



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 applications not for life support. They operate at 90 to 264VAC 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.

PM201 SERIES



New!!

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

Safety Standard Approvals:



UL60601-1, CSA C22.2 No. 601.1
File No. E178020



TÜV EN60601-1

INPUT SPECIFICATIONS

Input voltage : 90 to 260VAC
 Input frequency : 47 to 63Hz
 Input current : 3.2A (rms) for 115VAC
 1.6A (rms) for 230VAC
 Earth leakage current : 90uA max. @ 115VAC, 60Hz
 150uA max. @ 230VAC, 50Hz

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: 10.8 CFM forced air provided on
 "C" version; 25 CFM forced air to
 be provided for "B" version by user.

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 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 1ms
 prior to +5V output dropping
 5% below its nominal value.
 This signal also provides a
 minimum delay of 100ms after
 +5V is within regulation.

GENERAL SPECIFICATIONS

Switching frequency : 88 KHz -112 KHz
 Efficiency : 70% minimum on all models
 Hold-up time : 20 msec minimum at 110VAC
 Line regulation : $\pm 0.5\%$ 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 : 350,000 hours at full load at
 25°C ambient , calculated per
 MIL-HDBK-217F
 EMC Performance (EN60601-1-2: 2001)
 EN55011: Class B conducted, Class B radiated
 EN61000-3-2: Harmonic distortion, Class A and D
 EN61000-3-3: Line flicker
 EN61000-4-2: ESD, $\pm 8\text{KV}$ air and $\pm 6\text{KV}$ contact
 EN61000-4-3: Radiated immunity, 3V/m
 EN61000-4-4: Fast transient/burst, $\pm 2\text{KV}$
 EN61000-4-5: Surge, $\pm 1\text{KV}$ diff., $\pm 2\text{KV}$ com.
 EN61000-4-6: Conducted immunity, 3Vrms
 EN61000-4-8: Magnetic field immunity, 3A/m
 EN61000-4-11: Voltage dips, 30% reduction for 500ms,
 60% reduction for 100ms and >95%
 reduction for 10ms

2-11

MEDICAL

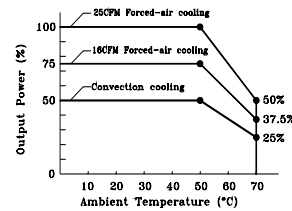
UNIVERSAL INPUT

PM201 MEDICAL SERIES

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

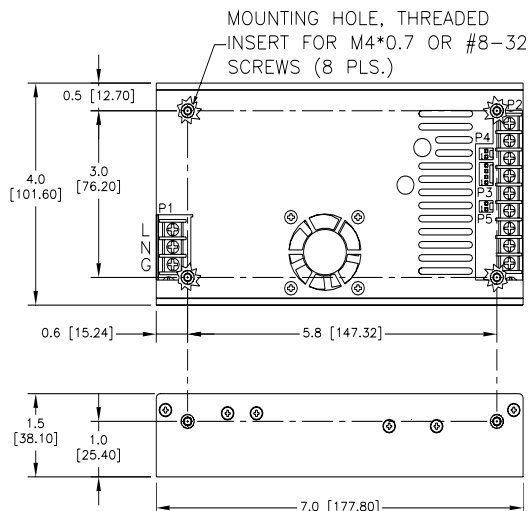
- NOTES:
- Add suffix "B" for U-bracket format and "C" for enclosed format with option fan control, e.g. PM201-45C.
 - Peak current is 12A on +12V, 9A on +15V and 6A on +24V.
 - Output #4 is floating. It can be connected externally for positive or negative output.
 - 200 watts for "C" version with a 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.
 - When the remote Sense facility is not used, +Sense must be connected to +V, and -Sense to return, on P2 connector.
 - All models may be operated at no-load. At no-load, output voltage tolerance increases to 10%.



DERATING CURVE

MECHANICAL SPECIFICATIONS

Single Output Models



NOTES:

- Dimensions shown in inch [mm]
- Tolerance 0.02 [0.5] maximum
- Input connector P1 is Dinkle DT-35-B01W-03 output connector P2 is Dinkle DT-35-B01W-09 screws are M3, Nickel plated.
- Connector P3 mates with Molex housing 22-01-1043 and Molex 40445 series crimp terminal.
- Connectors P4, P5 mates with Molex housing 22-01-1023 and Molex 40445 series crimp terminal.
- P4 is for DC fan rated 12V/0.2A, Pin1 +V and Pin2 COM.
- Weight:
0.82 kgs. (1.83 lbs.) approx. for "B" version,
0.96 kgs. (2.14 lbs.) approx. for "C" version

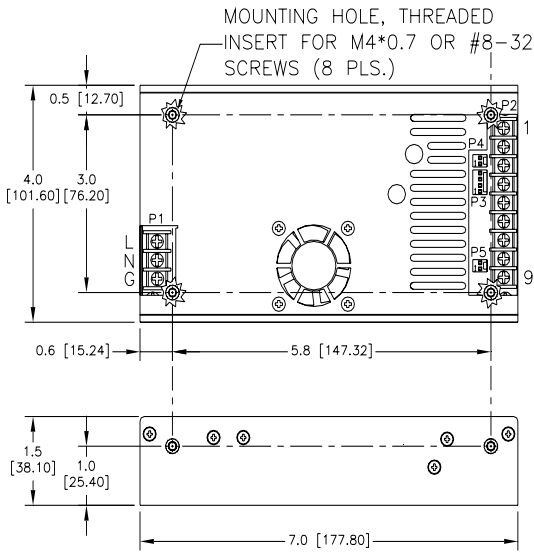
2-12

MEMO:

UNIVERSAL INPUT

PM201 MEDICAL SERIES

Multiple Output Models



NOTES:

1. Dimensions shown in inch [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:
0.82 kgs. (1.83 lbs.) approx. for "B" version,
0.96 kgs. (2.14 lbs.) approx. for "C" version

MEMO:

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-