MPM-24M Series

Medical Approved, 24W Single & Dual Output AC/DC Power Supplies

Key Features:

- 24W Output Power
- EN 60601-1 3RD Edition
- Universal 85-264 VAC Input
- EN 60950 Approved
- Reinforced Insulation
- Meets IEC Safety Class II
- Low Leakage Current
- Single and Dual Outputs
- Meets UL 508

Chassis Mount Models & DIN Rail Mount Option Available!

Electrical Specifications

Specifications typical @ +25°C, 230 VAC input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

Input

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Range		85		264	VAC
		120		370	VDC
Input Frequency		47		440	Hz
Inrush Current, See Note 2	115 VAC		20		A Pk
	230 VAC		40		
No Load Power Consumption				0.3	W

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±2.0		%
Line Regulation	VIN = Min to Max		±0.5		%
Load Regulation, IO = Min to Max	Single Output		±0.5		%
	Dual Output		±2.5		
Ripple & Noise (20 MHz), See Note 3	5.0 VDC Output		1.5	1.8	%VP-P of VO
	All Other Outputs		1.0	1.3	
Hold-Up Time	115 VAC, 60 Hz		20		mS
	230 VAC, 50 Hz		80		
Temperature Coefficient			±0.02		%/°C
Over Voltage Protection	See Note 4		120		% of VO
Overshoot				5	%
Overload Protection	See Note 5	105			% INOM
Over Temperature Protection	See Note 6		90		°C
Short Circuit Protection, See Note 7	Continuous (Autorecovery)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage (Reinforced)	Input to Output	4,000			VAC rms
Leakage Current			80		µA
Isolation Resistance	500 VDC	1,000			MΩ
Switching Frequency			132		kHz

Environmental

Parameter	Standard	Criterea	Level
Radiated Emissions	EN 55014, EN 55024		Class B
Conducted Emissions	EN 55022		Class B
ESD	EN 61000-4-2	A	±8 kV Air
		A	±4 kV Contact
RS	EN 61000-4-3	A	10 V/m
EFT	EN 61000-4-4	A	±2 kV
Surge	EN 61000-4-5	A	±1 kV
CS	EN 61000-4-6	A	10 Vrms
PFM	EN 61000-4-8	A	30 A/M
Voltage Dips	EN 61000-4-11	A	30% 10 mS
Interruptions	EN 61000-4-11	B	95% 5,000 mS

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+80	°C
Storage Temperature Range		-40		+95	°C
Cooling, See Note 8	Free Air Convection (See Derating Curve)				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	See Mechanical Diagrams (Pages 3 & 4)
Case Material	Non-Conductive Plastic Resin (UL94-V0)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	400			kHours
Safety Standards	UL 60950, EN 60950				
Safety Class	IEC 60536 Class II				

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Model Selection Guide

Model Number	Input Current (mA Typ)		Output			Capacitive Load (µF, Max)	Efficiency (%, Typ)
			Voltage (VDC)	Current (A)			
	115 VAC	230 VAC		Max.	Min.		
MPM-24MS-05xx	282	169	5.0	3.00	0.00	2,200	77
MPM-24MS-09xx	424	255	9.0	2.66	0.00	1,000	82
MPM-24MS-12xx	419	252	12.0	2.00	0.00	1,000	83
MPM-24MS-15xx	424	255	15.0	1.60	0.00	680	82
MPM-24MS-24xx	409	246	24.0	1.00	0.00	470	85
MPM-24MD-12xx	414	249	±12.0	±1.00	0.00	470	84
MPM-24MD-15xx	414	249	±15.0	±0.80	0.00	330	84

Other outputs may be available
Contact the factory for details at:
sales@micropowerdirect.com

Notes:

1. The specified maximum capacitive load is for each output.
2. Inrush current is given for a cold start at 25°C.
3. Ripple and noise is measured with a 0.1 µF/50V MLCC and a 1 µF/50V aluminum electrolytic connected between the +Vout and -Vout pins for single output models or from each output to common for dual output models.
4. Over voltage protection is provided by a zener diode clamp.
5. Output overload protection is provided by a "hiccup mode" circuit with auto-recovery. A long-term overload could damage the unit.
6. The unit will shutdown at 90°C. It will recover automatically at about 67 °C.
7. Output short circuit protection is provided by a "hiccup mode" circuit. The unit recovers automatically when the fault condition is removed.
8. Free air (natural) convection is about 20 LFM, it is not equal to "still" air.
9. Operation at no-load will not damage these units. However, they may not meet all specifications.
10. It is recommended that an external slow blow fuse also be used on the input for protection.

Model Number

MPM-24MX-YYCM

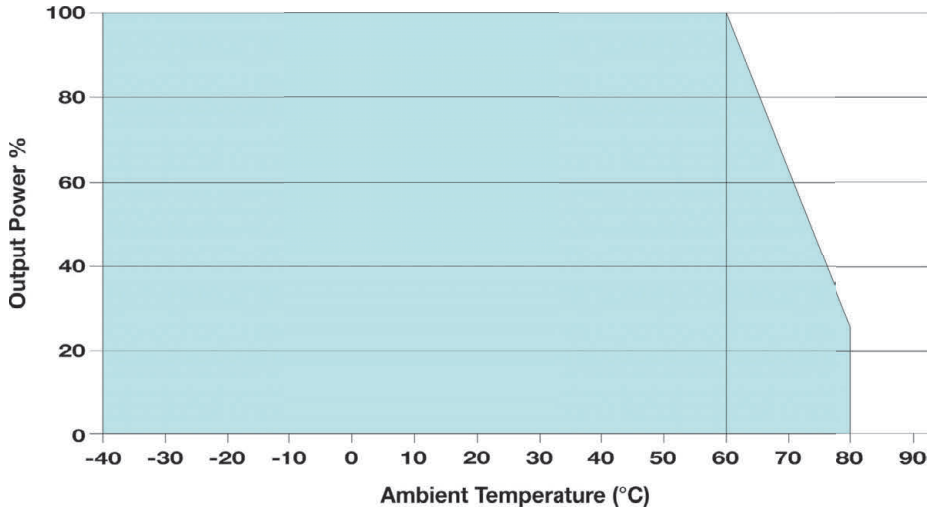
Special Rating
M = Medical

Outputs
S = Single
D = Dual

Output Voltage Selection
05 = 5 VDC
09 = 9 VDC
12 = 12 VDC
15 = 15 VDC
24 = 24 VDC

Mounting Type
Blank = Board Mount
CM = Chassis Mount

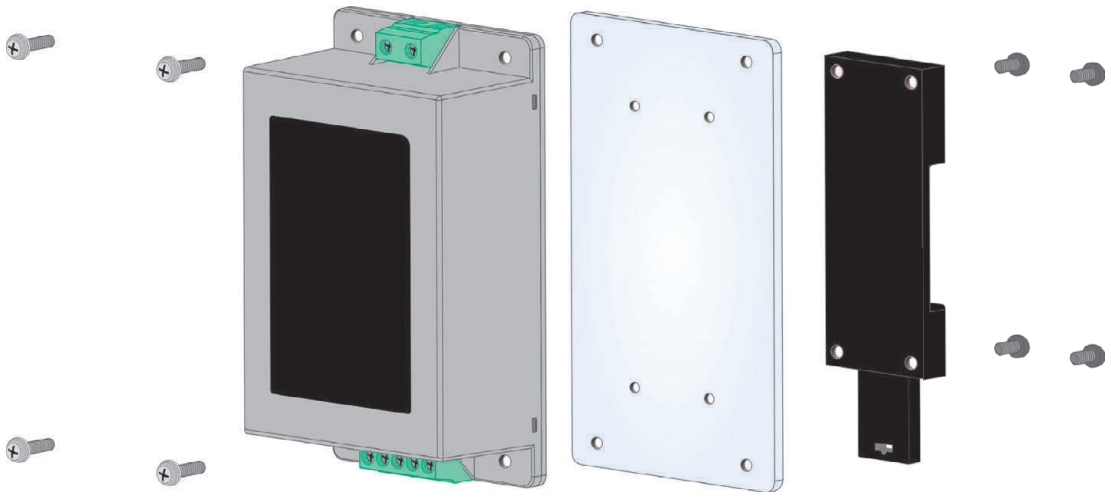
Derating Curve



Chassis Mount & DIN Rail

All models of the **MPM-24Mx** series are available in an encapsulated package that can be mounted to a chassis or cabinet and connected with flying leads. To order the unit in this package, add a "CM" to the end of the product number.

This package can also be adapted for use with a standard DIN rail by installing a simple adapter kit. As illustrated at right, this DIN rail kit consists of a base plate, a DIN rail bracket and the necessary hardware. For the **MPM-24Mx** series the DIN rail kit is: **AC-DIN-01**.



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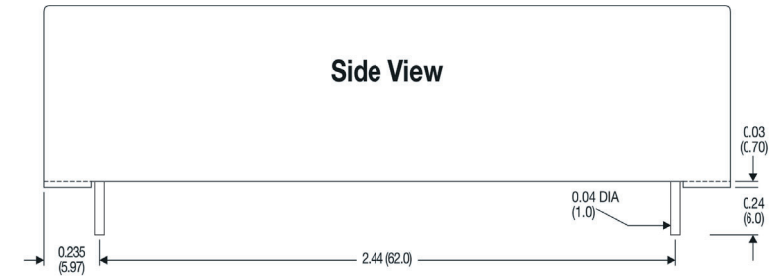
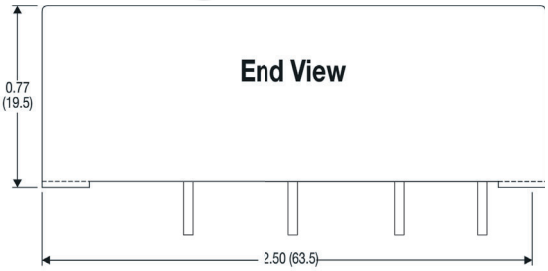
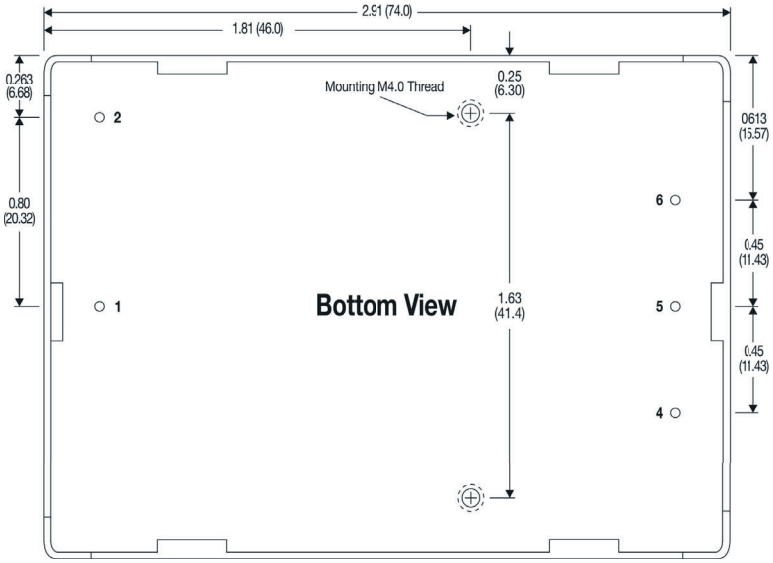
Mechanical Dimensions





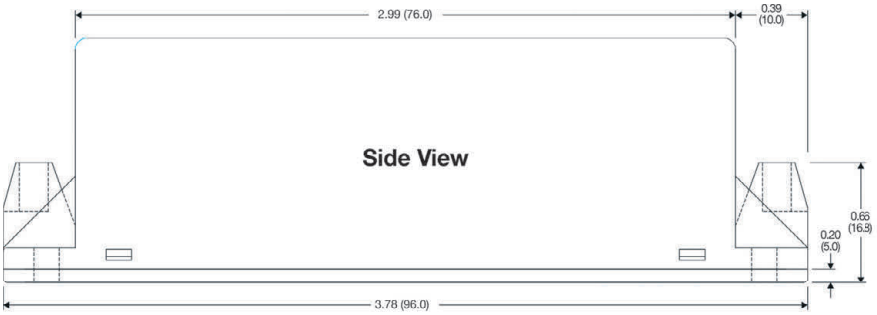


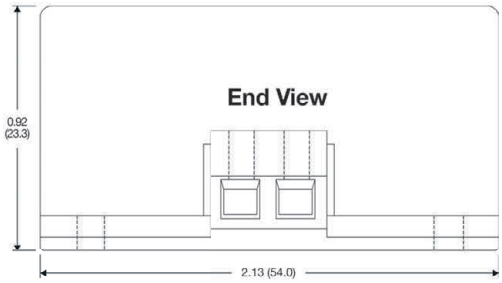
Pin Connections

Pin	Single	Dual
1	AC Neutral	AC Neutral
2	AC Line	AC Line
4	-VOUT	-VOUT
5	No Pin	Common
6	+VOUT	+VOUT

Notes:
- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.02 (±0.5)

Mechanical Dimensions, Chassis Mount





For the "Chassis Mount" package, add suffix "CM" to the model number (i.e. **MPM-24MS-12CM**)

Pin Connections

Pin	Single	Dual
1	AC Neutral	AC Neutral
2	AC Line	AC Line
3	NC	NC
4	-VOUT	-VOUT
5	NC	Common
6	+VOUT	+VOUT
7	NC	NC

NC = No Connection

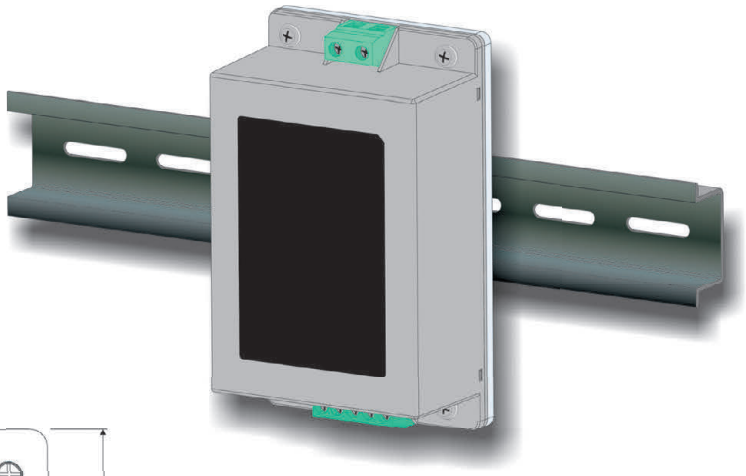
Notes:
- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.02 (±0.5)

DIN Rail Mounting

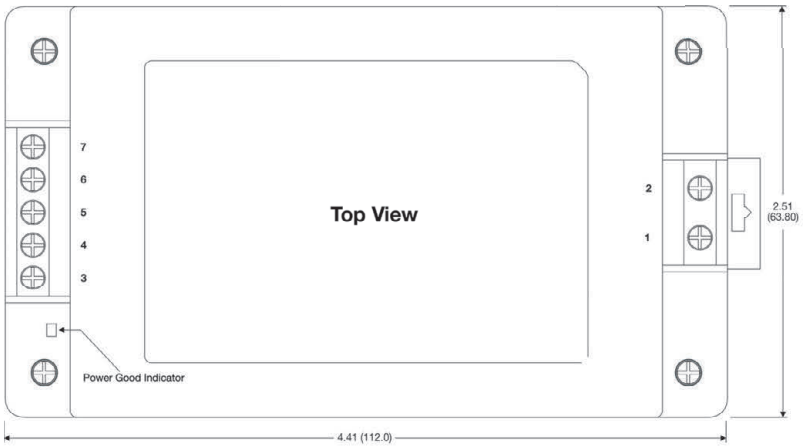
All chassis mount **MPM-24Mx** models are easily adapted for use with a standard 35 mm DIN rail by installing a simple adapter kit.

The DIN rail kit consists of a base plate, a DIN rail bracket and the necessary hardware. Mechanical dimensions for an **MPM-24Mx** assembly with the DIN rail option are shown below.

For the **MPM-24Mx** series the DIN rail kit is: **AC-DIN-01**.



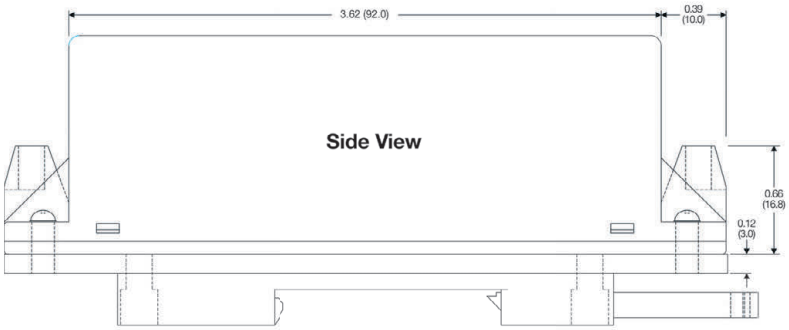
Mechanical Dimensions, DIN Rail Mount

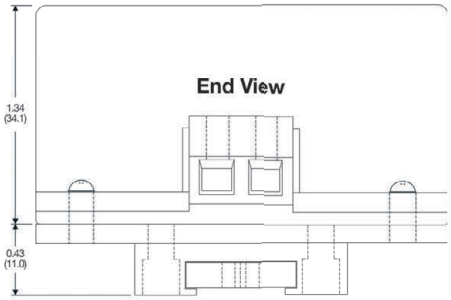


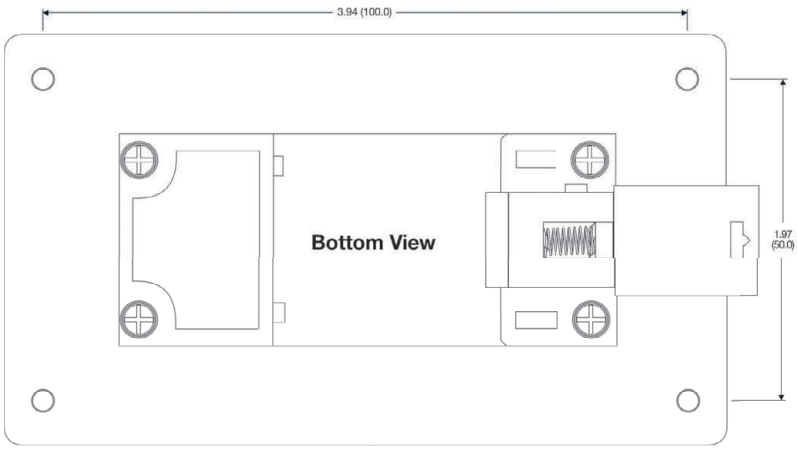
Pin Connections

Pin	Single	Dual
1	AC Neutral	AC Neutral
2	AC Line	AC Line
3	NC	NC
4	-VOUT	-VOUT
5	NC	Common
6	+VOUT	+VOUT
7	NC	NC

NC = No Connection







Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.02 (±0.5)

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