

## PERFORMANCE MEDICAL SWITCHERS

### FEATURES:

- Wide-range ac input 85-264 Vac
- 2-year warranty
- 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 CSA22.2-234 L3
- Medical Approved to UL2601-1, IEC601-1 and CSA22.2 No. 601.1
- Complies with EN61000-3-2 Class A
- RoHS Compliant Model Available (G suffix)



### SPECIFICATIONS

|   |
|---|
| Ac Input<br>85-264 Vac, 47-63 Hz single phase.  |
| Input Current<br>Maximum input current at 120 Vac, 60 Hz with full rated output load: 2.3 A   |
| Hold-Up Time<br>20 ms minimum from loss of ac input at full load, nominal line (115 Vac).   |
| Output Power<br>80 W continuous, 110 W with air flow. Peak ratings are for 60 s maximum duration, 10% duty cycle. During peak load condition, output regulation may exceed total regulation limits.   |
| Overload Protection<br>Fully protected against short circuit and output overload. Short circuit protection is cycling type power limit on outputs 1 & 2; foldback type on outputs 3 & 4. Recovery after fault is automatic. Factory set to begin power limiting at 120 W. See output ratings chart for additional notes or conditions.  |
| Overvoltage Protection<br>Main outputs: 124% ± 12% typical.   |
| Efficiency<br>70% at full rated load, nominal input voltage, depending on model and load distribution.  |
| Input Protection<br>Internal ac fuse provided. Designed to blow only if a catastrophic failure occurs in the unit.  |
| Inrush Current<br>Inrush is limited by internal thermistors. Inrush at 240 Vac under cold start conditions will not exceed 34 A.  |
| Temperature Coefficient<br>0.03%/°C typical on all outputs.   |
| Environmental<br>Designed for 0 to 50°C operation at full rated output power; derate output current and total output power by 2.5% per °C above 50°C. See Environmental and Packaging Specifications on next page.  |
| Power Fail (optional)<br>TTL- or CMOS-compatible output goes low (< 0.5 V) 5 ms before output voltage drops more than 4% below nominal voltage upon loss of ac power. The signal is factory set to trip on 84 to 94 Vac brown-out depending upon incoming line impedance and distortion. Other settings are available to the user through adjustment of built-in potentiometer (consult factory for assistance). For Power fail option, add -PF after model number. |

| 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.   |                                     |                  |                           |                              |                           |                              |                  |                                     |                         |                        |                        |                          |                      |                                    |                          |                     |
|--|-------------------------------------|------------------|---------------------------|------------------------------|---------------------------|------------------------------|------------------|-------------------------------------|-------------------------|------------------------|------------------------|--------------------------|----------------------|------------------------------------|--------------------------|---------------------|
| Transient Response<br>Main output—500 μs typical response time for return to within 0.5% of final value for a 50% load step change. Δi/Δt < 0.2 A/μs. Maximum voltage deviation is 3.5%. Startup/shutdown overshoot less than 3%.  |                                     |                  |                           |                              |                           |                              |                  |                                     |                         |                        |                        |                          |                      |                                    |                          |                     |
| Remote Sense<br>Provided as a standard feature on single-output models.  |                                     |                  |                           |                              |                           |                              |                  |                                     |                         |                        |                        |                          |                      |                                    |                          |                     |
| Voltage Adjustment<br>Built-in potentiometer adjusts voltage ±5% on outputs 1 & 2.   |                                     |                  |                           |                              |                           |                              |                  |                                     |                         |                        |                        |                          |                      |                                    |                          |                     |
| EMI/EMC Compliance<br>All models include built-in EMI filtering to meet the following emissions requirements:  |                                     |                  |                           |                              |                           |                              |                  |                                     |                         |                        |                        |                          |                      |                                    |                          |                     |
| <table border="1"> <thead> <tr> <th>EMI SPECIFICATIONS</th> <th>COMPLIANCE LEVEL</th> </tr> </thead> <tbody> <tr> <td>Conducted Emissions GPC80</td> <td>EN55022 Class B; FCC Class B</td> </tr> <tr> <td>Conducted Emissions GPM80</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> <tr> <td>Line Frequency Harmonics</td> <td>EN61000-3-2 Class A</td> </tr> </tbody> </table> | EMI SPECIFICATIONS                  | COMPLIANCE LEVEL | Conducted Emissions GPC80 | EN55022 Class B; FCC Class B | Conducted Emissions GPM80 | 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. | Line Frequency Harmonics | EN61000-3-2 Class A |
| EMI SPECIFICATIONS   | COMPLIANCE LEVEL                    |                  |                           |                              |                           |                              |                  |                                     |                         |                        |                        |                          |                      |                                    |                          |                     |
| Conducted Emissions GPC80  | EN55022 Class B; FCC Class B        |                  |                           |                              |                           |                              |                  |                                     |                         |                        |                        |                          |                      |                                    |                          |                     |
| Conducted Emissions GPM80  | 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.  |                  |                           |                              |                           |                              |                  |                                     |                         |                        |                        |                          |                      |                                    |                          |                     |
| Line Frequency Harmonics   | EN61000-3-2 Class A                 |                  |                           |                              |                           |                              |                  |                                     |                         |                        |                        |                          |                      |                                    |                          |                     |
| Commercial Leakage Current<br>0.7 mA 254 Vac @ 60 Hz input.  |                                     |                  |                           |                              |                           |                              |                  |                                     |                         |                        |                        |                          |                      |                                    |                          |                     |
| Commercial Safety<br>Approved to UL1950, CSA22.2 No. 234 Level 3, IEC950 and EN60950. UL file #E135803 commercial; CSA #LR46516 all. The output(s) are intended for safety earthed Signal Output and Intermediate Circuits only. All dc outputs are SELV under normal and single fault conditions.   |                                     |                  |                           |                              |                           |                              |                  |                                     |                         |                        |                        |                          |                      |                                    |                          |                     |
| Medical Leakage Current<br>35 μA 254 Vac @ 60 Hz input.  |                                     |                  |                           |                              |                           |                              |                  |                                     |                         |                        |                        |                          |                      |                                    |                          |                     |
| Medical Commercial Safety<br>Approved to UL2601-1, CSA-C22.2 No. 601.1 Level 3 and IEC601.1. UL file E116994; CSA #LR46516. The output(s) are intended for safety earthed Signal Output and Intermediate Circuits only. The output(s) are not acceptable for patient connection without additional isolation. All dc outputs are SELV under normal and single fault conditions.  |                                     |                  |                           |                              |                           |                              |                  |                                     |                         |                        |                        |                          |                      |                                    |                          |                     |

| Commercial Model | Medical Model | RoHS Suffix* | Output No. | Output | Output Minimum | Output Maximum (B) | Output Maximum (C) | Output Peak | Noise P-P | Total Regulation (A) |
|------------------|---------------|--------------|------------|--------|----------------|--------------------|--------------------|-------------|-----------|----------------------|
| GPC80A           | GPM80A        | G            | 1          | +5 V   | 1.0 A          | 12 A               | 12 A               | 16 A        | 50 mV     | 2%                   |
|                  |               |              | 2          | +12 V  | 0 A            | 3 A                | 4 A                | 5 A         | 120 mV    | 2%                   |
|                  |               |              | 3          | -12 V  | 0 A            | 1 A                | 1.2 A              | 1.2 A       | 120 mV    | 3%                   |
|                  |               |              | 4          | +12 V  | 0 A            | 1 A                | 1.2 A              | 1.2 A       | 120 mV    | 3%                   |
| GPC80B           | GPM80B        | G            | 1          | +5 V   | 1.0 A          | 12 A               | 12 A               | 16 A        | 50 mV     | 2%                   |
|                  |               |              | 2          | +12 V  | 0 A            | 3 A                | 4 A                | 5 A         | 120 mV    | 2%                   |
|                  |               |              | 3          | -12 V  | 0 A            | 1 A                | 1.2 A              | 1.2 A       | 120 mV    | 3%                   |
|                  |               |              | 4          | -5 V   | 0 A            | 1 A                | 1.2 A              | 1.2 A       | 50 mV     | 3%                   |
| GPC80C           | GPM80C        | G            | 1          | +5 V   | 1 A            | 12 A               | 12 A               | 16 A        | 50 mV     | 2%                   |
|                  |               |              | 2          | +12 V  | 0 A            | 3 A                | 4 A                | 5 A         | 120 mV    | 2%                   |
|                  |               |              | 3          | -15 V  | 0 A            | 1 A                | 1.2 A              | 1.2 A       | 150 mV    | 3%                   |
|                  |               |              | 4          | +15 V  | 0 A            | 1 A                | 1.2 A              | 1.2 A       | 150 mV    | 3%                   |
| GPC80D           | GPM80D        | G            | 1          | +5 V   | 1 A            | 12 A               | 12 A               | 16 A        | 50 mV     | 2%                   |
|                  |               |              | 2          | +24 V  | 0 A            | 2 A                | 3 A                | 4 A         | 240 mV    | 2%                   |
|                  |               |              | 3          | -12 V  | 0 A            | 1 A                | 1.2 A              | 1.2 A       | 120 mV    | 3%                   |
|                  |               |              | 4          | +12 V  | 0 A            | 1 A                | 1.2 A              | 1.2 A       | 120 mV    | 3%                   |
| GPC80 E          | GPM80E        | G            | 1          | +5 V   | 1 A            | 12 A               | 12 A               | 16 A        | 50 mV     | 2%                   |
|                  |               |              | 2          | +24 V  | 0 A            | 2 A                | 3 A                | 4 A         | 240 mV    | 2%                   |
|                  |               |              | 3          | -15 V  | 0 A            | 1 A                | 1.2 A              | 1.2 A       | 150 mV    | 3%                   |
|                  |               |              | 4          | +15 V  | 0 A            | 1 A                | 1.2 A              | 1.2 A       | 150 mV    | 3%                   |
| GPC80P           | GPM80P        | G            | 1          | +5 V   | 1 A            | 12 A               | 12 A               | 16 A        | 50 mV     | 2%                   |
|                  |               |              | 2          | +24 V  | 0.5 A          | 3.5 A              | 4.5 A              | 4.5 A       | 400 mV    | +10%/-5% D           |
|                  |               |              | 3          | -12 V  | 0 A            | 1 A                | 1.2 A              | 1.2 A       | 120 mV    | 3%                   |
|                  |               |              | 4          | +12 V  | 0 A            | 2 A                | 2 A                | 2.5 A       | 120 mV    | 3%                   |
| GPC80-5          | GPM80-5       | G            | 1          | 5 V    | 0 A            | 16 A               | 20 A               | 22 A        | 50 mV     | 2%                   |
| GPC80-12         | GPM80-12      | G            | 1          | 12 V   | 0 A            | 6.7 A              | 9.2 A              | 9.2 A       | 120 mV    | 2%                   |
| GPC80-15         | GPM80-15      | G            | 1          | 15 V   | 0 A            | 5.3 A              | 7.3 A              | 7.3 A       | 150 mV    | 2%                   |
| GPC80-24         | GPM80-24      | G            | 1          | 24 V   | 0 A            | 3.4 A              | 4.6 A              | 4.6 A       | 240 mV    | 2%                   |
| GPC80-28         | GPM80-28      | G            | 1          | 28 V   | 0 A            | 2.9 A              | 3.9 A              | 3.9 A       | 280 mV    | 2%                   |
| GPC80-48         | GPM80-48      | G            | 1          | 48 V   | 0 A            | 1.7 A              | 2.3 A              | 2.3 A       | 480 mV    | 2%                   |

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

A. Total regulation is defined as the maximum deviation from the nominal voltage for all steady-state conditions of initial voltage setting, input line voltage and output load.

B. Ratings for unrestricted natural convection cooling; output 1 & 2 combined load not to exceed 14A continuous; total power = 80W.

C. Ratings with 26 cfm forced air cooling; output 1 & 2 combined load not to exceed 16A continuous; total power = 110W.

D. To maintain these regulation conditions, the +5V current must be at least 1/4 of V2 and not greater than 5 times the V2 current. Requires +5V to be adjusted within ±1% with at least a 1A load to maintain regulation on this input.

E. For Power Fail option, add -PF after the model number.

## GPC80/GPM80 MECHANICAL SPECIFICATIONS

### INPUT: J1

AMP P/N 640445-5 0.156 [3.96mm] CTR HEADER

PIN 1) AC GROUND  
PIN 2) N/C  
PIN 3) AC NEUTRAL  
PIN 4) N/C  
PIN 5) AC LINE

### MATING CONNECTORS AMP P/N

#### HOUSING

INPUT 640250-5 770476-1  
OUTPUT 1-640250-3 770476-1

NOTE: 5A MAXIMUM RECOMMENDED CURRENT PER CONNECTOR PIN

OPTIONAL ENCLOSURE AVAILABLE, ORDER PIN 08-30466-1180

WEIGHT 1.8 LBS MAX. [0.82 kg MAX.]

### OUTPUT: J2

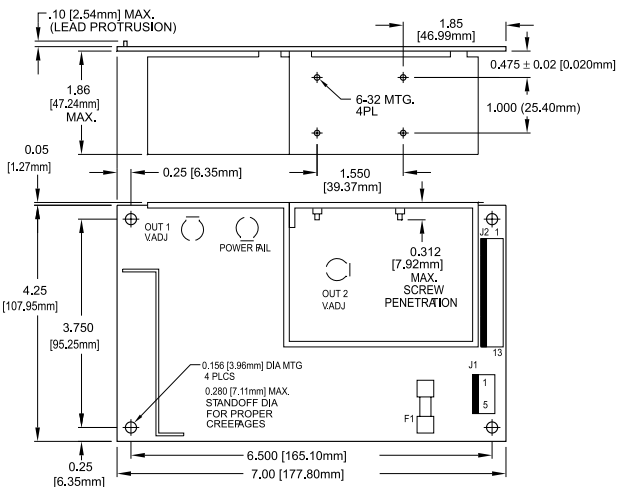
AMP P/N 1-640445-3 0.156 [3.96mm] CTR HEADER

| J2     | MULTI OUTPUT MODELS | SINGLE OUTPUT MODELS | J2 CONT. | MULTI OUTPUT MODELS | SINGLE OUTPUT MODELS |
|--------|---------------------|----------------------|----------|---------------------|----------------------|
| PIN 1) | OUTPUT #1           | OUTPUT #1            | PIN 8)   | OUTPUT #2           | COMMON               |
| PIN 2) | OUTPUT #1           | OUTPUT #1            | PIN 9)   | OUTPUT #2           | COMMON               |
| PIN 3) | OUTPUT #1           | OUTPUT #1            | PIN 10)  | POWER FAIL          | POWER FAIL           |
| PIN 4) | COMMON              | OUTPUT #1            | PIN 11)  | OUTPUT #3           | + SENSE              |
| PIN 5) | COMMON              | COMMON               | PIN 12)  | KEY                 | KEY                  |
| PIN 6) | COMMON              | COMMON               | PIN 13)  | OUTPUT #4           | - SENSE              |
| PIN 7) | COMMON              | COMMON               |          |                     |                      |

### TOLERANCES:

X.XX = ± 0.030 (0.76MM)

X.XXX = ± 0.010 (0.25MM)



| ENVIRONMENTAL SPECIFICATIONS | OPERATING                                       | NON-OPERATING                                 |
|------------------------------|---|---|
| Temperature (A)              | See individual specs                            | -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.

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.