



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: [info@chipsmall.com](mailto:info@chipsmall.com) Web: [www.chipsmall.com](http://www.chipsmall.com)

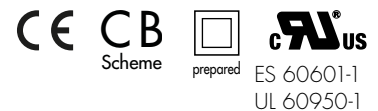
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



## AC/DC Medical Power Supply

## TPP 150 Series, 150 Watt

- Encased 150 W power supply with screw connection in 2.44" x 4" package
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2XMOPP
- Low leakage current <100 µA rated for BF applications
- Risk management process according to ISO 14971 including risk management file
- Acceptance criteria for electronic assemblies acc. to IPC-A-610 Level 3
- Active power factor correction >0.95
- Protection class I and II prepared
- Operating up to 5000 m altitude
- 5 year product warranty



Open frame version with JST connection see TPP 150A Series



[www.tracopower.com/overview/tpp150a](http://www.tracopower.com/overview/tpp150a)

The TPP 150 series of 150 Watt AC/DC encased power supplies feature a reinforced double I/O isolation system according to latest medical safety standards (60601-1 3rd edition, 2 × MOPP). The earth leakage current is below 100 µA which makes the units suitable for BF (body floating) applications. The excellent efficiency of up to 92% allows a high power density for the standard 2.44" x 4.0" packaging format. The full load operating temperature range is -25°C to +70°C while it goes up to 80°C with 40% load derating. The EMC characteristic is dedicated for applications in industrial and domestic fields. High reliability is provided by the use of industrial quality grade components and an excellent thermal management. It makes the products an ideal solution for medical devices and for demanding safety and space critical applications.

### Models

Order code	Output voltage	Output current max.	Efficiency typ.
TPP 150-112	12 VDC (10.8 - 13.2 VDC)	12.5 A	91 %
TPP 150-115	15 VDC (13.5 - 16.5 VDC)	10 A	92 %
TPP 150-124	24 VDC (21.6 - 26.4 VDC)	6.25 A	92 %
TPP 150-128	28 VDC (25.2 - 30.8 VDC)	5.36 A	92 %
TPP 150-136	36 VDC (32.4 - 39.6 VDC)	4.17 A	92 %
TPP 150-148	48 VDC (43.2 - 52.8 VDC)	3.13 A	92 %



## 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		T 3.15 A / 250 VAC (internal fuse)
Input inrush current	– at 230 VAC	60 A max.
Zero load power consumption		0.6 W typ.
Power factor		0.95 min.

## Output Specifications

Voltage set accuracy		±1%
Output voltage adjustment		±10% (by trim potentiometer)
Regulation	– Input variation (Vin min. to Vin max.) – Load variation (0 to 100%)	0.2% max. 0.5% max.
Minimum load		not required
Temperature coefficient		0.02 %/K max.
Hold-up time	– Vin = 115 VAC	16 ms min.
Start-up time		1 s max.
Rise time		20 ms typ.
Ripple and noise (20 MHz bandwidth)	12 Vout models: 15 Vout models: 24 Vout models: 28 Vout models: 36 Vout models: 48 Vout models:	120 mVp-p typ. w. cap. 1µF/25V 1206 X7R MLCC 150 mVp-p typ. w. cap. 1µF/25V 1206 X7R MLCC 220 mVp-p typ. w. cap. 1µF/50V 1206 X7R MLCC 220 mVp-p typ. w. cap. 1µF/50V 1206 X7R MLCC 250 mVp-p typ. w. cap. 1µF/50V 1206 X7R MLCC 250 mVp-p typ. w. cap. 0.1µF/100V 1206 X7R MLCC
Overvoltage protection		115 – 135% of nominal Vout
Overload protection		115 – 150% Iout typ.
Short circuit protection		Hiccup mode, continuous (automatic recovery)
Transiente response	– Peak deviation (25% load step change) – Recovery time	3% max. 500 µs typ.
Fan power supply	– Temperature-sensitive speed control	12 VDC / 500 mA max.
Capacitive load	12 Vout models: 15 Vout models: 24 Vout models: 28 Vout models: 36 Vout models: 48 Vout models:	10'400 µF max. 6'600 µF max. 2'600 µF max. 1'900 µF max. 1'150 µF max. 650 µF max.

## General Specifications

Temperature ranges	– Operating temperature – Storage temperature	–25°C to +80°C (with derating) –40°C to +80°C
Derating	– Temperature – Low input voltage	4.0 %/K above 70°C 1.33 %/V below 100 VAC
Humidity (non condensing)		5 – 95 % rel. H.
Altitude during operation		5000 m max.
Switching frequency (at 230 VAC)		60 kHz typ. (pulse frequency modulation)
Isolation voltage (60 s) (2 × MOPP insulation)	– Input to Output – Input/Output to Case	4000 VAC 2000 VAC
Isolation resistance (at 500 VDC)		100 MOhm min.

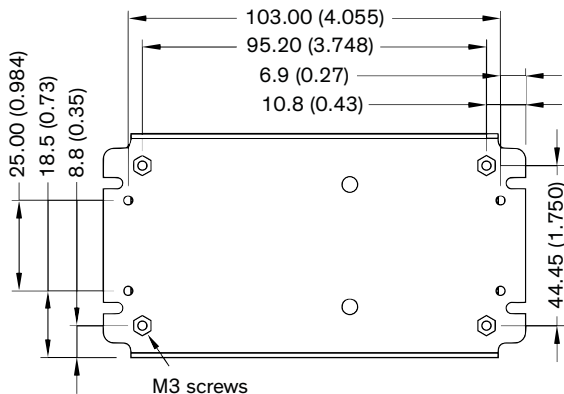
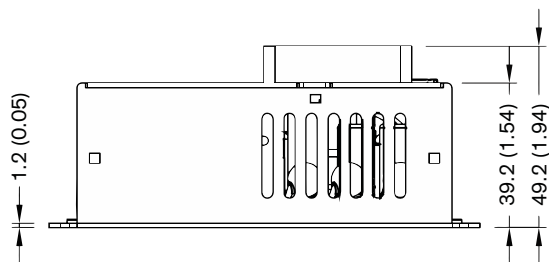
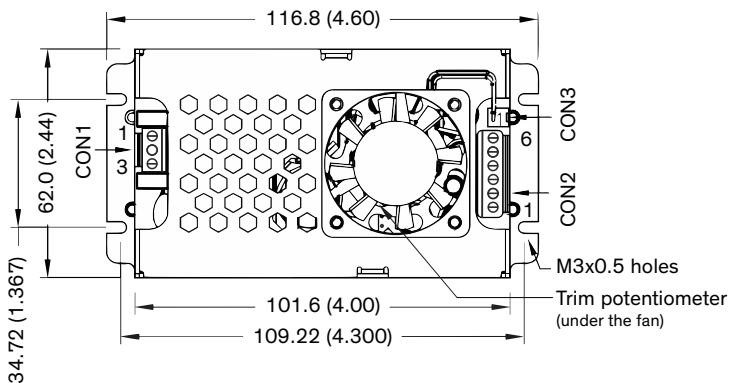
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

**General Specifications (continued)**

Leakage current (at 264 VAC / 60 Hz)		100 µA max.
Reliability	– calculated MTBF at +25°C acc. MIL-HDBK-217F	786'100 h
Protection class		class I and II prepared
EMC emissions	– Conducted / radiated input suppression – Harmonic current emissions – Voltage flicker	EN 55011 limits to IEC 60601-1-2 4th edition Conducted: EN 55032 class B (internal filter) Radiated: EN 55032 class A (internal filter) IEC/EN 61000-3-2, class A & D IEC/EN 61000-3-3
EMC immunity	– Electrostatic discharge ESD – RF field immunity – Electrical fast transients/burst immunity – Surge – Conducted RF – Magnetic field – Voltage dip and interruptions	IEC/EN 60601-1-2, EN 55024 IEC/EN 61000-4-2, ±15kV/8kV 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 Vrms perf. criteria A IEC/EN 61000-4-8, 10A/m perf. criteria A IEC/EN 61000-4-11, see below
Voltage dip and interruptions according to EN 60601-1-2 Reference: 230 VAC / 50Hz		30%, 500ms perf. criteria A 60%, 100ms perf. criteria A > 95%, 10ms perf. criteria A > 95%, 5000ms perf. criteria B
Safety standards and certification	– Certification documents	IEC/EN/UL 60950-1, IEC/EN 60601-1 3rd edition, ANSI/AAMI ES60601-1:2005(R)2012 <a href="http://www.tracopower.com/overview/tpp150">www.tracopower.com/overview/tpp150</a>
Environment	– Vibration – Shock – Thermal shock	acc. IEC 60068-2-6 acc. IEC 60068-2-27 acc. MIL-STD-810F
Environmental compliance	– Reach – RoHS	<a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a> RoHS directive 2011/65/EU
Weight		272 g (9.59 oz)

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

### Outline Dimensions



Screw Terminal				Molex	
Input (CON1)		Output (CON2)		Fan (CON3)	
Pin	Function	Pin*	Function	Pin	Function
1	Line	1-3	-Vout	1	-Fan
3	Neutral	4-6	+Vout	2	+Fan

\*Terminal rated for 7 A max.  
(at higher current connection has to be split)

**CON 1:** Screw Terminal

**CON 2:** Screw Terminal

**CON 3:** Molex series  
mates with Molex crimp terminals: 2759  
and Molex housing: 22-01-1022

Dimensions in mm (inch)  
Tolerances: x.x ±0.5 (x.xx ±0.02)  
x.xx ±0.25 (x.xxx ±0.01)

The fan's durability is lower compared to the power supply and has only 2 years warranty.