DESCRIPTION

The PU650 series comprising single and multiple output models for 650-700 watts of continuous output power is specially designed for ITE and industrial applications. They operate at 90-264 VAC input voltage without the need of a selector strap. 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.

PU650 SERIES

CE (LVD)

RoHS

FEATURES

- EN61000-3-2 class A and D compliant
- Power Factor 0.98 typical
- Overvoltage protection
- Short-circuit protection
- Thermal protection
- Power Fail Detect (PFD) signal
- 100% burn-in at full rated load
- Remote sense on output #1 and output #2
- Remote inhibit – TTL high to disable output
- Compliant with RoHS requirements

SAFETY STANDARD APPROVALS

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

TÜV EN 60950-1

INPUT SPECIFICATIONS

Input voltage:	90-264 VAC
Input frequency:	47-63 Hz
Input current:	10 A (rms) for 115 VAC 5 A (rms) for 230 VAC
Earth leakage current:	240 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
Overvoltage protection:	Provided on output #1 only; set at 115-140% of its nominal output voltage
Overcurrent protection:	All outputs protected to short circuit conditions
Temperature coefficient:	All outputs ±0.04% /℃ 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
Fan power:	12 V at 400 mA maximum for B version, 12 V at 100 mA maximum for C version

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 master output dropping 5% below its nominal value. This signal also provides a minimum delay of 100 ms after master output is within regulation.
Inhibit:	Requires an external TTL high level signal to inhibit outputs for standard models

ENVIRONMENTAL SPECIFICATIONS

Operating temperature:	0℃ to +70℃
Storage temperature:	-40℃ to +85℃
Relative humidity:	5% to 95% non-condensing
Derating:	Derate from 100% at +50℃, linearly to 50% at +70℃

GENERAL SPECIFICATIONS

Switching frequency:	70 KHz ±10 KHz
Power factor:	0.98 typical
Efficiency:	80% minimum on all models
Hold-up time:	12 ms minimum at 110 VAC
Line regulation:	±0.2% maximum at full load
Inrush current:	50 A @115 VAC or 100 A @ 230 VAC at 25℃ cold start
Withstand voltage:	3000 VAC from input to output, 1500 VAC from input to ground, 500 VAC from output to ground
MTBF:	300,000 hours minimum at full load at 25℃ ambient, calculated per MIL-HDBK- 217F

EMC Performance

EN55022:	Class B conducted, Class A radiated
EN61000-3-2:	Harmonic distortion, Class A and D
EN61000-3-3:	Line flicker

EN55024

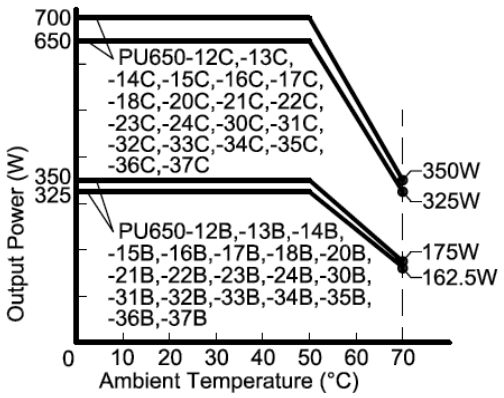
EN61000-4-2:	ESD, ±8 KV air and ±4 KV contact
EN61000-4-3:	Radiated immunity, 3 V/m
EN61000-4-4:	Fast transient/burst, ±1 KV
EN61000-4-5:	Surge, ±1 KV diff., ±2 KV com.
EN61000-4-6:	Conducted immunity, 3 Vrms
EN61000-4-8:	Magnetic field immunity, 1 A/m
EN61000-4-11:	Voltage dip immunity, 30% reduction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

OUTPUT VOLTAGE/CURRENT RATING CHART

Model[1]	Output #1 [3][5]				Output #2[5]				Output #3 [4]				Max. Output Power[5]
	V1	Imin.	Imax.	Tol.	V2	Imin.	Imax.	Tol.	V3	Imin.	Imax.	Tol.	
PU650-12B	12 V	0 A	54.2 A	±2%	(N/A)				(N/A)				325 W / 650 W
PU650-13B	15 V	0 A	43.4 A	±2%	(N/A)				(N/A)				325 W / 650 W
PU650-14B	24 V	0 A	27.1 A	±2%	(N/A)				(N/A)				325 W / 650 W
PU650-15B	27 V	0 A	24.1 A	±2%	(N/A)				(N/A)				325 W / 650 W
PU650-16B	30 V	0 A	21.7 A	±2%	(N/A)				(N/A)				325 W / 650 W
PU650-17B	36 V	0 A	18.1 A	±2%	(N/A)				(N/A)				325 W / 650 W
PU650-18B	48 V	0 A	14.6 A	±2%	(N/A)				(N/A)				350 W / 700 W
PU650-20B	24 V	1.50 A	18.0 A	±2%	12 V	N/A	22 A	±5%	(N/A)				325 W / 650 W
PU650-21B	24 V	1.50 A	18.0 A	±2%	15 V	1.0 A	18 A	±5%	(N/A)				325 W / 650 W
PU650-22B	48 V	0.75 A	9.0 A	±2%	24 V	0.6 A	12 A	±5%	(N/A)				325 W / 650 W
PU650-23B	48 V	0.75 A	9.0 A	±2%	12 V	1.2 A	22 A	±5%	(N/A)				325 W / 650 W
PU650-24B	48 V	0.75 A	9.0 A	±2%	15 V	1.0 A	18 A	±5%	(N/A)				325 W / 650 W
PU650-30B	24 V	1.50 A	18.0 A	±2%	12 V	1.2 A	22 A	±5%	3.3 V	0 A	10 A	±3%	325 W / 650 W
PU650-31B	24 V	1.50 A	18.0 A	±2%	15 V	1.0 A	18 A	±5%	3.3 V	0 A	10 A	±3%	325 W / 650 W
PU650-32B	24 V	1.50 A	18.0 A	±2%	12 V	1.2 A	22 A	±5%	5.1 V	0 A	10 A	±3%	325 W / 650 W
PU650-33B	24 V	1.50 A	18.0 A	±2%	15 V	1.0 A	18 A	±5%	5.1 V	0 A	10 A	±3%	325 W / 650 W
PU650-34B	48 V	0.75 A	9.0 A	±2%	12 V	1.2 A	22 A	±5%	3.3 V	0 A	10 A	±3%	325 W / 650 W
PU650-35B	48 V	0.75 A	9.0 A	±2%	15 V	1.0 A	18 A	±5%	3.3 V	0 A	10 A	±3%	325 W / 650 W
PU650-36B	48 V	0.75 A	9.0 A	±2%	12 V	1.2 A	22 A	±5%	5.1 V	0 A	10 A	±3%	325 W / 650 W
PU650-37B	48 V	0.75 A	9.0 A	±2%	15 V	1.0 A	18 A	±5%	5.1 V	0 A	10 A	±3%	325 W / 650 W

NOTES:
1. Suffix “B” in model numbers denotes U-bracket form. Change “B” to “C” for enclosed form with cover-and-fan assembly, e.g. PU650-14C.
2. All outputs are floating. They can be connected externally for positive or negative output.
3. Output #1 can be adjusted within +/- 5% of their nominal voltage.
4. Output #3 can be adjusted within +/- 15% of their nominal voltage.
5. 650-700 watts for "C" version with cover-and-fan assembly. 325-350 watts for "B" version without moving air (maximum current of output #1 and #2 derated to 70%), or 650-700 watts with 50 CFM forced air provided by user.
6. All models may be operated at no-load. At no-load, output voltage tolerance increases to +/- 10%.
7. 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.

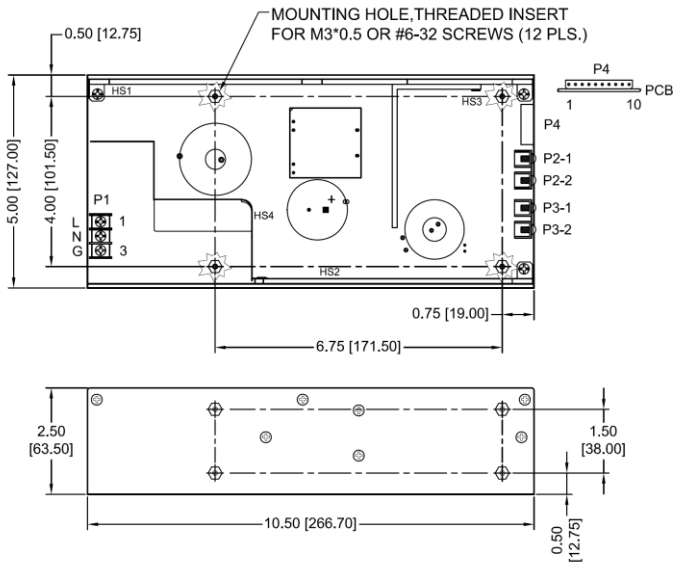
OUTPUT POWER DERATING CURVE



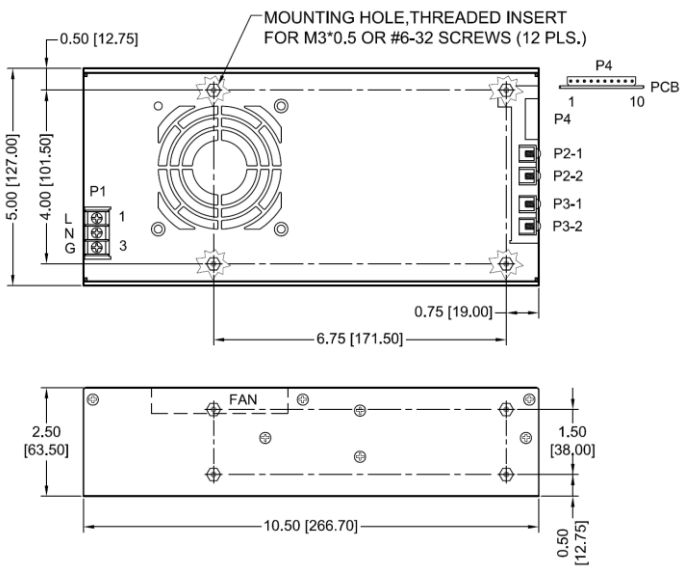
MECHANICAL SPECIFICATIONS

Single Output Models

U-bracket Form



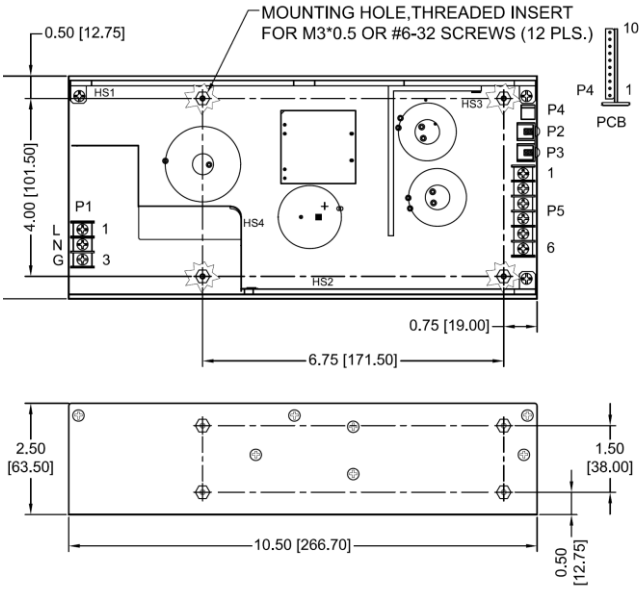
Enclosed Form



MECHANICAL SPECIFICATIONS

Multiple Output Models

U-bracket Form



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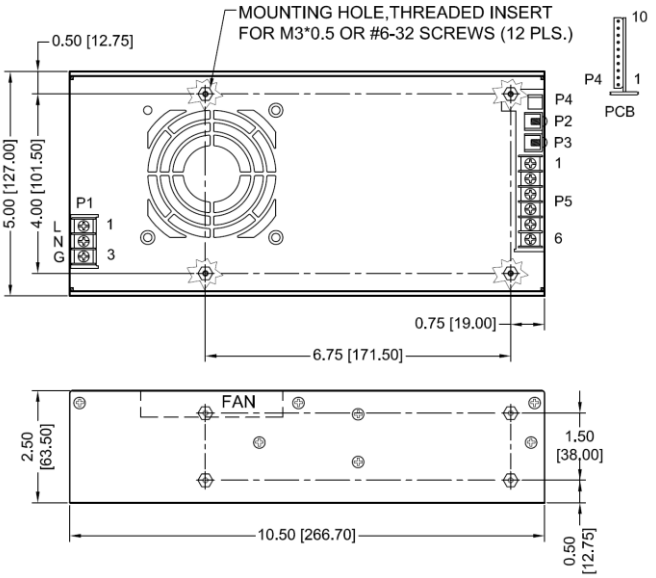

NOTES:

1. Dimensions shown in inches [mm]
2. Tolerance 0.02 [0.5] maximum
3. Input connector P1 is Dinkle DT-4C-B01W-03 with M3, nickel-plated screws.
4. Connector P4 mates with Molex housing 50-37-5103 and pins 5263.
5. Connector P2-1, P2-2, P3-1 & P3-2: M3*0.5 screw connections.
6. Connectors P2, P3: M3*0.5 screw connections
7. Output connector P5 is Dinkle DT-35-B01W-06. Screws are M3, nickel plated.
8. Weight: 2.0 Kgs. (4.4 lbs.) approx. for U-bracket form, 2.2 Kgs. (4.84 lbs.) approx. for enclosed form.
9. Maximum penetration depth of fixing screws is 4 mm from the outer surface of chassis.

PIN CHART

CONN / MODEL / PIN		P1 (AC)			P2	P3	P5					
		1	2	3			1	2	3	4	5	6
PU650-12B PU650-13B PU650-14B PU650-15B	PU650-16B PU650-17B PU650-18B	Live	Neutral	Ground	+V1	V1 Return	N.A.					
PU650-20B PU650-21B PU650-22B	PU650-23B PU650-24B	Live	Neutral	Ground	+V1	V1 Return	+V2		V2 Return		N.A.	N.A.
PU650-30B PU650-31B PU650-32B PU650-33B	PU650-34B PU650-35B PU650-36B PU650-37B	Live	Neutral	Ground	+V1	V1 Return	+V2		V2 Return		+V3	V3 Return

CONN / MODEL / PIN		P4									
		1	2	3	4	5	6	7	8	9	10
PU650-12B PU650-13B PU650-14B PU650-15B	PU650-16B PU650-17B PU650-18B	PFD Return	+V1 Sense	-V1 Sense	PFD	Inhibit +V	Inhibit -V	N.C.	N.C.	Fan Return	+12V Fan
PU650-20B PU650-21B PU650-22B	PU650-23B PU650-24B	PFD Return	+V1 Sense	-V1 Sense	PFD	Inhibit +V	Inhibit -V	+V2 Sense	-V2 Sense	Fan Return	+12V Fan
PU650-30B PU650-31B PU650-32B PU650-33B	PU650-34B PU650-35B PU650-36B PU650-37B	PFD Return	+V1 Sense	-V1 Sense	PFD	Inhibit +V	Inhibit -V	+V2 Sense	-V2 Sense	Fan Return	+12V Fan