

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
- 2 x 4 inch footprint with 1.3 inch low profile
- Less than 275 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

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 μ A max. @ 264 VAC, 63 Hz |
| Touch current: | 100 μ A max. @ 264 VAC, 63 Hz |

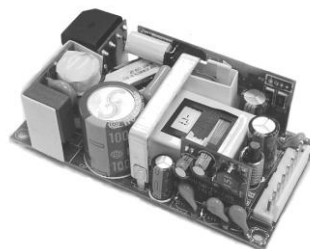
OUTPUT SPECIFICATIONS

| | |
|--------------------------|--|
| 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: | Output protected to short circuit conditions 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 μ 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 | |
| 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, ± 15 KV air and ± 8 KV contact |
| EN61000-4-3: | Radiated immunity, 10 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, 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 |

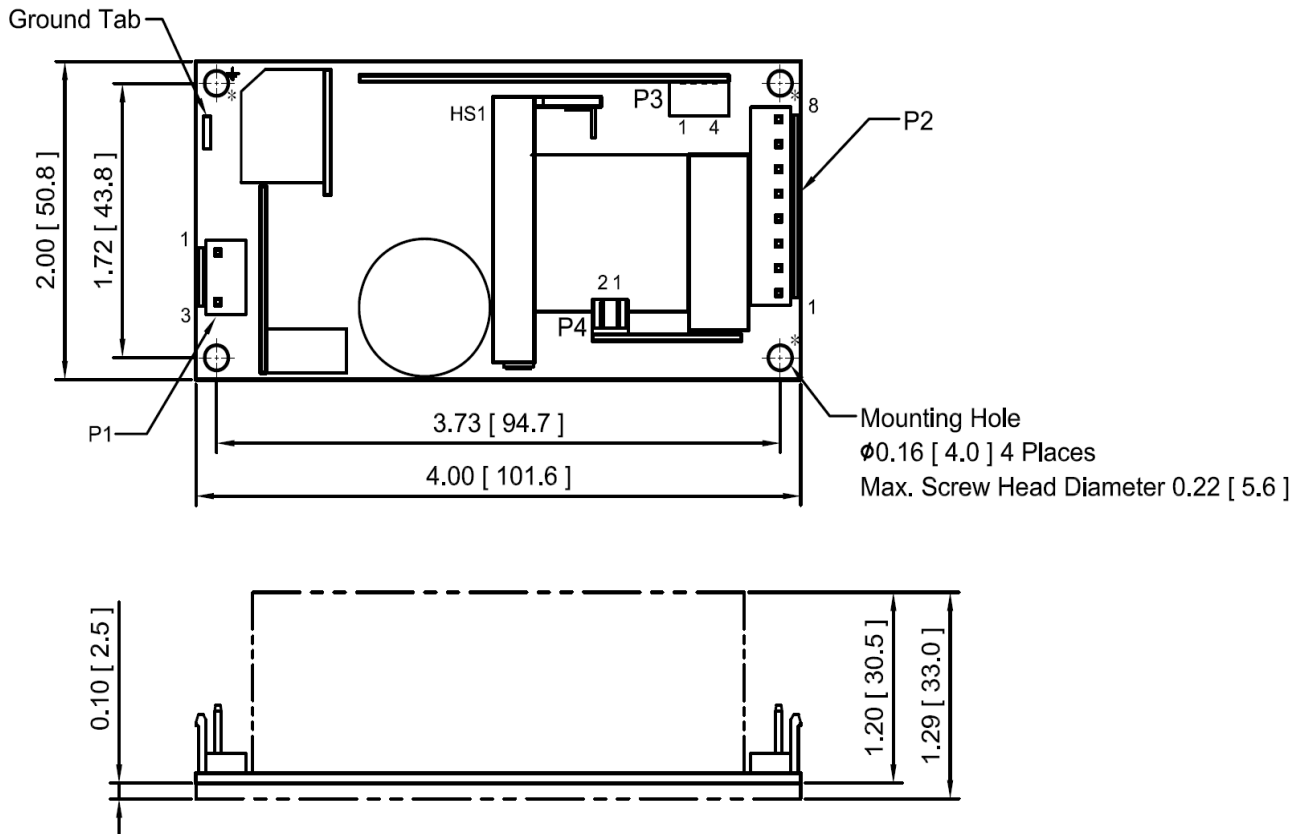
OUTPUT VOLTAGE/CURRENT RATING CHART

| Model ⁽¹⁾ | Output | | | | | | | | Efficiency (typical) 115/230 Vac |
|----------------------|--------|-----------|----------------------------|-------------------------|-----------------------------|------|-------------------------------|---------------------------|----------------------------------|
| | V1 | Min. load | Max. Current at convection | Max. Current at 7.5 CFM | Peak ⁽²⁾ Current | Tol. | Ripple & Noise ⁽⁴⁾ | Max. Power ⁽³⁾ | |
| 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



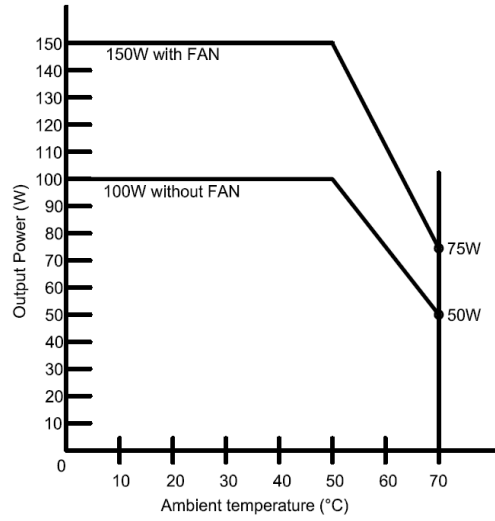
NOTES:

- 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 |