

### Features

- ◆ Highest power density open frame  
150 W power supply in 2" x 4" package
- ◆ I/O reinforced isolation 3000 VDC
- ◆ Ready to meet ErP directive,  
< 0.3 W no load power consumption
- ◆ Highest efficiency 91 to 92%  
across 10% – 100% load range
- ◆ Active power factor correction (>95)
- ◆ Protection class II prepared
- ◆ Operating up to 5000m altitude
- ◆ Adjustable output voltage
- ◆ 3-year product warranty



The TPI 150A Series of 150 Watt AC/DC power supplies features a 3000 VDC I/O reinforced isolation. Excellent efficiency of up to 92% allows a high power density for the standard 2.0" x 4.0" packaging format. The full load operating temperature range is -40°C to +50°C while it goes up to +80°C with load derating. The power supplies are designed to meet the ErP directive (< 0.3W no load power consumption).

They come with an active power factor correction and the EMC characteristic is dedicated for applications in industrial and domestic fields.

High reliability is provided by use of industrial quality grade components and an excellent thermal management. It makes the products an ideal solution for any demanding industrial devices and space critical applications.

### Models

Order code	Output voltage (adjustment range)	Output current max.*	Efficiency max.
TPI 150-112A-J	12 VDC (10.8 - 13.2)	12.5 A	91 %
TPI 150-115A-J	15 VDC (13.5 - 16.5)	10.0 A	92 %
TPI 150-124A-J	24 VDC (21.6 - 26.4)	6.25 A	92 %
TPI 150-128A-J	28 VDC (25.2 - 30.8)	5.36 A	92 %
TPI 150-136A-J	36 VDC (32.4 - 39.6)	4.17 A	92 %
TPI 150-148A-J	48 VDC (43.2 - 52.8)	3.13 A	92 %

\* for 100-150 W operation forced air cooling with 10 CFM is required

### Input Specifications

Input voltage range	– AC range (universal input) – DC range	85 – 264 VAC 120 – 370 VDC
Input frequency		47 – 63 Hz
Input current at full load	– at 115 VAC / 230 VAC	1.7 A max. / 0.8 A max.
Input protection		T3.15 A/250 VAC (internal fuse in both line & neutral)
Zero load power consumption		0.3 W (acc. ErP directive)
Harmonic limits	– Power factor	EN 61000-3-2, Class A & D 0.95
Inrush current at 230 Vac		100 A max.

### Output Specifications

Voltage set accuracy		±1%
Regulation	– Input variation – Load variation (0 - 100%)	0.2 % max. 0.5 % max.
Minimum load		not required
Temperature coefficient		0.02 %/K
Hold-up time	– $V_{in} = 115 \text{ VAC} / 230 \text{ VAC}$	16 ms min.
Start-up time		<1s
Rise time		20ms typ.
Output voltage adjustment		±10 %
Ripple and noise (20Mhz Bandwidth)	12 VDC model: 15 VDC model: 24 & 28 VDC model: 36 VDC model: 48 VDC model:	120 mVp-p typ. with cap. 1µF/25V 1206 X7R MLCC 150 mVp-p typ. with cap. 1µF/25V 1206 X7R MLCC 220 mVp-p typ. with cap. 1µF/50V 1206 X7R MLCC 250 mVp-p typ. with cap. 1µF/50V 1206 X7R MLCC 250 mVp-p typ. with cap. 0.1µF/100V 1206 X7R MLCC
Overvoltage protection		115 – 135 % of nominal $V_{out}$
Overload protection by current limit (hiccup)		at 115 – 150 % $I_{out \text{ max.}}$
Short circuit protection		continuous (automatic recovery)
Transient response (25% load step change)	– Peak deviation – Recovery time	3 % of $V_{out}$ 500µs

### General Specifications

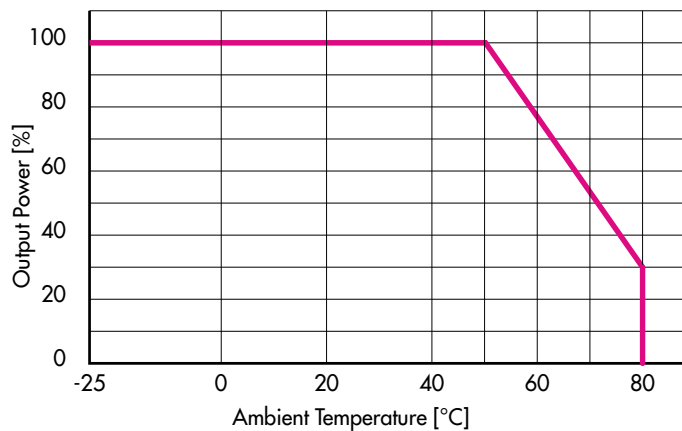
Operating temperature		–40°C to +80°C with derating, see below start up at -40°: 80% max. load at $V_{in} > 100 \text{ VAC}$ start up at -40°: 100% max. load at $V_{in} > 200 \text{ VAC}$
Output power derating	– Temperature – Low input voltage	2.33 %/K above +50°C 1.33 %/V below 100 VAC
Storage temperature		–40°C to +85°C
Humidity (non condensing)		5 – 95 % rel. H max.
Altitude during operation		5000 m
Switching frequency		60 kHz typ. (pulse width modulation)
Isolation voltage 1min (reinforced insulation)	– Input / Output – Input / Field Ground	3000 VAC 2000 VAC
Leakage current (at 264 VAC/60Hz)		300 µA max.
Isolation resistance (at 500 VDC)		100 Mohm min.
Reliability, calculated MTBF at +25°C acc. to IEC 61709		> 786'100 h

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

**General Specifications**

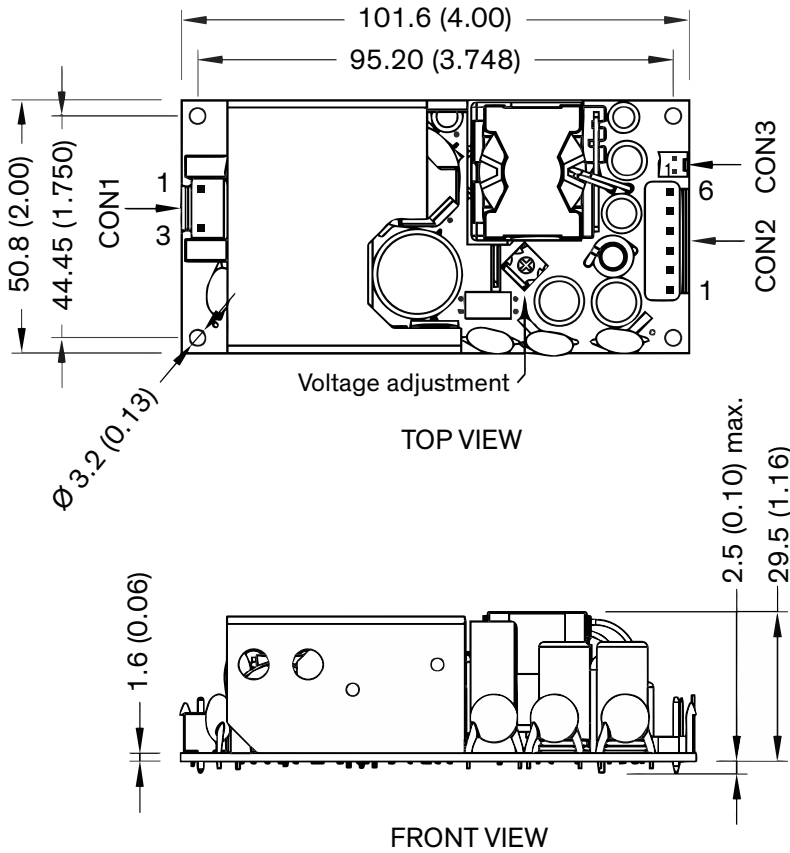
Protection class		class II prepared
Electromagnetic compatibility (EMC), emissions	<ul style="list-style-type: none"> <li>- Conducted input RI suppression</li> <li>- Harmonic current emissions</li> <li>- Voltage flicker</li> <li>- Radiated input suppression</li> </ul>	EN 55022, class B IEC / EN 61000-3-2, class A & D IEC / EN 61000-3-3, (class tba.) EN 55011, class A
Electromagnets compatibility (EMC), immunity	<ul style="list-style-type: none"> <li>- Electrostatic discharge ESD</li> <li>- RF field immunity</li> <li>- Electrical fast transients/burst immunity</li> <li>- Surge</li> <li>- Conducted RF</li> <li>- Magnetic field</li> <li>- Dip and interruptions</li> </ul>	IEC / EN 61000-4-2, 8kV/6kV perf. criteria A IEC / EN 61000-4-3, 20V/m perf. criteria A IEC / EN 61000-4-4, ± 2kV perf. criteria A IEC / EN 61000-4-5, ± 1kV/± 2kV perf. criteria A IEC / EN 61000-4-6, 20 Vr.m.s perf. criteria A IEC / EN 61000-4-8, 10 A/m perf. criteria A IEC / EN 61000-4-11, (criteria tba.)
Safety standards	<ul style="list-style-type: none"> <li>- Information technology equipment</li> <li>- Certification documents</li> </ul>	UL 60950-1, IEC/EN 60950-1 <a href="http://www.tracopower.com/overview/tpi150a">www.tracopower.com/overview/tpi150a</a>
Environment	<ul style="list-style-type: none"> <li>- Vibration acc. IEC 60068-2-6;</li> <li>- Shock acc. IEC 60068-2-27</li> </ul>	3 axis, sine sweep, 10-55Hz, 1g, 1oct/min 3 axis, 10g half sine, 11msShock 20 G (3 directions each 3 times)
Environmental compliance	<ul style="list-style-type: none"> <li>- Reach</li> <li>- RoHS</li> </ul>	<a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a> RoHS directive 2011/65/EU
Connection		pin connector

Power derating depending on temperature (for horizontal mounting)



All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

**Dimensions**



Pin Connector					
Input		Output		Fan**	
Pin	CON 1	Pin*	CON 2	Pin	CON 3
1	Line	1,2,3	- Vout	1	- Fan
3	Neutral	4,5,6	+ Vout	2	+ Fan

\*Connectors rated for 10 A max.  
(at higher current connection has to be splittet)

\*\*CON 3 provides 12 V at 500mA

**J1:** JST series  
mates with JST crimp terminal: BVH-21T-P1.1  
and terminal housing: VHR-3N

**J2:** JST series  
mates with JST crimp terminal: BVH-21T-P1.1  
and terminal housing: VHR-4N

**J3:** Molex series  
mates with Molex crimp terminal: 22-01-1022  
and terminal housing: 2759

Weight: 187g (5.50 oz)

Dimensions in mm (inch)  
Tolerances: x.x  $\pm 0.5$  (x.xx  $\pm 0.02$ ) x.xx  $\pm 0.25$  (x.xxx  $\pm 0.01$ )  
Wire dimensions range 26 – 16 AWG

Customized versions on request (e.g. encased, screw terminal, DIN-Rail clip)