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, but not for life-supporting equipment. The units are certified also to IEC/EN/UL 60950-1 and suitable for data networking, computer and telecommunication applications.

PM400 SERIES

SAFETY STANDARD APPROVALS

(Pending)

FEATURES

- 4 x 7 inch footprint with 1.58 inch low profile
- 100-240 VAC input with active PFC
- Less than 300 μ A leakage current
- 300 watt convection rating up to +50℃
- 400 watt output with 7 CFM forced air
- Standby output 5VDC at 100mA
- EN55011 / 55022 Class B conducted emissions
- Inhibit - TTL low to disable output
- Standard PS Off and DC OK signals
- Efficiency greater than 88%
- Compliant with RoHS requirements

INPUT SPECIFICATIONS

Input voltage:	90-264 VAC
Input frequency:	47-63 Hz
Input current:	4.2 A (rms) @115 VAC, 60 Hz 2.1 A (rms) @ 230 VAC, 50 Hz
Earth leakage current:	300 μA max. @ 264 VAC, 63 Hz

OUTPUT SPECIFICATIONS

Output voltage/current:	See rating chart.
Maximum output power:	See rating chart.
Ripple and noise:	1% peak to peak maximum
Remote sense	Compensation for cable losses up to 0.5V
Overvoltage protection:	Set at 115-140% of nominal output voltage
Overcurrent protection:	Protected to output short circuit conditions
Thermal shutdown	Protected to overtemperature conditions
Temperature coefficient:	All outputs ±0.04% /℃ maximum
Transient response:	Maximum excursion of 4%, recovering to 1% of final value within 500 us after a 25% step load change
Standby power	5 V at 100 mA maximum
Fan power	12 V at 250 mA maximum

ENVIRONMENTAL SPECIFICATIONS

Operating temperature:	-10℃ to +70℃
Storage temperature:	-40℃ to +85℃
Relative humidity:	5% to 95% non-condensing
Derating:	Derate from 100% at +50℃ linearly to 50% at +70℃, applicable to convection and forced-air cooling conditions

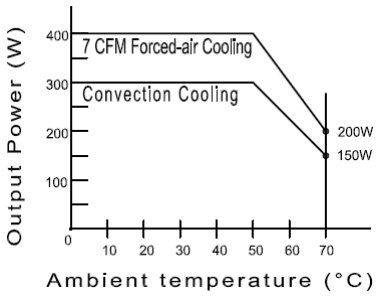
GENERAL SPECIFICATIONS

Switching frequency:	85 KHz (typical)
Efficiency:	Typical 89% @ 115 VAC, 92% @ 230 VAC
Hold-up time:	12 ms minimum at 110 VAC & 400 W
Line regulation:	±0.5% maximum at full load
Inrush current:	20 A @ 115 VAC, or 40 A @ 230 VAC, at 25℃ cold start
Withstand voltage:	4000 VAC from input to output, 1500 VAC from input to ground, 500 VAC from output to ground
MTBF:	350,000 hours at full load at 25℃ ambient, calculated per MIL-HDBK-217F
EMC Performance	
EN55011/EN55022:	Class B conducted, class A radiated
FCC:	Class B conducted, class A radiated
VCCI:	Class B conducted, class A radiated
EN61000-3-2:	Harmonic distortion, class A and D
EN61000-3-3:	Line flicker
EN61000-4-2:	ESD, ±8 KV air and ±6 KV contact
EN61000-4-3:	Radiated immunity, 3 V/m
EN61000-4-4:	Fast transient/burst, ±2 KV
EN61000-4-5:	Surge, ±1 KV diff., ±2 KV com
EN61000-4-6:	Conducted immunity, 3 Vrms
EN61000-4-8:	Magnetic field immunity, 3 A/m
EN61000-4-11:	Voltage dip immunity, 30% reduction for 500 ms, 60% reduction for 100 ms and >95% reduction for 10 ms

INTERFACE SIGNALS

PFD: TTL high for normal operation, low upon loss of input power, turn-on delay time 100-500 ms, turn-off delay time 5 ms minimum
Inhibit: TTL low to turn off output
DC OK: TTL high when output voltage >95%
PS OFF: TTL high to turn off output

OUTPUT POWER DERATING CURVE



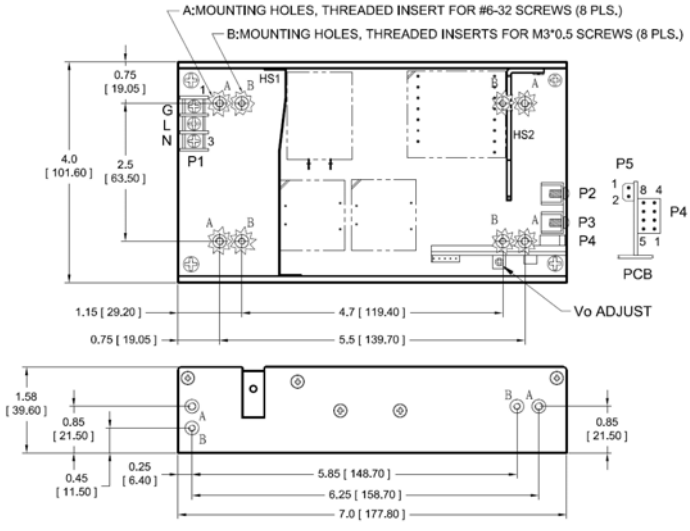
OUTPUT VOLTAGE/CURRENT RATING CHART

	Output							Efficiency (typical)	
Model[1]	V1	Min. Current	Max. Current at convection	Max. Current at 7 CFM[2]	Tol.	Ripple & Noise[3]	Max. Output Power	@ 300 W 115/230 Vac	@ 400 W 115/230 Vac
PM400-12B	12 V	0 A	25.00 A	33.34 A	±2%	120 mV	300 W/400 W	90/92 %	88/91 %
PM400-13B	15 V	0 A	20.00 A	26.67 A	±2%	150 mV	300 W/400 W	90/92 %	88/91 %
PM400-13-1B	18 V	0 A	16.67 A	22.23 A	±2%	180 mV	300 W/400 W	90/92 %	88/91 %
PM400-14B	24 V	0 A	12.50 A	16.67 A	±2%	240 mV	300 W/400 W	90/92 %	89/92 %
PM400-15B	28 V	0 A	10.72 A	14.29 A	±2%	280 mV	300 W/400 W	90/92 %	89/92 %
PM400-17B	36 V	0 A	8.34 A	11.12 A	±2%	360 mV	300 W/400 W	90/92 %	89/92 %
PM400-18B	48 V	0 A	6.25 A	8.34 A	±2%	480 mV	300 W/400 W	90/92 %	89/92 %

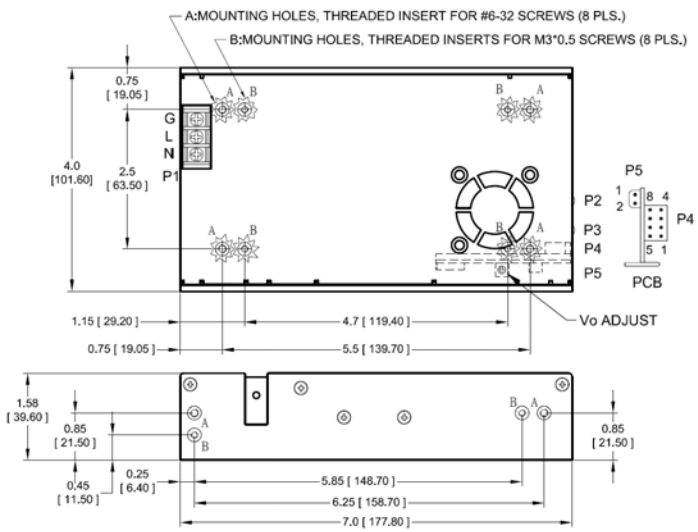
NOTES:
1. Change suffix "B" for U-Bracket form to "C" for enclosed form with cover-and-fan assembly, e.g. PM400-14C.
2. 300 W without moving air or 400 W with 7 CFM forced air provided by user for "B" version, 400 W for "C" version with cover-and-fan assembly
3. Ripple and noise is maximum peak-to-peak voltage value measured at output within 20 MHz bandwidth, at rated line voltage and output load ranges, and with a 10 µF tantalum capacitor in parallel with a 0.1 µF ceramic capacitor across the output.

MECHANICAL SPECIFICATIONS

U-bracket Form



Enclosed Form



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: M3 x 0.5 screw connectors
5. Connector P4: Molex header 87833-08 or equivalent, mating with Molex housing 51110-0850 or equivalent.
6. Fan connector P5: Molex header 53048-0210 or equivalent, mating with Molex housing 51021-0200 or equivalent.
7. Weight: 1.0 Kg (2.23 lbs.) approx. for U-bracket form, 1.14 Kg (2.52 lbs.) approx. for enclosed form
8. Maximum penetration depth of fixing screws is 4 mm from the outer surface of chassis.

PIN CHART

MODEL / CONN / PIN	P1 (AC)			P2	P3	P5	
	1	2	3			1	2
PM400-12B PM400-15B PM400-13B PM400-17B PM400-13-1B PM400-18B PM400-14B	Ground	Live	Neutral	+V1	Common Return	+12V Fan	Common Return

MODEL / CONN / PIN	P4							
	1	2	3	4	5	6	7	8
PM400-12B PM400-15B PM400-13B PM400-17B PM400-13-1B PM400-18B PM400-14B	Common Return	+V1 Sense	-V1 Sense	PFD	Inhibit	+5V Standby	DC OK	PS OFF