

## DESCRIPTION

The PUP221 series of AC/DC switching power supplies are for 180-220 watts of continuous output power. They are enclosed in a 94V-0 rated plastic case with an IEC320/C14 or IEC320/C6 inlet to mate with interchangeable cord for world-wide use. All models meet EN55022, EN55024 and FCC class B emission limits, and comply with UL, cUL, TUV and CE requirement.

## FEATURES

- No load power consumption less than 0.21 W
- Meet efficiency level VI
- Meet Energy Star EPS2.0 /ErP lot 7
- Operating altitude up to 5000 meters
- Overvoltage protection (latch)
- Short-circuit protection (auto-recovery)
- Overpower protection (auto-recovery)
- Over temperature protection (latch)
- High Efficiency
- With PFC circuit
- 100% burn-in at full rated load
- Compliant with RoHS requirements

## INPUT SPECIFICATIONS

Input voltage:	90-264 VAC
Input frequency:	47-63 Hz
Input current:	3 A (rms) for 100 VAC 1.5 A (rms) for 240 VAC
Touch current:	250 $\mu$ A max. @ 264 VAC, 60 Hz

## OUTPUT SPECIFICATIONS

Output voltage/current:	See rating chart.
Total output power:	See rating chart.
Ripple and noise:	See rating chart.
Overvoltage protection:	Set at 112-160% of its nominal output voltage.
Overcurrent protection:	All models 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 (See Derating)
Storage temperature:	-20 $^{\circ}$ C to +80 $^{\circ}$ C
Operating humidity:	20% to 80% non-condensing
Storage humidity:	10% to 90% non-condensing
Derating:	Derate output power linearly from 100% at 40 $^{\circ}$ C to 50% at 60 $^{\circ}$ C

## PUP221 SERIES



CE

RoHS

VI

## SAFETY STANDARD APPROVALS



UL 60950-1, CSA C22.2 No. 60950-1  
File No. E190414



TÜV EN 60950-1

## GENERAL SPECIFICATIONS

Hold-up time:	10 ms minimum at 110 VAC or 240 VAC
Efficiency:	91% typical at full load
Power factor:	0.9 minimum @ 230 Vac/50 Hz, Full load 3
Turn on delay time:	s maximum at 110 VAC
Inrush current:	80 A @ 115Vac or 160A @ 230Vac at 25 $^{\circ}$ C cold start
Withstand voltage:	1500 VAC from input to output and ground
MTBF:	500,000 hours at full load at 25 $^{\circ}$ C ambient, calculated per SR332
Ingress Protection:	IP22 Compliant

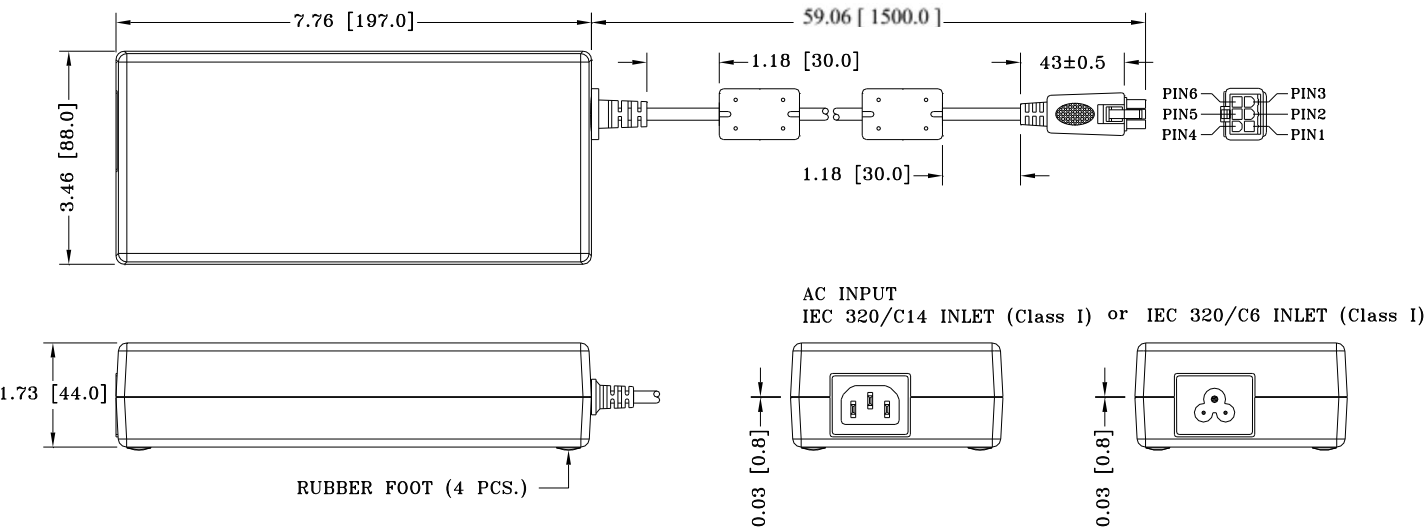
EMC	Class B conducted, class B radiated Class
Performance	B conducted, class B radiated Class B
EN55022:	conducted, class B radiated Harmonic
FCC:	distortion, class D
VCCI:	Line flicker
EN61000-3-2:	
EN61000-3-3:	ESD, $\pm 15$ KV air and $\pm 8$ KV contact
EN55024	Radiated immunity, 3 V/m
EN61000-4-2:	Fast transient/burst, $\pm 1$ KV
EN61000-4-3:	Surge, $\pm 1$ KV diff., $\pm 2$ KV com
EN61000-4-4:	Conducted immunity, 3 Vrms
EN61000-4-5:	Magnetic field immunity, 1 A/m
EN61000-4-6:	Voltage dip immunity, 30% reduction for 500
EN61000-4-8:	ms and >95% reduction for 10 ms
EN61000-4-11:	

OUTPUT VOLTAGE/CURRENT RATING CHART

Model <sup>(1)</sup>	Output						Average Active Efficiency (typical) @ 115 / 230 Vac
	V1	Minimum Current	Maximum Current	Tol.	Ripple & Noise <sup>(2)</sup>	Maximum Power	
PUP221-12	12V	0 A	15.00 A	±5%	350 mV	180 W	90 /91%
PUP221S-12	12V	0 A	15.00 A	±5%	350 mV	180 W	90 /91%
PUP221-13-2	19V	0 A	11.57 A	±5%	350 mv	220 W	91 /92%
PUP221-14	24V	0 A	9.16 A	±5%	350 mv	220 W	91 /92%

- NOTES:
- 1. PUP221models are equipped with IEC320/C14 inlet, and PUP221S-12 with IEC320/C6 inlet.
  - 2. 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 47 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: 1000 grams (2.2 lbs.) approx.
  - 4. V1 return (-) is electrically connected to incoming Earth Ground through a 3K ohm resistor as standard.

PIN CHART

PIN NO.	1	2	3	4	5	6
Polarity	V1 Return	V1 Return	V1 Return	+V1	+V1	+V1