

## Emerg-Power Systems FTEM Single Phase Series

Uninterruptible emergency lighting, 1PH, inverter system 1000VA – 2800VA



### Features

- 98% efficient at full load
- PWM/IGBT technology
- Self-testing/self-diagnostic
- User programmable with password protection
- Standard input circuit breaker
- Standard output circuit breaker
- Micro-processor controlled
- Floor or wall mountable
- 90 min. standard run time
- 2ms transfer time
- Compatible with all lighting loads LED and HID
- Automatic event, test and alarm log
- Small footprint (stackable cabinets)
- Maintenance-free standard batteries
- Forced air cooling during emergency mode only

UL listed to UL 924.  
Meets NFPA101, NFPA70, OSHA.



Electrical/mechanical characteristics (data provided for standard lead calcium batteries)

Power rating VA= W	Effic. at full load %	Max. input current (A)		Heat loss in normal mode (BTU/HR)	Batt. VDC	Batt. A	No. of Batt.	UPS cabinet dimensions			UPS cab. weight lbs	Batt. weight lbs	Total system weight lbs
		120V	277V					W"	H"	D"			
1000	98	10.5	4.5	70	48	26	4	24.25	27.5	10.5	121 lbs	160 lbs	281 lbs
1600	98	15.6	6.8	110	72	27	6	24.25	43.25	10.5	165 lbs	240 lbs	405 lbs
2200	98	20.8	9	150	96	27	8	24.25	43.25	10.5	174 lbs	320 lbs	494 lbs
2800	98	29	13	190	120	27	10	24.25	55	10.5	203 lbs	400 lbs	603 lbs

### How to order

Input/output voltage	Series	Nominal capacity	Battery type	Emergency run time	Output breaker configuration	Output breaker voltage	Output breaker amperage	Output breaker qty.
1= 120-120	<b>FTEM</b>	1= 1000VA	S=	Blank=	B= Normally ON	A= 120	10= 10 Amp	01-10=
2= 120-120/277 <sup>1</sup>		2= 1600VA	Standard	90 minutes	N= Normally OFF <sup>1</sup>	B= 208	16= 16 Amp	Choose the
3= 208-120 <sup>1</sup>		3= 2200VA		(Contact factory for other run times)	C= 240	20= 20 Amp	number of output	
4= 240-120/240 <sup>1</sup>		4= 2800VA			D= 277	25= 25 Amp	breakers between	
5= 277-120 <sup>1</sup>						32= 32 Amp	01 and 10 <sup>2</sup>	
6= 277-277								
7= 277-277/120 <sup>1</sup>								
8= 208-120/240 <sup>1</sup>								
9= 208-120/208 <sup>1</sup>								

Options	Monitoring	Mounting	Warranty (one year standard)	Accessories
A= Remote summary alarm panel	BAC= BACnet communication (MSTP)	Blank= Standard wall	2YW= Start up & same day training	Blank= No accessories
BL= Circuit breaker lock(s)	BIP= BACnet IP	F= Floor mount bracket (adds 4" to total system height)	2YWT= Start up, same day training and full run test	EMBP= External maintenance bypass switch <sup>3</sup>
BTM= Battery temperature monitor	MIP= Modbus TCP/IP	W= Wall mount Brackets	5YP= 5-year preventative maintenance plan (startup included)	SPARES= Spare fuses & circuit boards
C= Status monitoring dry form C contacts alarm panel	MOD= Modbus RTU	Z= Seismic/raised floor (adds 4" to total system height)	5YW= 5-year extended electronics warranty	SPAREF= Spare fuse kit
D= Drip top (NEMA 2)			TR= Training if required on day other than startup	
I= Inverter on dry form C contact				
L= Load control relay (contact factory for load control applications)				
M= Maintenance bypass (MBB)				
M(BBM)= Internal maintenance bypass				
O= Output transfer delay(factory set at 3 seconds adjustable 0 to 7.5 seconds)				
P= Remote status panel (requires "C" option – status monitoring dry form C contacts alarm panel)				
S= Summary fault form C contacts				
SEA= Serial to ethernet adapter				
T= Output trip (supervised) alarm <sup>2</sup>				
V= Time delay 15 minutes (15 minute retransfer time delay of normally off circuit after return of utility)				
Y= Battery strapping				
ZM#= Zone monitoring (quantity must be specified)				

Example: 1FTEM1SBA1005SBAC

<sup>1</sup>Enclosure height will increase. Contact factory.

<sup>2</sup>Unless output circuit breakers are specified, a single output breaker will be supplied with each unit and the current rating will vary based on the output power and voltage rating of the unit. Maximum specified output breakers available: 10 unsupervised (1-pole), 6 supervised (1-pole). A 2-pole breaker occupies 2 positions.

<sup>3</sup>Cannot be purchased with internal output breaker option

## Specifications

### General

#### Design

- Stand-by no break. PWM inverter type utilizing IGBT technology with 2ms transfer time

#### Control

- Microprocessor controlled, 4 x 20-character display with touch pad controls & functions
- Continuous scrolling display of system status and faults, with alarm feature

#### Metering

- Input and output voltage, battery voltage, battery and output current, output VA, temperature, inverter wattage

**Communications** Optional RS-232 port (DB9)

### Electrical input

#### Voltage

120 or 277VAC, 1-phase 2-wire, +10%/ -10%  
Contact factory for all other voltage.

#### Input power walk-in

Limiting inrush current to less than 125%,  
10 time for 1 line cycle for incandescent loads

**Input frequency** 60Hz, +/-3Hz

**Protection** Standard input circuit breaker

**Harmonic distortion** <10%

**Power factor** 0.5 lag/lead

### Electrical output

**Voltage** 120 or 277VAC, 1-phase 2-wire  
Contact factory for all other voltage

#### Static voltage

- Load current change +/-2%, battery discharge +/-12.5%

#### Dynamic voltage

- +/-2% for +/-25% load step change, +/-3% for a 50% load step change, recovery within 3 cycles

**Harmonic distortion** <3% THD for linear load

**Output frequency** 60Hz +/- 0.05Hz during emergency mode

**Load power factor** 0.5 lag to 0.5 lead

**Inverter overload** 115% for 10 minutes, 150% for 16 line cycles

**Protection** Standard output circuit breaker (normally on)

**Crest factor** <=4.5

### Environmental conditions

#### Storage/transport

- -4°F to 158°F (-20°C to 70°C) without batteries
- 0°F to 104°F (-18°C to 40°C) with batteries  
(max. 3 months at 104° F (40° C))

#### Operating temperature

System operates safely from 32°F to 104°F (0°C to 40°C)  
UL924 listed to provided 90 mins of battery back up  
between 68° F and 86° F (20°C to 30°C). Battery performance  
can be affected by temperature

**Altitude** <10,000 feet (above sea level) without de-rating

**Relative humidity** 0 to 95% non-condensing

**Audible noise** 45 dBA @ 1m from surface in emergency mode

### Cabinets

Single freestanding or wall mount NEMA Type 1 steel cabinets powder coated for corrosion and scratch resistance. Front access design. Top and left side conduit entry with knockouts.

### Inverter

Using IGBT/PWM technology the inverter converts the DC voltage supplied by the batteries to AC voltage of a precise stabilized amplitude and frequency, suitable for most sophisticated electrical equipment. True sinusoidal output waveform with very low distortion (less than 3% for linear loads). Overload capability of up to 150% for 16 line cycles.

### Charger

Fully automatic, temperature compensated, microprocessor controlled charger recharges fully discharged batteries in maximum 24 hours at nominal AC input voltage. AC input current limiting and over-voltage protection included.

### Battery

System is provided with 10 year, maintenance free, sealed valve regulated lead calcium batteries. 90 min. standard discharge time at full load under normal operating temperature. Low voltage disconnect protection included. No special ventilation required.

### Self-diagnostic

Automatic self-test consists of a 5-minute monthly and 90-minute annual function. The front-mounted control panel includes a 4-line 20-character display, a keypad to control and monitor the internal operation of the system. This allows the operator to easily “watch” system functions as they occur and check on virtually any aspect of the system’s operation. Self-diagnostic function monitors, controls, generates alarms and memorizes events.

### Alarms

High/low battery charger voltage, high/low AC input voltage, near low battery, low battery, load reduction fault, output overload, high ambient temperature, inverter fault, output fault, optional output circuit breaker trip, charger fault, output overload shutdown.

### Optional features

Normally off output, output circuit breakers, output trip alarm, RS232 communication port, remote meter panel, remote summary alarm panel, summary alarm dry form C contact, inverter on dry contacts, variable time delay, bypass relays, wall mount bracket, circuit breaker lock, battery temperature monitor, drip top (NEMA 2), internal/external maintenance bypass switch, output transfer delay, serial to ethernet adapter, battery strapping, zone monitoring, floor mount bracket, BACnet MSTP, BACnet IP, Modbus TCP/IP, Modbus RTU.

### Factory start-up

Includes one additional year of warranty. See warranty conditions

### Warranty

(full limited warranty conditions available upon request)

Limited manufacturer warranty is one-year, parts and labor, for system electronics or two-year with factory start-up program. Battery warranty is one year full plus 9 years pro-rata for a total of 10 years, under normal operating conditions. System must be put in service within 180 days from ship date in order to validate warranty.

### Single line diagram

