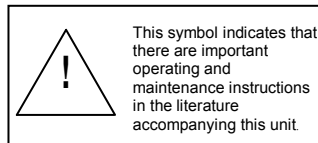
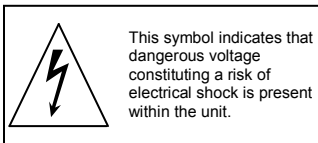
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# **“IMPORTANT SAFETY INSTRUCTIONS”**

## **“SAVE THESE INSTRUCTIONS”**

This manual contains important safety instructions that should be followed during installation and maintenance of the UPS and batteries. The instructions should be followed during installation and maintenance of the UPS and batteries. Be aware of the following symbols and their meaning as they appear throughout the manual:



**Earth Ground Symbol:**



**On / Off Symbol:**



### **Maximum Ambient Temperature 74° C.**

This unit intended for installation in a controlled environment (temperature controlled, indoor area free of conductive contaminants).

**CAUTION** – Do not dispose of batteries in a fire. The batteries may explode.

**CAUTION** - Do not open or mutilate the batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

**CAUTION** - A battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when working on batteries.

1. Remove watches, rings, or other metal objects.
2. Use tools with insulated handles.

### **WE STRONGLY URGE YOU TO READ THIS MANUAL COMPLETELY, PRIOR TO BEGINNING INSTALLATION OR ATTEMPTING OPERATION.**

Studying this manual will save you time and effort in your installation and application, and it will assure a trouble free installation and startup session, thus enhancing public safety and the image of your agency.

The illustrations provided will familiarize you with this product's operating modes and components. Always operate the unit within the guidelines and specifications provided to maximize safety and the lifetime of the unit. Your understanding of the product is a key element in assuring the proper use and effectiveness of the SP-LX Series Traffic UPS.

# 1 Introduction

## 1.1 How It Works

Congratulations! You have selected the highest quality protection for your continuous power needs. This unit offers a quiet and compact package with superior performance you can depend on. You now own a SP Series Continuous Power System (CPS) which is an all Digital Technology product manufactured by Clary Corporation, the first name in non-interruptible power system (UPS) reliability. The Continuous Power System is the highest order in the hierarchy of UPS products. When power problems occur, there can be no compromising the reliability of your power solution. The SP Series Continuous Power System is your complete power solution.

The SP1400LT is our space saving full-featured UPS for traffic systems. The LT Series are advanced UPS that provide clean, regulated dual conversion power for controllers and other sensitive equipment inside the traffic cabinet. Rated for 1400 VA / 1000 W, with operational temperature of -40°C to +74°C (-40°F to 165°F), the SP 1400LT has been independently tested and certified to comply with NEMA temperature standards as well as NEMA standards for shock and vibration. So small, lightweight and incredibly flexible in space, the SP1400 LT can fit in almost all cabinets. Along with its batteries it can even fit in a compact pole mounted cabinet as little as 16" H x 14" W x 12" D. The SP 1400LT provides continued operation during power loss for intersections using LED lights with either Lithium-Iron Phosphate or Lead Acid Batteries. Advanced communication features allow monitoring, configuration and control of the system over RS232, modem or network connections with SNMP. Available with battery bus voltage of 48 V.

This Owner's Operating Manual is provided with your new SP Series UPS. It will enhance your understanding of the product and its functions. **WE STRONGLY URGE YOU TO READ THIS MANUAL COMPLETELY, PRIOR TO BEGINNING INSTALLATION OR ATTEMPTING OPERATION.** This will save you time and effort in your installation and application, and it will assure a trouble free installation and startup session, thus enhancing public safety and the image of your agency. The illustrations provided will familiarize you with this product's operating modes and components. Always operate the unit within the guidelines and specifications provided to maximize safety and the lifetime of the unit. Also, your understanding of the product is a key element in getting the most out of your SP Series UPS.

## 1.2 Operating Modes

Once the system has been properly installed, it is ready to operate. The following procedures will explain how to start-up the system while plugged into rated electrical power and also how to start-up with no AC power available.

### Normal Operation on AC Start-Up:

- Verify that the unit is plugged into properly rated electrical power.
- Plug in External Batteries to DC input.(if used as an UPS)
- Position the System Switch to the **ON** position.

The front panel LED's will cycle.

The system will beep two times.

The LCD display will turn on.

You will now have 120VAC available at the AC outlet.

- To turn off the load, press and hold the Load Button until the AC Out LED turns off. Approx. 2 seconds.

### Battery Operation after AC Start-Up:

- Unplug the unit from the standard wall outlet.

The AC IN LED will turn Red.

An Audible beep will sound (if enabled).

The Alarm LED will flash Red after approx. 10 seconds.

- To silence the Audible alarm, quickly press and release either the Cold Start or Load button.

If the unit is allowed to operate further, it will time out and shut off completely. If power were to return, the unit will automatically restart and return to the condition it was in at the moment it went into *Battery Mode*.

### DC Start Operation (Cold Start)

If no utility power is available at the time backup power is required, the unit may be started to accomplish abbreviated tasks. The limitations of the battery prevent extended operations at full load.

- Position the System Switch to the **ON** position.
- Push and hold in the COLD START switch.

You now will have 120VAC available at the AC outlet.

### Loading the System

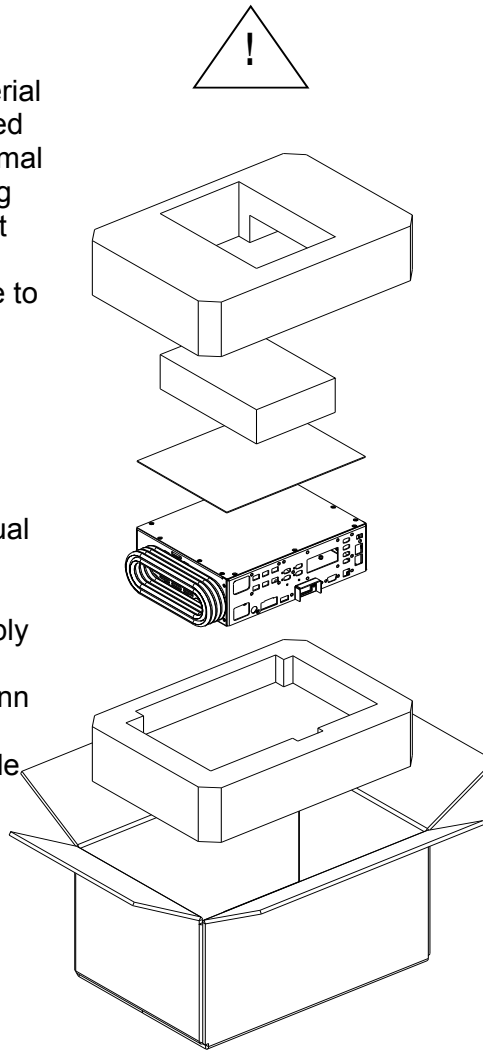
The system can be loaded up to full rated load. If too much load is applied, the audible alarm will sound. If this increased load is not removed within a few seconds, the unit will discontinue output operation and latch into an alarm condition. The audible alarm will continue to sound and the ALARM LED will light. Reducing the load and cycling the System Power Switch **OFF** then **ON** can reset the system.

## 1.3 Packaging

Your UPS has been carefully packaged to withstand most abuse sustained during shipment. The packing material has been specifically designed to protect this system for normal handling, using most shipping carriers. If there is significant damage to the carton, or if there is any physical damage to this unit, report this to your carrier.

The box should include:

- Cardboard and form protection
- Owners Operating Manual (1)
- 3x14GA, 6'L Conductor Detachable Power Supply Cord (3)
- SP-PD Series Relay Conn Connector
- 2.00m Shielded A-B Male USB 2.0 Cable



These units are encapsulated in a protective wrap that comes apart once the product is removed from the shipping carton. Save all packing material for future use.

The packaging also contains important information on use and care as well as valuable warranty information. Read all materials before storing this literature with your other valuable product documents.

## 1.4 Physical Description

This section will point out and illustrate the various indicators, functions and controls of the SP1400LT Series UPS. The important attributes of the SP-LT Series unit are numbered to assist you in locating them on your machine and also to fully explain its function and how it relates to system operation.

Numbers on the drawing will correspond to the operating component's name at the bottom with a brief identification. In the next section, a complete explanation of all numbered items will be enhanced to ensure you have a full understanding of the visual indicators used on the front panel are long lasting, very efficient, light emitting diodes (LED). When operating the push-button switches, always hold the switch in for at least two seconds to insure function confirmation. This feature has been implemented into the system design to avoid inadvertent operation of any of the user-available functions.

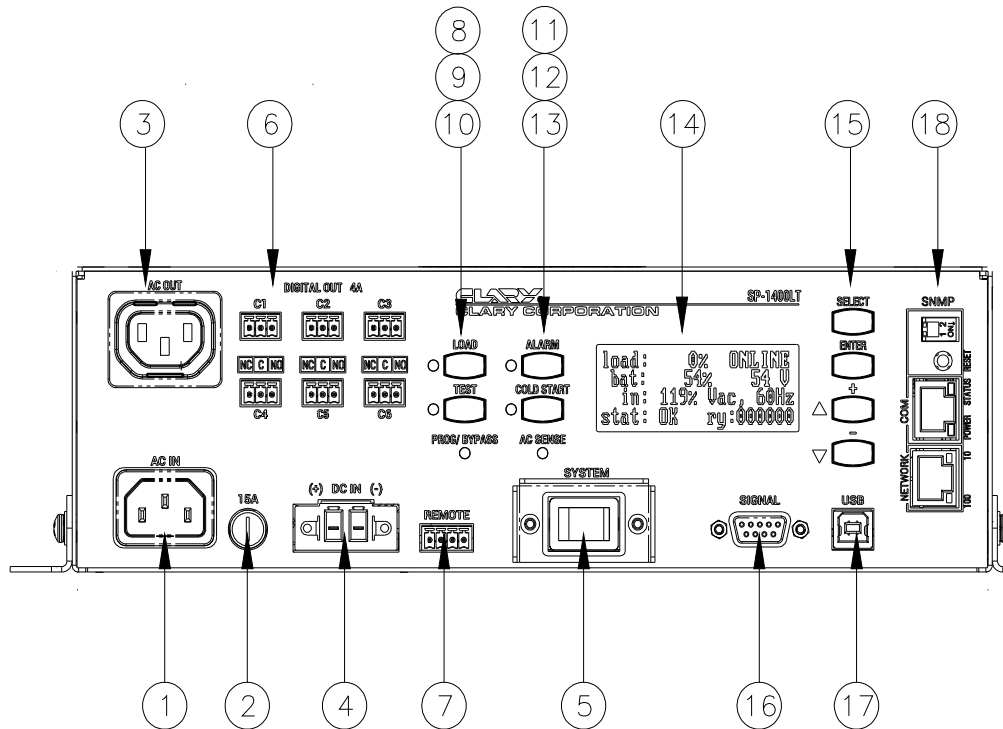


Figure 1

### SP1400LT FRONT PANEL VIEW

Figure 1: FRONT PANEL VIEW SP-1400LT SHOWN

- |   |                |    |                   |
|---|----------------|----|-------------------|
| 1 | AC IN          | 10 | PROGRAM LED       |
| 2 | AC IN FUSE     | 11 | ALARM SWITCH      |
| 3 | AC OUT         | 12 | COLD START SWITCH |
| 4 | DC IN          | 13 | AC SENSE LED      |
| 5 | SYSTEM SWITCH  | 14 | LCD DISPLAY       |
| 6 | RELAY CONTACTS | 15 | LCD CONTROL       |
| 7 | REMOTE         | 16 | DB9 SIGNAL        |
| 8 | LOAD SWITCH    | 17 | USB               |
| 9 | TEST SWITCH    | 18 | SNMP              |



## 1.5 SUMMARY OF INDICATORS AND CONTROLS

**AC IN** – IEC Inlet C14 type used to supply 120VAC utility power to the system.

**AC IN FUSE** – Input Inlet protection. 15A, 250VAC, 3AG.

**AC OUT** – IEC Outlet C13 type used to supply 120VAC Inverter generated power provided.

**DC IN** – A two position keyed connector provided for external 48V Batteries.

**SYSTEM SWITCH** – This switch is used to power up or down the unit. The switch must be in the ON position to AC or Cold start the unit.

**RELAY CONTACTS** – Six sets of normally open (NO) and normally closed (NC) contacts. These contacts are programmable thru the LCD display.

**REMOTE** – Optional battery monitor connection.

**LOAD SWITCH** – Once this switch is pressed for at least two seconds, output power will then be disabled to the AC Output. Pressing in this switch again for at least two seconds, output power will then be enabled to the AC Output.

**TEST SWITCH** - Battery Test switch. See the operations section for information on Battery Test.

**PROGRAM LED** – For Future use.

**ALARM SWITCH** – This switch will silence or unsilenced the audible alarm.

**COLD START SWITCH**- This switch allows the unit to start up from battery power when no AC input is available.

**AC SENSE LED** – Dual colored LED indicating AC input condition. Green – AC input in range, Red – AC input not present or out of range.

**LCD DISPLAY** – An LCD display showing UPS system data, status and settings.

**LCD CONTROL** – Push buttons used for navigating the LCD display.

**SIGNAL** - A DB-9 subminiature, female connector provided for intelligent computer monitoring systems. See page 15 SIGNALS AND INTERFACING for specific pin-outs.

**USB** – A USB type B connector provided for intelligent computer monitoring systems.

**SNMP** – Simple Network Management Protocol card to monitor UPS information.

## BYPASS SWITCH SUMMARY OF INDICATORS AND CONTROLS (SPH-302 Shown)

**SPH-302/SPH-303 BYPASS SWITCH** – When switch is in the “ON” Position, bypass box AC-Out will provide inverter power from the UPS as long as inverter power is available. If inverter power is not available, bypass power will be supplied at the output. When in the “OFF” position, Bypass power will be supplied to the output.

**CIRCUIT BREAKER** – A 15A resettable circuit breaker provides protection for the UPS AC-IN line.

**UPS AC-OUT** – IEC Inlet C14 type connects to the AC-OUT connector of the UPS.

**UPS AC-IN** – IEC Outlet C13 type connects to the AC-IN connector of the UPS.

**AC-IN** – A 3 position connector that connects to utility input. **Note: Must be connected to service with a protection fuse/circuit breaker no greater than 30A.**

**AC-OUT** – A 3 position connector that connects to your loads.

**GENERATOR IN** – IEC Outlet C13 type connects to a generator for backup power.

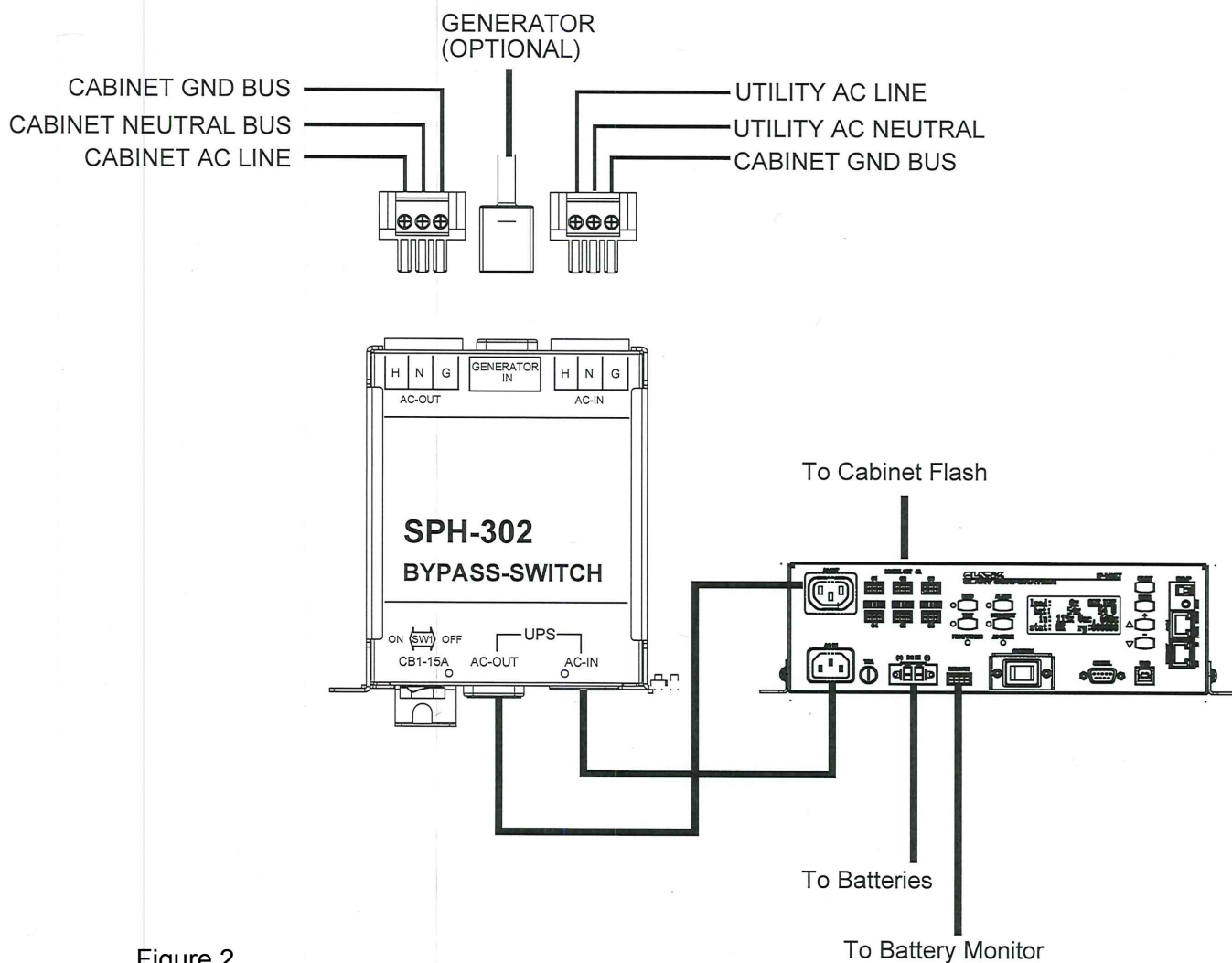


Figure 2

## 2 Installation & Operations

### 2.1 Preparation

- Ensure that the Installation Requirements will be met. (See following section).
- Read this manual thoroughly.
- Assemble wiring diagrams.

### 2.2 Installation

The system is lightweight and can be easily moved. Some important points to consider when positioning a unit for operation:

- The installation site should maintain an ambient air temperature of less than 165 °F (74 °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.
- Never use a Surge Protected device on the output of the system.
- Once a location has been selected and the unit is installed, it is ready for operation.
- If used as an UPS, allow at least 24 hours, after the system is first installed, to fully charge the external batteries to a maximum state

Table 2: RECOMMENDED INSTALLATION EQUIPMENT

Armored sheathing (cable protector)	Connectors (butt type and insulated)
Cordless drill w/ bits and a spare battery pack	Crimpers (for insulated and non-insulated connectors)
Wire Cutters	DVM w/ probes
Electrical Tape	Flat Head screwdriver
Hardware in spill-proof carrying case	Hold-downs (adhesive back)
Nut Driver Set	#2 Phillips head screwdriver
Phillips head drill bit	Propane torch (miniature) or cigarette lighter
Shrink tubing	Socket Set
Socket Wrench	Current clamp meter
Wire cutters	Wire strippers

## Installation Diagrams

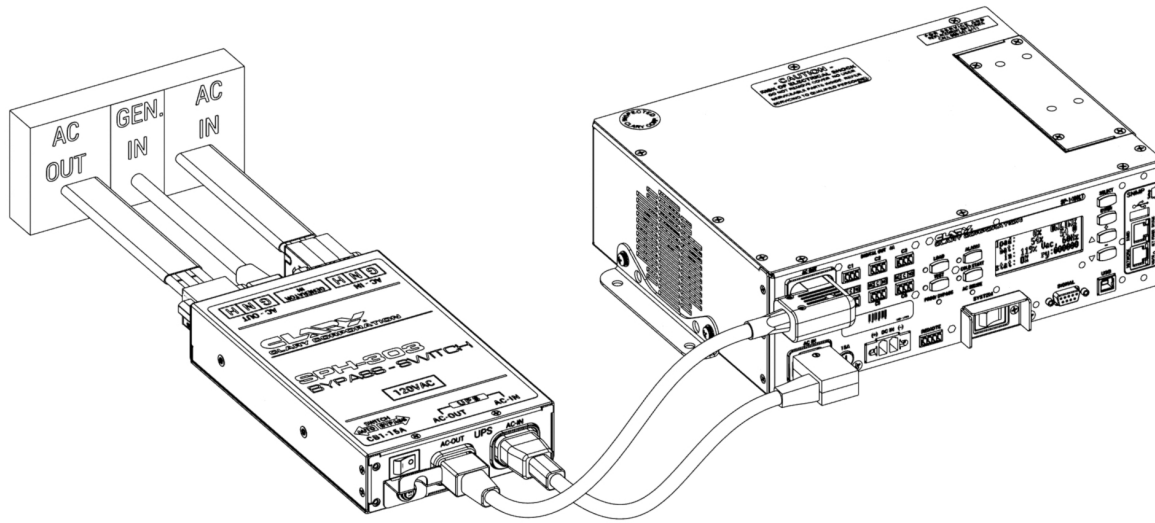


Figure 2

Above: Sample installation using 1400LT as a power conditioner. Features SP1400 and SPH-303 bypass switch.

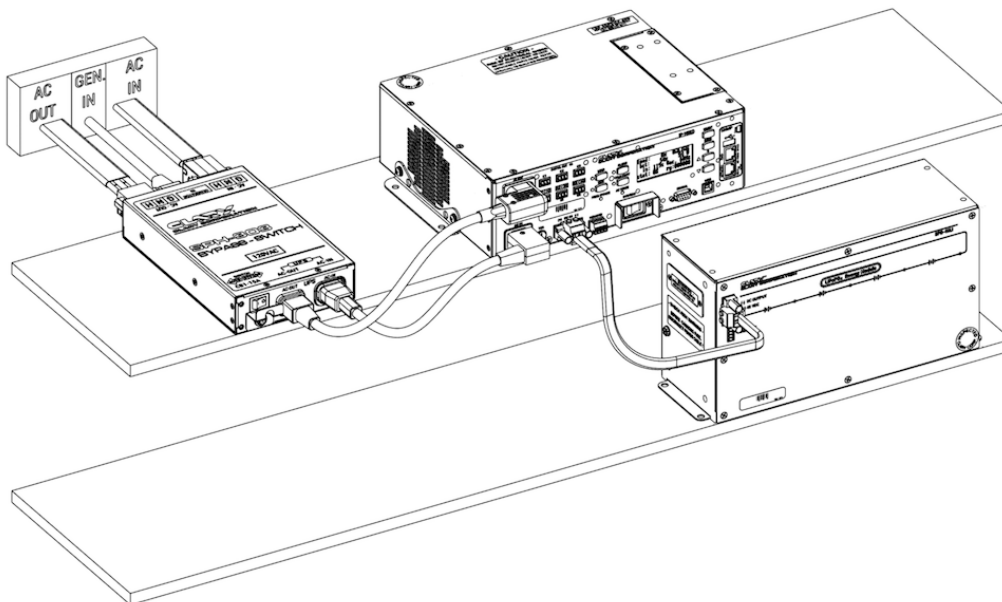


Figure 3

Above: Installation of the SP1400LT with the SPH-303 bypass switch and single lithium battery pack.

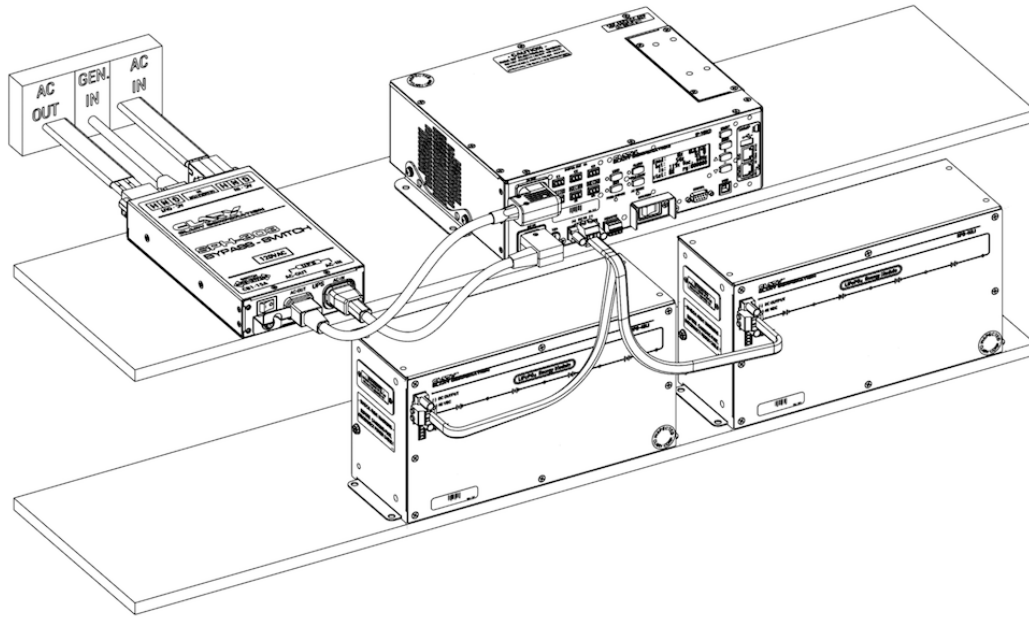


Figure 4

Above: Installation of the SP1400LT and SPH-303 bypass switch with dual lithium battery packs for twice the run time.

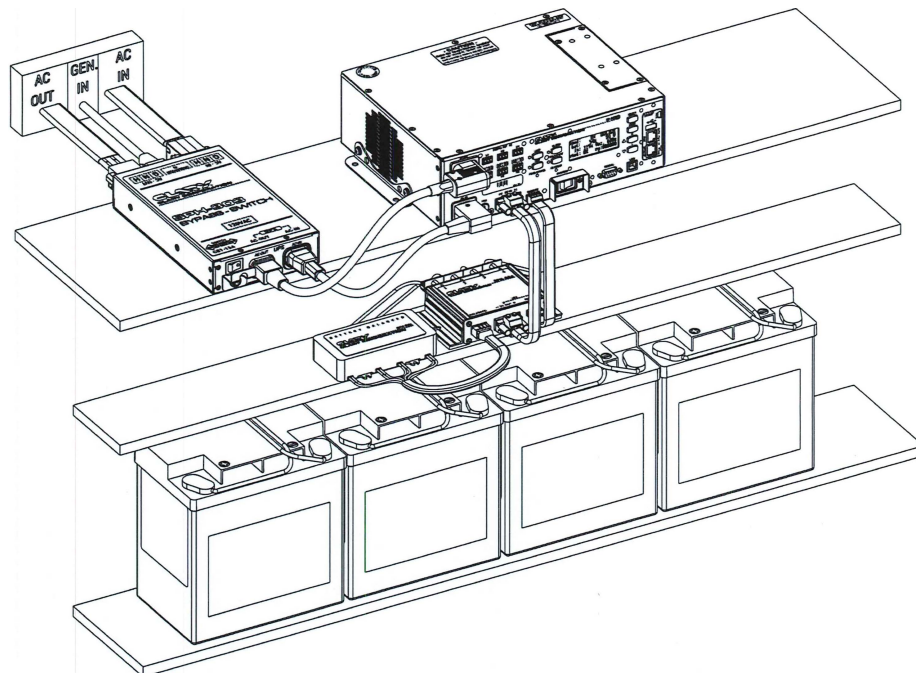


Figure 5

Above: Installation of the SP1400LT and SPH-303 bypass switch with battery monitor and four AGM batteries. Balancers: SPHBB4, SPHEQ4.

## 2.3 Operation Configuration & Setup

Once the system has been properly installed, it is ready to operate. The following procedures will explain how to start-up the system while plugged into rated electrical power and also how to start-up with no AC power available.

### Normal Operation on AC Start-Up:

- Verify that the unit is plugged into properly rated electrical power.
- Plug in External Batteries to DC input.(if used as an UPS)
- Position the System Switch to the **ON** position.

The front panel LED's will cycle.

The system will beep two times.

The LCD display will turn on.

You will now have 120VAC available at the AC outlet.

- To turn off the load, press and hold the Load Button until the AC Out LED turns off. Approx. 2 seconds.

### Battery Operation after AC Start-Up:

- Remove source of utility power, commonly done by turning off output breaker at service pedestal.

The AC IN LED will turn Red.

An Audible beep will sound (if enabled).

The Alarm LED will flash Red after approx. 10 seconds.

- To silence the Audible alarm, quickly press and release either the Cold Start or Load button.

If the unit is allowed to operate further, it will time out and shut off completely. If power were to return, the unit will automatically restart and return to the condition it was in at the moment it went into *Battery Mode*.

### DC Start Operation (Cold Start)

If no utility power is available at the time backup power is required, the unit may be started to accomplish abbreviated tasks. The limitations of the battery prevent extended operations at full load.

- Position the System Switch to the **ON** position.
- Push and hold in the COLD START switch.

You now will have 120VAC available at the AC outlet.

### Loading the System

The system can be loaded up to full rated load. If too much load is applied, the audible alarm will sound. If this increased load is not removed within a few seconds, the unit will discontinue output operation and latch into an alarm condition. The audible alarm will continue to sound and the ALARM LED will light. Reducing the load and cycling the System Power Switch **OFF** then **ON** can reset the system.

## 2.4 SIGNALS AND INTERFACING

There is one DB-9, sub-miniature, female connector and one USB connector. These connectors are provided for communications links to a computer or sophisticated monitoring device. Use the USB Type B connector when using the Clary Universal Traffic software which can be downloaded at [www.Clary.com](http://www.Clary.com). See following page for USB setup instructions.

Below are the pin outs of the connectors with their default assignments:

### **“SIGNAL” DB9F CONNECTOR**

- 1- OPEN COLLECTOR\_GP1
- 2- UPS\_TXD
- 3- UPS\_RXD
- 4- OPEN COLLECTOR\_GP2
- 5- SIGNAL GROUND
- 6- DATA SET READY (DSR)
- 7- REQUEST TO SEND (RTS)
- 8- OPEN COLLECTOR\_UTILFAIL/
- 9- OPEN COLLECTOR\_LOWBAT/

### **USB TYPE B CONNECTOR**

- 1- VBUS
- 2- D- (DATA-)
- 3- D+ (DATA+)
- 4- GND

# SPECIFICATIONS

## ELECTRICAL

Input	
Voltage	120VAC 85VAC to 155VAC (without Battery discharge)
Frequency	45Hz to 65Hz
Output	
Voltage	120VAC $\pm 3\%$
Frequency	50Hz or 60Hz $\pm .25\%$ (software selectable)
Power	1000W / 1400VA
Crest Factor Ratio (Non-linear load and less than 5% THD) Typical	@50% Load Up to 4.8:1 @75% Load Up to 3.2:1 @100% Load Up to 2.4:1
Harmonic Distortion	3%
Dynamic Response	$\pm 4\%$ for 100% Step Load Change, 0.5 Millisecond Recovery Time
Overload	110% for 10 min; 200% for 50 milliseconds
Efficiency (UPS)	85%
Load Power Factor	0.7
UPS Protection	Input and Output Short Circuit; Input and Output Overload; Excessive Battery Discharge

## MECHANICAL

Input (Qty)	(1) IEC Inlet C14
Output (Qty)	(1) IEC Outlet C13
Overall Dimensions W x D x H	11in x 8.5in x 3.5in
Weight	8 lb. (3.6 kg)
Cooling	Low Velocity, Forced Air

## CONTROLS AND INDICATORS

Visual Indicators	Battery Status, AC Output, Alarm, AC Input
Controls	Load On/Off, Cold Start
Intelligent Computer Interface	(1) DB9-F – RS232/Signal Interface (1) USB Type B

## DESIGN

Standard Features	Regenerative On-Line, Sinewave Inverter Powers Load Continuously, Extended Brownout Protection, External Battery Connector, Digitally Controlled IGBT PWM, Power Factor Corrected on Input, Designed for Non-linear Loads
-------------------	---

## ENVIRONMENTAL

Operating Temperature	-40°F to 165°F (-40°C to 74°C)
Humidity	0% to 95% non-condensing
Altitude	Sea Level to 10,000 Feet

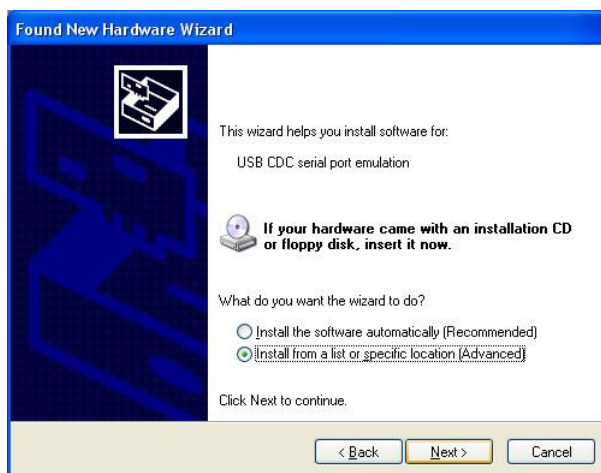


## 2.5 USB SETUP

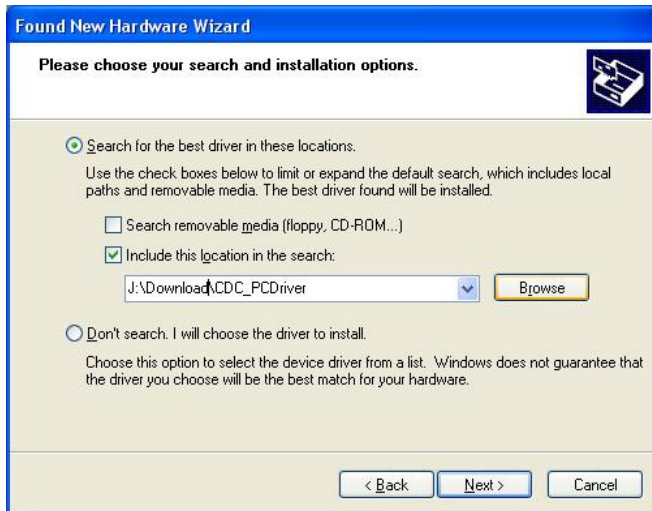
1. Contact Clary Corporation or your representative for latest software version.
  - SP560\_SP1250LE SERIES Software
  - CDC\_PCDriver
2. Connect the USB cable from your computer to the UPS's USB port (use the USB type B (Square) port).
3. Turn on the UPS.
4. Your computer will need a driver to connect for the first time. You should get a prompt as follows: Click on "No, not at this time" then "Next".



5. Select the "Install from a list or specific location" then click "Next"



6. Select the "Include this location in the search:" then click "Browse". Select the CDC\_PCDriver folder then click "Next."



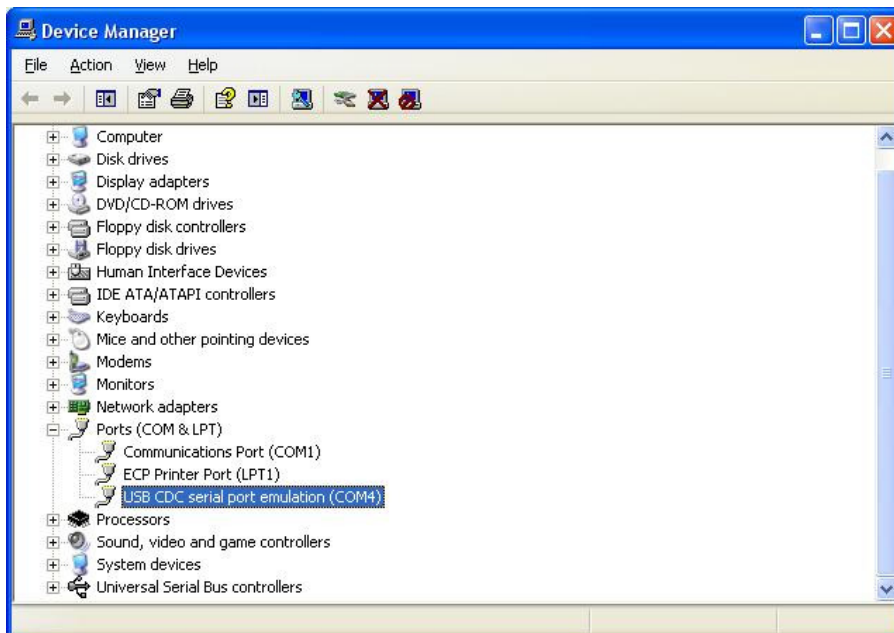
7. The driver will then be installed.



8. Driver is now installed. Click “Finish”.



9. Go to your device Manager, then click on the “Ports (COM & LPT)” tab. You will see the USB CDC serial port emulation (Com 1, 2, 3...etc.). This will be the com port assigned to your USB port. This is the Com port you will use when connecting to the Clary Software while using the USB port.



## 2.6 SNMP Configuration

The UPS system includes an SNMP card. Below are the basic instructions to find or change the IP address of the SNMP card. To see more detailed information, see the manual that is located on the CD for the SNMP card. IP address comes set from the factory at **172.17.10.10**.

### SNMP Operating Systems Supported

1. Microsoft Windows 2000, ME, XP, XP/2003, Windows 7
2. Novell 4.x thru 6.x
3. Solaris (x86 version) 2.6/2.7/2.8
4. Solaris (Sparc version) 7/8/9/10
5. SCO UNIX 5.x
6. SCO UnixWare 7.x
7. HP\_UX 10.2/11i
8. IBM\_AIX 4.3/5.3
9. Free BSD 4.3/5.1/6
10. Other Linux-derivatives OS (Kernel 2.x or later)

**Default user = usha, Default password = admin**

### Configuring USHA via Hyperterminal/Putty.

1. Connect a mini USB cable (not included) from your computer's USB to the SNMP "Setup" port.
2. Turn on UPS if it is not on.
3. If it is the first time connecting to your computer, you will be prompted to install driver. Driver is located on CD.
4. On your computer, open Hyperterminal/Putty.
5. Select the appropriate Com port that your serial cable is connected to.
6. Configure the port settings as 9600 bps, 8 data bits, Parity None, 1 Stop bit, and Flow Control None.
7. Press Enter on the Hyperterminal/Putty window. Username: usha Password: admin
8. Once on the main menu, go to 1. SNMP/WEB Card Settings. Type "1" then enter.
9. Go to 1. IP, Time and System Group. Type "1" then enter.
10. Go to 1. IPv4 Configuration. Type "1" then enter.
11. You will now see your IP, Gateway and Subnet.
12. If you would like to change the IP address, type in "1" then enter. Then type in the new IP address and press enter.

### **SNMP Extended Device Support – CT-16F, EMD Module**

The CT-16F (Environmental Monitoring Device) is a connectivity device that allows you to remotely monitor the temperature, humidity and status of two contact devices. Its connection to the USHA Card enables monitoring or notification of alarms via a standard Web browser.

#### **SNMP EMD Features**

1. Real-time temperature/humidity and other environmental conditions monitoring
2. Monitors the status of two user-provided contact devices
3. Can be located up to 15m from USHA module. Connects via Cat5 network cable
4. User selectable alarm and thresholds for temperature and humidity monitoring
5. Flexible configuration management via standard Web browser
6. Automatic event notification via email, or SNMP Trap
7. Records EMD parameters for statistical analysis
8. Automatically assigns IP address via DHCP or BOOTP
9. Works in 10/100Mbps modes
10. Configuration utility simplifies firmware upgrades
11. Quick and easy to install
12. Hot swappable

## 3 PROGRAMMABLE LCD DISPLAY

### 3.1 Introduction

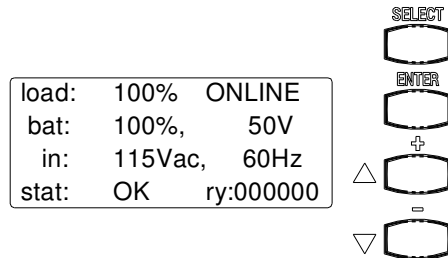


Figure 6

The LCD display on the UPS front panel is used to show various operational parameters of the UPS (in real time) as well as other important system information. It is also used to program the six relay contacts on the front of the UPS.

To view the UPS's Information, simply press the Up and Down arrows to scroll thru the information.

The Programmable LCD Display is operated by the 4 push button switches.

## 3.2 Main Screen

The Main screen will show various UPS status information. Use the “Arrow” buttons to scroll up and down to see the information below.

load: 100% ONLINE
bat: 100%, 50V
in: 115Vac, 60Hz
stat: OK ry:000000
-----
UPS Connect:
IP: 192.168.7.250
type: Static IP
date: 12-18-2019
time: 16:23:25
-----
Battery System:
stat: FULL
cond: GOOD
use: 12:43:39
evnt: 39321617
type: VRLA, 48V
cap: 0 Ahr
idate: 12-18-2019
-----
Power System:
in V: 114V, 60Hz
in I: n/a
out V: 120V, 60Hz
load: 35%
-----
UPS System:
mode: ONLINE
time: 0:15:04
alarm: 0, 0, (31)
ltemp: 26 C
Xtemp: N/A
pwdn: code C0
-----
UPS Configuration:
unit: SP1400-LT
rate: 1400VA
FW: 86552-01 R05
DSP: 1.14
-----

### **3.3 Event Log Status Screen**

The Event log status screen will show UPS events. From the main screen, press the “Select” button until you reach this screen.

Event Log Status >> READ CLEAR
--------------------------------------

Use the “Arrow” buttons to select Read or Clear. Press Enter to choose your desired choice. If Read is selected, use the “Arrow” buttons to scroll thru the logs.

Example Log

Event 1: ONLINE 12-18-19 16:15:49 in: 114Vac, 60Hz ld: 0% T: 0C
--



### 3.4 Relay Rules Screen

The Relay rules screen will allow the user to configure the 6 relay contacts on the front panel. See Relay Rules/Set table on next page.

From the main screen, press the “Select” button until you reach this screen.

Relay Rules  
>> READ/(Change)

Press the “Enter” button.

Relay Rules  
rly: 1  
rule: 5 OpMode  
set: 5 BACKUP

Pressing the “Arrow” buttons will scroll thru Relays 1-6.

Press “Enter” when you reach the relay number that you want to configure.

An arrow will appear before the rule:

Relay Rules  
rly: 1  
>rule: 5 OpMode  
set: 5 BACKUP

Use the “Arrow” buttons to select the Rule that you want. Press the “Enter” button to confirm. An arrow will appear before the set.

Relay Rules  
rly: 1  
rule: 5 OpMode  
>set: 5 BACKUP

Use the “Arrow” buttons to select the parameter that you want. Press the “Enter” button to confirm.

Press the “Select” button to go back to the main screen.

### 3.5 Relay Rules/Set Table

#	Rule	Description	Set
0	SystemOn	Turn relay on/off	0-Off, 1-On
1	BatRunTime	Activates relay after x minutes on battery	Minutes
2	LowBatVolt	Activates relay after x volts on battery	Volts
3	LowBatCap	Activates relay after battery capacity reaches x%	%
4	LowEstTime	Activates relay after battery low estimated time is reached	Minutes
5	OpMode	Operation Mode	1 - Idle 2 – PWRUP 3 – PWRUP 4 - ONLINE 5 - BACKUP 6 - BYPASS 7 – SHUTDOWN 8 – SLEEP 9 – TEST 10 - UNKNOWN
6	Alarms	Alarms	
7	SumAlarm	Summary Alarms	
8	InTempTrip		°C
9	ExTempTrip		°C

### 3.6 Relay Rules Default

Relay	Rule	Set
1	OpMode	5 Backup
2	LowBatCap	40 %
3	BatRunTime	30 min
4	SumAlarm	0
5	LowBatCap	20 %
6	BatRunTime	15 min

**Note:** If SP1400LT has not been powered on for 60 or more days, the relay rules will revert back to the default settings.

### 3.7 Configuration Screen

The Configuration screen allows the user to configure UPS settings. From the main screen, press the “Select” button until you reach this screen.

Configuration  
>> READ/(Change)

Press the “Enter” button.

System Date:  
12-18-2019

System Time:  
17:15:30

IP Address:  
000.000.000.000

Bat Install Date:  
04-05-2019

Bat Type:  
VRSLA

Bat Capacity AHrs:  
60

Audible Alarm  
Enabled

Use the “Arrow” buttons to select the setting that you want. Press the “Enter” button to confirm. An underline will appear under the settable parameter. Use the “Arrow” buttons to select the desired value. Press “Enter” to confirm and move on to the next settable parameter.

## 4 CARE AND MAINTENANCE

### 4.1 Safety

There are hazardous high voltages and materials present in the UPS system which present safety risks. You **MUST** follow basic safety procedures when maintaining the UPS. In addition please note the following:

#### ELECTRICAL SAFETY



- Hazardous high voltages are present in this product, which can cause electrical shock.
- Do not work alone under hazardous conditions.
- Always wear eye-protection when servicing energized power electronics.
- Connect equipment only to three wire AC outlets (two poles plus ground). The receptacle must be connected to an appropriate protected branch circuit (fuse or circuit breaker).
- Connecting this equipment in a manner other than specified may result in a shock hazard and may violate local electrical codes.

#### DE-ENERGIZING SAFETY

- To de-energize the UPS, BOTH the AC Power connector and the DC Power connectors must be disconnected.
- There is internal energy storage in the UPS Power Module. This energy is stored in Capacitors, which require at least 2 minutes of discharge time after power is disconnected.

## 4.2 Preventive Maintenance

### CLEANING

This device is designed to be maintenance-free. It can be cleaned with a damp cloth or nonabrasive cleanser.

**WARNING:** Do not use ACETONE-BASE cleaning solutions. Keep cleaning solutions out of the electrical receptacles on this device.

Be sure filters, vents and fans are kept free from accumulation of dust, dirt or lint. Below (see Table 15) is a simple maintenance schedule that will assist you in keeping the system at its peak level of performance and also minimizing potential premature failures.

### BATTERIES

Your system contains sealed maintenance-free batteries. When situated in the proper environment, with the proper charging and limited cycling, these batteries can last many years. **If batteries are to be stored, they must be charged at least once every three months (@ 25C ambient). If temperature is higher, they should be charged more often.**

Battery replacement should be performed or supervised by personnel familiar with the dangers of batteries and the required precautions. DO NOT permit untrained or unauthorized personnel to replace or service batteries.

**WARNING:** Never attempt to service batteries. 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 batteries, use the same number and type batteries.

**CAUTION:** Do not dispose of battery or batteries in a fire. The battery may explode.

**CAUTION:** Do not open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

**CAUTION:** A battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when working on 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.
5. Disconnect the charging source prior to connecting or disconnecting battery terminals.
6. Determine if the battery is inadvertently grounded. If inadvertently grounded, remove source of ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock will be reduced if such grounds are removed during installation and maintenance.
7. The rechargeable battery is recyclable. At the end of its useful life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with the factory for details in your area for recycling options or proper disposal.



### 4.3 BATTERY RECYCLING



- The batteries used in this equipment are recyclable. Proper disposal is required and mandated by law. The batteries contain lead and pose a hazard to the environment and human health if not disposed of properly.
- Refer to local codes for proper disposal requirements or return the batteries to the factory.
- ALWAYS contact the factory for information concerning shipment, disposal, or replacement of batteries.

Table 15: PREVENTIVE MAINTENANCE SCHEDULE

Item	Schedule	Actions
Cleaning	6 Mos.	Blow out unit with air.
Battery	6 Mos.	Clean terminals and check for corrosion. Unplug red/black connectors and check for corrosion on the pins.
Fans	6 Mos.	Check for proper operation.

### 4.4 Trouble Analysis

Unit does not power up:

- Make sure AC & DC input connectors are connected and seated properly.
- Check front panel circuit breakers
- Check Bypass Box for proper installation and wiring.
- Check Bypass Box to be switched to the “UPS” position.

No Backup when utility power is lost:

- Make sure DC breaker is in the “ON” position.
- If Bypass switch is installed, make sure it is in the “UPS” position.
- Check Batteries.

On turn on, Unit goes through startup sequence then goes into alarm and inverter does not turn on:

- Possible bad inverter.
- Load on unit may be over Max. rating.

Unit in Alarm, but is still operating OK:

- Possible over temp.
- Check fans in the unit to make sure they are running.

## **4.5 Service and Repair**

Your **SP-LT Series UPS** is backed by one of the finest customer service teams available. Write or call them at any time to obtain more information about your unit.

**Clary Corporation**  
**150 E. Huntington Drive**  
**Monrovia, CA 91016**  
**1-800-551-6111**

If a problem should occur, it is important that you obtain a Return Material Authorization (RMA) number from the Service Department to process any unit returned to the factory. In consulting the factory, always have the unit model number and serial number at hand. This information is located on the identification label and is essential in retrieving your unit's performance and history record.

The RMA number issued to you should appear on the outside of the carton, if the unit is returned, or on any correspondence regarding your unit. When shipping a unit back to the factory, try to use the original packing container and shipping materials. The Service Department cannot take responsibility for any unit damaged in return shipment. All units must be returned prepaid to:

**Clary Corporation**  
**Service Department**  
**150 E. Huntington Drive**  
**Monrovia, CA 91016**

# WARRANTY

## 1. TIME AND SCOPE OF WARRANTY:

- 1.1. Clary Corporation hereby warrants parts shipped under this Agreement to be free from defective workmanship for a period of 2 years following date of shipment. Accidental damage, misuse or normal wear and tear shall not be construed as a defect.
- 1.2. The date of shipment as used herein will be 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.
- 1.3. No provision of this warranty shall cover equipment that has been altered or modified from the original specifications to which it was manufactured unless authorized in writing.
- 1.4. No provision of this warranty shall cover batteries. However, battery manufacturer's warranties will be passed through to the customer whenever applicable.

## 2. LIMITS OF "IN WARRANTY" SERVICE LIABILITY:

- 2.1. Clary is obligated during the in-warranty period to provide service and/or adjustments to equipment returned to the factory at the expense of buyer (the term "factory" as used here-in shall also include any field service centers which may be established by Clary) and to repair or replace any part(s) thereof which in the opinion of authorized Clary personnel are found to have been defective.
- 2.2. Equipment requiring in-warranty services must be returned to the factory with all transportation charges prepaid, clearly tagged, and stating the nature of the trouble experienced, and the disposition of the equipment after repair. The equipment will be returned collect by Clary to the location specified via the best, least expensive carrier available or via customer's shipping instructions.
- 2.3. The nature of certain equipment installations may be such that it would be impractical or technically infeasible to remove the Clary portion of the equipment from the customer's premises to the Clary factory. In such cases, and at the request of the buyer, Clary will perform such service as can be satisfactorily rendered at buyer's location. The buyer will be charged only for travel expenses incidental to the service call, provided that the warranty is applicable.
- 2.4. During the in-warranty period, no service charges shall be payable by the buyer for service performed other than for service necessitated by accident, misuse, theft, abnormal line or source voltage fluctuations, abnormal conditions of operation, damage by the elements or damage resulting from adjustments, repairs, modifications made by other than Clary Authorized personnel, or the buyer's failure to reasonably maintain the equipment.
- 2.5. **THE FOREGOING WARRANTY IS EXCLUSIVE AND IS GIVEN AND ACCEPTED IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE REMEDIES OF BUYER SHALL BE LIMITED TO THOSE PROVIDED HEREIN. IN NO EVENT WILL SELLER BE LIABLE FOR COLLATERAL OR CONSEQUENTIAL DAMAGES.** No person is authorized to assume in behalf of Clary any obligation or liability in connection with the sale, warranty or service policy of any products manufactured and/or marketed by Clary Corporation beyond the warranty description on the face hereof.

## 3. Clary Corporation reserves the right to make changes, additions, and/or improvements in its products without incurring any obligation to install them on its products previously sold.