

DESCRIPTION

The PM250 series of AC-DC switching power supplies in a package of 2 x 4 x 1.46 inches are capable of delivering 250 watts of continuous power at 10 CFM forced air cooling or 150 watts at convection cooling. A U-bracket or cover-and-fan assembly can be added during manufacturing. The units are specially certified to IEC /EN /UL /CSA 60601-1 for medical applications, and also certified to IEC /EN /UL /CSA 62368-1 for data networking, computer, telecommunication, audio/video and industrial applications.

PM250 SERIES



RoHS

FEATURES

- BF Class insulation
- Operation altitude up to 5000 meters
- 2 x 4 inch footprint with 1.46 inch low profile
- Less than 220 μ A leakage current
- Wide input range 80-264 VAC
- Meet EN55011 /55032 Class B
- Power Factor 0.92 typical
- 100% burn-in at full load
- Short-circuit protection
- Over-temperature protection
- Compliant with RoHS requirements
- No load power consumption less than 0.3W

SPECIFICATIONS

| | |
|------------------------|---|
| Input voltage: | 80-264 VAC |
| Input frequency: | 47-63 Hz |
| Input current: | 2.7 A (rms) for 115 VAC 1.35 A (rms) for 230 VAC |
| Earth leakage current: | 220 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: | 1% peak to peak maximum |
| Remote sense | Compensation for cable losses up to 0.5 V |
| Over voltage protection: | set at 112-140% of its nominal output voltage |
| Over current protection: | Auto recovery |
| Over temp. protection | Auto recovery |
| Short circuit protection | Auto recovery |
| 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 |
| Standby power: | 5 V at 1.0 A maximum (optional) (Auxiliary plus fan power no more than 8 W) |
| Start-up time | Less than 1 second |

ENVIRONMENTAL SPECIFICATIONS

| | |
|------------------------|--|
| Operating temperature: | -20 $^{\circ}$ C to +70 $^{\circ}$ C, startup at -40 $^{\circ}$ 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 |

SAFETY STANDARD APPROVALS

GENERAL SPECIFICATIONS

| | |
|----------------------|--|
| Switching frequency: | 55-300 KHz |
| Efficiency: | See rating chart. |
| Hold-up time: | 10 ms minimum at 120 VAC |
| Line regulation: | $\pm 2\%$ 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: | 150,000 hours at full load at 25 $^{\circ}$ C ambient, calculated per MIL-HDBK-217F |
| EMC Performance | |
| EN55011/EN55032: | Class B conducted, class B radiated |
| EN61000-3-2: | Harmonic distortion, class A and D |
| EN61000-3-3: | Line flicker |
| EN60601-1-2, EN55035 | |
| EN61000-4-2: | ESD, ± 15 KV air and ± 8 KV contact |
| EN61000-4-3: | Radiated immunity, 9-28 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 |
| N61000-4-11: | Voltage dip immunity, 30% reduction for 500 ms, 100% reduction for 10 ms |

OUTPUT VOLTAGE/CURRENT RATING CHART

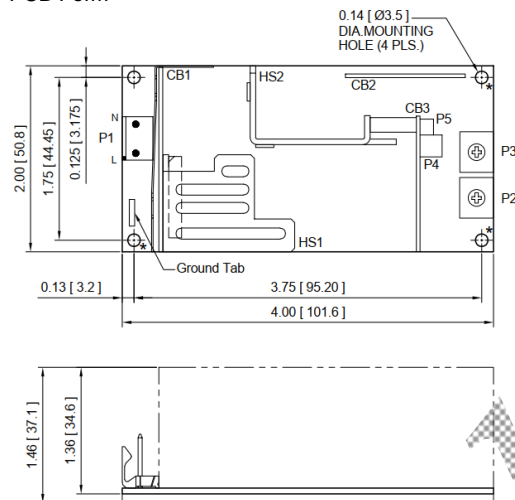
| Model ⁽¹⁾⁽³⁾ | Output | | | | | | | Efficiency (typical) 115/230 Vac |
|-------------------------|--------|-----------|-------------------------------|---------------------------|------|----------------------------------|---------------------------|-------------------------------------|
| | V1 | Min. load | Max. Current at convection | Max. Current at 10 CFM | Tol. | Ripple & Noise ⁽⁴⁾ | Max. Power ⁽²⁾ | |
| PM250-12A | 12 V | 0 A | 12.50 A | 20.84 A | ±2% | 120 mV | 150 W /250 W | 91 /93% |
| PM250-13A | 15 V | 0 A | 10.00 A | 16.67 A | ±2% | 150 mV | 150 W /250 W | 91 /93% |
| PM250-13-1A | 18 V | 0 A | 8.34 A | 13.89 A | ±2% | 180 mV | 150 W /250 W | 91 /93% |
| PM250-14A | 24 V | 0 A | 6.25 A | 10.42 A | ±2% | 240 mV | 150 W /250 W | 92 /93% |
| PM250-15A | 28 V | 0 A | 5.36 A | 8.93 A | ±2% | 280 mV | 150 W /250 W | 92 /93% |
| PM250-16-1A | 32 V | 0 A | 4.69 A | 7.82 A | ±2% | 320 mV | 150 W /250 W | 92 /93% |
| PM250-17A | 36 V | 0 A | 4.17 A | 6.95 A | ±2% | 360 mV | 150 W /250 W | 92 /93% |
| PM250-18A | 48 V | 0 A | 3.13A | 5.21 A | ±2% | 480 mV | 150 W /250 W | 92 /93% |

NOTES:

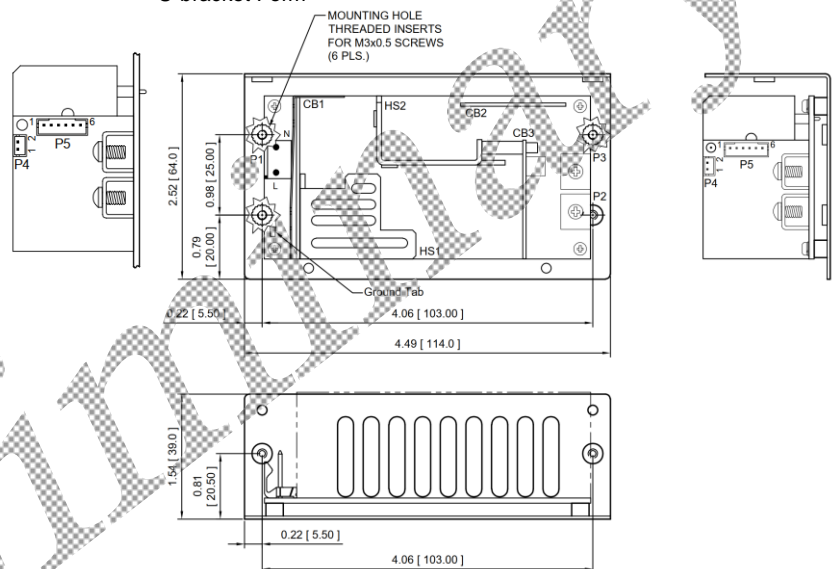
- Suffix "A" in model numbers denotes PCB constructed form. Change suffix "A" to "B" for U-bracket form, e.g. PM250-14B. Change "A" to "C" for enclosed form with cover and fan assembly, e.g. PM250-14C.
- "A" and "B" versions units provide 150 W power without moving air or 250 W with 10 CFM forced air provided by user. C version units with cover and fan assembly provide 250W power.
- Standard models without "Inhibit" and "+5Vsb". Add suffix "-I" with "Inhibit" and "+5Vsb", e.g. PM250-14A-I.
- 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 μ F tantalum (or electrolytic) capacitor in parallel with a 0.1 μ F ceramic capacitor across the output.

MECHANICAL SPECIFICATIONS

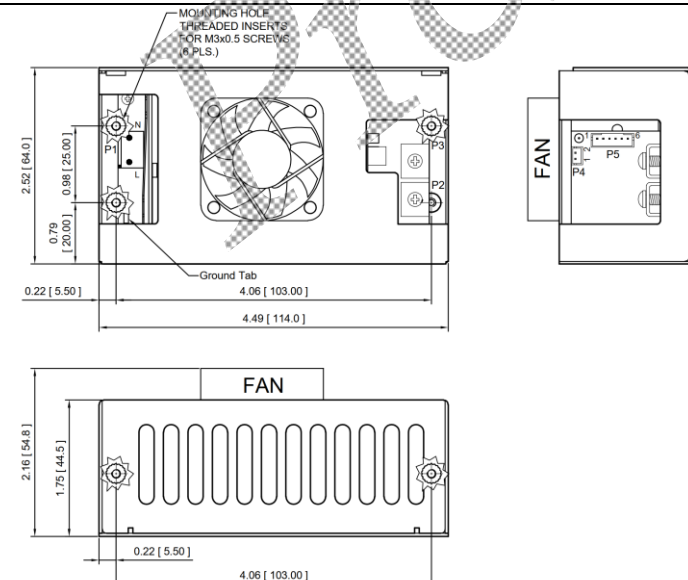
PCB Form



U-bracket Form



Enclosed Form



NOTES:

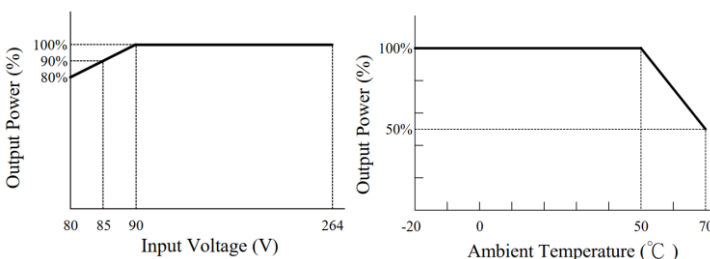
1. Dimensions shown in inches [mm], Tolerance 0.02 [0.5] maximum
2. Input connector P1: Molex header 26-60-4030, mating with Molex housing 09-50-8031 or equivalent.
3. Output connector P2 & P3: M3.5 * 0.5 screw connection.
4. Fan connector P4: JST header B2B-ZR-3.4 or equivalent, mating with JST housing ZHR-2 or equivalent.
5. Connector P5: JST header S6B-PH-K-S or equivalent, mating with JST housing PHR-6 or equivalent.
6. Ground tab is 0.25 [6.35] × 0.032 [0.8] fast-on connector.
7. PCB form, to ensure compliance with level B emissions, connect the three “*” marked mounting holes with metallic standoffs to chassis.
8. Weight: 210 grams (0.46 lbs.) approx. for PCB form, 260 grams (0.57 lbs.) approx. for U-bracket form, 318 grams (0.70 lbs.) approx. for enclosed form

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.

Inhibit: Requires an external TTL high level signal to inhibit (optional) outputs.

OUTPUT POWER DERATING CURVES



PIN CHART

| Connector | P1 | | | P2 | P3 | P4 | |
|-----------|------|------|---------|-----|---------------|----------|---------------|
| PIN NO. | 1 | 2 | 3 | +V1 | Common Return | +12V Fan | Common Return |
| Polarity | Live | Void | Neutral | | | | |

| Connector | P5 | | | | | |
|-----------|--------|--------|-----|--------------------|------------------------|---------------|
| PIN NO. | 1 | 2 | 3 | 4 | 5 | 6 |
| Polarity | -Sense | +Sense | PFD | Inhibit (Optional) | +5V Standby (Optional) | Common Return |