

Type No. _____
 Job Name _____
 Catalog No. _____



Shown: LEPEM202X2



Listed to
UL 924

LEPEM

Uninterruptible Power Supplies (UPS) for Emergency Lighting Applications

Three Phase, 20 kVA

Overall Characteristics

- 208Y/120 VAC, 3 phase, 4 wire plus ground, input and output standard, optional voltages available
- 87% efficiency minimum
- Operating temperature range 18°F (-8°C) to 104°F (40°C)*
- Internal maintenance by-pass is standard
- Main input breaker standard
- Main load disconnect breaker standard
- Double conversion, no interruption
- Standard backup time of 90 minutes
- Output circuit breakers optional
- Normally-off loads optional (Non-HID applications only)
- Some modules are field upgradeable

Application

- Operates incandescent, magnetic and electronic ballast fluorescent, high power factor compact fluorescent, and high intensity discharge (HID) lamp types
- Consult factory for compatibility and performance with non-lighting loads and normally off, quartz lighting

Housing

- Free standing, NEMA 1 enclosure
- Dead front panel
- Acid resistant powder coat finish
- Bottom access for conduit entries

Metering/Controls

- A multilingual, alphanumeric display of two lines and 40 characters provides the following information:
 - Inverter voltage/frequency/current
 - Reserve voltage/frequency/current
 - Load voltage/frequency/current
 - DC volts/current
 - Battery volts/current
 - Load percentage/crest factor
- Computer interface using volt-free relay contacts configured for IBM AS/400, DEC, DG, PRIME, HP and similar computers
- Two RS232 ports for direct two-way communication between the computer and UPS including the UPS Monitoring and Shutdown option
- Relay contacts to drive an optional remote alarm monitor
- Self-diagnostics/battery discharge test with user selectable battery test intervals

Electronics

Inverter

- Transient response $\leq 5\%$; Recovery time, 20 mS (100% load step)
- 3:1 crest factor capability
- Completely solid-state IGBT PWM inverter
- Inverter output distortion $\leq 5\%$ THD (100% non-linear)
- Inverter output distortion $\leq 3\%$ THD (linear loads)
- Output voltage regulation $\pm 1\%$ of nominal at full load
- Frequency: 60 Hz
- Inverter efficiency $\geq 90\%$
- Load power factor capability is 0.5 lagging to 0.9 leading
- K30 rated output power transformer
- Automatic low battery voltage disconnect (LVD)

Rectifier

- Input voltage range $\pm 15\%$ of nominal
- Full load walk-in from 25% to 100% of rated load in 10 seconds
- Voltage regulation $\pm 1\%$ maximum for input voltage and DC variations
- Ripple voltage $< 2\%$ rms voltage with inverter fully loaded and battery disconnected
- SCR controlled
- Rectifier efficiency $\geq 97.7\%$

Static Transfer Switch

- Overload rating 150% for 1 minute
- Transfer time from inverter to utility is less than 0.5 mS

Battery

- Maintenance free, sealed lead calcium battery with an expected life up to 10 years, and optimum operating range of 65°F (19°C) to 85°F (30°C)*

* Increases or decreases in temperature may affect battery performance. Optimum battery performance realized at 77°F (25°C). Batteries are rated at 100% capacity at 77°F (25°C).

Ordering Information

SERIES	VA RATING	INPUT/OUTPUT	OPTIONS
LEPEM = Three Phase UPS System	20 = 20,000	2X2 = 208Y/120 Input, 208Y/120 Output 4X2 = 480 Input, 208Y/120 Output 4X4 = 480 Input, 480Y/277 Output	F = 10% Harmonic Distortion Filter OCB () = Output Circuit Breakers (qty) NOL = Normally Off Load** RAU = Remote Alarm Unit MSP = MopUPS Pro Monitoring Software Pkg FSU = Factory Start-up
Sample Catalog Number: LEPEM202X2			

** Consult factory for quartz lamp normally off loads

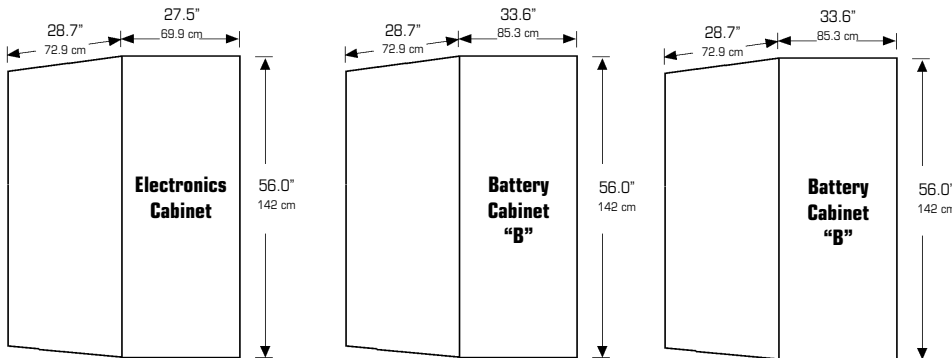
System Input/Output Ratings

SYSTEM RATING	INPUT VOLTAGE	INPUT AMPS ¹	OUTPUT MAX. LOAD AMPS PER PHASE		MAXIMUM HEAT REJECTION
			120 V	277 V	
20,000 VA	208Y/120 480	66.2 28.7	120 V	277 V	8,200 Btu/hr 8,200 Btu/hr
			56 A —	— 24 A	

NOTE:

1) Continuous Duty

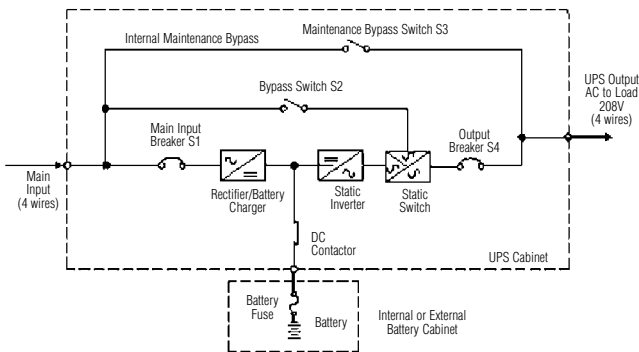
Dimensions/Weights



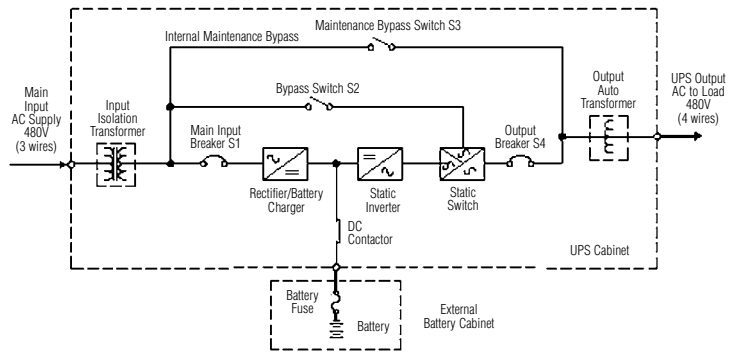
Unit	20 kVA		
	2x2	4x2	4x4
Electronics Cabinet	900 lbs. (408 kg)	1,200 lbs. (544 kg)	1,400 lbs. (635 kg)
Battery Cabinets*	740 lbs. (336 kg)	740 lbs. (336 kg)	740 lbs. (336 kg)
Battery	3,500 lbs. (1,587 kg)	3,500 lbs. (1,587 kg)	3,500 lbs. (1,587 kg)
Total System	5,140 lbs. (2,331 kg)	5,440 lbs. (2,467 kg)	5,640 lbs. (2,558 kg)

System One-Line Diagrams

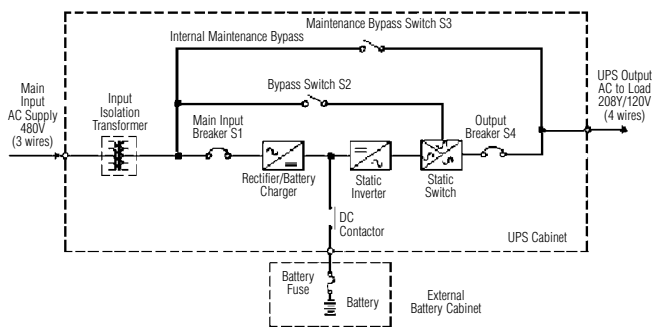
20 kVA (2 x 2)



20 kVA (4 x 4)



20 kVA (4 x 2)



Warranty

When Factory Start-up is performed in accordance with published requirements, warranty period extends one year from date of start-up. See LightGuard's Limited Warranty for details.



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LEPEM UPS System for Emergency Lighting Applications, 20,000 VA

Suggested Specification

Furnish and install LightGuard's three phase UPS system known as LEPEM with a VA rating of 20,000 VA. The system shall be ETL listed to Underwriters' Laboratories standard 924.

Equipment and accessories furnished under the terms of this specification shall be the standard product of a single manufacturer and shall be equal in all respects to those supplied by LightGuard. Catalog numbers and model designations which appear herein indicate design, quality and the type of material as well as required operating characteristics. All equipment shall be in compliance with the applicable UL standards.

The connected load shall be powered normally by the LEPEM rectifier and inverter and upon failure of the utility input, the load shall automatically continue to be powered via the LEPEM system's battery and inverter for a minimum of 1.5 hours. Upon restoration of utility power, the rectifier will automatically walk-in the inverter and recharge the batteries even if the batteries are completely discharged.

The LEPEM System shall be capable of powering any combination of fluorescent ballasted lamps, incandescent lamps, electronic and high power factor compact fluorescent ballasts, HID lamps or other approved loads up to the total rating of the system. The system shall automatically protect itself against damage from overloads and short circuits.

Under emergency operations, the output voltage shall be within $\pm 1\%$ of nominal at full load for the specified discharge period; and the frequency shall be 60 Hz $\pm 0.05\%$.

During emergency operation, the systems' efficiency shall not be less than 90%. The system shall use fans in the electronic compartments for forced air ventilation. The AC output to the load shall be isolated from the utility input during emergency operation.

The LightGuard rectifier shall be SCR controlled. The rectifier efficiency shall not be less than 97.7%. The rectifier shall have a ripple voltage less than 2% rms voltage with inverter fully loaded and battery disconnected. Charge voltage applied to the batteries shall be temperature compensated.

The static transfer switch shall have an overload rating of 150% for 1 minute. Transfer time from inverter to utility shall be less than 0.5 milliseconds.

Under emergency mode conditions, the LEPEM shall be powered by sealed, recombination lead calcium batteries. The battery shall operate entirely unattended and require no addition of water for a period of 10 years or longer. Periodic inspection of batteries is recommended.

A low voltage disconnect circuit designed to reduce battery discharge during extended power outages, shall monitor the battery voltage and disconnect the inverter when battery voltage drops to approximately 85% of nominal voltage.

System metering and controls shall consist of computer interface, RS232 port for direct two-way communication, relay contacts to drive an optional remote alarm monitor, a multilingual alphanumeric display of voltage/frequency/current, load percentage, crest factor and options as noted.

Unit Check List

Catalog No. _____	VA Rating: 20,000
Battery Type: PRC	Operating Time: 90 Min.
Input: _____ VAC; Three Phase	# of Wires: _____ plus Ground
Output: _____ VAC; Three Phase	# of Wires: _____ plus Ground
Options: <input type="checkbox"/> F <input type="checkbox"/> OCB(#)	<input type="checkbox"/> NOL <input type="checkbox"/> RAU <input type="checkbox"/> MSP <input type="checkbox"/> FSU
REMARKS: _____	

ALL SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE



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