



DESCRIPTION

The PM500F series of AC-DC switching power supplies in a package of 3.98 x 7.09 x 1.56 inches are capable of delivering 450-500 watts of continuous power at 30 CFM forced air cooling or 250 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.

PM500F SERIES

RoHS



FEATURES

- The PM500F model is designed for Home Health Care application
- Class II application
- Operation altitude up to 5000 meters
- 80-264 VAC input with active PFC
- Less than 100 μ A leakage current
- EN55011 /55022 Class B conducted emissions
- Inhibit - TTL high to disable output
- Compliant with RoHS requirements
- Power consumption in standby mode less than 1W at standby power 5 V /100 mA

INPUT SPECIFICATIONS

| | |
|------------------|--|
| Input voltage: | 80-264 VAC |
| Power derating: | Derate linearly from 100% at 90 VAC to 90% at 85 Vac and 80% at 80 VAC |
| Input frequency: | 47-63 Hz |
| Input current: | 5.2 A (rms) @115 VAC, 60 Hz 2.6 A (rms) @ 230 VAC, 50 Hz |
| Touch current: | 100 μ A 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 112-140% of nominal output voltage |
| Overcurrent protection: | Protected to output short circuit conditions |
| Thermal shutdown | Protected to over temperature conditions |
| Temperature coefficient: | All outputs \pm 0.04% / $^{\circ}$ C maximum |
| Transient response: | Maximum excursion of 4%, recovering to 1% of final value within 500 μ s after a 25% step load change |
| Standby power | 5 V at 2A maximum |
| Fan power | 12 V at 300 mA maximum |

ENVIRONMENTAL SPECIFICATIONS

| | |
|------------------------|--|
| Operating temperature: | -10 $^{\circ}$ C to +70 $^{\circ}$ 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: | 85 KHz (typical) |
| Efficiency: | Typical 92% |
| Hold-up time: | 20 ms minimum at 110 VAC & 250 W |
| 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 (2 MOPP) 4000 VAC from input to case (2 MOPP) 1500 VAC from output to case (1 MOPP) |
| MTBF: | 100,000 hours at full load at 25 $^{\circ}$ C ambient, calculated per MIL-HDBK-217F |

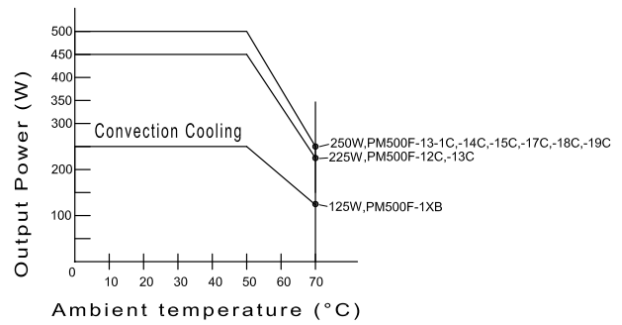
EMC Performance

| | |
|------------------|---|
| 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 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 and 100% reduction for 10 ms |

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:** Requires an external TTL high level signal to inhibit outputs for standard models

OUTPUT POWER DERATING CURVE



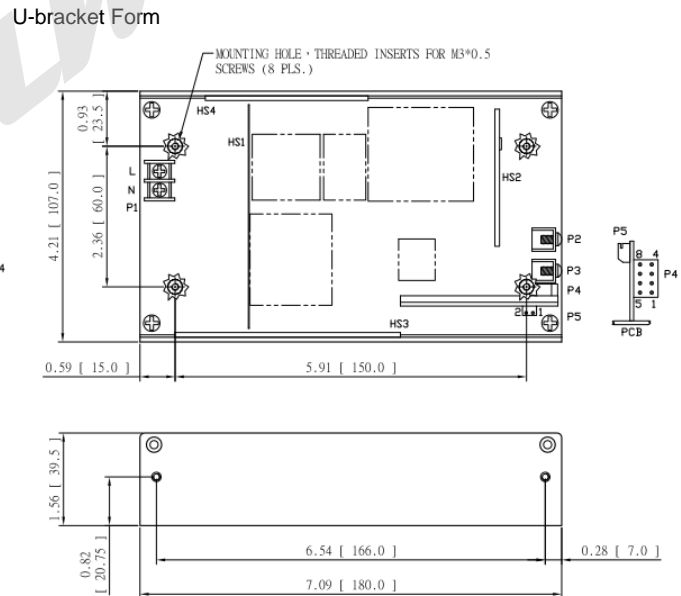
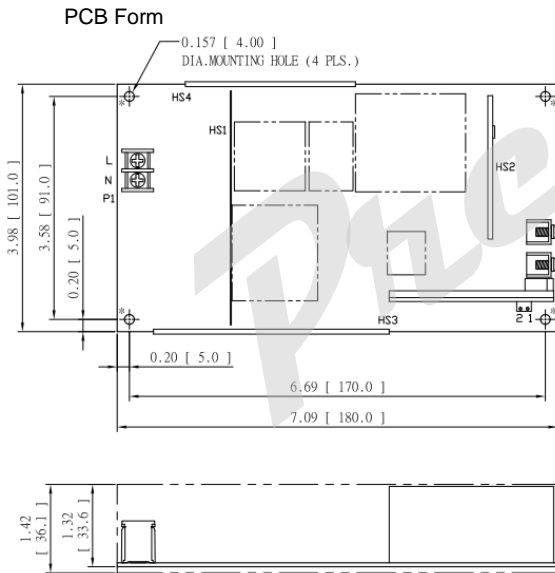
OUTPUT VOLTAGE/CURRENT RATING CHART

| Model ⁽¹⁾ | Output | | | | | | | Efficiency (typical) 115 /230 Vac |
|----------------------|----------|-----|-----------------------------|----------------------------|------------------------|--------|-------------------------------|--------------------------------------|
| | Class II | V1 | Min. Current ⁽⁴⁾ | Max. Current at convection | Max. Current at 30 CFM | Tol. | Ripple & Noise ⁽³⁾ | |
| PM500F-12B | 12 V | 0 A | 20.83 A | 37.50 A | ±2% | 120 mV | 250 W /450 W | 89 /91% |
| PM500F-13B | 15 V | 0 A | 16.67 A | 30.00 A | ±2% | 150 mV | 250 W /450 W | 89 /91% |
| PM500F-13-1B | 18 V | 0 A | 13.89 A | 27.78 A | ±2% | 180 mV | 250 W /500 W | 89 /91% |
| PM500F-14B | 24 V | 0 A | 10.42 A | 20.84 A | ±2% | 240 mV | 250 W /500 W | 90 /92% |
| PM500F-15B | 28 V | 0 A | 8.93 A | 17.86 A | ±2% | 280 mV | 250 W /500 W | 90 /92% |
| PM500F-17B | 36 V | 0 A | 6.94 A | 13.89 A | ±2% | 360 mV | 250 W /500 W | 90 /92% |
| PM500F-18B | 48 V | 0 A | 5.21 A | 10.42 A | ±2% | 480 mV | 250 W /500 W | 90 /92% |
| PM500F-19B | 57 V | 0 A | 4.38 A | 8.78 A | ±2% | 570 mV | 250 W /500 W | 90 /92% |

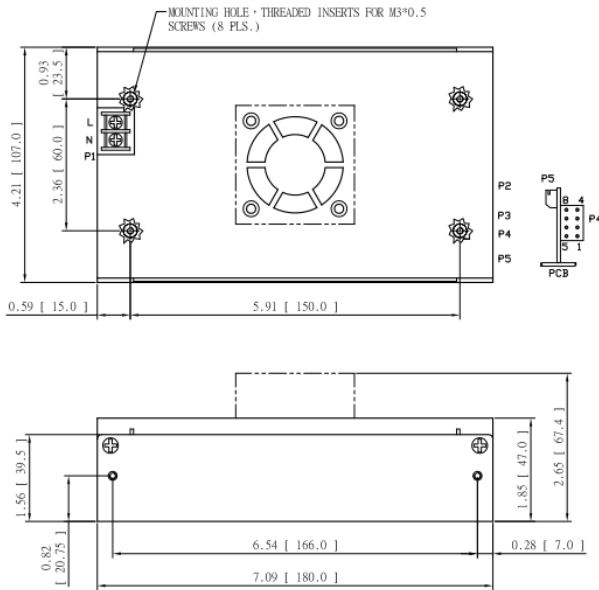
NOTES:

- Suffix "A" in models denotes PCB form, change suffix to "B" for U-Bracket form, "C" for enclosed cover and fan assembly, e.g. PM500F-14C.
- 250 W without moving air or 450-500 W with 30 CFM forced air provided by user for "B" and "C" versions.
- 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.
- All models may be operated at no-load without damage. At no load, output voltage fluctuates beyond 5% due to the burst-mode operation of the control IC in them for energy saving.

MECHANICAL SPECIFICATIONS



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-35C-B01W-02, with nickel plated M3 screws.
4. Output connectors P2 and P3 are for M4x0.7 screw connections.
5. Output connector P4 is Molex header 87833-08 or equivalent, mating with Molex housing 51110-0850 or equivalent.
6. Fan connector P5 is JST header S2B-ZR-3.4 or equivalent, mating with JST housing ZHR-2 or equivalent.
7. To ensure compliance with level B emissions, connect the two “ * ” marked mounting holes with metallic standoffs to chassis.
8. Weight: 1.0 Kg (2.23 lbs.) approx. for U-bracket form, 1.14 Kgs. (2.52 lbs.) approx. for enclosed form
9. Maximum penetration of fixing screws is 4 mm from the outer surface of chassis.

PIN CHART

| PIN NO. | P1 (AC) | | | P2 | P3 | P5 | |
|-----------------|---------|------|---------|-----|---------------|---------------|----------|
| | 1 | 2 | 3 | | | 1 | 2 |
| Polarity | Ground | Live | Neutral | +V1 | Common Return | Common Return | +12V Fan |

| PIN NO. | P4 | | | | | | | |
|-----------------|---------------|-----------|-----------|-----|---------|-------------|-------------|---------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Polarity | Common Return | +V1 Sense | -V1 Sense | PFD | Inhibit | +5V Standby | +5V Standby | Common Return |