

DESCRIPTION

The PU400 series of AC-DC switching power supplies in a package of 4 x 7 x 1.58 inches are capable of delivering 400 watts of continuous power at 7 CFM forced air cooling or 300 watts at convection cooling. The units are constructed on a printed circuit board with a U-bracket for mechanical support and heat sinking. A cover-and-fan assembly can be added during manufacturing for 400 watt output without the change of any dimension. The units are certified to IEC/EN/UL 60950-1 and suitable for data networking, computer and telecommunication applications.

FEATURES

- 4 x 7 inch footprint with 1.58 inch low profile
- 100-240 VAC input with active PFC
- 300 watt convection rating up to +50°C
- 400 watt output with 7 CFM forced air
- Standby output 5VDC at 100mA
- EN55022 Class B conducted emissions
- Inhibit - TTL low to disable output
- Standard PS Off and DC OK signals
- Efficiency greater than 88%
- Compliant with RoHS requirements

INPUT SPECIFICATIONS

| | |
|------------------|--|
| Input voltage: | 90-264 VAC |
| Input frequency: | 47-63 Hz |
| Input current: | 4.2 A (rms) @ 115 VAC, 60 Hz 2.1 A (rms) @ 230 VAC, 50 Hz |
| Touch current: | 250 µA max. @ 264 VAC, 63 Hz |

OUTPUT SPECIFICATIONS

| | |
|--------------------------|---|
| Output voltage/current: | See rating chart. |
| Maximum output power: | See rating chart. |
| Ripple and noise: | 1% peak to peak maximum |
| Remote sense | Compensation for cable losses up to 0.5V |
| Overvoltage protection: | Set at 115-140% of nominal output voltage |
| Overcurrent protection: | Protected to output short circuit conditions |
| Thermal shutdown | Protected to overtemperature conditions |
| Temperature coefficient: | All outputs ±0.04% /°C maximum |
| Transient response: | Maximum excursion of 4%, recovering to 1% of final value within 500 µs after a 25% step load change |
| Standby power | 5 V at 100 mA maximum |
| Fan power | 12 V at 250 mA maximum |

ENVIRONMENTAL SPECIFICATIONS

| | |
|------------------------|--|
| Operating temperature: | -10°C to +70°C |
| Storage temperature: | -40°C to +85°C |
| Relative humidity: | 5% to 95% non-condensing |
| Derating: | Derate from 100% at +50°C linearly to 50% at +70°C, applicable to convection and forced-air cooling conditions |

PU400 SERIES



CE (LVD)
RoHS

SAFETY STANDARD APPROVALS



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



TÜV EN 60950-1

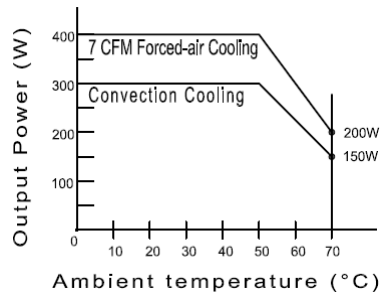
GENERAL SPECIFICATIONS

| | |
|----------------------|---|
| Switching frequency: | 85 KHz (typical) |
| Efficiency: | Typical 89% @ 115 VAC, 92% @ 230 VAC |
| Hold-up time: | 12 ms minimum at 110 VAC & 400 W |
| Line regulation: | ±0.5% maximum at full load |
| Inrush current: | 20 A @ 115 VAC, or 40 A @ 230 VAC, at 25°C cold start |
| Withstand voltage: | 3000 VAC from input to output, 1500 VAC from input to ground, 500 VAC from output to ground |
| MTBF: | 350,000 hours at full load at 25°C ambient, calculated per MIL-HDBK-217F |
| EMC Performance | |
| EN55022: | Class B conducted, class A radiated |
| FCC: | Class B conducted, class A radiated |
| VCCI: | Class B conducted, class A radiated |
| EN61000-3-2: | Harmonic distortion, class A and D |
| EN61000-3-3: | Line flicker |
| EN61000-4-2: | ESD, ±8 KV air and ±4 KV contact |
| EN61000-4-3: | Radiated immunity, 3 V/m |
| EN61000-4-4: | Fast transient/burst, ±1 KV |
| EN61000-4-5: | Surge, ±1 KV diff., ±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 |

INTERFACE SIGNALS

- PFD: TTL high for normal operation, low upon loss of input power, turn-on delay time 100-500 ms, turn-off delay time 5 ms minimum
- Inhibit: TTL low to turn off output
- DC OK: TTL high when output voltage >95%
- PS OFF: TTL high to turn off output

OUTPUT POWER DERATING CURVE



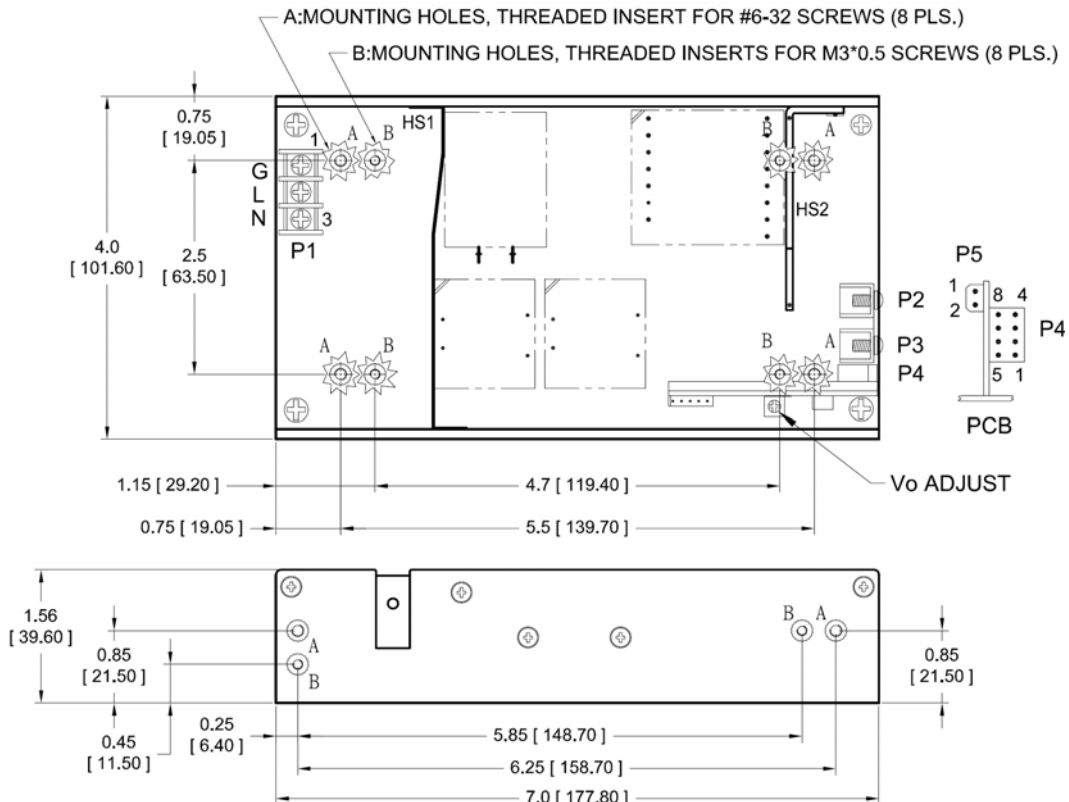
OUTPUT VOLTAGE/CURRENT RATING CHART

| Model ⁽¹⁾ | Output | | | | | | | Efficiency (typical) | |
|----------------------|--------|--------------|----------------------------|--------------------------------------|------|-------------------------------|-------------------|------------------------|------------------------|
| | V1 | Min. Current | Max. Current at convection | Max. Current at 7 CFM ⁽²⁾ | Tol. | Ripple & Noise ⁽³⁾ | Max. Output Power | @ 300 W 115/230 Vac | @ 400 W 115/230 Vac |
| PU400-12B | 12 V | 0 A | 25.00 A | 33.34 A | ±2% | 120 mV | 300 W/400 W | 90/92 % | 88/91 % |
| PU400-13B | 15 V | 0 A | 20.00 A | 26.67 A | ±2% | 150 mV | 300 W/400 W | 90/92 % | 88/91 % |
| PU400-13-1B | 18 V | 0 A | 16.67 A | 22.23 A | ±2% | 180 mV | 300 W/400 W | 90/92 % | 88/91 % |
| PU400-14B | 24 V | 0 A | 12.50 A | 16.67 A | ±2% | 240 mV | 300 W/400 W | 90/92 % | 89/92 % |
| PU400-15B | 28 V | 0 A | 10.72 A | 14.29 A | ±2% | 280 mV | 300 W/400 W | 90/92 % | 89/92 % |
| PU400-17B | 36 V | 0 A | 8.34 A | 11.12 A | ±2% | 360 mV | 300 W/400 W | 90/92 % | 89/92 % |
| PU400-18B | 48 V | 0 A | 6.25 A | 8.34 A | ±2% | 480 mV | 300 W/400 W | 90/92 % | 89/92 % |

- NOTES: 1. Change suffix "B" for U-Bracket form to "C" for enclosed form with cover-and-fan assembly, e.g. PU400-14C.
2. 300 W without moving air or 400 W with 7 CFM forced air provided by user for "B" version, 400 W for "C" version with cover-and-fan assembly
3. 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.

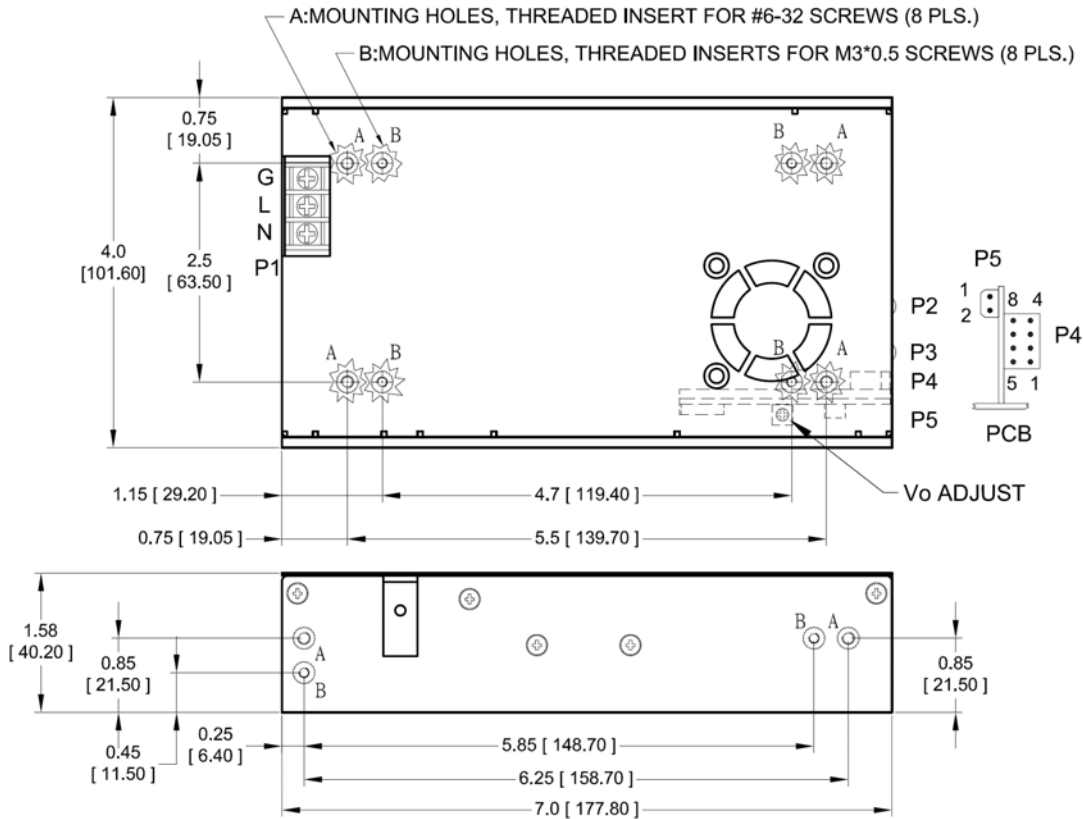
MECHANICAL SPECIFICATIONS

U-bracket Form



MECHANICAL SPECIFICATIONS

Enclosed Form



NOTES:

1. Dimensions shown in inches [mm]
2. Tolerance 0.02 [0.5] maximum
3. Input connector P1 is Dinkle terminal P/N DT-35-B01W-03, with nickel plated M3 screws.
4. P2, P3: M3 x 0.5 screw connectors
5. Connector P4: Molex header 87833-08 or equivalent, mating with Molex housing 51110-0850 or equivalent.
6. Fan connector P5: Molex header 53048-0210 or equivalent, mating with Molex housing 51021-0200 or equivalent.
7. Weight: 1.0 Kg (2.23 lbs.) approx. for U-bracket form, 1.14 Kg (2.52 lbs.) approx. for enclosed form
8. Maximum penetration depth of fixing screws is 4 mm from the outer surface of chassis.

PIN CHART

| MODEL | CONN PIN | P1 (AC) | | | P2 | P3 | P5 | |
|-------------|-------------|---------|------|---------|-----|------------------|-------------|------------------|
| | | 1 | 2 | 3 | | | 1 | 2 |
| PU400-12B | PU400-15B | Ground | Live | Neutral | +V1 | Common Return | +12V Fan | Common Return |
| PU400-13B | PU400-17B | | | | | | | |
| PU400-13-1B | PU400-18B | | | | | | | |
| PU400-14B | | | | | | | | |

| MODEL | CONN PIN | P4 | | | | | | | |
|-------------|-------------|------------------|-----------|-----------|-----|---------|----------------|-------|--------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| PU400-12B | PU400-15B | Common Return | +V1 Sense | -V1 Sense | PFD | Inhibit | +5V Standby | DC OK | PS OFF |
| PU400-13B | PU400-17B | | | | | | | | |
| PU400-13-1B | PU400-18B | | | | | | | | |
| PU400-14B | | | | | | | | | |