

**PROTEK POWER**

## PM201 Medical & ITE Power Supplies (150-200W)

### Features:

- Low safety ground leakage current
- Meet EN55011, EN55022 and FCC Class B
- Power Factor 0.98 typical
- Short-circuit protection
- Power Fail Detect (PFD) signal
- 100% burn-in at full rated load
- Optional cover and fan assembly
- Remote inhibit– TTL high to disable output
- Compliant with RoHS requirements



### Description:

The PM201 series comprising single and multiple output models for 150 to 200 watts of continuous output power is specially designed for medical and ITE applications. They operate at 90 to 264 VAC input voltage without the need of a selector strap. All auxiliary outputs are with magnetic amplifier 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.

Model <sup>1</sup>	Output #1 <sup>4</sup>				Output #2 <sup>2,4</sup>				Output #3				Output #4 <sup>3</sup>				Max. Output Power <sup>4</sup>
	V1	Imin	Imax	Tol.	V1	Imin	Imax	Tol.	V1	Imin	Imax	Tol.	V1	Imin	Imax	Tol.	
PM201-10B	5.1V	3A	35A	±2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	87.5W/175W
PM201-10-3B	3.3V	3A	46A	±3%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	75W/150W
PM201-12B	12V	1.2A	16.7A	±2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100W/200W
PM201-13B	15V	1A	13.4A	±2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100W/200W
PM201-14B	24V	0.6A	8.4A	±2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100W/200W
PM201-16B	30V	0.5A	6.7A	±2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100W/200W
PM201-18B	48V	0.5A	4.2A	±2%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100W/200W
PM201-23B	5.1V	3A	30A	±2%	12V	0A	8A	±4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100W/200W
PM201-24B	5.1V	3A	30A	±2%	15V	0A	6A	±4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100W/200W
PM201-25B	5.1V	3A	30A	±2%	24V	0A	4A	±4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100W/200W
PM201-27B	12V	1A	8.7A	±2%	24V	0A	4A	±4%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	100W/200W
PM201-30B	5.1V	3A	30A	±2%	12V	0A	8A	±4%	-5V	0A	6A	±4%	N/A	N/A	N/A	N/A	100W/200W
PM201-31B	5.1V	3A	30A	±2%	12V	0A	8A	±4%	-12V	0A	4A	±4%	N/A	N/A	N/A	N/A	100W/200W
PM201-32B	5.1V	3A	30A	±2%	15V	0A	6A	±4%	-15V	0A	4A	±4%	N/A	N/A	N/A	N/A	100W/200W
PM201-33B	5.1V	3A	30A	±2%	15V	0A	6A	±4%	-12V	0A	4A	±4%	N/A	N/A	N/A	N/A	100W/200W
PM201-36B	5.1V	3A	30A	±2%	12V	0A	8A	±4%	24V	0A	4A	±4%	N/A	N/A	N/A	N/A	100W/200W
PM201-40B	5.1V	3A	30A	±2%	12V	0A	8A	±4%	-12V	0A	4A	±4%	5V	0A	6A	±4%	100W/200W
PM201-41B	5.1V	3A	30A	±2%	15V	0A	6A	±4%	-15V	0A	4A	±4%	24V	0A	4A	±4%	100W/200W
PM201-42B	5.1V	3A	30A	±2%	12V	0A	8A	±4%	-12V	0A	4A	±4%	12V	0A	4A	±4%	100W/200W
PM201-44B	5.1V	3A	30A	±2%	12V	0A	8A	±4%	-15V	0A	4A	±4%	15V	0A	4A	±4%	100W/200W
PM201-45B	5.1V	3A	30A	±2%	12V	0A	8A	±4%	-12V	0A	4A	±4%	24V	0A	4A	±4%	100W/200W
PM201-40-3B	3.3V	3A	30A	±3%	5.1V	0A	8A	±4%	-12V	0A	4A	±4%	12V	0A	4A	±4%	87.5W/175W

### NOTES:

1. Suffix "B" in model numbers denotes U-bracket form. Change "B" to "C" for enclosed form with cover and fan assembly, e.g. PM201-45C.
2. Peak output current is 12 A on +12 V, 9 A on +15 V and 6 A on +24 V.
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. 100 watts for "B" version without moving air (maximum current of output #1 & #2 derated to 50%), 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%.
7. 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.

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## PM201 Medical & ITE Power Supplies (150-200W)

Specifications	
Safety Standards & EMC Specifications	
Safety Standard	UL ES 60601-1, CSA C22.2 No. 60601-1, File No. E178020, UL 60950-1 File No. E137410 TUV EN60601-1 TUV EN60950-1
EMI Standard	EN55011/EN55022 radiated and conducted
EMC Performance	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, 10V/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, 10Vrms EN61000-4-8: Magnetic field immunity, 30 A/m EN61000-4-11: Voltage dip immunity, 30% reduction for 500ms, and 100% reduction for 10ms
*Consult with TT Electronics for information on additional country safety approvals	
Input Specifications	
Input Voltage Range	90 to 264VAC
Input Frequency Range	47 to 63Hz
Input Current	3.2A (rms) @100VAC, 60 Hz and 1.6A (rms) @240VAC, 50 Hz
Earth Leakage Current	220 $\mu$ A max. @ 264VAC, 63Hz
Touch Current	100 $\mu$ A max. @ 264 VAC, 63Hz
Output Specifications	
Ripple & Noise	2% peak to peak maximum on 3.3 V & 5.1 V and 1% peak to peak maximum on other voltage outputs
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 $\pm 0.04\%/^{\circ}\text{C}$ maximum
Transient Response	Maximum excursion of 4% or better on all models, recovering to 1% of final value within 500 $\mu$ s after a 25% step load change
Fan Power	12V at 200 mA maximum, except 24V at 200mA maximum for PM201-25B and PM201-27B, and 5V at 380 mA maximum for PM201-40-3B
Environmental Specifications	
Operating Temperature	-0 $^{\circ}\text{C}$ to +70 $^{\circ}\text{C}$
Storage Temperature	-40 $^{\circ}\text{C}$ to +85 $^{\circ}\text{C}$
Relative Humidity	5% to 95% non-condensing
Temperature Derating	De-rate from 100% at +50 $^{\circ}\text{C}$ linearly to 50% at +70 $^{\circ}\text{C}$
Cooling	10.8 CFM forced air provided on "C" version; 25 CFM forced air to be provided for "B" version by user.
General Specifications	
Switching Frequency	88-112 KHz
Efficiency	70% minimum on all models
Hold-up Time	20ms minimum at 110 VAC
Line Regulation	$\pm 0.5\%$ maximum at full load
Inrush Current	20A @ 115 Vac or 40A @ 230 Vac at 25 $^{\circ}\text{C}$ cold start
Withstand Voltage	5600 VDC from input to output (2 MOPP) 2100 VDC from input to ground (1 MOPP) 700 VDC from output to ground (To verify AC strength, get correct test method to avoid power supply damage.)
MTBF	350,000 hours at full load at 25 $^{\circ}\text{C}$ ambient, calculated per MIL-HDBK-217F
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

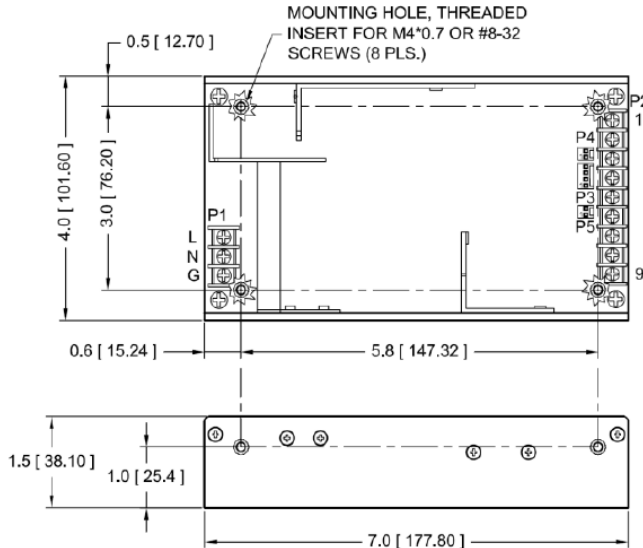


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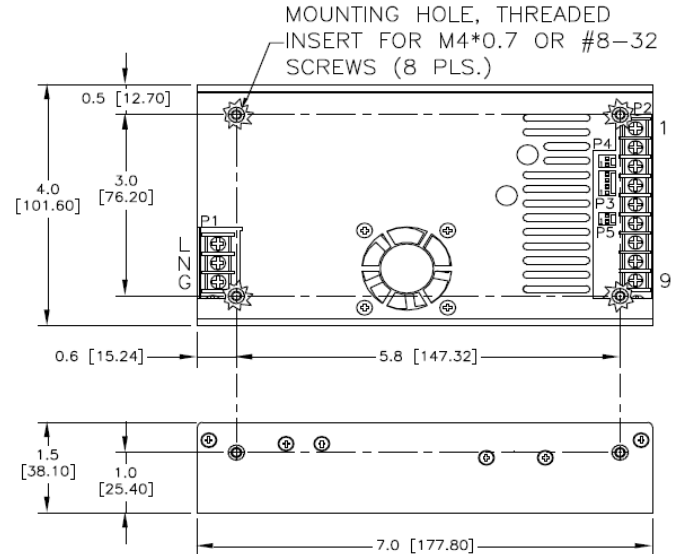
### MECHANICAL SPECIFICATIONS

Single Output Models  
U-bracket Form

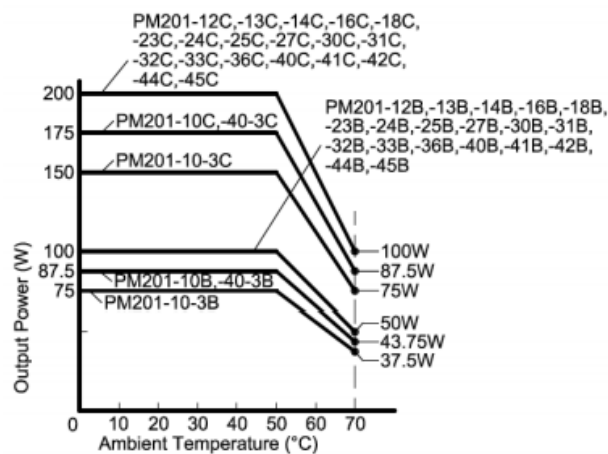


### Diagrams

Enclosed Form



### OUTPUT POWER DERATING CURVE



### 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



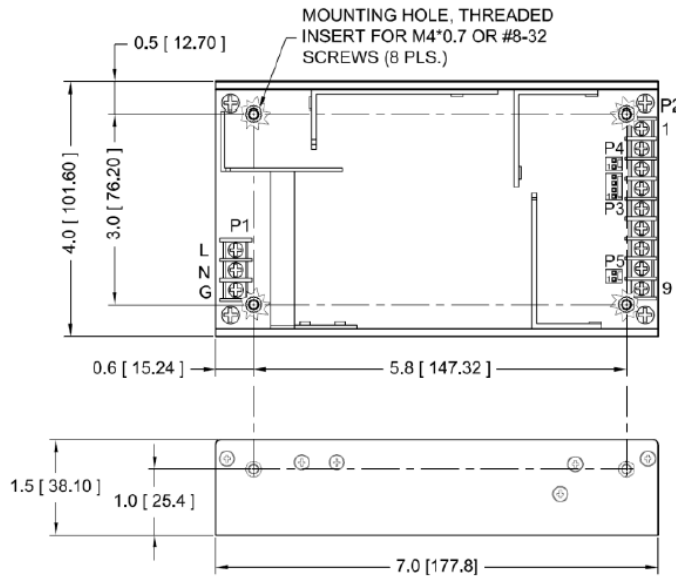
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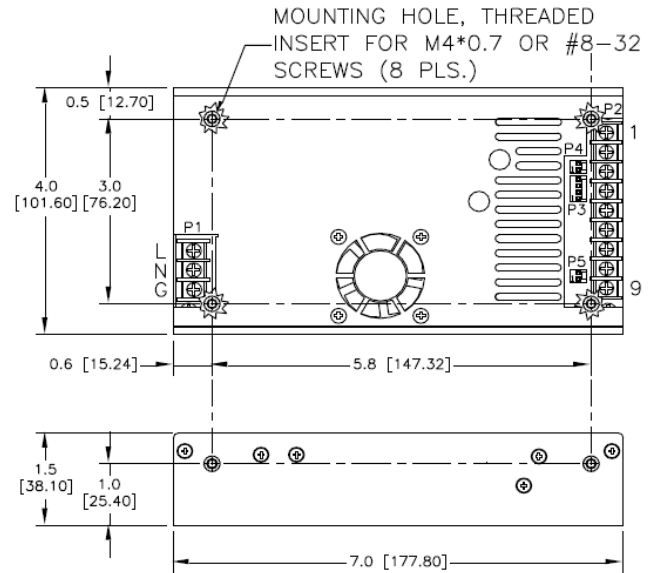
### MECHANICAL SPECIFICATIONS

#### Multiple Output Models

##### U-bracket Form



##### Enclosed Form



#### 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 and Molex 40445 series crimp terminal.
5. Connectors P4 and P5 mate with Molex housing 22-01-1023 and Molex 40445 series crimp terminal.
6. P4 is for DC fan, 12 V/0.2 A rated, Pin 1 +V and Pin 2 -V; except 24 V/0.2 A rated for models PM201-25 and PM201-27, and 5 V/0.38 A rated for models PM201-40-3).
7. Weight: 820 grams (1.8 lbs.) approx. for U-bracket form, 960 grams (2.1 lbs.) approx. for enclosed form.
8. Maximum penetration depth of fixing screws is 4 mm from the outer surface of chassis.

### PIN CHART

CONN		P2									P3				P5	
MODEL	PIN	1	2	3	4	5	6	7	8	9	1	2	3	4	1	2
PM201-10B	PM201-14B	-Sense	Com. Ret.	Com. Ret.	Com. Ret.	Com. Ret.	+V1	+V1	+V1	+Sense	Fan +V	Com. Ret.	Com. Ret.	PFD	Inhibit +V	Inhibit -V
PM201-10-3B	PM201-16B															
PM201-12B	PM201-18B															
PM201-13B																
PM201-23B	PM201-25B	V1	V1	Com. Ret.	Com. Ret.	Com. Ret.	V2	N.C.	N.C.	N.C.	Fan +V	Com. Ret.	Com. Ret.	PFD	Inhibit +V	Inhibit -V
PM201-24B	PM201-27B															
PM201-30B	PM201-32B	V1	V1	Com. Ret.	Com. Ret.	Com. Ret.	V2	V3	N.C.	N.C.	Fan +V	Com. Ret.	Com. Ret.	PFD	Inhibit +V	Inhibit -V
PM201-31B	PM201-33B															
PM201-36B		V1	V1	Com. Ret.	Com. Ret.	Com. Ret.	V2	N.C.	V3 Return	+V3	Fan +V	Com. Ret.	Com. Ret.	PFD	Inhibit +V	Inhibit -V
PM201-40B	PM201-44B	V1	V1	Com. Ret.	Com. Ret.	Com. Ret.	V2	V3	V4 Return	+V4	Fan +V	Com. Ret.	Com. Ret.	PFD	Inhibit +V	Inhibit -V
PM201-41B	PM201-45B															
PM201-42B	PM201-40-3B															