

# 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 and ITE 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.

## 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

## 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

## 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 $\pm 0.04\%$ / $^{\circ}\text{C}$ 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 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.

## PM450 SERIES

CE (LVD)  
RoHS



## Safety Standard Approvals :



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



UL 60950-1, CSA C22.2 No. 60950-1



TÜV EN60601-1



TÜV EN60950-1

## 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 $^{\circ}\text{C}$ linearly to 50% at +70 $^{\circ}\text{C}$

## GENERAL SPECIFICATIONS

Switching frequency :	60KHz $\pm 10\text{KHz}$
Power factor :	0.98 typical
Efficiency :	80% minimum on all models
Hold-up time :	12 msec minimum at 110VAC
Line regulation :	$\pm 0.2\%$ maximum at full load
Inrush current :	40 amps @ 115VAC or 80 amps @ 230VAC, at 25 $^{\circ}\text{C}$ 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 $^{\circ}\text{C}$ 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, $\pm 8\text{KV}$ 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

# UNIVERSAL INPUT

# PM450 SERIES

## OUTPUT VOLTAGE/CURRENT RATING CHART

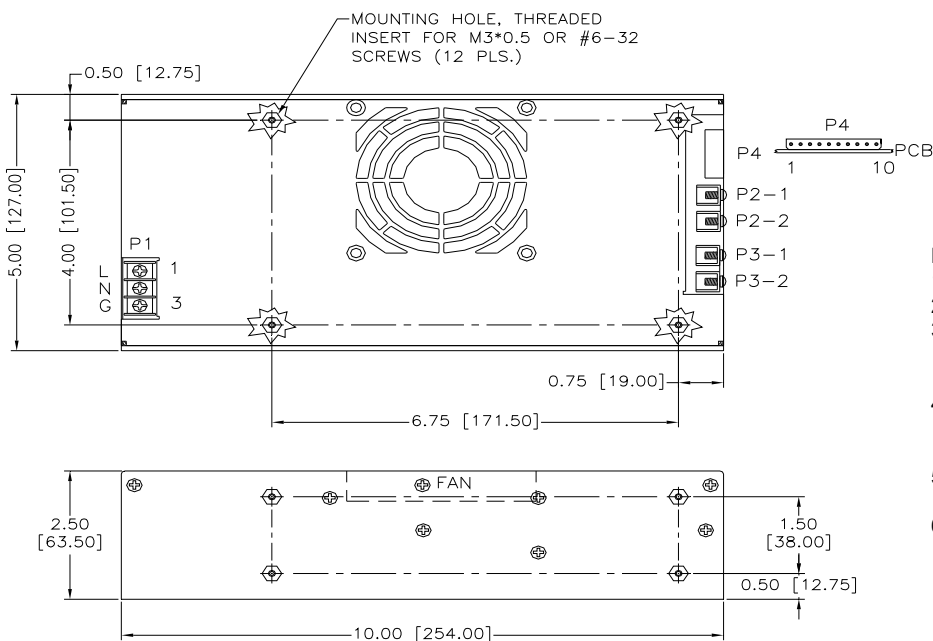
MODEL	Output # 1				Output # 2				Output # 3				Maximum Output Power
	Vnom.	Imin.	Imax.	Tol.	Vnom.	Imin.	Imax.	Tol.	Vnom.	Imin.	Imax.	Tol.	
PM450 12	12V	0A	37.5A	2%									450W
PM450 14	24V	0A	18.75A	2%									450W

### 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:

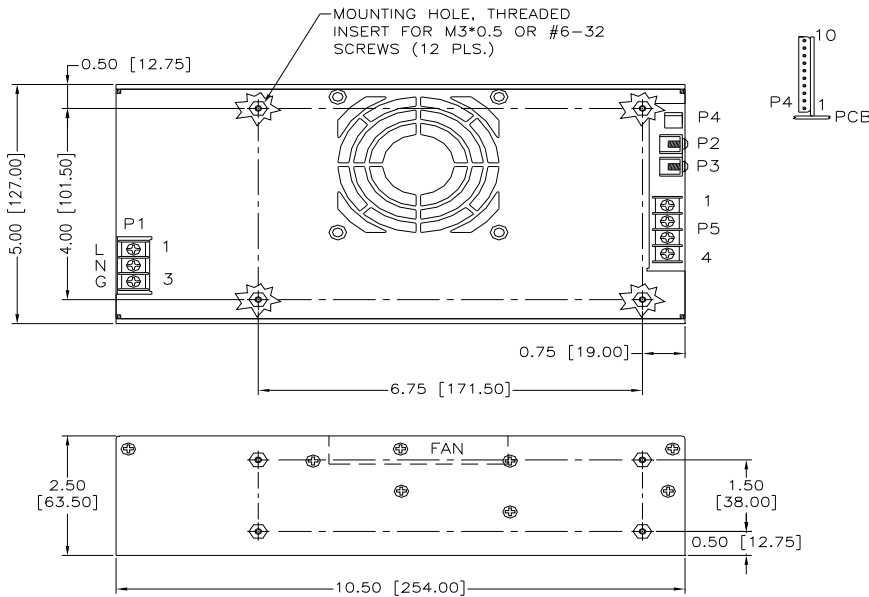
1. Dimensions shown in inch [mm].
2. Tolerance 0.02 [0.5] maximum.
3. Input connector P1 is Dinkle DT 35 B01W 03 screws are M3, Nickel plated.
4. Connector P4 mates with Molex housing 50 37 5103 and pins 5263.
5. P2 1, P2 2, P3 1 & P3 2: M3\*0.5 screw connections.
6. Weight: 1,800 grams

# 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

### 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 24										
PM450 30	PM450 31	INHIBIT +Ve	INHIBIT Ve	+S (V2)	-S (V2)	0V (FAN)	FAN	+V2	-V2	+V3	-V3
PM450 32	PM450 33										
PM450 34	PM450 35										
PM450 36	PM450 37										