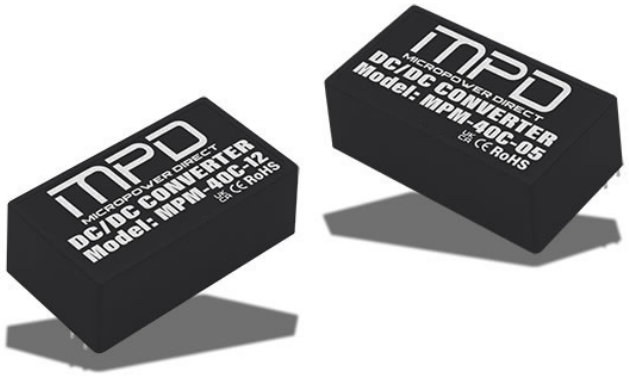
MPM-40C

40W, Compact, High Isolation AC/DC Power Supplies



Key Features:

- 40W Output Power
- 85-305 VAC Input
- 4,200 VAC Isolation
- Compact Size
- Efficiency to 90%
- -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	85		305	VAC
	DC Input	100		430	VDC
Input Frequency		47		63	Hz
Inrush Current (Cold Start)	115 VAC		30		A
	230 VAC		60		
Leakage Current	277 VAC / 50Hz			0.1	mA RMS
External Fuse	Recommended		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	5V output		±2		%
		Other outputs		±1		
Ripple & Noise (20 MHz), See Note 1				100	150	mV P - P
Standby Power Consumption				0.3	0.55	W
Hold-Up Time	115 VAC			8		ms
	230 VAC			50		
Temperature Coefficient				±0.02		%/°C
Over Voltage Protection	5V Output				6.3	VDC
	12V Output				16	
	15V Output				25	
	24V Output				35	
	48V Output				60	
Over Load Protection	≥130%Io, Self-Recovery					
Short Circuit Protection	Hiccup Mode (Autorecovery)					

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage, See Note 3		4,200			VAC
Isolation Resistance	500VDC	100			MΩ

EMI Characteristics

Parameter	Standard	Criteria	Level
Radiated Emissions, See Page 3	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	2.74 x 1.54 x 0.94 in (See Mechanical Drawing on Page 5 & 6)
Case Material	Flame Retardant, Non-Conductive, Black Plastic (UL94V-0)
Weight	3.53 oz (100g) (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	Meets EN62368-1				
Safety Class	Class II				
Lead Temperature, See Note 4	Wave, 5 - 10s			260	°C
	Manual, 3 - 5s			360	

Absolute Maximum Ratings

Caution: Exceeding Abolsute Maximum Ratings may damage the module. These are not continuous operating ratings.

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Easton, MA 02375
USA

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W: www.micropowerdirect.com

MICROPOWER DIRECT

Model Selection Guide

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-40C-05	1000	600	5	7000	35	6600	86
MPM-40C-12	1000	600	12	3330	40	4400	89
MPM-40C-15	1000	600	15	2666	40	3000	90
MPM-40C-24	1000	600	24	1670	40	1500	89
MPM-40C-48	1000	600	48	833	40	470	90

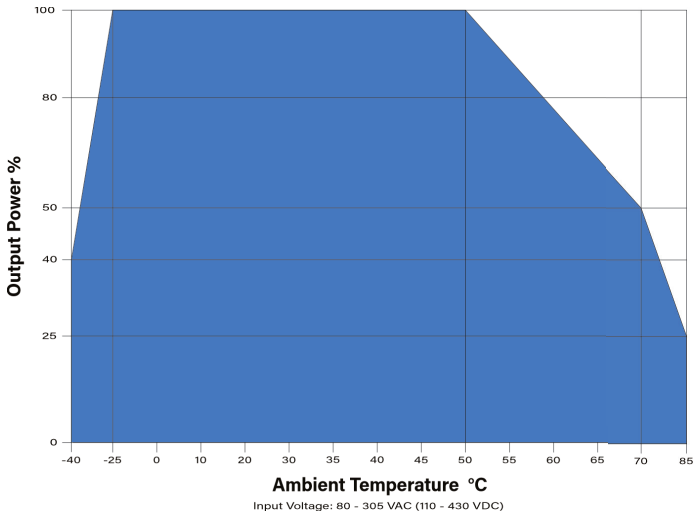
Notes:

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. Input-output isolation is tested for 60 seconds with a leakage current of <5 mA.
4. Lead temperature is specified for 5 to 10 seconds for wave soldering with a tolerance of ±5 ºC. For manual soldering it is specified for 3 to 5 seconds with a tolerance of ±10 ºC.
5. The **MPM-40C** series recommends a fuse of 3.5A/300V, slow-blow.

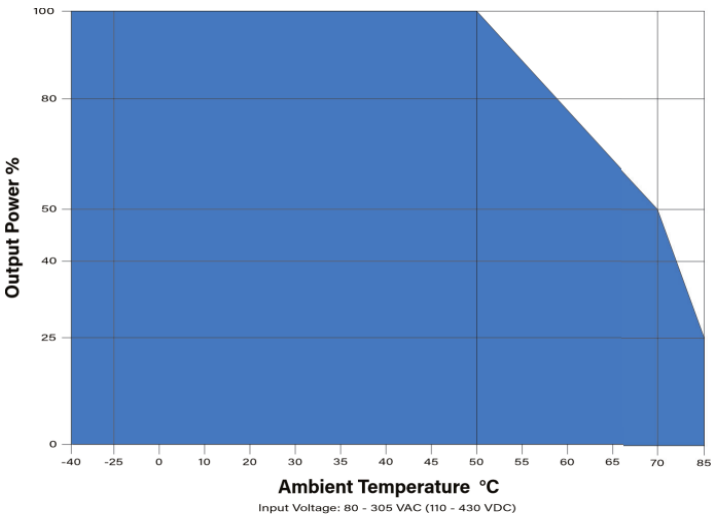
For the A2S adapter board option, add the sufix "-A2S" to the model number (i.e. **MPM-40C-05-A2S**). See Page 6.

For the A4S adapter board option, add the sufix "-A4S" to the model number (i.e. **MPM-40C-05-A4S**). See Page 6.

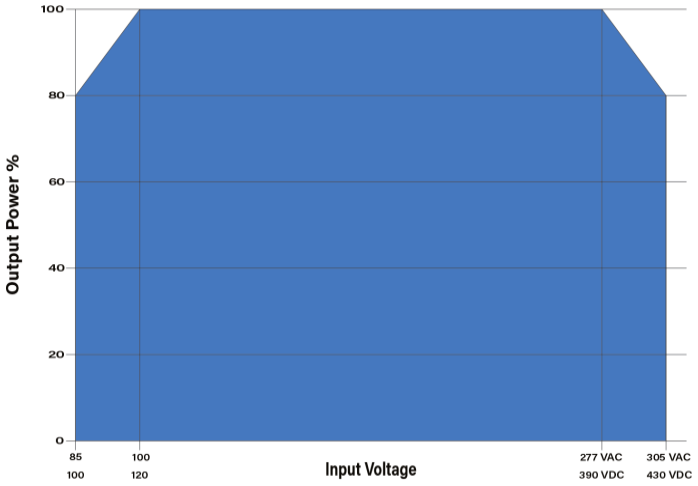
Temperature Derating: 85 - 200 VAC Input



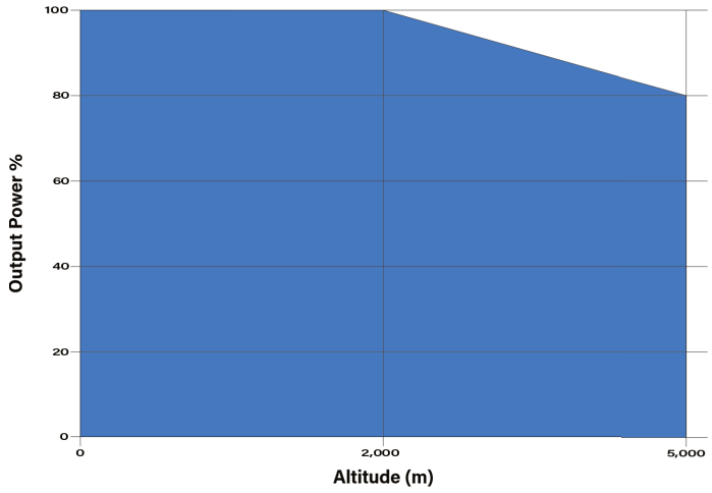
Temperature Derating: 200 - 305 VAC Input



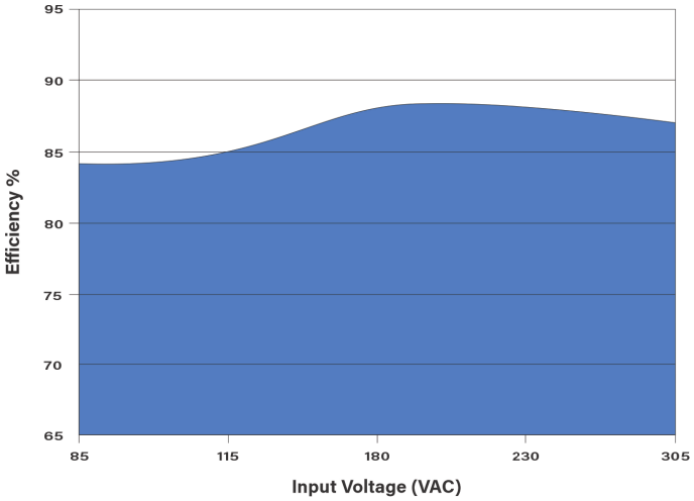
Input Voltage Derating



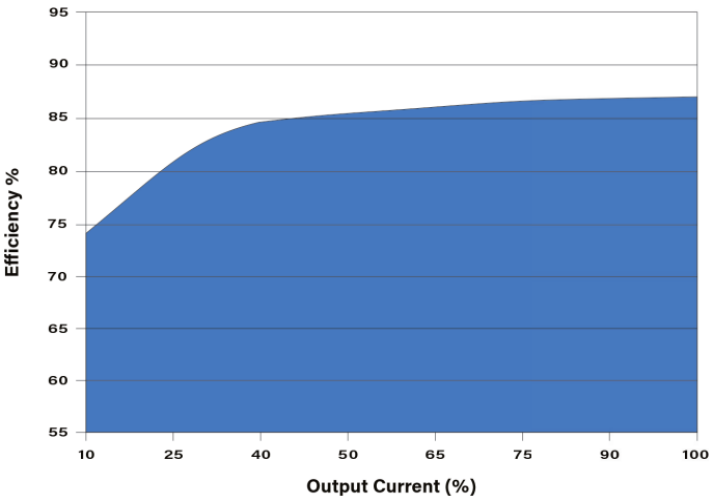
Altitude Derating



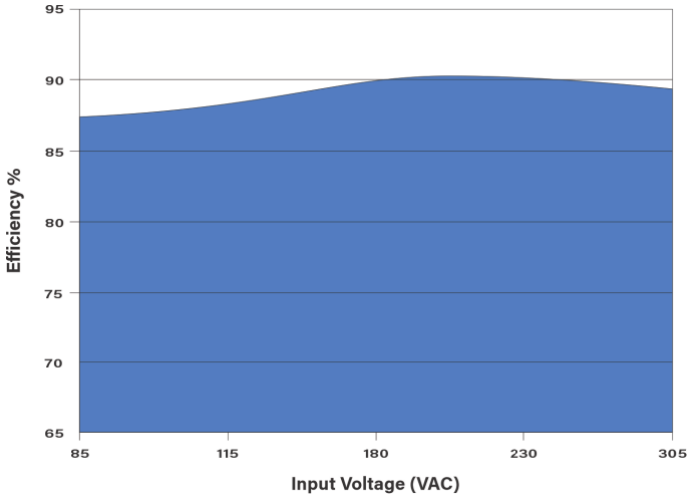
Efficiency vs Input Voltage: 5 VOUT Models



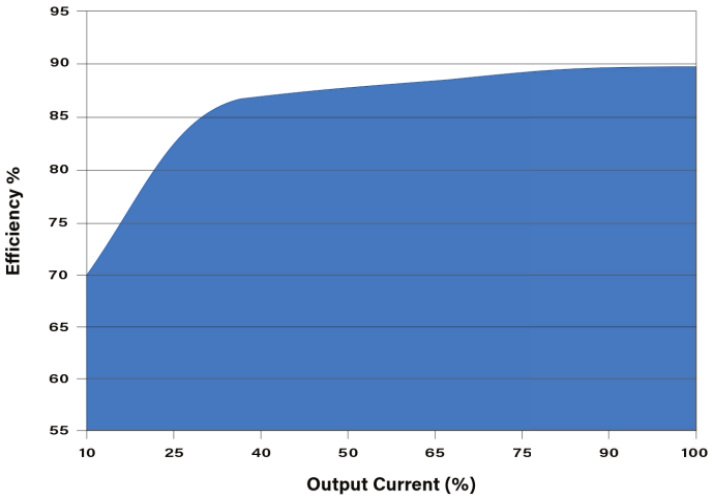
Efficiency vs Output Load: 5 VOUT Models



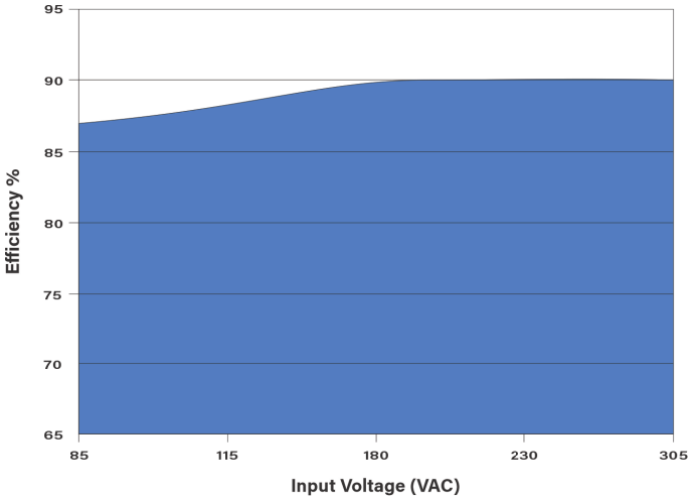
Efficiency vs Input Voltage: 12 VOUT Models



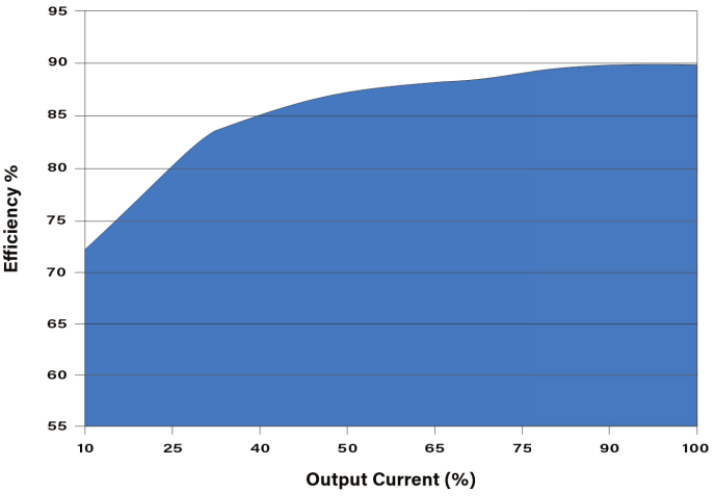
Efficiency vs Output Load: 12 VOUT Models



Efficiency vs Input Voltage: 24 VOUT Models



Efficiency vs Output Load: 24 VOUT Models



EMI Characteristics

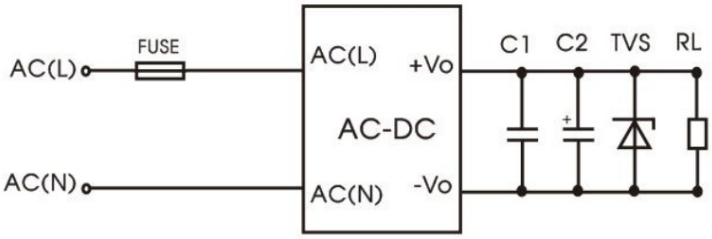
Parameter	Standard	Criteria	Level
Radiated Emissions (RE)	CISPR32/EN55032		B
Conducted Emissions (CE)	CISPR32/EN55032		B
ESD	IEC/EN61000-4-2	A	Contact ±6kV/Air ±8kV
RS	IEC/EN61000-4-3	A	10V/m
EFT	IEC/EN61000-4-4	A	±2kV
	IEC/EN61000-4-4	A	±4kV
Surge	IEC/EN61000-4-5	A	line to line ±2kV
	IEC/EN61000-4-5	A	line to line ±2KV/line to PE ±4kV
CS	IEC/EN61000-4-6	A	10 Vr.m.s
Voltage Dips, Short, 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 A), use the "EMI Connection for Class II Equipment" as shown below.

Application Circuits

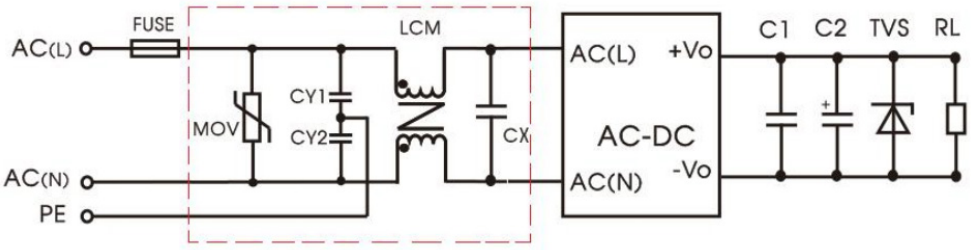
Typical Connection Diagram



Part No.	FUSE	C1	C2	TVS
MPM-30C-05	3.15A/300V, slow-blow, required	1uF/50V	330uF/16V	SMBJ7.0A
MPM-30C-12			330uF/16V	SMBJ20A
MPM-30C-15			220uF/25V	SMBJ20A
MPM-30C-24			100uF/35V	SMBJ30A
MPM-30C-48			47uF/63V	SMBJ64A

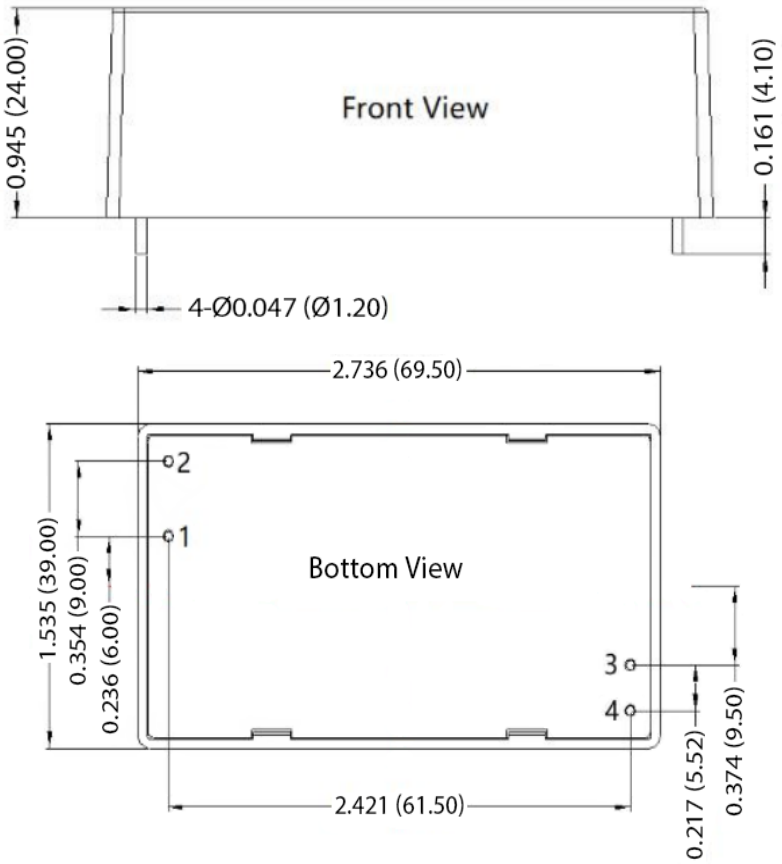
Output Filter Components:
We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2. Choose a capacitor voltage rating with at least 20% margin. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the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

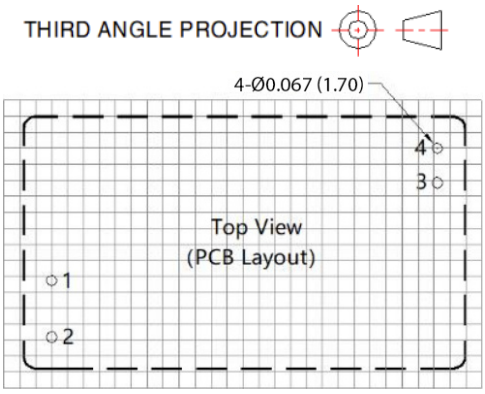
EMC Connection for Class II Equipment



Component	Recommended Value
FUSE	3.15A/300V,
MOV	S14K350
CY1/CY2	1nF/400VAC
CX	684K/310V
LCM	10mH

Mechanical Diagrams





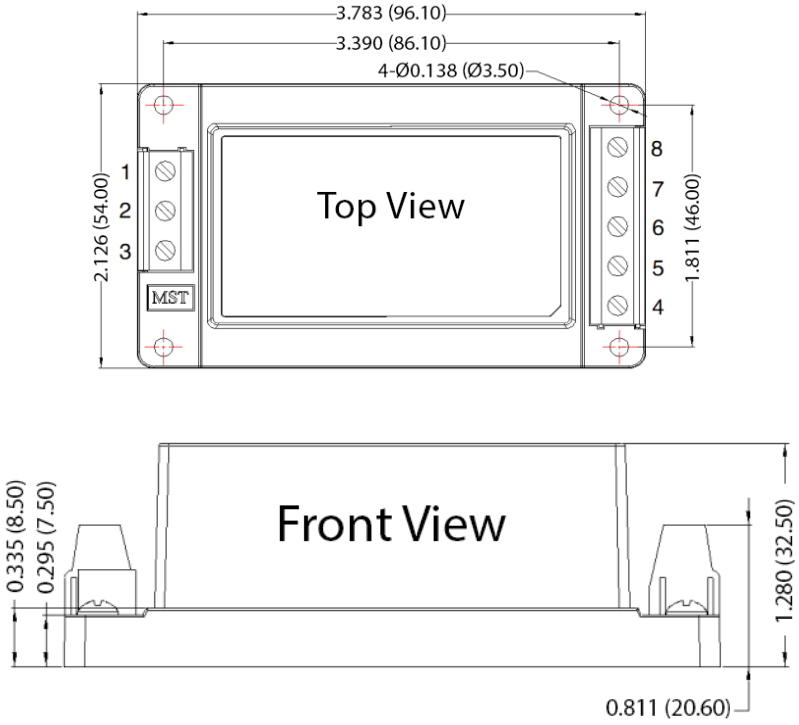
Note: Grid 0.1 * 0.1 in

Pin-Out	
Pin	**Function**
1	AC(L)
2	AC(N)
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: 3.53 oz (100g)

A2S Chassis Mechanical Diagram

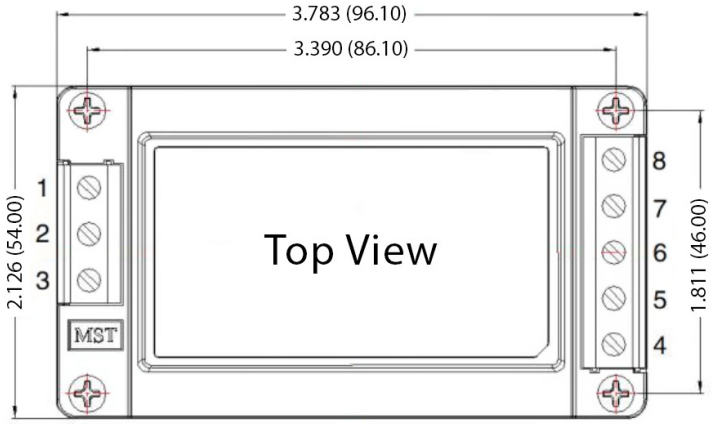


Pin-Out	
Pin	**Function**
1	NC
2	AC(N)
3	AC(L)
4	+Vo
5	NC
6	NC
7	NC
8	-Vo

Notes:
- All dimensions are typical in inches (mm)
- Wire range: 24-12 AWG
- Tightening torque: Max 0.4 N·m
- General tolerances: ±1.00 (±0.039)

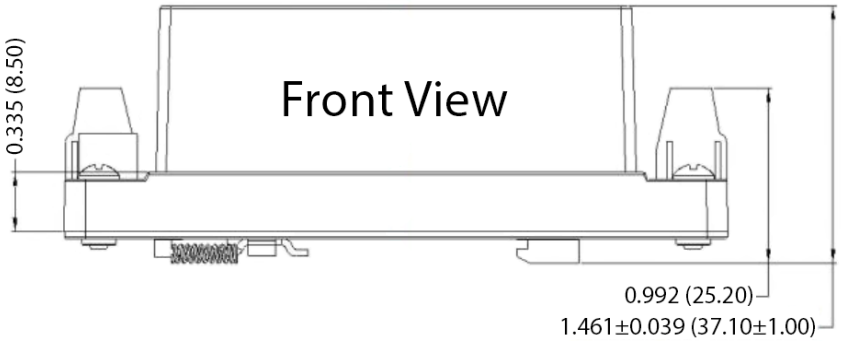
Weight:
- A2S Chassis: 5.19 oz (147g)

A4S DIN-Rail Mechanical Diagram



THIRD ANGLE PROJECTION

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



Notes:
- All dimensions are typical in inches (mm)
- Wire range: 24-12 AWG
- Tightening torque: Max 0.4 N·m
- General tolerances: ±1.00 (±0.039)
- Mounting Rail: TS35, connect safety ground

Weight:
- A4S Din-Rail: 6.70 oz (190g)

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, LED Drivers, 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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