

## DESCRIPTION

The PUP60N1 series of AC/DC switching power supplies are for 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, and comply with UL, CSA, IEC and CE requirement.

## FEATURES

- Operation altitude up to 5000 meters
- Optional output connectors
- Optional on /off switch
- 100% burn-in
- Wide input range 90-264 VAC
- Input surge current protection
- Overvoltage protection
- Overcurrent protection
- Compliant with DoE Efficiency level VI requirements
- Compliant with RoHS requirement

## INPUT SPECIFICATIONS

Input voltage:	90-264 VAC
Input frequency:	47-63 Hz
Input current:	1.22 A (rms) for 100 VAC 0.68 A (rms) for 240 VAC
Earth leakage current:	200 $\mu$ A max. @ 264 VAC, 63 Hz
Touch current:	100 $\mu$ A max. @ 264 VAC, 63 Hz

## OUTPUT SPECIFICATIONS

Output voltage /current:	See output rating chart.
Maximum output power:	See output rating chart.
Ripple and noise:	1% peak to peak maximum
Overvoltage protection:	Provided on output #1 only, 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:	-20 $^{\circ}$ 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

## PUP60N1 SERIES



## SAFETY STANDARD APPROVALS



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



TÜV EN 60950-1

## GENERAL SPECIFICATIONS

Switching frequency:	20 KHz-70 KHz
Efficiency:	88% minimum
Hold-up time:	20 ms minimum at 110 VAC
Line regulation:	$\pm 0.5\%$ maximum at full load
Inrush current:	60 A @ 115 VAC or 120 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
EN55024	
EN61000-4-2:	ESD, $\pm 8$ KV air and $\pm 4$ KV contact
EN61000-4-3:	Radiated immunity, 3 V/m
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

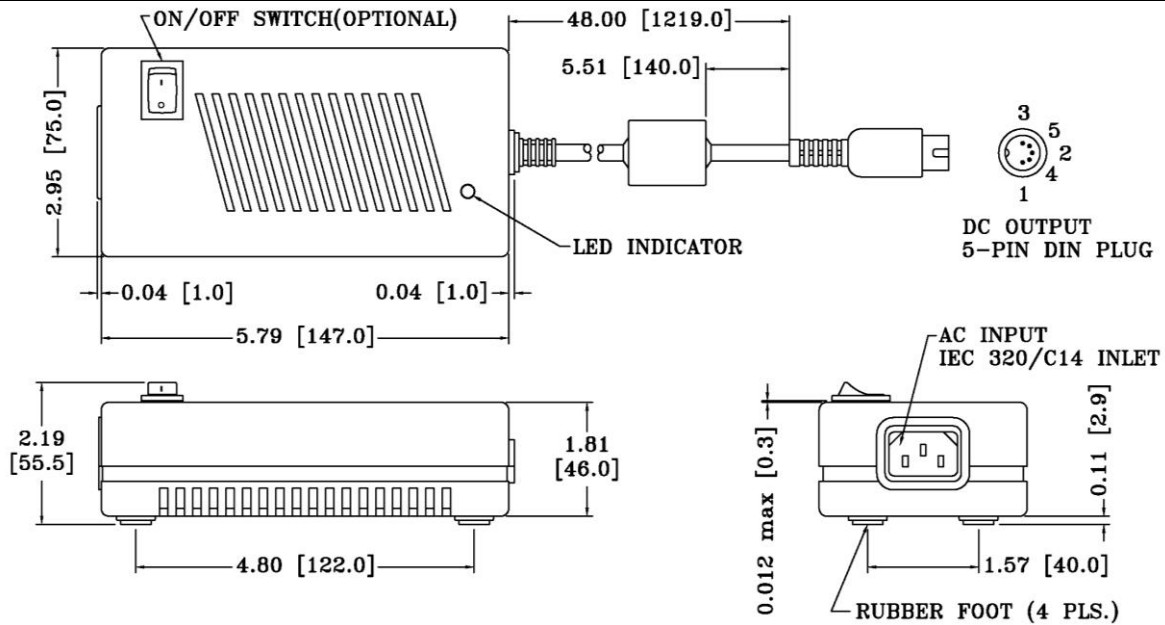
## OUTPUT VOLTAGE/CURRENT RATING CHART

Model	Output						Average Active Efficiency (typical) @ 115 / 230 Vac
	V1	Min. current	Max. current	Tol.	Ripple & Noise <sup>(1)</sup>	Max. Power	
PUP60N1-13	13-17 V	0 A	4.62 A	±5%	130-170 mV	60 W	88 /89%
PUP60N1-13-1	17-21 V	0 A	3.53 A	±5%	170-210 mV	60 W	89 /90%
PUP60N1-14	21-27 V	0 A	2.86 A	±5%	210-270 mV	60 W	88 /89%
PUP60N1-16	27-33 V	0 A	2.23 A	±3%	270-330 mV	60 W	88 /89%
PUP60N1-17	33-39 V	0 A	1.82 A	±3%	330-390 mV	60 W	88 /89%
PUP60N1-18	46-50 V	0 A	1.31 A	±3%	460-500 mV	60 W	89 /89%

**NOTES:**

1. 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



**NOTES:**

1. Dimensions shown in inches [mm]
2. Tolerance 0.02 [0.5] maximum
3. Weight: 600 grams (1.33 lbs.) approx.
4. Output connector is 5 pin DIN plug, mating with Switchcraft P/N 57GB5F receptacle or equivalent.
5. 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. PUP60N1-14-B2, for ordering.
6. To order a model with on / off switch, add suffix " S " to the model number, e.g. PUP60N1-14-B2-S

## PIN CHART

PIN 1	V1 Return
PIN 2	V1 Return
PIN 3	+V1
PIN 4	V1 Return
PIN 5	+V1

## OUTPUT POWER DERATING CURVE

