

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

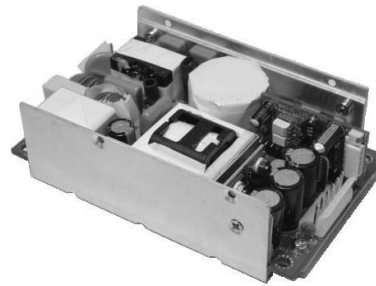
OUTPUT SPECIFICATIONS

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, automatic recovery
Short circuit protection:	Automatic recovery
Over temperature protection:	Automatic 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 250 mA maximum

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
Temperature derating:	Derate from 100% at +50 $^{\circ}$ C linearly to 50% at +70 $^{\circ}$ C, applicable to convection and forced-air cooling conditions

PM202 SERIES



CE
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)

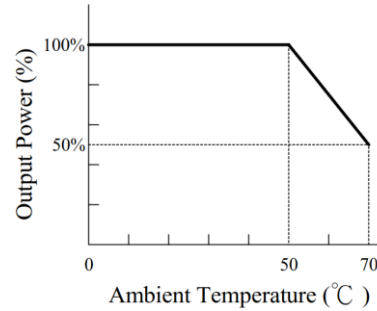
GENERAL SPECIFICATIONS

Switching frequency:	15-180 KHz
Efficiency:	87% minimum on all models
Hold-up time:	10 ms minimum at 110 VAC
Line regulation:	$\pm 0.5\%$ maximum at full load
Inrush current:	20 A @ 115 VAC or 40 A @ 230 VAC, at 25 $^{\circ}$ 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 $^{\circ}$ C ambient, calculated per MIL-HDBK-217F
EMC Performance (EN60601-1-2)	
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
EN61000-4-11:	Voltage dip immunity, 30% reduction for 500 ms, 100% reduction for 10 ms

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

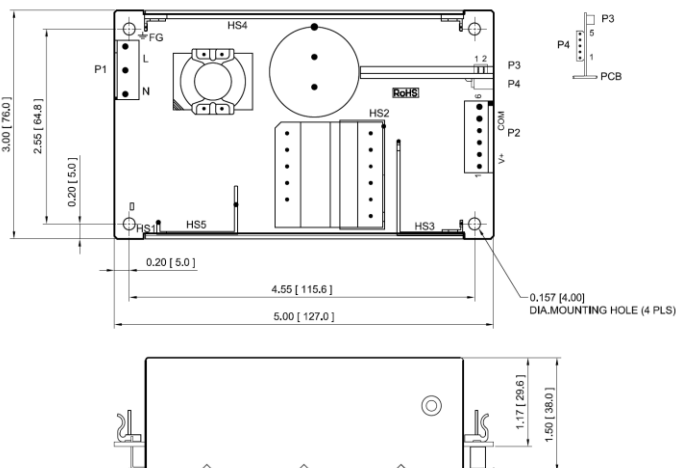
Model ⁽¹⁾	Output							Efficiency (typical) 115/230 Vac
	V1	Min. Current ⁽⁴⁾	Max. Current at convection	Max. Current at 5.3 CFM ⁽²⁾	Tol.	Ripple & Noise ⁽³⁾	Max. Power ⁽²⁾	
PM202-12BN1	12 V	0.1 A	12.50 A	16.67 A	±2%	120 mV	150 W /200 W	88 /91%
PM202-13BN1	15 V	0.1 A	10.00 A	13.34 A	±2%	150 mV	150 W /200 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:

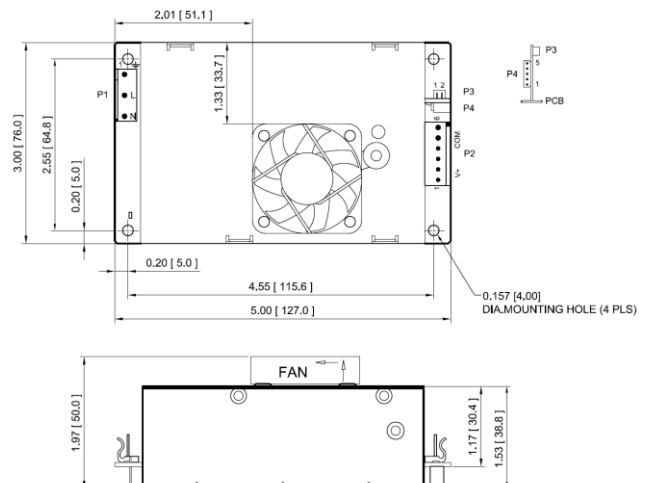
- Suffix "BN1" in model numbers denotes U-bracket form. Change suffix "BN1" to "CN1" for enclosed form with cover and fan assembly, e.g. PM202-14CN1
- 150 W without moving air or 200 W with 5.3 CFM forced air provided by user for "BN1" version, 200 W for "CN1" version with cover and fan assembly. The 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.
- 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

U-bracket Form



Enclosed Form



NOTES:

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

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