

MAP55 Series

AC-DC Power Supplies

Bel Power Solutions MAP55 Series of power supplies provides reliable, tightly-regulated DC power for commercial and industrial systems. Wide-range AC input and full international safety, EMI, and ESD compliance ensure worldwide acceptance. All units bear the CE Mark.

The MAP55 utilizes a thermally efficient U-channel chassis design. Other mechanical 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
- Meets EN55022, Conducted Class B Limits
- Compact Footprint: 6.0 x 3.27 x 1.6 inch (152.4 x 83.1 x 40.6 mm)
- Greater than 225000 Hours MTBF
- Metric and SAE Mounting Inserts



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1. SINGLE-OUTPUT MODEL SELECTION

| MODEL ⁸ | OUTPUT VOLTAGE | ADJUSTMENT RANGE | MAX OUTPUT CURRENT | PEAK OUTPUT CURRENT ¹ | LINE REGULATION | LOAD REGULATION | RIPPLE & NOISE ² | INITIAL SETTING ACCURACY |
|--------------------------|----------------|------------------|-----------------------|----------------------------------|-----------------|-----------------|-----------------------------|--------------------------|
| MAP40-1005G | 5V | 4.7V to 5.5V | 8A | 11A | 0.2% | ±1.5% | 1% | 5.0V to 5.2V |
| MAP55-1012G ⁶ | 12V/15V | 11.4V to 15.75V | 5.0/4.0A ³ | 5.8/4.7A ³ | 0.2% | ±1% | 1% | 12.0V to 12.2V |
| MAP55-1024G ⁶ | 24V/28V | 23.5V to 28.5V | 2.5/2.2A ³ | 2.9/2.5A ³ | 0.2% | 1% | 1% | 23.8V to 24.2V |

2. MULTIPLE-OUTPUT MODEL SELECTION – 55 W CONTINUOUS OUTPUT POWER

| MODEL ⁸ | OUTPUT VOLTAGE | ADJUSTMENT RANGE | OUTPUT CURRENT | PEAK OUTPUT CURRENT ⁴ | LINE REGULATION | LOAD REGULATION | RIPPLE & NOISE ² | INITIAL SETTING ACCURACY |
|--------------------------|----------------|------------------|----------------|----------------------------------|-----------------|-----------------|-----------------------------|--------------------------|
| MAP55-4000G ⁷ | +5V | 4.7V to 5.6V | 6A | 8A | 0.2% | 2% | 1% | 5.0V to 5.2V |
| | +12V | Fixed | 3A | 5A | 0.2% | 2% | 1% | 11.6V to 12.4V |
| | -5V | Fixed | 0.5A | 1A ⁵ | 0.5% | 2% | 1% | -4.8V to -5.2V |
| | -12V | Fixed | 0.5A | 1A ⁵ | 0.5% | 2% | 1% | -11.6V to -12.4V |
| MAP55-4001G ⁷ | +5V | 4.7V to 5.6V | 6A | 8A | 0.2% | 2% | 1% | 5.0V to 5.2V |
| | +24V | Fixed | 1.5A | 2.5A | 0.2% | 2% | 1% | 23.0V to 24.9V |
| | -12V | Fixed | 0.5A | 1A ⁵ | 0.5% | 2% | 1% | -11.6V to -12.4V |
| | +12V | Fixed | 0.5A | 1A ⁵ | 0.5% | 2% | 1% | 11.6V to 12.4V |
| MAP55-4002G ⁷ | +5V | 4.7V to 5.6V | 6A | 8A | 0.2% | 2% | 1% | 5.0V to 5.2V |
| | +12V | Fixed | 3A | 5A | 0.2% | 2% | 1% | 11.6V to 12.4V |
| | -12V | Fixed | 0.5A | 1A ⁵ | 0.5% | 2% | 1% | -11.6V to -12.4V |
| | +12V | Fixed | 0.5A | 1A ⁵ | 0.5% | 2% | 1% | 11.6V to 12.4V |
| MAP55-4003G ⁷ | +5V | 4.7V to 5.6V | 6A | 8A | 0.2% | 2% | 1% | 5.0V to 5.2V |
| | +15V | Fixed | 2.5A | 3.5A | 0.2% | 2% | 1% | 14.6V to 15.4V |
| | -5V | Fixed | 0.5A | 1A ⁵ | 0.5% | 2% | 1% | -4.8V to -5.2V |
| | -15V | Fixed | 0.5A | 1A ⁵ | 0.5% | 2% | 1% | -14.4V to -15.6V |
| MAP55-4004G ⁷ | +5V | 4.7V to 5.6V | 6A | 8A | 0.2% | 2% | 1% | 5.0V to 5.2V |
| | +24V | Fixed | 1.5A | 2.5A | 0.2% | 2% | 1% | 23.0V to 24.9V |
| | -15V | Fixed | 0.5A | 1A ⁵ | 0.5% | 2% | 1% | -14.5V to -15.5V |
| | +15V | Fixed | 0.5A | 1A ⁵ | 0.5% | 2% | 1% | 14.5V to 15.5V |

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 MAP55-1012 output currents are expressed as 12V/15V operation. MAP55-1024 output currents are expressed as 24V/28V operation.

⁴ Peak loads up to 65 watts for 60 seconds or less are acceptable, (10% duty cycle max.). Peak power must not exceed 65 watts.

⁵ Maximum load on V3 or V4 could be 1 amp continuous if output V4 or V3 is unloaded.

⁶ Maximum 60 W with 150LFM (Linear Feet per Minute) air cooling or maximum 50 W with convection cooling.

⁷ Maximum 55 W with 200LFM (Linear Feet per Minute) air cooling or maximum total output power 45 W at 40°C ambient operating temperature for models with no cover and 40 W for models with cover / convection cooling.

⁸ Non-G models use lead solder exemption.

3. INPUT SPECIFICATIONS

| PARAMETER | CONDITIONS / DESCRIPTION | MIN | NOM | MAX | UNITS |
|----------------------|---|-----------|-----|------------|------------------|
| Input Voltage - AC | Continuous input range | 90 175 | | 132 264 | 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 (55 W load) | | 1.6 | | A _{RMS} |
| Input Protection | Non-user serviceable internally located AC input line fuse. | | | | |
| Inrush Surge Current | Internally limited by thermistor, V _{in} = 264 VAC (one cycle), 25°C | | | 38 | A _{PK} |
| Operating Frequency | Switching frequency of power supply (varies with load) | 22 | | 180 | 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 | MAP55-1012 MAP55-1024 MAP40-1005 and all multiple output models, main channel only | 0.21 0.11 0.50 | | | 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 (60 s maximum, 10% duty cycle), all multiple output models. | | | 55 65 | 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 VAC, 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 | | 4 | Sec |
| Turn-on Rise Time | Time required for output voltage to rise from 10% to 90%. (Nominal rise time for MAP55-1024 is 36 msec.) | | 7 | | ms |

5. INTERFACE SIGNALS & INTERNAL PROTECTION

| PARAMETER | CONDITIONS / DESCRIPTION | MIN | NOM | MAX | UNITS |
|------------------------|--|----------------------------|-----|----------------------------|-------|
| Overvoltage Protection | MAP40-1005 MAP55-1012 MAP55-1024 Main output only of multiple output units. | 5.5 17.5 32.0 5.6 | | 6.8 19.7 36.0 6.8 | V |
| Overload Protection | Fully protected against output overload and short circuit. Automatic recovery upon removal of overload condition. | | | | |



Asia-Pacific
+86 755 298 85888

Europe, Middle East
+353 61 225 977

North America
+1 408 785 5200

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. | B | | | Class |
| | | B | | | |
| | | A | | | |
| 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 | Feet |
| | Non-operating | | | 40k | |
| Operating Temperature | Derate linearly above 50°C by 2.5% per °C to a maximum temperature of 70°C (with 200LFM) | 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} |

8. MECHANICAL SPECIFICATIONS / OPTIONS

| PARAMETER | CONDITIONS / DESCRIPTION | MIN | NOM | MAX | UNITS |
|----------------|--|---------------------|-----|-----|-------|
| Dimensions | | 152.4 x 83.1 x 40.6 | | | mm |
| | | 6.00 x 3.27 x 1.6 | | | |
| Weight | | 0.55 | | | kg |
| | | 1.1 | | | |
| Cover (Option) | Order the cover number 412-59584-G separately. For convection cooled applications, derate output power to 40 watts on multiple output units, 50 watts on MAP55-1012 and MAP55-1024 and 40 watts on MAP40-1005. | | | | |
| | Dimensions: | 152.4 x 83.1 x 45.0 | | | mm |
| | | 6.00 x 3.27 x 1.77 | | | in |

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" (3.4 mm) centers |
| Matting Connectors | Molex Series 2139, 6442, or 41695 |
| Chassis | 0.090" (2.3 mm) aluminum alloy, with clear finish |

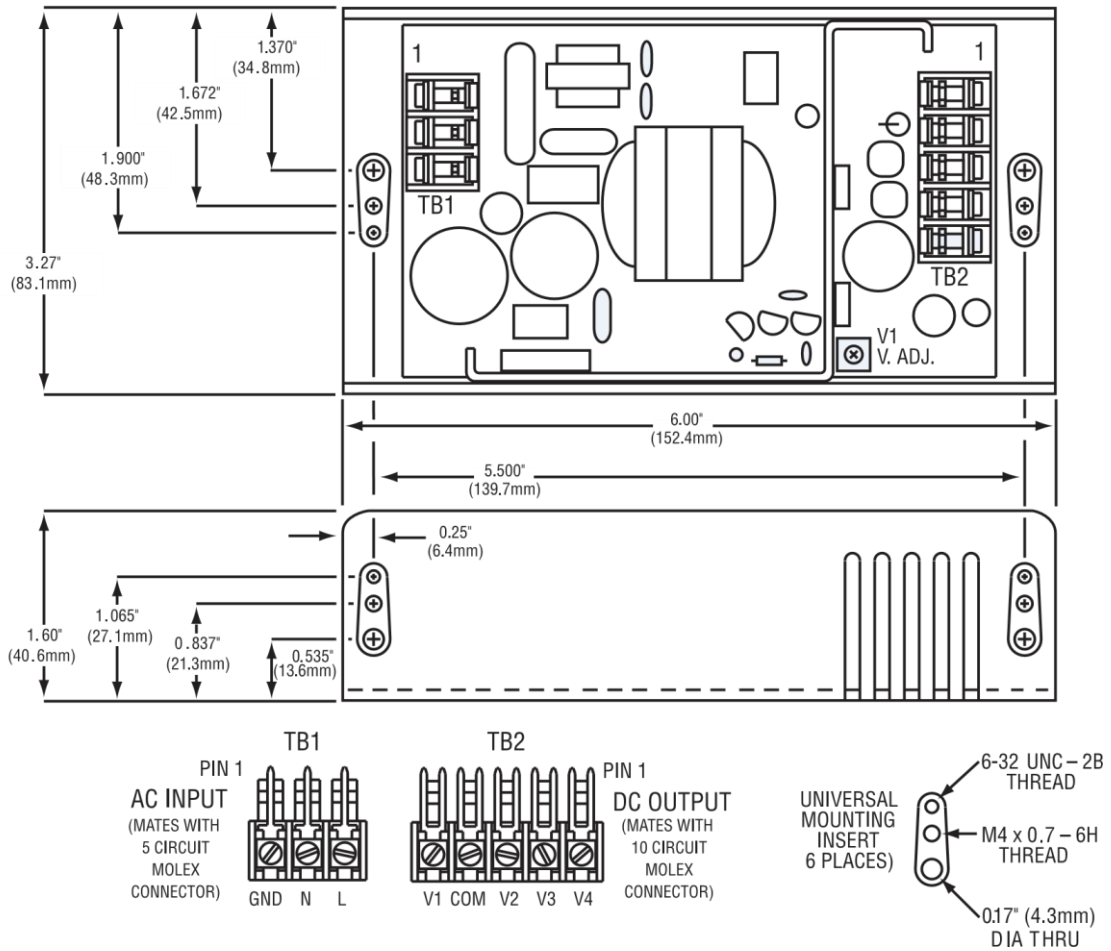


Figure 1. Mechanical Drawing

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.



Asia-Pacific
+86 755 298 85888

Europe, Middle East
+353 61 225 977

North America
+1 408 785 5200