



**DESCRIPTION**

The PM150 series of AC-DC switching power supplies in a package of 2 x 4 x 1.3 inches are capable of delivering 120-150 watts of continuous power at 30 CFM forced air cooling or 80-100 watts at convection cooling. The units are constructed on a printed circuit board. They are specially designed for medical applications, but not for life-supporting equipment. The units are certified also to IEC /EN /UL /CSA 60950-1 and suitable for data networking, computer and telecommunication applications.

**PM150 SERIES**

**RoHS**

**FEATURES**

- 2 x 4 inch footprint with 1.3 inch low profile
- 100-240 VAC input with active PFC
- Less than 275  $\mu$ A leakage current
- Meet EN55011 /55022 and FCC Class B
- Power Factor 0.98 typical
- Short-circuit protection
- Power Fail Detect (PFD) signal
- Inhibit - TTL high to disable output
- Compliant with RoHS requirements
- Efficiency greater than 87%

**SAFETY STANDARD APPROVAL**

*Preliminary*

**INPUT SPECIFICATIONS**

Input voltage: 90-264 VAC  
 Input frequency: 47-63 Hz  
 Input current: 2.0 A (rms) for 115 VAC  
 1.0 A (rms) for 230 VAC  
 Earth leakage current: 275  $\mu$ 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  
 Overvoltage protection: set at 112-140% of its nominal output voltage  
 Overcurrent protection: Output protected to short circuit conditions  
 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  $\mu$ s after a 25% step load change  
 Fan power: 12 V at 1.0 A maximum (isolated)

**ENVIRONMENTAL SPECIFICATIONS**

Operating temperature: 0 $^{\circ}$ C to +70 $^{\circ}$ C  
 Storage temperature: -40 $^{\circ}$ C to +85 $^{\circ}$ C  
 Relative humidity: 5% to 95% non-condensing  
 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: 133 KHz (typical)  
 Efficiency: See rating chart.  
 Hold-up time: 10 ms minimum at 120 VAC  
 Line regulation:  $\pm$ 0.5% maximum at full load  
 Inrush current: 30 A @ 115 VAC or 60 A @ 230 VAC, at 25 $^{\circ}$ C cold start  
 Withstand voltage: 4000 VAC from input to output, 1500 VAC from input to ground, 500 VAC from output to ground  
 MTBF: 250,000 hours at full load at 25 $^{\circ}$ C ambient, calculated per MIL-HDBK-217F  
 EMC Performance  
 EN55011/EN55022: Class B conducted, class B radiated  
 FCC: Class B conducted, class B radiated  
 VCCI: Class B conducted, class B radiated  
 EN61000-3-2: Harmonic distortion, class A and D  
 EN61000-3-3: Line flicker  
 EN61000-4-2: ESD,  $\pm$ 8 KV air and  $\pm$ 6 KV contact  
 EN61000-4-3: Radiated immunity, 3 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, 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, >95% reduction for 10 ms

## OUTPUT VOLTAGE/CURRENT RATING CHART

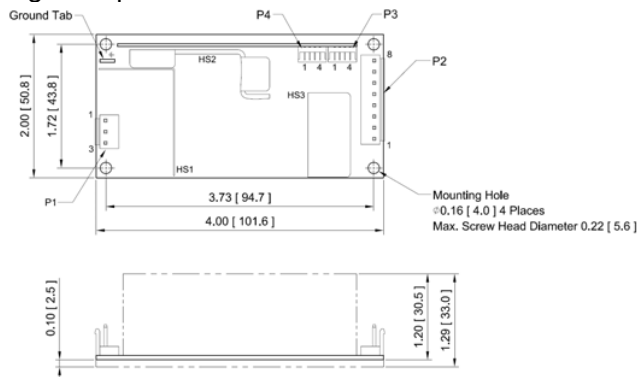
Model	Output									Efficiency (typical)	
	Vnom.	Min. load	Max. Current at convection	Max. Current at 30 CFM	Peak <sup>(1)</sup> Current	Tol.	Ripple & Noise <sup>(3)</sup>	Max. Power <sup>(2)</sup>	Max. Power at convection 115/230 Vac	Max. Power at 30 CFM 115/230 Vac	
PM150-10A	V1 5 V	0 A	16.0 A	24.0 A	30.0 A	±2%	50 mV	80 W / 120 W	86/86 %	86/86 %	
PM150-12A	V1 12 V	0 A	8.3 A	12.5 A	14.0 A	±2%	120 mV	100 W / 150 W	87/89 %	86/88 %	
PM150-13A	V1 15 V	0 A	6.7 A	10.0 A	11.0 A	±2%	150 mV	100 W / 150 W	87/89 %	86/88 %	
PM150-13-1A	V1 18 V	0 A	5.56 A	8.34 A	9.2 A	±2%	180 mV	100 W / 150 W	87/89 %	86/88 %	
PM150-14A	V1 24 V	0 A	4.2 A	6.3 A	7.0 A	±2%	240 mV	100 W / 150 W	87/89 %	86/88 %	
PM150-16A	V1 30 V	0 A	3.34 A	5.0 A	5.6 A	±2%	300 mV	100 W / 150 W	87/89 %	86/88 %	
PM150-17A	V1 36 V	0 A	2.78 A	4.17 A	4.6 A	±2%	360 mV	100 W / 150 W	87/89 %	86/88 %	
PM150-18A	V1 48 V	0 A	2.1 A	3.1 A	3.5 A	±2%	480 mV	100 W / 150 W	87/89 %	86/88 %	
PM150-31-3A	V1 +3.3 V	0 A	13.0 A	18.0 A	20.0 A	±2%	50 mV	80 W / 130 W	80/82 %	81/83 %	
	V2 +5 V	0 A	5.0 A	9.0 A	10.0 A	±5%	50 mV				
	V3 +12 V	0 A	1.0 A	2.3 A	2.3 A	±5%	120 mV				
PM150-31A	V1 +5 V	0 A	13.0 A	18.0 A	20.0 A	±2%	50 mV	80 W / 130 W	81/83 %	82/84 %	
	V2 +12 V	0 A	5.0 A	9.0 A	10.0 A	±5%	120 mV				
	V3 -12 V	0 A	1.0 A	2.0 A	2.0 A	±5%	120 mV				
PM150-32A	V1 +5 V	0 A	13.0 A	18.0 A	20.0 A	±2%	50 mV	80 W / 130 W	81/83 %	82/84 %	
	V2 +15 V	0 A	4.0 A	7.2 A	8.0 A	±5%	150 mV				
	V3 -15 V	0 A	1.0 A	1.5 A	2.0 A	±5%	150 mV				
PM150-36A	V1 +5 V	0 A	13.0 A	18.0 A	20.0 A	±2%	50 mV	80 W / 130 W	81/83 %	82/84 %	
	V2 +24 V	0 A	1.5 A	3.0 A	3.5 A	±7%	240 mV				
	V3 +12 V	0 A	1.0 A	2.3 A	2.3 A	±5%	120 mV				

### NOTES:

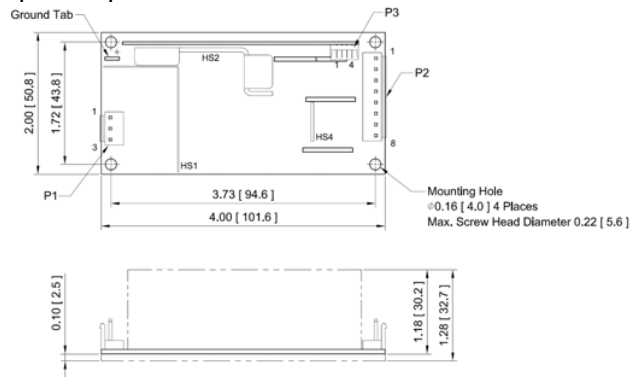
1. Peak output current with 10% duty cycle maximum for less than 15 seconds. The total peak power of triple output models must not exceed 130 W.
2. The first value of max. power is at convection cooling. The second value is with 30 CFM forced air provided by user.
3. Ripple and noise is maximum peak-to-peak 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

### Single Output Models



### Triple Output Models



### NOTES:

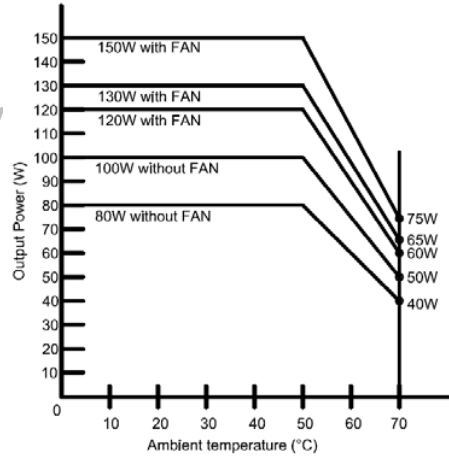
1. Dimensions shown in inches [mm]
2. Tolerance 0.02 [0.5] maximum
3. Input connector P1: JST header P/N V3P-VH-B, mating with JST housing P/N VHR-3N or equivalent.
4. Output connector P2: JST header P/N V8P-VH-B, mating with JST housing P/N VHR-8N or equivalent.
5. Connector P3: Molex header 53253-0470, mating with Molex housing 51065-400 or equivalent.
6. FAN connector P4: Molex header 53253-0470, mating with Molex housing 51065-400 or equivalent.
7. Ground tab is 0.25 [6.35] × 0.032 [0.8] fast-on connector.
8. Weight: 200 grams (0.44 lbs.) approx.

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: TTL high to turn off output

Preliminary

OUTPUT POWER DERATING CURVE



PIN CHART

Single Output Models

CONN		P1			P2							
MODEL	PIN	1	2	3	1	2	3	4	5	6	7	8
PM150-10A PM150-12A PM150-13A PM150-13-1A	PM150-14A PM150-16A PM150-17A PM150-18A	Neutral	Void	Live	Common Return					+V1		

CONN		P3				P4			
MODEL	PIN	1	2	3	4	1	2	3	4
PM150-10A PM150-12A PM150-13A PM150-13-1A	PM150-14A PM150-16A PM150-17A PM150-18A	Common Return	PFD	-Sense	+Sense	+12V Fan	+12V Fan	Fan Return (Isolated)	Fan Return (Isolated)

Triple Output Models

CONN		P1			P2							
MODEL	PIN	1	2	3	1	2	3	4	5	6	7	8
PM150-31-3A PM150-31A PM150-32A PM150-36A		Neutral	Void	Live	V1	V1	Common Return				V2	V3

CONN		P3			
MODEL	PIN	1	2	3	4
PM150-31-3A PM150-31A PM150-32A PM150-36A		PFD	Common Return	+V1 Sense	-V1 Sense