

eLITE Model ELN Centralized Emergency Lighting Inverter Systems 550 W to 1.5 KW Systems

General Specification

1.0 General

This specification describes the features and design of an uninterruptible, seamless transfer emergency lighting inverter power system. The ELN Series emergency lighting inverter system is designed to assure maximum reliability, serviceability and performance, and is designed for PFC electronic ballast loading up to 50% of the rated output, and other lighting loads up to 100% of the rated output. The system incorporates a microprocessor controlled transistorized PWM inverter, high speed transfer devices, constant voltage regulating transformer, battery charging system, and 90 minute battery platform to provide immunity from all line disturbances and power interruptions with no break in AC output power. The system as described herein includes a normally on uninterrupted AC output power section and provision to include a normally off AC output power section, thus enabling compatibility with emergency lighting fixtures operating in normally on and standby operating modes. A self-diagnostic monitoring alarm system continuously advises of system status and battery condition.

2.0 Inverter Ratings

<u>Model</u>	<u>Rating</u>
ELN 550	550 Watts
ELN 1000	1000 Watts
ELN 1500	1500 Watts

3.0 Standards

The system is designed in accordance with applicable portions of the following standards:

- 3.1 American National Standards Institute (ANSI C57.110).
- 3.2 Institute of Electrical and Electronic Engineers (IEEE 519-1992) and (C62.41-1991).
- 3.3 National Electrical Manufacturers Association (NEMA PE-1).
- 3.4 National Electric Code (NEC 2005) (NEC 2005, Article 700).
- 3.5 National Fire Protection Association (NFPA 70, 101).
- 3.6 Underwriters Laboratories (UL 924).
- 3.7 Federal Communications Commission (FCC part 15, Sec. J, Class A).
- 3.8 Listed UL Standards UL 924, UL 924A, UL 1778, CUL 1778.

4.0 Input Specifications

- 4.1 Input Voltage: 277 VAC or 120 VAC.
- 4.2 Operating Range: +10% to -15% at full load without battery usage.
- 4.3 Extended Range: The unit incorporates the use of variable range regulation in conjunction with the load percentage to extend the input range up to +10% to -40% without battery usage while maintaining a regulated, useable output voltage.
- 4.4 Frequency Range: Capture 57.5 Hz to 62.5 Hz.
- 4.5 Power Factor: Self correcting to >0.95.
- 4.6 Input Harmonics: < 5% THD.
- 4.7 Spike Attenuation: 3000:1.

5.0 Output Specifications

- 5.1 Voltage: 120 VAC or 277 VAC.
- 5.2 Sine Wave Voltage: Maximum 5% harmonic distortion under linear load.
- 5.3 Crest Factor: 3.0 : 1.
- 5.4 K Factor: 30 or better.
- 5.5 Power Factor: Unity rated, KW=KVA.
- 5.6 Harmonic Attenuation: Reflected load generated harmonics are attenuated 23dB at the input.
- 5.7 Line Regulation: $\pm 3\%$.
- 5.8 Load Regulation: Typically better than $\pm 3\%$.
- 5.9 Isolation: NEC article 250-5d, complies with this standard that specifies a separately derived power source.

6.0 Battery Specifications

- 6.1 Standard run times are 90 minutes at full kilowatt load, UL 924 compliant.
- 6.2 Battery Type: Integral, valve regulated, sealed lead calcium, maintenance free.
- 6.3 Charger: 3 Amp., two stage.
- 6.4 Recharge Time: UL 924, NFPA 101 compliant.
- 6.5 Bus Voltage: 24 VDC, Float 2.27 VPC, final 1.75 VPC.
- 6.6 Projected Life: 5 years service, 15 year pro-rated.

7.0 Performance Specifications

- 7.1 Overload Capability: 125% for ten minutes.
- 7.2 Surge Capability: 150% of rated output without need of static bypass.
- 7.3 Frequency Stability: ± 0.2 Hz.
- 7.4 Inner Winding Capacitance: 0.01 pF (primary to secondary coupling).
- 7.5 Common Mode: 120 dB (10^6 : 1 ground noise attenuation).
- 7.6 Transverse Mode: 70 dB (3160 : 1 line noise attenuation).
- 7.7 Reactive Power Correction: Load at .6 pf corrected to > 0.95 at input (automatically correcting).
- 7.8 Efficiency: 89% typical under full rated load.
- 7.9 Reliability: 100,000 hours MTBF.
- 7.10 Loading Profile: Designed for PFC electronic ballast loading up to 50% of the rated output, and other lighting loads up to 100% of the rated output.

8.0 Environmental Specifications

- 8.1 Operating Temperature: 0°C (32°F) to 40°C (105°F).
- 8.2 Storage Temperature: -20°C to 50°C
- 8.3 Relative Humidity: 95% non-condensing.
- 8.4 Elevation: 5,000 feet, 1500 meters.
- 8.5 BTU/HR Emitted, Weight, Cabinet Sizes:

<u>Wattage Rating</u>	<u>BTU/HR</u>	<u>Weight</u>	<u>Dimensions W x D x H</u>
550	409	344 lb.	31 " x 16.6" x 39"
1000	545	426 lb.	31 " x 16.6" x 39"
1500	614	510 lb.	31 " x 16.6" x 39"

- 8.6 Audible Sound Level: Not greater than 50 dba.
- 8.7 Enclosure: NEMA 2, drip-proof for indoor use. Sealed, prohibiting rodent entry.
- 8.8 Cooling: Forced air with air intake entry through screened bottom and slotted lower right side and air exit through slotted upper left side of enclosure.

9.0 Display Monitor and Diagnostics

- 9.1 Display Panel – Front mounted, sealed, alphanumeric LED display. Displays inverter input voltage, inverter output voltage, % load, and % battery as selected using display select push button. System display panel includes automatic visual indication status for system on, system on battery, low battery, and general alarm. Includes audible alarm for system on battery, low battery and general alarm condition(s).
- 9.2 General Alarm Conditions (RS232) – Communications port for access to general alarm conditions and electrical measurements. General alarm conditions include: Loss of AC input power, Low battery warning, frequency fault, check battery, shorted SCR, low battery shutdown, low output voltage, high output voltage, system overload, and system over temperature warning.
- 9.3 Electrical Measurements (RS232) – Communications port for access to electrical measurements and general alarm conditions. Electrical measurements include: AC input voltage, AC output voltage, output amps, % load, output watts, output va, power factor, input line frequency, number of power outages recorded from last clear function, and number of overloads recorded from last clear function.

10.0 Communications Interface

- 10.1 Status / Alarm open collector transistor interface is provided for use with optional remote annunciator panel or automatic message dialer. Inverter on, utility AC power failure (system using battery power), low battery warning, and general alarm signals are included.
- 10.2 Status / Alarm open collector transistor ratings: 40 VDC maximum, 300mA for use with optional remote annunciator panel or automatic message dialer or for use with customer’s remote indicator.
- 10.3 Power supply included for +/- 10 VDC, 1 mA.

11.0 Reliability

11.1 MTBF Electronic / Electrical System: 100,000 hours.

11.2 MTBF Transformer: 200,000 hours.

11.3 MTTR: One hour.

12.0 Standard Equipment

12.1 Hard wired input and output.

12.2 Single PC board / control module design.

12.3 Batteries (90 Minute).

12.4 Thermal magnetic AC input circuit breaker.

12.5 D.C. battery fuse and Anderson connector with interconnect cable.

12.6 Normally on uninterrupted AC output bus.

12.7 Thermal magnetic output circuit breaker(s).

12.8 Copper conductor construction.

12.9 Local front mounted diagnostic monitoring display panel.

12.10 Functional cabinet enclosure with hinged, lockable front door.

13.0 Optional Equipment

13.1 Normally off AC output bus.

13.2 Timed normally off AC output bus with field programmable timers.

13.3 Additional pre-installed output circuit breakers for use with normally on AC output bus.

13.4 Pre-installed output circuit breakers for use with timed normally off AC output bus.

13.5 Automatic message dialer.

13.6 Remote annunciator panel.

13.7 Control device override.

13.8 Zone sensing device.

13.9 Output circuit breaker open / tripped alarm contacts.

13.10 SNMP / TCP/IP Ethernet Adapter

13.11 SNMP / TCP/IP / MODBUS TCP Adapter

13.12 SNMP / TCP/IP / MODBUS TCP / MODBUS RS485 Adapter

14.0 Warranty

- 14.1 All systems are guaranteed to be free from defects in material and workmanship for a period 2 years.
- 14.2 Batteries are warranted for 15 years prorated with full replacement in the first year.
- 14.3 Optional extended warranty and maintenance contracts available.