

# MAP55 Series

AC-DC Power Supplies

Bel Power Solutions MAP55 Series of power supplies provides reliable, tightly regulated DC power for industrial systems. MAP55 series complies with EMC product standard EN 61204-3. All RoHS compliant 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

- Wide Range Input for 110/220 VAC Applications
- 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
- RoHS Compliant
- CE Marked to Low Voltage Directive
- Meets EMC standards: EN 61204-3

EN 55032

EN 61000-3-2

EN 61000-3-3



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## 1. SINGLE-OUTPUT MODEL SELECTION

MODEL <sup>8</sup>	OUTPUT VOLTAGE	ADJUSTMENT RANGE	MAX OUTPUT CURRENT	PEAK OUTPUT CURRENT <sup>1</sup>	LINE REGULATION	LOAD REGULATION	RIPPLE & NOISE <sup>2</sup>	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 <sup>6</sup>	12V/15V	11.4V to 15.75V	5.0/4.0A <sup>3</sup>	5.8/4.7A <sup>3</sup>	0.2%	±1%	1%	12.0V to 12.2V
MAP55-1024G <sup>6</sup>	24V/28V	23.5V to 28.5V	2.5/2.2A <sup>3</sup>	2.9/2.5A <sup>3</sup>	0.2%	1%	1%	23.8V to 24.2V

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

MODEL <sup>8</sup>	OUTPUT VOLTAGE	ADJUSTMENT RANGE	OUTPUT CURRENT	PEAK OUTPUT CURRENT <sup>4</sup>	LINE REGULATION	LOAD REGULATION	RIPPLE & NOISE <sup>2</sup>	INITIAL SETTING ACCURACY
MAP55-4000G <sup>7</sup>	+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 <sup>5</sup>	0.5%	2%	1%	-4.8V to -5.2V
	-12V	Fixed	0.5A	1A <sup>5</sup>	0.5%	2%	1%	-11.6V to -12.4V
MAP55-4001G <sup>7</sup>	+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 <sup>5</sup>	0.5%	2%	1%	-11.6V to -12.4V
	+12V	Fixed	0.5A	1A <sup>5</sup>	0.5%	2%	1%	11.6V to 12.4V
MAP55-4002G <sup>7</sup>	+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 <sup>5</sup>	0.5%	2%	1%	-11.6V to -12.4V
	+12V	Fixed	0.5A	1A <sup>5</sup>	0.5%	2%	1%	11.6V to 12.4V
MAP55-4003G <sup>7</sup>	+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 <sup>5</sup>	0.5%	2%	1%	-4.8V to -5.2V
	-15V	Fixed	0.5A	1A <sup>5</sup>	0.5%	2%	1%	-14.4V to -15.6V
MAP55-4004G <sup>7</sup>	+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 <sup>5</sup>	0.5%	2%	1%	-14.5V to -15.5V
	+15V	Fixed	0.5A	1A <sup>5</sup>	0.5%	2%	1%	14.5V to 15.5V

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

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

<sup>3</sup> MAP55-1012G output currents are expressed as 12V/15V operation. MAP55-1024G output currents are expressed as 24V/28V operation.

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

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

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

<sup>7</sup> 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.

<sup>8</sup> Models without suffix G are not RoHS-compliant (Leaded solder used) and are not recommended for new designs or already EOL.

### 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 (115 VAC), full rated load	20			ms
Input Current	90 VAC (55 W load)		1.6		A <sub>RMS</sub>
Input Protection	Non-user serviceable internally located AC input line fuse.				
Inrush Surge Current	Internally limited by thermistor, V <sub>in</sub> = 264 VAC (one cycle), 25°C			38	A <sub>PK</sub>
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	MAP55-1012G MAP55-1024G MAP40-1005G 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 MAP55-1024G is 36 msec.)		7		ms

### 5. INTERFACE SIGNALS & INTERNAL PROTECTION

PARAMETER	CONDITIONS / DESCRIPTION	MIN	NOM	MAX	UNITS
Overvoltage Protection	MAP40-1005G MAP55-1012G MAP55-1024G 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.				

### 6. SAFETY SPECIFICATIONS

PARAMETER	CONDITIONS / DESCRIPTION	MIN	NOM	MAX	UNITS
Agency Approvals	Approved to the latest edition of the following standards: UL/CSA 62368-1, IEC 62368-1, and EN 62368-1				
Dielectric Withstand Voltage	Input to Chassis Input to Output (tested by manufacturer only)	2121 4242			VDC
Insulation Resistance	Input to output	7			MΩ
Touch Current	EN 62368-1, 264 VAC			600	μA



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## 7. EMC SPECIFICATIONS

Conducted emissions EN 55032 Class B  
Radiated emissions EN 55032 Class A

PHENOMENON	BASIC STANDARD	TEST ITEM	TEST SPECIFICATION	PERFORMANCE CRITERIA
Radio-frequency electromagnetic field Amplitude modulated	EN 61000-4-3	Frequency Field strength AM 1 kHz	80 - 1000 MHz 10 V/m 80%	A
			1,4 to 2 GHz 3 V/m 80%	
			2 to 2,7 GHz 1 V/m 80 %	
Conducted disturbances induced by radio-frequency fields	EN 61000-4-6	Frequency Amplitude AM 1 kHz	0,15 to 80 MHz 10 V 80 %	A
Voltage dips	EN 61000-4-11	Residual voltage	0 % during 1/2 cycle	A
			0 % during 1 cycle	
			40 % during 10/12 cycles at 50/60 Hz	
			70 % during 25/30 cycles at 50/60 Hz	
			80 % during 250/300 cycles at 50/60 Hz	B

## 8. ENVIRONMENTAL SPECIFICATIONS

PARAMETER	CONDITIONS / DESCRIPTION	MIN	NOM	MAX	UNITS
Altitude	Operating Non-operating			10k 40k	Feet
Operating Temperature	Derate linearly above 50°C by 2.5% per °C to a maximum temperature of 70°C (with 200 LFM)	At 100% load: 0 At 50% load: 0		50 70	°C
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, 10 Hz to 2 kHz, 3 axis			6	G <sub>RMS</sub>

## 9. MECHANICAL SPECIFICATIONS / OPTIONS

PARAMETER	CONDITIONS / DESCRIPTION	MIN	NOM	MAX	UNITS
Dimensions		152.4 x 83.1 x 40.6 6.00 x 3.27 x 1.6			mm in
Weight			0.55 1.1		kg lb
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 MAP55-1012G and MAP55-1024G and 40 watts on MAP40-1005G.  Dimensions:			152.4 x 83.1 x 45.0 6.00 x 3.27 x 1.77	mm in

10. 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

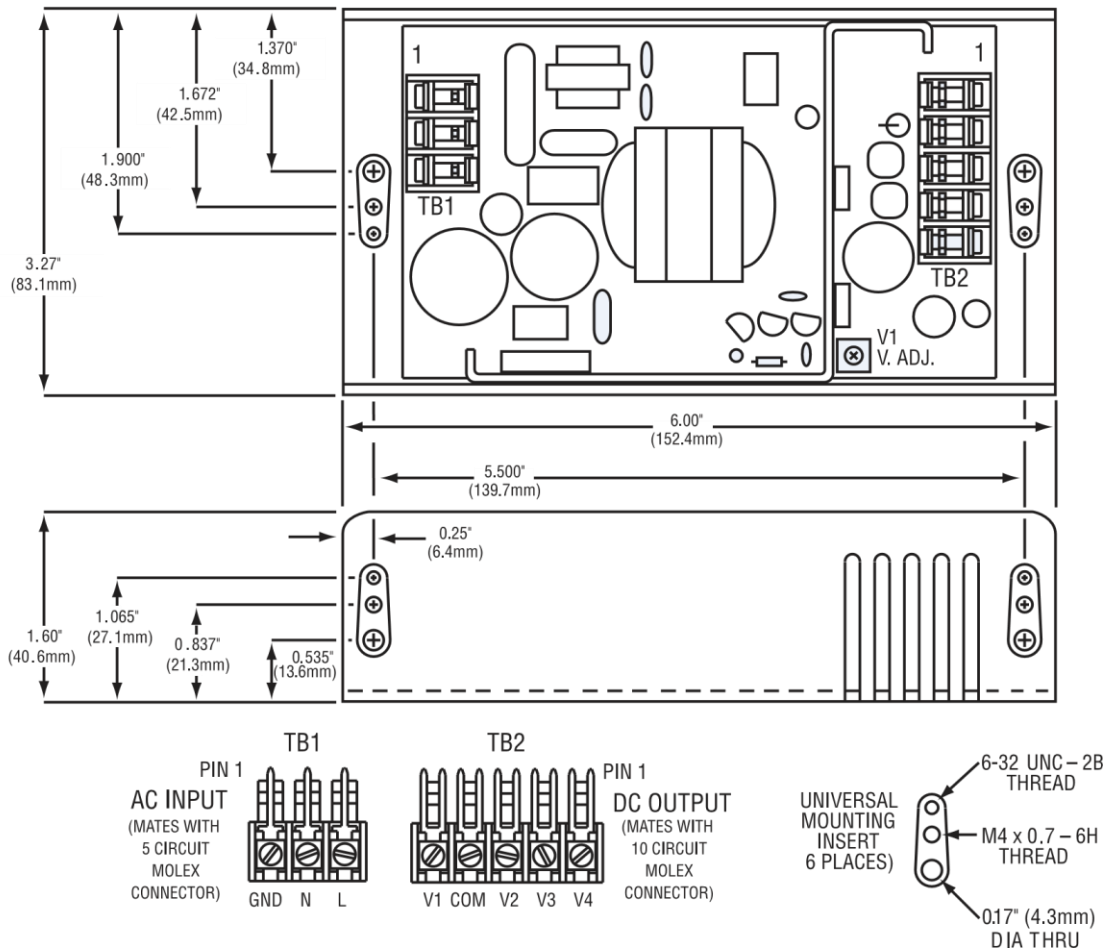


Figure 1. Mechanical Drawing

For more information on these products consult: [tech.support@psbel.com](mailto: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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