

**PERFECT POWER SYSTEMS VALUSINE EMERGENCY LIGHTING
POWER SYSTEM, ON LINE INVERTERS (UNINTERRUPTIBLE)
New York City Approved**

1. SCOPE

The PPS Emergency Lighting Inverter ValuSine shall be a solid-state single phase unit designed to provide regulated and conditioned sinusoidal power for emergency lighting applications. The PPS ValuSine Inverter 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 PPS ValuSine Inverter and battery subsystem shall be U.L. listed to U.L. 924 *Standard for Emergency Lighting and Power Equipment*.

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

The PPS ValuSine Inverter 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 a freestanding battery cabinet. Battery run time (based on 100% full load) shall be no less than ninety (90) minutes. Extended battery run times greater than ninety (90) minutes shall be available.

INVERTER: The ValuSine Inverter 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 ValuSine Inverter input and output shall be hard wired. A main output circuit breaker shall be provided. This circuit breaker provides over-current protection and a means to easily disconnect power from the lighting system.

MONITORING SUBSYSTEM: The PPS ValuSine Inverter shall be furnished with a system status indicator panel. This panel shall have the following enunciators:

- Green LED for AC Line Present
- Green LED Battery Charger Charging in 20 % increments
- Green LED for Inverter Output Status
- Amber LED for Inverter on Battery Operation
- Red LED Low Battery Condition in 20 % Increments
- Red LED for Alarm

OUT PUT CIRCUIT BREAKERS: Up to five output circuit breakers.

4. SPECIFICATIONS

The ValuSine Inverter shall meet the following minimum specifications:

INPUT SPECIFICATIONS	Voltages 120, 277 with Isolation Xfmer	500, 750, 1000, 1250. 1500, 2000, 3000 VA
	Voltage Range	+15% to -20% of Nominal Voltage
	Frequency	60 Hz +/-5%
	Power Factor	0.7 Lagging (Typical)
	Power Connections	Hard Wired (Terminal Block)
	Number of Wires	H, N, and Ground

OUTPUT SPECIFICATIONS	Maximum Output Ratings	500, 750, 1000, 1250, 1500, 2000, 3000 VA 350, 525, 700, 875, 1050, 1400, 2100 WATTS
	Voltages	120 VAC
	Voltage Regulation	+/-4% No Load to Full Load +/-4% High Line to Low Line
	Frequency	60 Hz +/-0.5 Hz (When on Inverter)
	Output Waveshape	Sine Wave
	Optional Output Circuit Breakers	Normally On 20amp 1/p only available in 120 VAC
	Harmonic Distortion	10 % Max THD with Linear Load
	Output Protection	Current Limiting and short circuit protection
	Power Factor	0.7 Lagging and Leading to Unity
	Overload	125% for Ten (10) Minutes; 150% Surge per ANSI/IEEE C62.45 CAT A & B
	Over-current Protection	Main Output Circuit Breaker
	Power Connections	Hard Wired (Terminal Block)
	Number of Wires	H, N, and Ground
	Noise Rejection	-120 dB Common Mode; -60 dB Normal Mode
	Isolation	No Direct Electrical Connections Between Input and Output - Including Neutral
Output Neutral	Solidly Bonded to Inverter Frame	

BATTERY SPECIFICATIONS	Standard Run Time	90 Minutes Minimum @ Full Power Factor Rated Load
	Output Circuit Breaker	(1) 20 AMP OCB 120 Volt only, Normally On
	Battery Type	Sealed, Maintenance-Free, Lead-Acid
	Expected Life	10 Years, if maintained and documented @ 77 degree F
	Nominal DC Link	48 VDC (500,750,& 1000 VA) 72 VDC (1250,1500,& 2000VA) 96 VDC (3000 VA)
	Charger Ampacity	Sized to Meet Requirements of U.L. 924
	Float Voltage	2.25 Volts per Cell
	Protection	(500, 750, 1000, 1250, 1500, 2000, 3000VA) Circuit Breaker
	Packaging	Free-Standing, Fully Enclosed Battery Cabinet
	Display	LED Display
	Battery Test Switch	Located on Real Panel-Standard Feature
	Agency Listings	U.L. 924; FCC Class A
Surge Withstandability	ANSI C62.41-1980 Categories A & B	

ENVIRONMENTAL SPECIFICATIONS	Display	LED Display
	Battery Test Switch	Located on Real Panel-Standard Feature
	Agency Listings	U.L. 924; FCC Class A
	Surge Withstandability	ANSI C62.41-1980 Categories A & B
	Temperature	0 to +40 degrees C (Operating); -20 to +40 degrees C (Storage)
	Relative Humidity	0 to 95% Non-Condensing
	Altitude	Up to 6,000 Feet (1,829 Meters)
	Heat Dissipation (Worst Case)	BTU/Hour (3000VA)
	Efficiency	70% Minimum
	Audible Noise	57 dB @ 1 Meter
	Number of Cabinets	1: UPS Cabinet includes batteries
Dimensions (H x W x D)	28"x24"x15" ALL SIZES	

ENVIRONMENTAL SPECIFICATIONS (cont.)	Weight (UPS & Batteries)	350 VA: 280 lbs 525 VA: 325 lbs 700 VA: 375 lbs 825 VA: 485 lbs 1050 VA: 485 lbs 1400 VA: 560 lbs 2100 VA: 685 lbs.
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5. QUALIFIED SYSTEMS

The PPS Inverter shall be a line interactive, Solid State Electronics, uninterruptible power system, designed specifically for emergency lighting systems, and manufactured by Perfect Power Systems to meet ISO 9001.

Perfect Power Systems.
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