

200 WATT MEDICAL & ITE POWER SUPPLIES

DESCRIPTION

The PM202 series of AC-DC switching power supplies in a package of 3 x 5 x 1.5 inches are capable of delivering 200 watts of continuous power at 5.3 CFM forced air cooling or 150 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 for 200 watt output. They are specially designed for medical applications. The units are certified also to IEC/EN/UL 62368-1 and suitable for data networking, industrial and telecommunication applications.

FEATURES

- BF Class insulation
- Operation altitude up to 5000 meters
- 3 x 5 inch footprint with 1.5 inch low profile
- Less than 220 μA leakage current
- Meet EN55011 /55032 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
- High Efficiency 92% typical

INPUT SPECIFICATIONS

Input voltage: 90-264 VAC Input frequency: 47-63 Hz

Input current: 2.5 A (rms) for 115 VAC

1.25 A (rms) for 230 VAC

Earth leakage current: 220 µA max. @ 264 VAC, 63 Hz Touch current: 100 µA 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, automatic recovery

Short circuit protection: Automatic recovery
Over temperature protection: Automatic recovery

Temperature coefficient: All outputs ±0.04% /℃ maximum

Transient response: Maximum excursion of 4% or better on all models, recovering to 1% of

final value within 500 us after a 25%

step load change

Fan power: 12 V at 250 mA maximum

ENVIRONMENTAL SPECIFICATIONS

Operating temperature: 0° C to +70°C Storage temperature: -40°C to +85°C

Relative humidity: 5% to 95% non-condensing
Temperature derating: Derate from 100% at +50°C linearly

to 50% at +70°C, applicable to convection and forced-air cooling

conditions

PM202 SERIES



C€ RoHS

SAFETY STANDARD APPROVAL



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



TÜV EN 60601-1



UL 62368-1, CSA-C22.2 No. 62368-1 (except PM202-16-1BN1 and PM202-16-1CN1)



TÜV EN 62368-1

(except PM202-16-1BN1 and PM202-16-1CN1)

GENERAL SPECIFICATIONS

Switching frequency: 100 KHz (typical)

Efficiency: 87% minimum on all models
Hold-up time: 10 ms minimum at 110 VAC
Line regulation: ±0.5% maximum at full load

Inrush current: 20 A @ 115 VAC or 40 A @ 230 VAC, at 25° C

cold start

Withstand voltage: 4000 VAC from input to output (2MOPP)

1500 VAC from input to ground (1MOPP)

1500 VAC from output to ground

MTBF: 200,000 hours at full load at 25°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, EN55024

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

EN61000-4-11: Voltage dip immunity, 30% reduction for 500

ms, 100% reduction for 10 ms

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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

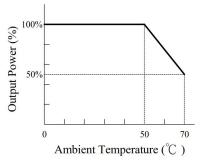
regulation.

Inhibit:

Requires an external TTL high level signal to

inhibit outputs for standard models

OUTPUT POWER DERATING CURVE



OUTPUT VOLTAGE/CURRENT RATING CHART

	Output							
Model ⁽¹⁾	V1	Min. Current ⁽⁴⁾	Max. Current at convection	Max. Current at 5.3 CFM (2)	Tol.	Ripple & Noise ⁽³⁾	Max. Power ⁽²⁾	(typical) 115/230 Vac
PM202-12BN1	12 V	0.1 A	12.50 A	16.67 A	±2%	120 mV	150 W /200 W	88 /91%
PM202-13BN1	15 V	0.1 A	10.00 A	13.34 A	±2%	150 mV	150 W /200 W	88 /91%
PM202-13-1BN1	18 V	0.1 A	8.34 A	11.12 A	±2%	180 mV	150 W /200 W	88 /91%
PM202-14BN1	24 V	0.1 A	6.25 A	8.34 A	±2%	240 mV	150 W /200 W	88 /91%
PM202-15BN1	28 V	0.1 A	5.36 A	7.15 A	±2%	280 mV	150 W /200 W	88 /91%
PM202-16-1BN1	32 V	0.1 A	4.69 A	6.25 A	±2%	320 mV	150 W /200 W	88 /91%
PM202-17BN1	36 V	0.1 A	4.17 A	5.56 A	±2%	360 mV	150 W /200 W	88 /92%
PM202-18BN1	48 V	0.1 A	3.13 A	4.17 A	±2%	480 mV	150 W /200 W	89 /92%

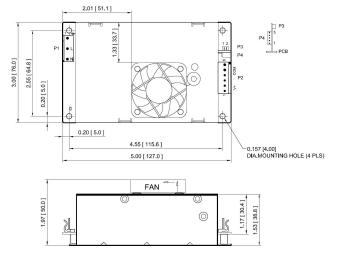
NOTES:

- Suffix "BN1" in model numbers denotes U-bracket form. Change suffix "BN1" to "CN1" for enclosed form with cover and fan assembly, e.g. PM202-14CN1
- 2. 150 W without moving air or 200 W with 5.3 CFM forced air provided by user for "BN1" version, 200 W for "CN1" version with cover and fan assembly. The adequacy of cooling air is judged by the measured core temperature of transformer T1 below 75°C at 25°C ambient, or below 100°C at 50°C ambient.
- 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.
- 4. 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

U-bracket Form

Enclosed Form



NOTES:

- 1. Dimensions shown in inches [mm], tolerance 0.02 [0.5] maximum.
- 2. Input connector P1: Molex header 09-65-2058 or equivalent, mating with Molex housing 09-50-1051 or equivalent.
- 3. Output connector P2: Molex header 09-65-2068 or equivalent, mating with Molex housing 09-50-1061 or equivalent.
- 4. Fan connector P3: JST header S2B-ZR-3.4 or equivalent, mating with JST housing ZHR-2 or equivalent.
- 5. Connectors P4: Molex header 22-05-7055 or equivalent, mating with Molex housing 50-37-5053 or equivalent.
- 6. Weight: 390 grams (0.86 lbs.) approx. for U-bracket form, 440 grams (0.97 lbs.) for enclosed form
- 7. Fixing of units to end equipment is through standoffs and the four mounting holes in PCB.
- 8. Ground tab is 0.25 [6.35] x 0.032 [0.8] fast-on connector.

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PIN CHART

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

Connector P3			P4						
PIN NO.	1	2	1	2	3	4	5		
Polarity	+12V Fan	Common Return	-Sense	+Sense	PFD	Inhibit	Common Return		