

DESCRIPTION

The PM451 series of AC-DC switching power supplies in a package of 3 x 5 x 1.42 inches are capable of delivering 450 watts of continuous power at 24 CFM forced air cooling or 250 watts at convection cooling. The U-bracket or cover-and-fan assembly can be added during manufacturing. All models are specially certified for IEC /EN /UL /CSA 60601-1 for medical applications. All models meet the safety requirements of IEC, EN, UL, CSA 62368-1 for data networking, computer, telecommunication, audio/video and industrial applications.

FEATURES

- 3 x 5 inch footprint with 1.42 inch low profile
- BF Class insulation
- Operation altitude up to 5000 meters
- Less than 300 μ A leakage current
- Meet EN55011 /55032 and FCC Class B
- Power Factor 0.98 typical
- Power Fail Detect (PFD) signal
- Inhibit- TTL high to disable output
- High Efficiency 92% typical
- Power consumption in standby mode less than 1 W at standby power 5 V /100 mA
- No load power consumption less than 0.3 W

INPUT SPECIFICATIONS

Input voltage:	80-264 VAC
Power derating:	Derate linearly from 100% at 90 VAC to 90% at 85 Vac and 80% at 80 VAC
Input frequency:	47-63 Hz;
Input current:	4.8 A (rms) for 115 VAC 2.4 A (rms) for 230 VAC
Earth leakage current:	300 μ A max. @ 264 VAC, 63 Hz
Touch current:	100 μ A max. @ 264 VAC, 63 Hz

OUTPUT SPECIFICATIONS

Output voltage/current:	See rating chart.
Total output power:	See rating chart.
Ripple and noise:	1% peak to peak maximum
Remote sense	Compensation for cable losses up to 0.5 V
Over voltage protection:	Set at 112-140% of its nominal output voltage
Over current protection:	Output protected to short circuit conditions
Over temp. protection:	Latching and by recycle input to reset
Temperature coefficient:	All outputs \pm 0.04% / $^{\circ}$ C maximum
Transient response:	Maximum excursion of 4% or better on all models, recovering to 1% of final value within 500 μ s after a 25% step load change
Fan power:	12 V at 0.6 A maximum
Standby power	5 V at 1.0 A maximum

ENVIRONMENTAL SPECIFICATIONS

Operating temperature:	-20 $^{\circ}$ C to +50 $^{\circ}$ C, startup at -40 $^{\circ}$ C
Storage temperature:	-40 $^{\circ}$ C to +85 $^{\circ}$ C
Relative humidity:	5% to 95% non-condensing
Temperature derating:	Derate from 100% at +50 $^{\circ}$ C linearly to 50% at +70 $^{\circ}$ C, applicable to convection and forced-air cooling conditions

PM451 SERIES



RoHS

SAFETY STANDARD APPROVAL

GENERAL SPECIFICATIONS

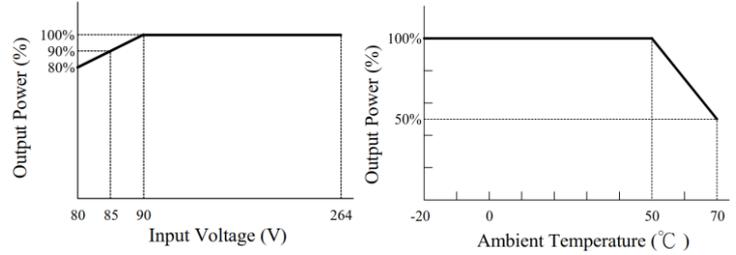
Switching frequency:	55-300 KHz
Efficiency:	See rating chart.
Turn on delay time	3 s maximum at 100 VAC
Hold-up time:	20 ms minimum at 115 VAC
Line regulation:	\pm 0.5% maximum at full load
Inrush current:	60 A @ 115 VAC or 120 A @ 230 VAC, at 25 $^{\circ}$ C cold start
Withstand voltage:	4000 VAC from input to output (2MOPP) 1500 VAC from input to ground (1 MOPP) 1500 VAC from output to ground
MTBF:	350,000 hours at full load at 25 $^{\circ}$ C ambient, calculated per MIL-HDBK-217F
EMC Performance	
EN55011/EN55032:	Class B conducted, class B radiated
EN61000-3-2:	Harmonic distortion, class A and D
EN61000-3-3:	Line flicker
EN60601-1-2/EN55024	
EN61000-4-2:	ESD, \pm 15 KV air and \pm 8 KV contact
EN61000-4-3:	Radiated immunity, 10 V/m
EN61000-4-4:	Fast transient/burst, \pm 2 KV
EN61000-4-5:	Surge, \pm 1 KV diff., \pm 2 KV com
EN61000-4-6:	Conducted immunity, 10 Vrms
EN61000-4-8:	Magnetic field immunity, 30 A/m
EN61000-4-11:	Voltage dip immunity, 30% reduction for 500 ms, 100% reduction for 10 ms

INTERFACE SIGNALS

PFD: TTL logic high for normal operation and TTL logic low upon loss of input power. This signal appears at least 1ms prior to V1 output dropping 5% below its nominal value. This signal also provides a minimum delay of 100 ms after V1 is within regulation.

Inhibit: Required an external TTL high level signal to inhibit output.

OUTPUT POWER DERATING CURVE



OUTPUT VOLTAGE/CURRENT RATING CHART

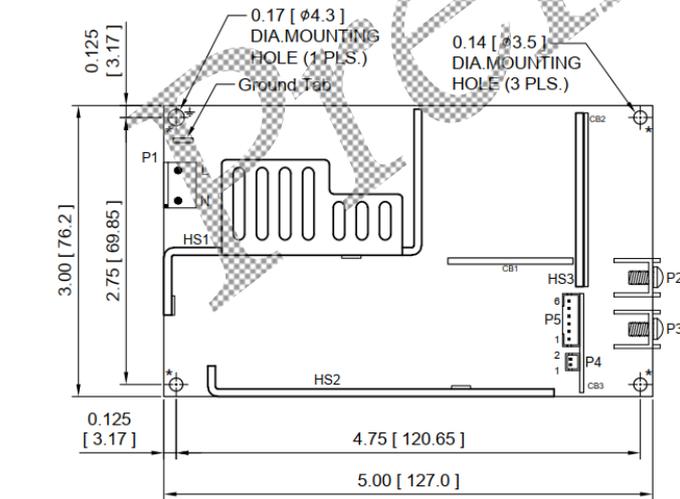
Model ⁽¹⁾	Output							Efficiency (typical) 115/230 Vac
	V1	Min. Current	Max. Current at Convection ⁽²⁾	Max. Current at 24 CFM ⁽²⁾	Tol.	Ripple & Noise ⁽³⁾	Max. Power	
PM451-12A	12 V	0 A	20.84 A	37.50 A	±2%	120 mV	250 /450 W	91 /92%
PM451-13A	15 V	0 A	16.67 A	30.00 A	±2%	150 mV	250 /450 W	91 /92%
PM451-13-1A	18 V	0 A	13.89 A	25.00 A	±2%	190 mV	250 /450 W	92 /93%
PM451-14A	24 V	0 A	10.42 A	18.75 A	±2%	240 mV	250 /450 W	92 /94%
PM451-15A	28 V	0 A	8.93 A	16.07 A	±2%	300 mV	250 /450 W	92 /94%
PM451-16-1A	32 V	0 A	7.82 A	14.07 A	±2%	320 mV	250 /450 W	92 /94%
PM451-17A	36 V	0 A	6.95 A	12.50 A	±2%	360 mV	250 /450 W	92 /94%
PM451-18A	48 V	0 A	5.21 A	9.38 A	±2%	480 mV	250 /450 W	92 /94%

NOTES:

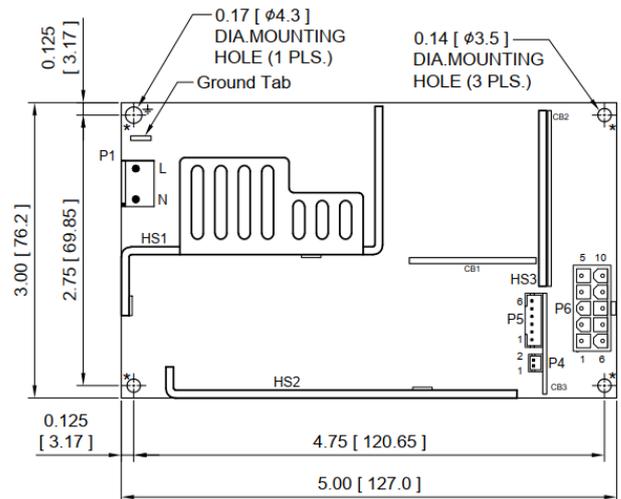
- Suffix "A" in model numbers denotes PCB constructed form; suffix "B" for U-bracket form, e.g. PM451-14B; suffix "C" for enclosed form with cover and fan assembly, e.g. PM451-14C.
- "A" and "B" versions units provide 250W power without moving air or 450 W with 24 CFM forced air provided by user. C version unit with cover and fan assembly provides 450W power.
- Ripple and noise is maximum peak to peak voltage value measured at output within 20 MHz bandwidth, at rated line voltage and output load ranges, and with a 10 μF tantalum capacitor in parallel with a 0.1 μF ceramic capacitor across the output.

MECHANICAL SPECIFICATIONS

PM451_12-48V_A type

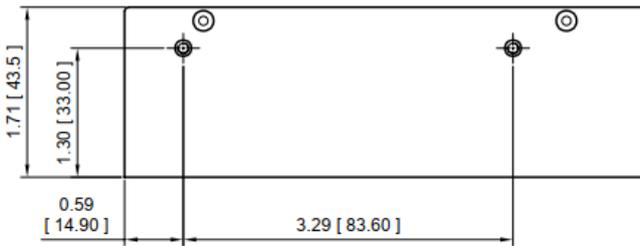
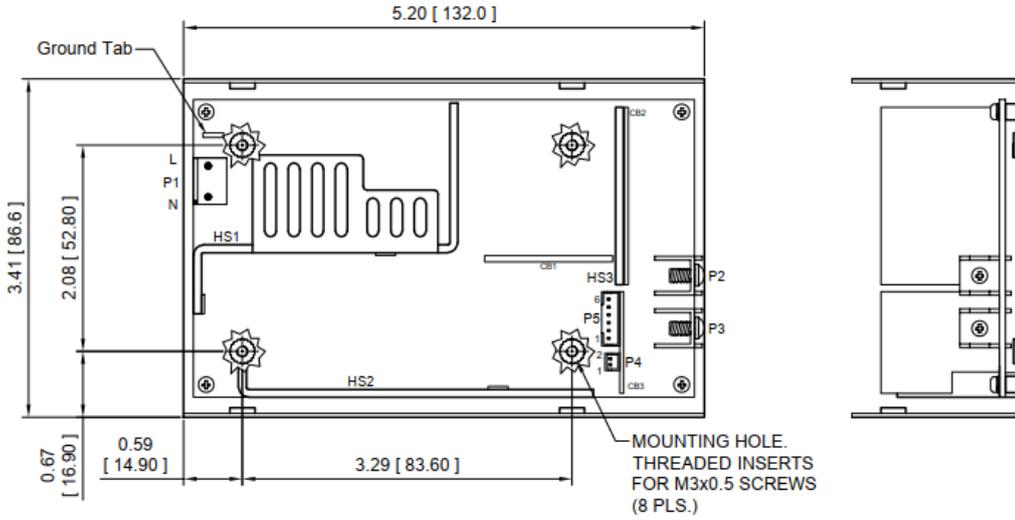


PM451_24-48V_A type

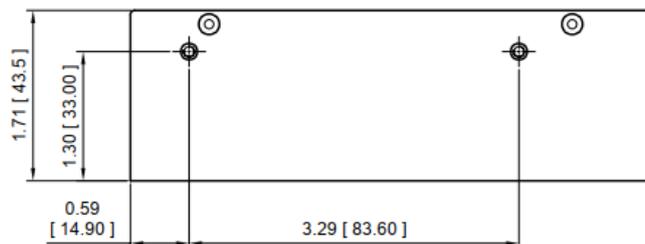
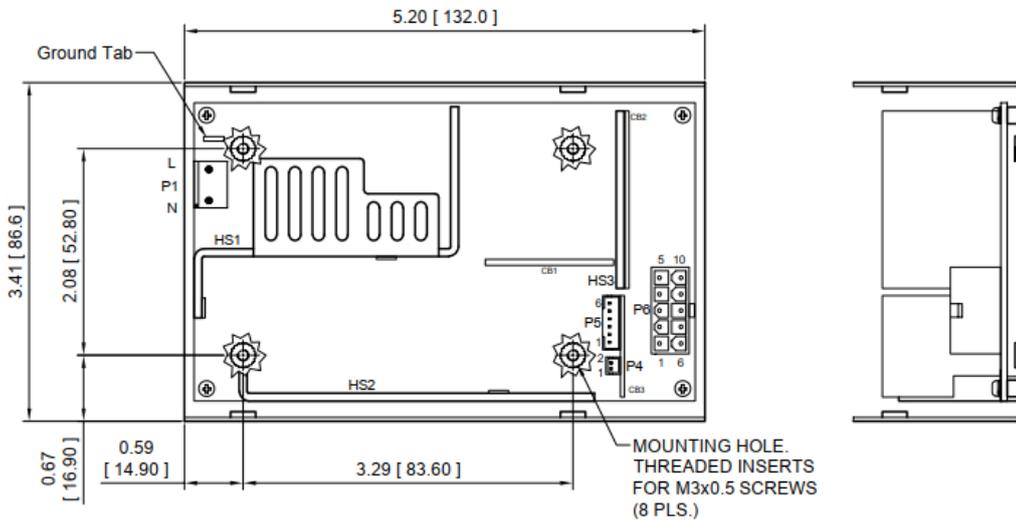


MECHANICAL SPECIFICATIONS

PM451_12-48V_B type

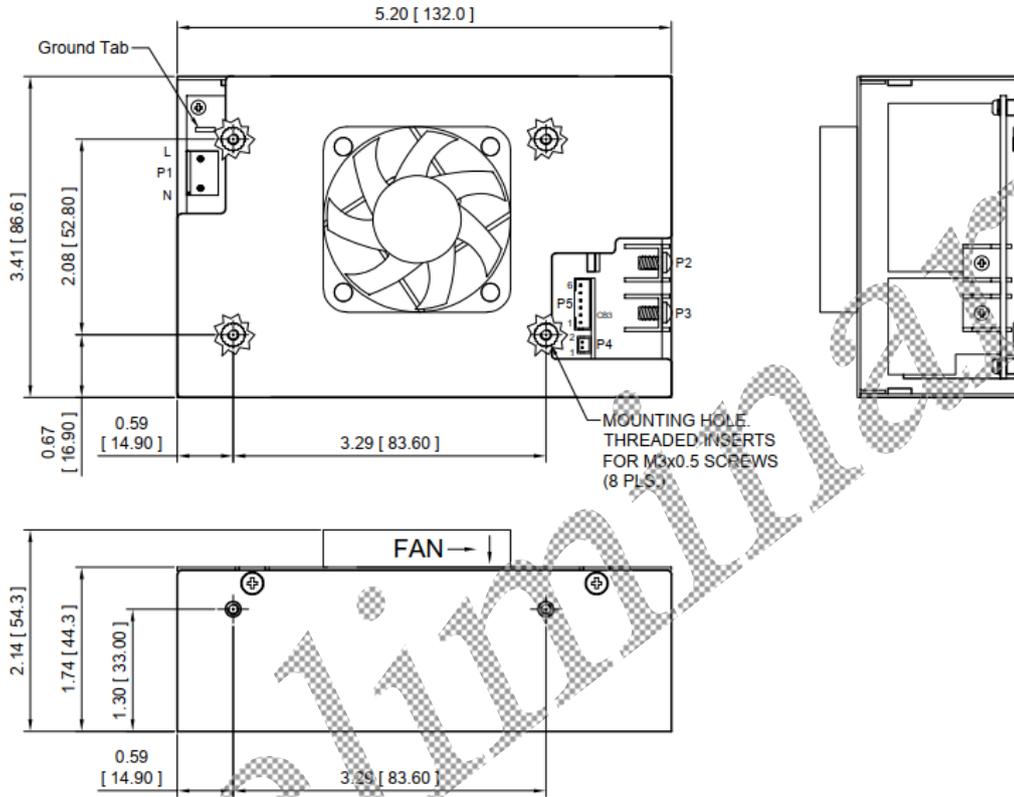


PM451_24-48V_B type

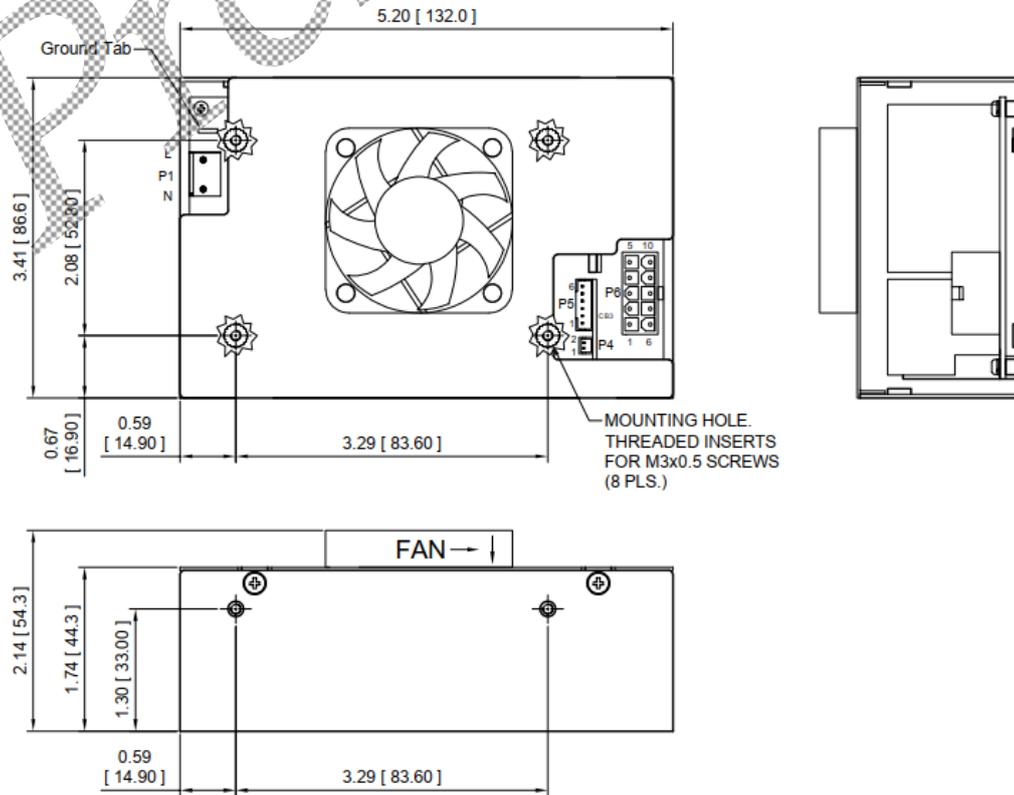


MECHANICAL SPECIFICATIONS

PM451_12-48V_C type



PM451_24-48V_C type



NOTES:

1. Dimensions shown in inches [mm]; tolerance 0.02 [0.5] maximum.
2. Input connector P1: JST header B3P-VH or equivalent, mating with JST housing VHR-3N or equivalent.
3. Output connector P2 & P3: M4 x 0.7 screw connections.
4. Fan connector P4: JST header S2B-ZR or equivalent, mating with JST housing ZHR-2 or equivalent.
5. Connector P5: JST header B6B-PH-K-S or equivalent, mating with JST housing PHR-6 or equivalent.
6. Optional output connector P6: Molex header 39-28-8100 or equivalent, mating with Molex housing 39-01-2100 or equivalent.
7. Ground tab is 0.25 x 0.032 (6.35 x 0.8) fast-on connector.
8. PCB form, to ensure compliance with level B emissions, connect the four "*" marked mounting holes with metallic standoffs to chassis.
9. Weight: 390 grams (0.86 lbs.) approx. for PCB form, 570 grams (1.26 lbs.) approx. for U-bracket form, 660 grams (1.46 lbs.) approx. for enclosed form.
10. Maximum penetration depth of fixing screws is 4 mm from the outer surface of chassis.

PIN CHART

Connector	P1		P2	P3	P4	
	PIN NO.				1	2
	1	2			1	2
Polarity	Neutral	Live	+V1	Common Return	-Fan	+Fan

Connector	P5					
PIN NO.	1	2	3	4	5	6
Polarity	-Sense	+Sense	PFD	Inhibit	+5V Standby	Common Return

Connector	P6 (Optional)									
PIN NO.	1	2	3	4	5	6	7	8	9	10
Polarity	+V1	+V1	+V1	Common Return	Common Return	+V1	+V1	Common Return	Common Return	Common Return