

**Features**

- RoHS lead-solder-exempt compliant
- Wide-range input for 110/220 VAC applications
- CE marked to Low Voltage Directive
- Input transient & ESD compliance to EN61000-4-2/-3/-4
- Meets EN55022, Class B limits
- TTL compatible Power Fail Signal
- Greater than 175,000 Hours MTBF
- Metric and SAE mounting inserts

**Description**

Power-One's MAP80 Series of power supplies provides reliable, tightly-regulated DC power for commercial and industrial systems which require high peak current capabilities. Wide-range AC input and full international safety, EMI, and ESD compliance ensure worldwide acceptance. All units bear the CE Mark.

The MAP80 utilizes a variable frequency design with a thermally efficient U-channel chassis to provide full power operation in convection-cooled applications. Design innovations include metric and SAE mounting inserts on each mounting surface to provide integration flexibility. Dual-mode connectors provide traditional terminal block connections or popular single-row Molex connector mating.

Single-output models feature wide-range output adjustability to meet a wide variety of standard and user-specific output voltage requirements.

**Single Output Model Selection**

| MODEL             | OUTPUT VOLTAGE | ADJUSTMENT RANGE | MAXIMUM OUTPUT CURRENT | PEAK OUTPUT CURRENT (NOTE 3) | LINE REGULATION | LOAD REGULATION | RIPPLE & NOISE %p-p (NOTE 1) | INITIAL SETTING ACCURACY |
|-------------------|----------------|------------------|------------------------|------------------------------|-----------------|-----------------|------------------------------|--------------------------|
| <b>MAP80-1005</b> | 5V             | 4.5V to 5.6V     | 16A                    | 18A                          | 0.2%            | 1%              | 1.4%                         | 5.0V to 5.1V             |
| <b>MAP80-1012</b> | 12V/15V        | 11.5V to 15.5V   | 7.5/6A (Note 2)        | 9.2/7.3A (Note 2)            | 0.2%            | ±1%             | 1%                           | 11.76V to 12.15V         |
| <b>MAP80-1024</b> | 24V/28V        | 23.0V to 29.0V   | 3.8/3.2A (Note 2)      | 4.6/3.9A (Note 2)            | 0.1%            | 0.5%            | 0.5%                         | 23.8V to 24.2V           |

**NOTES:** 1) Maximum peak to peak noise expressed as a percentage of output voltage, 20MHz bandwidth.  
 2) MAP80-1012 output currents are expressed as 12V/15V operation. MAP80-1024 output currents are expressed as 24V/28V operation.  
 3) Peak load for 60 seconds or less are acceptable, 10% duty cycle, maximum.

**Multiple Output Model Selection – 80W Continuous Output Power**

| MODEL             | OUTPUT VOLTAGE | ADJUSTMENT RANGE | OUTPUT CURRENT | PEAK OUTPUT CURRENT (NOTE 1) | LINE REGULATION | LOAD REGULATION | RIPPLE & NOISE %p-p (NOTE 2) | INITIAL SETTING ACCURACY |
|-------------------|----------------|------------------|----------------|------------------------------|-----------------|-----------------|------------------------------|--------------------------|
| <b>MAP80-4000</b> | +5V            | 4.8V to 5.5V     | 14A            | 16A                          | 0.2%            | 1%              | 1%                           | 5.1V to 5.2V             |
|                   | +12V           | 11.52V to 12.48V | 4A             | 7A                           | 0.2%            | 1%              | 1%                           | 11.9V to 12.1V           |
|                   | -5V            | Fixed            | 1A             | 1A                           | 0.5%            | 2%              | 1%                           | -4.8V to -5.4V           |
|                   | -12V           | Fixed            | 1A             | 1A                           | 0.5%            | 2%              | 1%                           | -11.5V to -12.5V         |
| <b>MAP80-4001</b> | +5V            | 4.8V to 5.5V     | 14A            | 16A                          | 0.2%            | 1%              | 1%                           | 5.1V to 5.2V             |
|                   | +24V           | 23.04V to 24.96V | 2A             | 3.5A                         | 0.2%            | 1%              | 1%                           | 24.0V to 24.1V           |
|                   | -12V           | Fixed            | 1A             | 1A                           | 0.5%            | 2%              | 1%                           | -11.5V to -12.5V         |
| <b>MAP80-4002</b> | +12V           | Fixed            | 1A             | 1A                           | 0.5%            | 2%              | 1%                           | 11.5V to 12.5V           |
|                   | +5V            | 4.7V to 5.5V     | 14A            | 16A                          | 0.2%            | 1%              | 1%                           | 5.1V to 5.2V             |
|                   | +12V           | 11.52V to 12.48V | 4A             | 7A                           | 0.2%            | 1%              | 1%                           | 12.0V to 12.1V           |
| <b>MAP80-4003</b> | -12V           | Fixed            | 1A             | 1A                           | 0.5%            | 2%              | 1%                           | -11.6V to -12.4V         |
|                   | +5V            | 4.8V to 5.5V     | 14A            | 16A                          | 0.2%            | 1%              | 1%                           | 5.1V to 5.2V             |
|                   | +15V           | 14.40V to 15.60V | 3.5A           | 6A                           | 0.2%            | 1%              | 1%                           | 14.6V to 15.1V           |
| <b>MAP80-4004</b> | -5V            | Fixed            | 1A             | 1A                           | 0.5%            | 2%              | 1%                           | -4.8V to -5.4V           |
|                   | -15V           | Fixed            | 1A             | 1A                           | 0.5%            | 2%              | 1%                           | -14.4V to -15.5V         |
|                   | +5V            | 4.8V to 5.5V     | 14A            | 16A                          | 0.2%            | 1%              | 1%                           | 5.1V to 5.2V             |
| <b>MAP80-4004</b> | +24V           | 23.04V to 24.96V | 2A             | 3.5A                         | 0.2%            | 1%              | 1%                           | 24.0V to 24.1V           |
|                   | -15V           | Fixed            | 1A             | 1A                           | 0.5%            | 2%              | 1%                           | -14.4V to -15.5V         |
|                   | +15V           | Fixed            | 1A             | 1A                           | 0.5%            | 2%              | 1%                           | 14.4V to 15.5V           |

**Multiple Output Model Selection (Cont.) – 80W Continuous Output Power**

| MODEL             | OUTPUT VOLTAGE | ADJUSTMENT RANGE | OUTPUT CURRENT | PEAK OUTPUT CURRENT (NOTE 1) | LINE REGULATION | LOAD REGULATION | RIPPLE & NOISE %p-p (NOTE 2) | INITIAL SETTING ACCURACY |
|-------------------|----------------|------------------|----------------|------------------------------|-----------------|-----------------|------------------------------|--------------------------|
| <b>MAP80-4010</b> | +5V            | 4.8V to 5.5V     | 14A            | 16A                          | 0.2%            | 1%              | 1%                           | 5.1V to 5.2V             |
|                   | +12V           | 11.52V to 12.48V | 4A             | 7A                           | 0.2%            | 1%              | 1%                           | 12.0V to 12.1V           |
|                   | -5V            | Fixed            | 1A             | 1A                           | 0.5%            | 2%              | 1%                           | -4.8V to -5.4V           |
|                   | -12V           | Fixed            | 3A             | 3A                           | 0.5%            | 2%              | 1%                           | -11.5V to -12.5V         |
| <b>MAP80-4020</b> | +5V            | 4.8V to 5.5V     | 14A            | 16A                          | 0.2%            | 1%              | 1%                           | 5.1V to 5.2V             |
|                   | +12V           | 11.52V to 12.48V | 4A             | 7A                           | 0.2%            | 1%              | 1%                           | 12.0V to 12.1V           |
|                   | -12V           | Fixed            | 1A             | 1A                           | 0.5%            | 2%              | 1%                           | -11.5V to -12.5V         |
|                   | -5V            | Fixed            | 3A             | 3A                           | 0.5%            | 2%              | 1%                           | -4.8V to -5.4V           |

**NOTES:** 1) Peak loads up to 90 Watts for 60 seconds or less are acceptable, (10% duty cycle max.). Peak power must not exceed 90 Watts.  
2) Maximum peak to peak noise expressed as a percentage of output voltage, 20MHz bandwidth.

**Input Specifications**

| PARAMETER            | CONDITIONS/DESCRIPTION   | MIN       | NOM | MAX        | UNITS |
|----------------------|--|-----------|-----|------------|-------|
| Input Voltage - AC   | Continuous input range.  | 90<br>175 |     | 135<br>264 | VAC   |
| Input Frequency      | AC input.  | 47        |     | 63         | Hz    |
| Brown Out Protection | Lowest AC input voltage that regulation is maintained with full rated loads. | 90        |     |            | VAC   |
| Hold-up Time         | Nominal AC input voltage (115VAC), full rated load.                          | 20        |     |            | mS    |
| Input Current        | 90 VAC (80W load).<br>110VAC (80W load).                                     |           |     | 2.5<br>1.8 | ARMS  |
| Input Protection     | Non-user serviceable internally located AC input line fuse.                  |           |     |            |       |
| Inrush Surge Current | Internally limited by thermistor. Vin = 264VAC (one cycle). 25° C.           |           |     | 45         | APK   |
| Operating Frequency  | Switching frequency of power supply (varies with load).                      | 22        |     | 120        | kHz   |

**Output Specifications**

| PARAMETER              | CONDITIONS/DESCRIPTION  | MIN                  | NOM | MAX      | UNITS                      |
|------------------------|---|----------------------|-----|----------|----------------------------|
| Efficiency             | Full load, 115VAC. Varies with distribution of loads among outputs.   | 73                   | 75  | 80       | %                          |
| Minimum Loads          | MAP80-1012<br>MAP80-1024<br>MAP80-1005 and all multiple output models, main channel only.   | 0.42<br>0.21<br>1.00 |     |          | Amps                       |
| Ripple and Noise       | Full load, 20MHz bandwidth.   |                      |     |          | See Model Selection Chart. |
| Output Power           | Continuous output power, all multiple output models.<br>Peak output power (60s maximum, 10% duty cycle), all multiple output models.                  |                      |     | 80<br>90 | Watts<br>Watts             |
| Overshoot / Undershoot | Output voltage overshoot/undershoot at turn-on, V1, V2.   |                      |     | 1        | %                          |
| Regulation             | Varies by output. Total regulation includes: line changes from 90-132 VAC or 175-264, changes in load starting at 20% load and changing to 100% load. |                      |     |          | See Model Selection Chart. |
| Transient Response     | Recovery time, to within 1% of initial set point due to a 50-100% load change, 4% max. deviation. (Main output of multiple output units).             |                      |     | 500      | µS                         |
| Turn-On Delay          | Time required for initial output voltage stabilization.   | 1                    |     | 5        | Sec                        |
| Turn-on Rise Time      | Time required for output voltage to rise from 10% to 90%.   |                      |     | 20       | mS                         |

**Interface Signals and Internal Protection**

| PARAMETER                   | CONDITIONS/DESCRIPTION  | MIN             | NOM | MAX             | UNITS |
|-----------------------------|---|-----------------|-----|-----------------|-------|
| Overvoltage Protection      | Provided on MAP80-1005 and the main output of multiple output units.<br>MAP80-1012<br>MAP80-1024                  | 5.5<br>17<br>32 |     | 6.8<br>23<br>37 | V     |
| Overload Protection         | Fully protected against output overload and short circuit. Automatic recovery upon removal of overload condition. |                 |     |                 |       |
| Power Fail Warning (Note 1) | TTL compatible logic signal. Time before regulation dropout due to loss of input power at 110VAC.                 | 4               |     |                 | mS    |

**NOTES:** 1) Power Fail Warning is not available on MAP80-1024. The MAP80-1012 is an open collector output, capable of sinking 35 mA, maximum.

**Safety, Regulatory, and EMI Specifications**

| PARAMETER                               | CONDITIONS/DESCRIPTION   | MIN         | NOM      | MAX | UNITS |
|---|--|-------------|----------|-----|-------|
| Agency Approvals                        | UL1950.<br>CSA 22.2 No. 234/950.<br>EN60950 (TUV).   |             | Approved |     |       |
| Dielectric Withstand Voltage            | Input to output.   | 2600        |          |     | VDC   |
| Electromagnetic Interference, Conducted | FCC CFR title 47 part 15 sub-part B - conducted & radiated.<br>EN55022 / CISPR 22 conducted.<br>EN55022 / CISPR 22 radiated. | B<br>B<br>B |          |     | Class |
| Input Transient Protection              | EN61000-4-5 level 3.   | 1           | 2        |     | kV    |
| Insulation Resistance                   | Input to output.   | 7           |          |     | MΩ    |
| Leakage Current                         | Per EN60950, 264VAC.   |             |          | 500 | μA    |

**Environmental Specifications**

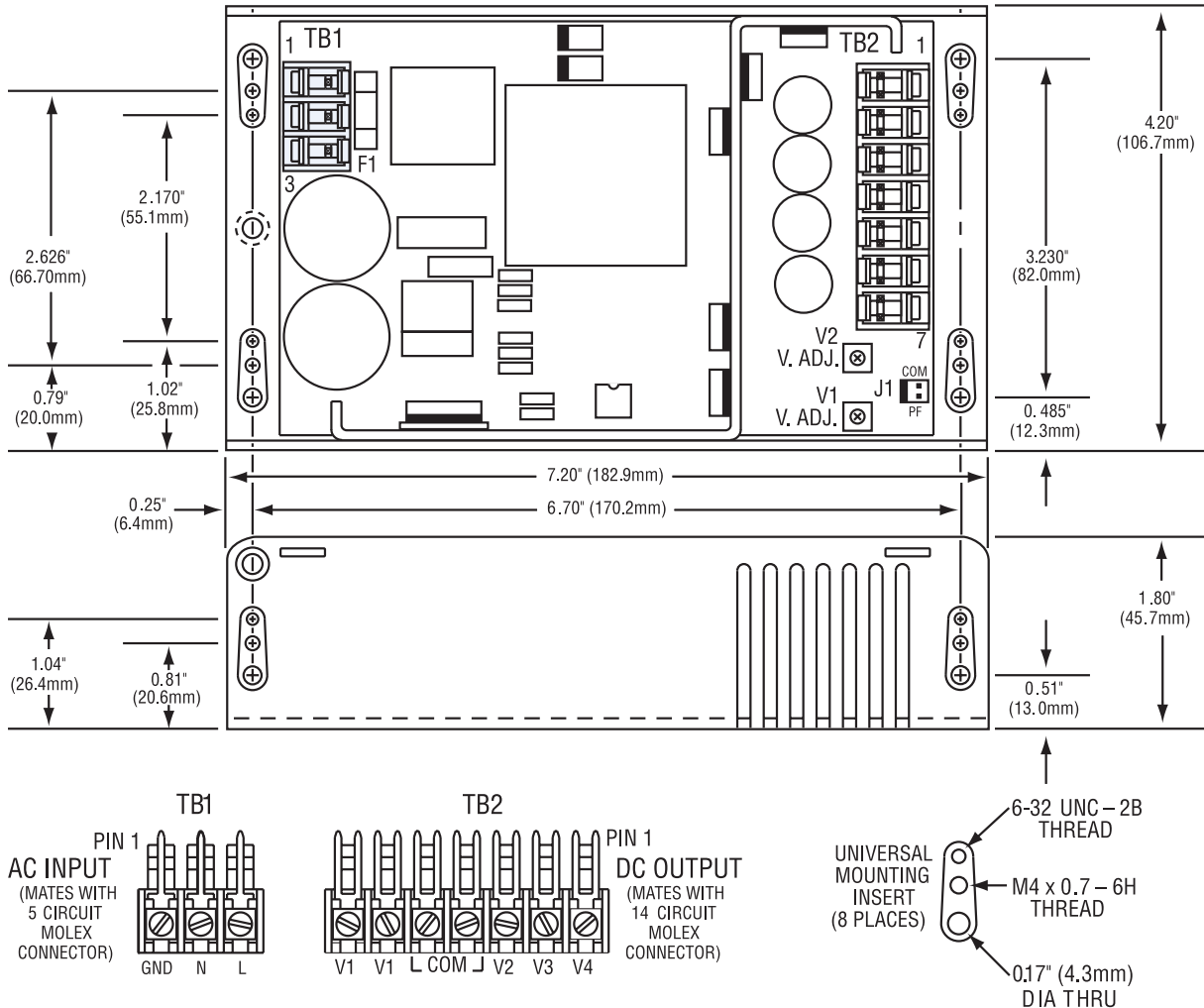
| PARAMETER               | CONDITIONS/DESCRIPTION  | MIN | NOM   | MAX        | UNITS              |
|-------------------------|---|-----|-------|------------|--------------------|
| Altitude                | Operating.<br>Non-operating.  |     |       | 10k<br>40k | ASL Ft.<br>ASL Ft. |
| Operating Temperature   | Derate linearly above 50°C by 2.5% per °C to a maximum temperature of 70°C. |     |       |            |                    |
|                         | At 100% load:   | 0   |       | 50         | °C                 |
|                         | At 50% load:  | 0   |       | 70         | °C                 |
| Storage Temperature     |   | -55 |       | 85         | °C                 |
| Temperature Coefficient | 0°C to 70°C (After 15 minute warm-up).                                      |     | ±0.02 | ±0.03      | %/°C               |
| Relative Humidity       | Non-condensing.   | 5   |       | 95         | %RH                |
| Shock                   | Operating, peak acceleration.   |     |       | 20         | G                  |
| Vibration               | Random vibration, 10Hz to 2kHz, 3 axis.                                     |     |       | 6          | GRMS               |

**Options**

| DESCRIPTION | NOTES  | SIZE IMPACT   |
|-------------|--|---|
| Cover       | Add 'C' suffix to model number or order part number 412-59585-G separately.<br>For convection cooled applications, derate output power to 65 watts on all multiple output models and MAP80-1005. Derate MAP80-1012 and MAP80-1024 to 75 watts. | 7.20" x 4.20" x 2.05"<br>(183.0mm x 107.0mm x 52.0mm) |

**OVERALL SIZE: 7.20" x 4.20" x 1.80" (182.9mm x 106.7mm x 45.7mm)**

**WEIGHT: 1.8 LBS (0.82 kg)**



**INPUT & OUTPUT CONNECTIONS:** 6-32 SCREW WIRE CLAMPS ON 0.312" (7.9mm) CENTERS, 0.045" (1.1mm) SQUARE PINS ON 0.156" (3.9mm) CENTERS, MATES WITH MOLEX SERIES 2139, 6442, OR 41695

**POWER FAIL CONNECTIONS:** J1: 0.035" (0.9mm) SQUARE PINS ON 0.100" (2.5mm) CENTERS, MATES WITH MOLEX SERIES 2695/6471

**CHASSIS:** 0.090" (2.3mm) ALUMINUM ALLOY, WITH CLEAR FINISH

**NUCLEAR AND MEDICAL APPLICATIONS -** Power-One products are not designed, intended for use in, or authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the respective divisional president of Power-One, Inc.

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