

## 200 WATT MEDICAL SWITCHING POWER SUPPLIES

### DESCRIPTION

The PM200 series comprising single and multiple output models for 200 watts of continuous output power is specially designed for medical applications not for patient contact. Auto-ranging input allows them to operate from any line voltage throughout the world without a selector strap. All auxiliary outputs are with magnetic amplifier or linear regulator to keep regulation. 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.

### FEATURES

- Low safety ground leakage current
- Meet EN 55011 and FCC Class B
- Auto-ranging input
- Short-circuit protection with auto-recovery
- Power Fail Detect (PFD) signal
- 100% burn-in at full rated load
- Optional cover-and-fan assembly

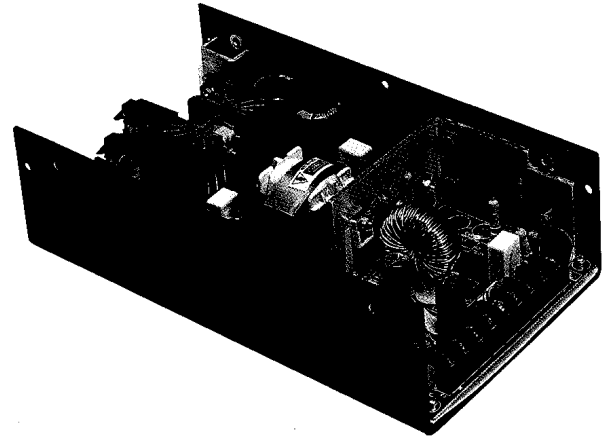
### INPUT SPECIFICATIONS

**Input voltage:** 90 to 130 VAC, or 180 to 264 VAC (auto-ranging)  
**Input frequency:** 47 to 63 Hz  
**Input current:** 4.5A (rms) for 115VAC  
 2.6A (rms) for 230VAC  
**Leakage current:** 90uA max. @115VAC, 60Hz  
 150uA max. @230VAC, 50Hz

### OUTPUT SPECIFICATIONS

**Output voltage/current :** See rating chart  
**Total output power:** 200 watts maximum  
**Ripple and noise :** 2% peak to peak maximum  
**Overvoltage protection :** Provided on output #1 only; set at 112 - 132 % of its nominal output voltage  
**Overcurrent protection:** All outputs protected to short circuit conditions  
**Temperature coefficient:** All outputs +/-0.04%/ °C maximum  
**Transient response :** Maximum excursion of 4% or better on all models, recovering to 1% of final value within 500us after a 25% step load change  
**PFD signal :** TTL logic high for normal operation and TTL logic low upon loss of input power. This signal appears at least 1 ms prior to +5V output dropping 5% below its nominal value. This signal also provides a minimum delay of 100 ms after +5V is within regulation.

### PM200 SERIES



### Safety Standard Approvals:



UL 2601-1  
File No. E178020



C22.2 No. 601.1  
File No. LR93632



EN 60601-1  
Certificate No. R9452561

### ENVIRONMENTAL SPECIFICATIONS

**Operating temperature:** 0°C to +70°C  
**Storage temperature:** -40°C to +85°C  
**Relative humidity:** 5% to 95% non-condensing  
**Derating:** Derate from 100% at +50 °C linearly to 50% at +70 °C  
**Cooling:** 25 CFM forced air, provided on "C" version, to be provided for "B" version by user

### GENERAL SPECIFICATIONS

**Switching frequency:** 64KHz +/-5KHz  
**Efficiency :** 70% minimum on all models  
**Hold-up time :** 12 msec minimum at 110VAC  
**Line regulation :** +/-0.5% maximum at full load  
**Inrush current :** 20 amps @ 115VAC, or 40 amps @ 230VAC, at 25 °C cold start  
**Withstand voltage :** 4000VAC from input to output  
 1500VAC from input to ground  
 500VAC from output to ground  
**MTBF :** 450,000 hours at full load at 25°C ambient, calculated per MIL-HDBK-217F  
**EMI requirements :** Meets conducted limits of  
 (a) FCC Level B  
 (b) EN 55011 Class B  
**Safety requirements :** Meets or exceeds:  
 (a) UL 2601-1  
 (b) CSA C22.2 No. 601.1  
 (c) IEC 601-1 (EN 60601-1)

# AUTORANGING INPUT

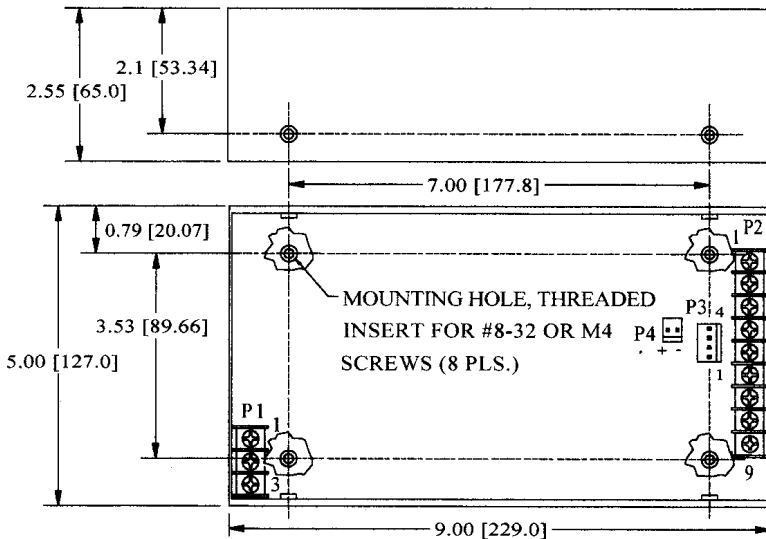
# PM200 MEDICAL SERIES

## OUTPUT VOLTAGE/CURRENT RATING CHART

(1)(5)(6) Model	Output #1				Output #2 (2)				Output #3				Output #4 (3)				Maximum Output Power (4)
	Vnom.	Imin.	I <sub>max.</sub>	Tol.	Vnom.	Imin.	I <sub>max.</sub>	Tol.	Vnom.	Imin.	I <sub>max.</sub>	Tol.	Vnom.	Imin.	I <sub>max.</sub>	Tol.	
PM200-10	5V	3.0A	40A	2%	(N/A)				(N/A)				(N/A)				200W
PM200-12	12V	1.2A	16.7A	2%	(N/A)				(N/A)				(N/A)				200W
PM200-13	15V	1.0A	13.4A	2%	(N/A)				(N/A)				(N/A)				200W
PM200-14	24V	0.6A	8.4A	2%	(N/A)				(N/A)				(N/A)				200W
PM200-16	30V	0.5A	6.7A	2%	(N/A)				(N/A)				(N/A)				200W
PM200-18	48V	0.5A	4.2A	2%	(N/A)				(N/A)				(N/A)				200W
PM200-23	+5V	3.0A	30A	2%	+12V	0A	8A	4%	(N/A)				(N/A)				200W
PM200-24	+5V	3.0A	30A	2%	+15V	0A	6A	4%	(N/A)				(N/A)				200W
PM200-25	+5V	3.0A	30A	2%	+24V	0A	4A	4%	(N/A)				(N/A)				200W
PM200-30	+5V	3.0A	30A	2%	+12V	0A	8A	4%	-5V	0A	6A	4%	(N/A)				200W
PM200-31	+5V	3.0A	30A	2%	+12V	0A	8A	4%	-12V	0A	4A	4%	(N/A)				200W
PM200-32	+5V	3.0A	30A	2%	+15V	0A	6A	4%	-15V	0A	4A	4%	(N/A)				200W
PM200-33	+5V	3.0A	30A	2%	+15V	0A	6A	4%	-12V	0A	4A	4%	(N/A)				200W
PM200-40	+5V	3.0A	30A	2%	+12V	0A	8A	4%	-12V	0A	4A	4%	5V	0A	6A	4%	200W
PM200-41	+5V	3.0A	30A	2%	+15V	0A	6A	4%	-15V	0A	4A	4%	24V	0A	4A	4%	200W
PM200-42	+5V	3.0A	30A	2%	+12V	0A	8A	4%	-12V	0A	4A	4%	12V	0A	4A	4%	200W
PM200-44	+5V	3.0A	30A	2%	+12V	0A	8A	4%	-15V	0A	4A	4%	15V	0A	4A	4%	200W
PM200-45	+5V	3.0A	30A	2%	+12V	0A	8A	4%	-12V	0A	4A	4%	24V	0A	4A	4%	200W

- Notes: (1) Add suffix "B" for U-bracket format and "C" for enclosed format, e.g. PM200-45C.  
 (2) Peak current is 12A on +12V, 9A on +15V and 6A on +24V.  
 (3) Output #4 is floating. It can be connected externally for positive or negative output.  
 (4) 200 watts for "C" version with a cover-and-fan assembly. 150 watts for "B" version without moving air (maximum current of output #1 & #2 derated to 70%), or 200 watts with 25 CFM forced air provided by user.  
 (5) When the remote Sense facility is not used, +Sense must be connected to +V, and -Sense to Return, on P2 connector.  
 (6) All models may be operated at no-load. At no-load, output voltage tolerance increases to 10%.

## MECHANICAL SPECIFICATIONS



### NOTES:

- Dimensions shown in inch [mm]
- Tolerance 0.02 [0.5] maximum
- Input connector P1 is Beau Inc. P/N 72-5-03C, output connector P2 is Beau Inc. P/N 72-5-09C. Screws are #6-32 on 0.375 inch centers.
- Connector P3 mates with Molex housing 22-01-1043 and Molex 40445 series crimp terminal
- Connector P4 mates with Molex housing 22-01-1023 and Molex 40445 series crimp terminal
- P4 is for DC fan rated 24V/0.12A (models PM200-14, -16, -25), or 12V/0.2A (other models).
- Weight:  
 1.40 Kgs (3.08 Lbs.) approx. for "B" version  
 1.60 Kgs (3.52 Lbs.) approx. for "C" version

## PIN CHART

MODEL	CONN PIN	P1			P2						P3			
		1	2	3	1,2	3,4,5	6	7	8	9	1	2	3	4
PM200-10 PM200-12 PM200-13 PM200-14 PM200-16 PM200-18	AC LIVE	AC NEUTRAL	AC GROUND	-SENSE	RET.	OUTPUT #1	OUTPUT #1	OUTPUT #1	+SENSE	FAN	COM. RET.	COM. RET.	PFD	
PM200-23 PM200-24 PM200-25	AC LIVE	AC NEUTRAL	AC GROUND	OUTPUT #1	COM. RET.	OUTPUT #2	N.C.	N.C.	N.C.	FAN	COM. RET.	COM. RET.	PFD	
PM200-30 PM200-31 PM200-32 PM200-33	AC LIVE	AC NEUTRAL	AC GROUND	OUTPUT #1	COM. RET.	OUTPUT #2	OUTPUT #3	N.C.	N.C.	FAN	COM. RET.	COM. RET.	PFD	
PM200-40 PM200-41 PM200-42 PM200-44 PM200-45	AC LIVE	AC NEUTRAL	AC GROUND	OUTPUT #1	COM. RET.	OUTPUT #2	OUTPUT #3	OUTPUT #4 RETURN	OUTPUT #4	FAN	COM. RET.	COM. RET.	PFD	