



PROTEK POWER

PM400 Medical & ITE Power Supply Series (400W)

Features:

- BF Class insulation
- Operation altitude up to 5000 meters
- Suitable for both Class I and Class II applications*
- 2 x 4 inch foot print with 1.3 inch low profile
- Less than 2 75 μ A leakage current
- Wide input range 80-264 VAC
- Meet EN55011 /55022 and FCC Class B
- Power Factor 0.98 typical
- 100% burn-in at full load
- Short –circuit protection
- Over-temperature protection
- Power Fail Detect (PFD) signal (optional)
- Compliant with RoHS Requirements
- No load power consumption less than 0. 5W without PFD or 1W with PFD



RoHS



Description:

The PM400 series of AC-DC switching power supplies in a package of 4 X 7 X 1.58 inches are capable of delivering 400 watts of continuous power at 7 CFM forced air cooling or 300 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 for 400 watt output without the change of any dimension. They are designed for medical applications. The units are certified also to IEC/EN/ UL 60950-1 and suitable for data networking, industrial and telecommunication applications.

Model ¹ Class II	Output							Efficiency (typical) @115/230 Vac
	V1	Min Current	Max. Current at convection	Max. Current at 7.5 CFM ⁽²⁾	Tol	Ripple & Noise ⁴	Max. Output Power ³	
PM400-12B	12V	0.1A	25.00A	33.34A	±2%	120mV	300 W/ 400 W	90/92%
PM400-13B	15V	0.1A	20.00A	26.67A	±2%	150mV	300 W/400 W	90/92%
PM400-13-1B	18V	0.1A	16.67A	22.23A	±2%	180mV	300 W/ 400W	91/92%
PM400-14B	24V	0.1A	12.50A	16.67A	±2%	240mV	300W /400W	89/91%
PM400-15B	28V	0.1A	10.72A	14.29A	±2%	280mV	300 W/ 400 W	89/91%
PM400-17B	36V	0.1A	8.34A	11.12A	±2%	360mV	300 W/ 400 W	90/92%
PM400-18B	48V	0.1A	6.25A	8.34A	±2%	480mV	300 W/ 400 W	90/93%

NOTES:

1. Dimensions shown in inches [mm]
2. Tolerance 0.02 [0.5] maximum
3. Input connector P1 is Dinkle terminal P/N DT-35-B01W-03, with nickel plated M3 screws.
4. P2, P3: M4 x 0.7 screw connectors
5. Connector P4: Molex header 87833-08 or equivalent, mating with Molex housing 51110-0850 or equivalent.
6. Fan connector P5: JST header S2B-ZR-3.4 or equivalent, mating with JST housing ZHR-2 or equivalent.
7. Weight: 1.0 Kg (2.23 lbs.) approx. for U-bracket form, 1.14 Kgs. (2.52 lbs.) approx. for enclosed form 8. Maximum penetration depth of fixing screws is 4 mm from the outer surface of chassis.

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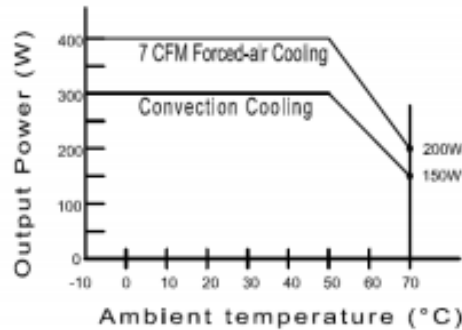
Specifications	
Safety Standards & EMC Specifications	
Safety Standard	UL ES 60601-1, CSA C22.2 No. 60601-1 , File No. E178020 TUV EN 60601-1 TUV EN 60950-1 UL 60950-1, CSA C22.2 No. 60950-1
EMI Standard	IEC60601-1-2:2014: EN55011/EN55022: Class B conducted , class B radiated FCC: Class B conducted, class B radiated VCCI: Class B conducted, class B radiated
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 EN61000-4-4: Fast transient /burst , ± 2 KV EN61000-4-5: Surge, ± 1 KV diff, \pm KV com EN61000-4-6: Conducted immunity, 10 Vms 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
*Consult with TT Electronics for information on additional country safety approvals	
Input Specifications	
Input Voltage Range	90– 264VAC
Input Frequency Range	47-63Hz
Input Current	4.2 A (rms) @115 VAC, 60 Hz 2.1 A (rms) @ 230 VAC, 50 Hz
Earth Leakage Current	300 μ A max. @ 264 VAC, 63 Hz
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 0.5 V
Overvoltage Protection	Set at 115-140% of nominal output voltage, automatic recovery
Short circuit protection	Automatic recovery
Over temperature protection	Latching by recycle input to reset
Thermal shutdown	Protected to overtemperature conditions
Temperature Coefficient	All outputs $\pm 0.04\%$ / $^{\circ}$ C maximum
Transient Response	Maximum excursion of 4%, recovering to 1% of final value within 500 us after a 25%
Fan Power	12 V at 250 mA maximum
Standby power	5V at 100 mA maximum
Environmental Specifications	
Operating Temperature	-10 $^{\circ}$ C to +70 $^{\circ}$ 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
General Specifications	
Switching frequency	85KHz (typical)
Power Factor	>0.9
Efficiency	Typical 89% @ 115 VAC, 92% @ 230 VAC
Hold-up time	12 ms minimum at 110 VAC & 400W
Line Regulation	$\pm 0.5\%$ maximum at full load
Inrush Current	20 A @ 115 VAC, or 40 A @ 230 VAC, at 25 $^{\circ}$ C cold start
Withstand Voltage	4000 VAC from input to output (2 MOPP) 1500 VAC from input to ground (1 MOPP) 1500 VAC from output to ground
MTBF	250,000 hours at full load at 25 $^{\circ}$ C ambient, calculated per MIL-HDBK-217F



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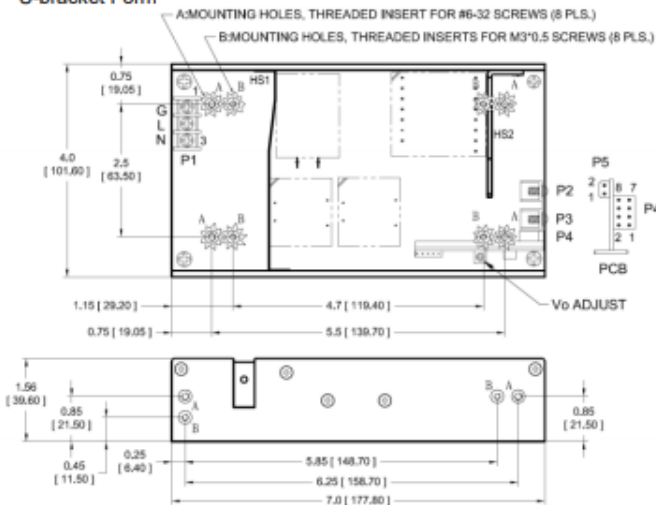
Diagrams

OUTPUT POWER DERATING CURVE

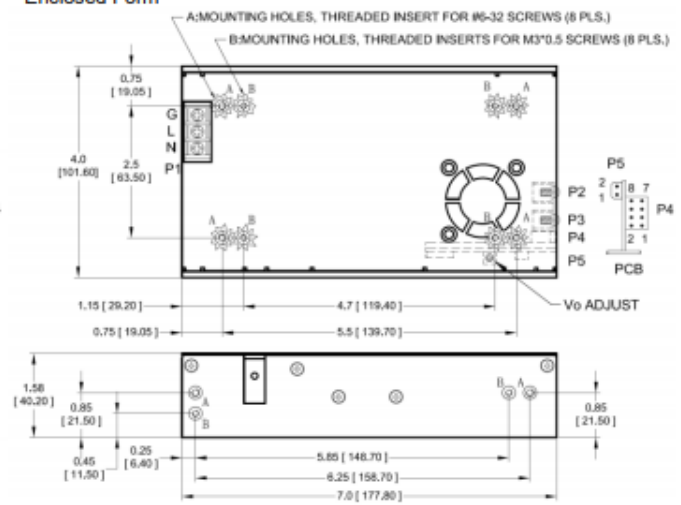


MECHANICAL SPECIFICATIONS

U-bracket Form



Enclosed Form



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Diagrams

PIN CHART

Connector	P1 (AC)			P2	P3	P5	
PIN NO.	1	2	3			1	2
Polarity	Ground	Live	Neutral	+V1	Common Return	+12V Fan	Common Return

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