MPU-240SAR

Very Compact, U-Channel, High Performance 240W AC/DC Power Supplies

Key Features:

- 240W Output Power
- Universal 90-264 VAC Input
- Very-Compact U-Channel
- EN 62368 Approved (UL)
- Efficiency To 94%
- -30°C to +80°C Temp Range
- Active PFC Function
- Meets EN 55032/55035
- >400 kHour MTBF
- <0.5W No Load Power
- 4,000 VAC Isolation
- Tight Line/Load Regulation

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	See Note 1	90		264	VAC
		120		370	VDC
Input Frequency		47		63	Hz
Input Current	See Model Selection Guide				
Inrush Current, <2ms, Cold Start	115 VAC			45	A
	230 VAC			90	
Leakage Current	264 VAC			0.75	mA
Power Factor	At Full Load		>0.9		PF

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±2.0		%
Line Regulation	VIN = Min to Max		±1.0		%
Load Regulation	0 to 100%		±1.0		%
Ripple/Noise	See Note 2			1.0	%VOUT
Hold-Up Time, At 90% VOUT	115 VAC	10			mS
Over Voltage Protection	Autorecovery				
Over Power Protection, 110 - 210%	Autorecovery				
Over Temperature Protection	Autorecovery				
Minimum Load			0		%
Short Circuit Protection	Level 1 (Continuous, Autorecovery)				
	Level 2 (Instantaneous High Current : Latch)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage, See Note 4	Input to Output		4,000		VAC
			5,656		VDC

EMI Characteristics

Parameter	Standard	Criteria	Level
Radiated Emissions	EN 55032, Class I		Class B
	EN 55032, Class II		Class A
Conducted Emissions	EN 55032		Class B
Harmonic Currents	EN 61000-3-2 (Full Load		Class A
ESD	EN 61000-4-2	A	±8 kV Air
			±4 kV Contact
RS	EN 61000-4-3	A	3 V/m
EFT	EN 61000-4-4	A	±1 kV
			±2 kV (L/N-PE)
Surge	EN 61000-4-5	A	±1 kV
			±2 kV (L/N-PE)
CS	EN 61000-4-6	A	3 Vrms
PFMF	EN 61000-4-8	A	1 A/m

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	With Derating	-30		+80	°C
Storage Temperature Range		-30		+80	°C
Temperature Coefficient			±0.05		%°C
Cooling	Free Air Convection (See Derating Curve)				
Humidity	RH, Non-condensing	20		90	%RH
Altitude During Operation			5,000		m

Physical

Size & Weight	See Page 3

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	400			kHours
Safety Standards	UL/cUL 62368-1 Recognition (UL certificate)				
Vibration	IEC 60068-2-6, 10-500 Hz, 2G 10 min/1 cycle, 60 min each along X, Y, Z axis				
Shock	IEC 60068-2-27 (Acceleration:50G, Pulse Duration 11 mS, Filter 500 Hz				

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MICROPOWER DIRECT

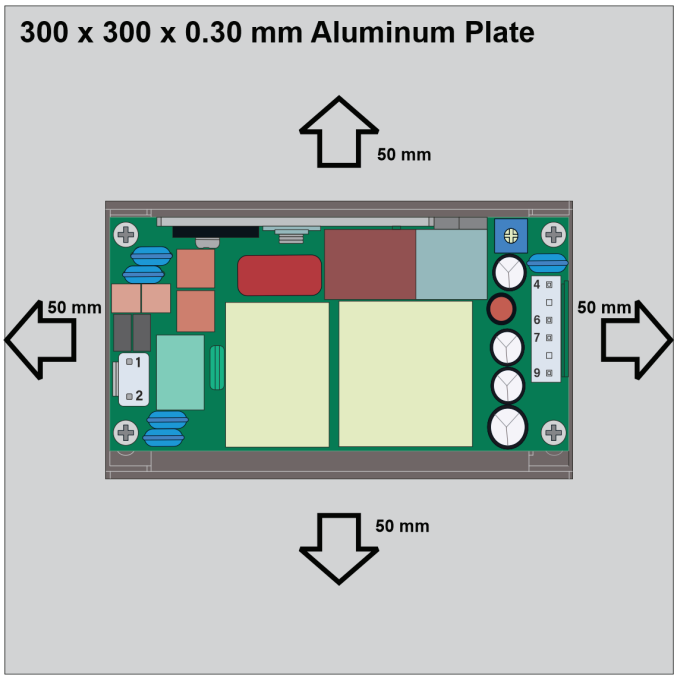
Model Selection Guide

Model Number	Input		Output										
	Current (A Max)		Voltage (VDC)	Voltage Adjust Range	Current (A Max)				Power (W Max)			Capacitive Load (μF, Max)	Efficiency @ 230 VAC (%, Typ)
					With 8 CFM (A Max)	Conduction Cooling (A Max)	Natural Convection		With 8 CFM	Natural Convection			
	115 VAC	230 VAC					100 VAC	230 VAC		100 VAC	230 VAC		
MPU-240SAR-12(A)	3.0	1.5	12	±5%	20.0	20.0	17.5	19.5	240	210	240	8,000	92.5
MPU-240SAR-24(A)	3.0	1.5	24	±5%	10.0	10.0	8.96	10.0	240	215	240	3,000	93.0
MPU-240SAR-48(A)	3.0	1.5	48	±5%	5.0	5.0	4.48	5.0	240	215	240	470	94.0

Notes:

1. Check the derating curves for full information.
2. Ripple and noise are measured at 20 Mhz bandwidth with a 0.1μF and a 47 μF capacitor connected in parallel as close to the unit output terminals as possible.
3. It is highly recommended that this test be conducted using a DC voltage. If an AC voltage is used, all Y capacitors must be disconnected from the power supply. For more information, please contact the factory.
4. If the unit is being used in either Class 1 or Class II equipment, the power supply should be securely attached to the metal case of the application. The four notches at the corners of the unit should be used to do this.
5. **Caution: The MPU-240SAR has double pole, neutral fusing. Disconnect the mains before servicing.**
6. Standard models are shipped with terminal block connectors on the output (Molex on the input) For Molex on the output also, add an "A" to the part number (for example: **MPU-240SAR-24A**).

EMI Connection

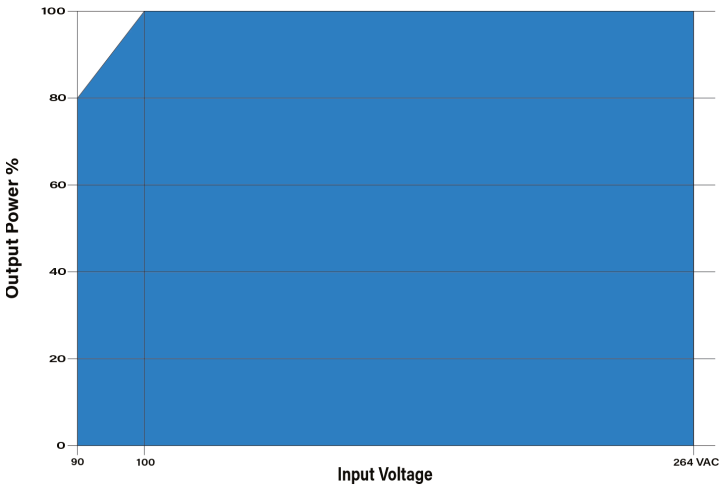


For optimum use (both EMI & thermal performance), the unit should be mounted on an aluminum plate, as shown in the illustration at left. The plate must have an even, smooth surface. Preferably, it would be coated with thermal grease.

The unit should be firmly mounted to the center of the plate. To do this, the threaded inserts marked "A" (see the bottom view of the mechanical diagram on page 4) should be used.

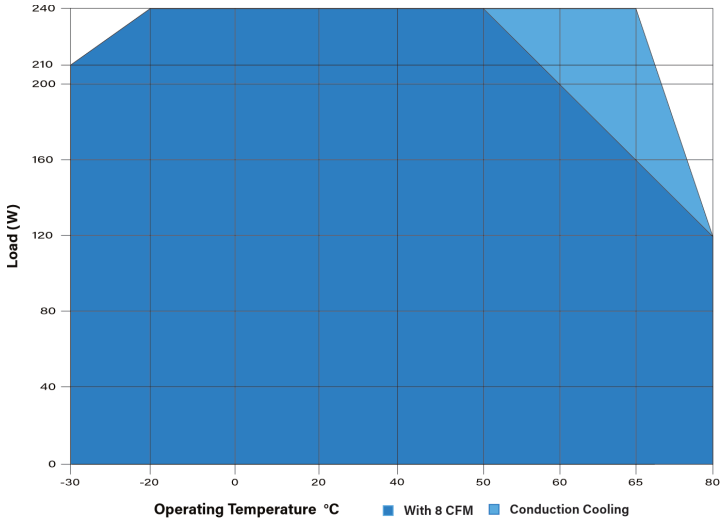
Ideally, this plate would be 300 x 300 x 0.30 mm, as shown in the illustration above. If this is not possible, it should extend out from the unit by at least 50 mm on each side.

Input Voltage Derating

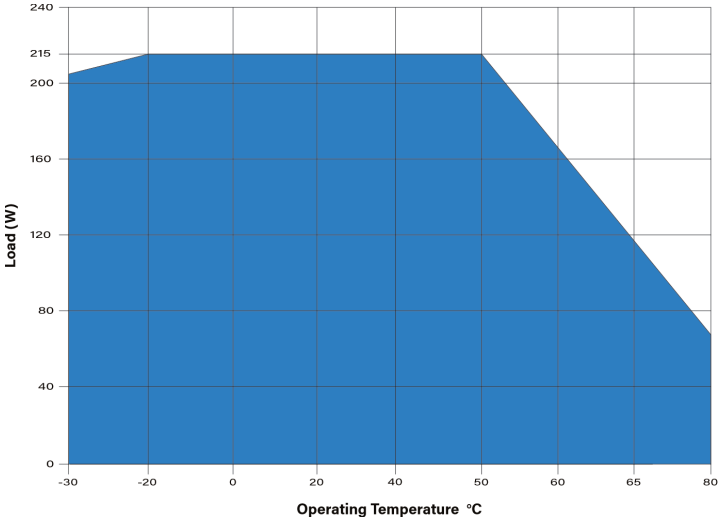


If a U-channel doesn't quite fit your requirements, **MPD** also offers this power supply as an open frame or enclosed model. Call today or visit our website for complete information.

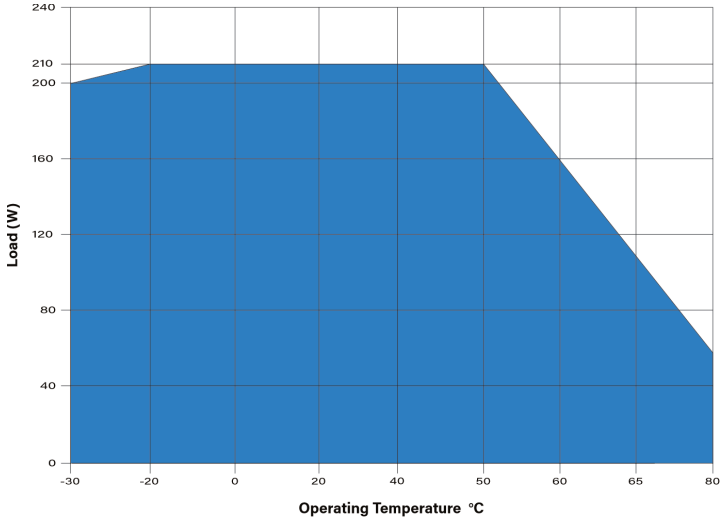
Temperature Derating: VIN: 100-197 VAC 8 CFM Fan / Conduction



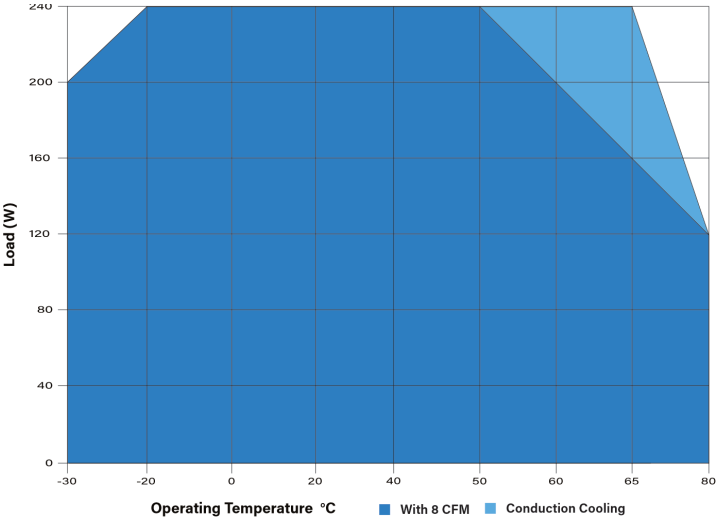
Temperature Derating: VIN: 100-197 VAC Natural Convection, 24 VOUT, 48 VOUT



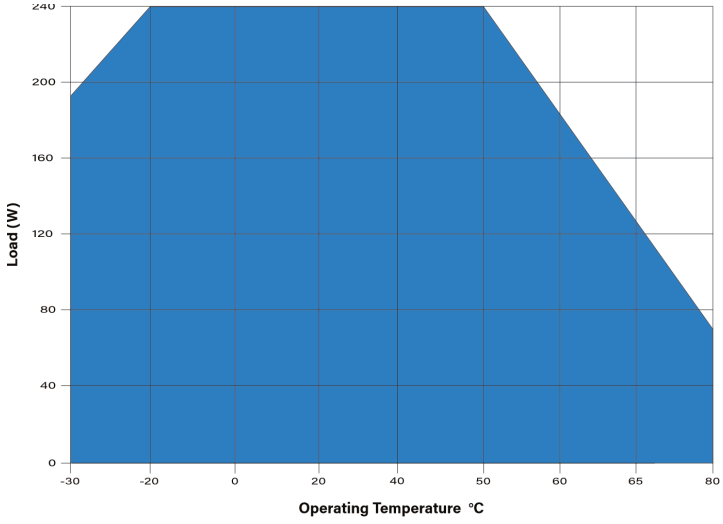
Temperature Derating: VIN: 100-197 VAC Natural Convection, 12 VOUT



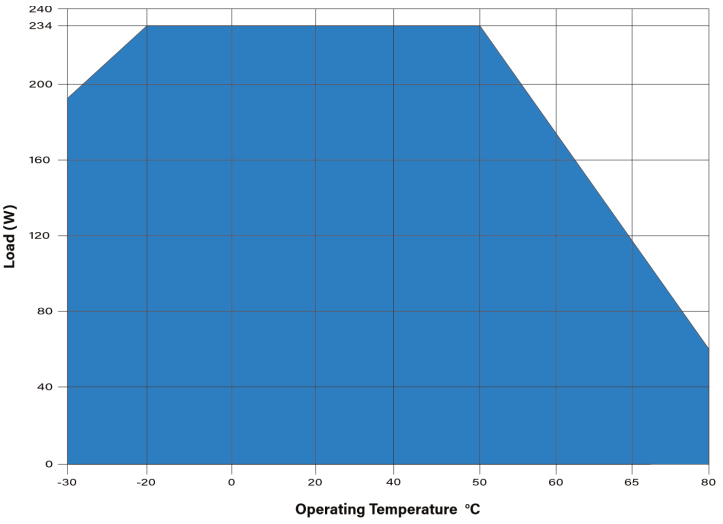
Temperature Derating: VIN: 198-264 VAC 8 CFM Fan / Conduction

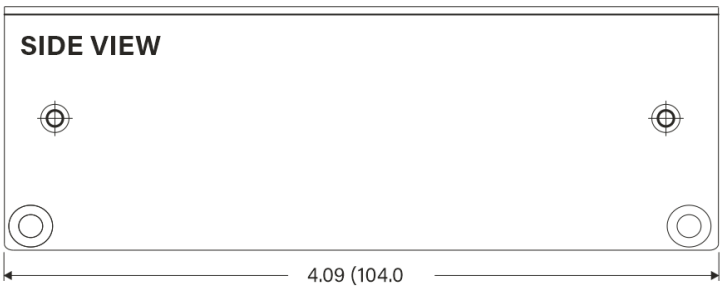


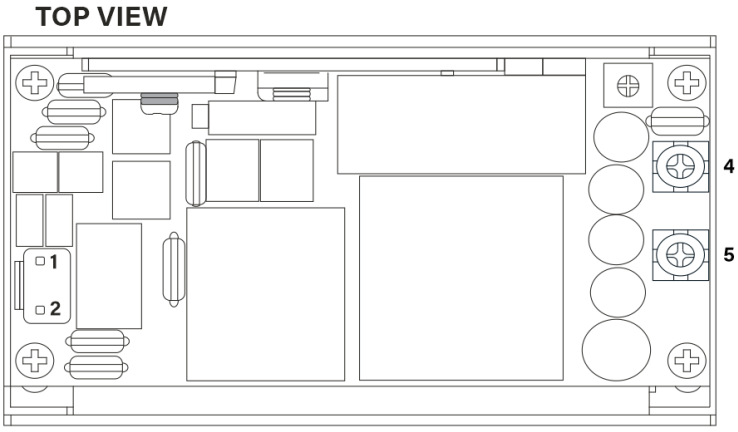
Temperature Derating: VIN: 198-264 VAC Natural Convection, 24 VOUT, 48 VOUT

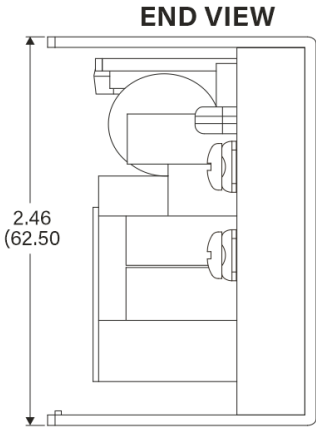


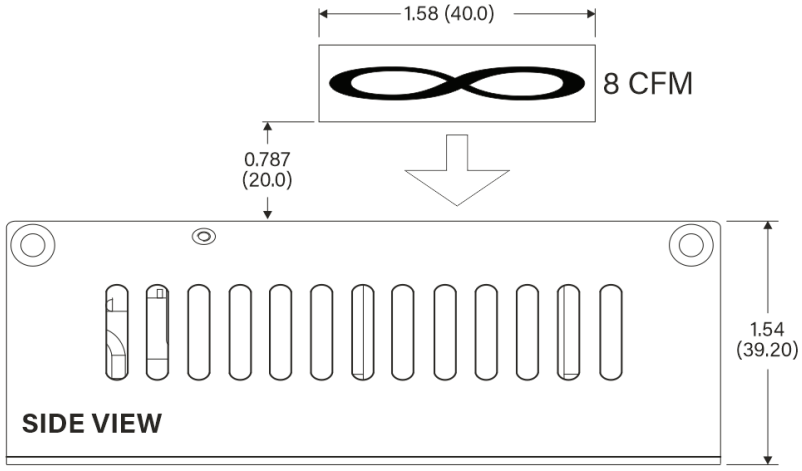
Temperature Derating: VIN: 198-264 VAC Natural Convection, 12 VOUT









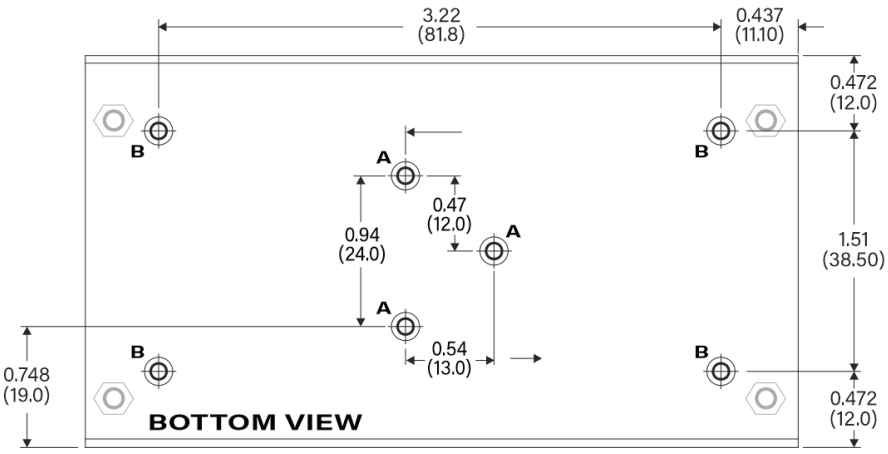


Pin Connections

Pin	Function	JST Mating Housing	JST Terminal
1	AC-IN (N)	VHR-3N	SVH-41T-P1.1
2	AC-IN (L)		
4	+VOUT	Terminal: M3.5 Pan HD Screws Torque to 8 lbs/In (90 cNm) Max	
5	-VOUT		

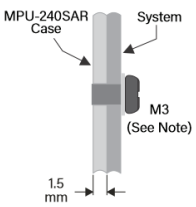
Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.02 (±0.50)
- Power supply weight is: 12.34 Oz (350g)
- The middle pin is removed on the input connector

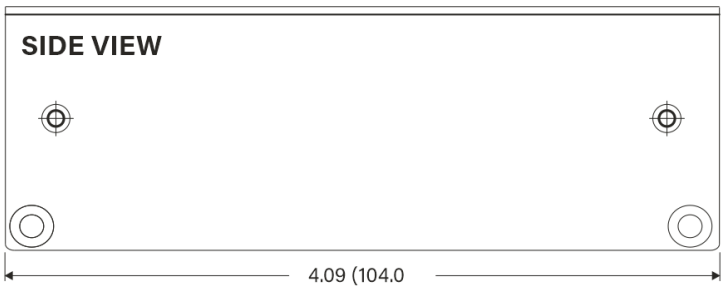


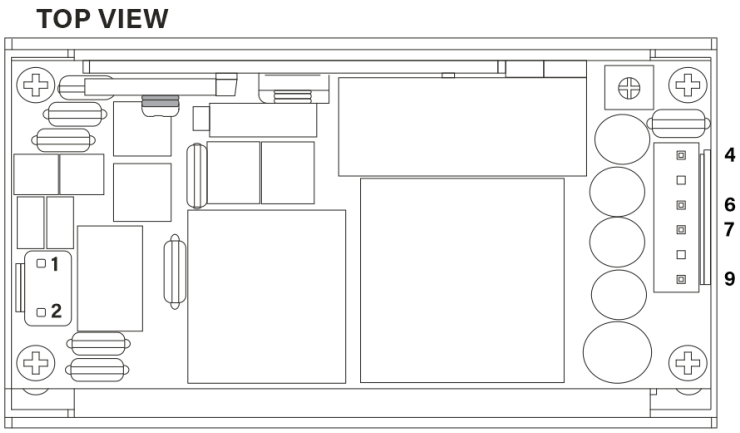
Mounting Note:

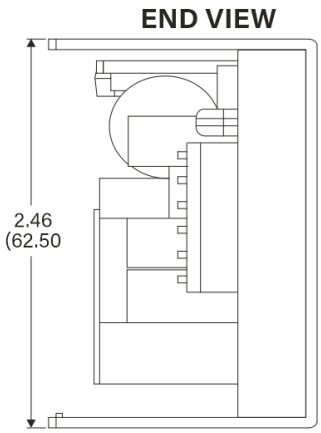
- "B" is for attaching the unit to a PCB or chassis only. Suggested is a pan head machine screw: M3 x 0.5P
- "A" is for attaching the unit to a chassis only. Suggested is a pan head machine screw: M3 x 0.5P
- Torque: 3 ±0.5 Kgf.cm

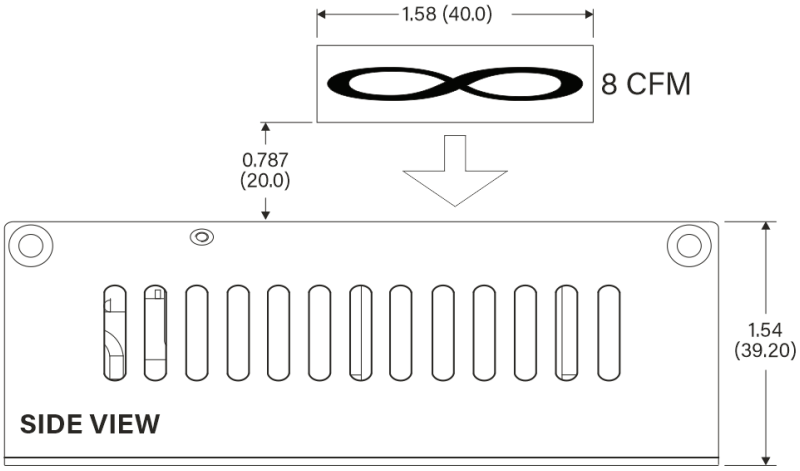


Mechanical Dimensions (Optional Molex Connections)









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7, 9	-VOUT		

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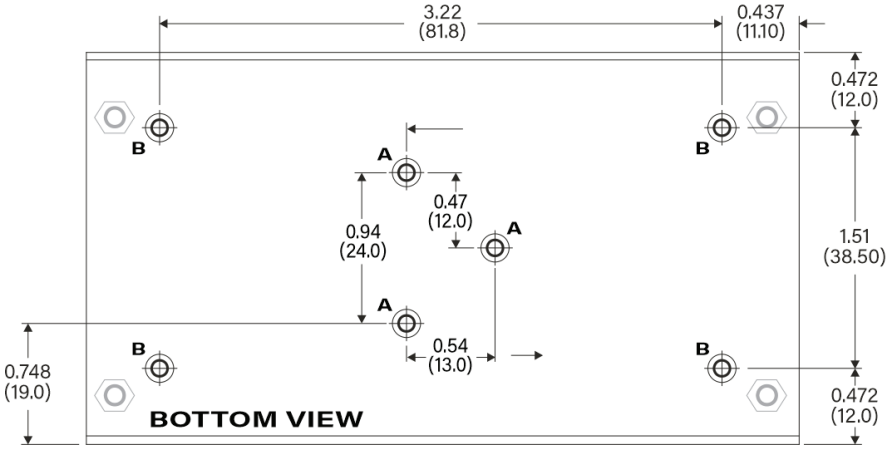

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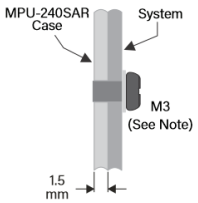

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