

## DESCRIPTION

The PU110 series of compact, open PCB constructed, AC-DC switching power supplies are capable of delivering 72-110 watts of continuous power at 25 CFM forced air cooling or 60-80 watts at convection cooling. They operate at 85-264 VAC 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 85-264 VAC
- Input surge current protection
- Overvoltage protection
- Overcurrent protection
- Compliant with RoHS requirements

## INPUT SPECIFICATIONS

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

## OUTPUT SPECIFICATIONS

Output voltage /current:	See rating chart.
Maximum output power:	See rating chart.
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 $\pm 0.04\%$ / $^{\circ}\text{C}$ maximum
Transient response:	Maximum excursion of 4% or better on all models, recovering to 1% of final value within 500 us after a 25% step load change

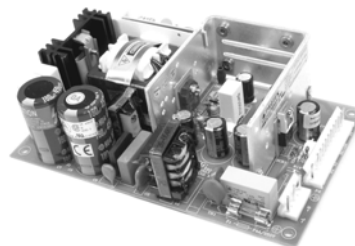
## INTERFACE SIGNALS

**PFD:** TTL logic high for normal operation and TTL logic low upon loss of input power. This signal appears at least 1 ms prior to +5V output dropping 5% below its nominal value. This signal also provides a minimum delay of 100 ms after +5V is within regulation.

## ENVIRONMENTAL SPECIFICATIONS

Operating temperature:	0 $^{\circ}\text{C}$ to +70 $^{\circ}\text{C}$
Storage temperature:	-40 $^{\circ}\text{C}$ to +85 $^{\circ}\text{C}$
Relative humidity:	5% to 95% non-condensing
Derating:	Derate from 100% at +50 $^{\circ}\text{C}$ linearly to 50% at +70 $^{\circ}\text{C}$
Cooling:	110 watts continuous output power at 25 CFM forced air cooling or 80 watts at convection cooling

## PU110 SERIES



**CE** (LVD)  
**RoHS**

## SAFETY STANDARD APPROVALS



UL 60950-1  
File No. E137410  
CSA C22.2 No. 60950-1  
File No. LR93632

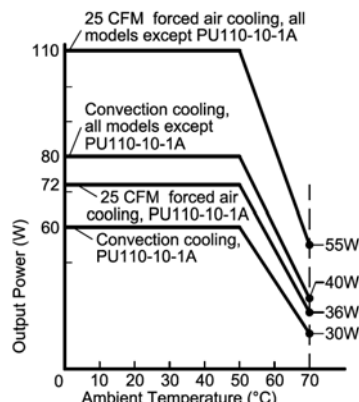


TÜV EN 60950-1  
Certificate No. R9352008

## GENERAL SPECIFICATIONS

Switching frequency:	20 KHz to 250 KHz, varied with load and line
Efficiency:	70% minimum on single output models with $V_o \geq 12\text{V}$ , 65% minimum on the others
Hold-up time:	12 ms minimum at 110 VAC
Line regulation:	$\pm 0.5\%$ maximum at full load
Inrush current:	15 A @ 115 VAC or 30 A @ 230VAC, at 25 $^{\circ}\text{C}$ cold start
Withstand voltage:	3000 VAC from input to output, 1500 VAC from input to ground, 500 VAC from output to ground
MTBF:	400,000 hours minimum at full load at 25 $^{\circ}\text{C}$ 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, $\pm 8$ 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 POWER DERATING CURVE



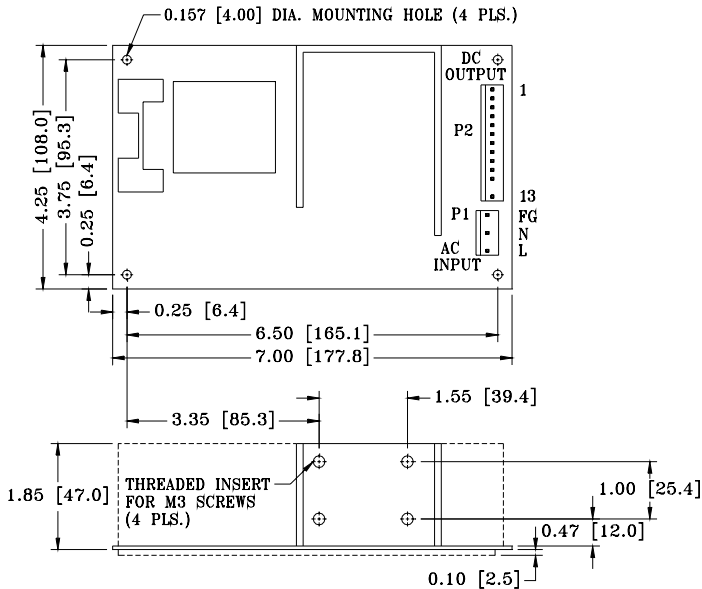
## OUTPUT VOLTAGE/CURRENT RATING CHART

Model <sup>(3)</sup>	Output # 1 <sup>(2)(4)</sup>				Output # 2					Output # 3				Output # 4				Max. Output Power <sup>(2)</sup>
	V1	Imin.	Imax.	Tol.	V2	Imin.	Imax.	Peak <sup>(1)</sup>	Tol.	V3	Imin.	Imax.	Tol.	V4	Imin.	Imax.	Tol.	
PU110-10-1A	3.3 V	0 A	22.0 A	±3%	(N/A)					(N/A)				(N/A)				60 W / 72 W
PU110-10A	5 V	0 A	22.0 A	±3%	(N/A)					(N/A)				(N/A)				80 W / 110 W
PU110-12A	12 V	0 A	9.0 A	±2%	(N/A)					(N/A)				(N/A)				80 W / 110 W
PU110-13A	15 V	0 A	7.5 A	±2%	(N/A)					(N/A)				(N/A)				80 W / 110 W
PU110-14A	24 V	0 A	4.5 A	±2%	(N/A)					(N/A)				(N/A)				80 W / 110 W
PU110-16A	30 V	0 A	3.6 A	±2%	(N/A)					(N/A)				(N/A)				80 W / 110 W
PU110-23A	+5 V	0 A	10.0 A	±3%	+12 V	0 A	5 A	9.0 A	±3%	(N/A)				(N/A)				80 W / 110 W
PU110-31A	+5 V	0 A	10.0 A	±3%	+12 V	0 A	5 A	9.0 A	±3%	-12 V	0 A	1 A	±4%	(N/A)				80 W / 110 W
PU110-32A	+5 V	0 A	10.0 A	±3%	+15 V	0 A	4 A	7.5 A	±3%	-15 V	0 A	1 A	±4%	(N/A)				80 W / 110 W
PU110-40A	+5 V	0 A	10.0 A	±3%	+12 V	0 A	5 A	9.0 A	±3%	-12 V	0 A	1 A	±4%	-5 V	0 A	1 A	±4%	80 W / 110 W
PU110-41A	+5 V	0 A	10.0 A	±3%	+15 V	0 A	4 A	7.5 A	±3%	-15 V	0 A	1 A	±4%	+24 V	0 A	1 A	±4%	80 W / 110 W
PU110-42A	+5 V	0 A	10.0 A	±3%	+12 V	0 A	5 A	9.0 A	±3%	-12 V	0 A	1 A	±4%	+12 V	0 A	1 A	±4%	80 W / 110 W
PU110-45A	+5 V	0 A	10.0 A	±3%	+12 V	0 A	5 A	9.0 A	±3%	-12 V	0 A	1 A	±4%	+24 V	0 A	1 A	±4%	80 W / 110 W
PU110-45-1A	+5 V	2 A	10.0 A	±3%	+12 V	0 A	5 A	9.0 A	±3%	-12 V	0 A	1 A	±4%	+24 V	1.5 A	3 A	±10%	80 W / 110 W
PU110-45-2A	+5 V	0 A	10.0 A	±3%	+24 V	0 A	3 A	5.0 A	±3%	-12 V	0 A	1 A	±4%	+12 V	0 A	1 A	±4%	80 W / 110 W
PU110-46A	+5 V	0 A	10.0 A	±3%	+15 V	0 A	4 A	7.5 A	±3%	-15 V	0 A	1 A	±4%	-5 V	0 A	1 A	±4%	80 W / 110 W

### NOTES:

- Peak output current with 10% maximum duty cycle for less than 60 seconds. Total peak power must not exceed 130 watts.
- 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 60 W at convection cooling or 72 W at 25 CFM forced air cooling.
- 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 71-72), e.g. PU110-31C.
- The output #1 of model PU110-45-1A needs a minimum current of 2 A to support the other outputs at their maximum rated loads
- 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:

- Dimensions shown in inches [mm]
- Tolerance 0.02 [0.5] maximum
- Connector P1: Molex header 09-65-2058 or equivalent, mating with Molex housing 09-50-1051 or equivalent.
- Connector P2 mates with Molex housing 09-50-3131 or equivalent.
- Weight: 640 grams (1.408 lbs.) approx.
- The copper pad of the mounting hole near P1 is for system grounding through a metallic stand-off to system chassis.

## PIN CHART

MODEL	PIN	1, 2, 3	4, 5	6, 7	8, 9	10	11	12	13
PU110-10-1A	PU110-13A	+V1	V1 & PFD Return	V1 & PFD Return	+V1	PFD	N.C.	KEY	N.C.
PU110-10A	PU110-14A								
PU110-12A	PU110-16A								
PU110-23A		V1	Common Return	Common Return	V2	PFD	N.C.	KEY	N.C.
PU110-31A	PU110-32A	V1	Common Return	Common Return	V2	PFD	V3	KEY	N.C.
PU110-40A	PU110-45-1A	V1	Common Return	Common Return	V2	PFD	V3	KEY	V4
PU110-41A	PU110-45-2A								
PU110-42A	PU110-46A								
PU110-45A									