

## 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-1 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, EN55022 and FCC class B emission limits, and are designed for medical and ITE applications, not for life-supporting equipment.

## FEATURES

- Low safety ground leakage current
- Both Class I and Class II models are certified to medical and ITE safety standards.
- Wide input range 85 to 264 VAC
- Optional output connectors
- 100% burn-in
- Overvoltage 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

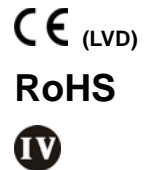
## OUTPUT SPECIFICATIONS

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 us 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 60601-1, CSA C22.2 No. 601.1  
File No. E178020



TÜV EN 60601-1



UL 60950-1, CSA C22.2 No. 60950-1  
File No. E137410



TÜV EN 60950-1

## 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:	4000 VAC from input to output, 1500 VAC from input to ground, 500 VAC from output to ground
MTBF:	150,000 hours at full load at 25 $^{\circ}$ C ambient , calculated per MIL-HDBK-217F
EMC Performance (IEC60601-1-2)	
EN55011/EN55022:	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, $\pm 8$ KV air and $\pm 6$ KV contact
EN61000-4-3:	Radiated immunity, 3 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, 3 Vrms
EN61000-4-8:	Magnetic field immunity, 3 A/m
EN61000-4-11:	Voltage dip immunity, 30% reduction for 500 ms, 60% reduction for 100 ms, and >95% reduction for 10 ms

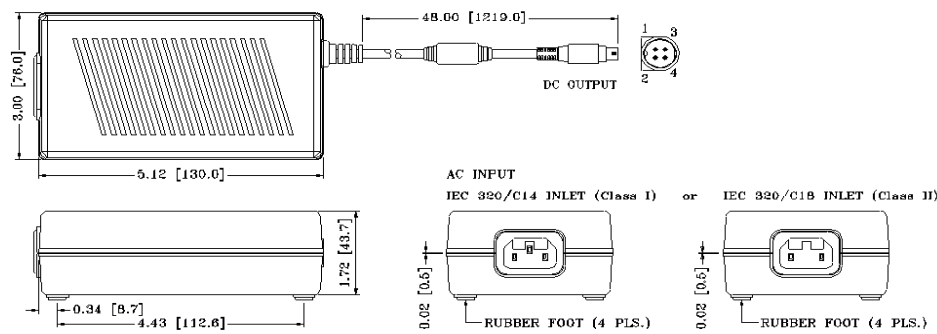
## OUTPUT VOLTAGE/CURRENT RATING CHART

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 %

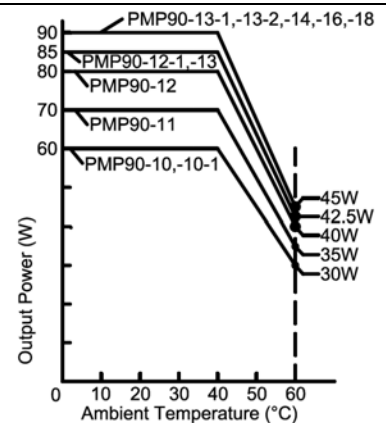
**NOTES:**

- 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				