

Open Frame (Suffix "O")



Size: 4.00 x 2.00 x 1.16 inches

U-Chassis (Suffix "U")



Size: 4.60 x 2.44 x 1.54 inches

Enclosed Case (Suffix "C")



Size: 4.60 x 2.44 x 1.54 inches

Enclosed w/ External Fan (Suffix "F")



Size: 4.60 x 2.44 x 1.94 inches

Din Rail (Suffix "D")



Size: 4.60in x 2.44in x 1.54in

Din Rail with External Fan (Suffix "DF")



Size: 4.60in x 2.44in x 1.54in



FEATURES

- Protection Type Class I or Class II
- Active Power Factor Correction
- 2 x 4 Inch Footprint
- High Efficiency up to 92%
- Adjustable Output Voltage
- Built-in EMI Filter
- 5000M Operating Altitude
- Low Leakage Current under 100µF
- Low Standby Power Consumption under 0.3W
- -25°C to +80°C Operating Temperature Range
- Up to 150W with 10CFM Forced Air
- 4000VAC Input to Output 2 MOPP Insulation
- Over Voltage, Over Load, and Short Circuit Protection
- Designed to Meet Energy Efficiency Level VI
- 85~264 VAC (120~370 VDC) Input Voltage Range
- Compliant to RoHS EU Directive 2011/65/EU
- CE Marked
- ANSI/AAMI ES60601-1, EN60601-1, and IEC60601-1 3rd Edition Medical Approvals
- Open Frame, U-Chassis, Enclosed Case, Enclosed Case with External Fan, DIN Rail and DIN Rail with External Fan Mechanical Options

DESCRIPTION

The PSMAF150 series of AC/DC medical power supplies provides up to 150 Watts of output power with 10CFM forced air and up to 110 Watts with convection cooling in a compact 2 x 4 inch footprint. These supplies feature a universal 85-264VAC (120~370 VDC) input, enabling them to be used anywhere in the world. The off load power draw is less than 0.3 Watts, which complies with many energy-saving initiatives. 12V, 15V, 24V, 28V, 36V, and 48VDC single output voltages are available for this series, all of which have a ±10% adjustment range. These supplies also feature a low leakage current of less than 100µA at 264VAC and are designed to withstand 4000VAC, input to output. The PSMAF150 series has an operating temperature range of -25°C to +80°C, power factor correction, and a high efficiency up to 92%. These supplies are also protected against short circuit, over voltage, and over current conditions. The PSMAF150 series has ANSI/AAMI ES60601-1, EN60601-1, and IEC60601-1 3rd edition medical approvals, are CE Marked, are designed to meet Efficiency Level VI and meet the conducted and radiated EMI requirements of EN55011, EN55022 and FCC Part 18. Open frame, U-chassis, enclosed case, enclosed case with external fan, DIN rail and DIN rail with external fan mechanical options are available. Class I and Class II protection types are also available.

MODEL SELECTION TABLE

Model Number ⁽¹⁾	Input Voltage	Output Voltage	Output Current		Ripple & Noise	Output Power		Efficiency
			10CFM Forced Air	Convection		10CFM Forced Air	Convection	
PSMAF150-12S-O	85 - 264 VAC (120 - 370 VDC)	12 VDC	12.5A	8.34 A	120mVp-p	150W	100W	91%
PSMAF150-15S-O		15 VDC	10A	7.34 A	150mVp-p	150W	110W	92%
PSMAF150-24S-O		24 VDC	6.25A	4.59 A	220mVp-p	150W	110W	92%
PSMAF150-28S-O		28 VDC	5.36A	3.93 A	220mVp-p	150W	110W	92%
PSMAF150-36S-O		36 VDC	4.17A	3.06 A	250mVp-p	150W	110W	92%
PSMAF150-48S-O		48 VDC	3.13A	2.09 A	250mVp-p	150W	100W	92%
PSMAF150-12S-U	85 - 264 VAC (120 - 370 VDC)	12 VDC	12.5A	8.34 A	120mVp-p	150W	100W	91%
PSMAF150-15S-U		15 VDC	10A	7.34 A	150mVp-p	150W	110W	92%
PSMAF150-24S-U		24 VDC	6.25A	4.59 A	220mVp-p	150W	110W	92%
PSMAF150-28S-U		28 VDC	5.36A	3.93 A	220mVp-p	150W	110W	92%
PSMAF150-36S-U		36 VDC	4.17A	3.06 A	250mVp-p	150W	110W	92%
PSMAF150-48S-U		48 VDC	3.13A	2.09 A	250mVp-p	150W	100W	92%
PSMAF150-12S-C	85 - 264 VAC (120 - 370 VDC)	12 VDC	12.5A	10.84 A	120mVp-p	150W	100W	91%
PSMAF150-15S-C		15 VDC	10A	9 A	150mVp-p	150W	110W	92%
PSMAF150-24S-C		24 VDC	6.25A	5.63 A	220mVp-p	150W	110W	92%
PSMAF150-28S-C		28 VDC	5.36A	4.83 A	220mVp-p	150W	110W	92%
PSMAF150-36S-C		36 VDC	4.17A	3.75 A	250mVp-p	150W	110W	92%
PSMAF150-48S-C		48 VDC	3.13A	2.71 A	250mVp-p	150W	100W	92%
PSMAF150-12S-F	85 - 264 VAC (120 - 370 VDC)	12 VDC	12.5A	10.84 A	120mVp-p	150W	100W	91%
PSMAF150-15S-F		15 VDC	10A	9 A	150mVp-p	150W	110W	92%
PSMAF150-24S-F		24 VDC	6.25A	5.63 A	220mVp-p	150W	110W	92%
PSMAF150-28S-F		28 VDC	5.36A	4.83 A	220mVp-p	150W	110W	92%
PSMAF150-36S-F		36 VDC	4.17A	3.75 A	250mVp-p	150W	110W	92%
PSMAF150-48S-F		48 VDC	3.13A	2.71 A	250mVp-p	150W	100W	92%
PSMAF150-12S-D	85 - 264 VAC (120 - 370 VDC)	12 VDC	12.5A	10.84 A	120mVp-p	150W	100W	91%
PSMAF150-15S-D		15 VDC	10A	9 A	150mVp-p	150W	110W	92%
PSMAF150-24S-D		24 VDC	6.25A	5.63 A	220mVp-p	150W	110W	92%
PSMAF150-28S-D		28 VDC	5.36A	4.83 A	220mVp-p	150W	110W	92%
PSMAF150-36S-D		36 VDC	4.17A	3.75 A	250mVp-p	150W	110W	92%
PSMAF150-48S-D		48 VDC	3.13A	2.71 A	250mVp-p	150W	100W	92%
PSMAF150-12S-DF	85 - 264 VAC (120 - 370 VDC)	12 VDC	12.5A	10.84 A	120mVp-p	150W	100W	91%
PSMAF150-15S-DF		15 VDC	10A	9 A	150mVp-p	150W	110W	92%
PSMAF150-24S-DF		24 VDC	6.25A	5.63 A	220mVp-p	150W	110W	92%
PSMAF150-28S-DF		28 VDC	5.36A	4.83 A	220mVp-p	150W	110W	92%
PSMAF150-36S-DF		36 VDC	4.17A	3.75 A	250mVp-p	150W	110W	92%
PSMAF150-48S-DF		48 VDC	3.13A	2.71 A	250mVp-p	150W	100W	92%

NOTES

- The "X" in the model number represents the package type. It can be "O" for open frame, "U" for U-chassis, "C" for enclosed case, "F" for enclosed case with external fan, "D" for DIN rail or "DF" for DIN rail with external fan. DIN rail is only available for enclosed case type models.
- Class I and Class II protection types are also available for this series. Class I comes standard and for Class II add the suffix "B" to the model number.

SPECIFICATIONS: PSMAF150 SERIES

All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
INPUT SPECIFICATIONS						
Operating Input Voltage Range	AC input		85		264	VAC
	DC input		120		370	VDC
Input Frequency	AC input		47		63	Hz
Input Current	115VAC and full load				1.7	A
	230VAC and full load				0.8	
No load Input Power	230VAC	Option -F (With Fan)		0.6		W
	230VAC	Others			0.3	
Power Factor			0.95			
Input Inrush Current	230VAC				60	A
Input Protection	Internal fuse in line and neutral			T3.15A / 250VAC		
OUTPUT SPECIFICATIONS						
Output Voltage			See Table			
Initial Set Voltage Accuracy	230VAC and full load		-1.0		+1.0	%
Line Regulation	Low line to high line at full load		-0.2		+0.2	%
Load Regulation	No load to full load		-0.5		+0.5	%
	10% load to 90% load		-0.4		+0.4	
Voltage Adjustability			-10		+10	%
Output Power	10CFM forced air cooling (-F)				150	W
	Convection cooling for 15V, 24V, 28V, and 36V output models				110	
	Convection cooling for 12V and 48V output models				100	
Output Current			See Table			
Minimum Load				0		%
Ripple & Noise (20MHz BW)	With 1µF/25V 1206 X7R MLCC capacitor	12V output model		120		mVp-p
	With 1µF/25V 1206 X7R MLCC capacitor	15V output model		150		
	With 1µF/50V 1206 X7R MLCC capacitor	24V output model		220		
	With 1µF/50V 1206 X7R MLCC capacitor	28V output model		220		
	With 1µF/50V 1206 X7R MLCC capacitor	36V output model		250		
	With 0.1µF/100V 1206 X7R MLCC capacitor	48V output model		250		
Transient Response	Load step from 50~75% change at 2.5A/µs		Peak Deviation		3	% Vout
			Recovery Time		500	µs
Start-Up Time					1000	ms
Rise Time				20		ms
Hold-up Time	115VAC and full load		16			ms
Temperature Coefficient			-0.02		+0.02	%/°C
Fan Power Supply			12V at 500mA			
PROTECTION						
Over Voltage Protection	% of Vout (nom); latch mode		115		130	%
Over Load Protection	% of Iout rated; hiccup mode		115		150	%
Short Circuit Protection			Continuous, automatic recovery			
GENERAL SPECIFICATIONS						
Switching Frequency				60		kHz
Isolation Voltage	1 minute (2MOPP insulation)		Input to Output	4000		VAC
			Input to FG	1500		
			Output to FG	1500		
Isolation Resistance	500VDC		0.1			GΩ
Leakage Current	264VAC				100	µA

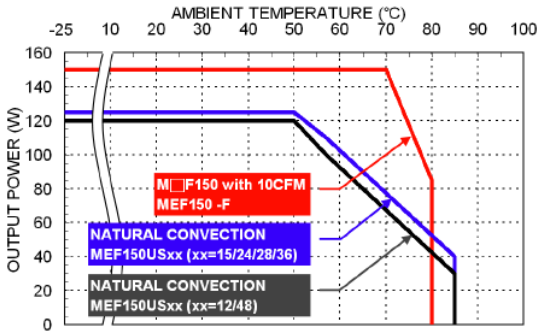
SPECIFICATIONS: PSMAF150 SERIES

All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.
We reserve the right to change specifications based on technological advances.

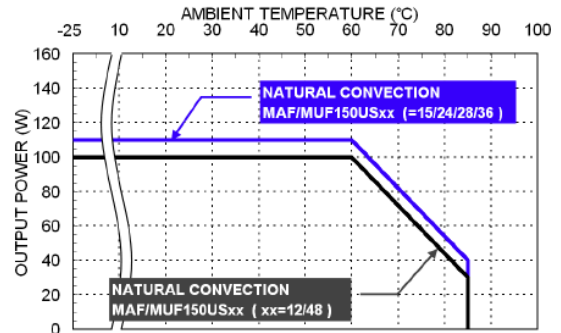
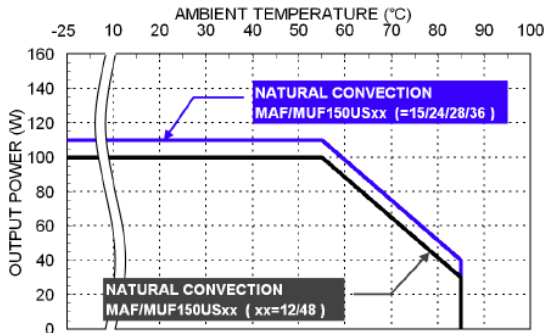
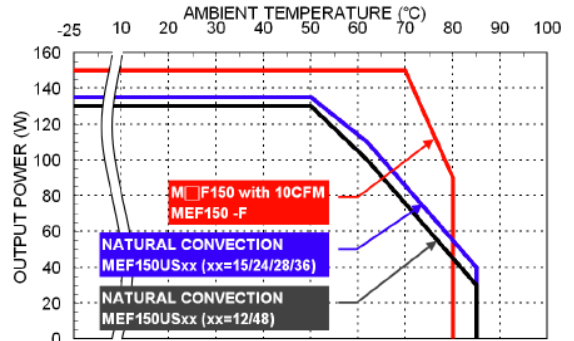
SPECIFICATION	TEST CONDITIONS	Min	Typ	Max	Unit
ENVIRONMENTAL SPECIFICATIONS					
Operating Ambient Temperature	10CFM forced air cooled: 150W (with derating)	-25		+80	°C
	Convection cooled: 100~110W (with derating)	-25		+85	
Storage Temperature Range	10CFM forced air cooled: 150W (with derating)	-40		+75	°C
	Convection cooled: 100~110W (with derating)	-40		+85	
Operating Altitude				5000 meters	
Shock				IEC68-2-27	
Thermal Shock				MIL-STD-810F	
Vibration				IEC68-2-6	
Relative Humidity	Non-condensing	5		95	% RH
MTBF	MIL-HDBK-217F, Ta=25°C, full load	786,100			hours
PHYSICAL SPECIFICATIONS					
Weight	Open Frame Models (Suffix "-O")			6.60oz (187g)	
	U-Chassis Models (Suffix "-U")			8.29oz (235g)	
	Enclosed Case Models (Suffix "-C", "-D")			9.03oz (256g)	
	Enclosed Case with External Fan Models (Suffix "-F", "-DF")			9.03oz (256g)	
Dimensions (L x W x H)	Open Frame Models (Suffix "-O")			4.00 x 2.00 x 1.16 inches (101.6 x 50.8 x 29.5 mm)	
	U-Chassis Models (Suffix "-U")			4.60 x 2.44 x 1.54 inches (116.8 x 62.0 x 39.2 mm)	
	Enclosed Case Models (Suffix "-C", "-D")			4.60 x 2.44 x 1.54 inches (116.8 x 62.0 x 39.2 mm)	
	Enclosed Case with External Fan Models (Suffix "-F", "-DF")			4.60 x 2.44 x 1.94 inches (116.8 x 62.0 x 49.2 mm)	
Input Connector (CON1)		Mates with JST housing VHR-3N and JST Series SVH-21T-P1.1 crimp terminals			
Output Connector (CON2)		Mates with JST housing VHR-6N and JST Series SVH-21T-P1.1 crimp terminals			
Fan Connector (CON3)		Mates with Molex housing 22-01-1022 and 2759 crimp terminals			
SAFETY & EMC					
Safety Approvals		ANSI/AAMI ES60601-1, IEC60601-1, EN60601-1			
EMI	Conducted	EN55011, EN 55022 and FCC Part 18	Conducted		Class B
	Radiated		Radiated		Class A
Harmonic Currents	EN61000-3-2	Full load	Class A and D		
Voltage Flicker	EN61000-3-3				
ESD	EN61000-4-2	Air±8kV and Contact ±6kV	Perf. Criteria A		
Radiated Immunity	EN61000-4-3	10 V/m	Perf. Criteria A		
Fast Transient	EN61000-4-4	±2kV	Perf. Criteria A		
Surge	EN61000-4-5	DM ±1kV and CM ±2kV	Perf. Criteria A		
Conducted Immunity	EN61000-4-6	20 Vrms	Perf. Criteria A		
Power Frequency Magnetic Field	EN61000-4-8	10 A/m	Perf. Criteria A		
Dip and Interruptions	230VAC 50Hz		30%	500mS	Perf. Criteria A
			60%	100mS	Perf. Criteria A
			>95%	10mS	Perf. Criteria A
			>95%	5000mS	Perf. Criteria B
	100VAC 50Hz		30%	500mS	Perf. Criteria A
			60%	100mS	Perf. Criteria A
			>95%	10mS	Perf. Criteria A
			>95%	5000mS	Perf. Criteria B

DERATING CURVES

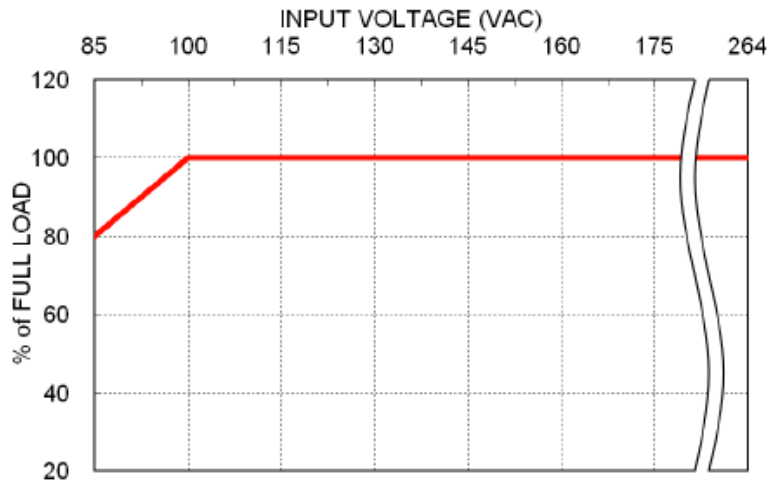
Derating Curve vs Ambient Temperature
Vin=115VAC



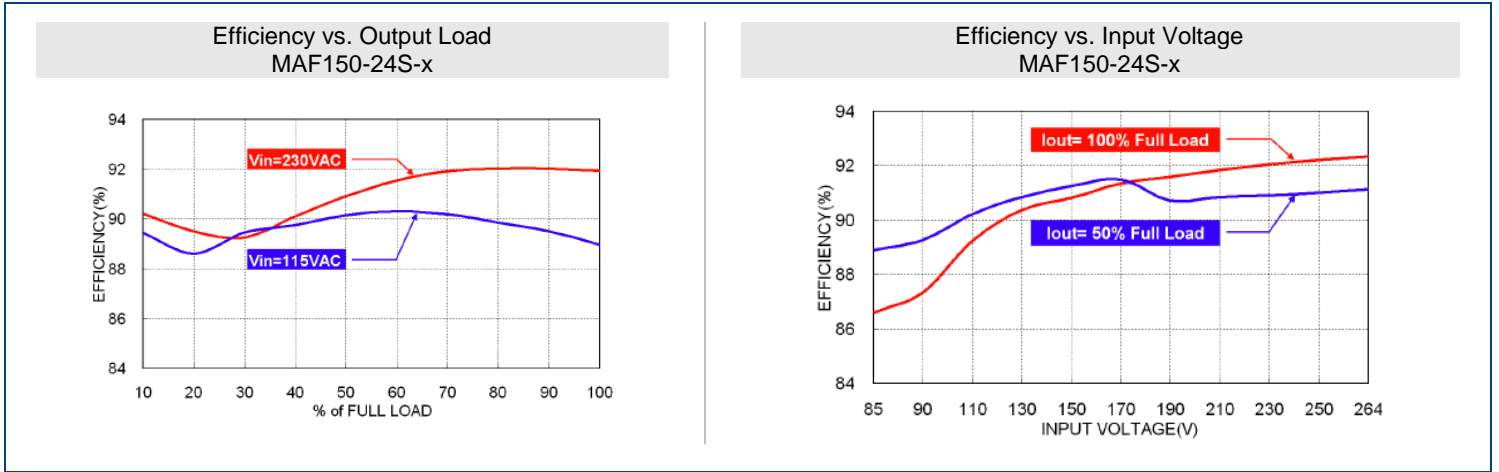
Derating Curve vs. Ambient Temperature
Vin=230VAC



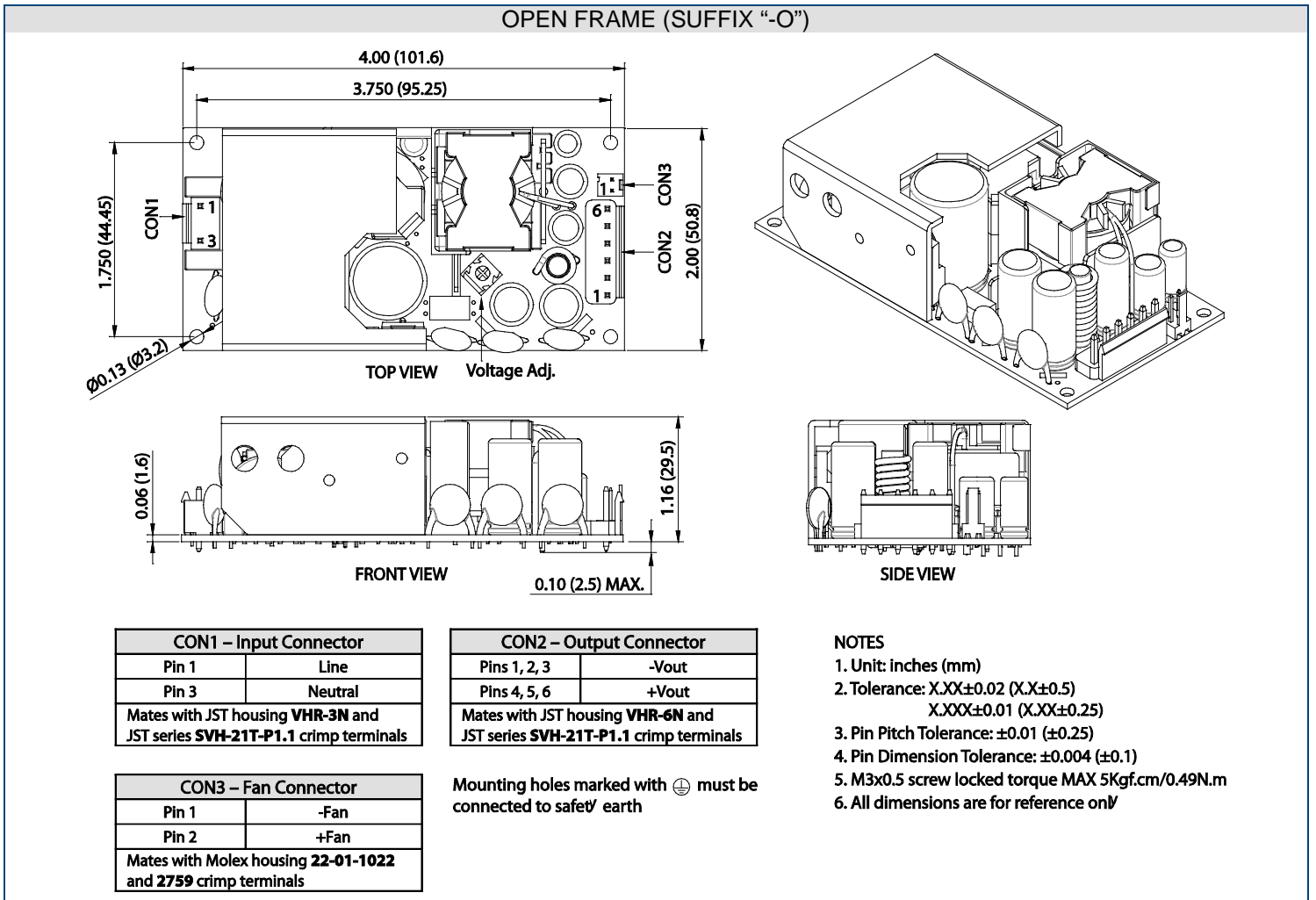
Derating Curve vs. Input Voltage



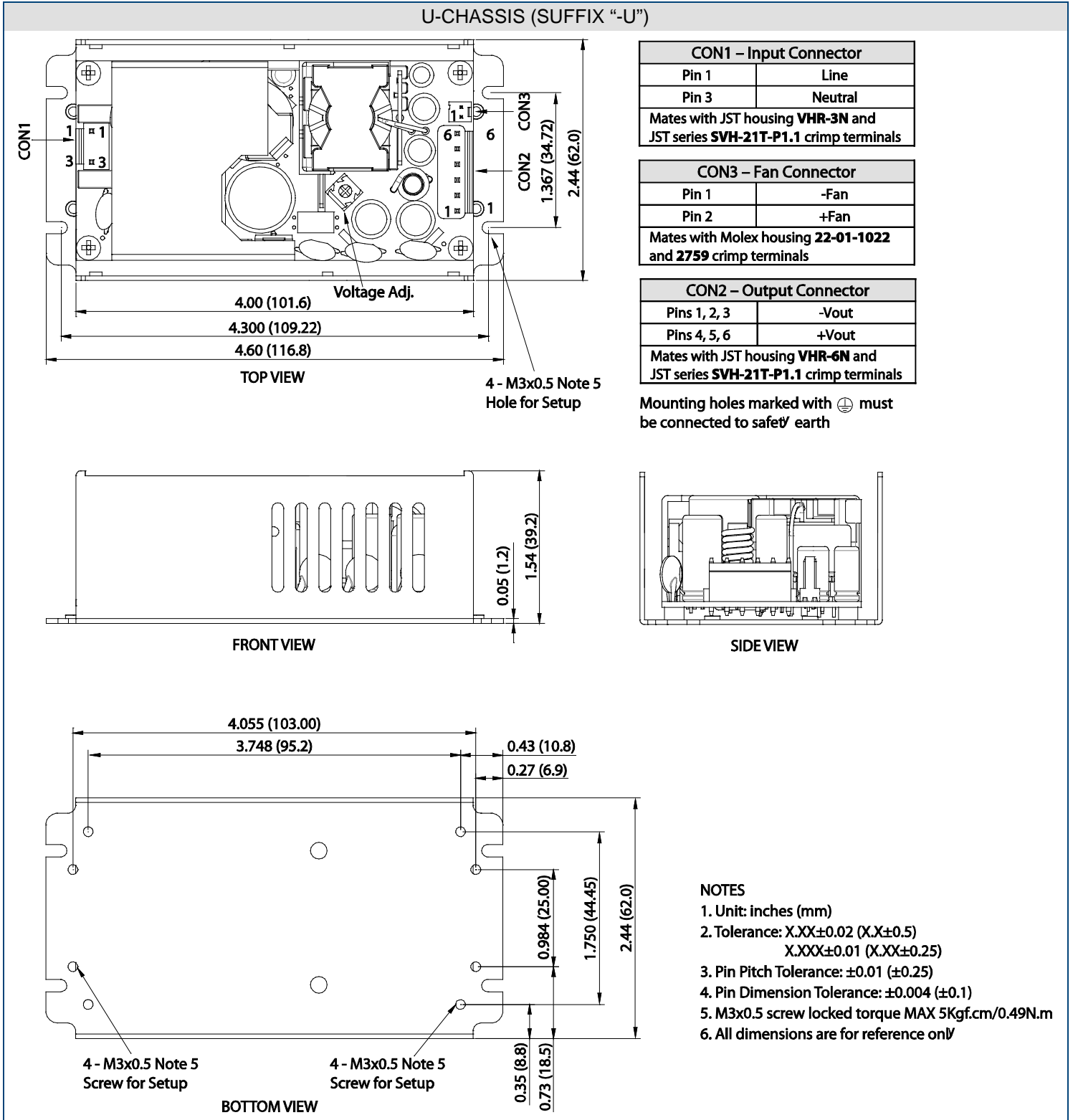
EFFICIENCY CURVES



MECHANICAL DRAWING

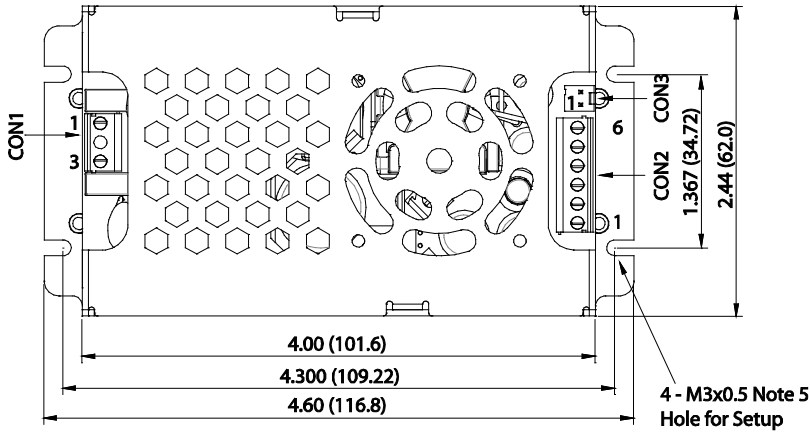


MECHANICAL DRAWING

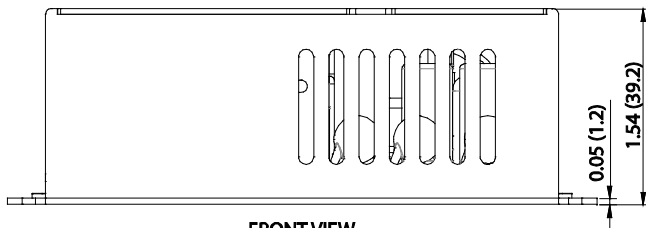
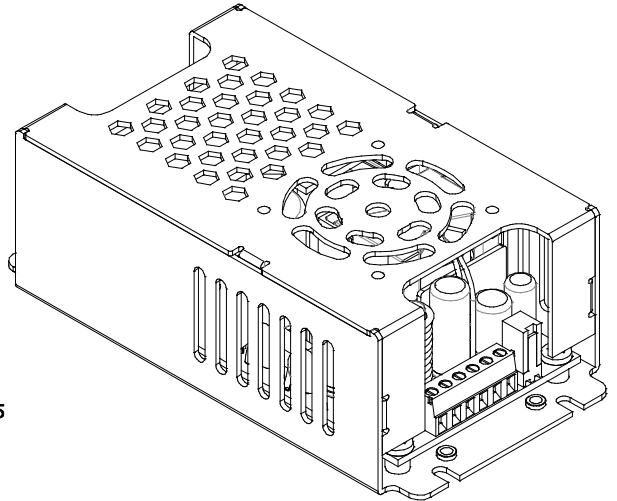


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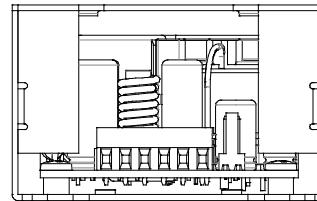
ENCLOSED CASE (SUFFIX "-C")



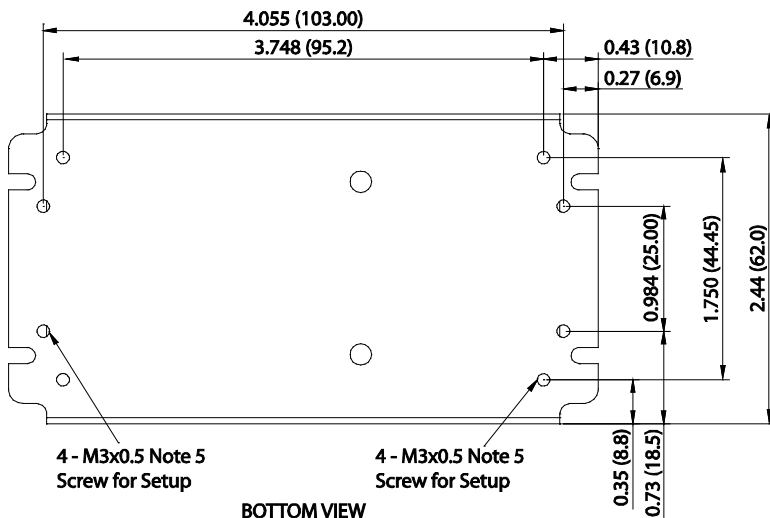
TOP VIEW



FRONT VIEW



SIDE VIEW



BOTTOM VIEW

NOTES

1. Unit: inches (mm)
2. Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
3. Pin Pitch Tolerance: ±0.01 (±0.25)
4. Pin Dimension Tolerance: ±0.004 (±0.1)
5. M3x0.5 screw locked torque MAX 5Kgf.cm/0.49N.m
6. CON1 and CON2 screw locked torque MAX 2Kgf.cm/0.2N.m
7. CON1 and CON2 wire dimensions range 26~16AWG
8. All dimensions are for reference only

CON1 – Input Connector	
Pin 1	Line
Pin 3	Neutral
Mates with JST housing VHR-3N and JST series SVH-21T-P1.1 crimp terminals	

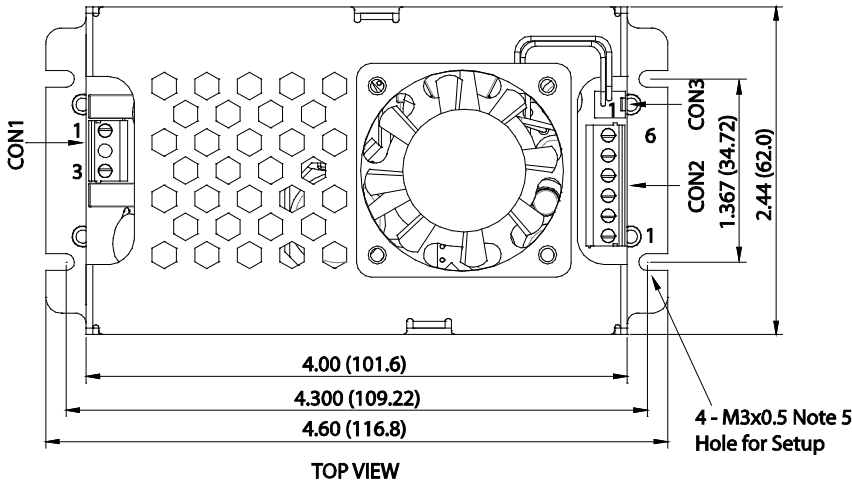
CON2 – Output Connector	
Pins 1, 2, 3	-Vout
Pins 4, 5, 6	+Vout
Mates with JST housing VHR-6N and JST series SVH-21T-P1.1 crimp terminals	

CON3 – Fan Connector	
Pin 1	-Fan
Pin 2	+Fan
Mates with Molex housing 22-01-1022 and 2759 crimp terminals	

Mounting holes marked with ⊕ must be connected to safety earth

MECHANICAL DRAWING

ENCLOSED CASE WITH EXTERNAL FAN (SUFFIX "-F")

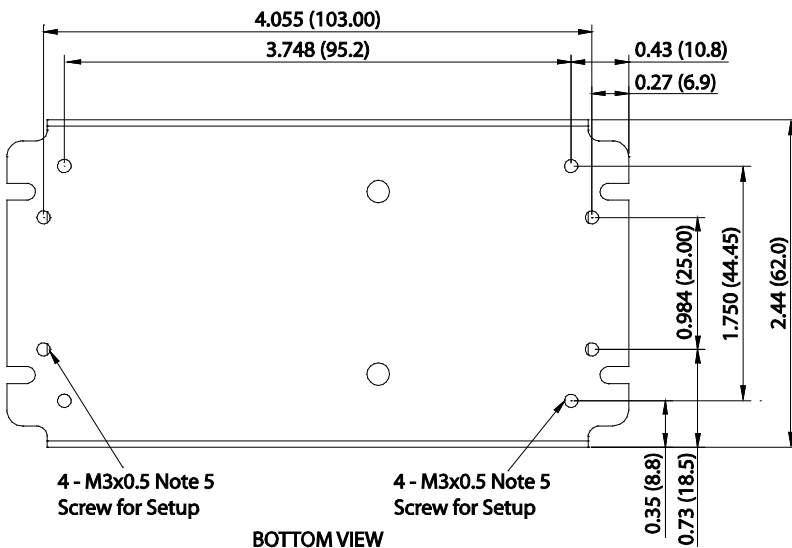
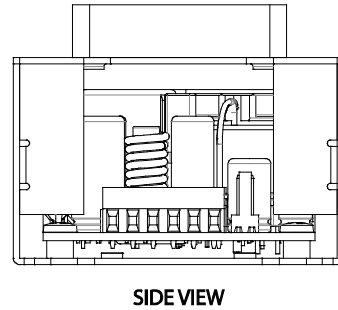
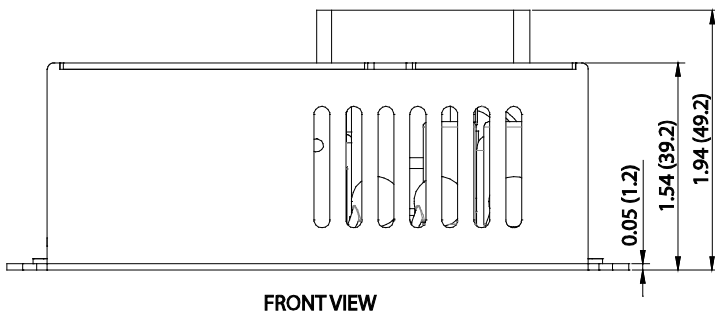


CON1 - Input Connector	
Pin 1	Line
Pin 3	Neutral
Mates with JST housing VHR-3N and JST series SVH-21T-P1.1 crimp terminals	

CON2 - Output Connector	
Pins 1, 2, 3	-Vout
Pins 4, 5, 6	+Vout
Mates with JST housing VHR-6N and JST series SVH-21T-P1.1 crimp terminals	

CON3 - Fan Connector	
Pin 1	-Fan
Pin 2	+Fan
Mates with Molex housing 22-01-1022 and 2759 crimp terminals	

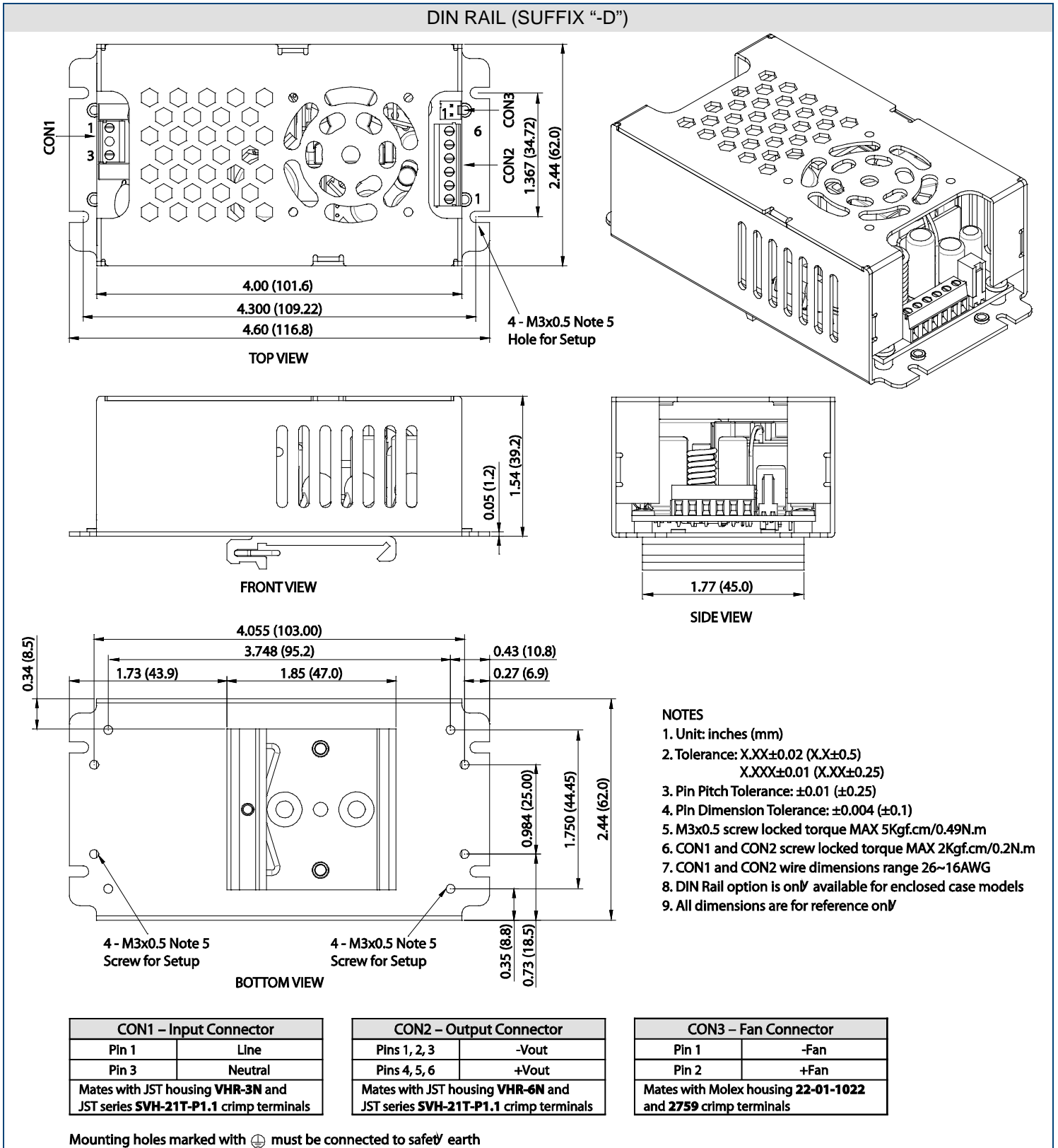
Mounting holes marked with ⊕ must be connected to safety earth



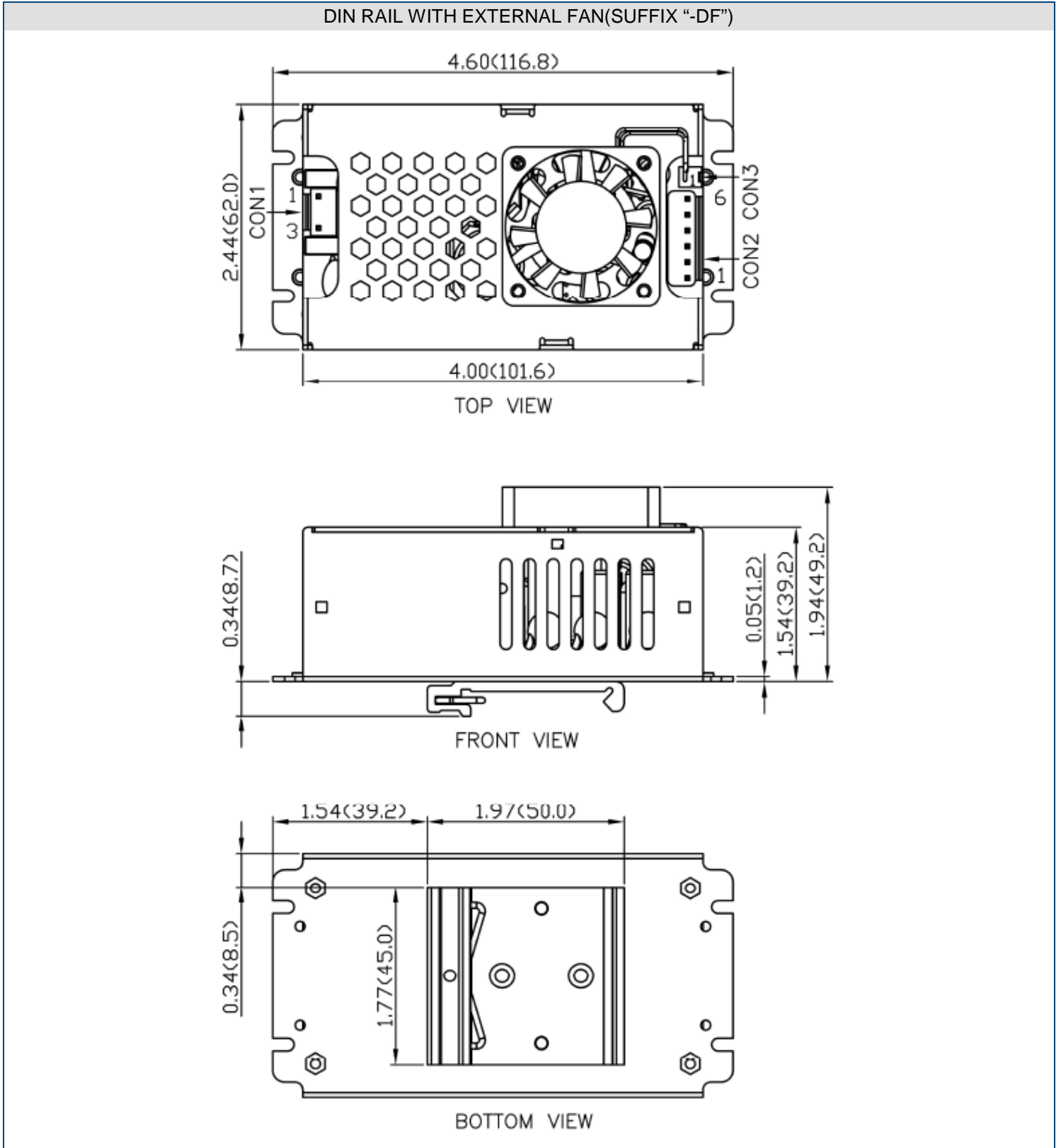
NOTES

- Unit: inches (mm)
- Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
- Pin Pitch Tolerance: ±0.01 (±0.25)
- Pin Dimension Tolerance: ±0.004 (±0.1)
- M3x0.5 screw locked torque MAX 5Kgf.cm/0.49N.m
- CON1 and CON2 screw locked torque MAX 2Kgf.cm/0.2N.m
- CON1 and CON2 wire dimensions range 26~16AWG
- All dimensions are for reference onl/

MECHANICAL DRAWING



MECHANICAL DRAWING



MODEL NUMBER SETUP

PSMAF	150	-	12	S	-	O	B
Series Name	Output Power		Ouptut Voltage	Output Quantity		Package Type	Protection Type
	150: 150 Watts		12: 12 VDC 15: 15 VDC 24: 24 VDC 28: 28 VDC 36: 36 VDC 48: 48 VDC	S: Single Output		O: Open Frame U: U-Chassis C: Enclosed Case F: Enclosed with External Fan D: DIN Rail ⁽¹⁾ DF: Din Rail with External Fan	None: Class I B: Class II

(1) DIN Rail is only available for enclosed case models

COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001-2008 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

Contact **Wall Industries** for further information:

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