

Staco SEL
120/208/240/277/347/480VAC 60Hz
0.675 – 2.7kW
USER MANUAL

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Thank you for choosing this product.

Staco Energy is highly specialized in the development and production of Emergency Lighting Inverter System (ELI). The ELI of this series are high quality products, carefully designed and manufactured to ensure optimum performance.

Safety Warnings



IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

This manual contains important instructions for Staco UL924 series Emergency Lighting Inverter System (ELI) that should be followed during installation and maintenance of the ELI. Please read all instructions before operating the ELI and save this manual for future reference.

READ AND FOLLOW ALL SAFETY INSTRUCTIONS

- a. Do not install outdoors.
- b. Do not route wires across or near hot surfaces.
- c. Do not install near gas or electric heaters.
- d. Use caution when servicing batteries. Battery acid can cause burns to skin and eyes. If acid is spilled on skin or in eyes, flush acid with fresh water and contact a physician immediately.
- e. Unit should be installed where it will not readily be subjected to tampering by unauthorized personnel.
- f. The use of accessory equipment not recommended by the manufacturer may present an unsafe condition.
- g. Do not use this ELI for anything other than intended use.
- h. WARRANTY IS VOID if system is energized without approved startup/commissioning by a factory Authorized Service Provider. (U.S. & Canada only)

This ELI is designed and manufactured according to the relevant product standards for normal use.

DANGER



This ELI contains LETHAL VOLTAGES. All repairs and service should be performed by AUTHORIZED SERVICE PERSONNEL ONLY. There are NO USER SERVICEABLE PARTS inside ELI.

WARNING



To reduce the risk of fire or electric shock, install this ELI in a temperature and humidity controlled, indoor environment, free of conductive contaminants. Do not operate near water or excessive humidity (95% maximum).

WARNING



Batteries present a risk of electrical shock or burn from high short circuit current. Observe proper precautions. Servicing should be performed by qualified service personnel knowledgeable of batteries and required precautions. Keep unauthorized personnel away from batteries.

There is a risk of explosion if batteries are replaced with an incorrect type. Replace with same type and rating only.

Proper disposal of batteries is required. Refer to your local codes for disposal requirements. Never dispose of batteries in a fire.

Emergency Intervention

First aid intervention

Local and company procedures should be followed for any first aid intervention that may be required.

Firefighting measures

1. Do not use water to put out a fire. Use fire extinguishers that are suitable for use with electrical and electronic equipment.
2. If exposed to heat or fire, some products may release toxic fumes into the atmosphere. Always use a respirator when extinguishing a fire.

Symbols used in the Manual

Some elements are highlighted with graphic symbols to alert the user to dangerous operations.

	Danger / Risk of Electric Shock <i>This symbol indicates the possibility of serious injury or substantial damage to the unit, unless adequate precautions are taken.</i>
	Warning <i>This symbol indicates important information which must be understood. Stated precautions must be taken</i>
	Note

Protective Equipment

No maintenance operation should be carried out on the unit without wearing the Personal Protective Equipment (PPE) described below. Personnel involved in the installation and/or maintenance of the unit must be properly clothed.

The following signs show the protective equipment that should be worn. The various items of PPE must be selected and sized according to the nature of the hazard (particularly electrical) posed by the unit.

	Accident prevention footwear		Protective eyewear
	Protective clothing		Helmet
	Work gloves		

GENERAL PRECAUTIONS

This manual contains detailed instructions for the use, installation and start-up of the ELI. Read the manual carefully before installation. For information on using the ELI, the manual should be kept close at hand and consulted before carrying out any operation on the ELI.

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1. Safety Warnings and EMC instructions

Strictly comply with all warnings and operating instructions in this manual. Save this manual and carefully read the following instructions before installing the unit. Do not operate this unit before reading through all the safety information and operating instructions carefully.

1.1 ELI Location

- Install the ELI indoors, away from excess moisture or heat, direct sunlight, dust and conductive contaminants.
- Install the ELI in a structurally sound area. The ELI is extremely heavy; take care when moving and lifting the unit.
- Only operate the ELI at indoor temperatures between 32°F and 104°F (between 0°C and 40°C).
- Leave adequate space around all sides of the ELI for proper ventilation.
- Do not install the ELI near magnetic storage media, as this may result in data corruption.

1.2 Connections

- There is back feed protection inside.
- The ELI should be connected to a properly grounded utility system (**TN** grounding system).
- The input source for the unit must be single-phase rated in accordance with the equipment nameplate and must be suitably grounded.
- Use of this equipment in life support applications where failure of this equipment can reasonably be expected to cause the failure of the life support equipment or to significantly affect its safety or effectiveness is not recommended.
- Do not use this equipment in the presence of a flammable anesthetic mixture with air, oxygen or nitrous oxide.
- The ELI is connected to a DC energy source (battery). The output terminals may be live when the ELI is not connected to an AC supply.
- An external branch circuit breaker at the ELI output side is strongly recommended to provide overcurrent protection or easy disconnection of the load device.

1.3 Maintenance

- Service and repair should be performed only by trained personnel. During any service work to the ELI, it should be turned off or manually bypassed. Note that potentially lethal voltages exist within this unit as long as the battery supply is connected.
- The ELI power module does not require routine maintenance. Do not open for any reason. There are no user-serviceable parts inside.
- Before carrying out any kind of service and/or maintenance, disconnect the batteries and verify that no current is present, and no hazardous voltage exists at the terminals of high-capacity capacitors such as BUS-capacitors.
- Fuses should be replaced only with fuses of the same number and type and should be replaced only by factory authorized personnel.
- The battery circuit is not isolated from the input voltage. Verify that no voltage between the battery terminals and ground is present before maintenance or repair. Hazardous voltages may occur between the battery terminals and the ground.

1.4 Battery

- Installation and servicing of batteries should be performed or supervised by personnel knowledgeable about batteries and required precautions.
- Batteries present a risk of electrical shock and burn from high short-circuit current. Observe proper precautions.
 - Remove watches, rings, or other metal objects.
 - Use tools with insulated handles.
 - Wear rubber gloves and boots.
 - Do not lay tools or metal parts on top of batteries.
 - Disconnect charging source prior to connecting or disconnecting battery terminals.
 - Determine if battery is inadvertently grounded. If inadvertently grounded, remove source from ground.
- Contact with any part of a grounded battery can result in electrical shock.
- The batteries are recyclable. The batteries must be disposed of properly according to local regulations.
- Do not dispose of the batteries in a fire.
- Do not short or bridge the battery terminals.
- Unplug and turn off the ELI before performing battery installation or replacement.
- Battery replacement should be performed only by authorized service personnel using the same number and type of batteries (Sealed Lead-Acid). Use tools with insulated handles.
- Do not open or mutilate the batteries. Released electrolyte is harmful to the skin and eyes and may be toxic.
- Do not connect or disconnect battery(s) while the ELI is operating from the battery supply.

2. Installation

S	E	L	0	0	9	1	1	0

2.1 Unpacking and Inspection

Shipment consists of ELI enclosure and separate battery pallet. Unpack and check the contents of each package. The shipping package contains:

- (1) User manual
- (1) USB cable
- (1) Software CD
- (1) Battery pallet

NOTE: Before installation, inspect the unit and each battery. Ensure that nothing inside the package is damaged during transportation. If there is any damage or lack of parts, do not turn on the unit and notify the carrier and factory immediately. Keep the original package in a safe place for future use.

2.1.1 ELI Layout

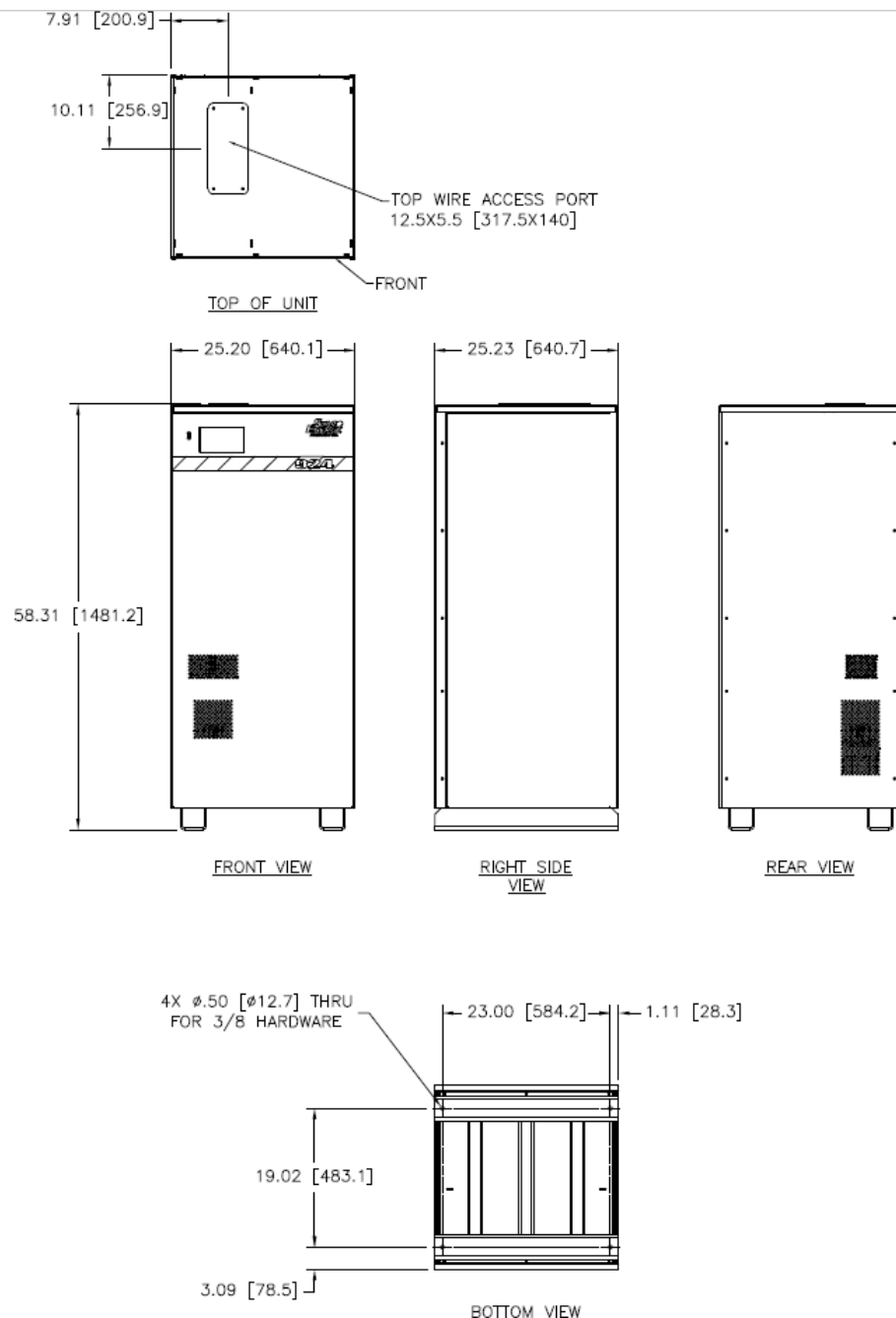


Figure 1: ELI Layout 0.675 -2.70kW

2.1.2 ELI Main Components

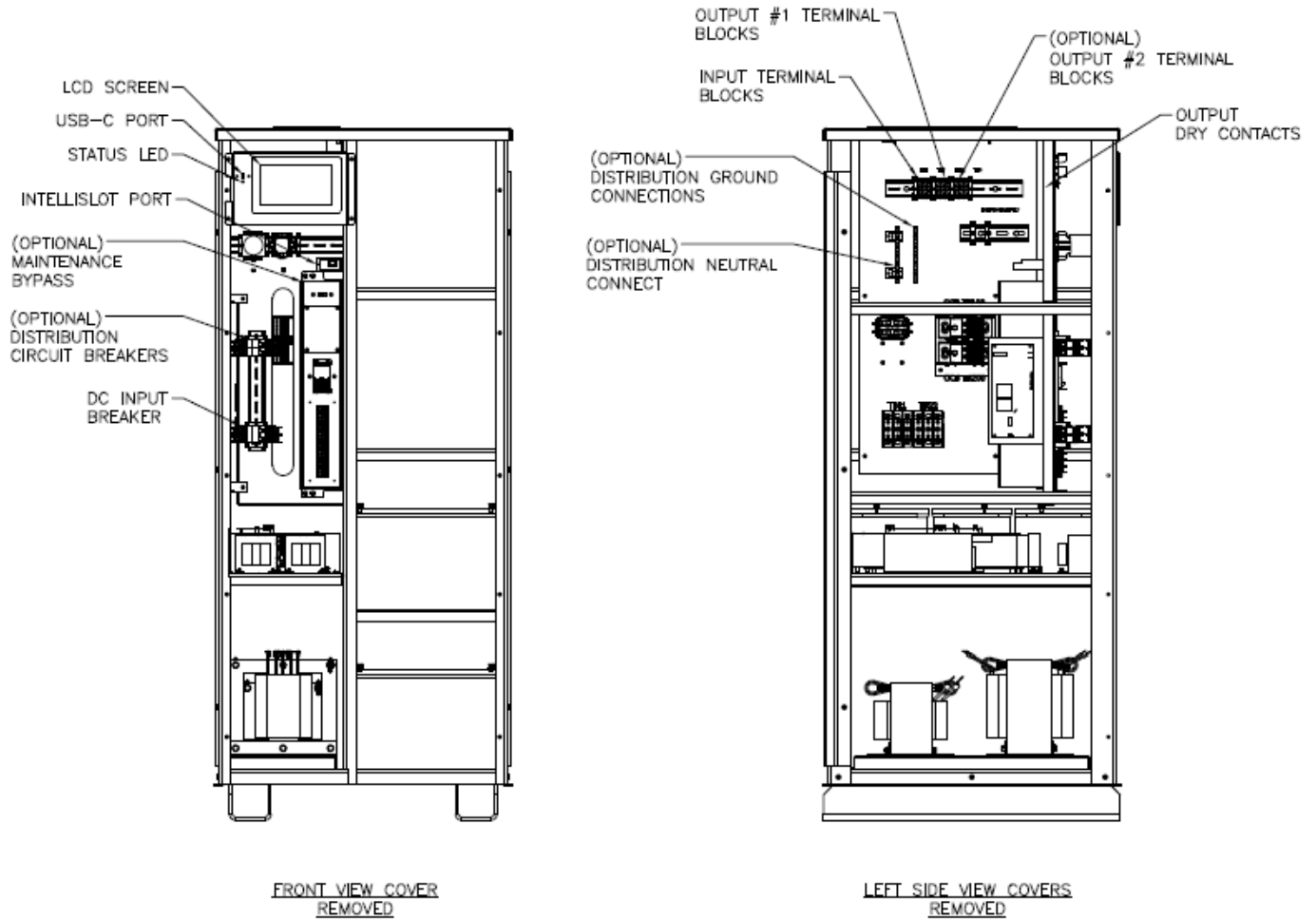
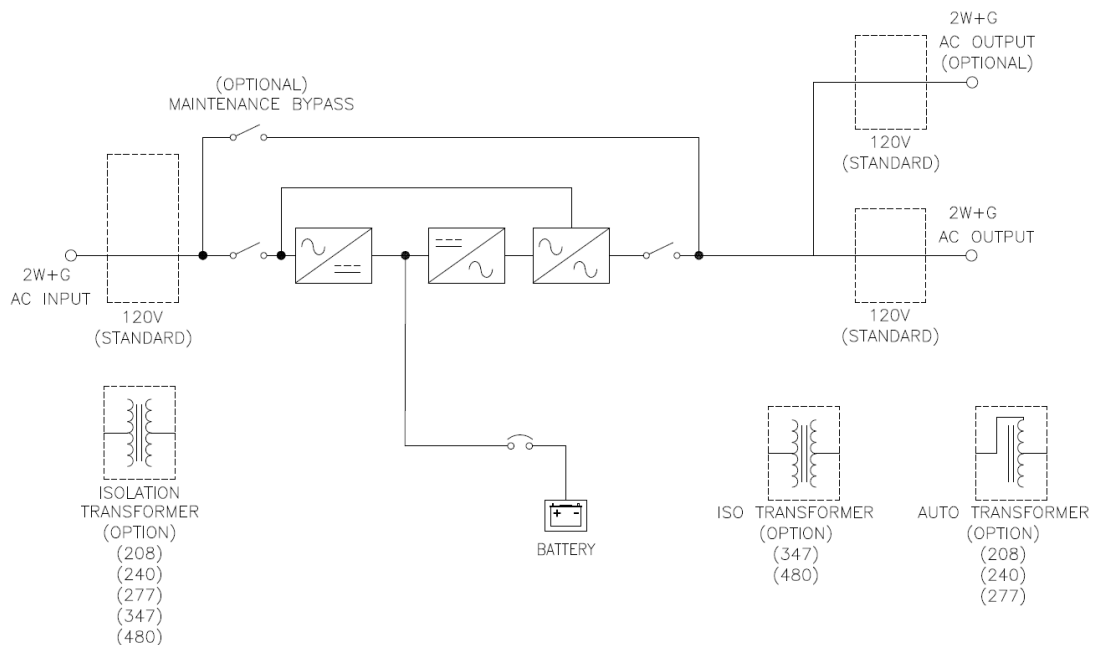


Figure 2: ELI Main Components 0.675 -2.70kW

2.2 System Single Line Diagram



2.3 Installation

Installation and wiring must be set in accordance with the national and local codes.

WARRANTY IS VOID if system is energized without approved startup/commissioning by a factory Authorized Service Provider. (U.S. & Canada only)

2.3.1 Battery Installations

- Installation and servicing of batteries should be performed or supervised by personnel knowledgeable about batteries and required precautions.
- DC input breaker polarity is marked on the load side (battery side) of the breaker. Ensure positive is connected to the 'RED' wire and negative is connected to the 'BLACK' wire.
- Batteries present a risk of electrical shock and burn from high short-circuit current. Observe proper precautions.
 - Remove watches, rings, or other metal objects.
 - Use tools with insulated handles.
 - Wear rubber gloves and boots.
 - Do not lay tools or metal parts on top of batteries.
 - Disconnect charging source prior to connecting or disconnecting battery terminals.
 - Determine if battery is inadvertently grounded. If inadvertently grounded, remove source from ground.
- Contact with any part of a grounded battery can result in electrical shock.
- Do not short or bridge the battery terminals.
- Unplug and turn off the ELI before performing battery installation or replacement.
- Use tools with insulated handles.

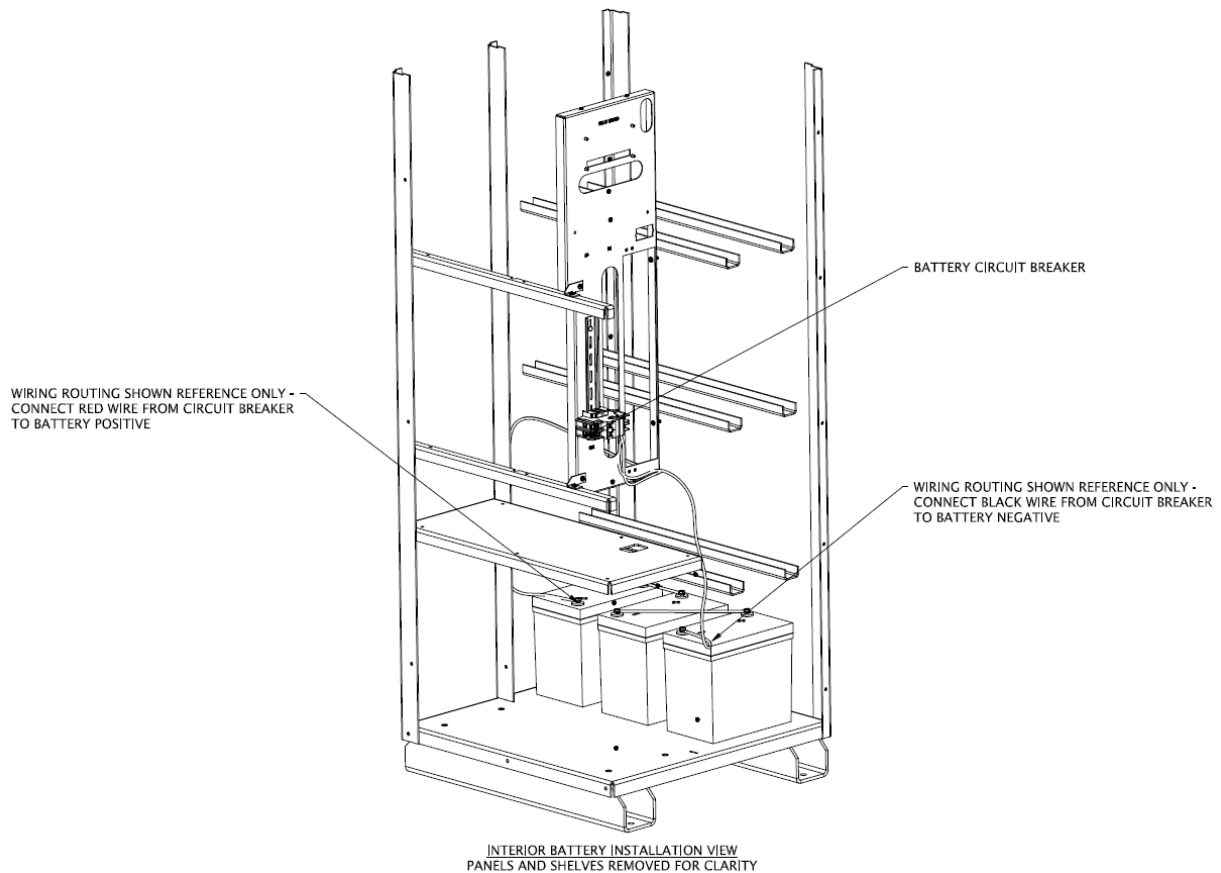
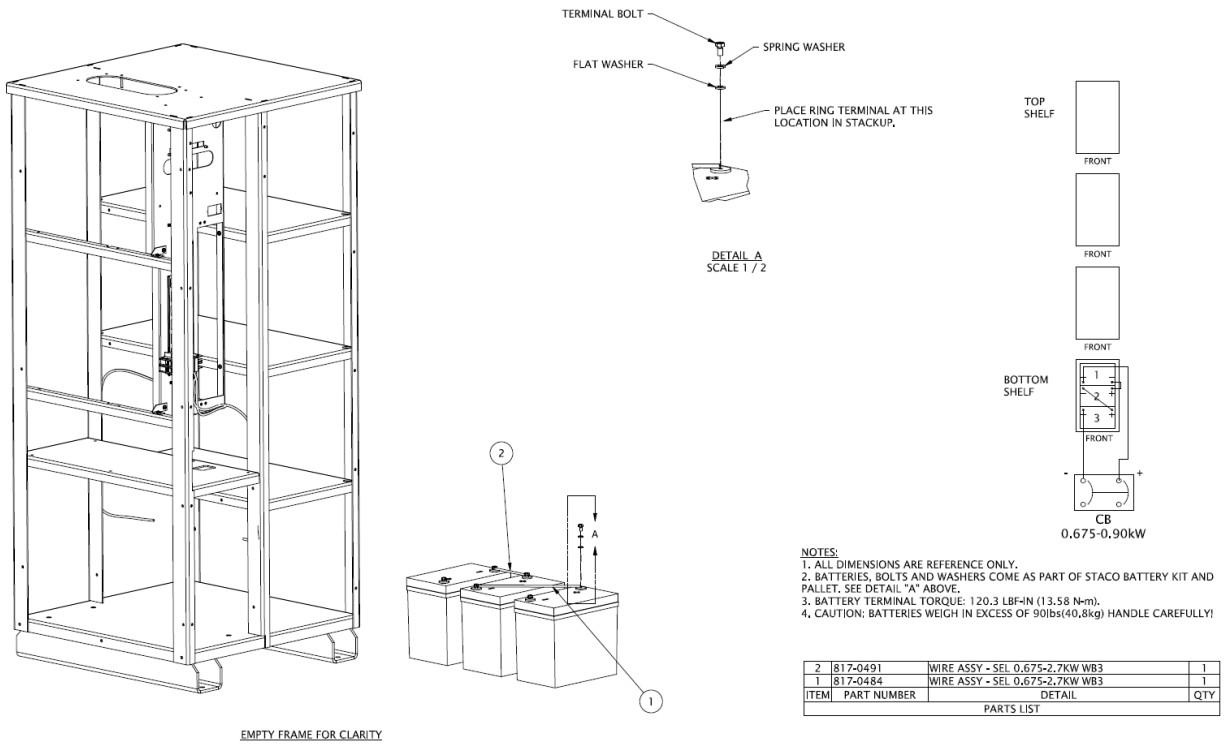


Figure 3: 0.675-0.90kW Battery Installation

2.3.2 ELI Input / Output Wiring

The input and output wiring are located behind enclosure panels. See **Figure 2** for component layout.

NOTE: Connect the earth ground wire first when making wire connection. Disconnect the earth ground wire last when making wire disconnection.



Wire size should be in accordance with NEC and local code referencing the currents shown in section **5.2**
Nominal ELI Current

1. Connect input wires to appropriate input terminals according to **Figure 7**
2. Connect output wires to appropriate output terminals according to **Figure 7**

NOTE: Make sure that the wires are connected tightly with the terminals in accordance with section **5.3**
Recommended Wiring.

NOTE: Install the output breaker between the output terminal and the load. The breaker should be qualified with leakage current protection if necessary.

CUSTOMER WIRING CONNECTIONS
Terminal Torque: 14 in-lb (1.6 Nm)
Wire Stripping Length: 0.43 inches (11 mm)

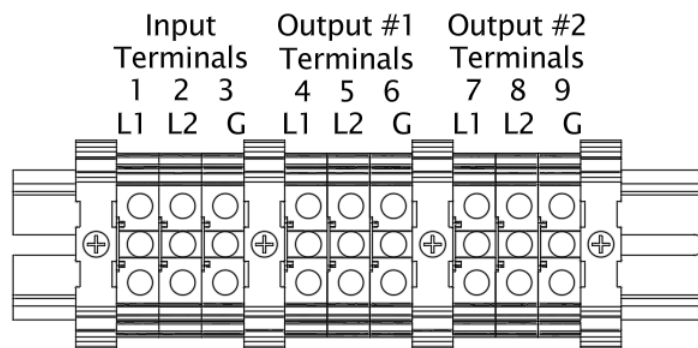


Figure 7: Terminal block array of 0.675 -2.70kW ELI

2.3.3 Dual Output Voltage

NOTE: Dual rated output voltages are available. The combined outputs power may not exceed the maximum ELI kW rating.

NOTE: Connect the earth ground wire first when making wire connection. Disconnect the earth ground wire last when disconnecting.



Wire size should be in accordance with NEC and local code referencing the currents shown in **5.2 Nominal ELI Current**

1. Connect input wires to appropriate input terminals according to **Figure 7**.
2. Connect Output wires to appropriate Output terminals to **Figure 7**.

NOTE: Ensure that the wires are connected tightly with the terminals in accordance with section **5.3 Recommended Wiring**.

NOTE: Install the output breaker between the output terminal and the load. The breaker should be qualified with leakage current protection if necessary.

NOTE: 347 & 480-volt output rating is not available with the dual outputs.

2.3.4 Optional Output Circuit Breakers (OCB)

Output circuit breaker(s) for separating and controlling the load connected to the ELI are available. The breakers are located in an accessible compartment separated from the customer connection section. See **Figure 8: Output Circuit Breaker Terminals on ELI**. The OCB wire connections replace the standard and dual output terminals. A grounding bar & neutral bar are provided with this option.



Wire size should be in accordance with NEC and local code referencing the currents shown in **5.2 Nominal ELI Current**

NOTE: Ensure that the wires are connected tightly with the terminals in accordance with section **5.3 Recommended Wiring**.

1. Connect Output wires to appropriate line, neutral, and ground terminals according to **Figure 8**.

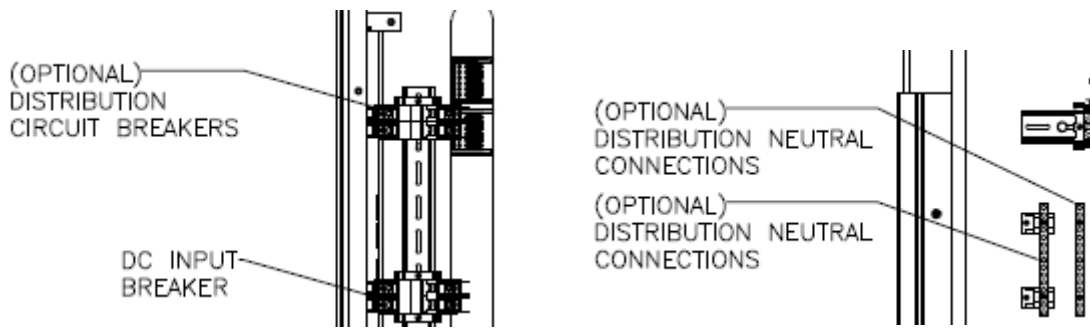


Figure 8: Output Circuit Breaker Terminals on ELI

2.3.5 Trip Alarm Option

Trip alarms are Dry Contacts connected to individual optional OCB breakers. Dry Contact is (1) set of Normally Off contacts.

Rated Operating Currents	10A@240V AC 3A@110V DC 1A@220V DC
Minimum Contact Load	1mA @ 24V DC
Torque	max. 0.8Nm (7 lb.in)
Wire Range	
Single Wire	1.0mm ² - 2.5mm ² (18-14 AWG)
Stranded Wire	1.0mm ² - 1.5mm ² (18-16 AWG)
Stranded Wire Ferrule	1.0mm ² - 1.5mm ² (18-16 AWG)

2.3.6 Output Dry Contacts

It relays based upon the status of UPS. There are six connections, J2 through J7.

Connection	Description	Terminal	Type	Rating	Wire Size	Torque
J1	Internal connection					
J2	Normal Operation	1	N. C.	30 V (AC or DC); <2 A	#22-#12 AWG	4.4 in-lbs.
		2	Com			
		3	N.O.			
J3	On Bypass	1	N. C.			
		2	Com			
		3	N.O.			
J4	On Battery	1	N. C.			
		2	Com			
		3	N.O.			
J5	Low Battery	1	N. C.			
		2	Com			
		3	N.O.			
J6	Over Temperature	1	N. C.			
		2	Com			
		3	N.O.			
J7	Alarm Present	1	N. C.			
		2	Com			
		3	N.O.			

N.C. – Normally Closed – shorted to Com when signal is not energized

N.O. – Normally Open – shorted to Com when signal is activated

Table 1 – Alarm Relay Board

2.3.7 Normally-Off Hold (NOH) Option

Normally-Off hold allows for the fixtures, lamps and/or loads connected to the ELI to immediately begin operating at full-light output in the event of an AC power outage, as required by UL924 egress codes. When utility source is restored, the ELI will continue supplying power to the connected emergency circuits for the duration of the timer setting. Once the predetermined time is reached, the normally off circuits will de-energized.

The relay timer allows the emergency circuit to remain energized after the utility power is restored. The timer is settable from 0 seconds to 500 hours.

1. Set the desired time range of the Normal-Off relay. time ranges are selectable between 1s to 500h. See **Figure 9** for the timer details.
 - a. Turn the time range selector with the screwdriver. Clockwise increases the time range and counterclockwise decreases the time range.
 - b. Confirm the range selector position is correct.
 - c. If the position is not stable, the timer may not operate as intended.

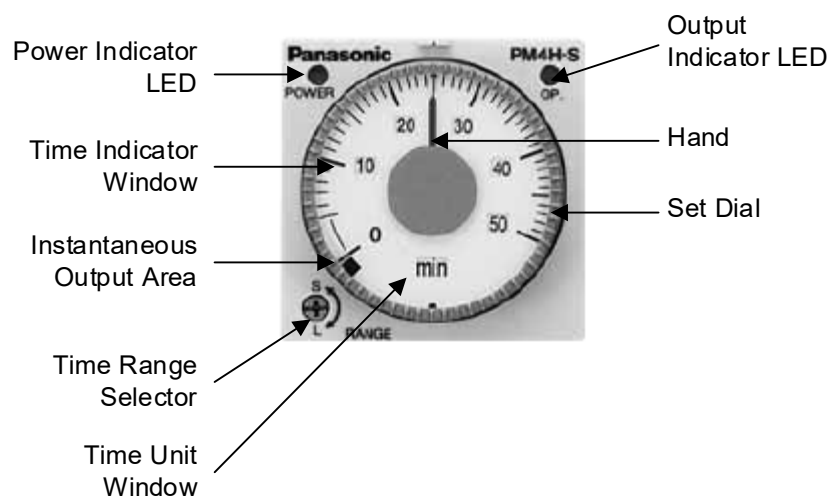


Figure 9: Normally-Off Timer Relay

2. Set the desired time setting of the Normally-Off relay. See
 - a. Turn the set dial to a desired time within the range.
 - b. Instantaneous output will be on when the dial is set to "0". (Instantaneous output area)
 - c. Time range and setting time cannot be changed when the power supply is on.

		Time unit			
		sec	min	hrs	10h
Scale	1	0.1s to 1s	0.1 min to 1 min	0.1h to 1h	1.0h to 10h
	5	0.5s to 5s	0.5 min to 5 min	0.5h to 5h	5h to 50h
	10	1.0s to 10s	1.0 min to 10 min	1.0h to 10h	10h to 100h
	50	5s to 50s	5 min to 50 min	5h to 50h	50h to 500h

3. Operation

3.1 LED Indicators

LED on the front panel shows the UPS operating status:

Green	Yellow	Red
Normal Mode	Warning	Alarm

3.2 LCD Panel



Figure 10 – ELI Start-up Screen

3.3 ELI Operation

3.3.1 Turn on the ELI with utility power supply (to Line mode)

1. Verify DC wiring.
2. Switch on DC input breaker
3. Verify mains input is connected correctly.
4. Apply input power- LCD will initialize.
5. After 15 seconds the inverter will start
6. After a few seconds, the ELI will enter Line mode.

3.3.2 Connect devices to ELI

After the ELI is powered, the connected loads may be powered on.

1. Switch on the ELI first and then switch on the devices one by one; the LCD panel will display total load level.
2. If inductive loads are connected the inrush current should be calculated carefully to ensure the capacity of the ELI is sized properly.
3. If the ELI is overloaded, the overload alarm will sound.
4. When the ELI is overloaded, reduce the loads.
 - i. If the overload timer expires while in Line Mode, the ELI will automatically transfer to Bypass mode. After the overload is removed, it will return to Line mode.
 - ii. If the overload timer expires while in Battery Mode, the ELI will enter fault status.
 1. If a bypass is enabled, the ELI will power the load via bypass.
 2. If bypass function is disabled or the input power is not within bypass acceptable range, output will be immediately lost.

3.3.3 Charging batteries

1. After the ELI is connected to the utility power, the charger will charge the batteries automatically except in Battery mode or during battery test.
2. Charge batteries for at least 24 hours before use. Otherwise, the backup time may be shorter than expected.

3.3.4 Battery Mode operation

1. In Battery mode, the audible alarm will alert.

3.3.5 Turn off the ELI with utility power supply in Line mode

1. Press Control and Press “Turn Off”
2. ELI will go to bypass mode.

NOTE: “Turn Off” means that ELI is not working online / ECO / battery / battery test mode. Even though the ELI is turned off, if input or bypass voltage is normal, the internal power supply will still be working; the output voltage of the ELI will still exist.

3. To fully disable the output, remove utility power. After a few seconds, the LCD will turn off and the ELI is fully shutdown.

3.3.6 Turn off the ELI without utility power supply in Battery mode

1. Press Control and Press “Turn Off”
 - LCD will show 0VAC measurements for input and output.

3.3.7 Optional Maintenance Bypass Operation

The maintenance bypass isolates the system electronics, to provide continuous power without shutting down the connected loads during ELI scheduled maintenance or battery replacement.

Transfer to Maintenance Bypass:

1. Place ELI in Static Bypass by Press Control and Press “Turn Off”
2. Open Maintenance switch cover
3. Rotate bypass switch to the ‘Bypass’ position

The input and output of the ELI electronics are isolated from the system. All devices are now directly powered by utility.

Transfer to ELI Operation

1. Rotate bypass switch to ‘UPS’ position
2. Replace Maintenance switch cover
3. Turn ELI on Inverter by Press Control and Press “Turn On”

The ELI is now powering all devices.

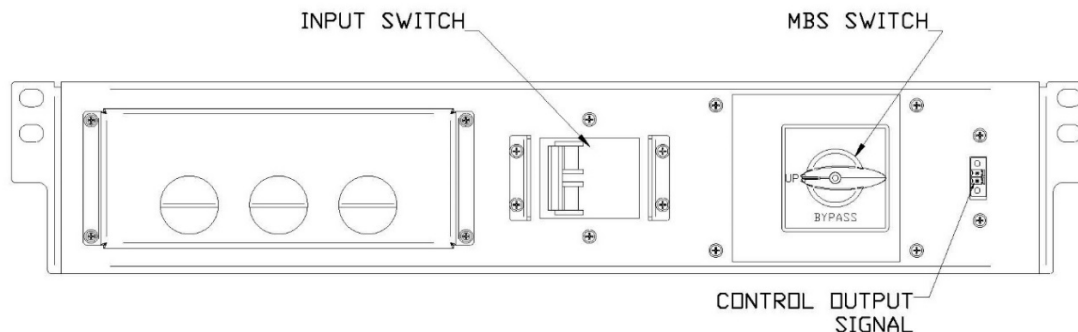


Figure 11: Maintenance Bypass on ELI

3.4 LCD Operation

3.4.1 Main interface (home page)

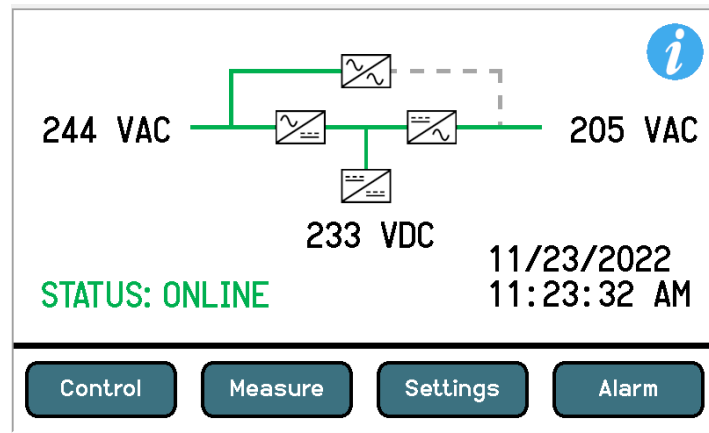


Figure 12 – ELI Home Screen - Normal Mode

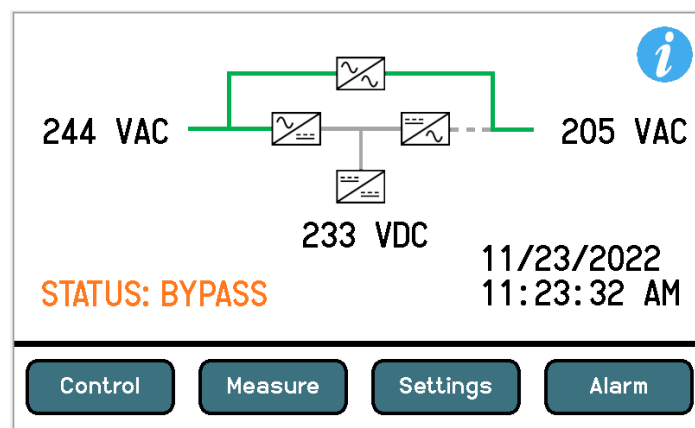


Figure 13 – ELI Home Screen - Bypass Mode

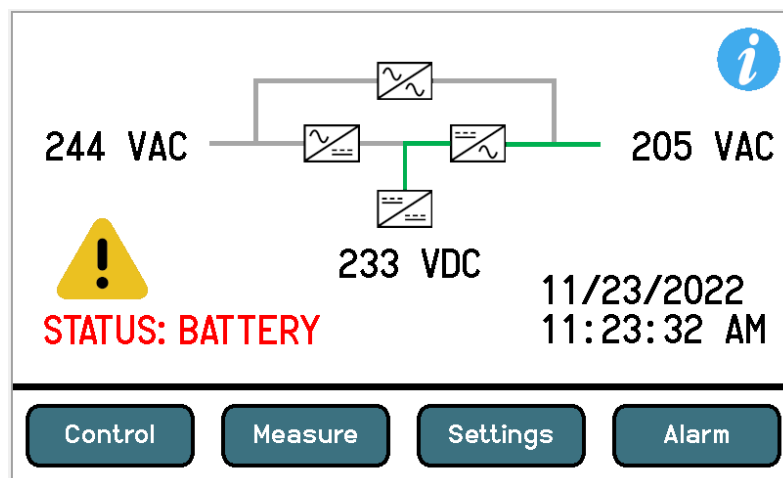


Figure 14 – ELI Home Screen - Battery Mode

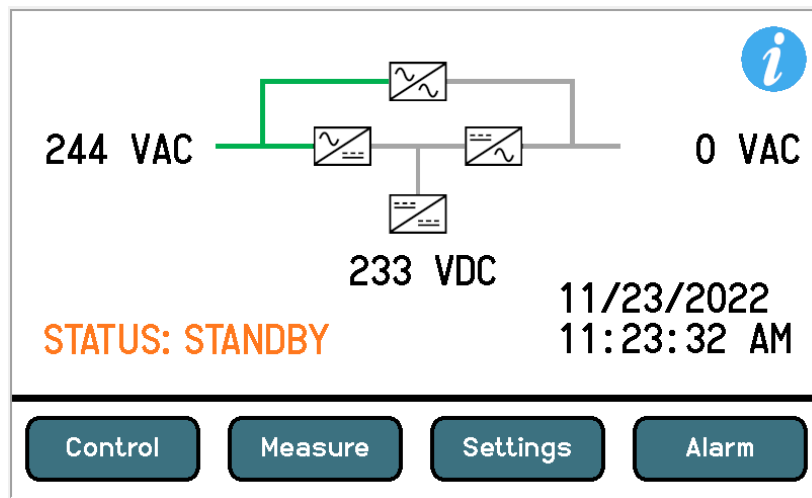


Figure 15 – ELI Home Screen – Stand-By Mode

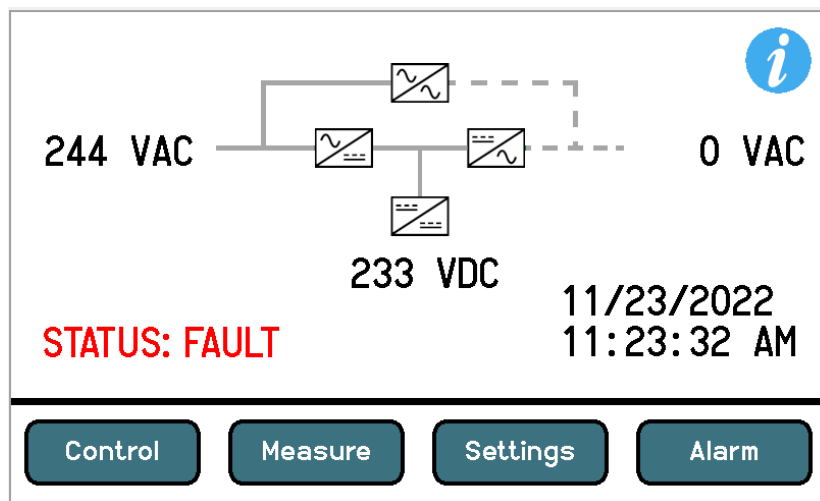


Figure 16 – ELI Home Screen – Fault



Figure 17 – Start-up Screen

- Pressing blue “i” button on any Home screen will take to Start-Up screen. This screen displays Technical Support Phone number and QR code to appropriate website for Staco Energy Products.

3.4.2 Control menu

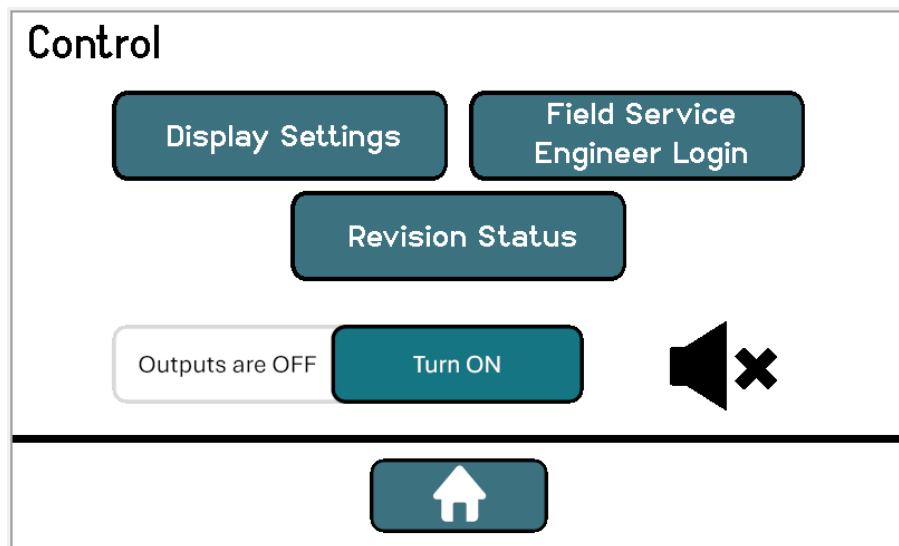


Figure 18 – Control Menu

3.4.2.1 Display Settings

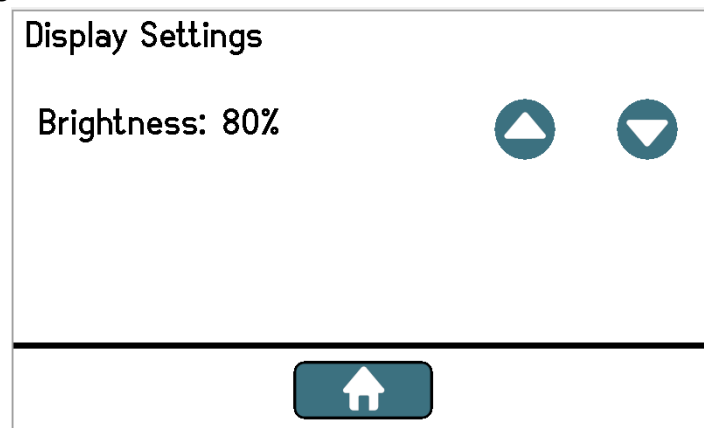


Figure 19 – Display Settings

- Tap the up arrow to increase brightness.
- Tap the down arrow to decrease brightness.
- Percent value indicates brightness level.

3.4.2.2 Field Service Engineer Login

This is a password protected screen for factory and start-up settings.

3.4.2.3 Revision Status

Revision Status	
Time:	09:37:23 AM
Date:	10/12/2020
UPS Firmware Revision:	00.00.00.00
HMI Firmware Revision:	00.00.80.00
HMI Firmware Revision Date:	01/22/2023
	

Figure 20 – Revision Status

- Displays information related to the revision of the system.
- The firmware revision of the current UPS will be displayed.
- The current date and time will be displayed, with the date in MM/DD/YYYY format and time in hh:mm:ss AM/PM format.

3.4.3 Measure Menu

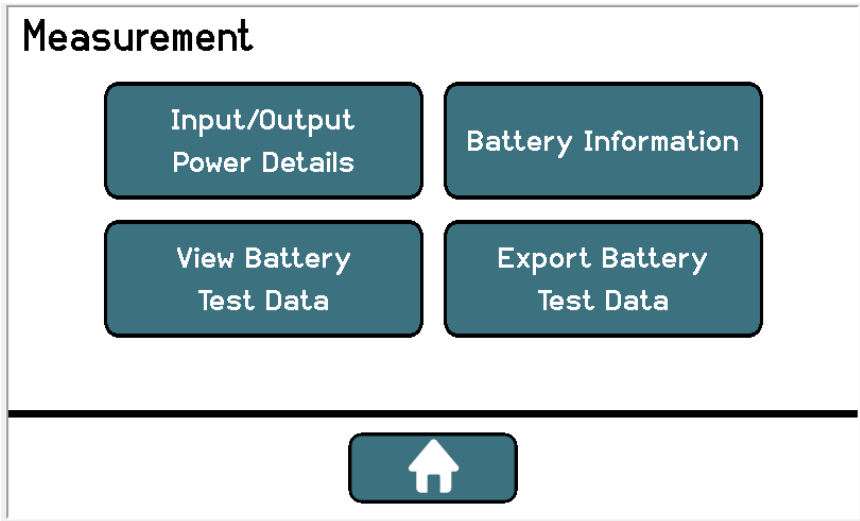


Figure 21 – Measure Menu

3.4.3.1 Input/Output Power Details

Input/Output Power Details			
Input		Output	
Voltage	120 VAC	Voltage #1	130 VAC
Frequency	122 Hz	Voltage #2	127 VAC
		Total Current	33 AAC
		Frequency	120 Hz
		Total Power	200 W
		Total Load	80 %



Figure 22 – Input/Output Power Details

- Periodically updates displayed values.

3.4.3.2 Battery Information

Battery Information	
Battery Voltage	24 VDC
Number of Times On Battery	22
Total Time On Battery	1000000 Min
Battery Last Replaced	02/22/2024



Figure 23 – Battery Information

- Displays battery related information.
- Periodically updates displayed values.
- 'Number of Times On Battery' displays how many times the UPS had entered battery mode.
- 'Total Time On Battery' displays the total time in minutes that the UPS had been in battery mode.

3.4.3.3 View Battery Test Data

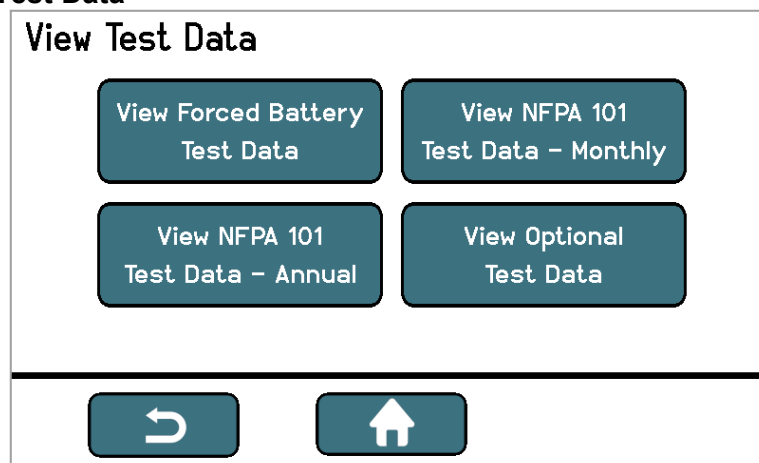


Figure 24 – View Battery Test Data

Forced Battery Test Data

Forced Test Data		999999999	Total
Entry	105236		Last
10/11/2022 11:30:23 AM			Prev
Passed Forced 1-Minute Test			Next
Load at 239.2 VAC 68.8 Watts			First
Battery Stop Voltage 268.8 VDC			
			

- Allow the user to view all available Forced tests conducted.
- Each test will display information regarding the test.
- Display the description of the test and the date and time in which it occurred.
- The date will be in format MM/DD/YYYY.
- The time will be in the format hh:mm:ss AM/PM.

NFPA 101 Test Data - Monthly

NFPA 101 Monthly Test Data		999999999	Total
Entry	105236		Last
10/11/2022 11:30:23 AM			Prev
Passed Monthly 5 Minute Test			Next
Load at 239.2 VAC 68.8 Watts			First
Battery Stop Voltage 268.8 VDC			
			

- Allow the user to view all available Monthly tests conducted.
- Each test will display information regarding the test.
- Display the description of the test and the date and time in which it occurred.
- The date will be in format MM/DD/YYYY.
- The time will be in the format hh:mm:ss AM/PM.

NFPA 101 Test Data - Annual

NFPA 101 Annual Test Data		999999999	Total
Entry	105236		Last
10/11/2022 11:30:23 AM			Prev
Passed Annual 90-Minute Test			Next
Load at 239.2 VAC 68.8 Watts			First
Battery Stop Voltage 268.8 VDC			
Load Changed +50% from Previous Test			
			

- Allow the user to view all available Annual tests conducted.
- Each test will display information regarding the test.
- Display the description of the test and the date and time in which it occurred.
- The date will be in format MM/DD/YYYY.
- The time will be in the format hh:mm:ss AM/PM.

View Optional test Data

Optional Test Data		999999999 Total
Entry	105236	▲ Last
10/11/2022 11:30:23 AM		▲ Prev
Passed Weekly 5-Minute Test		▼ Next
Load at 239.2 VAC 68.8 Watts		▼ First
Battery Stop Voltage 268.8 VDC		



- Allow the user to view all available optional battery tests conducted.
- Each test will display information regarding the test.
- Display the description of the test and the date and time in which it occurred.
- The date will be in format MM/DD/YYYY.
- The time will be in the format hh:mm:ss AM/PM.

3.4.3.4 Export Battery Test Data

Export Test Data

Export NFPA 101
Monthly Test Data

Export NFPA 101
Annual Test Data



Figure 25 – Export Battery Test Data

- Tapping the 'Export NFPA 101 Monthly Test Data' button will attempt to export monthly test data to an attached USB drive and will display a message regarding errors, or success.
- Tapping the 'Export NFPA 101 Annual Test Data' button will attempt to export annual test data to an attached USB drive and will display a message regarding errors, or success.

3.4.4 Settings Menu

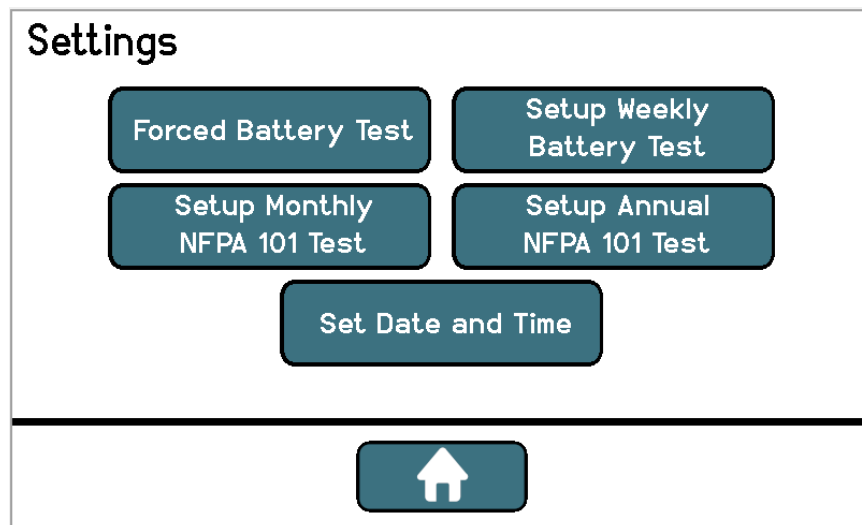


Figure 26 – Settings Menu

3.4.4.1 Forced Battery Test

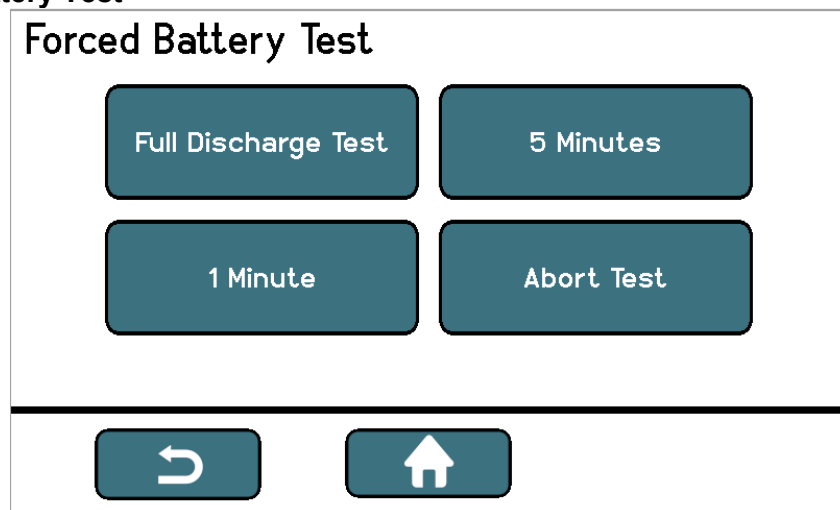


Figure 27 – Forced Battery Test

- Tapping the 'Full Discharge Test' button will run a full discharge test.
- Tapping the '5 Minutes' button will run a 5-minute NFPA 101 test.
- Tapping the '1 Minute' button will run a 1-minute NFPA 101 test.
- Tapping the 'Abort Test' button will discontinue the currently running test.

3.4.4.2 Setup Weekly Battery Test

Optional Test Setup

◀ Weekly ▶

◀ Saturday ▶

Hour:Min

09 : 53 AM

1 2 3

4 5 6

7 8 9

AM/PM 0 ⌫

↶ ⏠ ↷

Figure 28 – Setup Weekly Battery Test

- Select whether to schedule or not to schedule a weekly 5-minute battery test.
- If the weekly 5-minute test is selected, then select which day of the week and time to conduct the test.
- Pressing the AM/PM keypad button will toggle the meridiem that the user chooses.
- Message box appears if an invalid value is submitted.

3.4.4.3 Setup Monthly Battery Test

Monthly NFPA 101
Battery Test

Day of Month

12

Hour:Min

09 : 53 AM

1 2 3

4 5 6

7 8 9

AM/PM 0 ⌫

↶ ⏠ ↷

Figure 29 – Setup Monthly Battery Test

- Enter date of this month and time at which to start the Monthly NFPA Battery Test.
- Select to edit either the date or time by touching the respective editing box.
- Pressing the AM/PM keypad button will toggle the meridiem that the user chooses.
- Message screen appears if an invalid value is submitted.
- Enter zero for each input box, then the monthly NFPA 101 test will not be set. This effectively disables the monthly NFPA test until the user enters valid values on this screen.

3.4.4.4 Setup Annual Battery Test

Annual NFPA 101
Battery Test
Month/Day
12 / 15
Hour:Min
09 : 53 AM

1 2 3
4 5 6
7 8 9
AM/PM 0

Back Home Forward

Figure 30 – Setup Annual Battery Test

- Enter this year's month, day, and time at which to start the Annual NFPA Battery Test.
- Select to edit either the date or time by touching the respective editing box.
- Pressing the AM/PM keypad button will toggle the meridiem that the user chooses.
- Message screen appears if an invalid value is submitted.
- Enter zero for each input box, then the annual NFPA 101 test will not be set. This effectively disables the annual NFPA test until the user enters valid values on this screen.

3.4.4.5 Set Date and Time

Set Date Time
Month/Day/Year
12 / 15 / 2005
Hour:Min
09 : 53 AM

1 2 3
4 5 6
7 8 9
AM/PM 0

Back Home Forward

Figure 31 – Set Date and Time

- Set Date in format MM/DD/YYYY.
- Set time in format hh:mm AM/PM.
- Pressing the AM/PM keypad button will toggle the meridiem that the user chooses.
- Message box appears if an invalid value is submitted.

3.4.5 Alarms

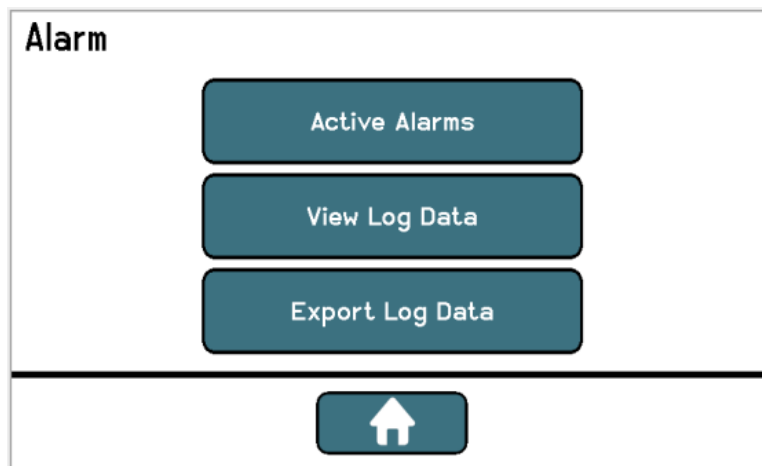


Figure 32 – Alarm Menu

3.4.5.1 Active Alarms

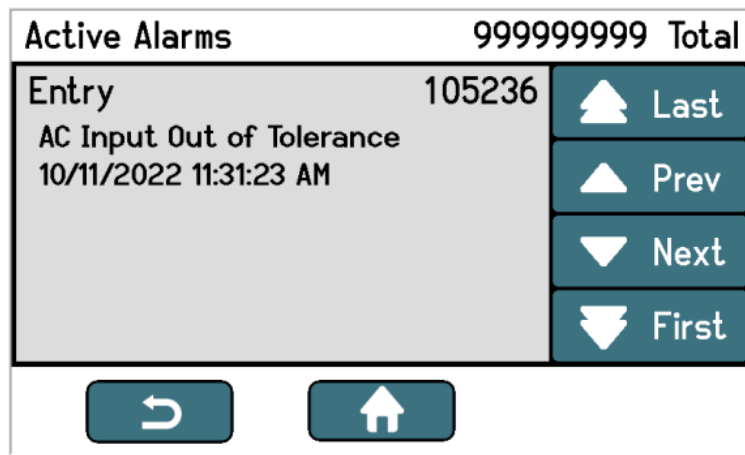


Figure 33 – Active Alarms

- View all available warnings and faults that are currently active.
- Display the description of the alarm and the date and time in which it occurred.
- The date will be in the format MM/DD/YYYY.
- The time will be in the format hh:mm:ss AM/PM.

3.4.5.2 View Log Data

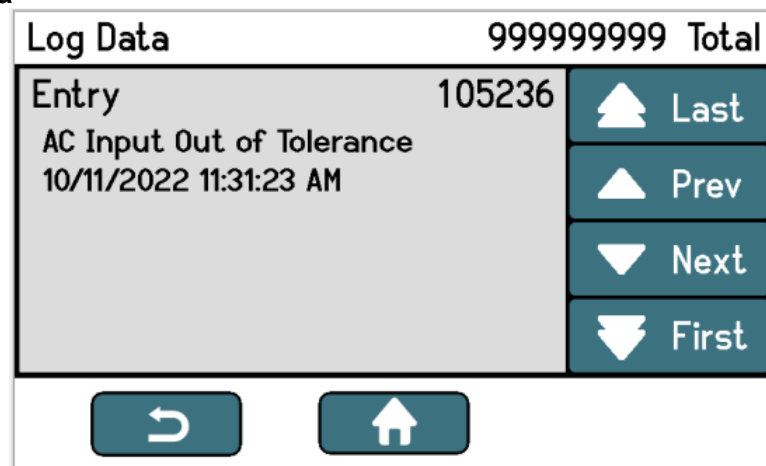


Figure 34 – View Log Data

- View all available warnings and faults stored in memory of the HMI.
- Display all recorded alarms.
- Display the description of the alarm and the date and time in which it occurred.
- The date will be in the format MM/DD/YYYY.
- The time will be in the format hh:mm:ss AM/PM.

3.4.5.3 Export Log Data

Tapping the 'Export Log Data' button will attempt to export log data to an attached USB drive and will display a message regarding errors, or success.

4. Trouble Shooting

4.1 Warning status

When Status LED turns yellow or red and the alarm beeps, there is an issue with the ELI. Navigate to Active Alarm menu to identify Warning or Fault, **See Figure 33**.

5. Specifications

5.1 General Specification

kW	0.675	0.90	1.30	1.80	2.70
Phase	Single phase with ground				
INPUT					
Nominal Voltage	120/208/240/277/347/480 VAC				
Voltage Range	+/-10% @ 100% load				
Frequency Range	60 Hz, ±6Hz				
OUTPUT					
Nominal Voltage, VAC	120/208/240/277/347/480 VAC				
AC Voltage Regulation	± 10%				
Frequency Sync Range	54 – 66Hz				
Freq Range (Bat. Mode)	60 Hz ± 0.1 Hz				
Overload	110% for 20-sec, 125% for 10-sec, 150%Shutdown Immediately				
Transfer Time	6 ms (typical)				
Waveform (All Modes)	Pure Sinewave				
BATTERY					
Nominal Voltage	36VDC			72VDC	
Battery Type	VRLA, 12 V				
Battery Size	200W	280W	200W x2	280W	200W x2
Numbers	3			6	
Recharge Time	24 hrs. maximum, 12-24 hrs. typical				
Float Charging Voltage	40.9 VDC			81.9 VDC	
PHYSICAL					
Dimension, in (mm)	25.20 x 58.31 x 25.11 (640.1 x 1481 x 637.8) [WxHxD]				
System Weight lbs (kg)					
No Transformer	640 (290)	700 (316)	745 (338)	870 (395)	965 (438)
One Transformer	680 (308)	740 (336)	785 (356)	935 (424)	1030 (467)
Two Transformer	700 (316)	755 (342)	805 (365)	965 (438)	1060 (481)
ENVIRONMENT					
Operation Temperature	0 ~ 40°C (32°F ~ 104°F)(the battery life will decrease when > 25°C (77°F))				
Operation Humidity	0-95 % RH @ 0- 40°C (non-condensing)				
Noise Level	Less than 65dBA @ 1 Meter				
Operation Altitude ¹	<1000m				
COMMUNICATIONS					
SNMP Card	SNMP/ Web Browser/ MODBUS; TC/IP capability				
Standards					
Lighting System	UL924, OUST				
Inverter: EMI	FCC Class A				
Inverter: Safety	cUL 1778 5 th Ed.,				

1. If the unit is installed or used in a place where the altitude is above 1000m (maximum 2000m), the output power must be derated one percent per 100m.

Product specifications are subject to change without further notice.

5.2 Nominal ELI Current

kW	Input		Output	
	Input Voltage (Vac)	Nom Input Current (A)	Output Voltage (Vac)	Output Current (A)
0.675	120	6.9	120	5.6
0.675	208	4.1	208	3.2
0.675	240	3.5	240	2.8
0.675	480	1.8	277	2.4
0.675	277	3.0	480	1.4
0.675	346	2.4	346	2.0
0.90	120	9.1	120	7.5
0.90	208	5.4	208	4.3
0.90	240	4.7	240	3.8
0.90	480	2.3	277	3.2
0.90	277	4.1	480	1.9
0.90	346	3.3	346	2.6
1.35	120	13.7	120	11.3
1.35	208	8.1	208	6.5
1.35	240	7.0	240	5.6
1.35	480	3.5	277	4.9
1.35	277	6.1	480	2.8
1.35	346	4.9	346	3.9
1.80	120	18.3	120	15.0
1.80	208	10.8	208	8.7
1.80	240	9.4	240	7.5
1.80	480	4.7	277	6.5
1.80	277	8.1	480	3.8
1.80	346	6.5	346	5.2
2.70	120	27.4	120	22.5
2.70	208	16.2	208	13.0
2.70	240	14.1	240	11.3
2.70	480	7.0	277	9.7
2.70	277	12.2	480	5.6
2.70	346	9.8	346	7.8

5.3 Recommended Wiring

NOTE 1: It is recommended to use 75°C copper wire.

NOTE 2: Recommended cable sized based on THW cables at 30°C ambient (NEC Table 310.16). If different cables are used or installed at higher ambient temperatures, the cable size needs to be reviewed

kW	Input			Output		
	Input Voltage (Vac)	Recommended Cables	Recommended Torque	Output Voltage (Vac)	Recommended Cables	Recommended Torque
0.675	120	14AWG	14 lb-in	120	14AWG	14 lb-in
0.675	208	14AWG	14 lb-in	208	14AWG	14 lb-in
0.675	240	14AWG	14 lb-in	240	14AWG	14 lb-in
0.675	480	14AWG	14 lb-in	480	14AWG	14 lb-in
0.675	277	14AWG	14 lb-in	277	14AWG	14 lb-in
0.675	346	14AWG	14 lb-in	346	14AWG	14 lb-in
0.90	120	14AWG	14 lb-in	120	14AWG	14 lb-in
0.90	208	14AWG	14 lb-in	208	14AWG	14 lb-in
0.90	240	14AWG	14 lb-in	240	14AWG	14 lb-in
0.90	480	14AWG	14 lb-in	480	14AWG	14 lb-in
0.90	277	14AWG	14 lb-in	277	14AWG	14 lb-in
0.90	346	14AWG	14 lb-in	346	14AWG	14 lb-in
1.35	120	14AWG	14 lb-in	120	14AWG	14 lb-in
1.35	208	14AWG	14 lb-in	208	14AWG	14 lb-in
1.35	240	14AWG	14 lb-in	240	14AWG	14 lb-in
1.35	480	14AWG	14 lb-in	480	14AWG	14 lb-in
1.35	277	14AWG	14 lb-in	277	14AWG	14 lb-in
1.35	346	14AWG	14 lb-in	346	14AWG	14 lb-in
1.80	120	10AWG	14 lb-in	120	14AWG	14 lb-in
1.80	208	14AWG	14 lb-in	208	14AWG	14 lb-in
1.80	240	14AWG	14 lb-in	240	14AWG	14 lb-in
1.80	480	14AWG	14 lb-in	480	14AWG	14 lb-in
1.80	277	14AWG	14 lb-in	277	14AWG	14 lb-in
1.80	346	14AWG	14 lb-in	346	14AWG	14 lb-in
2.70	120	8AWG	14 lb-in	120	10AWG	14 lb-in
2.70	208	12AWG	14 lb-in	208	14AWG	14 lb-in
2.70	240	14AWG	14 lb-in	240	14AWG	14 lb-in
2.70	480	14AWG	14 lb-in	480	14AWG	14 lb-in
2.70	277	14AWG	14 lb-in	277	14AWG	14 lb-in
2.70	346	14AWG	14 lb-in	346	14AWG	14 lb-in

6. Storage

Before storing equipment, charge the ELI for at least 24 hours. Store the ELI covered and upright in a cool, dry location. During storage, recharge the battery in accordance with the following table:

Storage Temperature	Recharge Frequency	Charging Duration
-25°C - 30°C (-13°F - 86°F)	Every 6 months	5-8 hours
30°C - 40°C (86°F - 104°F)	Every 90 days	5-8 hours
40°C - 45°C (104°F - 113°F)	Every 30 days	5-8 hours

7. Recommended Replacement Intervals

The Staco SEL has a long design life. Due to the characteristics of the part, not the design of the ELI, certain components used in the design have a limited life, even with proper maintenance.



Service and maintenance work must be performed only by factory authorized personnel.

Staco recommends these limited-life components be periodically inspected and replaced before the expected expiration of their life cycle. The recommended replacement schedule is an estimate only. The life of these parts depends on site conditions such as ambient temperature, load profile, cleanliness of environment and other factors.

Staco Recommends a Factory Authorized Preventative Maintenance Review is scheduled at least once a year.

Component	Recommend Replace in:
Fans	4-5 years
Batteries	4-5 years

The functional lifetime of VRLA batteries is significantly affected by the temperature at which they are stored and operated. Ideally, VRLA batteries should be used in a 25° C (77° F) environment. For every 8.3° C (15° F) increase in temperature, the life expectancy of a battery will be halved.

Exposure to temperatures in excess of 32° C (90° F) should be limited to no more than 30 days per year. Under no circumstances should the VRLA battery be exposed to temperatures over 40° C (104° F) which can lead to thermal runaway, a condition that damages the battery. Thermal runaway can cause batteries to swell. If the battery cases burst, the hazardous contents may be exposed.

Replace batteries with the same manufacturing and type. Contact your Staco Representative for approved alternate batteries

Maintaining proper ambient temperature usually requires installing the product in a temperature-controlled space. Equipment rooms without cooling systems do not generally maintain the proper conditions for good battery life.

See Staco's website for warranty details:

<http://www.stacoenergy.com/support/literature-download-center.html>

NOTES: