

## DESCRIPTION

The PUP60 series of AC/DC switching power supplies are for 30-60 watts of continuous output power. They are enclosed in a 94V-1 rated polyphenylene-oxide case with an IEC320/C14 inlet to mate with interchangeable cord for world-wide use. All models meet EN55022 and FCC class B emission limits, and are designed for ITE applications.

## FEATURES

- 9 standard desktop models
- Single, dual or triple outputs
- Optional output connectors
- Optional on/off switch
- 100% burn-in
- Wide input range 85-264 VAC
- Input surge current protection
- Overvoltage protection
- Overcurrent protection
- Single output models compliant with CEC and Energy Star Efficiency level V requirements
  - \* No load power consumption less than 0.5 W
  - \* Average active efficiency  $\geq 87\%$
- Compliant with RoHS requirement

## INPUT SPECIFICATIONS

Input voltage:	85-264 VAC
Input frequency:	47-63 Hz
Input current:	1.22 A (rms) for 100 VAC 0.68 A (rms) for 240 VAC
Touch current:	200 $\mu$ A max. @ 264 VAC, 63 Hz

## OUTPUT SPECIFICATIONS

Output voltage /current:	See rating chart.
Maximum output power:	See rating chart.
Ripple and noise:	66 mVp-p maximum on 3.3 V output, 100 mVp-p maximum on 5 V output and 1% maximum on other voltage outputs (12 V, 15 V ..., 48 V etc.)
Overvoltage protection:	Provided on output #1 only, set at 112-140% of its nominal output voltage
Overcurrent protection:	All outputs protected to short circuit conditions
Temperature coefficient:	All outputs $\pm 0.04\%$ / $^{\circ}$ 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

## PUP60 SERIES



CE (LVD)  
RoHS  
V

## SAFETY STANDARD APPROVALS



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



TÜV EN 60950-1

## GENERAL SPECIFICATIONS

Switching frequency:	40 KHZ-130 KHZ
Efficiency:	87% minimum on single output models, 68-74% minimum on the others
Hold-up time:	10 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:	3000 VAC from input to output, 1500 VAC from input to ground, 500 VAC from output to ground
MTBF:	150,000 hours minimum at full load at 25 $^{\circ}$ C ambient, calculated per MIL-HDBK-217F
EMC Performance	
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 $\pm 4$ KV contact
EN61000-4-3:	Radiated immunity, 3 V/m for 80-2500 MHz
EN61000-4-4:	Fast transient/burst, $\pm 1$ 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, 1 A/m
EN61000-4-11:	Voltage dip immunity, 30% reduction for 500 ms, and >95% reduction for 10 ms

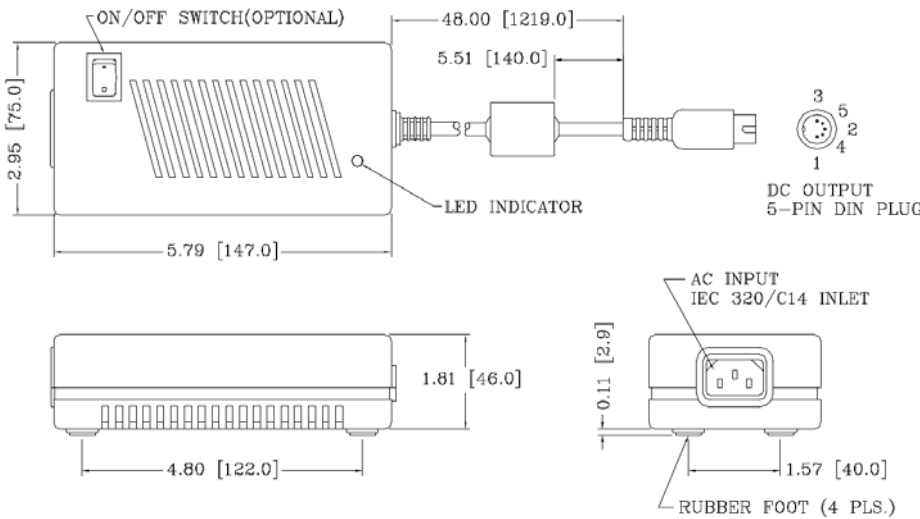
## OUTPUT VOLTAGE/CURRENT RATING CHART

Model	Output #1				Output #2				Output #3				Max. Output Power
	V1	Min. current	Max. current	Tol.	V2	Min. current	Max. current	Tol.	V3	Min. current	Max. current	Tol.	
PUP60-14	21-27 V	0 A	2.86 A	±5%	(N/A)				(N/A)				60 W
PUP60-16	27-33 V	0 A	2.23 A	±3%	(N/A)				(N/A)				60 W
PUP60-17	33-39 V	0 A	1.82 A	±3%	(N/A)				(N/A)				60 W
PUP60-18	46-50 V	0 A	1.31 A	±3%	(N/A)				(N/A)				60 W
PUP60-23	+5.0 V	1 A	5.0 A	±5%	+12 V	0.5 A	3.0 A	±5%	(N/A)				40 W
PUP60-30	+3.3 V	1 A	6.0 A	±5%	+5 V	0.5 A	3.0 A	±5%	+12 V	0.1 A	0.7 A	±10%	30 W
PUP60-31	+5.0 V	1 A	5.0 A	±5%	+12 V	0.5 A	3.0 A	±5%	-12 V	0.1 A	0.7 A	±10%	40 W
PUP60-32	+5.0 V	1 A	5.0 A	±5%	+15 V	0.4 A	2.3 A	±5%	-15 V	0.1 A	0.7 A	±10%	40 W
PUP60-36	+5.0 V	1 A	5.0 A	±5%	+24 V	0.3 A	1.5 A	±5%	+12 V	0.1 A	0.7 A	±10%	40 W

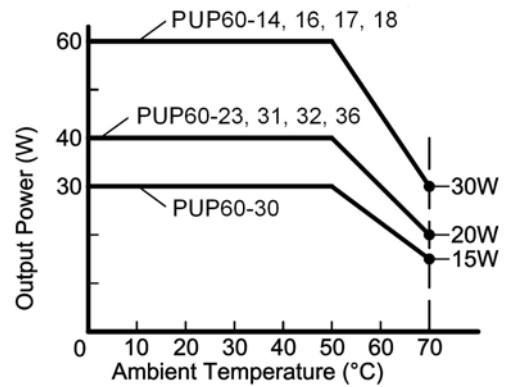
**NOTES:**

- The output voltages of a multiple output model may go outside of the stated tolerance when an output load current is out of stated limits. All models may be operated at no-load without damage.
- 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: 600 grams (1.33 lbs.) approx.
- Output connector is 5 pin DIN plug, mating with Switchcraft P/N 57GB5F receptacle or equivalent.
- Refer to Section titled "OPTIONAL OUPUT CONNECTORS" for optional output connectors. Add the suffix assigned for a selected connector to a wanted model number, e.g. PUP60-14-B2, for ordering.
- To order a model with on / off switch, add suffix " S " to the model number, e.g. PUP60-14-B2-S

## PIN CHART

MODEL	PIN	1	2	3	4	5
PUP60-14 PUP60-16	PUP60-17 PUP60-18	V1 Return	V1 Return	+V1	V1 Return	+V1
PUP60-23		Common Return	Common Return	V1	N.C.	V2
PUP60-30 PUP60-31	PUP60-32 PUP60-36	Common Return	Common Return	V1	V3	V2