

## 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 100-150 watts of continuous power at 7.5 CFM forced air cooling or 100 watts at convection cooling. The units are constructed on a printed circuit board. They are specially designed for medical applications. The units are certified also to IEC /EN /UL /CSA 60950-1 and suitable for data networking, industrial and telecommunication applications.

## FEATURES

- BF Class insulation
- Operation altitude up to 5000 meters
- Suitable for both Class I and Class II applications\*
- 2 x 4 inch footprint with 1.3 inch low profile
- Less than 275  $\mu$ 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

## INPUT SPECIFICATIONS

Input voltage:	80-264 VAC
Input frequency:	47-63 Hz
Input current:	1.7 A (rms) for 115 VAC 0.85 A (rms) for 230 VAC
Earth leakage current:	275 $\mu$ A max. @ 264 VAC, 63 Hz
Touch current:	100 $\mu$ A max. @ 264 VAC, 63 Hz

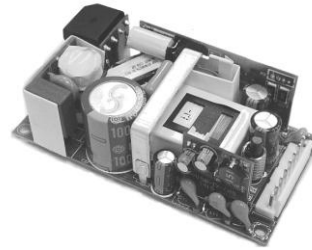
## OUTPUT SPECIFICATIONS

Output voltage/current:	See rating chart.
Total output power:	See rating chart.
Ripple and noise:	See rating chart.
Remote sense	Compensation for cable losses up to 0.5 V
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 0.5 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

## PM150 SERIES



**CE**  
**RoHS**

## SAFETY STANDARD APPROVAL



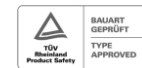
UL ES 60601-1, CSA C22.2 No. 60601-1  
File No. E178020



TÜV EN 60601-1



UL 60950-1, CSA C22.2 No. 60950-1



TÜV EN 60950-1

## 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:	80 A @ 115 VAC or 160 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
EMC Performance (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
EN61000-3-2:	Harmonic distortion, class A and D
EN61000-3-3:	Line flicker
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

\* When installing a PM150-XXA (Open Frame) model in Class II end application, the power supply shall be mounted on insulating posts, in a manner that provides at minimum 5mm Clearance and 8mm Creepage between the power supply and any accessible conductive parts.

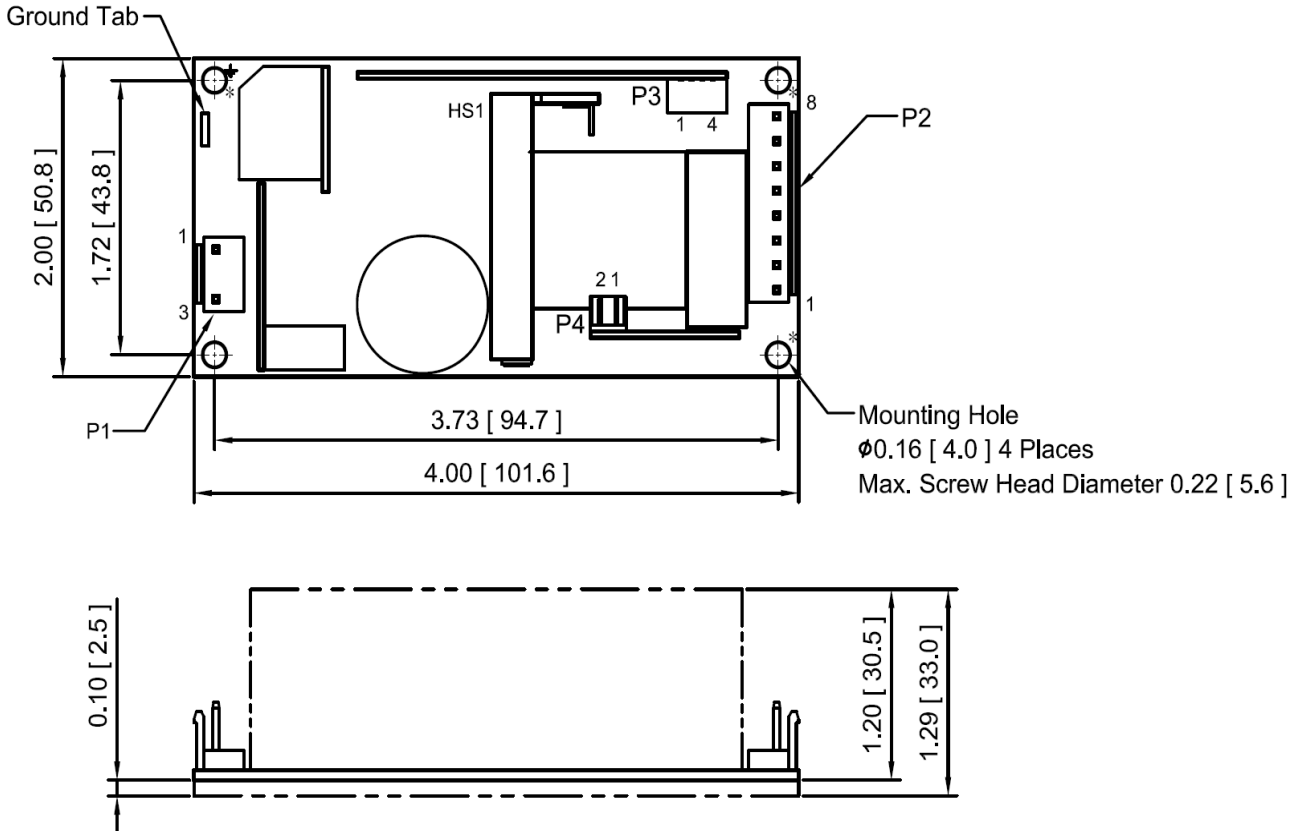
## OUTPUT VOLTAGE/CURRENT RATING CHART

Model <sup>(1)</sup>	Output								Efficiency (typical) 115/230 Vac
	V1	Min. load	Max. Current at convection	Max. Current at 7.5 CFM	Peak <sup>(2)</sup> Current	Tol.	Ripple & Noise <sup>(4)</sup>	Max. Power <sup>(3)</sup>	
PM150-12A	12 V	0 A	8.35 A	12.50 A	14.0 A	±2%	120 mV	100 W /150 W	90 /92%
PM150-13A	15 V	0 A	6.70 A	10.00 A	11.0 A	±2%	150 mV	100 W /150 W	89 /91%
PM150-13-1A	18 V	0 A	5.56 A	8.34 A	9.2 A	±2%	180 mV	100 W /150 W	91 /92%
PM150-14A	24 V	0 A	4.20 A	6.25 A	7.0 A	±2%	240 mV	100 W /150 W	89 /92%
PM150-16A	30 V	0 A	3.34 A	5.00 A	5.6 A	±2%	300 mV	100 W /150 W	89 /92%
PM150-17A	36 V	0 A	2.78 A	4.17 A	4.6 A	±2%	360 mV	100 W /150 W	90 /92%
PM150-18A	48 V	0 A	2.10 A	3.13 A	3.5 A	±2%	480 mV	100 W /150 W	89 /92%

### NOTES:

- To order a model with PFD signal, please consult factory to get an exclusive part number distinguishing it from the standard model without PFD signal.
- Peak output current with 10% duty cycle maximum for less than 15 seconds, average power not to exceed maximum power rating.
- The first value of max. power is at convection cooling. The second value is with 7.5 CFM forced air provided by user.
- 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 (or electrolytic) capacitor in parallel with a 0.1 µF ceramic capacitor across the output except model PM150-12A which is with a 47 µF tantalum (or electrolytic) capacitor in parallel with a 0.1 µF ceramic capacitor across the output.

## MECHANICAL SPECIFICATIONS



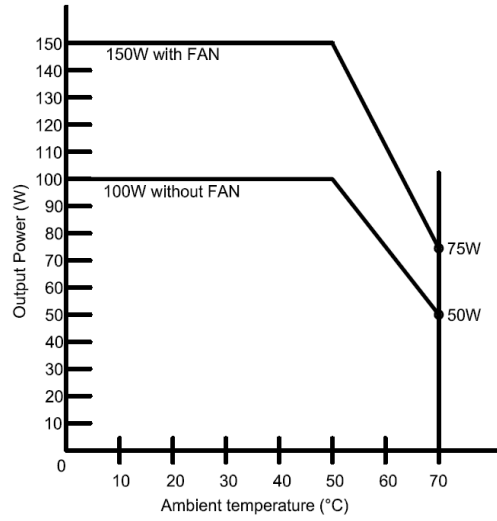
### NOTES:

- Dimensions shown in inches [mm]
- Tolerance 0.02 [0.5] maximum
- Input connector P1: JST header P/N B3P-VH, mating with JST housing P/N VHR-3N or equivalent.
- Output connector P2: JST header P/N B8P-VH, mating with JST housing P/N VHR-8N or equivalent.
- Connector P3: JST header B4B-PH-K-S (LF) (SN), mating with JST housing PHR-4 or equivalent.
- FAN connector P4: JST header B2B-PH-K-S (LF) (SN), mating with JST housing PHR-2 or equivalent.
- Ground tab is 0.25 [6.35] × 0.032 [0.8] fast-on connector.
- To ensure compliance with level B emissions, connect the three "\*" marked mounting holes with metallic standoffs to chassis.
- Weight: 200 grams (0.44 lbs.) approx.

### 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.

### OUTPUT POWER DERATING CURVE



### PIN CHART

Connector	P1			P2							
PIN NO.	1	2	3	1	2	3	4	5	6	7	8
Polarity	Neutral	Void	Live	Common Return				+V1			

Connector	P3				P4	
PIN NO.	1	2	3	4	1	2
Polarity	Common Return	PFD (Optional)	-Sense	+Sense	Fan Return (Isolated)	+12V Fan