

## Emerg-Power Systems 3FTC Three Phase Series

Uninterruptible emergency lighting inverter system 4.8KVA – 50KVA



### Features

- 98% efficient at full load
- PWM/IGBT technology
- Self-testing/self-diagnostic
- User programmable with password protection
- Standard input circuit breaker
- Standard normally off and on output
- RS232 communication port
- Micro-processor controlled
- Automatic event and alarm log
- 90 min. standard run time
- Generator compatibility
- Available in Y or Δ input configuration
- Custom voltages available
- Automatic event, test and alarm log
- LCD display
- Reduced footprint
- Maintenance free standard batteries
- Forced air cooling during emergency mode only

UL listed to UL 924. Meets NFPA101, NFPA70, NFPA 110, OSHA, UBC, SBCCI. N.Y City approved.



Electrical/mechanical characteristics<sup>4</sup> (data provided for standard lead calcium batteries)<sup>1,4</sup>

| Power rating <sup>1</sup><br>KVA= 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 |    |    | Battery cabinet dimensions <sup>2,3</sup> |    |    | No. of batt. cab. | Batt. cab. weight lbs | UPS cab. weight lbs | Batt weight lbs | Total system weight lbs |
|-------------------------------------|-----------------------|------------------------|------------|-----------------------------------|-----------|---------|--------------|------------------------|----|----|---|----|----|-------------------|-----------------------|---------------------|-----------------|-------------------------|
|                                     |                       | 120V/ 208V             | 277V/ 480V |                                   |           |         |              | W"                     | H" | D" | W"  | H" | D" |                   |                       |                     |                 |                         |
| 4.8                                 | 98                    | 17                     | 7          | 326                               | 144       | 39      | 12           | 30                     | 47 | 25 | 30  | 47 | 25 | 1                 | N/A                   | 535 lbs             | 888 lbs         | 1633 lbs                |
| 6                                   | 98                    | 21                     | 9          | 408                               | 180       | 39      | 15           | 30                     | 47 | 25 | 30  | 47 | 25 | 1                 | N/A                   | 535 lbs             | 1110 lbs        | 1855 lbs                |
| 8                                   | 98                    | 28                     | 12         | 544                               | 240       | 39      | 20           | 30                     | 47 | 25 | 30  | 47 | 25 | 1                 | N/A                   | 535 lbs             | 1480 lbs        | 2247 lbs                |
| 10                                  | 98                    | 35                     | 15         | 680                               | 144       | 81      | 24           | 30                     | 47 | 25 | 30  | 47 | 25 | 1                 | N/A                   | 639 lbs             | 1776 lbs        | 2835 lbs                |
| 12.5                                | 98                    | 43                     | 19         | 850                               | 180       | 81      | 30           | 30                     | 47 | 25 | 30  | 47 | 25 | 2                 | N/A                   | 639 lbs             | 2220 lbs        | 3279 lbs                |
| 16.7                                | 98                    | 58                     | 25         | 1136                              | 240       | 81      | 40           | 30                     | 47 | 25 | 30  | 47 | 25 | 2                 | 210 lbs               | 639 lbs             | 2960 lbs        | 4063 lbs                |
| 24                                  | 98                    | 84                     | 36         | 1632                              | 240       | 117     | 60           | 30                     | 47 | 31 | 48  | 72 | 31 | 1                 | 232 lbs               | 1250 lbs            | 4440 lbs        | 6390 lbs                |
| 33                                  | 98                    | 115                    | 50         | 2244                              | 240       | 160     | 40           | 30                     | 47 | 31 | 48  | 72 | 31 | 2                 | 420 lbs               | 1250 lbs            | 6080 lbs        | 8630 lbs                |
| 40                                  | 98                    | 139                    | 60         | 2720                              | 240       | 194     | 100          | 30                     | 47 | 31 | 48  | 72 | 31 | 2                 | 420 lbs               | 1450 lbs            | 7400 lbs        | 10150 lbs               |
| 50                                  | 98                    | 174                    | 75         | 3400                              | 240       | 243     | 60           | 30                     | 47 | 31 | 48  | 72 | 31 | 2                 | 464 lbs               | 1450 lbs            | 9120 lbs        | 11980 lbs               |

<sup>1</sup>Consult factory for 20 year type batteries.

<sup>2</sup>KVA=KW

<sup>3</sup>Battery cabinets are stackable. Must be installed under the electronics cabinet

<sup>4</sup>Special voltages can change the size, weight or number of cabinets

### How to order

| Input voltage <sup>1</sup> | Battery type        | VA/W rating   | System type | Output voltage <sup>2</sup> | Run time <sup>3</sup>     | Input breaker | RS232 Port | Internal Bypass Switch        | Output breakers <sup>4</sup>               | Options <sup>5</sup>                         |
|----------------------------|---------------------|---|-------------|-----------------------------|---------------------------|---------------|------------|-------------------------------|--|--|
| 120/208                    | SG=                 | 4800  | -3FTC       | 120/208                     | -90                       | -ICB          | -RS232     | -MBYP= Internal bypass switch | -OCBxxxx= No trip alarm <sup>4</sup>       | -20Y= 20 yr sealed batteries                 |
| 277/480                    | Sealed lead-calcium | 6000<br>8000<br>10000<br>12500<br>16700<br>24000<br>33000<br>40000<br>50000 |             | 277/480                     | -R120= 120 minute runtime |               |            |                               | -12HR= 12 hr fast recharge                 | -INNON= Inverter on dry contacts             |
|                            |                     |   |             |                             |                           |               |            |                               | -EMBP= External bypass switch <sup>7</sup> | -NOFF3= normally OFF output 3PH <sup>6</sup> |
|                            |                     |   |             |                             |                           |               |            |                               | -RMP= Remote metering panel                | -NOFF= normally off output 1PH <sup>6</sup>  |
|                            |                     |   |             |                             |                           |               |            |                               | -RSAP= Remote summary alarm panel          | -MOD= External modem                         |
|                            |                     |   |             |                             |                           |               |            |                               | -DCS= Dry summary alarm contacts           | -FAX= Fax modem                              |
|                            |                     |   |             |                             |                           |               |            |                               |  | -BPR= Bypass relays                          |
|                            |                     |   |             |                             |                           |               |            |                               |  | -SEIS= Seismic mounting                      |
|                            |                     |   |             |                             |                           |               |            |                               |  | -ZONEM= Zone monitoring                      |
|                            |                     |   |             |                             |                           |               |            |                               |  | -BATM= Battery cycle warranty monitor        |

**Example: 277/480SG6000-3FTC277/480-90-ICB-RS232**

<sup>1</sup>Special voltages may change the size, weight or number of cabinets

<sup>2</sup>Special voltages may change the size, weight or number of cabinets

<sup>3</sup>Other run times available

<sup>4</sup>Max. 12 unsupervised single pole positions or 8 with trip alarm 16.7kVA systems.

24 unsupervised or 16 with trip alarm for systems 24kVA to 50kVA.

For more output breakers please consult factory.

See page 183 for output breaker details

<sup>5</sup>See page 183 for options description

<sup>6</sup>External bypass switch is not compatible with integrated output circuit breakers.

Input/output voltage has to be the same

<sup>7</sup>Normally off loads cannot exceed 20% of total KVA rating with any combination of H.I.D. loads

## Specifications

### General

#### Design

- Stand-by. PWM inverter type utilizing IGBT technology with 2ms transfer time

#### Control

- Microprocessor controlled, 2 x 20-character display with touch pad controls & functions
- 5 LED indicators & alarm with ring-back feature

#### Metering

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

#### Communications RS-232 port (DB9)

### Electrical input

#### Voltage

- 120/208 or 277/480 3 phase 4-wire +10% - 15%.  
Contact factory for all other voltages

#### Input power walk-in

- Limiting inrush current to less than 125%, 10 times for 1 line cycle

#### Input frequency 60Hz, +/-3%, 50Hz available upon request

#### Protection Input circuit breaker

#### Harmonic distortion <10%

#### Power factor 0.5 lag/lead

### Electrical output

#### Voltage 120/208 or 277/480VAC, 3-phase 4-wire Contact factory for all other voltage

#### Static voltage

- Load current change +/-4%, battery discharge +/-4%

#### Dynamic voltage

- +/-3% for +/-25% load step change
- +/-6% 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 5 minutes, 125% for 10 minutes, 280% for line cycles

#### Protection Optional Distribution Circuit Breaker

#### Crest factor 2.8

### Environmental conditions

#### Storage/transport

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

#### Operating temperature

System operates safely from 32°F to 104°F (0°C to 40°C) but optimum operation is 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

Modular design, freestanding NEMA type 1 steel cabinets powder coated for corrosion and scratch resistance. Front access design through hinged lockable doors requires only 39" front clearance and 12" top clearance. Cabinets are stackable up to 16.7kVA, if required to further reduce the footprint. Top and left side conduit entry with knockouts up to 16.7kVA. Left side only for 24kVA and up.

### 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 12 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 standard with 10 year, maintenance free, sealed valve regulated, front terminals Lead Calcium batteries. 20 year sealed Lead Calcium battery also available. 90 min. standard discharge time at full load under normal operating temperature. Low Voltage Disconnect protection included. No special ventilation required.

### Supervision

Automatic self tests consist of a 5-minute monthly and 90-minute annual function. The front-mounted control panel includes 5 LED indicators, a 2-line 20-character LCD 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. Standard RS232 diagnostic interface.

### 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

### Optional features

Output circuit breakers, output trip alarms, 20 years sealed batteries, 12 hours fast recharge, external maintenance bypass switch, remote meter panel, remote summary alarm panel, summary alarm dry form C contact, inverter on dry contacts, normally off output, fax/modem, bypass relays, auto dialer, seismic mounting.

### 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 6 months from ship date in order to validate warranty.  
2-Consult factory for other type batteries than the standard one.

### Single line diagram

