

## DESCRIPTION

The PMP90 series of AC/DC switching power supplies are for 60-90 watts of continuous output power. They are enclosed in a 94V-0 rated polyphenylene-oxide case with an IEC320/C14 or IEC320/C18 inlet to mate with interchangeable cord for world-wide use. All models meet EN55011 and FCC class B emission limits, and are designed for medical applications.

## FEATURES

- Low safety ground leakage current
- Wide input range 90 to 264 VAC
- Optional output connectors
- 100% burn-in
- Overvoltage protection
- Over-temperature protection
- Overcurrent protection
- Compliant with CEC and Energy Star Efficiency level IV requirements (except models PMP90-10, PMP90-10-1 and PMP90-11)
  - \* No load power consumption less than 0.5 W
  - \* Average active efficiency greater than 85%
- Compliant with RoHS requirements

## INPUT SPECIFICATIONS

Input voltage:	90-264 VAC
Input frequency:	47-63 Hz
Input current:	1.20 A (rms) for 115 VAC 0.60 A (rms) for 230 VAC
Earth leakage current:	180 $\mu$ A max. @ 264 VAC, 63 Hz
Touch current:	100 $\mu$ A max. @ 264 VAC, 63 Hz

## OUTPUT SPECIFICATIONS

Output voltage /current:	See rating chart.
Maximum output power:	See rating chart.
Ripple and noise:	100 mVp-p maximum on 5 V, 6 V and 9 V outputs, 1% maximum on other voltage outputs (12 V, 13.5 V ..., 48 V etc.)
Overvoltage protection:	Provided and set at 112-140% of its nominal output voltage
Overcurrent protection:	Protected to short circuit conditions
Temperature coefficient:	$\pm 0.04\%$ / $^{\circ}$ C maximum
Transient response:	Maximum excursion of 4% or better on all models, recovering to 1% of final value within 500 $\mu$ s after a 25% step load change

## ENVIRONMENTAL SPECIFICATIONS

Operating temperature:	0 $^{\circ}$ C to +60 $^{\circ}$ C
Storage temperature:	-40 $^{\circ}$ C to +85 $^{\circ}$ C
Relative humidity:	5% to 95% non-condensing
Derating:	Derate from 100% at +40 $^{\circ}$ C linearly to 50% at +60 $^{\circ}$ C

## PMP90 SERIES



## SAFETY STANDARD APPROVALS



UL ES 60601-1, CSA C22.2 No. 60601-1  
File No. E178020



TÜV EN 60601-1

## GENERAL SPECIFICATIONS

Switching frequency:	50-110 KHz
Power factor:	0.98 Typical
Efficiency:	85% min. (except 77% min. for PMP90-10, PMP90-10-1, PMP90-11 and PMP90-12)
Hold-up time:	15 ms minimum at 110 VAC
Line regulation:	$\pm 0.5\%$ maximum at full load
Inrush current:	50 A @ 115 VAC or 100 A @ 230 VAC, at 25 $^{\circ}$ 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.) For Class II models, 4000 VAC from input to output
MTBF:	150,000 hours at full load at 25 $^{\circ}$ C ambient, calculated per MIL-HDBK-217F

## EMC Performance (IEC60601-1-2)

EN55011	Class B conducted, class B radiated
FCC:	Class B conducted, class B radiated
VCCI:	Class B conducted, class B radiated
EN61000-3-2:	Harmonic distortion, class A and D
EN61000-3-3:	Line flicker
EN61000-4-2:	ESD, $\pm 15$ KV air and $\pm 8$ KV contact
EN61000-4-3:	Radiated immunity, 10 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, 10 Vrms
EN61000-4-8:	Magnetic field immunity, 30 A/m
EN61000-4-11:	Voltage dip immunity, 30% reduction for 500 ms, 100% reduction for 10 ms

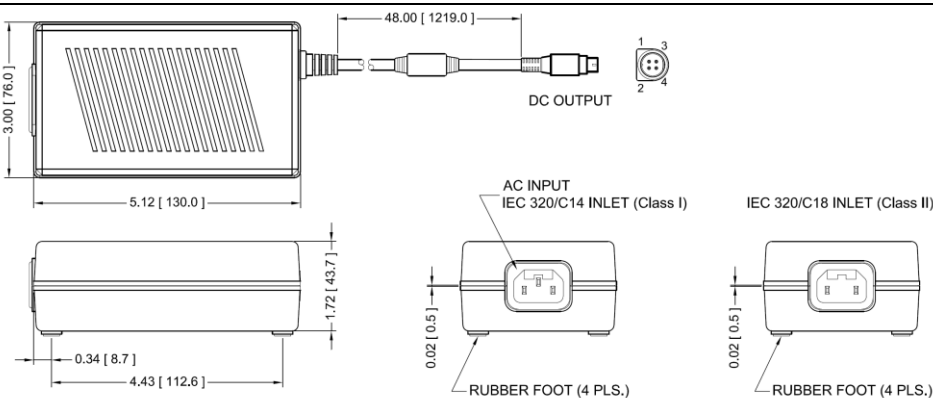
## OUTPUT VOLTAGE/CURRENT RATING CHART

Model <sup>(1)</sup>		Output						Average Active Efficiency (typical) @ 115 / 230 Vac
Class I	Class II	V1	Min. Current	Max. Current	Tol.	Ripple & Noise <sup>(2)</sup>	Max. Power	
PMP90-10	PMP90F-10	5.0 V	0 A	12.0 A	±5%	100 mV	60 W	78 /79%
PMP90-10-1	PMP90F-10-1	6.0 V	0 A	10.0 A	±5%	100 mV	60 W	78 /79%
PMP90-11	PMP90F-11	9.0 V	0 A	7.78 A	±5%	100 mV	70 W	81 /82%
PMP90-12	PMP90F-12	12.0 V	0 A	6.67 A	±5%	120 mV	80 W	86 /85%
PMP90-12-1	PMP90F-12-1	13.5 V	0 A	6.30 A	±5%	135 mV	85 W	86 /85%
PMP90-13	PMP90F-13	15.0 V	0 A	5.67 A	±5%	150 mV	85 W	86 /85%
PMP90-13-1	PMP90F-13-1	18.0 V	0 A	5.00 A	±5%	180 mV	90 W	86 /85%
PMP90-13-2	PMP90F-13-2	19.0 V	0 A	4.74 A	±5%	190 mV	90 W	86 /86%
PMP90-14	PMP90F-14	24.0 V	0 A	3.75 A	±5%	240 mV	90 W	87 /86%
PMP90-16	PMP90F-16	30.0 V	0 A	3.00 A	±5%	300 mV	90 W	87 /86%
PMP90-18	PMP90F-18	48.0 V	0 A	1.87 A	±5%	480 mV	90 W	88 /87%

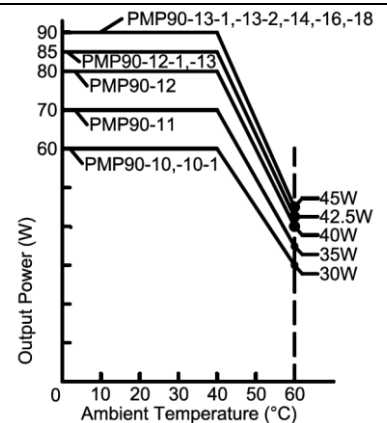
**NOTES:**

- Class I models are equipped with IEC320/C14 inlet, and class II models with IEC320/C18 inlet.
- Ripple and noise is maximum peak to peak voltage value measured at output within 20 MHz bandwidth, at rated line voltage and output load ranges, and with a 10 µF tantalum capacitor in parallel with a 0.1 µF ceramic capacitor across the output.

## MECHANICAL SPECIFICATIONS



## OUTPUT POWER DERATING CURVE



**NOTES:**

- Dimensions shown in inches [mm]
- Tolerance 0.02 [0.5] maximum
- Weight: 658 grams (1.45 lbs.) approx.
- Output connector is 4 pin plug without lock, mating with Kycon P/N KPJX-4S-S socket or equivalent.
- Refer to Section titled "OPTIONAL OUTPUT CONNECTORS". Add the suffix assigned for a selected connector to a wanted model number, e.g. PMP90-14-B1, for ordering.

## PIN CHART

MODEL	PIN	1	2	3	4
PMP90-10	PMP90F-10	V1 Return	+V1	V1 Return	+V1
PMP90-10-1	PMP90F-10-1				
PMP90-11	PMP90F-11				
PMP90-12	PMP90F-12				
PMP90-12-1	PMP90F-12-1				
PMP90-13	PMP90F-13				
PMP90-13-1	PMP90F-13-1				
PMP90-13-2	PMP90F-13-2				
PMP90-14	PMP90F-14				
PMP90-16	PMP90F-16				
PMP90-18	PMP90F-18				