

MAP80 Series

AC-DC Power Supplies

Bel Power Solutions 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.



Key Features & Benefits

- RoHS Compliant
- Wide Range Input for 110/220 VAC Applications
- CE marked to Low Voltage Directive
- Input Transient and 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



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1. SINGLE-OUTPUT MODEL SELECTION

| MODEL ⁷ | OUTPUT VOLTAGE | ADJUSTMENT RANGE | MAX OUTPUT CURRENT | PEAK OUTPUT CURRENT ¹ | LINE REGULATION | LOAD REGULATION | RIPPLE & NOISE ² | INITIAL SETTING ACCURACY |
|--------------------------|----------------|------------------|-----------------------|----------------------------------|-----------------|-----------------|-----------------------------|--------------------------|
| MAP80-1012G ⁶ | 12V/15V | 11.5V to 15.5V | 7.5/6.0A ³ | 9.2/7.3A | 0.2% | ±1% | 1% | 11.76V to 12.15V |
| MAP80-1024G ⁶ | 24V/28V | 23.0V to 29.0V | 3.8/3.2A | 4.6/3.9A | 0.1% | 0.5% | 0.5% | 23.8V to 24.2V |

2. MULTIPLE-OUTPUT MODEL SELECTION – 80 W CONTINUOUS OUTPUT POWER

| MODEL ⁷ | OUTPUT VOLTAGE | ADJUSTMENT RANGE | OUTPUT CURRENT | PEAK OUTPUT CURRENT ⁴ | LINE REGULATION | LOAD REGULATION | RIPPLE & NOISE ² | INITIAL SETTING ACCURACY |
|--------------------------|----------------|------------------|----------------|----------------------------------|-----------------|-----------------|-----------------------------|--------------------------|
| MAP80-4000G ⁵ | +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 |
| MAP80-4001G ⁵ | +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 |
| | +12V | Fixed | 1A | 1A | 0.5% | 2% | 1% | 11.5V to 12.5V |
| MAP80-4002G ⁵ | +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 |
| | -12V | Fixed | 1A | 1A | 0.5% | 2% | 1% | -11.6V to -12.4V |
| | +12V | Fixed | 1A | 1A | 0.5% | 2% | 1% | 11.6V to 12.4V |
| MAP80-4003G ⁵ | +5V | 4.8V to 5.5V | 14A | 16A | 0.2% | 1% | 1% | 5.1V to 5.2V |
| | +15V | 14.4V to 15.6V | 3.5A | 6A | 0.2% | 1% | 1% | 14.6V to 15.1V |
| | -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 |
| MAP80-4004G ⁵ | +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 |
| | -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 |
| MAP80-4010G ⁵ | +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 |

¹ Peak load for 60 seconds or less are acceptable, 10% duty cycle, maximum.

² Maximum peak to peak noise expressed as a percentage of output voltage, 20 MHz bandwidth.

³ MAP80-1012 output currents are expressed as 12V/15V operation. MAP80-1024 output currents are expressed as 24V/28V operation.

⁴ Peak loads up to 90 Watts for 60 seconds or less are acceptable, (10% duty cycle max.). Peak power must not exceed 90 Watts.

⁵ Output rated 65 W max for 50°C ambient, convection cooled.

⁶ Output rated 75 W max for 50°C ambient, convection cooled.

⁷ Non-G models use lead solder exemption and are not recommended for new designs.

3. INPUT SPECIFICATIONS

| PARAMETER | CONDITIONS / DESCRIPTION | MIN | NOM | MAX | UNITS |
|----------------------|--|-----------|-----|------------|------------------|
| Input Voltage - AC | Continuous input range | 90 175 | | 135 264 | 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 (80 W load) 110VAC (80W load) | | | 2.5 1.8 | A _{RMS} |
| Input Protection | Non-user serviceable internally located AC input line fuse. | | | | |
| Inrush Surge Current | Internally limited by thermistor, Vin = 264 VAC (one cycle), 25° C | | | 45 | APK |
| Operating Frequency | Switching frequency of power supply (varies with load) | 22 | | 120 | kHz |

4. OUTPUT SPECIFICATIONS

| PARAMETER | CONDITIONS / DESCRIPTION | MIN | NOM | MAX | UNITS |
|------------------------|---|----------------------|---------------------------|----------|-------|
| Efficiency | Full load @ 115 VAC. Varies with distribution of loads among outputs. | | 73% typical | | |
| Minimum Loads | MAP80-1012 MAP80-1024 All multiple output models, main channel only | 0.42 0.21 1.50 | | | Amps |
| Ripple and Noise | Full load, 20 MHz bandwidth. | | See Model Selection Chart | | |
| Output Power | Continuous output power, all multiple output models. Peak output power (60s maximum, 10% duty cycle), all multiple output models. | | | 80 90 | 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 |

5. INTERFACE SIGNALS & INTERNAL PROTECTION

| PARAMETER | CONDITIONS/DESCRIPTION | MIN | NOM | MAX | UNITS |
|---------------------------------|--|-------------------|-----|-----------------|-------|
| Overvoltage Protection | Provided on the main output of multiple output units. MAP80-1012 MAP80-1024 | 5.5 17.5 32 | | 6.8 23 37 | V |
| Overload Protection | Fully protected against output overload and short circuit. Automatic recovery upon removal of overload condition. | | | | |
| Power Fail Warning ⁸ | Logic LO (denotes power fail detected). | | | 0.7 | V |
| | Logic HI with internal pull-up to output. | | 5.1 | | kΩ |
| | Power Fail trip point, maximum load, decreasing line. | 86 | | 94 | VAC |
| | Time before regulation dropout, at full load, due to loss of input power. | 4 | | | ms |

⁸ Power Fail Warning is not available for MAP80-1024. The MAP80-1012 is an open collector output, capable of sinking 35 mA, maximum



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6. SAFETY, REGULATORY AND EMI SPECIFICATIONS

| PARAMETER | CONDITIONS / DESCRIPTION | MIN | NOM | MAX | UNITS |
|---|---|----------------|-----|-----|-------|
| Agency Approvals | Approved to the latest edition of the following standards; UL/CSA60950-1 2nd, IEC60950-1 2nd and EN60950-1 2nd. | | | | |
| Dielectric Withstand Voltage | Input to Chassis | 2121 | | | VDC |
| | Input to Output (tested by manufacturer only) | 4242 | | | |
| Electromagnetic Interference, Conducted | FCC CFR title 47 Part 15 Sub-Part B - conducted & radiated. | | | | |
| | EN55022 / CISPR 22 conducted. | | | | |
| | EN55022 / CISPR 22 radiated. | | | | |
| Input Transient Protection | EN61000-4-5 Level 3 | Line to Line | 1 | | kV |
| | | Line to Ground | | 2 | |
| Insulation Resistance | Input to output | 7 | | | MΩ |
| Leakage Current | Per EN60950, 264 VAC | | | 500 | μA |

7. ENVIRONMENTAL SPECIFICATIONS

| PARAMETER | CONDITIONS / DESCRIPTION | MIN | NOM | MAX | UNITS |
|------------------------------------|--|---------------|-------|-------|------------------|
| Altitude | Operating | | | 10k | ASL Feet |
| | Non-operating | | | 40k | |
| Operating Temperature ⁹ | 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 | |
| Storage Temperature | | -40 | | 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 | G _{RMS} |

⁹ The use of an external cooling fan (100LFM (linear feet per minute), minimum) shall be determined at end use if the 25°C ambient is exceeded.

8. MECHANICAL SPECIFICATIONS / OPTIONS

| PARAMETER | CONDITIONS / DESCRIPTION | MIN | NOM | MAX | UNITS |
|----------------|--|----------------------|-----|-----|-------|
| Dimensions | | 182.9 x 106.7 x 45.7 | | | mm |
| | | 7.2 x 4.2 x 1.8 | | | |
| Weight | | 0.82 | | | kg |
| | | 1.8 | | | |
| Cover (Option) | Add 'C' suffix to model number or order part number 412-59585-G separately. 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. | 182.9 x 106.7 x 50.0 | | | mm |
| | | 7.20 x 4.20 x 1.97 | | | |

9. CONNECTIONS

| CONNECTOR | CONDITIONS / DESCRIPTION |
|---------------------------|---|
| Input & Output Connectors | 6-32 screw wire clamps on 0.312" (7.9 mm) centers, 0.045" (1.1 mm) square pins on 0.156" (3.9 mm) centers, mates with Molex series 2139, 6442, or 41695 |
| Matting Connectors | J1: 0.035" (0.9 mm) square pins on 0.100" (2.5 mm) centers, mates with Molex series 2695/6471 |
| Chassis | 0.090" (2.3 mm) aluminum alloy, with clear finish |

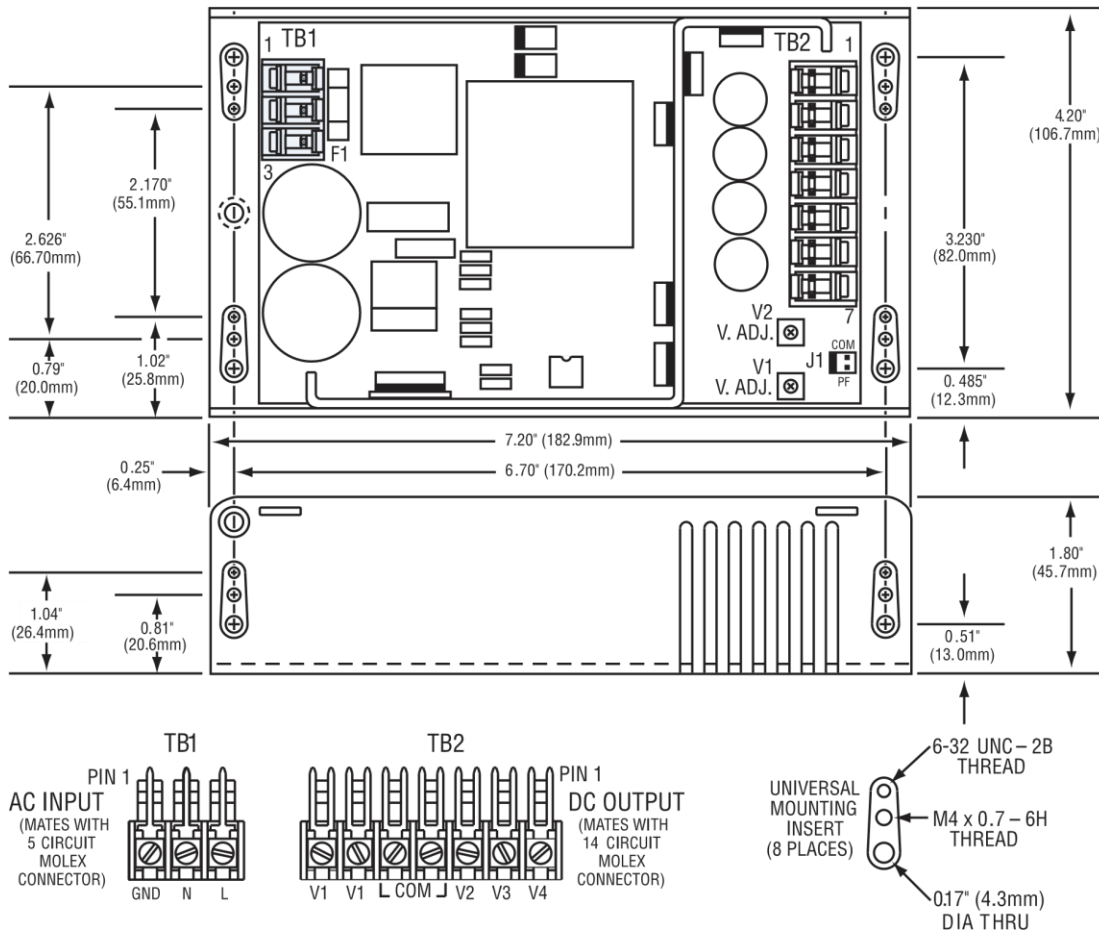


Figure 1. Mechanical Drawing

For more information on these products consult: tech.support@psbel.com

NUCLEAR AND MEDICAL APPLICATIONS - Products are not designed or intended for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems.

TECHNICAL REVISIONS - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.



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