

# MAP30/40/42 Series AC-DC Power Supplies



## Key Features & Benefits

- Universal Input 85-264 VAC
- Input Transient & ESD Compliance to EN61000-4-2/-3/-4
- Meets EN55022 Conducted and Radiated Limits
- Greater than 311,000 Hours MTBF
- Remote Sense (MAP30, MAP42)
- RoHS Compliant
- CE Marked to Low Voltage Directive

The Bel Power Solutions MAP30/40/42 Series of power supplies combines low cost and universal input in a board-only power solution to meet commercial and industrial requirements. Full international safety, EMI and ESD compliance ensure worldwide acceptance. All units bear the CE Mark.

Fixed frequency operation simplifies system level operation. The MAP30/40/42 Series is configured to the international standard 3 x 5 inch footprint. Input and output connections are made via popular single-row Molex connectors. Single output models feature wide-range output adjustability to meet a wide variety of standard and user-specific output voltage requirements.

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# MAP30/40/42 Series

## Single Output Model Selection

MODEL	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
MAP30-1005	5V	4.7V to 5.8V	6A	8A <sup>8</sup>	0.2%	±1%	1%	4.9V to 5.1V
MAP42-1005	5V	4.7V to 5.8V	8A	11A	0.2%	±1%	1%	4.9V to 5.1V
MAP42-1012	12V/15V	11V to 18V	3.4/2.7A <sup>3</sup>	4.6/3.7A <sup>3</sup>	0.2%	1%	1%	11.9V to 12.1V
MAP42-1024	24V/28V	23V to 29V	1.7/1.4A <sup>3</sup>	2.3/1.9A <sup>3</sup>	0.2%	1%	1%	23.8V to 24.2V

## Multiple-Output Model Selection - 40 W Continuous Output Power

MODEL	OUTPUT VOLTAGE	ADJUSTMENT RANGE	OUTPUT CURRENT	PEAK OUTPUT CURRENT <sup>4</sup>	LINE REGULATION	LOAD REGULATION	RIPPLE & NOISE <sup>2</sup>	INITIAL SETTING ACCURACY	MAXIMUM OUTPUT POWER
MAP40-3000	+5V	4.7V to 5.5V	3A	5A	0.2%	2%	1%	4.9V to 5.1V	40 W <sup>7</sup>
	+12V	Fixed	2A	3.5A	1%	3.5% <sup>5</sup>	1%	11.5V to 12.5V	
	-12V	Fixed	0.3A	0.5A	1%	2% <sup>6</sup>	1%	-11.5V to -12.5V	
MAP40-3100	+5V	4.75V to 5.25V	3A	5A	0.2%	2%	1%	4.9V to 5.1V	40 W <sup>7</sup>
	+12V	Fixed	2A	3.5A	1%	3.5% <sup>5</sup>	1%	11.5V to 12.5V	
	-12V	Fixed	0.3A	0.5A	1%	2%	1%	-11.4V to -12.6V	
MAP40-3101	+5V	4.75V to 5.25V	3A	5A	0.2%	2%	1%	4.9V to 5.1V	40 W <sup>7</sup>
	+24V	Fixed	1A	1.5A	1%	3.5% <sup>5</sup>	1%	23.0V to 25.0V	
	-12V	Fixed	0.3A	0.5A	1%	2%	1%	-11.5V to -12.5V	
MAP40-3105	+5V	4.7V to 5.8V	3A	5A	0.2%	2%	1%	4.9V to 5.1V	40 W <sup>7</sup>
	+12V	Fixed	2A	3.5A	1%	3.5% <sup>5</sup>	1%	11.5V to 12.5V	
	-5V	Fixed	0.5A	1A	1%	2%	1%	-4.75V to -5.25V	
MAP40-3500	+5V	4.7V to 5.8V	5A	6A	0.2%	2%	1%	4.9V to 5.1V	40 W <sup>7</sup>
	+12V	Fixed	1A	3.5A	1%	3.5% <sup>5</sup>	1%	11.5V to 12.5V	
	-12V	Fixed	0.3A	0.5A	1%	2%	1%	-11.4V to -12.6V	
MAP40-3003	+5V	4.7V to 5.8V	3A	5A	0.2%	2%	1%	4.9V to 5.1V	40 W <sup>7</sup>
	+15V	Fixed	1.5A	3A	1%	3.5% <sup>5</sup>	1%	14.7V to 15.3V	
	-15V	Fixed	0.2A	0.5A	1%	2% <sup>6</sup>	1%	-14.3V to -15.7V	

<sup>1</sup> Peak ratings may be used as maximum output current with 100 Linear Feet per Minute (LFM) forced air cooling.

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

<sup>3</sup> MAP42-1012 output currents are expressed as 12V/15V operation. MAP42-1024 output currents are expressed as 24V/28V operation.

<sup>4</sup> Peak loads for 30 seconds or less are acceptable, (10% duty cycle max.).

<sup>5</sup> Quasi regulated output. See Regulation Curves for more information.

<sup>6</sup> Requires a minimum load of 0.5A on V1 or 0.3A on V2.

<sup>7</sup> Needs 170 LFM forced air cooling for use at 50°C ambient.

<sup>8</sup> Needs 200 LFM forced air cooling for use at 50°C ambient.

Model numbers highlighted in yellow are not recommended for new designs.

# MAP30/40/42 Series

## Input Specifications

PARAMETER	CONDITIONS / DESCRIPTION	MIN	NOM	MAX	UNITS
Input Voltage - AC	Continuous input range MAP42 MAP30, MAP40	85 90		264 264	VAC
Input Frequency	AC input	47		63	Hz
Brown Out Protection	Lowest AC input voltage that regulation is maintained with full rated loads.	85			VAC
Hold-up Time	Nominal AC Input Voltage (115VAC), full rated load.	15			ms
Input Current	90 VAC (40W load).			1.2	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 (fixed frequency).	23	25	30	kHz

## Output Specifications

PARAMETER	CONDITIONS / DESCRIPTION	MIN	NOM	MAX	UNITS
Efficiency	Full load @120 VAC		70% typical		
Minimum Loads	Single output models; MAP30, MAP42. All multiple output models, see regulation graphs.	0.0			Amps
Ripple and Noise	Full load, 20 MHz bandwidth.				See Model Selection Chart.
Output Power	Multiple output models with convection cooling.			40	Watts
Overshoot / Undershoot	Output voltage overshoot/undershoot at turn-on, V1.			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 regulation graphs.
Transient Response	Recovery time, to within 1% of initial set point due to a 50-100% load change, 4% max. deviation. (Main output only of multiple output units).		500		µs
Turn-on Delay	Time required for initial output voltage stabilization.		1	2	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	MAP30-1005, MAP42-1005 MAP42-1012 MAP42-1024 Main output only of multiple output units.	5.8 20.0 32.0 5.8		6.8 22.0 37.0 6.8	V
Overload Protection	Fully protected against output overload and short circuit. Automatic recovery upon removal of overload condition.		130		%
Remote Sense	Total cable drop, single output models only.			250	mV

# MAP30/40/42 Series

## Safety, Regulatory, and EMI Specifications

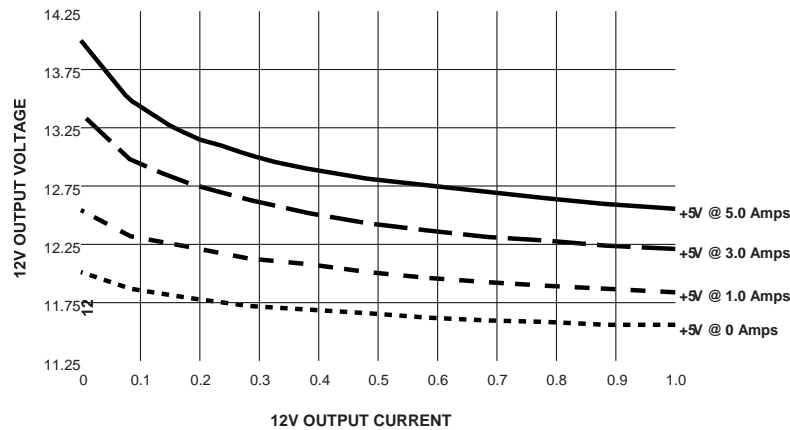
PARAMETER	CONDITIONS / DESCRIPTION	MIN	NOM	MAX	UNITS
Agency Approvals	Approved to the latest edition of the following standards; UL/CSA60950-1 2 <sup>nd</sup> , IEC60950-1 2 <sup>nd</sup> and EN60950-1 2 <sup>nd</sup> .				
Dielectric Withstand Voltage	Input to Chassis	2121			VDC
	Input to Output (tested by manufacturer only)	4242			
Electromagnetic Interference	FCC CFR title 47 part 15 sub-part B - conducted		B		Class
	EN55022 / CISPR 22 conducted (Note 1)		B		
	EN55022 / CISPR 22 radiated (Note 2)		B		
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, 264VAC	MAP42, MAP40-3100, 3001, 3105, 3500		500	μA
		MAP30-1005, MAP40-3000, MAP40-3003		750	

**NOTES:** 1) MAP30-1005, MAP40-3000, MAP40-3003 meet Class A  
 2) MAP40-3000, MAP40-3003, MAP3500 meet Class A

## Environmental Specifications

PARAMETER	CONDITIONS/DESCRIPTION	MIN	NOM	MAX	UNITS
Altitude	Operating			10k	ASL Ft.
	Non-operating			40k	
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	
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	Grms

Figure-1 - MAP40-3500 Typical Quasi Regulation Performance For +12V Output



# MAP30/40/42 Series

Figure-2 - MAP40-3000/3100/3105 Typical Quasi Regulation Performance For +12V Output

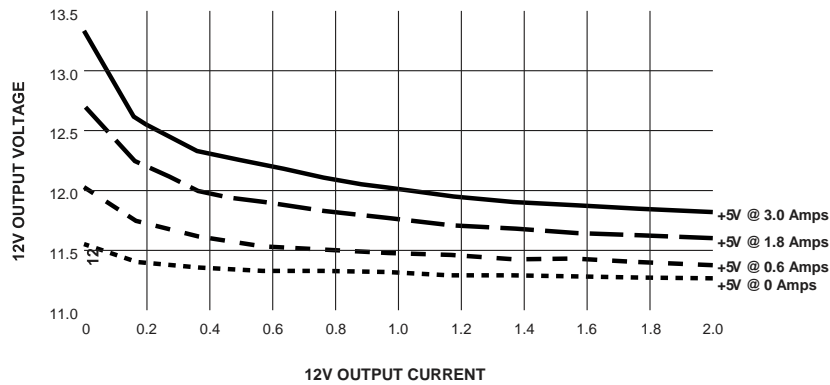


Figure-3 - MAP40-3003 Typical Quasi Regulation Performance For +15V Output

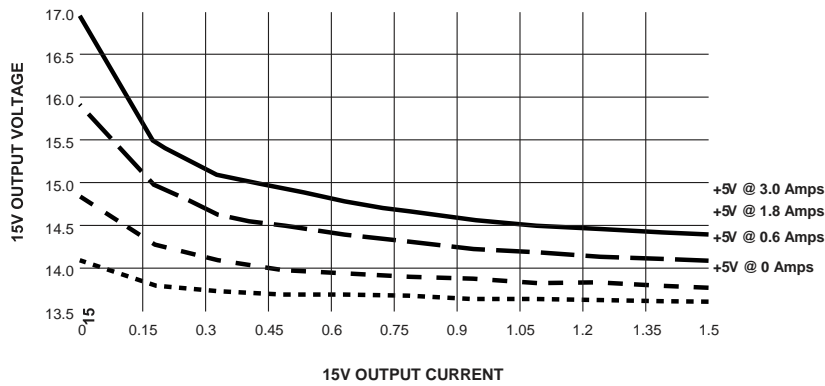
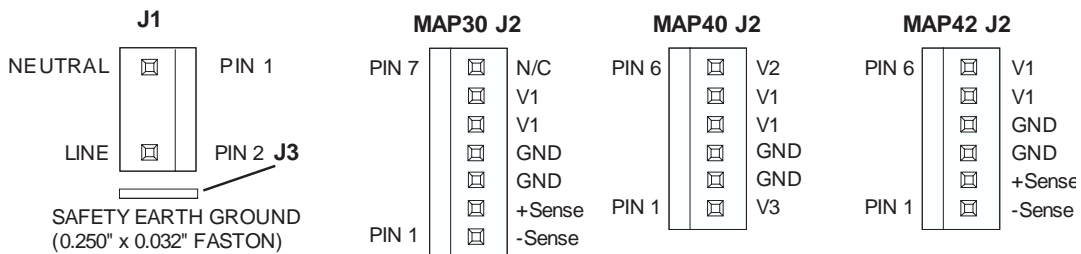


Figure-4 - Electrical Connectors



J1/J2 MATES WITH MOLEX (SERIES 2139 or SERIES 41695) .156" (4mm) CENTER CRIMP TERMINAL HOUSING OR EQUIVALENT

## Mechanical Specifications

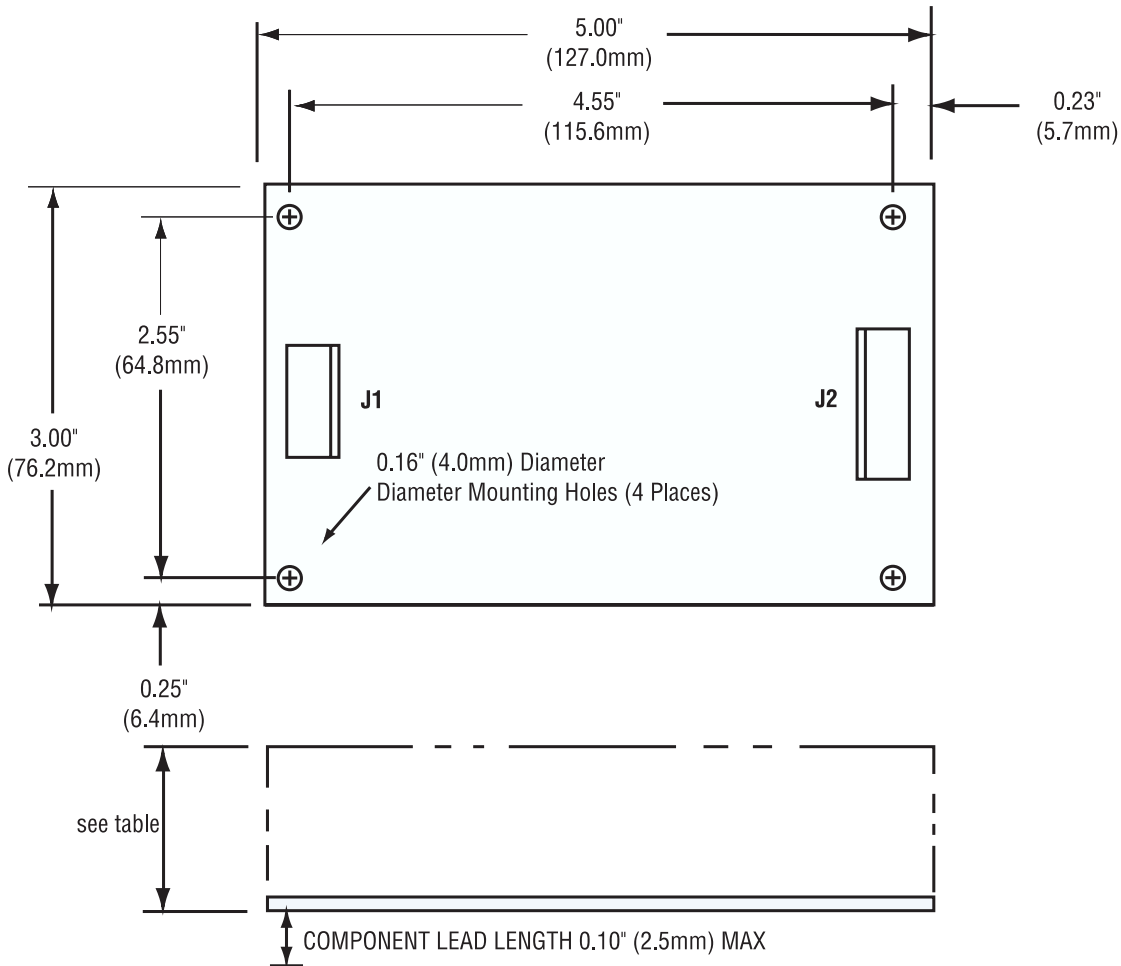
PARAMETER	CONDITIONS / DESCRIPTION
Dimensions	127.0 mm x 76.2 mm x see table below (5.0" x 3.0" x see table below)
Weight	0.26 kg (0.6 lbs)

# MAP30/40/42 Series

MAP30/40/42 Series Height

SINGLE OUTPUT MODELS		MULTIPLE OUTPUT MODELS	
Model	Height	Model	Height
MAP30-1005	1.16" (29.5)	MAP40-3000	1.16" (29.5)
MAP42-1005	1.25" (31.8)	MAP40-3003	1.16" (29.5)
MAP42-1012	1.25" (31.8)	MAP40-3100	1.25" (31.8)
MAP42-1024	1.25" (31.8)	MAP40-3101	1.25" (31.8)
		MAP40-3105	1.25" (31.8)
		MAP40-3500	1.60" (40.6)

Figure-5 - 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.