110 WATT SWITCHING POWER SUPPLIES

DESCRIPTION
The PU110 series of compact, open PCB constructed, AC-DC switching power supplies are capable of delivering 72 to 110 watts of continuous power at 25 CFM forced air cooling or 52 to 80 watts at convection cooling. They operate at 85 to 264VAC input voltage without the need of a selector strap. They are ideally suited for use in small to medium size digitally-based systems, such as point-of-sale equipment, microprocessor based systems, and telecom equipment. All models meet the safety requirements of UL, CSA and IEC.

FEATURES
- Recognized or certified by UL, CSA and TÜV
- Power Fail Detect (PFD) signal
- 100% burn-in
- Wide input range 85 to 264VAC
- Input surge current protection
- Overvoltage protection
- Overcurrent protection
- Compliant with RoHS requirements

INPUT SPECIFICATIONS
Input voltage: 85 to 264VAC
Input frequency: 47 to 63Hz
Input current:
- 3.20A (rms) for 115VAC
- 1.80A (rms) for 230VAC
Earth leakage current:
- 0.40mA max. @ 115VAC, 60Hz
- 0.75mA max. @ 230VAC, 50Hz

OUTPUT SPECIFICATIONS
Output voltage/current: See rating chart
Total output power:
- 110 watts maximum at 25 CFM forced air cooling or 80 watts maximum at convection cooling
Ripple and noise: 1% peak to peak maximum
Overvoltage protection:
- Provided on output #1 only; set at 112-132% of its nominal output voltage
Overcurrent protection:
- All outputs protected to short circuit conditions
Temperature coefficient:
- All outputs ±0.04% /ºC maximum
Transient response:
- Maximum excursion of 4% or better on all models, recovering to 1% of final value within 500us after a 25% step load change
- TTL logic high for normal operation and TTL logic low upon loss of input power. This signal appears at least 1ms prior to +5V output dropping
- 5% below its nominal value. This signal also provides a minimum delay of 100ms after +5V is within regulation
PFD signal:
- 101x783

ENVIRONMENTAL SPECIFICATIONS
Operating temperature: 0ºC to +70ºC
Storage temperature: -40ºC to +85ºC
Relative humidity: 5% to 95% non-condensing
Derating:
- Derate from 100% at +50ºC linearly to 50% at +70ºC
Cooling:
- 110 watts continuous output power at 25 CFM forced air cooling or 80 watts at convection cooling

Safety Standard Approvals:
- UL 60950-1
- CSA C22.2 No. 60950-1
- TÜV EN60950-1

GENERAL SPECIFICATIONS
Switching frequency: 20KHz to 250KHz, varies with load and line
Efficiency:
- 70% minimum on single output models with V0±12V, 65% minimum on the others
Hold-up time:
- 12 msec minimum at 110VAC
Line regulation:
- ±0.5% maximum at full load
Inrush current:
- 15 amps @ 115VAC or 30 amps @ 230VAC, at 25ºC cold start
Withstand voltage:
- 3000VAC from input to output
- 1500VAC from input to ground
- 500VAC from output to ground
MTBF:
- 400,000 hours minimum at full load at 25ºC ambient, calculated per MIL-HDBK-217F

EMC Performance (EN55024)
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
EN61000-3-3:
- Line flicker
EN61000-4-2:
- ESD, ± 8KV air and ± 4KV contact
EN61000-4-3:
- Radiated immunity, 3V/m
EN61000-4-4:
- Fast transient/burst, ± 1KV
EN61000-4-5:
- Surge, ± 1KV diff., ± 2KV com.
EN61000-4-6:
- Conducted immunity, 3Vrms
EN61000-4-11:
- Magnetic field immunity, 1A/m
EN61000-4-11:
- Voltage dips, 30% reduction for 500ms and >95% reduction for 10ms

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RoHS (LVD)
## OUTPUT VOLTAGE/CURRENT RATING CHART

<table>
<thead>
<tr>
<th>Model</th>
<th>Output #1</th>
<th>Output #2</th>
<th>Output #3</th>
<th>Output #4</th>
<th>Maximum Power (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PU110-10-1A</td>
<td>3.3V</td>
<td>0A</td>
<td>22A</td>
<td>3%</td>
<td>(N/A)</td>
</tr>
<tr>
<td>PU110-10A</td>
<td>5V</td>
<td>0A</td>
<td>22A</td>
<td>3%</td>
<td>(N/A)</td>
</tr>
<tr>
<td>PU110-12A</td>
<td>12V</td>
<td>0A</td>
<td>9.0A</td>
<td>2%</td>
<td>(N/A)</td>
</tr>
<tr>
<td>PU110-13A</td>
<td>15V</td>
<td>0A</td>
<td>7.5A</td>
<td>2%</td>
<td>(N/A)</td>
</tr>
<tr>
<td>PU110-14A</td>
<td>24V</td>
<td>0A</td>
<td>4.5A</td>
<td>2%</td>
<td>(N/A)</td>
</tr>
<tr>
<td>PU110-15A</td>
<td>30V</td>
<td>0A</td>
<td>3.6A</td>
<td>2%</td>
<td>(N/A)</td>
</tr>
<tr>
<td>PU110-23A</td>
<td>+5V</td>
<td>0A</td>
<td>10A</td>
<td>3%</td>
<td>+12V</td>
</tr>
<tr>
<td>PU110-31A</td>
<td>+5V</td>
<td>0A</td>
<td>10A</td>
<td>3%</td>
<td>+15V</td>
</tr>
<tr>
<td>PU110-32A</td>
<td>+5V</td>
<td>0A</td>
<td>10A</td>
<td>3%</td>
<td>+15V</td>
</tr>
<tr>
<td>PU110-40A</td>
<td>+5V</td>
<td>0A</td>
<td>10A</td>
<td>3%</td>
<td>+12V</td>
</tr>
<tr>
<td>PU110-41A</td>
<td>+5V</td>
<td>0A</td>
<td>10A</td>
<td>3%</td>
<td>+12V</td>
</tr>
<tr>
<td>PU110-42A</td>
<td>+5V</td>
<td>0A</td>
<td>10A</td>
<td>3%</td>
<td>+15V</td>
</tr>
<tr>
<td>PU110-45A</td>
<td>+5V</td>
<td>0A</td>
<td>10A</td>
<td>3%</td>
<td>+12V</td>
</tr>
<tr>
<td>PU110-45-1A</td>
<td>+5V</td>
<td>0A</td>
<td>10A</td>
<td>3%</td>
<td>+12V</td>
</tr>
<tr>
<td>PU110-45-2A</td>
<td>+5V</td>
<td>0A</td>
<td>10A</td>
<td>3%</td>
<td>+24V</td>
</tr>
<tr>
<td>PU110-46A</td>
<td>+5V</td>
<td>0A</td>
<td>10A</td>
<td>3%</td>
<td>+15V</td>
</tr>
</tbody>
</table>

**NOTES:**
1. Peak output current with 10% maximum duty cycle for less than 60 seconds. Total peak power must not exceed 130 watts.
2. 110 watts maximum at 25 CFM forced air cooling or 80 watts maximum at convection cooling, except model PU110-10-1A which is rated maximum 60W at convection cooling or 72W at 25 CFM forced air cooling.
3. Safety agency approvals are for the above listed models in PCB format. To order models with metallic L-bracket or box, change suffix “A” to “B” for L-bracket format, to “C” for enclosed format (mechanical details shown in page 6-1), e.g. PU110-31C.
4. The output #1 of model PU110-45-1A needs a minimum current of 2A to support the other outputs at their maximum rated loads.

## MECHANICAL SPECIFICATIONS

**NOTES:**
1. Dimensions shown in inch [mm]
2. Tolerance 0.02 [0.5] maximum
3. Input connector mates with Molex housing 09-50-3051 and Molex 2878 series crimp terminal.
4. Output connector mates with Molex housing 09-50-3131 and Molex 2878 series crimp terminal.
5. Weight: 640 grams (PCB format).
6. The copper pad of the mounting hole near P1 is for system grounding through a metallic stand-off to system chassis.

## PIN CHART

<table>
<thead>
<tr>
<th>MODEL</th>
<th>PIN #</th>
<th>1, 2, 3</th>
<th>4, 5</th>
<th>6, 7</th>
<th>8, 9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>PU110-10-1A</td>
<td>OUTPUT #1</td>
<td>RETURN</td>
<td>RETURN</td>
<td>OUTPUT #1</td>
<td>P.F.D.</td>
<td>N.C.</td>
<td>KEY</td>
<td>N.C.</td>
<td></td>
</tr>
<tr>
<td>PU110-10A</td>
<td>OUTPUT #1</td>
<td>COMMON</td>
<td>RETURN</td>
<td>COMMON</td>
<td>OUTPUT #2</td>
<td>P.F.D.</td>
<td>N.C.</td>
<td>KEY</td>
<td>N.C.</td>
</tr>
<tr>
<td>PU110-23A</td>
<td>OUTPUT #1</td>
<td>COMMON</td>
<td>RETURN</td>
<td>COMMON</td>
<td>OUTPUT #2</td>
<td>P.F.D.</td>
<td>N.C.</td>
<td>KEY</td>
<td>N.C.</td>
</tr>
<tr>
<td>PU110-31A</td>
<td>OUTPUT #1</td>
<td>COMMON</td>
<td>RETURN</td>
<td>COMMON</td>
<td>OUTPUT #2</td>
<td>P.F.D.</td>
<td>N.C.</td>
<td>KEY</td>
<td>N.C.</td>
</tr>
<tr>
<td>PU110-40A</td>
<td>OUTPUT #1</td>
<td>COMMON</td>
<td>RETURN</td>
<td>COMMON</td>
<td>OUTPUT #2</td>
<td>P.F.D.</td>
<td>N.C.</td>
<td>KEY</td>
<td>N.C.</td>
</tr>
<tr>
<td>PU110-41A</td>
<td>OUTPUT #1</td>
<td>COMMON</td>
<td>RETURN</td>
<td>COMMON</td>
<td>OUTPUT #2</td>
<td>P.F.D.</td>
<td>N.C.</td>
<td>KEY</td>
<td>N.C.</td>
</tr>
<tr>
<td>PU110-42A</td>
<td>OUTPUT #1</td>
<td>COMMON</td>
<td>RETURN</td>
<td>COMMON</td>
<td>OUTPUT #2</td>
<td>P.F.D.</td>
<td>N.C.</td>
<td>KEY</td>
<td>N.C.</td>
</tr>
<tr>
<td>PU110-45-1A</td>
<td>OUTPUT #1</td>
<td>COMMON</td>
<td>RETURN</td>
<td>COMMON</td>
<td>OUTPUT #2</td>
<td>P.F.D.</td>
<td>N.C.</td>
<td>KEY</td>
<td>N.C.</td>
</tr>
<tr>
<td>PU110-45-2A</td>
<td>OUTPUT #1</td>
<td>COMMON</td>
<td>RETURN</td>
<td>COMMON</td>
<td>OUTPUT #2</td>
<td>P.F.D.</td>
<td>N.C.</td>
<td>KEY</td>
<td>N.C.</td>
</tr>
<tr>
<td>PU110-46A</td>
<td>OUTPUT #1</td>
<td>COMMON</td>
<td>RETURN</td>
<td>COMMON</td>
<td>OUTPUT #2</td>
<td>P.F.D.</td>
<td>N.C.</td>
<td>KEY</td>
<td>N.C.</td>
</tr>
</tbody>
</table>

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