MPM-90C

90W, Compact, High Isolation AC/DC Power Supplies

Key Features:

- 90W Output Power
- 80-305 VAC Input
- 4,200 VAC Isolation
- Compact Size
- Efficiency to 93%
- -40°C to +85°C Temp
- Meets EN 55032 B
- >500 kHour MBTF
- OVC III
- Reinforced Insulation

Electrical Specifications

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

Input

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Range	AC Input	80		305	VAC
	DC Input	110		430	VDC
Input Frequency		47		63	Hz
Input Current	115 VAC			2	A
	230 VAC			1.1	
Inrush Current (Cold Start)	115 VAC		35		A
	230 VAC		65		
Leakage Current	277 VAC / 50Hz			0.25	mA RMS
Built-In Fuse	3.15A/300V, slow-blow				

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±2		%
Line Regulation	Full Load		±0.5		%
Load Regulation	0 to 100% Load		±1		%
Ripple & Noise (20 MHz) - See Note 1	12/15V Outputs			120	mV P - P
	24V Output			200	
	48V Output			240	
Standby Power Consumption				0.21	W
Hold-Up Time	115 VAC		10		ms
	230 VAC		30		
Temperature Coefficient			±0.02		%/°C
Temperature Derating	-40°C to -30°C	5.0			%/ °C
	+50°C to +70°C	2.5			
	+70°C to +85°C	1.66			
Input Voltage Derating	80 - 100 VAC	1.0			%/VAC
Altitude Derating	2000 - 4000m	10			%/Km
Over Voltage Protection	12V Output			16	VDC
	15V Output			25	
	24V Output			35	
	48V Output			60	
Over Load Protection		110			%Io
Short Circuit Protection	Hiccup Mode (Autorecovery)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	See Note 4	4,200			VAC
Isolation Resistance	500 VDC	100			MΩ

EMI Characteristics

Parameter	Standard	Criteria	Level
Radiated Emissions, See Page 4	CISPR32/EN 55032		Class B
Conducted Emissions	CISPR32/EN 55032		Class B

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40		+85	°C
Storage Temperature Range		-40		+85	°C
Cooling	Free Air Convection				
Storage Humidity	Non-condensing			95	%RH

Physical

Case Size	3.43 x 2.05 x 1.16 in. (See Mechanical Drawing on Page 5 & 6)
Case Material	Flame Retardant, Non-Conductive, Black Plastic (UL94-V0)
Weight	7.05 oz (200g) (See Mechanical Drawing on Page 5 & 6)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	500			kHours
Safety Standards	See Model Selection Guide				
Lead Temperature	Wave, 5 - 10s			260	°C
	Manual, 3 - 5s			360	

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MICROPOWER DIRECT

Model Selection Guide

UL	Model Number	Input		Output			Output Capacitive Load (μF Max)	Efficiency (%, Typ)
		Current (mA)		Voltage (VDC)	Current (mA, Max)	Power (W)		
		115 VAC	230 VAC					
▪	MPM-90C-12	2000	1100	12	6700	80.4	6800	92
	MPM-90C-15	2000	1100	15	5670	85.05	4500	92.5
	MPM-90C-24	2000	1100	24	3750	90	3000	93
	MPM-90C-48	2000	1100	48	1875	90	470	93
* MPM-90C-12 has UL/cUL 62368-1 recognition (UL certificate). Contact factory for safety standard status of other models.								

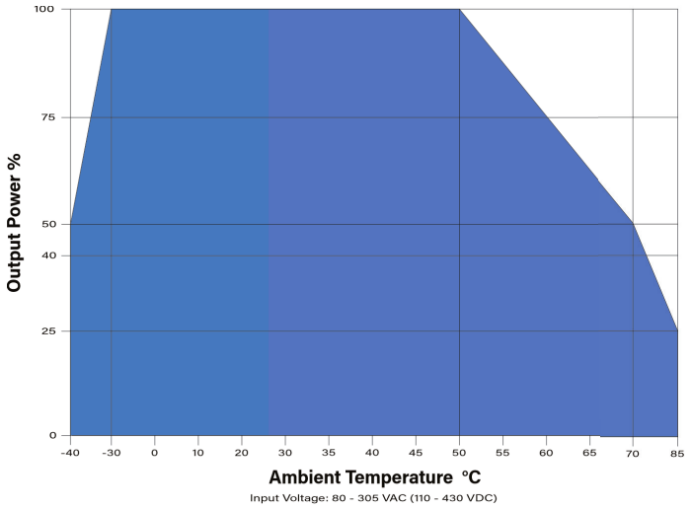
Notes:

1. The "tip and barrel method" is used for ripple and noise test, output parallel 10uF electrolytic capacitor and 1uF ceramic capacitor.
2. Unless otherwise specified, EMC performance indicators are tested according to typical connection circuit on page 4.
3. Output short circuit protection is provided by a "hiccup mode" circuit. The unit recovers automatically when the fault condition is removed.
4. Input-output isolation is tested for 60 seconds with a leakage current of <5 mA.
5. Lead temperature is specified for 5 to 10 seconds for wave soldering with a tolerance of ±5 °C. For manual soldering it is specified for 3 to 5 seconds with a tolerance of ±10 °C.
6. The **MPM-90C** series includes a built-in fuse of 3.15A/300V, slow-blow, however, the actual application environment may require a different value. See the application notes on page 4 for suggested sizes.

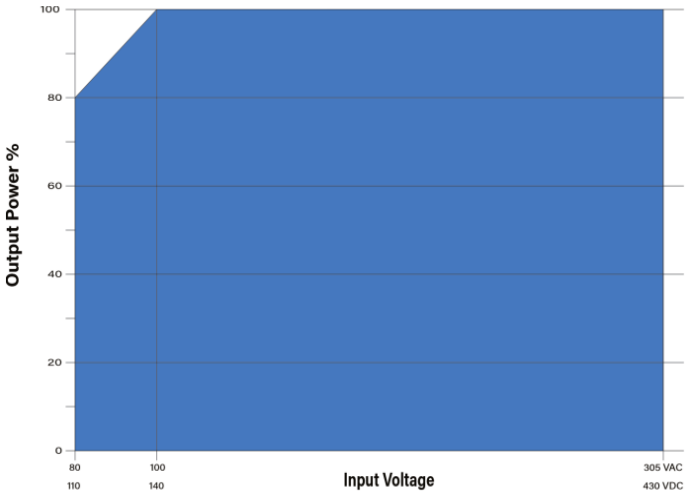
For the A2S adapter board option, add the sufix "-A2S" to the model number (i.e. **MPM-90C-12-A2S**). See Page 5.

For the A4S adapter board option, add the sufix "-A4S" to the model number (i.e. **MPM-90C-12-A4S**). See Page 6.

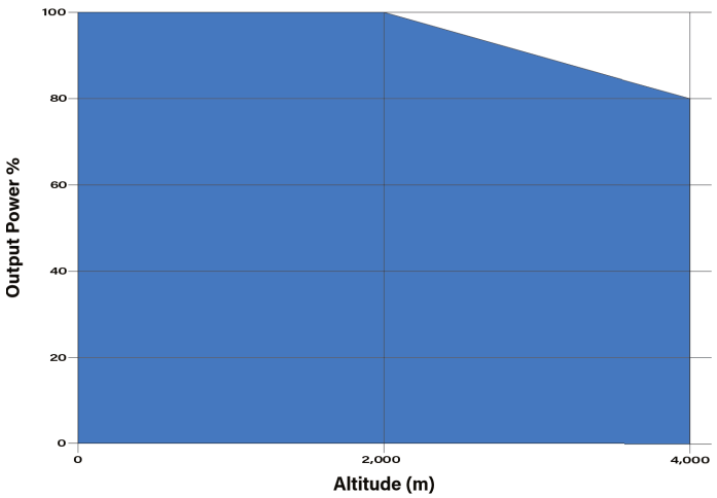
Temperature Derating



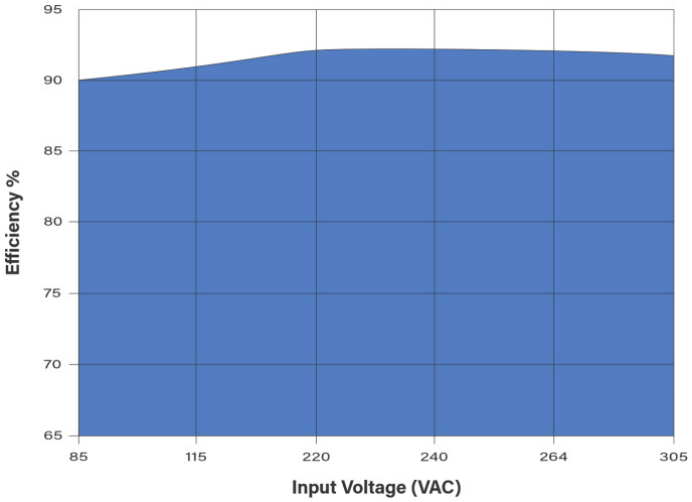
Input Voltage Derating



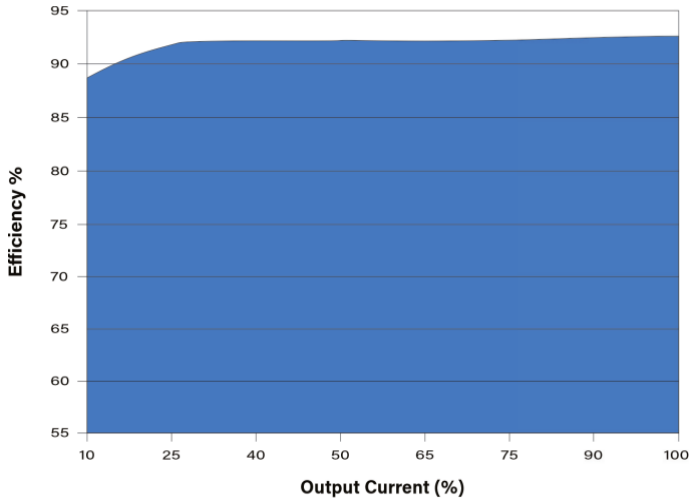
Altitude Derating



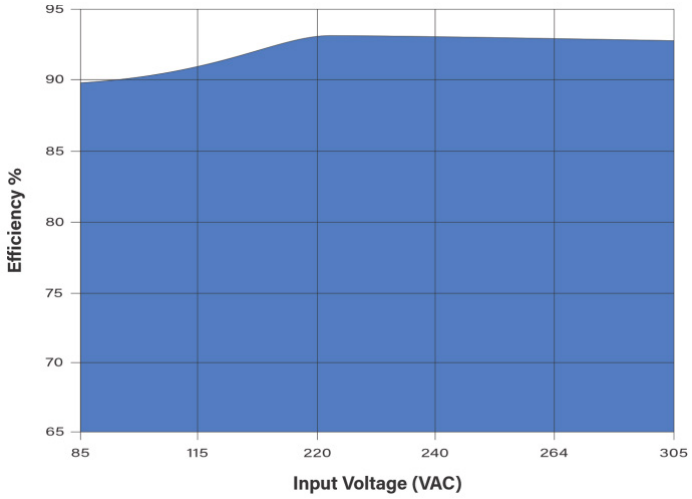
Efficiency vs Input Voltage: 12 VOUT Models



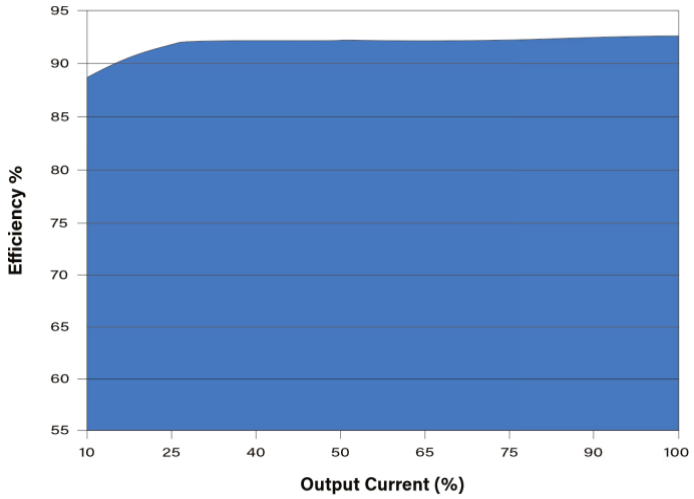
Efficiency vs Output Load: 12 VOUT Models



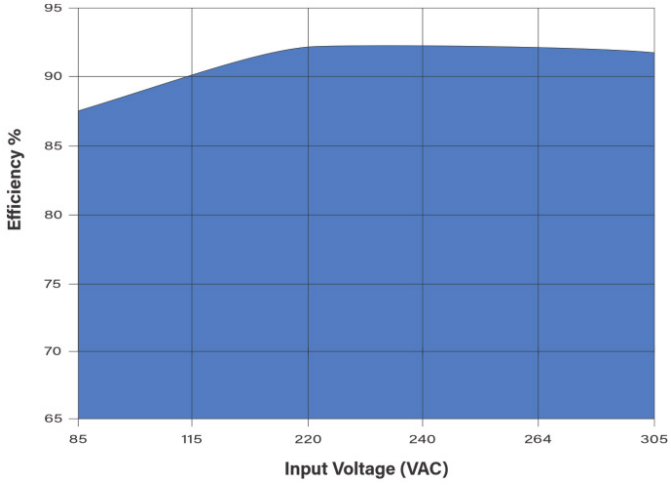
Efficiency vs Input Voltage: 24 VOUT Models



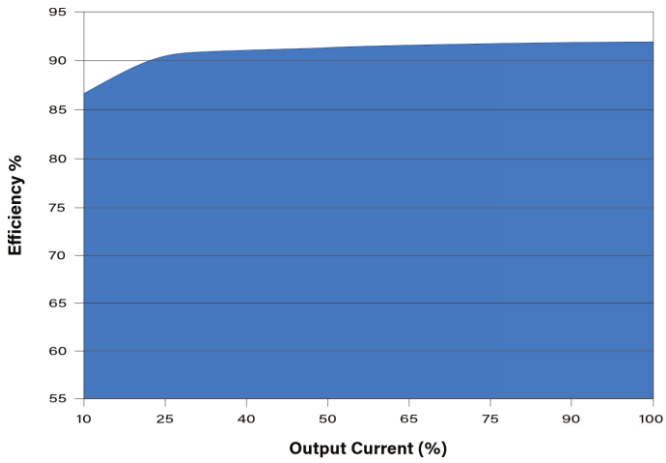
Efficiency vs Output Load: 24 VOUT Models



Efficiency vs Input Voltage: 48 VOUT Models



Efficiency vs Output Load: 48 VOUT Models



EMI Characteristics

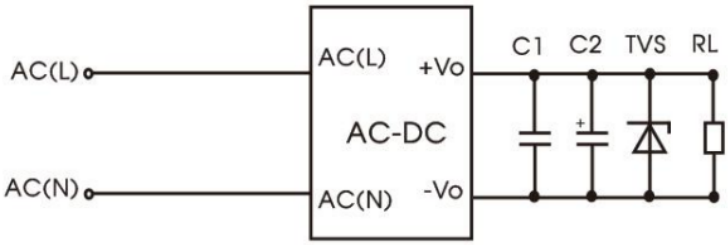
Parameter	Standard	Criteria	Level
Radiated Emissions (RE)	CISPR32/EN55032		B
Conducted Emissions (CE)	CISPR32/EN55032		B
Harmonic Current	IEC/EN61000-3-2		A
ESD	IEC/EN61000-4-2	A	Contact ±6kV/Air ±8kV
RS	IEC/EN61000-4-3	A	10V/m
EFT	IEC/EN61000-4-4	A	±2kV
Surge	IEC/EN61000-4-5	A	line to line ±2kV
	IEC/EN61000-4-5	B	line to line ±2kV/line to PE ±4kV
CS	IEC/EN61000-4-6	A	10 Vr.m.s
PFM	IEC/EN61000-4-8	A	30A/m
Voltage Dips, Shorts, Interruptions	IEC/EN61000-4-11	B	0%, 70%

Notes:

1. To meet the rquirements of CISPR32/EN55032 Class B, for Class II equipment, use the "Typical Connection" or the "EMI Connection for Class II Equipment" as shown below. Contact the factory for more information.
2. To meet the requirements of IEC/EN61000-4-4 (±2 kV, Criteria A), use the "Typical Connection" as shown below. To meet EN61000-4-4 (±4 kV, Criteria A) use the "EMI Connection for Class II Equipment" as shown below. Contact the factory for more information.
3. To meet the requirements of IEC/EN 61000-4-5 (±2 kV line to line, Criteria A), use the "Typical Connection" as shown below. Contact the factory for more information.
4. To meet the requirements of IEC/EN 61000-4-5 (±2 kV line to line / ±4 kV line to ground, Crtieria B), use the "EMI Connection for Class II Equipment" as shown below. Contact the factory for more information.

Application Circuits

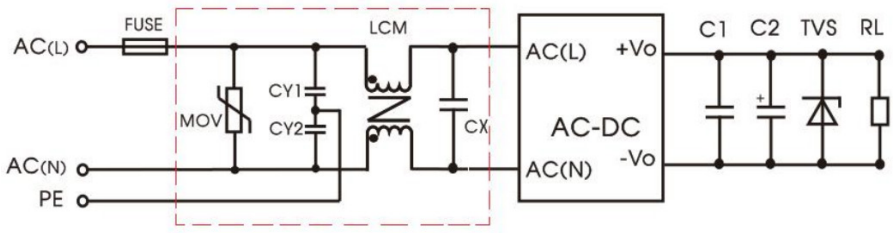
Typical Connection Diagram



Part No.	C1	C2	TVS
MPM-90C-12	1uF/100V	330uF/35V	SMBJ20A
MPM-90C-15		330uF/25V	SMBJ20A
MPM-90C-24		200uF/35V	SMBJ30A
MPM-90C-48		100uF/63V	SMBJ60A

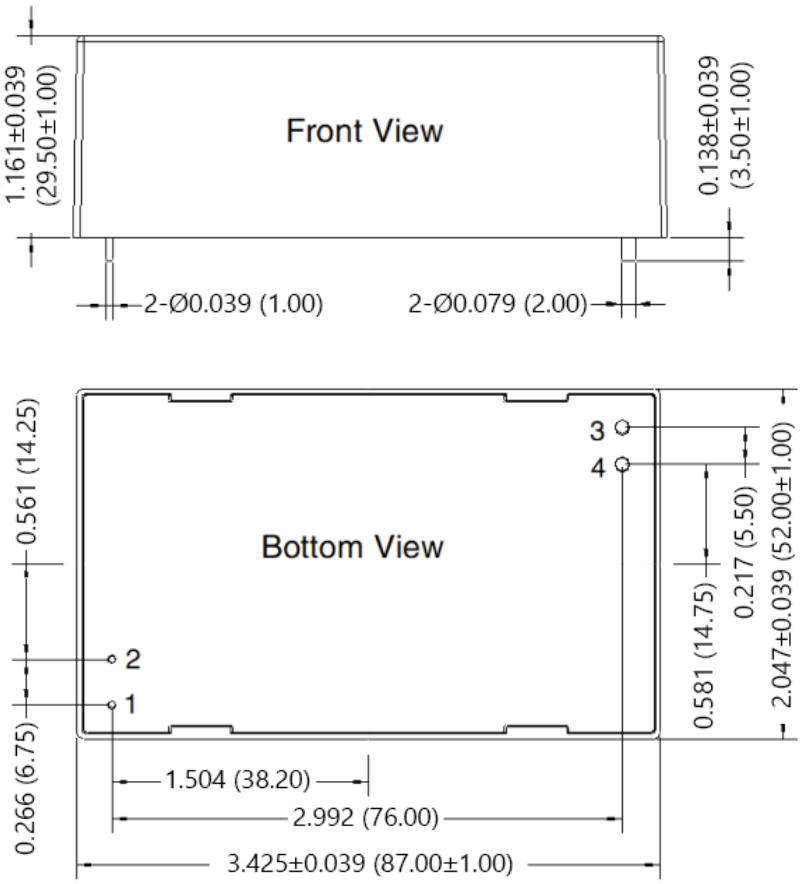
Output Filter Components:
We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2. Choose a capacitor voltage rating with at least 20% margin. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

EMI Connection for Class II Equipment

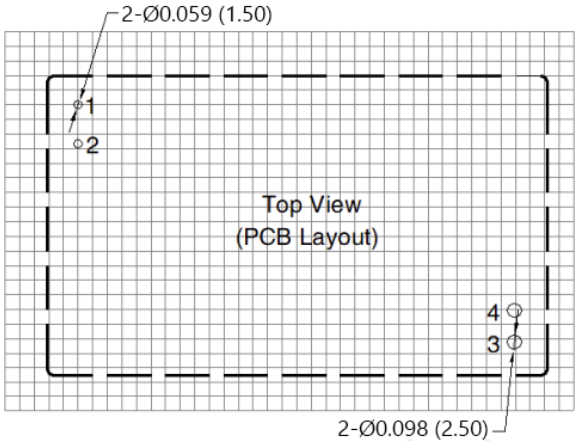


Component	Recommended Value
FUSE	6.3A/300V, slow-blow, required
MOV	S14K350
CY1/CY2	1nF/400VAC
CX	684K/310V
LCM	10mH

Mechanical Diagrams



THIRD ANGLE PROJECTION



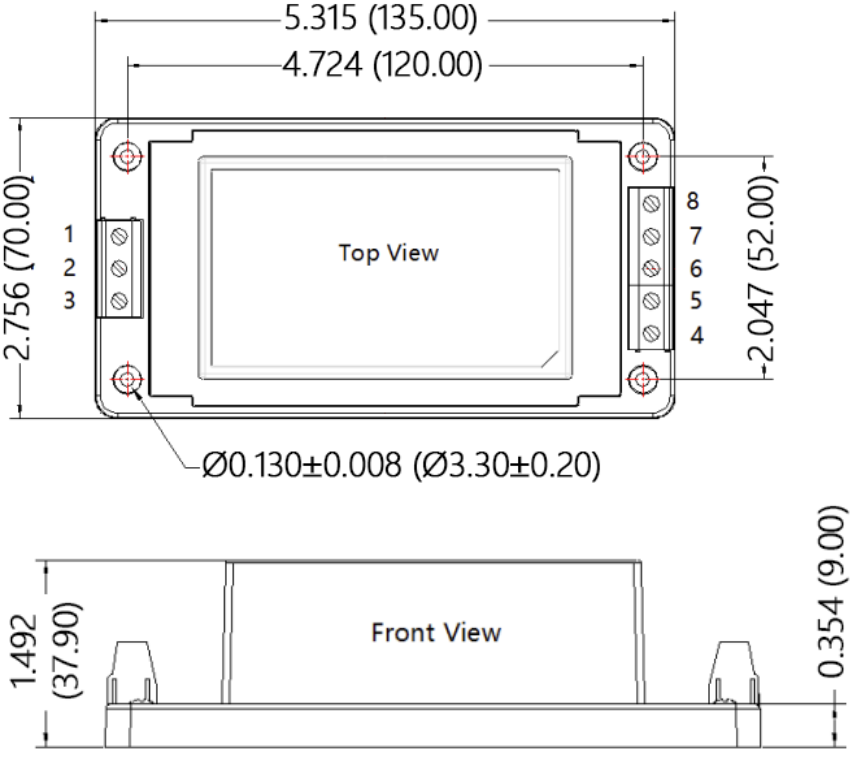
Note: Grid distance is 2.54 * 2.54 mm

Pin-Out	
Pin	**Function**
1	AC(N)
2	AC(L)
3	+Vo
4	-Vo

Notes:
- All dimensions are typical in inches (mm)
- Pin diameter tolerances: ±0.004 (±0.10)
- General tolerances: ±0.020 (±0.50)

Weight:
- Standard DIP Package: 7.05 oz (200g)

A2S Chassis Mechanical Diagram



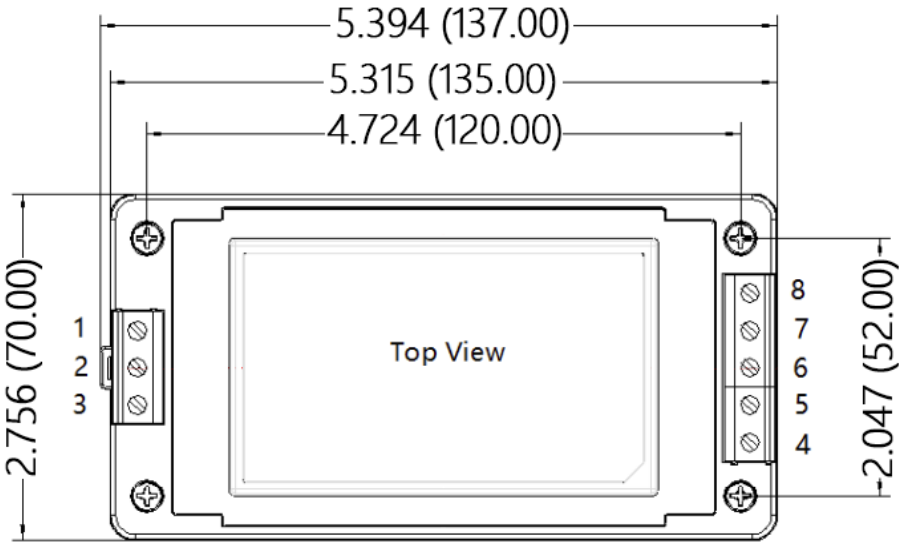
THIRD ANGLE PROJECTION

Pin-Out	
Pin	**Function**
1	AC(L)
2	NC
3	AC(N)
4	+Vo
5	-Vo
6	NC
7	NC
8	NC

Notes:
- All dimensions are typical in inches (mm)
- Wire range: 24-12 AWG
- Tightening torque: Max 0.4 N·m
- General tolerances: ±0.040 (±1.00)

Weight:
- A2S Chassis: 9.88 oz (280g)

A4S Din-Rail Mechanical Diagram

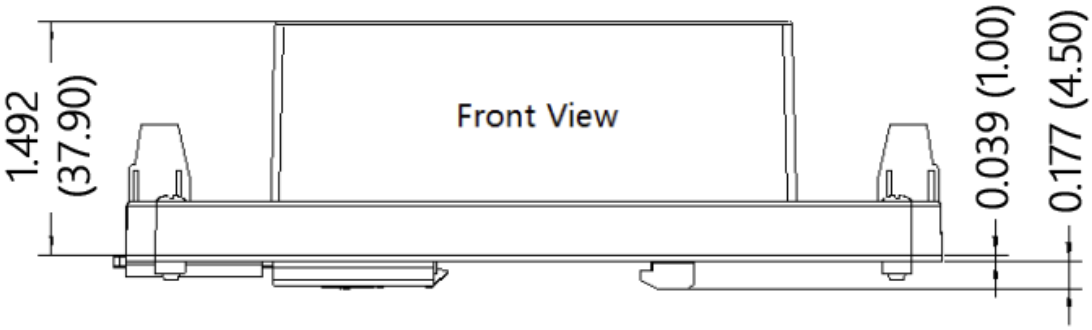


THIRD ANGLE PROJECTION

Pin-Out	
Pin	**Function**
1	AC(L)
2	NC
3	AC(N)
4	+Vo
5	-Vo
6	NC
7	NC
8	NC

Notes:
- All dimensions are typical in inches (mm)
- Wire range: 24-12 AWG
- Tightening torque: Max 0.4 N·m
- General tolerances: ±0.040 (±1.00)

Weight:
- A4S Din-Rail: 12.35 oz (350g)



MPD has a very wide range of high performance AC/DC power supplies ranging from 600W UChannel units to 1W units in miniature Single-In-Line (SIP) packages. All are designed and certified to international safety and EMC/EMI standards.
We have AC/DC supplies approved for use in medical equipment, DIN rail supplies, "Green" energy supplies and constant power supplies.
We also offer a wide variety of DC/DC converters, POL regulators and IGBT drivers. All products are available with short lead times. Call today for complete information or product samples. Or go to our website:

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