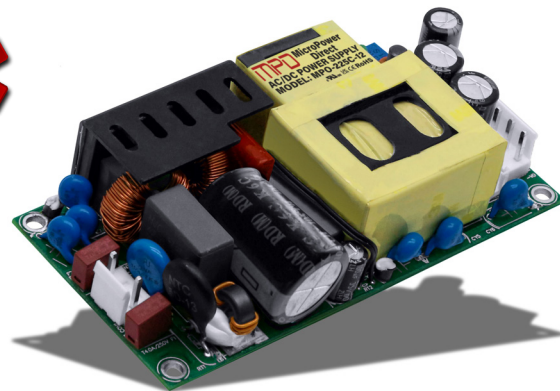


MPO-225C



Compact, Open Frame 225W, Industrial/Medical AC/DC Power Supplies



Key Features:

- 225W Output Power
- Compact 4" x 2" Size
- UL 60601 Approval
- UL 62368 Approval
- 4 kV I/O Isolation
- Insulation 2 x MOPP
- Suitable For BF Apps
- Meets EN 55032 B
- Meets EN 60335
- Meets EN 61558
- <0.1mA Leakage Current
- Active PFC
- -40°C to +70°C Operation



MicroPower Direct

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Unit 1
Easton, MA 02375
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W: www.micropowerdirect.com



Electrical Specifications

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

Input		Min.	Typ.	Max.	Units
Parameter	Conditions				
Input Voltage Range		85		264	VAC
Input Frequency		120		370	VDC
Input Current	115 VAC	47		63	Hz
Leakage Current	230 VAC			3.0	A
Inrush Current, Cold Start	240 VAC			2.0	A
Power Factor, Full Load	115 VAC	0.99			---
	230 VAC	0.95			---
Output		Min.	Typ.	Max.	Units
Parameter	Conditions				
Output Voltage Accuracy, See Note 9	0 - 100% Load		±1.0		%
Line Regulation	At Rated Load		±0.5		%
Load Regulation	0 - 100% Load		±0.5		%
Ripple & Noise (20 MHz), See Note 1	12V Output			60	mV
	54V Output			200	mV
	All Other Models			100	mV
Hold-Up Time, 230 VAC, 25°C	Air Cooling		16		mSec
	13 CFM		12		mSec
Temperature Coefficient			±0.03		%/°C
Temperature Derating	Air Cooling	+45°C to +70°C	2.0		%/°C
	13CFM	+50°C to +70°C	2.5		%/°C
		-40°C to -30°C	2.0		%/°C
Input Voltage Derating	85 - 115 VAC	1.0			%/VAC
Standby Power Consumption			0.50		W
Over Current Protection	Self Recovery	110			%IOUT
Over Temperature Protection	See Note 2				%IOUT
Fan Power	15V Output			24V (±15%) @ 0.25A	
	All Other Models			12V (±15%) @ 0.5A	
Short Circuit Protection, See Note 3	Continuous (Autorecovery)				
General		Min.	Typ.	Max.	Units
Parameter	Conditions				
Isolation Voltage, See Note 4	Input to Output	4,000			VAC
	Input to Ground	1,500			VAC
	Output to Ground	1,500			VAC
Insulation Resistance, See Note 5		50			MΩ
Isolation Level	Input to Output		2 x MOPP		
	Input to Ground		1 x MOPP		
	Output to Ground		1 x MOPP		
Environmental		Min.	Typ.	Max.	Units
Parameter	Conditions				
Operating Temperature Range	Ambient	-40		+70	°C
Storage Temperature Range		-40		+85	°C
Cooling	Free Air Convection (See Derating Curves)				
Humidity, RH, Non-condensing	Storage	10		95	%
	Operating	20		90	%
Physical		Min.	Typ.	Max.	Units
Parameter	Conditions				
Size		4.00 x 2.04 x 1.00 in. (See Mechanical Drawing on Page 4)			
Weight		6.17 oz (175g) (See Mechanical Drawing on Page 4)			
Reliability Specifications		Min.	Typ.	Max.	Units
Parameter	Conditions				
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	300			kHours
	UL/cUL 60601-1 recognition (UL certificate)				
	UL/cUL 62368-1 recognition (UL certificate)				
Safety Standards	EN60335				
Safety Class	Class I (with PE connected), Class II (without PE)				

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Model Number	Cooling Method	Output				Over Voltage Protection (VDC) See Note 6	Output Capacitive Load (μ F Max)	Efficiency @ 230 VAC (% Typ)
		Voltage (VDC)	Current (A)		Power (W)			
			Rated	% Min.		Adj Range (VDC)		
MPO-225C-12	Air Cooling	12.0	11.67	0.00	140	11.80 - 12.60	16.0	93.0
	13 CFM		18.75		225			
MPO-225C-15	Air Cooling	15.0	9.33	0.00	140	14.70 - 15.80	20.0	93.0
	13 CFM		15.00		225			
MPO-225C-18	Air Cooling	18.0	7.78	0.00	140	17.60 - 18.79	25.0	93.0
	13 CFM		12.50		225			
MPO-225C-19	Air Cooling	19.0	7.37	0.00	140	18.80 - 20.00	25.0	93.0
	13 CFM		11.84		225			
MPO-225C-24	Air Cooling	24.0	5.83	0.00	140	23.50 - 25.20	32.0	94.0
	13 CFM		9.40		225			
MPO-225C-27	Air Cooling	27.0	4.81	0.00	130	26.50 - 28.40	35.0	94.0
	13 CFM		8.35		225			
MPO-225C-36	Air Cooling	36.0	3.88	0.00	140	35.28 - 37.80	50.0	94.0
	13 CFM		6.25		225			
MPO-225C-48	Air Cooling	48.0	2.91	0.00	140	47.10 - 50.40	60.0	94.0
	13 CFM		4.70		225			
MPO-225C-54	Air Cooling	54.0	2.59	0.00	140	52.50 - 55.50	60.0	94.0
	13 CFM		4.17		225			

Notes:

- Output ripple is measured at 20 MHz bandwidth using 0.1 μ F and 10 μ F capacitors connected in parallel as close to the power supply terminals as possible.
- After an overtemperature fault, the output voltage is turned off. When the temperature returns to normal, repower the unit to return to normal operation.
- Output short circuit protection is provided by a "hiccup mode" circuit. The unit recovers <3 seconds after the fault condition is removed.
- Input-output, input-ground and output-ground isolation are tested for 60 seconds with a leakage current of <10 mA.
- Insulation resistance is tested at an ambient temperature of 25°C $\pm$ 5°C, at a relative humidity of <95%RH (no condensation) with a test voltage of 500 VDC.
- After an overvoltage fault, the unit power must be recycled for the unit to recover.
- All units include an on-board slow blow fuse.
- Output voltage accuracy includes the setting error, line regulation, and load regulation. The output voltage can be adjusted by the ADJ knob. Turn clockwise to decrease and counterclockwise to increase.

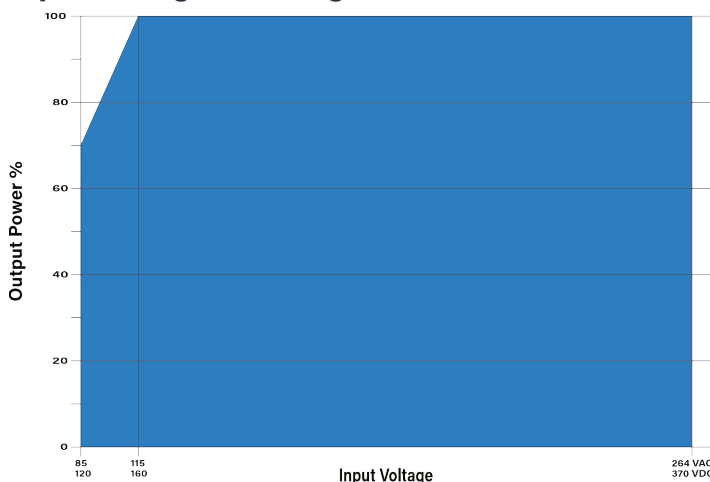
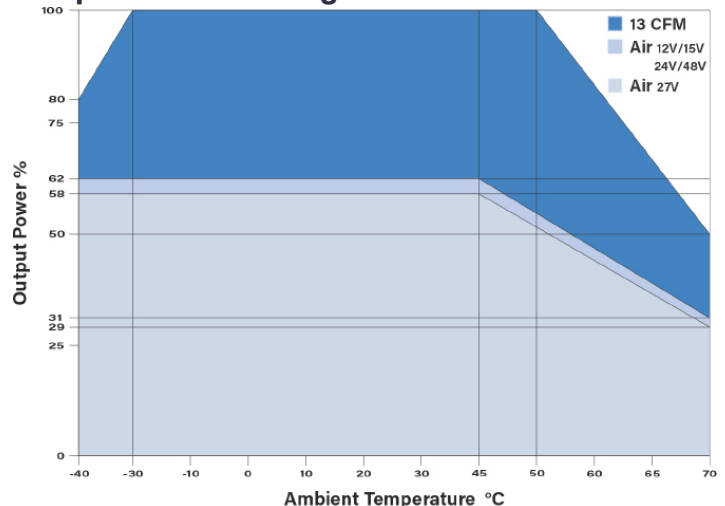
The **MPO-225C** is also available with a compact metal case.
Contact the factory for more information.
(Example **MPO-225C-12-C**)

EMC Characteristics

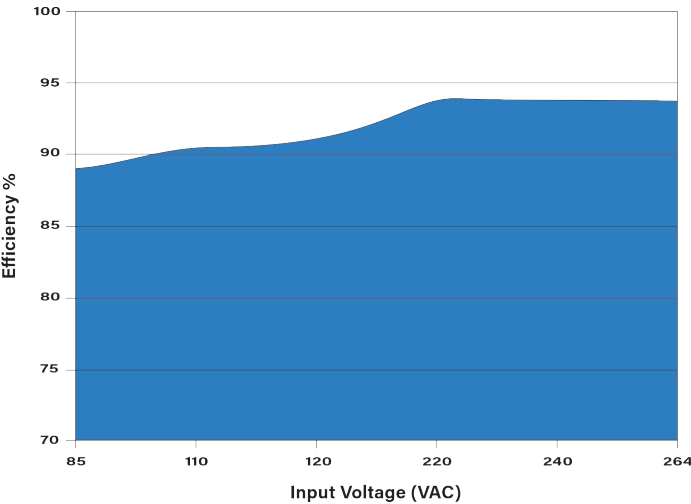
Parameter	Conditions	Criteria	Level
Conducted Emissions	EN 55032		Class B
Radiated Emissions	EN 55032		Class B (Category I)
			Class A (Category II)
Harmonic Current	EN 61000-3-2		Class A & Class D
ESD	EN 61000-4-2	A	$\pm$ 15 kV Air $\pm$ 8 kV Contact
RS	EN 61000-4-3	A	10V/m
EFT	EN 61000-4-4	A	$\pm$ 4 kV
Surge	EN 61000-4-5	A	$\pm$ 2 kV Line to Line $\pm$ 4 kV Line to Gnd
CS	EN 61000-4-6	A	10V rms
Dips	EN 61000-4-11	B	0%, 70%

Notes:

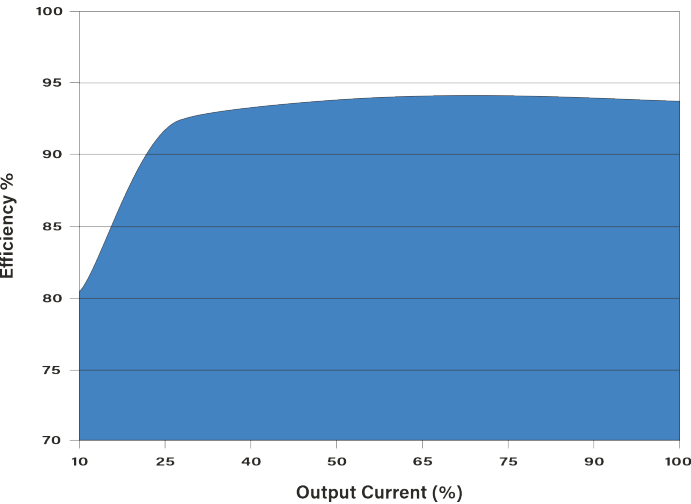
- All EMC tests are conducted on a metal plate measuring 360 x 360 mm with a thickness of 1mm. Contact the factory for more information.

Input Voltage Derating**Temperature Derating**

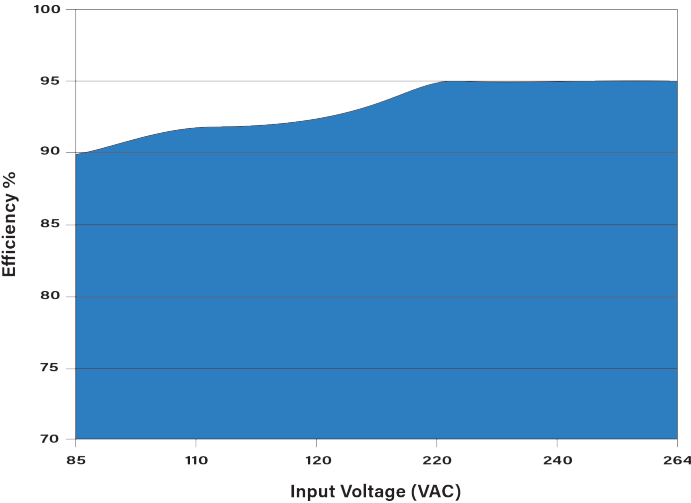
Efficiency vs Input Voltage: 12 V_{OUT}



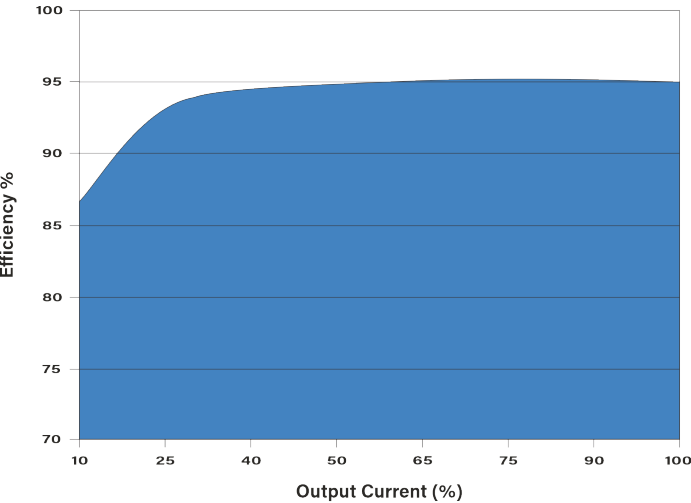
Efficiency vs Output Load: 12 V_{OUT}



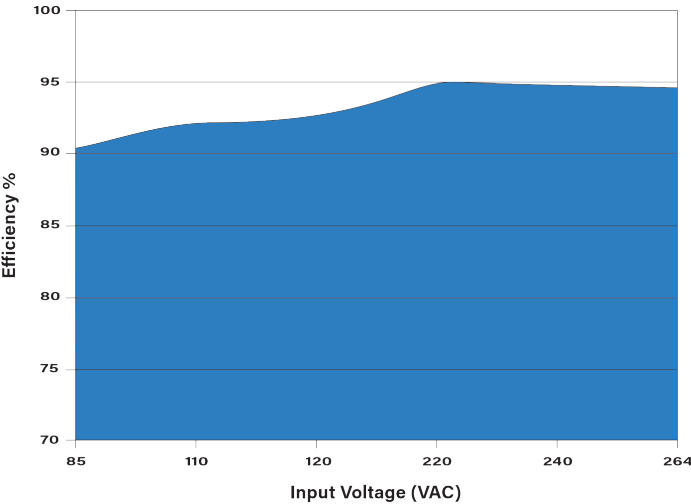
Efficiency vs Input Voltage: 24 V_{OUT}



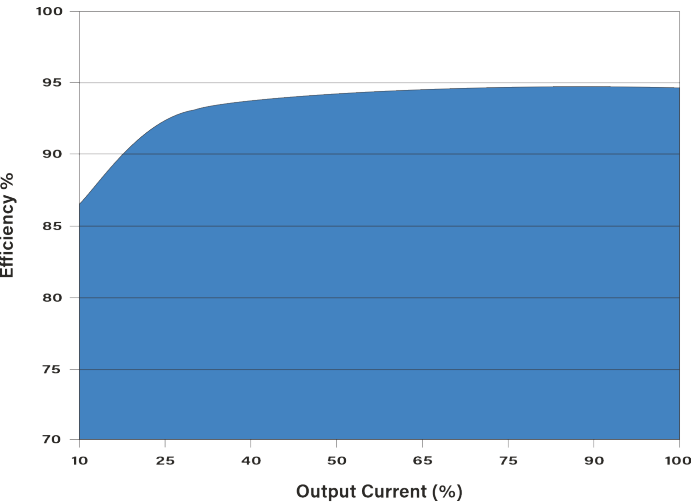
Efficiency vs Output Load: 24 V_{OUT}



Efficiency vs Input Voltage: 48 V_{OUT}

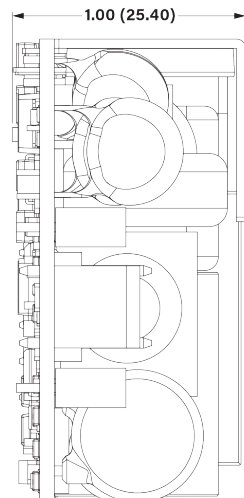


Efficiency vs Output Load: 48 V_{OUT}

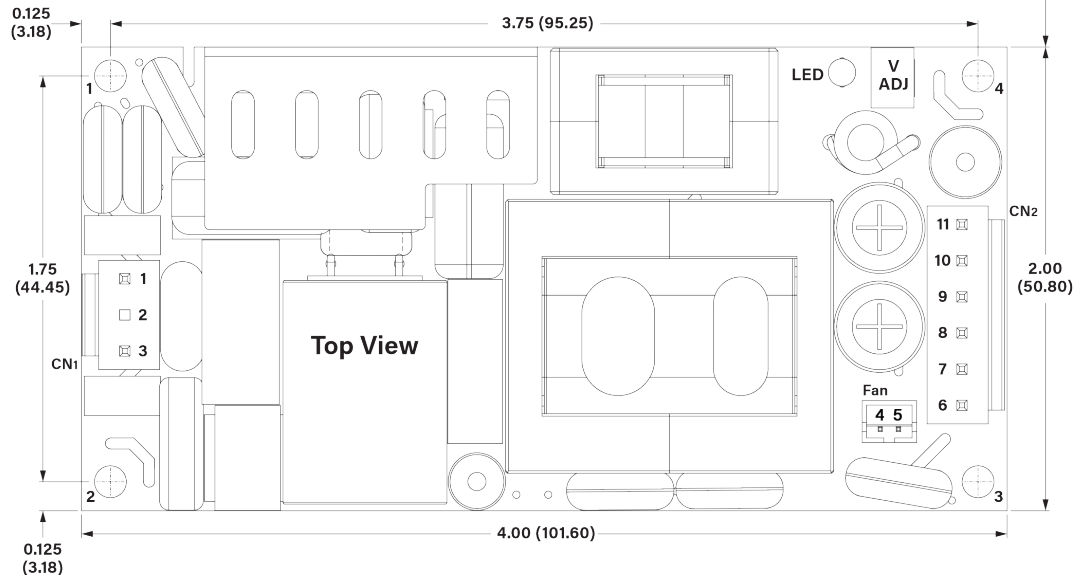


FAN: 13 CFM
Recommended Size:
40 x 40 x 15 mm

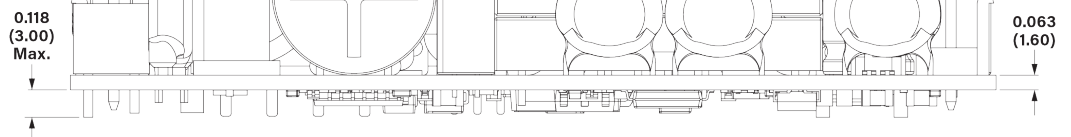
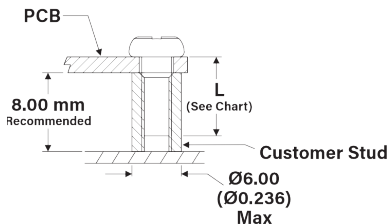
Airflow
Direction



End View



Top View



Side View

Connections

Input Connector (CN1):

- JST-B3P-VH or equivalent (one pin removed)
- Mating Terminal: JST VHR or equivalent
- Contact: JST SVH-21T-P1.1

Pin	Function
1	AC-Neutral
2	Removed
3	AC-Line

Fan Connector:

- JST-B2B-PH-K-S or equivalent
- Mating Connector Housing: JST PHR-2 Terminal: JST SPH-002T-P0.56 or equivalent

Pin	Function
1	-Fan
2	+Fan

Output Connector (CN2):

- JST-B6P-VH or equivalent
- Mating Terminal: JST VHR or equivalent
- Contact: JST SVH-21T-P1.1

Pin	Function
6	-V _{OUT}
7	-V _{OUT}
8	-V _{OUT}
9	+V _{OUT}
10	+V _{OUT}
11	+V _{OUT}

Notes:

- All dimensions are typical in inches (mm)
- General Tolerance = ± 0.039 (± 1.0)
- Weight (Typ) = 6.17 Oz (175g)
- A minimum of 10 mm should be maintained between the power supply and any other components
- The unit uses double pole, neutral fusing. Disconnect the mains before servicing.

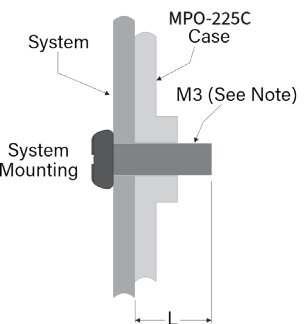
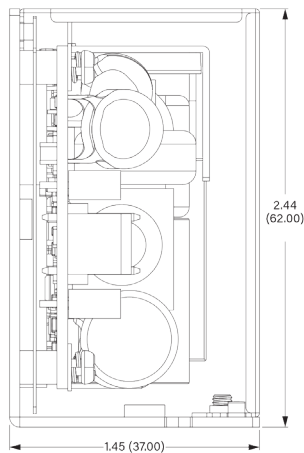
Unit Mounting Screws:

Position	Screw	Max L	Max Torque
1, 2, 3, 4	M3	6 mm	0.4N•m

1. For class I systems, points 1 & 3 must be connected to earth grd.
2. For class II systems, points 1 & 3 must be connected together

Mechanical Dimensions

End View



Notes:

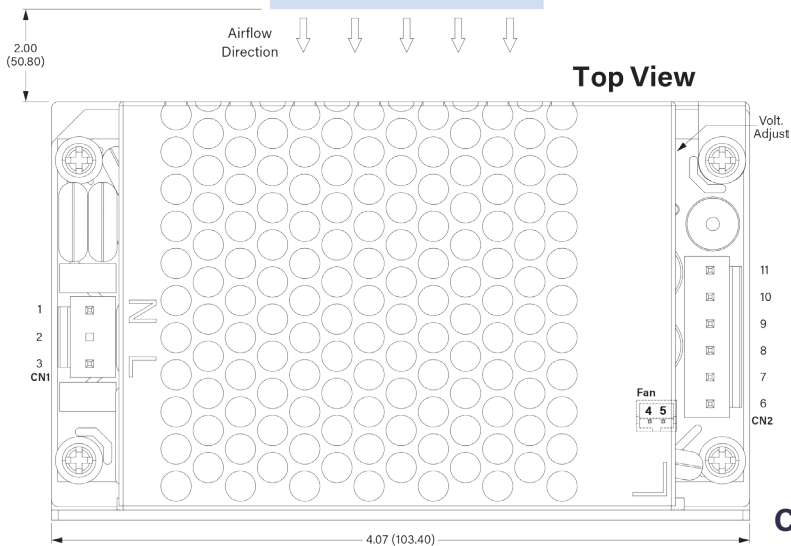
- All dimensions are typical in inches (mm)
- General Tolerance = ± 0.039 (± 1.0)
- Weight (Typ) = 9.17 Oz (260g)
- A minimum of 10 mm should be maintained between the power supply and any other components
- The unit uses double pole, neutral fusing. Disconnect the mains before servicing.

Unit Mounting Screws:

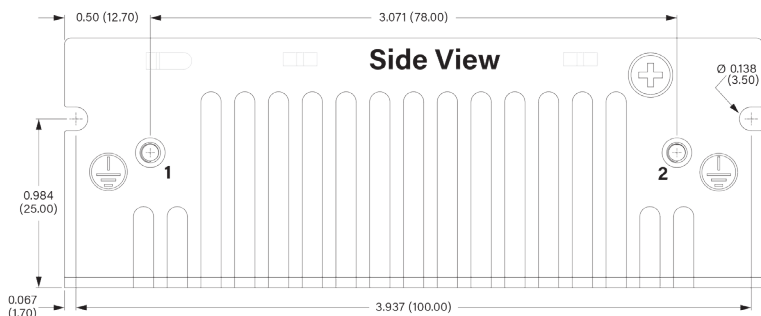
Position	Screw	Max L	Max Torque
1, 2	M3	4 mm	0.4N·m
3, 4	M3	3 mm	0.4N·m

1. For class I systems, unit must be connected to earth grd.
2. For class II systems, no connection to earth ground

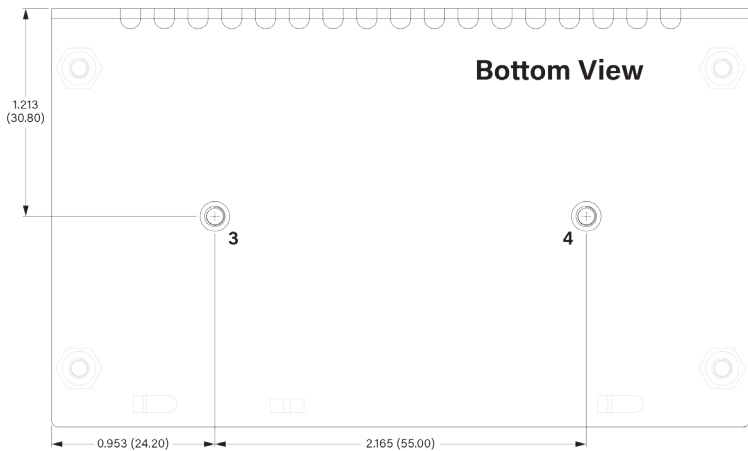
FAN: 13 CFM
Recommended Size:
40 x 40 x 15 mm



Top View



Side View



Bottom View

Connections

Input Connector (CN1):

- JST-B3P-VH or equivalent (one pin removed)
- Mating Terminal: JST VHR or equivalent
- Contact: JST SVH-21T-P1.1

Pin	Function
1	AC-Neutral
2	Removed
3	AC-Line

Output Connector (CN2):

- JST-B6P-VH or equivalent
- Mating Terminal: JST VHR or equivalent
- Contact: JST SVH-21T-P1.1

Pin	Function
6	-V _{OUT}
7	-V _{OUT}
8	-V _{OUT}
9	+V _{OUT}
10	+V _{OUT}
11	+V _{OUT}

Fan Connector:

- JST-B2B-PH-K-S or equivalent
- Mating Connector Housing: JST PHR-2 Terminal: JST SPH-002T-P0.56 or equivalent

Pin	Function
1	-Fan
2	+Fan