

## 150-200 WATT MEDICAL SWITCHING POWER SUPPLIES

### 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, not for life-support. 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.

### FEATURES

- Low safety ground leakage current
- Meet EN 55011 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 disables output
- Compliant with RoHS requirements

### INPUT SPECIFICATIONS

Input voltage :	90-264 VAC
Input frequency :	47-63 Hz
Input current :	3.20 A (rms) for 115 VAC 1.60 A (rms) for 230 VAC
Earth leakage current :	90 uA max. @ 115 VAC, 60 Hz 150 uA max. @ 230 VAC, 50 Hz

### 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 $\pm 0.04\%$ / $^{\circ}\text{C}$ maximum
Transient response :	Maximum excursion of 4% or better on all models, recovering to 1% of final value within 500 us 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 1ms prior to +5 V output dropping 5% below its nominal value. This signal also provides a minimum delay of 100 ms after +5 V is within regulation.

### 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
Derating:	Derate from 100% at +50 $^{\circ}\text{C}$
Cooling:	linearly to 50% at +70 $^{\circ}\text{C}$ 10.8 CFM forced air provided on "C" version; 25 CFM forced air to be provided for "B" version by user.

### PM201 SERIES



**CE** (LVD)  
**RoHS**

### SAFETY STANDARD APPROVALS



UL 60601-1, CSA C22.2 No. 601.1  
File No. E178020  
UL 60950-1  
File No. E137410



TÜV EN60601-1



TÜV EN60950-1

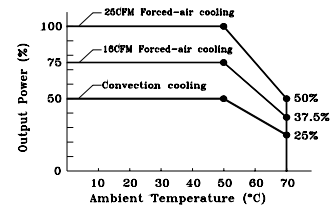
### GENERAL SPECIFICATIONS

Switching frequency :	88-112 KHz
Efficiency :	70% minimum on all models
Hold-up time :	20 msec 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 $^{\circ}\text{C}$ cold start
Withstand voltage :	4000 VAC from input to output 1500 VAC from input to ground 500 VAC from output to ground
MTBF :	350,000 hours at full load at 25 $^{\circ}\text{C}$ ambient , calculated per MIL-HDBK-217F
EMC Performance (EN60601-1-2: 2001)	
EN55011/EN55022:	Class B conducted, class B radiated
EN61000-3-2:	Harmonic distortion, class A and D
EN61000-3-3:	Line flicker
EN61000-4-2:	ESD, $\pm 8$ KV air and $\pm 6$ KV contact
EN61000-4-3:	Radiated immunity, 3 V/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, 3 Vrms
EN61000-4-8:	Magnetic field immunity, 3 A/m
EN61000-4-11:	Voltage dips, 30% reduction for 500 ms, 60% reduction for 100 ms and >95% reduction for 10 ms

## OUTPUT VOLTAGE/CURRENT RATING CHART

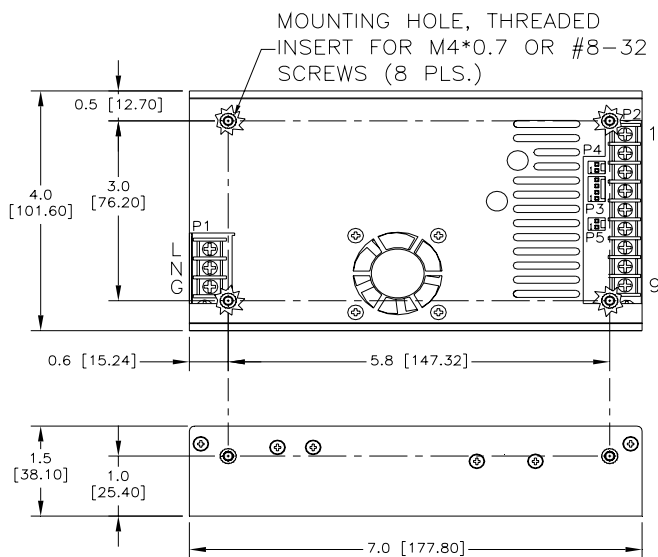
MODEL	Output #1				Output #2				Output #3				Output #4				Maximum Output Power		
	Vnom.	Imin.	Imax.	Tol.	Vnom.	Imin.	Imax.	Tol.	Vnom.	Imin.	Imax.	Tol.	Vnom.	Imin.	Imax.	Tol.			
PM201-10	5.1 V	3.0 A	35 A	2%	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	175 W	
PM201-10-3	3.3 V	3.0 A	46 A	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)	(N/A)	150 W	
PM201-12	12 V	1.2 A	16.7 A	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)	(N/A)	200 W	
PM201-13	15 V	1.0 A	13.4 A	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)	(N/A)	200 W	
PM201-14	24 V	0.6 A	8.4 A	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)	(N/A)	200 W	
PM201-16	30 V	0.5 A	6.7 A	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)	(N/A)	200 W	
PM201-18	48 V	0.5 A	4.2 A	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)	(N/A)	200 W	
PM201-23	+5.1 V	3.0 A	30 A	2%	+12 V	0 A	8 A	4%	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	200 W	
PM201-24	+5.1 V	3.0 A	30 A	2%	+15 V	0 A	6 A	4%	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	200 W	
PM201-25	+5.1 V	3.0 A	30 A	2%	+24 V	0 A	4 A	4%	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	200 W	
PM201-27	+12 V	1.0 A	8.7 A	2%	+24 V	0 A	4 A	4%	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	200 W	
PM201-30	+5.1 V	3.0 A	30 A	2%	+12 V	0 A	8 A	4%	-5 V	0 A	6 A	4%	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	200 W	
PM201-31	+5.1 V	3.0 A	30 A	2%	+12 V	0 A	8 A	4%	-12 V	0 A	4 A	4%	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	200 W	
PM201-32	+5.1 V	3.0 A	30 A	2%	+15 V	0 A	6 A	4%	-15 V	0 A	4 A	4%	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	200 W	
PM201-33	+5.1 V	3.0 A	30 A	2%	+15 V	0 A	6 A	4%	-12 V	0 A	4 A	4%	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	200 W	
PM201-36	+5.1 V	3.0 A	30 A	2%	+12 V	0 A	8 A	4%	+24 V	0 A	4 A	4%	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	200 W	
PM201-40	+5.1 V	3.0 A	30 A	2%	+12 V	0 A	8 A	4%	-12 V	0 A	4 A	4%	5 V	0 A	6 A	4%	(N/A)	(N/A)	200 W
PM201-41	+5.1 V	3.0 A	30 A	2%	+15 V	0 A	6 A	4%	-15 V	0 A	4 A	4%	24 V	0 A	4 A	4%	(N/A)	(N/A)	200 W
PM201-42	+5.1 V	3.0 A	30 A	2%	+12 V	0 A	8 A	4%	-12 V	0 A	4 A	4%	12 V	0 A	4 A	4%	(N/A)	(N/A)	200 W
PM201-44	+5.1 V	3.0 A	30 A	2%	+12 V	0 A	8 A	4%	-15 V	0 A	4 A	4%	15 V	0 A	4 A	4%	(N/A)	(N/A)	200 W
PM201-45	+5.1 V	3.0 A	30 A	2%	+12 V	0 A	8 A	4%	-12 V	0 A	4 A	4%	24 V	0 A	4 A	4%	(N/A)	(N/A)	200 W
PM201-40-3	+3.3 V	3.0 A	30 A	3%	+5.1 V	0 A	8 A	4%	-12 V	0 A	4 A	4%	12 V	0 A	4 A	4%	(N/A)	(N/A)	175 W

- NOTES:
1. Add suffix "B" for U-bracket format and "C" for enclosed format with option fan control, e.g. PM201-45C.
  2. Peak 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%.



## MECHANICAL SPECIFICATIONS

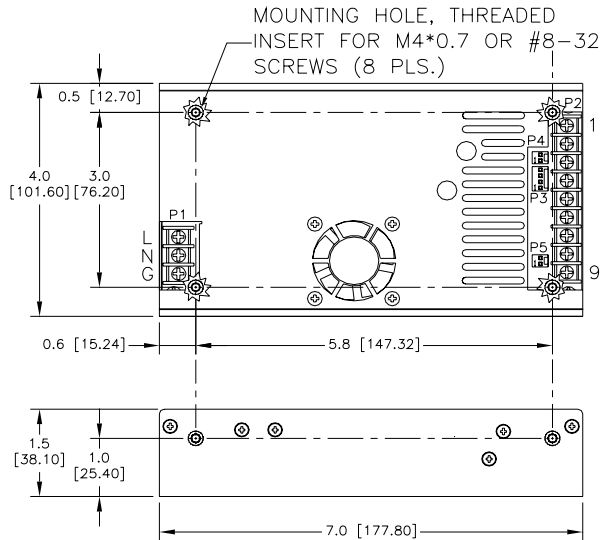
### Single Output Models



### 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, P5 mates with Molex housing 22-01-1023 and Molex 40445 series crimp terminal.
6. P4 is for DC fan rated 12 V/0.2 A, Pin1 +V and Pin2 COM.
7. Weight: 820 grams (1.83 lbs.) approx. for "B" version, 960 grams (2.14 lbs.) approx. for "C" version

## Multiple Output Models



### 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, P5 mates with Molex housing 22-01-1023 and Molex 40445 series crimp terminal.
6. P4 is for DC fan rated 24V/0.2A (models PM201-25/27) or 5V/0.38A (models PM201-40-3), and 12V/0.2A (other models, Pin1 +V and Pin2 COM).
7. Weight:  
820 grams (1.83 lbs.) approx. for "B" version,  
960 grams (2.14 lbs.) approx. for "C" version

## PIN CHART

MODEL	CONN PIN	P2									P3				P5	
		1	2	3	4	5	6	7	8	9	1	2	3	4	1	2
PM201-10 PM201-12 PM201-14 PM201-18	PM201-10-3 PM201-13 PM201-16 PM201-18	-SENSE	RET.	RET.	RET.	RET.	OUTPUT #1	OUTPUT #1	OUTPUT #1	+SENSE	FAN	COM. RET.	COM. RET.	PFD	INHIBIT+	INHIBIT-
PM201-23 PM201-25	PM201-24 PM201-27	OUTPUT #1	OUTPUT #1	COM. RET.	COM. RET.	COM. RET.	OUTPUT #2	N.C.	N.C.	N.C.	FAN	COM. RET.	COM. RET.	PFD	INHIBIT+	INHIBIT-
PM201-30 PM201-32	PM201-31 PM201-33	OUTPUT #1	OUTPUT #1	COM. RET.	COM. RET.	COM. RET.	OUTPUT #2	OUTPUT #3	N.C.	N.C.	FAN	COM. RET.	COM. RET.	PFD	INHIBIT+	INHIBIT-
PM201-36		OUTPUT #1	OUTPUT #1	COM. RET.	COM. RET.	COM. RET.	OUTPUT #2	N.C.	OUTPUT #3 RETURN	OUTPUT #3	FAN	COM. RET.	COM. RET.	PFD	INHIBIT+	INHIBIT-
PM201-40 PM201-41 PM201-44	PM201-40-3 PM201-42 PM201-45	OUTPUT #1	OUTPUT #1	COM. RET.	COM. RET.	COM. RET.	OUTPUT #2	OUTPUT #3	OUTPUT #4 RETURN	OUTPUT #4	FAN	COM. RET.	COM. RET.	PFD	INHIBIT+	INHIBIT-