



450-480 WATT MEDICAL SWITCHING POWER SUPPLIES

DESCRIPTION

The PM450 series comprising single and multiple output models for 450-480 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. 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.

PM450 SERIES



New!!

FEATURES

- EN61000-3-2 class A and D compliant
- Power Factor 0.98 typical
- Overvoltage protection
- Short-circuit protection
- Thermal protection
- Power Fail Detect (PFD)
- 100% burn-in at full rated load
- Remote sense on output #1 and output #2
- 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 264VAC
 Input frequency: 47 to 63Hz
 Input current : 7.1A (rms) for 115VAC
 3.5A (rms) for 230VAC
 Earth leakage current: 100uA max. @115VAC, 60Hz
 165uA 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

OUTPUT SPECIFICATIONS

Output voltage/current : See rating chart
 Total output power : See rating chart
 Ripple and Noise : 2% peak to peak maximum
 Overvoltage protection : Provided on output #1 only; set at 115 – 140% 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 1ms prior to master output dropping 5% below its nominal value. This signal also provides a minimum delay of 100ms after master output is within regulation.
 Remote inhibit : Requires an external TTL high level signal to inhibit outputs for standard models.

GENERAL SPECIFICATIONS

Switching frequency : 60KHz ±10KHz
 Power factor : 0.98 typical
 Efficiency : 80% minimum on all models
 Hold-up time : 12 msec minimum at 110VAC
 Line regulation : ±0.2% maximum at full load
 Inrush current : 40 amps @ 115VAC or 80 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 : 300,000 hours minimum at full load at 25°C ambient, calculated per MIL-HDBK- 217F
 EMC Performance (EN60601-1-2)
 EN55011: Class B conducted, Class A radiated
 EN61000-3-2: Harmonic distortion, Class A and D
 EN61000-3-3: Line flicker
 EN61000-4-2: ESD, ±8KV air and ±6KV contact
 EN61000-4-3: Radiated immunity, 3V/m
 EN61000-4-4: Fast transient/burst, ±2KV
 EN61000-4-5: Surge, ±1KV diff., ±2KV 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

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MEDICAL

OUTPUT VOLTAGE/CURRENT RATING CHART

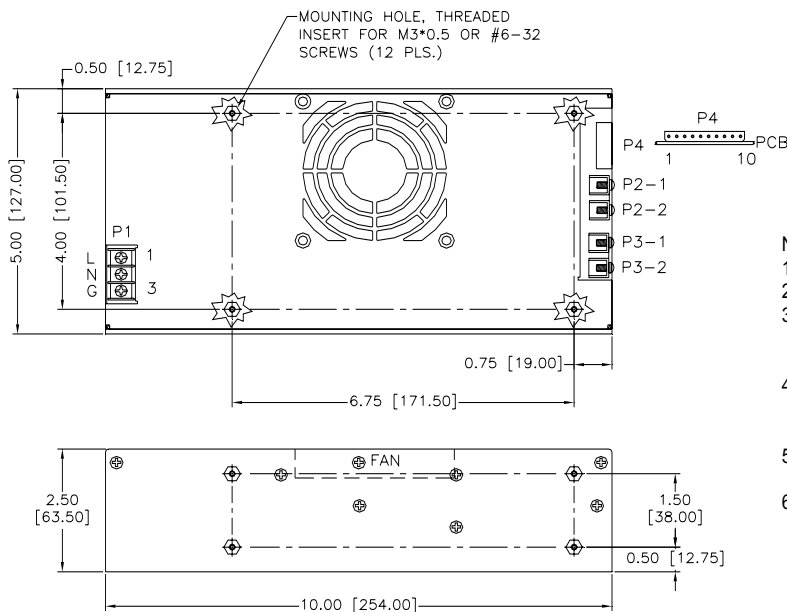
MODEL	Output # 1				Output # 2				Output # 3				Maximum Output
	Vnom.	Imin.	I _{max.}	Tol.	Vnom.	Imin.	I _{max.}	Tol.	Vnom.	Imin.	I _{max.}	Tol.	Power
PM450-12	12V	0A	37.5A	2%									450W
PM450-13	15V	0A	30A	2%									450W
PM450-14	24V	0A	18.75A	2%									450W
PM450-15	27V	0A	16.7A	2%									450W
PM450-16	30V	0A	15A	2%									450W
PM450-17-1	40V	0A	12A	2%									480W
PM450-18	48V	0A	10A	2%									480W
PM450-19	55V	0A	8.73A	2%									480W
PM450-20	24V	1.0A	12A	2%	12V	1.0A	17A	5%					450W
PM450-21	24V	1.0A	12A	2%	15V	0.75A	15A	5%					450W
PM450-22	48V	0.5A	6A	2%	24V	0.5A	10A	5%					450W
PM450-23	48V	0.5A	6A	2%	12V	1.0A	17A	5%					450W
PM450-24	48V	0.5A	6A	2%	15V	0.75A	15A	5%					450W
PM450-30	24V	1.0A	12A	2%	12V	1.0A	17A	5%	3.3V	0A	8A	3%	450W
PM450-31	24V	1.0A	12A	2%	15V	0.75A	15A	5%	3.3V	0A	8A	3%	450W
PM450-32	24V	1.0A	12A	2%	12V	1.0A	17A	5%	5.1V	0A	8A	3%	450W
PM450-33	24V	1.0A	12A	2%	15V	0.75A	15A	5%	5.1V	0A	8A	3%	450W
PM450-34	48V	0.5A	6A	2%	12V	1.0A	17A	5%	3.3V	0A	8A	3%	450W
PM450-35	48V	0.5A	6A	2%	15V	0.75A	15A	5%	3.3V	0A	8A	3%	450W
PM450-36	48V	0.5A	6A	2%	12V	1.0A	17A	5%	5.1V	0A	8A	3%	450W
PM450-37	48V	0.5A	6A	2%	15V	0.75A	15A	5%	5.1V	0A	8A	3%	450W

NOTES:

1. Add suffix "B" for U-bracket format or "C" for enclosed format with fan control function, e.g. PM450-14C.
2. All outputs are floating. It can be connected externally for positive or negative output.
3. Output #1 can be adjusted within $\pm 5\%$ of their nominal voltage.
4. Output #3 can be adjusted within $\pm 15\%$ of their nominal voltage.
5. 450~480 watts for "C" version with cover-and-fan assembly. 225~240 watts for "B" version without moving air (maximum current of output #1 & 2 derated to 50%), or 450 watts with 40 CFM forced air provided by user.
6. All models may operate at no-load. At no-load, output voltage tolerance increases to 10%.

MECHANICAL SPECIFICATIONS

Single 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 screws are M3, Nickel plated.
4. Connector P4 mates with Molex housing 50-37-5103 and pins 5263.
5. P2-1, P2-2, P3-1 & P3-2: M3*0.5 screw connections.
6. Weight: 1,800 grams

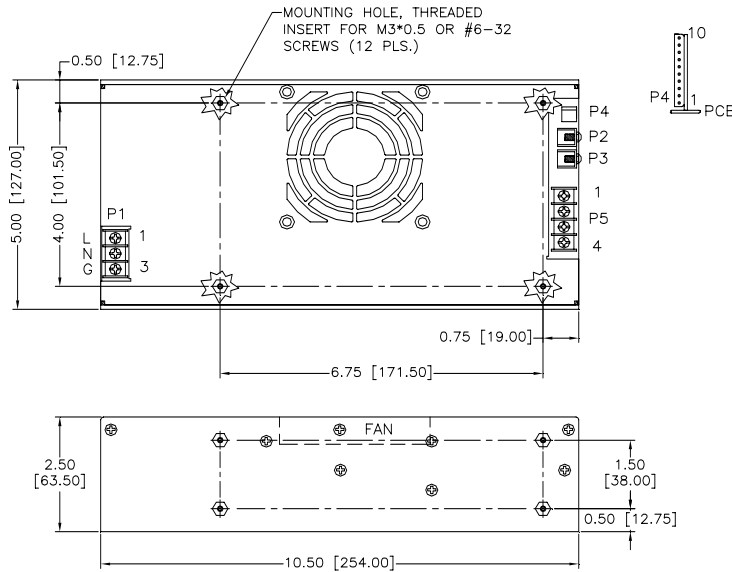
MEMO:

UNIVERSAL INPUT

PM450 SERIES

MECHANICAL SPECIFICATIONS

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 screws are M3, Nickel plated.
4. Connector P4 mates with Molex housing 50-37-5103 and pins 5263.
5. P2, P3: M*0.05 screw connections.
6. Output connector P5 is Dinkle DT-35-B01W-04 screws are M3, Nickel plated.
7. Weight: 1,900 grams

MEMO:

PIN CHART

Single Output Models

MODEL	CONN PIN	P1 (AC)			P2	P3	P4			
		1	2	3			1	2	3	4
PM450-12	PM450-13	LIVE	NEUTRAL	GROUND	+V	-V	SIGNAL GROUND (-V)	+S (V)	-S (V)	PFD
PM450-14	PM450-15									
PM450-16	PM450-17-1									
PM450-18	PM450-19									

MODEL	CONN PIN	P4					
		5	6	7	8	9	10
PM450-12	PM450-13	INHIBIT +Ve	INHIBIT -Ve	N.C.	N.C.	0V (FAN)	FAN
PM450-14	PM450-15						
PM450-16	PM450-17-1						
PM450-18	PM450-19						

Multiple Output Models

MODEL	CONN PIN	P1 (AC)			P2	P3	P4			
		1	2	3			1	2	3	4
PM450-20	PM450-21	LIVE	NEUTRAL	GROUND	+V1	-V1	SIGNAL GROUND (-V)	+S (V1)	-S (V1)	PFD
PM450-22	PM450-23									
PM450-24	PM450-30									
PM450-31	PM450-32									
PM450-33	PM450-34									
PM450-35	PM450-36									
PM450-37	PM450-37									

MODEL	CONN PIN	P4						P5					
		5	6	7	8	9	10	1	2	3	4		
PM450-20	PM450-21	INHIBIT +Ve	INHIBIT -Ve	+S (V2)	-S (V2)	0V (FAN)	FAN	+V2	-V2	N.C.	N.C.		
PM450-22	PM450-23												
PM450-24	PM450-30												
PM450-30	PM450-31							+V2	-V2	+V3	-V3		
PM450-32	PM450-33												
PM450-34	PM450-35												
PM450-36	PM450-37												