

### GLOBAL PERFORMANCE SWITCHERS

#### FEATURES:

- 3.6 watts/cu.in. power density
- Compact size (5.0" x 8.0" x 1.75")
- Power factor corrected to IEC 1000-3-2, Class A
- Less than 300  $\mu$ A leakage
- Conducted EMI exceeds FCC Class B and CISPR 22 Class B (Commercial models) and CISPR 11 Class B (Medical models)
- Commercial Approved to UL1950, IEC950, EN60950 and CSA 22.2 No. 950
- Medical Approved to UL2601-1, IEC601-1/60601-1 and CSA-C22.2 No. 601.1
- 2-year warranty
- RoHS Compliant Model Available (G suffix)




#### SPECIFICATIONS

| Ac Input<br>85-264 Vac, 47-63 Hz single phase.                                                                                                                                                                                                                                                                         | EMI/EMC Compliance<br>All models include built-in EMI filtering to meet emissions requirements:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------|-----------------------------|------------------------------|-----------------------------|------------------------------|------------------|-------------------------------------|-------------------------|------------------------|------------------------|--------------------------|----------------------|-----------------------------------|
| Input Current<br>Maximum input current 3.7 A at 90 Vac, 60 Hz with full rated load. Input current harmonic content meets the requirements of IEC1000-3-2 Class A for all load conditions.                                                                                                                              | <table border="1"> <thead> <tr> <th>EMI SPECIFICATIONS</th><th>COMPLIANCE LEVEL</th></tr> </thead> <tbody> <tr> <td>Conducted Emissions GPFC250</td><td>EN55022 Class B; FCC Class B</td></tr> <tr> <td>Conducted Emissions GPFM250</td><td>EN55011 Class B; FCC Class B</td></tr> <tr> <td>Static Discharge</td><td>EN61000-4-2, 6 kV contact, 8 kV air</td></tr> <tr> <td>RF Field Susceptibility</td><td>EN61000-4-3, 3 V/meter</td></tr> <tr> <td>Fast Transients/Bursts</td><td>EN61000-4-4, 2 kV, 5 kHz</td></tr> <tr> <td>Surge Susceptibility</td><td>EN61000-4-5, 1 kV diff, 2 kV com.</td></tr> </tbody> </table> | EMI SPECIFICATIONS | COMPLIANCE LEVEL | Conducted Emissions GPFC250 | EN55022 Class B; FCC Class B | Conducted Emissions GPFM250 | EN55011 Class B; FCC Class B | Static Discharge | EN61000-4-2, 6 kV contact, 8 kV air | RF Field Susceptibility | EN61000-4-3, 3 V/meter | Fast Transients/Bursts | EN61000-4-4, 2 kV, 5 kHz | Surge Susceptibility | EN61000-4-5, 1 kV diff, 2 kV com. |
| EMI SPECIFICATIONS                                                                                                                                                                                                                                                                                                     | COMPLIANCE LEVEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Conducted Emissions GPFC250                                                                                                                                                                                                                                                                                            | EN55022 Class B; FCC Class B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Conducted Emissions GPFM250                                                                                                                                                                                                                                                                                            | EN55011 Class B; FCC Class B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Static Discharge                                                                                                                                                                                                                                                                                                       | EN61000-4-2, 6 kV contact, 8 kV air                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| RF Field Susceptibility                                                                                                                                                                                                                                                                                                | EN61000-4-3, 3 V/meter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Fast Transients/Bursts                                                                                                                                                                                                                                                                                                 | EN61000-4-4, 2 kV, 5 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Surge Susceptibility                                                                                                                                                                                                                                                                                                   | EN61000-4-5, 1 kV diff, 2 kV com.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Hold-upTime<br>25 ms minimum from loss of ac input at full load, nominal line (115 Vac). Minimum Load: No minimum load required                                                                                                                                                                                        | Inrush Current<br>Inrush 240 Vac is less than 37 A, averaged over the first ac half-cycle under cold start conditions. Limiting provided by internal thermistors.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Output Power<br>250 W fan cooled, 180 W convection. See chart for models under 12 V.                                                                                                                                                                                                                                   | Fan Output<br>An additional 12 Vdc, 250 mA output suitable for powering a dc fan is included in all models.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Overload Protection<br>Fully protected against short circuit and output overload. Short circuit protection is cycling type power limit or foldback type depending on model and output. Recovery after fault is automatic. Individual output current limits are a function of load distribution and degree of overload. | Thermal Shutdown<br>Provided as a standard feature. Designed to protect unit from prolonged over temperature.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Output Noise<br>0.5% rms, 1% pk-pk, 20 MHz Bandwidth, differential mode. Measured with noise probe directly across output terminals of the power supply.                                                                                                                                                               | Power Fail<br>TTL or CMOS compatible output goes low (<0.5 V) 8 ms before output voltage drops more than 4% below nominal voltage upon loss of ac power. The signal is factory set to trip when input power can no longer sustain the output.                                                                                                                                                                                                                                                                                                                                                                               |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Transient Response<br>Main Output—500 $\mu$ s typical response time for return to within 0.5% of final value for a 50% load step change, $Di/Dt < 0.2$ A/ $\mu$ s. Maximum voltage deviation is 3.5%.                                                                                                                  | Temperature Coefficient<br>0.03% / $^{\circ}$ C typical on all outputs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Remote Sense<br>Provided as a standard feature. Capable of compensating for 0.25 V total of cabling losses in voltage.                                                                                                                                                                                                 | Leakage Current<br>70 $\mu$ A under normal conditions (132 Vac @ 60 Hz). Maximum under single fault conditions (264 Vac @ 60Hz), 250 $\mu$ A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Overvoltage Protection<br>Built in on all models. Output voltage decay is dependent upon loading.                                                                                                                                                                                                                      | Power Good<br>TTL/CMOS compatible output goes high more than 100 ms after V1 reaches the under voltage threshold and should assure that sufficient energy is stored in the input section to provide normal power fail/shutdown. The signal will fall to a low state (<0.5 V) when V1 goes below 95% of the rated voltage.                                                                                                                                                                                                                                                                                                   |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Voltage Adjustment<br>Main output $\pm$ 5%.                                                                                                                                                                                                                                                                            | External Off<br>TTL/CMOS compatible input shuts down power converter. A logic high (>2.7 V with 400 uA source) shuts down the power converter. A logic low (<0.5 V) or an open circuit allows the supply to run. 3.3 V & 5 V models require 25 mA source.                                                                                                                                                                                                                                                                                                                                                                   |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Efficiency<br>Minimum 80% on 12-48 V units, 75% on 5 & 3.3 V units at full rated load.                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |
| Input Protection<br>Internal ac fuses provided on all models. Fuses do not blow on overload or short circuit—fuses blow only if catastrophic failure occurs in the unit.                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |                  |                             |                              |                             |                              |                  |                                     |                         |                        |                        |                          |                      |                                   |

| Commercial Model | Medical Model | RoHS Suffix* | Output No. | Output | Voltage Adjustment | Output Maximum (A) | Output Maximum (B) | OVP Setpoint | Total Regulation | Notes |
|------------------|---------------|--------------|------------|--------|--------------------|--------------------|--------------------|--------------|------------------|-------|
| GPFC250-3.3      | GPFM250-3.3   | G            | 1          | 3.3 V  | ±5%                | 36 A               | 50 A               | 6.2 ± 0.6 V  | 2%               | C     |
| GPFC250-5        | GPFM250-5     | G            | 1          | 5.1 V  | ±5%                | 36 A               | 50 A               | 6.2 ± 0.6 V  | 2%               | C     |
| GPFC250-12       | GPFM250-12    | G            | 1          | 12 V   | ±5%                | 15 A               | 21 A               | 14 ± 1.1 V   | 2%               | C     |
| GPFC250-15       | GPFM250-15    | G            | 1          | 15 V   | ±5%                | 12 A               | 16.7 A             | 18.5 ± 1.5 V | 2%               | C     |
| GPFC250-24       | GPFM250-24    | G            | 1          | 24 V   | ±5%                | 7.5 A              | 10.5 A             | 28 ± 2.5 V   | 2%               | C     |
| GPFC250-28       | GPFM250-28    | G            | 1          | 28 V   | ±5%                | 6.5 A              | 9 A                | 34 ± 2.8 V   | 2%               | C     |
| GPFC250-48       | GPFM250-48    | G            | 1          | 48 V   | ±5%                | 3.8 A              | 5.3 A              | 55 ± 4.0 V   | 2%               | C     |

\* Add "G" suffix to part number for RoHS compliant model.

A. Continuous output rating with unrestricted convection cooling.

B. Continuous output rating with 26cfm airflow or "-C" option. Also one minute peak rating for convection cooled.

C. Add "-C" suffix for factory installed cover with fan option.

## GPFC250/GPFM250 MECHANICAL SPECIFICATIONS

### INPUT:

#### TB1

6-32, 3 PIN TERMINAL BLOCK 0.375"  
PIN 1) AC LINE  
PIN 2) AC NEUTRAL  
PIN 3) AC GROUND

### SIGNALS: J2

AMP P.C.B. HEADER P/N 640456-5  
MATING CONNECTOR P/N640440-5  
PIN 1) DC GOOD  
PIN 2) POWER FAIL  
PIN 3) EXT OFF  
PIN 4) +SENSE  
PIN 5) -SENSE

### FAN

AMP P.C.B. HEADER P/N 640456-2  
MATING CONNECTOR P/N 640440-2  
PIN 1) -  
PIN 2) +

### OUTPUT:

#### TB2

6-32, 4 PIN TERMINAL BLOCK 0.375  
[9.53mm]CTR  
AN OPTIONAL BUS BAR WITH 10-32  
SCREWS ON HIGH-CURRENT MODELS  
IS AVAILABLE BY ADDING -B TO  
MODEL NUMBER  
PINS 1-2) +Vout  
PINS 3-4) RETURN  
16A MAXIMUM RECOMMENDED

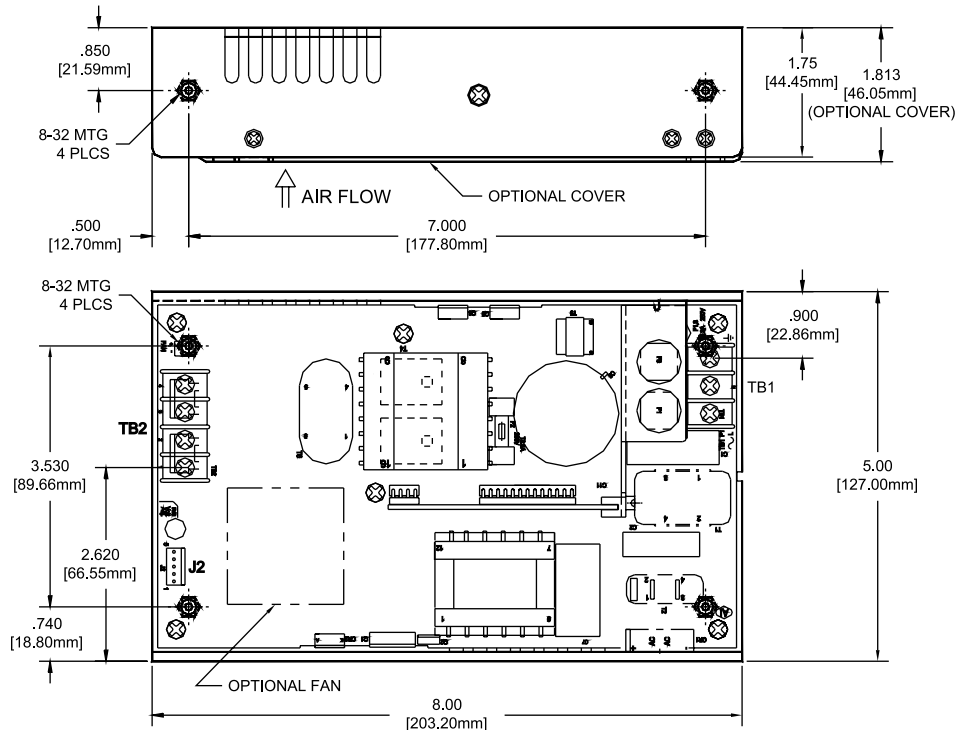
### CURRENT PER CONNECTOR PIN.

MAX. SCREW PROTRUSION ABOVE  
CHASSIS = 0.120" [3.05MM].

OPTIONAL: COVER/FAN ASSEMBLY #09-250CF  
CAN BE INCLUDED BY ADDING -C TO  
MODEL NUMBER

WEIGHT: 2.9 LBS. [1.32 kg] MAX.

TOLERANCES: X.XX=0.030 [0.76mm]  
X.XXX=0.010 [0.25 mm]



| ENVIRONMENTAL SPECIFICATIONS | OPERATING                                       | NON-OPERATING                                 |
|------------------------------|-------------------------------------------------|-----------------------------------------------|
| Temperature (A)              | 0 to 50°                                        | -40 to +85°C                                  |
| Humidity (A)                 | 0 to 95% RH                                     | 0 to 95% RH                                   |
| Shock (B)                    | 20 g <sub>pk</sub>                              | 40 g <sub>pk</sub>                            |
| Altitude                     | -500 to 10,000 ft                               | -500 to 40,000 ft                             |
| Vibration (C)                | 1.5 g <sub>rms</sub> , 0.003 g <sup>2</sup> /Hz | 5 g <sub>rms</sub> , 0.026 g <sup>2</sup> /Hz |

A. Units should be allowed to warm up/operate under non-condensing conditions before application of power. Derate output current and total output power by 2.5% per °C above 50°C.

B. Shock testing—half-sinusoidal, 10 ± 3 ms duration, ± direction, 3 orthogonal axes, total 6 shocks.

C. Random vibration—10 to 2000Hz, 6dB/octave roll-off from 350 to 2000Hz, 3 orthogonal axes. Tested for 10 min./axis operating and 1 hr./axis non-operating.

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