

## PBM200 Series



- Worldwide Medical Approvals
- Single, Dual, Triple and Quad Outputs
- Small Size - Only 7" x 4" x 1.5"
- Power Fail Detect & Remote On/Off
- Universal AC Input with Active PFC
- High Reliability - 350k Hours MTBF
- 100 Watt Convection-Cooled Rating

## Specification

## Input

Input Voltage	• 90-264 VAC
Input Frequency	• 47-63 Hz
Input Current	• 3.2 A rms at 115 VAC, 1.6 A rms at 230 VAC
Inrush Current	• 20 A at 115 VAC, 40 A at 230 VAC cold start 25 °C
Power Factor	• 0.98 typical
Earth Leakage Current	• 90 µA max at 115 VAC, 60 Hz 150 µA max at 230 VAC, 50 Hz
Input Protection	• Both line and neutral fused

## Output

Output Voltage	• See table
Output Voltage Trim	• Not user-adjustable
Initial Set Accuracy	• ±2%
Minimum Load	• See table & note 5
Start Up Delay	• 2 s max
Start Up Rise Time	• 18 ms typical
Hold Up Time	• 20 ms minimum at full load & 110 VAC
Drift	• ±0.2%
Line Regulation	• ±0.5% max
Load Regulation	• See note 7
Transient Response	• 4% max deviation, recovery to within 1% in 500 µs for a 25% load change
Ripple & Noise	• 2% max pk-pk, 20 MHz BW with a 22 µF electrolytic & a 0.47 µF tantalum capacitor
Overvoltage Protection	• 112-140% Vnom output 1 only, recycle input to reset
Overtemperature Protection	• Shutdown at +85 °C (singles) or +105 °C (multi outputs) with auto recovery, measured internally
Overload Protection	• 140-200% typical, auto recovery
Short Circuit Protection	• Trip and restart (Hiccup mode)
Temperature Coefficient	• 0.04%/°C
Remote Sense	• Single output models only. Compensates for up to 0.5 V drop
Remote On/Off	• On = Logic low or open circuit Off = Logic high

## General

Efficiency	• Up to 80%
Isolation	• 4000 VAC Input to Output 1500 VAC Input to Ground 500 VAC Output to Ground
Switching Frequency	• 100 kHz ±12 kHz
Power Density	• 4.76 W/In <sup>3</sup>
Power Fail Detect	• AC OK = TTL logic high AC not OK = TTL logic low
MTBF	• 350 kHrs per MIL-HDBK-217F at +25 °C

## Environmental

Operating Temperature	• 0 °C to +70 °C, derate linearly from 100% power at +50 °C to 50% power at +70 °C
Cooling	• 'C' versions have internal fan, 'B' versions are derated with convection cooling or require 25 CFM (see note 4)
Operating Humidity	• Up to 95% RH, non-condensing
Storage Temperature	• -40 °C to +85 °C
Operating Altitude	• 2500 m
Shock	• Half sine pulse, acceleration 50 g, 11 ms duration, 3 shocks in each direction, unpackaged, non-operating
Vibration	• Sinusoidal 10-55 Hz, amplitude 0.15 mm, 30 min/axis, unpackaged, non-operating

## EMC &amp; Safety

Emissions	• EN55011 & FCC Class B conducted & radiated
Harmonic Currents	• EN61000-3-2
Voltage Flicker	• EN61000-3-3
ESD Immunity	• EN61000-4-2, level 3 Perf Criteria A
Radiated Immunity	• EN61000-4-3, level 3 Perf Criteria A
EFT/Burst	• EN61000-4-4, level 3 Perf Criteria A
Surge	• EN61000-4-5, level 3 Perf Criteria A
Conducted Immunity	• EN61000-4-6 3 V, Perf Criteria A
Dips & Interruptions	• EN61000-4-11, 30% 10 ms, 60% 100 ms, >95% 5000 ms, Perf Criteria A, B, B
Safety Approvals	• EN60601-1, UL60601-1, CSA22.2 No. 601-1 per cUL, CE Mark

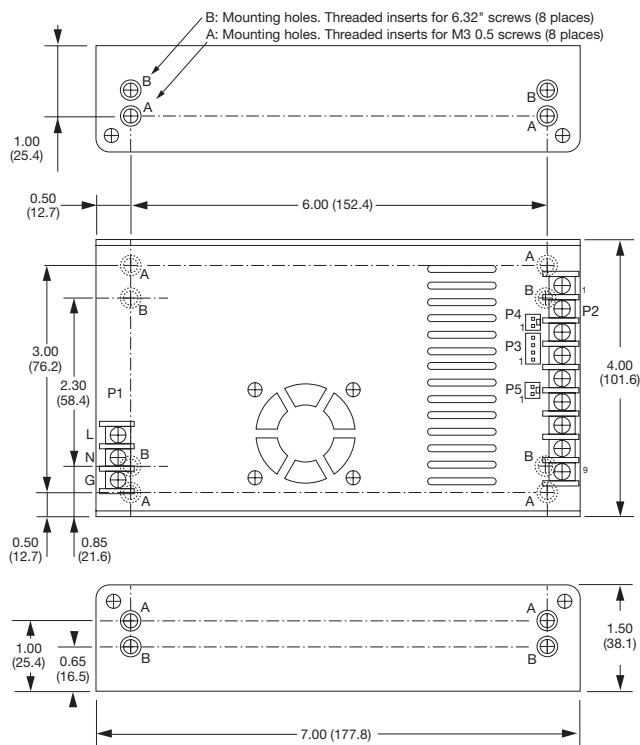
**Models and Ratings**

Output Power <sup>(4)</sup>	Output 1 <sup>(6)</sup>				Output 2 <sup>(2,5)</sup>			Output 3 <sup>(5)</sup>			Output 4 <sup>(3,5)</sup>			Model Number <sup>(1)</sup>
	Vnom	Imin <sup>(5)</sup>	I <sub>max</sub>	Reg <sup>(7)</sup>	Vnom	I <sub>max</sub>	Reg <sup>(7)</sup>	Vnom	I <sub>max</sub>	Reg <sup>(7)</sup>	Vnom	I <sub>max</sub>	Reg <sup>(7)</sup>	
150 W	3.3 V	3.0 A	46.0 A	3%										PBM200PS3V3-C†
175 W	5.1 V	3.0 A	35.0 A	2%										PBM200PS05-C†
200 W	12.0 V	1.2 A	16.7 A	2%										PBM200PS12-C†
200 W	15.0 V	1.0 A	13.4 A	2%										PBM200PS15-C†
200 W	24.0 V	0.6 A	8.4 A	2%										PBM200PS24-C†
200 W	30.0 V	0.5 A	6.7 A	2%										PBM200PS30-C
200 W	48.0 V	0.5 A	4.2 A	2%										PBM200PS48-C†
200 W	+5.1 V	3.0 A	30.0 A	2%	+12 V	8.0 A	4%							PBM200PD01-C
200 W	+5.1 V	3.0 A	30.0 A	2%	+15 V	6.0 A	4%							PBM200PD02-C
200 W	+5.1 V	3.0 A	30.0 A	2%	+24 V	4.0 A	4%							PBM200PD03-C
200 W	+12.0 V	1.0 A	8.7 A	2%	+24 V	4.0 A	4%							PBM200PD04-C
200 W	+5.1 V	3.0 A	30.0 A	2%	+12 V	8.0 A	4%	-5 V	6.0 A	4%				PBM200PT01-C
200 W	+5.1 V	3.0 A	30.0 A	2%	+12 V	8.0 A	4%	-12 V	4.0 A	4%				PBM200PT02-C†
200 W	+5.1 V	3.0 A	30.0 A	2%	+15 V	6.0 A	4%	-15 V	4.0 A	4%				PBM200PT03-C†
200 W	+5.1 V	3.0 A	30.0 A	2%	+12 V	8.0 A	4%			4%	F 24 V	4.0 A	4%	PBM200PT04-C
200 W	+5.1 V	3.0 A	30.0 A	2%	+15 V	6.0 A	4%	-12 V	4.0 A	4%				PBM200PT05-C
200 W	+5.1 V	3.0 A	30.0 A	2%	+12 V	8.0 A	4%	-12 V	4.0 A	4%	F 5 V	6.0 A	4%	PBM200PQ01-C
200 W	+5.1 V	3.0 A	30.0 A	2%	+15 V	6.0 A	4%	-15 V	4.0 A	4%	F 24 V	4.0 A	4%	PBM200PQ02-C†
200 W	+5.1 V	3.0 A	30.0 A	2%	+12 V	8.0 A	4%	-12 V	4.0 A	4%	F 12 V	4.0 A	4%	PBM200PQ03-C
200 W	+5.1 V	3.0 A	30.0 A	2%	+12 V	8.0 A	4%	-15 V	4.0 A	4%	F 15 V	4.0 A	4%	PBM200PQ04-C
200 W	+5.1 V	3.0 A	30.0 A	2%	+12 V	8.0 A	4%	-12 V	4.0 A	4%	F 24 V	4.0 A	4%	PBM200PQ05-C†
175 W	+3.3 V	3.0 A	30.0 A	3%	+5.1 V	8.0 A	4%	-12 V	4.0 A	4%	F 12 V	4.0 A	4%	PBM200PQ06-C†

**Notes**

1. For U-bracket format, replace suffix '-C' with suffix '-B'.
2. Output 2 peak current is 12 A on +12 V, 9 A on +15 V, and 6 A on +24 V. Maximum 2 s duration with total load <200 W.
3. Output 4 is floating and can be connected externally for positive or negative output.
4. 200 W for '-C' version with a cover and fan assembly. 100 W for '-B' version with convection cooling (maximum current of output 1 & 2 derated to 50%). 200 W for '-B' version with 25 CFM forced air provided by user.
5. Zero minimum load for outputs 2, 3 & 4. All models may be operated at no-load on output 1, but voltage total regulation increases to 10%.
6. When the Remote Sense facility is not used, +Sense must be connected to +V, and -Sense to return, on P2 connector.
7. Total regulation includes initial tolerance, line regulation and load regulation.
8. Peak current for single output models is 140% of I<sub>max</sub>. Maximum 2 s duration with 10% duty cycle.
9. † Available from Farnell. See pages 204-206.

**Mechanical Details**



Conn	Pin	Model Number(s)				
		PSXX	PDXX	PTXX (except 04)	PT04	PQXX
P2	1	-SENSE	OP1	OP1	OP1	OP1
	2	Return	OP1	OP1	OP1	OP1
	3	Return	Com Ret	Com Ret	Com Ret	Com Ret
	4	Return	Com Ret	Com Ret	Com Ret	Com Ret
	5	Return	Com Ret	Com Ret	Com Ret	Com Ret
	6	OP1	OP2	OP2	OP2	OP2
	7	OP1	N.C.	OP3	N.C.	OP3
	8	OP1	N.C.	N.C.	OP4 Ret	OP4 Ret
	9	+SENSE	N.C.	N.C.	OP4	OP4
P3	1	Fan				
	2	Com Ret				
	3	Com Ret				
	4	PFD	PFD	PFD	PFD	PFD

**Notes**

1. Dimensions shown in inches (mm).
2. Tolerance 0.02 [0.5] maximum.
3. Input connector P1 is Dinkle DT-35-B01W-03, output connector P2 is Dinkle DT-35-B01W-09 screws are M3, Nickel plated.
4. Connector P3 mates with Molex housing 22-01-1043 & Molex 40445 series crimp terminal.
5. Connectors P4 & P5 mate with Molex housing 22-01-1023 & Molex 40445 series crimp terminal.
6. P4 is for DC fan rated at 24 V/0.2 A (models PBM200PD03 & PD04), 5 V/0.38 A (PBM200PQ06), or 12 V/0.2 A (all other models). Pin 1 Fan+, pin 2 Fan-.
7. P5 is for Remote On/Off. Pin 1 is positive, pin 2 is return.
8. Weight: 1.83 lb (0.82kg) approx. for '-B' version, 2.14 lb (0.96kg) approx. for '-C' version.