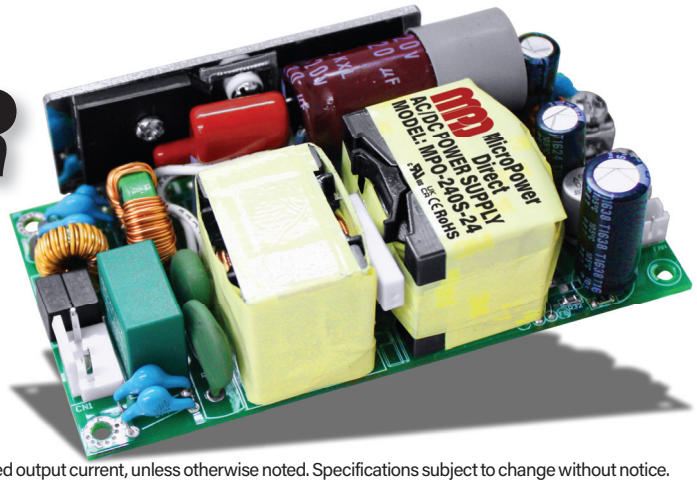
MPO-240SAR

Very Compact, 2" x 4" High Performance, 240W AC/DC Power Supplies



Key Features:

- 240W Output Power
- Universal 90-264 VAC Input
- Small 2.05 x 4.02 x 1.09 Size
- EN 62368 Approved (UL)
- Efficiency To 94%
- -30°C to +80°C Temp Range
- Active PFC
- 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, See Note 3	115 VAC	10			mS
Over Voltage Protection	Autorecovery				
Over Power Protection, 110 - 210%	Autorecovery				
Minimum Load			0		%
Short Circuit Protection, See Note 4	Hiccup Mode (Autorecovery)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage, See Note 5	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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Model Selection Guide

Model Number	Input		Output					Capacitive Load (μF, Max)	Efficiency (230 VAC, %, Typ)
	Current (A Max)		Voltage (VDC)	Voltage Adjust Range	Current (A Max)				
	115 VAC	230 VAC			With 8CFM Fan	Conduction Cooling	Natural Convection		
MPO-240SAR-12(A)	3.0	1.50	12	±5%	20	15	13.33	8,000	92.5
MPO-240SAR-24(A)	3.0	1.50	24	±5%	10	7.5	6.66	3,000	93.0
MPO-240SAR-48(A)	3.0	1.50	48	±5%	5.0	3.75	3.33	470	94.0

Notes:

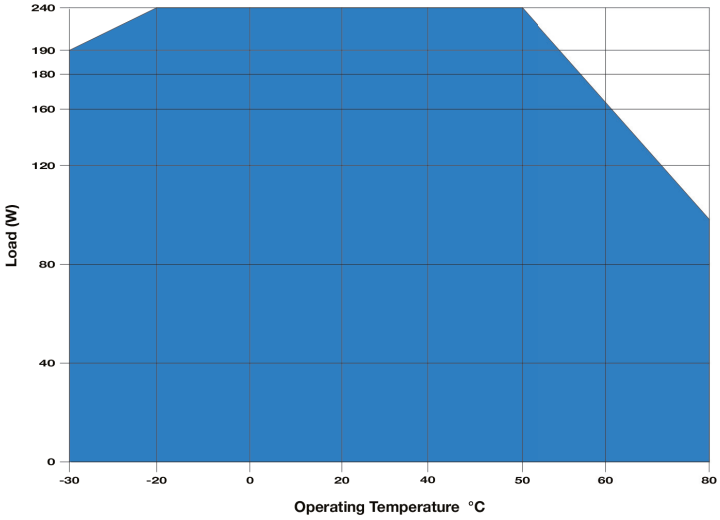
1. See the input voltage derating curve below.
2. Ripple and noise are measured at 20 Mhz bandwidth with a 0.1μF and a 47 μF capacitor connected in parallel as close to the unit output terminals as possible.
3. Hold-up time is measured at 90% VOUT.
4. Output short circuit protection level 1 is provided by a "hiccup mode" circuit. The unit recovers automatically when the fault condition is removed. Protection level 2 occurs in the event of an instantaneus high current. Under level 2, the unit latches off, and must have the input power recycled to operate normally again.
5. It is recommended that the supply isolation only be tested with a DC voltage. If an AC voltage is used, please disconnect all Y-Capacitors from the unit.
6. The "FAN" connection should be used to provide power for an external fan used to cool the power supply. It should not be used to drive any other devices.
   The chart at right shows the Fan supply output voltage under varying conditions
7. The power supply must be secured to the users metal case by using the four mounting holes at the corners for either class I or class II equipment.
8. At least 15 mm insulation distance should be maintained between the botom of the unit and the user system.
9. **Caution:** The unit uses Double Pole neutral fusing. Disconnect the mains before servicing. For more information, contact the factory.

The standard unit comes with two screw terminals for the output connection. If a terminal block (see pages 3 & 4) is preferred, add an A to the part number.

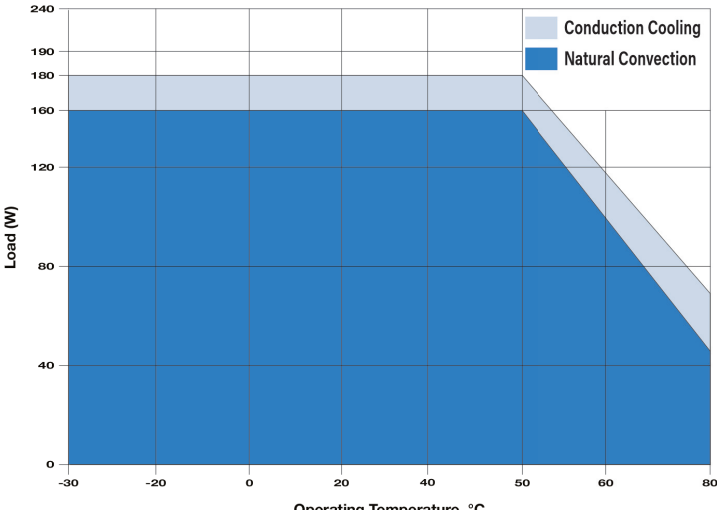
Fan Supply (See Note 6)

Main Output Power	Fan Voltage		
	At 0.1A	At 0.25A	At 0.5A
25%	12.1V	11.8V	11.5V
50%	12.2V	11.9V	11.7V
75%	12.3V	12.0V	11.8V
100%	12.5V	12.2V	11.9V

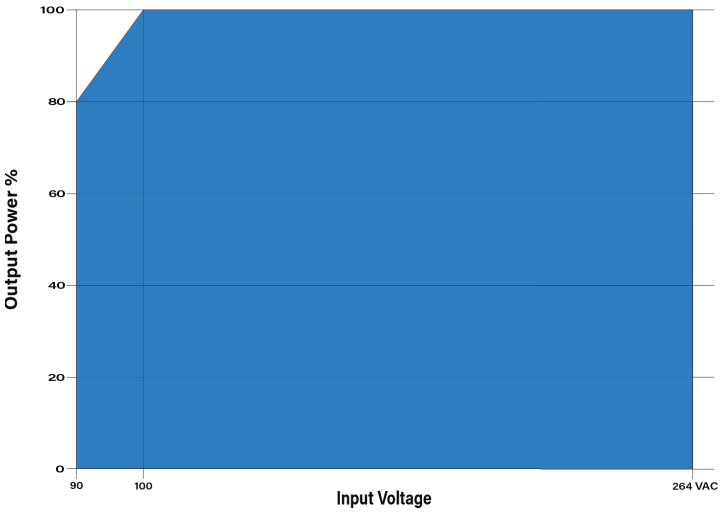
Power Derating Curve, With 8 CFM Air Flow



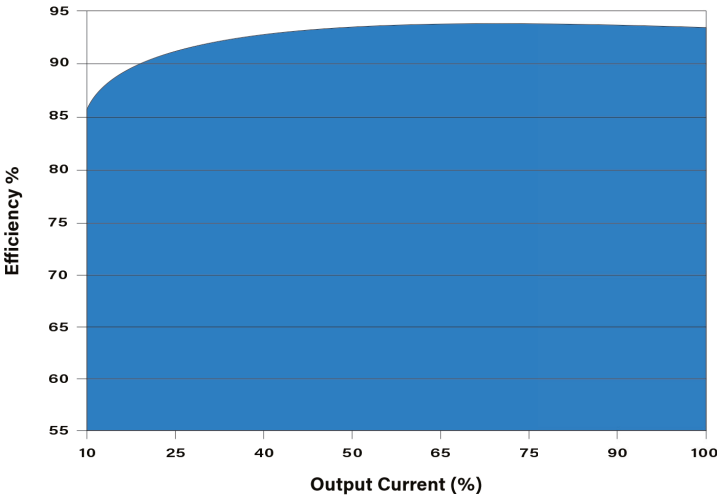
Power Derating: Natural Convection & Conduction



Power Derating Curve, Input Voltage



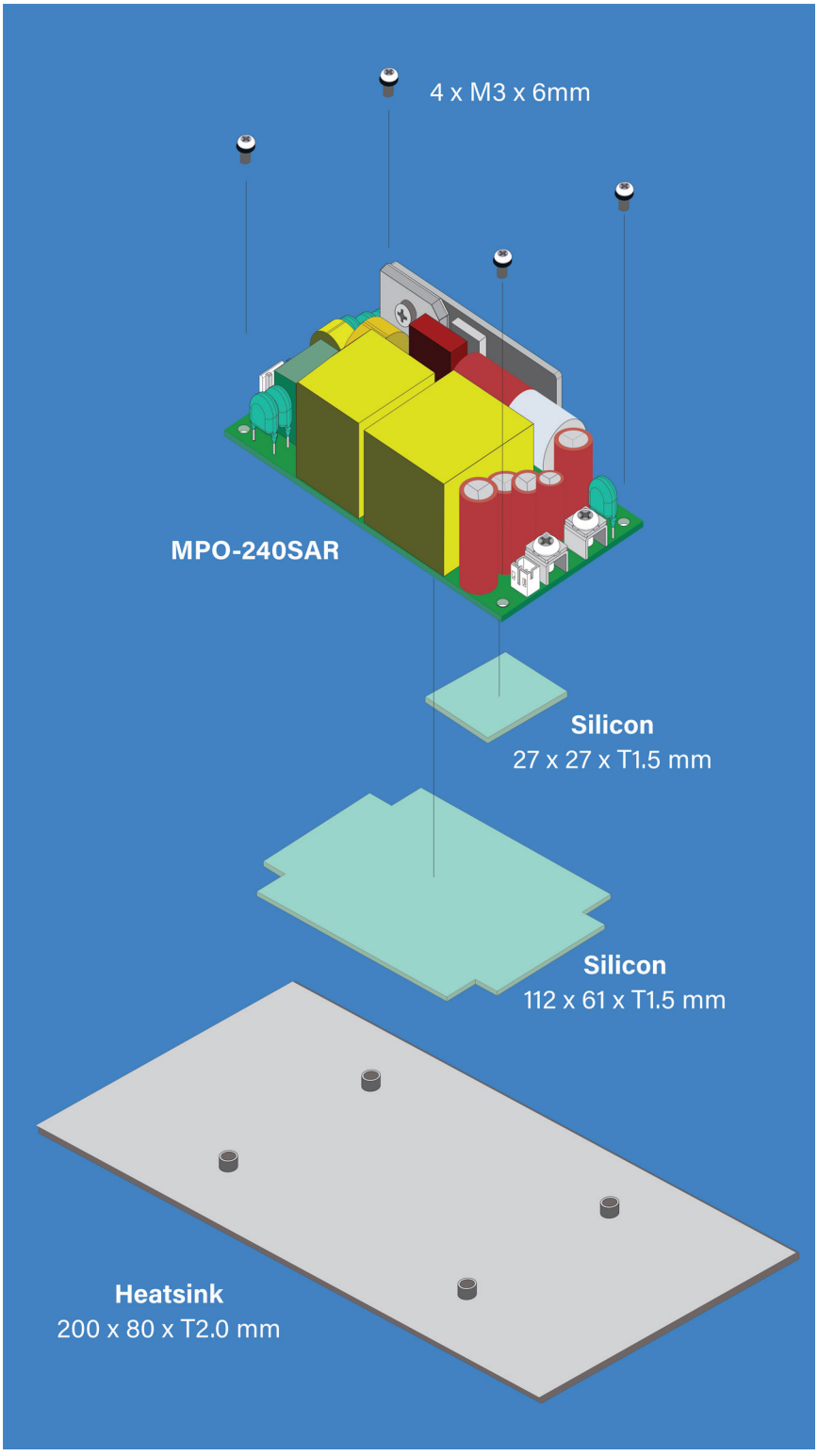
Efficiency vs Output Load, 48 VOUT



Power Derating Curve, Input Voltage

If the unit cannot be attached to the application case or a metal chassis, it is suggested that a heatsink plate be added. is For optimum use (both EMI & thermal performance), the unit should be mounted on an aluminum plate, as shown in the illustration below.

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 as shown. The silicon pads will improve the transfer of heat.

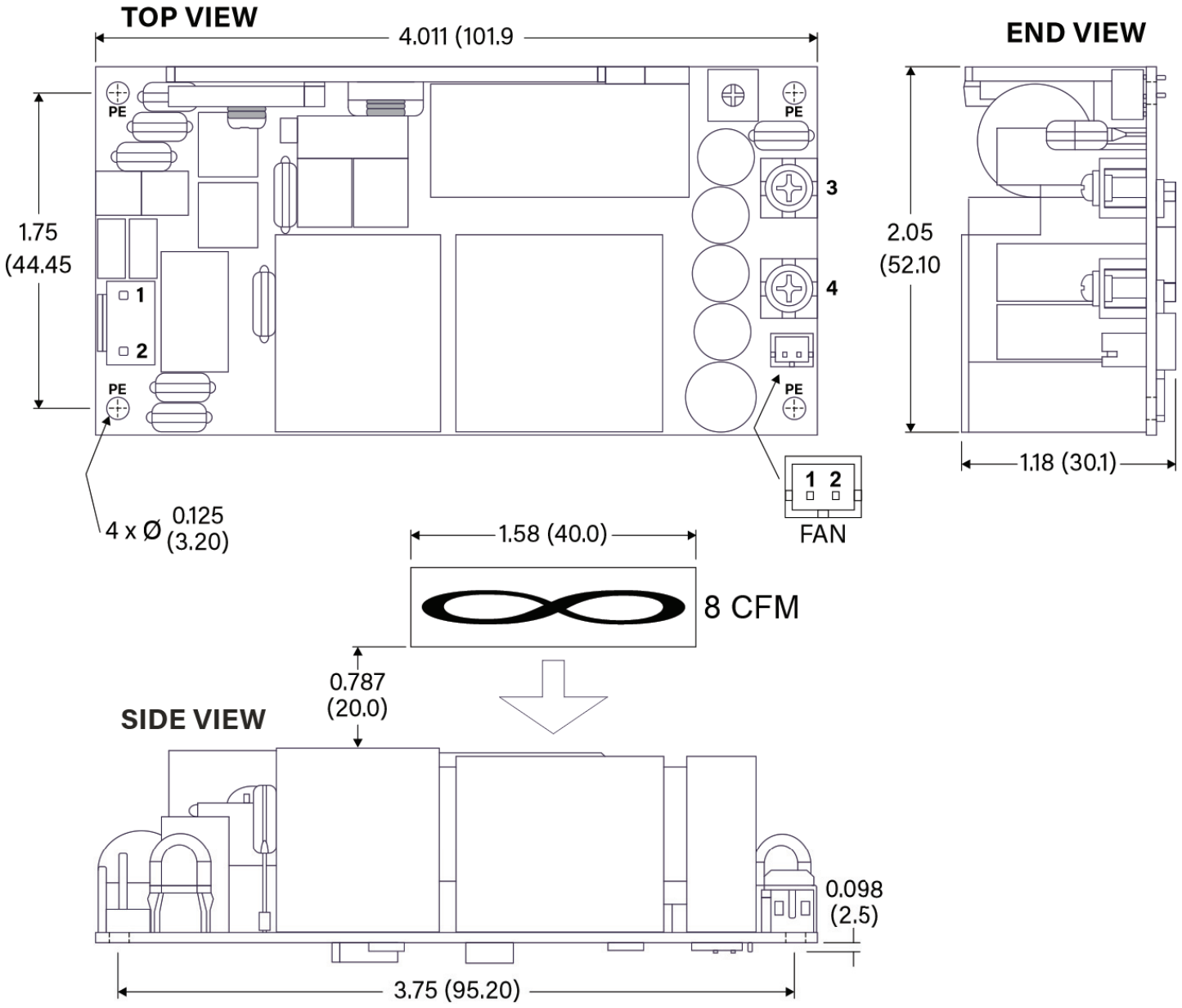


If an Open Frame supply doesn't quite fit your requirements, **MPD** also offers this power supply as a U-Channel or fully Enclosed model. Call today or visit our website for complete information.

MPU-240SAR

MPU-240SARC

Mechanical Dimensions: MPO-240SAR-xx



Pin Connections

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

Pin Connections: Fan

Pin	Function	JST Mating Housing	JST Terminal
1	+AUX Out	PHR-2	SPH-002T-P0.5L
2	-AUX Out		

Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.02 (±0.50)
- Power supply weight is: 7.76 Oz (220g)
- The middle pin is removed on the input connector

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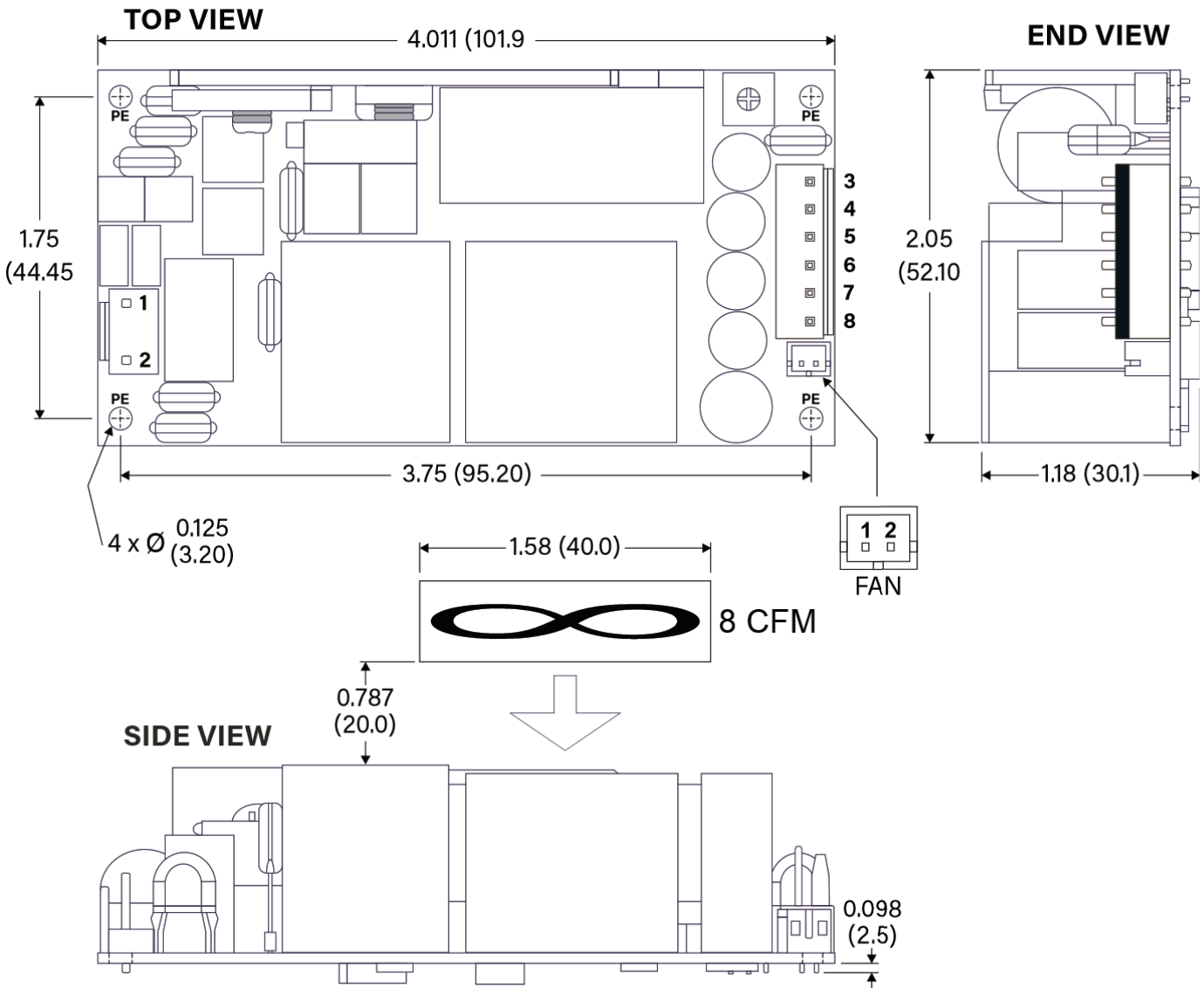
Mechanical Dimensions: MPO-240SAR-xxA



Pin Connections

Pin	Function	JST Mating Housing	JST Terminal
1	AC-IN (N)	VHR-3N	SVH-41T-P1.1
2	AC-IN (L)		
3	+Vout	VHR-6N	SVH-41T-P1.1
4	+Vout		
5	+Vout		
6	-Vout	VHR-6N	SVH-41T-P1.1
7	-Vout		
8	-Vout		

Pin Connections: Fan

Pin	Function	JST Mating Housing	JST Terminal
1	+AUX Out	PHR-2	SPH-002T-P0.5L
2	-AUX Out		

Notes:

- All dimensions are typical in inches (mm)
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