PROTEK POWER

TT Electronics
POWER PARTNERS

PM450 Medical & ITE Power Supplies (450-480W)

Features:

- EN61000-3-2 class A and D compliant
- Power Factor 0.98 typical
- Overvoltage protection
- Short-circuit protection
- Power Fail Detect (PFD) signal
- 100% burn-in at full rated load
- Remote sense on output #1 and output #2
- Remote inhibit –TTL high to disable output
- Compliant with RoHS requirements

CE
RoHS

c UL us
IEC 60601-1
TÜV Rheinland Product Safety
BAUART GEPRÜFT TYPE APPROVED

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. They operate at 90-264VAC 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.

Model[1]	Output #1[3,5]				Output #2[5]				Output #3[4]				Max. Output Power[5]
	V1	Imin	Imax	Tol.	V1	Imin	Imax	Tol.	V1	Imin	Imax	Tol.	
PM450-12B	12V	0A	37.5A	±2%	(N/A)								225/450W
PM450-13B	15V	0A	30A	±2%	(N/A)								225/450W
PM450-14B	24V	0A	18.75A	±2%	(N/A)								225/450W
PM450-15B	27V	0A	16.7A	±2%	(N/A)								225/450W
PM450-16B	30V	0A	15A	±2%	(N/A)								225/450W
PM450-17-1B	40V	0A	12A	±2%	(N/A)								240/480W
PM450-18B	48V	0A	10A	±2%	(N/A)								240/480W
PM450-19B	55V	0A	8.73A	±2%	(N/A)								240/480W
PM450-20B	24V	1A	12A	±2%	12V	1A	17A	±5%	(N/A)				225/450W
PM450-21B	24V	1A	12A	±2%	15V	0.75A	15A	±5%	(N/A)				225/450W
PM450-22B	48V	0.5A	6A	±2%	24V	0.5A	10A	±5%	(N/A)				225/450W
PM450-23B	48V	0.5A	6A	±2%	12V	1A	17A	±5%	(N/A)				225/450W
PM450-24B	48V	0.5A	6A	±2%	15V	0.75A	15A	±5%	(N/A)				225/450W
PM450-30B	24V	1A	12A	±2%	12V	1A	17A	±5%	3.3V	0A	8A	±3%	225/450W
PM450-31B	24V	1A	12A	±2%	15V	0.75A	15A	±5%	3.3V	0A	8A	±3%	225/450W
PM450-32B	24V	1A	12A	±2%	12V	1A	17A	±5%	5.1V	0A	8A	±3%	225/450W
PM450-33B	24V	1A	12A	±2%	15V	0.75A	15A	±5%	5.1V	0A	8A	±3%	225/450W
PM450-34B	48V	0.5A	6A	±2%	12V	1A	17A	±5%	3.3V	0A	8A	±3%	225/450W
PM450-35B	48V	0.5A	6A	±2%	15V	0.75A	15A	±5%	3.3V	0A	8A	±3%	225/450W
PM450-36B	48V	0.5A	6A	±2%	12V	1A	17A	±5%	5.1V	0A	8A	±3%	225/450W
PM450-37B	48V	0.5A	6A	±2%	15V	0.75A	15A	±5%	5.1V	0A	8A	±3%	225/450W

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. PM450-14C.
2. All outputs are floating. They can be connected externally for positive or negative output.
3. Output #1 can be adjusted within ±5% of its nominal voltage.
4. Output #3 can be adjusted within ±15% of its 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 be operated at no-load. At no-load, output voltage tolerance increases to ±10%.

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PM450 Medical & ITE Power Supplies (450-480W)

Specifications	
Safety Standards & EMC Specifications	
Safety Standard Approvals	ULES 60601-1, CSA C22.2 No. 60601-1 File No. E178020 TÜV EN60601-1 UL 60950-1, CSA C22.2 No. 60950-1 TÜV EN60950-1
EMI Standard	EN55011/EN55022, FCC & VCCI Class B (radiated and conducted)
EMC Performance	EN61000-3-2: Harmonic distortion, Class A and D EN61000-3-3: Line flicker EN61000-4-2: ESD, ±15 KV air and ± 8KV contact EN61000-4-3: Radiated immunity, 10V/m EN61000-4-4: Fast transient/burst, ±2KV EN61000-4-5: Surge, ±1 KV diff., ±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	7.1A (rms) @100VAC, 60 Hz 3.5A (rms) @240VAC, 50 Hz
Earth Leakage Current	240µA max. @ 264VAC, 63Hz
Touch Current	100µA 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 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 500 us after a 25% step load change
Fan Power	12 V at 400 mA maximum for B version 12 V at 100 mA maximum for C version
Environmental Specifications	
Operating Temperature	-0°C to +70°C
Storage Temperature	-40°C to +85°C
Relative Humidity	5% to 95% non-condensing
Temperature Derating	De-rate from 100% at +50°C linearly to 50% at +70°C
General Specifications	
Switching Frequency	60KHz ±10KHz
Power Factor	0.98 typical
Efficiency	80% minimum on all models
Hold-up Time	12ms minimum at 110 VAC
Line Regulation	±0.2% maximum at full load
Inrush Current	40A @ 115 Vac or 80A @ 230 Vac at 25°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	300,000 hours at full load at 25°C ambient, calculated per MIL-HDBK-217F

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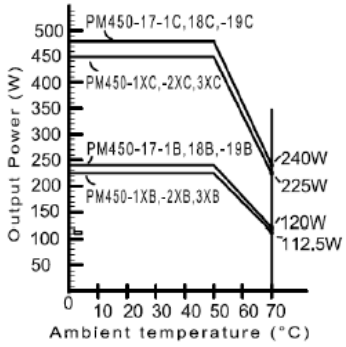
Diagrams

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 output is within regulation.

Inhibit : Requires an external TTL high level signal to inhibit outputs for standard models.

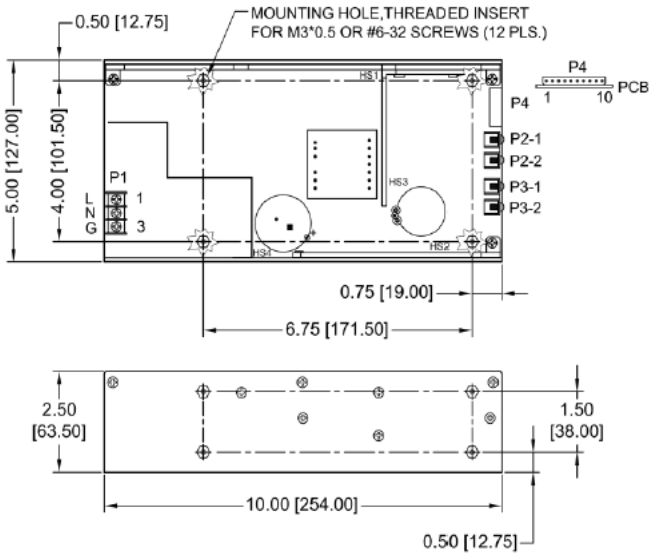
OUTPUT POWER DERATING CURVE



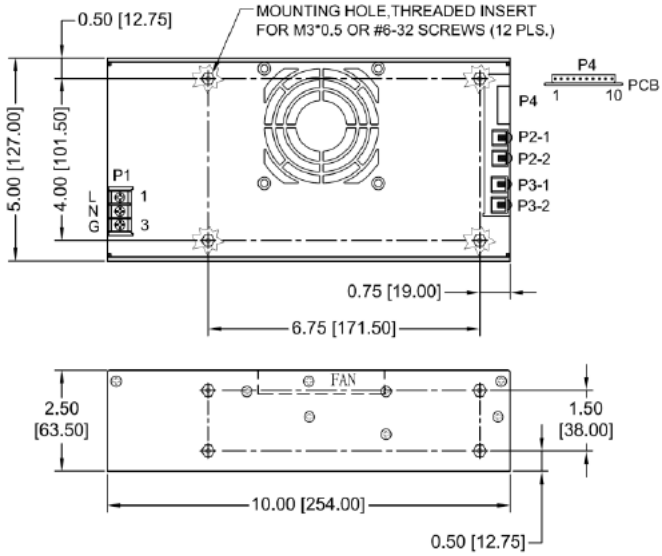
MECHANICAL SPECIFICATIONS

Single Output Models

U-bracket Form



Enclosed Form



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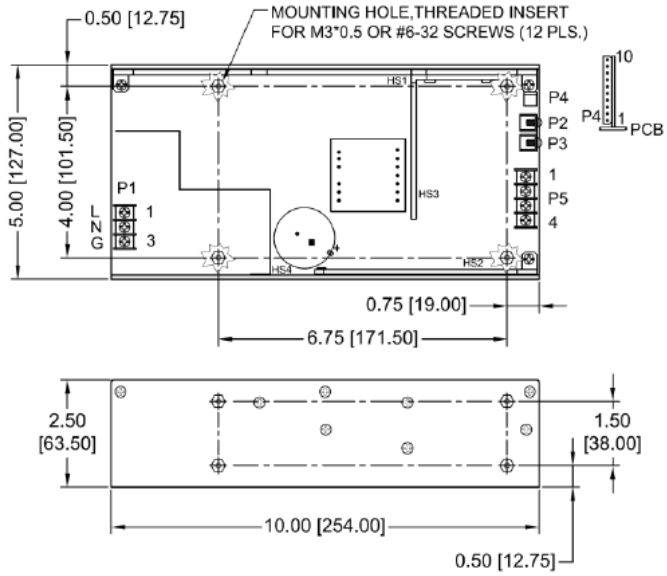
Multiple Output Models
U-bracket Form



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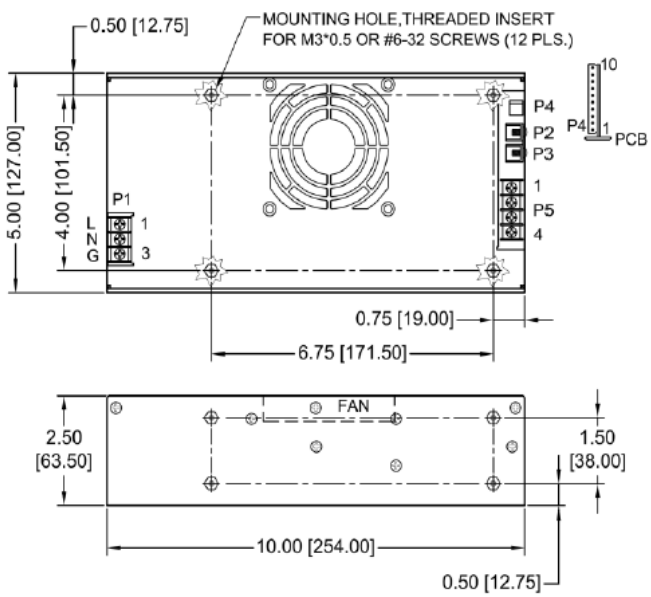

NOTES:

1. Dimensions shown in inches [mm]
2. Tolerance 0.02 [0.5] maximum
3. Input connector P1 is Dinkle DT-35-B01W-03 with M3, nickel plated screws.
4. Connector P4 mates with Molex housing 50-37-5103 and pins 5263.
5. P2, P2-1, P2-2, P3, P3-1 & P3-2: M3*0.5 screw connections
6. Output connector P5 is Dinkle DT-35-B01W-04 with M3, nickel plated screws.
7. Weight: 1.8 Kgs. (3.96 lbs.) approx. for U-bracket form, 2.0 Kgs. (4.4 lbs.) approx. for enclosed form
8. Maximum penetration depth of fixing screws is 4 mm from the outer surface of chassis.

PIN CHART

CONN / MODEL / PIN		P1 (AC)			P2	P3	P5			
		1	2	3			1	2	3	4
PM450-12B PM450-13B PM450-14B PM450-15B	PM450-16B PM450-17-1B PM450-18B PM450-19B	Live	Neutral	Ground	+V1	V1 Return	N.A.			
PM450-20B PM450-21B PM450-22B	PM450-23B PM450-24B	Live	Neutral	Ground	+V1	V1 Return	+V2	V2 Return	N.C.	N.C.
PM450-30B PM450-31B PM450-32B PM450-33B	PM450-34B PM450-35B PM450-36B PM450-37B	Live	Neutral	Ground	+V1	V1 Return	+V2	V2 Return	+V3	V3 Return

CONN / MODEL / PIN		P4									
		1	2	3	4	5	6	7	8	9	10
PM450-12B PM450-13B PM450-14B PM450-15B	PM450-16B PM450-17-1B PM450-18B PM450-19B	PFD Return	+V1 Sense	-V1 Sense	PFD	Inhibit +V	Inhibit -V	N.C.	N.C.	Fan Return	+12V Fan
PM450-20B PM450-21B PM450-22B	PM450-23B PM450-24B	PFD Return	+V1 Sense	-V1 Sense	PFD	Inhibit +V	Inhibit -V	+V2 Sense	-V2 Sense	Fan Return	+12V Fan
PM450-30B PM450-31B PM450-32B PM450-33B	PM450-34B PM450-35B PM450-36B PM450-37B	PFD Return	+V1 Sense	-V1 Sense	PFD	Inhibit +V	Inhibit -V	+V2 Sense	-V2 Sense	Fan Return	+12V Fan