



PROTEK POWER



Electronics

POWER PARTNERS

PM500F Medical & ITE Class II Power Supplies

Features:

- The PM500F Model is Designed for Home Health Care Application
- Class II Application
- Operation Altitude up to 5000 Meters
- 80-264 VAC Input with Active PFC, >0.9 P.F.
- Less than 100 μ A Leakage Current
- EN55011/55022 Class B Conducted Emissions
- Inhibit—TTL high to Disable Output
- Compliant with RoHS Requirements
- Power Consumption in Standby Mode less than 1W at Standby Power 5V/100mA

**RoHS**

Description:

The PM500F series of AC-DC switching power supplies in a package of 3.98 x 7.09 x 1.56 inches are capable of delivering 450-500 watts of continuous power at 30 CFM forced air cooling or 250 watts at convection cooling. The units are constructed on a printed circuit board with a U-bracket for mechanical support and heat sinking. A cover and fan assembly can be added during manufacturing.

Model ¹	Output							Average Efficiency @115/230 Vac
	V1	Min. Current ⁴	Max. Current at convection	Max. Current at 30 CFM	Tol.	Ripple & Noise ³	Max. Output Power ²	
PM500F-12B	12V	0A	20.83A	37.5A	$\pm 2\%$	120mV	250W/450W	89/91%
PM500F-13B	15V	0A	16.67A	30A	$\pm 2\%$	150mV	250W/450W	89/91%
PM500F-13-1B	18V	0A	13.89A	27.78A	$\pm 2\%$	180mV	250W/500W	89/91%
PM500F-14B	24V	0A	10.42A	20.84A	$\pm 2\%$	240mV	250W/500W	90/92%
PM500F-15B	28V	0A	8.93A	17.86A	$\pm 2\%$	280mV	250W/500W	90/92%
PM500F-16A	30V	0A	8.34	16.67	$\pm 2\%$	300mV	250W/500W	90/92%
PM500F-17B	36V	0A	6.94A	13.89A	$\pm 2\%$	360mV	250W/500W	90/92%
PM500F-18B	48V	0A	5.21A	10.42A	$\pm 2\%$	480mV	250W/500W	90/92%
PM500F-19B	57V	0A	4.38A	8.78A	$\pm 2\%$	570mV	250W/500W	90/92%

NOTES:

1. Suffix "A" in models denotes PCB form, change suffix to "B" for U-Bracket form, "C" for enclosed cover and fan assembly, e.g. PM500F-14C.
2. 250W without moving air or 450-500 W with 30 CFM forced air provided by user for "B" and "C" versions.
3. 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 μ F tantalum capacitor in parallel with a 0.1 μ F ceramic capacitor across the output.
4. All models may be operated at no-load without damage. At no load, output voltage fluctuates beyond 5% due to the burst-mode operation of the control IC in them for energy saving.



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Specifications	
Safety Standards & EMC Specifications	
Safety Standards	UL ES 60601-1, CSA C22.2 No. 60601-1 TUV EN 60601-1
EMI Standard	EN55011/EN55022, FCC, and VCCI Class B (radiated and conducted)
EMC Performance	EN61000-3-2: Harmonic distortion, Class A and D EN61000-3-3: Line flicker EN61000-4-2: ESD, ± 15 kV air and ± 8 kV contact EN61000-4-3: Radiated immunity, 10V/m EN61000-4-4: Fast transient/burst, ± 2 kV EN61000-4-5: Surge, ± 1 kV diff., ± 2 kV com. EN61000-4-6: Conducted immunity, 10Vrms EN61000-4-8: Magnetic field immunity, 30 A/m EN61000-4-11: Voltage dip immunity, 30% reduction for 500ms, and 100% reduction for 10ms
*Consult with TT Electronics for information on additional country safety approvals	
Input Specifications	
Input Voltage Range	80 to 264 Vdc
Power Derating	Derate linearly from 100% at 90VAC to 90% at 85VAC and 80% at 80VAC
Input Frequency Range	47 to 63Hz
Input Current	5.2 A (rms) @ 115VAC, 60Hz or 2.6 A (rms) for 230VAC, 50Hz
Touch Current	100 μ A max. @ 264 VAC, 63 Hz
Output Specifications	
Ripple and Noise	1% peak to peak maximum
Remote Sense	Compensation for cable losses up to 0.5V
Oversupply Protection	Set 112-140% of nominal output voltage
Short circuit protection	Automatic recovery
Over temperature protection	Latching by recycle input to reset
Temperature Coefficient	All outputs $\pm 0.04\%/\text{C}$ maximum
Transient Response	Maximum excursion of 4%, recovering to 1% of final value within 500 μ s after a 25% step load change
Standby Power	5V at 2A maximum
Fan Power	12V at 300 mA maximum
Environmental Specifications	
Operating Temperature	-10°C to +70°C
Storage Temperature	-40°C to +85°C
Relative Humidity	5% to 95% non-condensing
Temperature Derating	De-rate from 100% at +50°C linearly to 50% at +70°C, applicable to convection and forced-air cooling conditions
General Specifications	
Switching Frequency	85 KHz
Power Factor	>0.9
Efficiency	Typical 92%
Hold-up Time	20ms minimum at 100 VAC
Line Regulation	$\pm 0.5\%$ maximum at full load
Inrush Current	30A @ 115 Vac or 200A @ 60 Vac at 25°C cold start
Withstand Voltage	4000 VAC input to output (2 MOOP) 4000 VAC input to case (2 MOOP) 1500 VAC output to case (1 MOOP)
MTBF	100,000 hours at full load at 25°C ambient, calculated per MIL-HDBK-217F

General Note

All data sheets are subject to change without notice.



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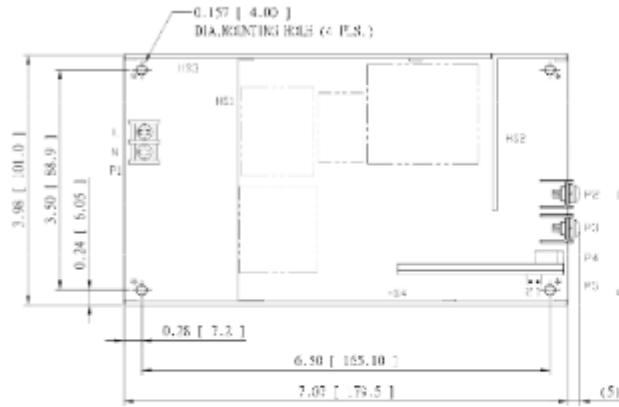
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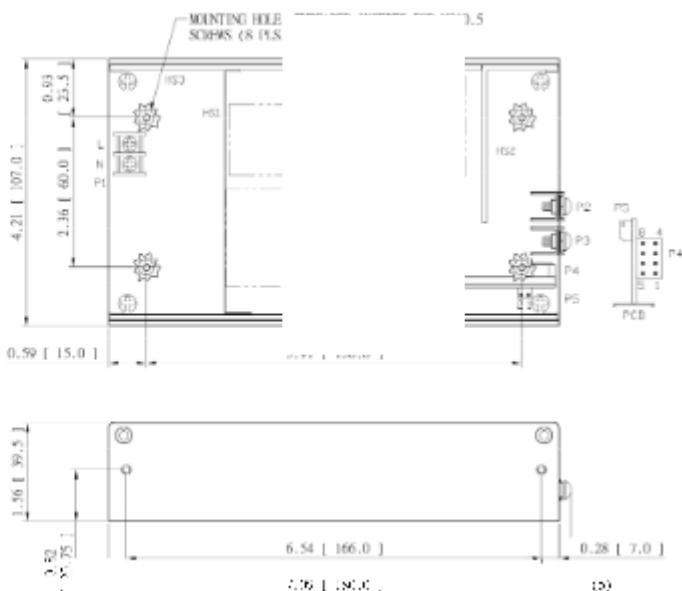
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Diagrams

PCB Form



U-bracket Form

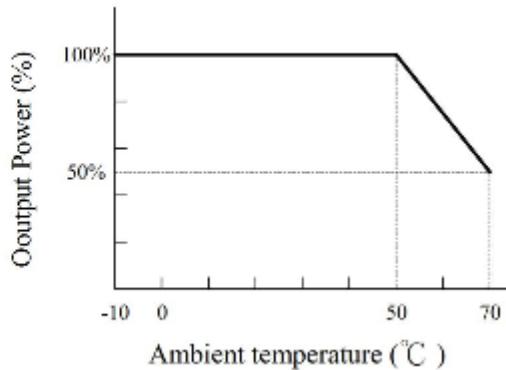


INTERFACE SIGNALS

PFD: TTL high for normal operation, low upon loss of input power, turn-on delay time 100-1000 ms, turn-off delay time 1 ms minimum

Inhibit: Requires an external TTL high level signal to inhibit outputs for standard models

OUTPUT POWER DERATING CURVE



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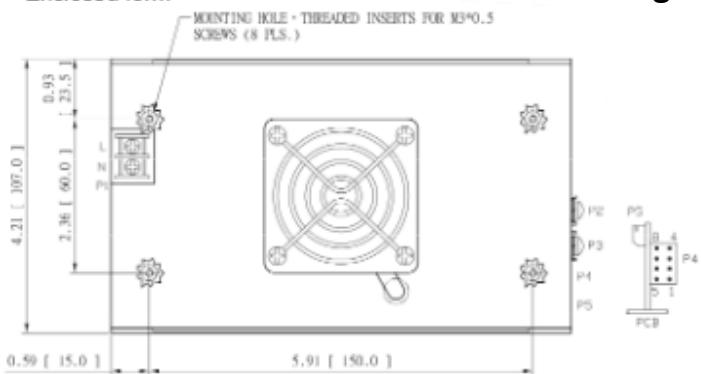


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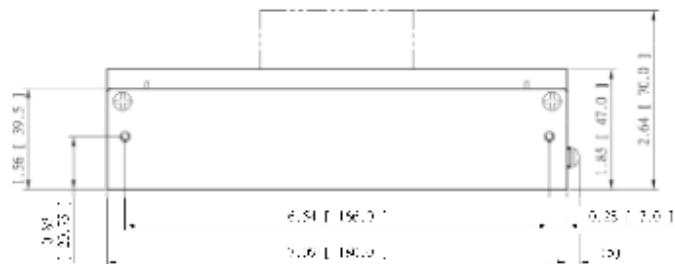
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Enclosed form



Diagrams



NOTES:

- Dimensions shown in inches [mm]
- Tolerance 0.02 [0.5] maximum
- Input connector P1 is Dinkle terminal P/N DT-35C-B01W-02, with nickel plated M3 screws.
- Output connectors P2 and P3 are for M4x0.7 screw connections.
- Output connector P4 is Molex header 87833-08 or equivalent, mating with Molex housing 51110-0850 or equivalent.
- Fan connector P5 is JST header B2B-ZR-3.4 or equivalent, mating with JST housing ZHR-2 or equivalent.
- To ensure compliance with level B emissions, connect the four '*' marked mounting holes with metallic standoffs to chassis.
- Weight: 1.0 Kg (2.23 lbs.) approx. for U-bracket form, 1.14 Kgs. (2.52 lbs.) approx. for enclosed form
- Maximum penetration of fixing screws is 4 mm from the outer surface of chassis.

PIN CHART

PIN NO.	P1 (AC)		P2	P3	P5	
	1	2			1	2
Polarity	Live	Neutral	+V1	Common Return	Common Return	+12V Fan

PIN NO.	P4							
	1	2	3	4	5	6	7	8
Polarity	Common Return	+V1 Sense	-V1 Sense	PFD	Inhibit	+5V Standby	+5V Standby	Common Return

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