

TECHNICAL GUIDE SPECIFICATIONS

ECONOSINE

Single Phase, (500 to 2100 Watts)
UL924 Central Lighting Inverter



1. SCOPE

The Emergency Lighting Power System shall be a solid-state single phase unit designed to provide regulated and conditioned sinusoidal power for emergency lighting applications. The Emergency Lighting Power System shall provide uninterrupted power during all modes of operation. There shall be no interruption of power to the lighting system when the unit transfers to and from battery operation. The Emergency Lighting Power System and battery subsystem shall be listed to UL 924 Standard for Emergency Lighting and Power Equipment by a nationally recognized organization.

2. MODES OF OPERATION

NORMAL: During normal operation, utility (or generator) power is thoroughly conditioned and regulated by solid state electronics. The Solid State Electronics in conjunction with the input filter, filters noise and transients from the incoming power.

Additionally, the Solid State Electronics regulates its output voltage to within specified limits. The rectifier section maintains the batteries in a fully charged state.

EMERGENCY: Upon loss of input power or when power exceeds the specified input limits, the control logic shall transfer to operation and disconnect the input line. The transfer to battery shall be an uninterrupted or "no break" power transfer. The inverter shall supply power from the batteries and through the Solid State Electronics to the lighting system. The output shall be sinusoidal and within specified limits. If power is not restored before the batteries have been exhausted, the Inverter shall completely shutdown, protecting the batteries from possible damage.

RECHARGE: Upon restoration of input power and before the batteries are completely exhausted, the Inverter shall automatically return to normal operation. This retransfer to normal operation shall be uninterrupted. The battery charger shall automatically recharge the batteries to full capacity. The battery charger shall recharge the batteries as set forth in U.L. Standard 924

3. MAJOR SYSTEM COMPONENTS

Emergency Lighting Power System shall consist of the following major subsystems:

SOLID STATE ELECTRONICS: The Solid State Electronics shall provide regulation and conditioning from incoming power aberrations. Power to the critical load shall be supplied by the Solid State Electronics whether the Inverter is in normal mode or emergency mode. The output wave shape shall be sinusoidal for all modes of operation.

BATTERY SUBSYSTEM: Sealed, maintenance-free batteries shall be provided. The batteries shall have an expected life of ten (10) years. The batteries shall be fully wired and contained within its own section. Battery run time (based on 100% full load) shall be no less than ninety (90) minutes. Optional Extended battery run times greater than ninety (90) minutes shall be available.

INVERTER: The Emergency Lighting Power System shall convert DC power supplied from the batteries into AC power.

CHARGER: A battery charger shall be provided. The battery charger shall maintain the batteries at full charge. The battery charger shall be sized such that it recharges the batteries as set forth in UL Standard 924.

POWER CONNECTIONS: The Emergency Lighting Power System input and output shall be hard wired. A main Input, Output and DC circuit breaker shall be provided. The main Input circuit breaker provides over-current protection and a means to easily disconnect power from the lighting system.

TRANSFORMER: Unit shall utilize auto transformer for 277 Volt input & output only.

MONITORING PANEL:

- **MONITORING PANEL (72VDC UNITS):**

Front Panel LCD / LED display

The unit shall use LCD display for easy viewing of UPS status.

Alarm indicators

The UPS gives the following audible alarms:






If UPS is on battery and the ON BATTERY LED is on, UPS will beep every 5 seconds.

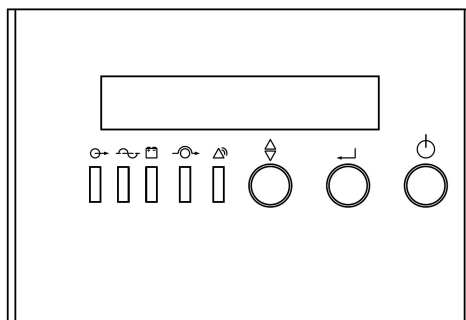
If the battery capacity is low and the ON BATTERY LED is flashing, the UPS will beep twice every 5 seconds.

If UPS is on bypass and the BYPASSED LED is on, UPS will no beep.

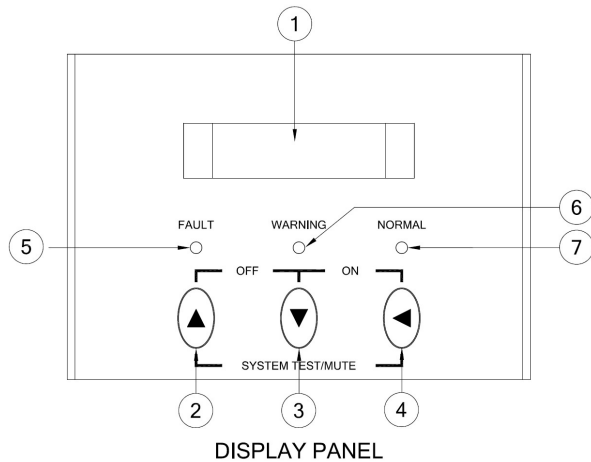
If UPS has an internal fault and the ALARM LED is on, the UPS will give a constant audible alarm displaying the cause on the LCD display.

The unit shall use 5 LED indicator lights:

- | | | |
|----------|---|--|
| ON/ |  | This green LED is lit when UPS has been turned on. |
| ON-LINE/ |  | When the UPS is in normal or static bypass modes, there is voltage at the output terminals and this LED will light up in green. |
| ON-BAT/ |  | While operating in battery mode. |
| BYPASS/ |  | While operating in bypass mode, this LED will light up in yellow. |
| FAULT/ |  | If any internal error occurs in the UPS, this LED will light up in red and give off an audible alarm. Press any of the buttons on the front panel to turn off the alarm. |



- **MONITORING PANEL (96VDC UNITS):**



(1) LCD DISPLAY: This Indicates the UPS operation information, including UPS status, input/output voltage, input/output frequency, battery voltage, battery capacity left, output load, inside temperature, and the times of history events. Besides, UPS output voltage and output frequency can be set from the LCD panel.

(2) KEY SELECT UP: It is pressed to select upward the UPS status on LCD Display. When this key is pressed with the LCD Select Down-key simultaneously for 3 seconds, the UPS will be switched off.

(3) KEY SELECT DOWN: It is pressed to select downward the UPS status on LCD Display.

(4) KEY ON-OFF CONTROL (only available during maintenance and or repair): When this key is pressed with the LCD Select Down-Key simultaneously for 3 seconds, the UPS will be switched on. Besides, in the mode of battery back-up, press both of this key and LCD Select UP-key at the same time to disable the beeps.

(5) FAULT LED: This red LED indicates the UPS is in fault condition because of inverter abnormal or over-temperature or DC_BUS fault.

(6) WARNING LED: This yellow LED indicates the UPS is the status of overload, bypass or battery back-up.

(7) NORMAL LED: This green LED indicates the UPS is operating normally.

4. OPTIONS:

- **Norm ON C.B options:** Unit shall provide up to 12 optional 1 pole 20amp din-rail output circuit breakers.
- **Norm OFF or Norm ON W/delay C.B options:** Unit shall provide up to 12 Normally OFF or Normally ON with time delay din rail Circuit Breakers.
- **MBS (Maintenance by-pass manual).**
- **Communication interface:** Unit shall have RS232 and USP communication port Option.
- **SNMP/Web Card:** SNMP shall allow direct monitoring in SNMP based networks for monitoring of the Unit through web browser.
- **External Auxiliary TVSS:** Input Transient voltage suppressor shall comply with UL1449 third edition.
- **Remote status panel (AS400C W/ RELAY CARD & REMOTE MONITOR).**
- **Floor mount brackets:** Unit shall be floor mountable.
- **RS232.**
- **Battery Exerciser and event logger:** Unit shall provide battery testing to comply with UL924.
- **Thermal runaway control by shutting of charger:** Unit shall provide a "BATT OVER TEMP" alarm.

5. SPECIFICATIONS:

- 72VDC

Specifications for 120VAC /277VAC							
Capacity (W)	Description	500	750	1000	1250	1500	2100
Input	Voltage	Single Phase 120Vac or 277Vac					
	Voltage Range	120Vac \pm 10% or or 277Vac					
	Frequency	60Hz +/- 4Hz					
Output	Voltage (on battery)	Single Phase 120Vac or 277Vac					
	Voltage Range	120Vac \pm 2% or 277Vac					
	Frequency (on battery)	60 Hz +/-0.5%					
	Transfer Time	0 ms					
	Overload Recovery	Auto transfer to UPS					
	High Efficiency mode (AC to AC)	> 95 %					
	UPS Design Technology	On-Line / Fully digitized microprocessor controlled					
	Output Wave Form	Sine wave					
	Harmonic distortion	< 3% of T.H.D. at linear load					
Protection and Filtering	Overload Protection	125% for 1 minutes and 150% for 10 seconds					
	Short Circuit Protection	Circuit breaker					
System/Display/ Warning	Visual Display (LED model)	UPS on(green), line-mode(green), battery mode(yellow), bypass(yellow), fault(red)					
	Visual Display (LCD model)	Input / output voltage, input / output frequency, on-line mode, back up mode, battery capacity, load level					
	Audible Alarm (Battery back-up)	Beep every 5 sec					
	UPS Fault	Continuous beeping sound and LCD display					
	Communication	RS-232 Serial Port and USB					
Battery	90 min. UL924 (Sealed, maintenance free lead acid battery)	6X35 A/H	6X50 A/H	6X50 A/H	6X65 A/H	6X90 A/H	6X100 A/H
Dimensions	(Inches) Width x Height x Depth	23.5 X 34.25 X 18.25					
Environmental	Operating Temperature	0 - 40°C / 32 ~ 104°F					
	Storage Temperature	-20 ~ 50°C / -4 ~ 122°F					
	Audible Noise (1 meter from surface)	< 40 dBA					
	Relative Humidity	0 ~ 95% humidity, non-condensing					

Note: Due to continuous improvement specifications are subject to change without prior notice

- 96VDC

Specifications for 120VAC /277VAC

Capacity (W)	Description	500	750	1000	1250	1500	2100
Input	Voltage	Single Phase 120Vac or 277Vac					
	Voltage Range	120Vac \pm 10% or or 277Vac					
	Frequency	60Hz +/- 4Hz					
Output	Voltage (on battery)	Single Phase 120Vac or 277Vac					
	Voltage Range	120Vac \pm 2% or 277Vac					
	Frequency (on battery)	60 Hz +/-0.5%					
	Transfer Time	0 ms					
	Overload Recovery	Auto transfer to UPS					
	High Efficiency mode (AC to AC)	> 95 %					
	UPS Design Technology	On-Line / Fully digitized microprocessor controlled					
	Output Wave Form	Sine wave					
	Harmonic distortion	< 3% of T.H.D. at linear load					
Protection and Filtering	Overload Protection	125% for 1 minutes and 150% for 10 seconds					
	Short Circuit Protection	Circuit breaker					
System/Display/ Warning	Visual Display (LED model)	UPS on(green), line-mode(green), battery mode(yellow), bypass(yellow), fault(red)					
	Visual Display (LCD model)	Input / output voltage, input / output frequency, on-line mode, back up mode, battery capacity, load level					
	Audible Alarm (Battery back-up)	Beep every 5 sec					
	UPS Fault	Continuous beeping sound and LCD display					
	Communication	RS-232 Serial Port and USB					
Battery	90 min. UL924 (Sealed, maintenance free lead acid battery)	8X26 A/H	8X35 A/H	8X35 A/H	8X50 A/H	8X65 A/H	8X65A/H
Dimensions	(Inches) Width x Height x Depth	23.5 X 34.25 X 18.25					
Environmental	Operating Temperature	0 - 40°C / 32 ~ 104°F					
	Storage Temperature	-20 ~ 50°C / -4 ~ 122°F					
	Audible Noise (1 meter from surface)	< 40 dBA					
	Relative Humidity	0 ~ 95% humidity, non-condensing					

Note: Due to continuous improvement specifications are subject to change without prior notice

Floor Mount Lighting Inverter 90 minute battery back up (72 VDC)				
Total/ WATT	Model Numbers	Input/Output Voltages	BTU/ Hr	Cabinet Dimension (W"xH"xD")
500W	ES.50A0100N1-V	120V/120V	478	23.5x34.25x18.25
	ES.50R0100T1-V	277V/120V	550	
	ES.50R2500T1-V	277V/277V	550	
	ES.50A2500T1-V	120V/277V	550	
750W	ES.75A0100N1-V	120V/120V	492	“
	ES.75R0100T1-V	277V/120V	575	
	ES.75R2500T1-V	277V/277V	575	
	ES.75A2500T1-V	120V/277V	575	
1000W	ES1.0A0100N1-V	120V/120V	615	“
	ES1.0R0100T1-V	277V/120V	675	
	ES1.0R2500T1-V	277V/277V	675	
	ES1.0A2500T1-V	120V/277V	675	
1250W	ES1.2A0100N1-V	120V/120V	780	“
	ES1.2R0100T1-V	277V/120V	890	
	ES1.2R2500T1-V	277V/277V	890	
	ES1.2A2500T1-V	120V/277V	890	
1500W	ES1.5A0100N1-V	120V/120V	925	“
	ES1.5R0100T1-V	277V/120V	1100	
	ES1.5R2500T1-V	277V/277V	1100	
	ES1.5A2500T1-V	120V/277V	1100	
2100W	ES2.1A0100N1-V	120V/120V	1175	“
	ES2.1R0100T1-V	277V/120V	1525	
	ES2.1R2500T1-V	277V/277V	1525	
	ES2.1A2500T1-V	120V/277V	1525	
(NOTE)				
** BTU/HR ARE APROX. NUMBER WITH TOLERANCE ± 15% FOR ALL MODELS				

Floor Mount Lighting Inverter 90 minute battery back up (96 VDC)				
Total/ WATT	Model Numbers	Input/Output Voltages	BTU/ Hr	Cabinet Dimension (W"xH"xD")
500W	ES.50A0100N1-S	120V/120V	478	23.5x34.25x18.25
	ES.50R0100T1-S	277V/120V	550	
	ES.50R2500T1-S	277V/277V	550	
	ES.50A2500T1-S	120V/277V	550	
750W	ES.75A0100N1-S	120V/120V	492	“
	ES.75R0100T1-S	277V/120V	575	
	ES.75R2500T1-S	277V/277V	575	
	ES.75A2500T1-S	120V/277V	575	
1000W	ES1.0A0100N1-S	120V/120V	615	“
	ES1.0R0100T1-S	277V/120V	675	
	ES1.0R2500T1-S	277V/277V	675	
	ES1.0A2500T1-S	120V/277V	675	
1250W	ES1.2A0100N1-S	120V/120V	780	“
	ES1.2R0100T1-S	277V/120V	890	
	ES1.2R2500T1-S	277V/277V	890	
	ES1.2A2500T1-S	120V/277V	890	
1500W	ES1.5A0100N1-S	120V/120V	925	“
	ES1.5R0100T1-S	277V/120V	1100	
	ES1.5R2500T1-S	277V/277V	1100	
	ES1.5A2500T1-S	120V/277V	1100	
2100W	ES2.1A0100N1-S	120V/120V	1175	“
	ES2.1R0100T1-S	277V/120V	1525	
	ES2.1R2500T1-S	277V/277V	1525	
	ES2.1A2500T1-S	120V/277V	1525	
(NOTE) ** BTU/HR ARE APROX. NUMBER WITH TOLERANCE ± 15% FOR ALL MODELS				