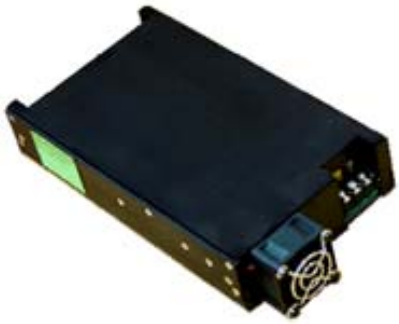
Wall Industries, Inc.

DATASHEET
Rev. C

PSPW500 SERIES

90~264VAC Input Voltage Range
500 Watts with Forced Airflow
Active PFC, Single Output
AC/DC Switching Power Supplies

Type U



Type E

Type F

FEATURES

- Active PFC
- Single Output
- 90~264VAC Input Voltage Range
- 500W with Forced Airflow
- 83% Efficiency
- RoHS Compliant
- +5VSB/0.25A Convection Cooling, 1.0A Forced Air Cooling
- +12V/1A DC Fan Output
- Optional High Efficiency OR-ing FET Diode Current Share Option
- Short Circuit, Over Load, Over Voltage, and Over Temperature Protection
- 3 Mechanical Options Available: U-Chassis, Enclosed with Rear Side Fan, Enclosed with Top Fan
- Remote Inhibit Function
- UL60950-1, CB IEC60950-1, and TUV EN60950-1 Safety Approvals

DESCRIPTION

The PSPW500 series of AC/DC switching power supplies consists of U-chassis (U type), enclosed with rear-side built-in (E type), and enclosed with top-side built-in fan (F type) models. Built-in fan models offer 500W of output power and U-chassis models offer 360W of output power with convection cooling and 500W with 30CFM forced airflow. All units have a single output, 90~264VAC full range input, and active PFC. These supplies also have UL60601-1, TUV EN60601-1, CB IEC60601-1, and CE safety approvals. All models are protected against short circuit, over load, over voltage, and over temperature conditions. This series also has a current sharing option (suffix "D").

SPECIFICATIONS: *PSPW500 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.

INPUT SPECIFICATIONS			
Input Voltage Range		90 ~ 264VAC (Full Range)	
Input Frequency		47 ~ 63Hz	
Input Current (rms)		6A max. at 115VAC; 3A max. at 230VAC	
Inrush Current		< 25A peak at 115VAC; < 50A peak at 230VAC cold start and 25°C	
Power Factor		>0.95 at 115VAC and full load; > 0.90 at 230VAC and full load	
OUTPUT SPECIFICATIONS			
Output Current		See Table	
Output Voltage		See Table	
Line Regulation		±0.5%	
Load Regulation		±1%	
Minimum Load		0%	
Output Power *(See Note 2)*		360W max. with convection cooling for U-Chassis models 500W max. with 30CFM forced air for U-Chassis models 500W max. for models with built-in fans	
Ripple & Noise (20MHz BW) *(See Note 4)*		1%	
Hold Up Time		20ms typ. at 360W load and 115VAC input	
Overshoot at Turn-On/Turn-Off		< ±10% of nominal output voltage. No voltage of opposite polarity should be present on the output during turn-on or turn-off	
Temperature Coefficient		±0.04%/°C	
ADDITIONAL FUNCTIONS			
Remote Control (Inhibit)	Active Low	0 – 0.5V (output is disabled)	
	Active High or Floating	3.5 – 5.25V (output is enabled)	
Power Good Output	Active Low	Output voltage falls below its under voltage threshold.	
	Active High	Indicates DC output is good and within regulation	
Fan Fault Output	Active Low	Fan fault	
	Active High	Fan works in normal condition	
Fan Speed Control		The power supply includes a sophisticated fan controller that only turns the fan on as needed, sets the fan speed according to cooling requirements, and generates a fan fail alarm for a non-rotating fan.	
Current Share Option *(See Note 1)*		Single wire: Up to 4 units cane be paralleled within 10% accuracy at full load	
PROTECTION			
Short Circuit Protection		The supply will automatically recover without damage when short circuit condition is removed.	
Over Voltage Protection		110% to 130% above nominal output. The power supply will not automatically recover after the fault condition is removed. A manual reset is necessary or INHIBIT pin is reset.	
Over Load Protection		110% to 150% maximum load. Auto-recovery without damage after fault condition is removed.	
Over Temperature Protection		An over temperature condition is typically the result of current overloading or inadequate air circulation. When the thermistor senses a temperature inside the power supply that is above normal, the unit will automatically shut down. The power supply will recover when the thermistor temperature returns to a normal value and after the INHIBIT pin is reset.	
GENERAL SPECIFICATIONS			
Efficiency		83% typical at 115VAC and full load 86% typical at 230VAC and full load	
Isolation Voltage	Primary to Secondary	4242VDC for 4 seconds	
	Primary to Frame Ground	2121VDC for 4 seconds	
	Secondary to Frame Ground	707VDC	
Insulation Resistance	Primary to Secondary	20MΩ min / 500VDC	
	Primary to Frame Ground	20MΩ min / 500VDC	
Leakage Current	Earth	< 300µA at 264VAC	The leakage current measurement is made in accordance with safety agency requirements.
	Enclosure	< 100µF at 264VAC	
ENVIRONMENTAL SPECIFICATIONS			
Operating Temperature (see derating curve)		0°C to +70°C (derate linearly 2.5% / °C from +51°C to +70°C)	
Operating Humidity (non-condensing)		5% to 95%	
Storage Temperature		-10°C to +85°C	
Storage Humidity (non-condensing)		10% to 95%	
MTBF		> 100,000 hours at full load and 25°C ambient temperature	
Burn-in Test		100% burn-in tested at max. load under 40±5°C	
PHYSICAL SPECIFICATIONS			
Dimensions (L x W x H)		U Type: 8.00" x 4.66" x 1.51" (203.2 x 118.5 x 38.5 mm) E Type: 9.03" x 4.66" x 1.63" (229.4 x 118.5 x 41.5 mm) DC Fan: 1.57" x 1.57" x 0.79" (40 x 40 x 20 mm) F Type: 8.00" x 4.66" x 2.44" (203.2 x 118.5 x 62.0 mm) DC Fan: 2.36" x 2.36" x 0.59" (60 x 60 x 15 mm)	
Weight		U Type: 1.9lbs (860g) E Type: 2.16lbs (980g) F Type: 2.18lbs (990g)	

SAFETY	
Safety Requirements	UL60950-1, CSA-C22.2 No.950-1, TUV EN60950-1, and CB IEC60950-1 standards
Electromagnetic Compatibility	Tests of conformance for this requirement will be performed with host system.
FCC Requirements	The power supply complies with the FCC Part 15 limits
CE Requirements	The power supply complies with the "Class B" requirements of EN55022

U-CHASSIS MODELS (Suffix "U")

Model [1]	Input Voltage Range	Output Voltage	Output Current			Output Power [2]	
			Min Load	Max Load (Convection)	Max Load (30CFM Forced Air)	Convection	30CFM Forced Air
PSPW500B-1Y12-U (D)	90 ~ 264 VAC	12 VDC	0A	30A	41.67A	360W	500W
PSPW500B-1Y24-U (D)	90 ~ 264 VAC	24 VDC	0A	15A	20.84A	360W	500W
PSPW500B-1Y30-U (D)	90 ~ 264 VAC	30 VDC	0A	12A	16.67A	360W	500W
PSPW500B-1Y36-U (D)	90 ~ 264 VAC	36 VDC	0A	10A	13.89A	360W	500W
PSPW500B-1Y48-U (D)	90 ~ 264 VAC	48 VDC	0A	7.5A	10.42A	360W	500W
PSPW500B-1Y54-U (D)	90 ~ 264 VAC	54 VDC	0A	6.67A	9.26A	360W	500W
PSPW500B-1Y57-U (D)	90 ~ 264 VAC	57 VDC	0A	6.32A	8.78A	360W	500W

ENCLOSED WITH REAR-SIDE BUILT-IN FAN MODELS (Suffix "E")

Model [1]	Input Voltage Range	Output Voltage	Output Current		Output Power [2]
			Min Load	Max Load	
PSPW500B-1Y12-E (D)	90 ~ 264 VAC	12 VDC	0A	41.67A	500W
PSPW500B-1Y24-E (D)	90 ~ 264 VAC	24 VDC	0A	20.84A	500W
PSPW500B-1Y30-E (D)	90 ~ 264 VAC	30 VDC	0A	16.67A	500W
PSPW500B-1Y36-E (D)	90 ~ 264 VAC	36 VDC	0A	13.89A	500W
PSPW500B-1Y48-E (D)	90 ~ 264 VAC	48 VDC	0A	10.42A	500W
PSPW500B-1Y54-E (D)	90 ~ 264 VAC	54 VDC	0A	9.26A	500W
PSPW500B-1Y57-E (D)	90 ~ 264 VAC	57 VDC	0A	8.78A	500W

ENCLOSED WITH TOP-SIDE BUILT-IN FAN MODELS (Suffix "F")

Model [1]	Input Voltage Range	Output Voltage	Output Current		Output Power [2]
			Min Load	Max Load	
PSPW500B-1Y12-F (D)	90 ~ 264 VAC	12 VDC	0A	41.67A	500W
PSPW500B-1Y24-F (D)	90 ~ 264 VAC	24 VDC	0A	20.84A	500W
PSPW500B-1Y30-F (D)	90 ~ 264 VAC	30 VDC	0A	16.67A	500W
PSPW500B-1Y36-F (D)	90 ~ 264 VAC	36 VDC	0A	13.89A	500W
PSPW500B-1Y48-F (D)	90 ~ 264 VAC	48 VDC	0A	10.42A	500W
PSPW500B-1Y54-F (D)	90 ~ 264 VAC	54 VDC	0A	9.26A	500W
PSPW500B-1Y57-F (D)	90 ~ 264 VAC	57 VDC	0A	8.78A	500W

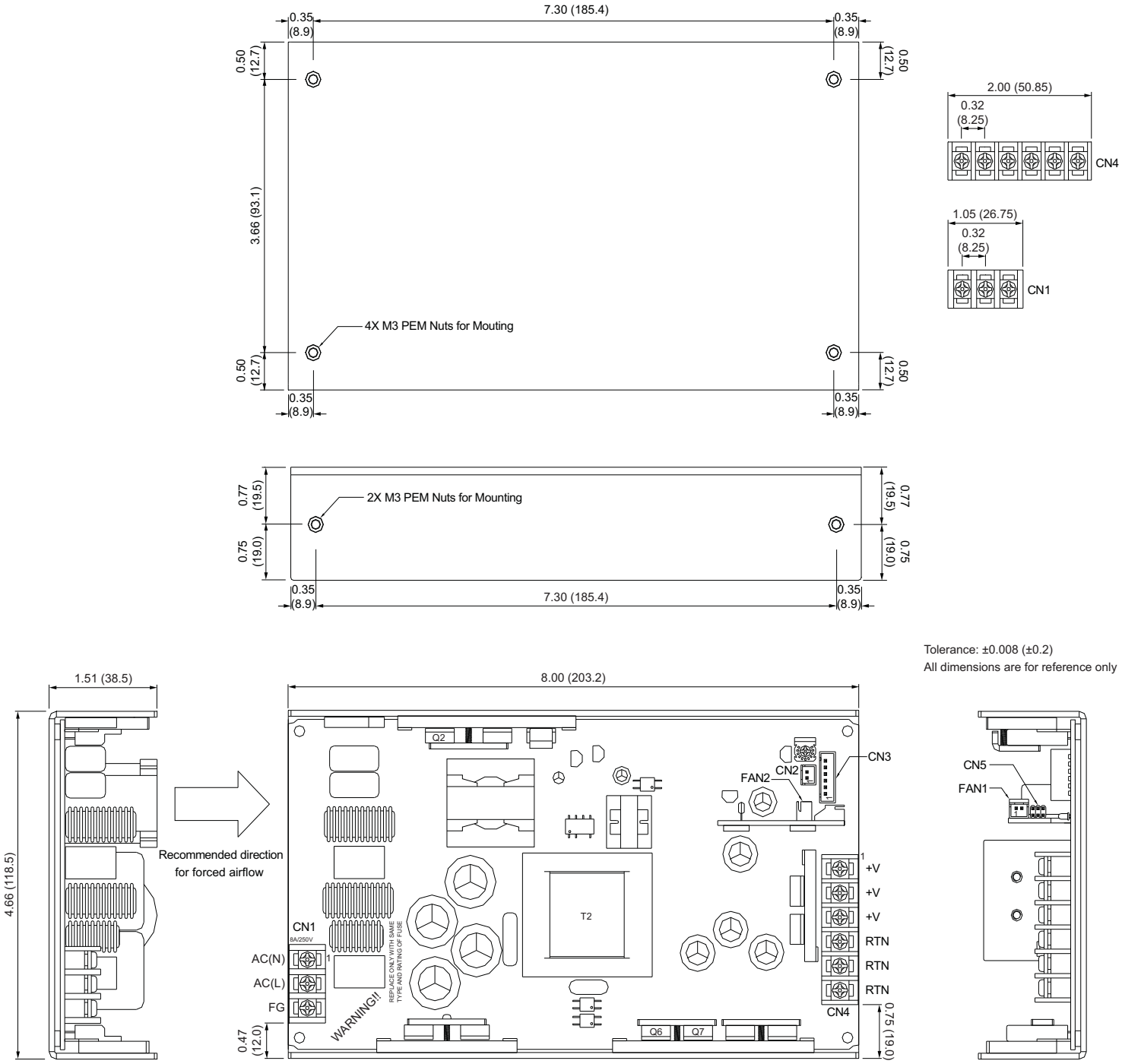
NOTES

1. Mechanical Options: The "**U"** suffix in the model number is for U-chassis type, "**E"** is for enclosed type with rear-side built-in fan, "**F"** is for enclosed type with top-side built-in fan, and the "**D**" is for current sharing option.
2. **U Type:** 360W max. at +40°C ambient temp. and free air convection. 500W max. at +50°C ambient temp. and 30CFM forced air.
   E Type: 500W max. at +50°C ambient temperature.
   F Type: 500W max. at +50°C ambient temperature.
3. +5VSB/0.25A with convection cooling and +5VSB/1A with forced air cooling.
4. Ripple & Noise is measured at 20MHz bandwidth and with 0.1µF ceramic capacitor and 10µF/50V electrolytic capacitor bypassed at the output connector at 5% to 100% full load and nominal line.
5. Preset accuracy should be less than 1% of nominal output voltage at 60% full load.

MECHANICAL DRAWINGS

U-Chassis Models ("U" Suffix): 8.00 x 4.66 x 1.51 Inches (203.2 x 118.5 x 38.5 mm)

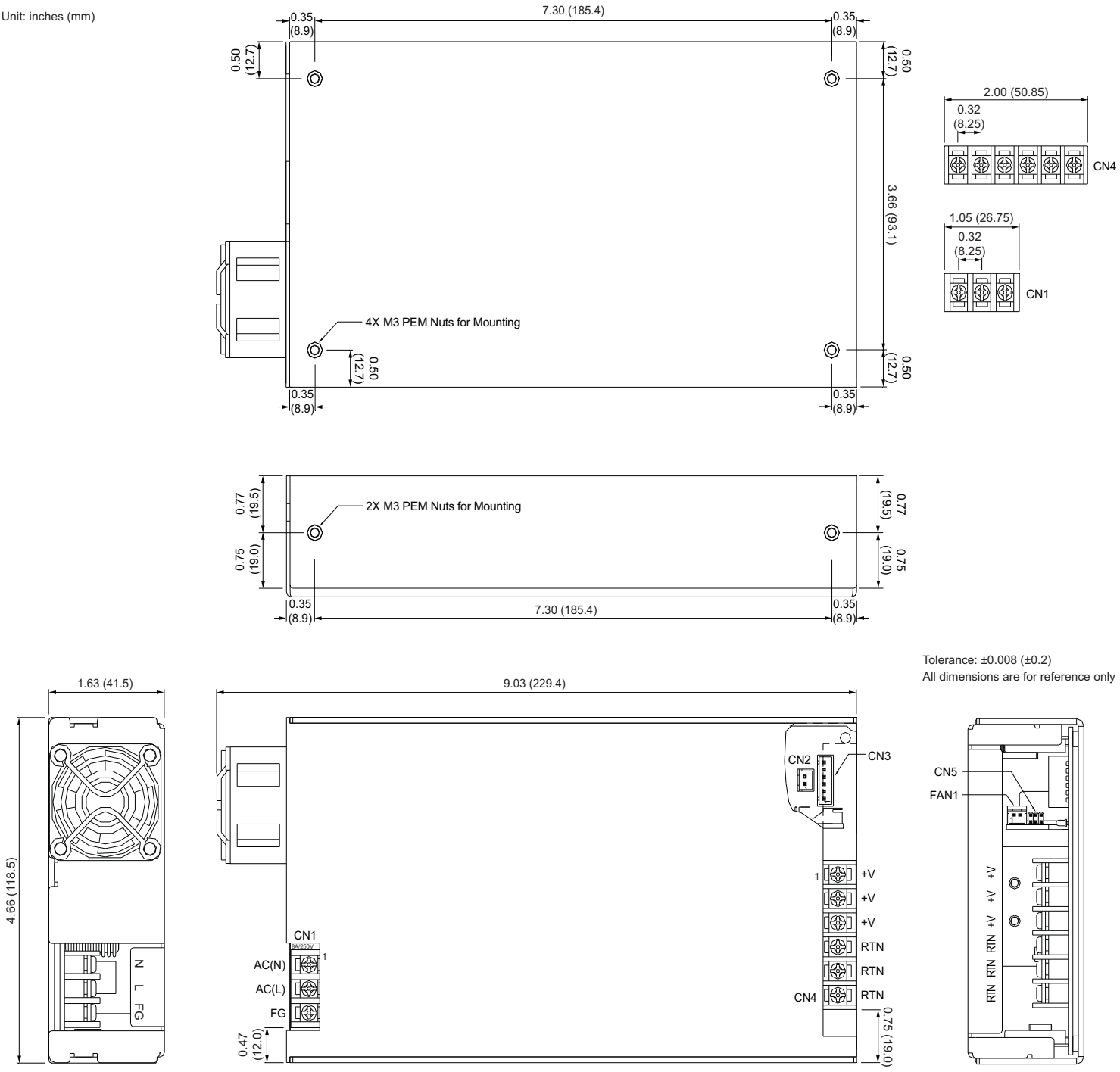
Unit: inches (mm)



(See page 7 for matching connectors)

Enclosed with Rear-Side Built-in Fan ("E" Suffix): 9.03 x 4.66 x 1.63 Inches (229.4 x 118.5 x 41.5 mm)

Unit: inches (mm)

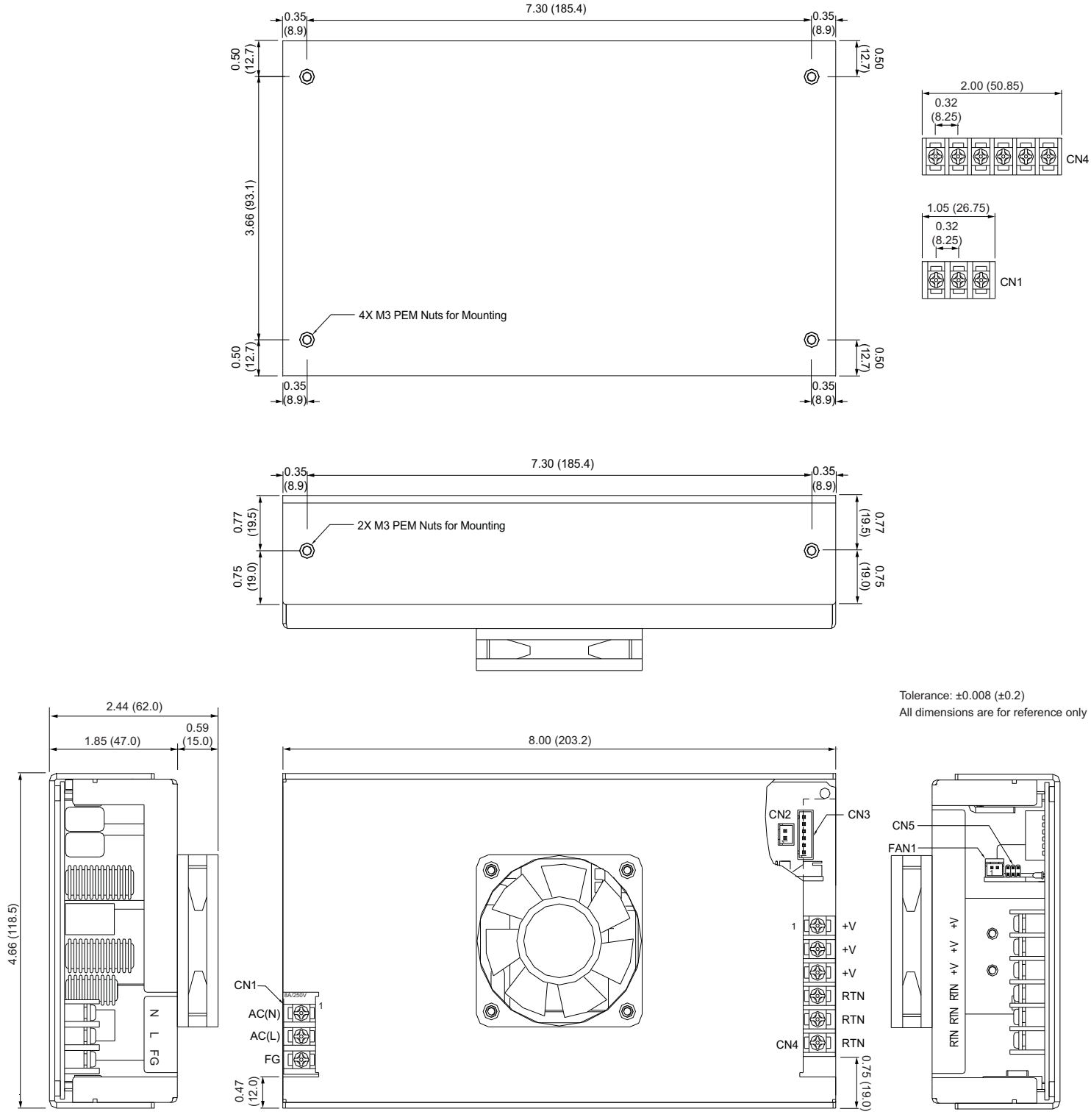


Tolerance: ±0.008 (±0.2)
All dimensions are for reference only

(See page 7 for matching connectors)

Enclosed with Top-Side Built-in Fan ("F" Suffix): 8.00 x 4.66 x 2.44 Inches (203.2 x 118.5 x 62 mm)

Unit: inches (mm)



(See page 7 for matching connectors)

MATCHING CONNECTORS

CN1: Input Connector
3-Pole Terminal block pitch: 8.25mm rate 8A/250V

Pin No	Signal
1	AC Neutral
2	AC Line
3	FG

CN2: +5VSB Output Connector
JST B2B-XH-A pitch: 2.5mm or equivalent
Mates with female housing JST XHP-2 or equivalent

Pin No	Signal
1	+5VSB
2	GND

CN3: Remote Sense Connector
JST B6B-XH-A pitch: 2.5mm or equivalent
Mates with female housing JST XHP-6 or equivalent

Pin No	Signal
1	+Sense
2	-Sense
3	+5VSB
4	GND
5	INHIBIT (Remote Control)
6	Current Share

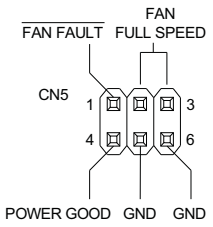
CN4: Main Output Connector
6-Pole Terminal block pitch: 8.25mm rate 8A/250V

Pin No	Signal
1	+Vo
2	+Vo
3	+Vo
4	RTN
5	RTN
6	RTN

INHIBIT: Logic Level HIGH (+5V): Enable, Logic Level LOW: Disable (0V)

CN5: Fan Control & Power Good Signal Connector
Pitch: 2.54x2.54mm dual row 3x2 contacts

Pin No	Signal
1	FAN FAULT
2, 3	FAN FULL SPEED
4	POWER GOOD
5	GND
6	GND



FAN FAULT: Fan Status Indication; Fan Good: Logic Level HIGH (+5V); Fan Fault: Logic Level LOW (0V)
FAN FULL SPEED: Short these 2 pins (#2 and #3) with mini-jumper to get highest fan speed
POWER GOOD: Power Good: Logic Level HIGH (+5V); Power Fault: Logic LOW (0V)

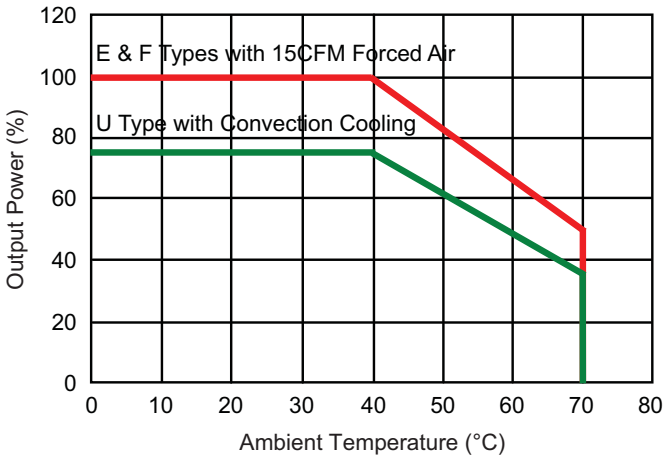
FAN1: Fan Output Connector
JST S2B-XH-A pitch: 2.5mm or eqivalent
Mates with female housing JST XHP-2 or equivalent

Pin No	Signal
1	+12VDC FAN+
2	+12VDC FAN-

FAN2: Fan Output Connector
JST B2B-XH-A pitch: 2.5mm or eqivalent
Mates with female housing JST XHP-2 or equivalent

Pin No	Signal
1	+12VDC FAN+
2	+12VDC FAN-

DERATING CURVE



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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