

AC/DC Industrial Power Supply

TPI 150A Series, 150 Watt

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



UL 62368-1 IEC 62368-1

The TPI 150A Series of 150 Watt AC/DC power supplies features a 3000 VAC 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 +85°C with load derating. The power supplies are designed to meet the ErP directive (< 0.3 W 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 Power max.	Output Voltage nom. (adjustable)	Output Current max. (Forced air cooling)	Output Current max. (Natural convection)	Efficiency typ.
TPI 150-112A-J	150 W	12 VDC (10.8 - 13.2 VDC)	12'500 mA	8'340 mA	91 %
TPI 150-115A-J		15 VDC (13.5 - 16.5 VDC)	10'000 mA	7'340 mA	92 %
TPI 150-124A-J		24 VDC (21.6 - 26.4 VDC)	6'250 mA	4'590 mA	92 %
TPI 150-128A-J		28 VDC (25.2 - 30.8 VDC)	5'360 mA	3'930 mA	92 %
TPI 150-136A-J		36 VDC (32.4 - 39.6 VDC)	4'170 mA	3'060 mA	92 %
TPI 150-148A-J		48 VDC (43.2 - 52.8 VDC)	3'130 mA	2'090 mA	92 %

Input Specifications

Input Voltage	- AC Range	Operational Range: 85 - 264 VAC (Full Range) Rated Range: 100 - 240 VAC (Full Range)
	- DC Range	Operational Range: 120 - 370 VDC (Designed for, no certification) Polarity: +DC: L / -DC: N
Input Frequency		Operational Range: 47 - 440 Hz Certified: 50/60 Hz
Power Consumption	- No load & Vin = 230 VAC	300 mW max. (Ready to meet ErP directive)
	- No load & Vin = 115 VAC	300 mW max.
Input Current	- Full load & Vin = 230 VAC	800 mA max.
	- Full load & Vin = 115 VAC	1'700 mA max.
Input Inrush Current	- At 230 VAC	100 A max.
	- At 115 VAC	55 A max.
Power Factor	- At 230 VAC	0.95 min.
	- At 115 VAC	0.95 min.
Input Protection		T 3.15 A / 250 VAC (Internal Fuse in L & N)
Recommended Input Fuse		(The need of an external fuse has to be assessed in the final application.)

Output Specifications

Output Voltage Adjustment		±10% (By trim potentiometer) Output power must not exceed rated power!
Voltage Set Accuracy		±1% max.
Regulation	- Input Variation (Vmin - Vmax)	0.2% max.
	- Load Variation (0 - 100%)	0.5% max.
Ripple and Noise (20 MHz Bandwidth)	12 VDC model:	120 mVp-p typ. (w/ 1 μ F X7R)
	15 VDC model:	150 mVp-p typ. (w/ 1 μ F X7R)
	24 VDC model:	220 mVp-p typ. (w/ 1 μ F X7R)
	28 VDC model:	220 mVp-p typ. (w/ 1 μ F X7R)
	36 VDC model:	250 mVp-p typ. (w/ 1 μ F X7R)
	48 VDC model:	250 mVp-p typ. (w/ 0.1 μ F X7R)
Capacitive Load	12 VDC model:	10'400 μF max.
	15 VDC model:	6'600 μF max.
	24 VDC model:	2'600 μF max.
	28 VDC model:	1'900 μF max.
	36 VDC model:	1'150 μF max.
	48 VDC model:	650 μF max.
Minimum Load		Not required
Temperature Coefficient		±0.02 %/K max.
Hold-up Time	- At 230 VAC	16 ms min.
	- At 115 VAC	16 ms min.
Start-up Time	- At 230 VAC	1'000 ms max.
	- At 115 VAC	1'000 ms max.
Short Circuit Protection		Continuous, Automatic recovery
Output Current Limitation		115 - 150% of Iout max.
Overvoltage Protection		115 - 135% of Vout nom.
Transient Response	- Response Deviation	3% max. (50% to 75% Load Step)
	- Response Time	500 μs typ. (50% to 75% Load Step)

All specifications valid at 230 VAC, resistive full load and +25°C after warm-up time, unless otherwise stated.

Safety Specifications

Standards	- IT / Multimedia Equipment	EN 60950-1 EN 62368-1 IEC 60950-1 IEC 62368-1 UL 60950-1 UL 62368-1
	- Certification Documents	www.tracopower.com/overview/tpi150a
Protection Class		Class I & II (Prepared): Reinforced Insulation
Pollution Degree		PD 2
Over Voltage Category		OVC II

EMC Specifications

EMI (Emissions)	- Conducted Emissions	EN 61000-6-4 (Generic Industrial) EN 55011 class B (internal filter) EN 55032 class B (internal filter) FCC 47 Part 15 class B (internal filter)
	- Radiated Emissions	EN 55011 class A (internal filter) EN 55032 class A (internal filter) FCC 47 Part 15 class A (internal filter)
	- Harmonic Current Emissions	EN 61000-3-2, class A
	- Voltage Fluctuations & Flicker	EN 61000-3-2, class D EN 61000-3-3
EMS (Immunity)	- Electrostatic Discharge	EN 55024 (IT Equipment) EN 55035 (Multimedia) Air: EN 61000-4-2, ± 8 kV, perf. criteria A Contact: EN 61000-4-2, ± 6 kV, perf. criteria A
	- RF Electromagnetic Field	EN 61000-4-3, 20 V/m, perf. criteria A
	- EFT (Burst) / Surge	EN 61000-4-4, ± 2 kV, perf. criteria A
	- Conducted RF Disturbances	L to L: EN 61000-4-5, ± 1 kV, perf. criteria A
	- PF Magnetic Field	EN 61000-4-6, 20 Vrms, perf. criteria A
	- Voltage Dips & Interruptions	Continuous: EN 61000-4-8, 10 A/m, perf. criteria A 230 VAC / 50 Hz: EN 61000-4-11 30%, 25 periods, perf. criteria A >95%, 0.5 periods, perf. criteria A >95%, 250 periods, perf. criteria B
		115 VAC / 60 Hz: EN 61000-4-11 30%, 25 periods, perf. criteria A >95%, 0.5 periods, perf. criteria A >95%, 250 periods, perf. criteria B
EMC / Environmental	- Certification Documents	www.tracopower.com/overview/tpi150a

General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-40°C to +85°C
	- Storage Temperature	-40°C to +85°C (-40°C startup: 80% load max. at Vin >100 VAC -40°C startup: 100% load max. at Vin >200 VAC)
Power Derating	- High Temperature	Depending on model
	- Low Input Voltage	1.33 %/V below 100 VAC
		See application note: www.tracopower.com/overview/tpi150a
Cooling System	- Option 1	Forced air cooling (with external fan, 10 CFM)
	- Option 2	Natural convection (20 LFM)
Fan Power Source	- Characteristic	Variable fan speed (temperature regulated)
	- Output Voltage	12 VDC
	- Output Current	500 mA max.

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Altitude During Operation	5'000 m max.
Regulator Topology	Flyback Converter
Switching Frequency	45 - 75 kHz (PWM QR)
Insulation System	Reinforced Insulation
Working Voltage (rated)	344 VAC
Isolation Test Voltage	- Input to Output, 60 s - Input to Case or PE, 60 s - Output to Case or PE, 60 s
	3'000 VAC
	2'000 VAC
	2'000 VAC
Isolation Resistance	- Input to Output, 500 VDC
	100 MΩ min.
Leakage Current (at 264 VAC)	- Touch Current
	300 μA max.
Reliability	- Calculated MTBF
	786'100 h (MIL-HDBK-217F, ground benign)
Environment	- Vibration
	IEC 60068-2-6
	1 g, 3 axis, sine sweep, 10-55 Hz, 1 oct/min
	IEC 60068-2-27
	10 g, 3 axis, half sine, 11 ms
	20 g, 3 axis, 3 shocks
Housing Type	Open Frame
Mounting Type	Chassis Mount
Connection Type	Pin Connector
Weight	187 g
Environmental Compliance	- REACH Declaration
	www.tracopower.com/info/reach-declaration.pdf
	REACH SVHC list compliant
	REACH Annex XVII compliant
	www.tracopower.com/info/rohs-declaration.pdf
	Exemptions: 7a, 7c-I
	(RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).)
	- RoHS Declaration
	ca75035d-51b1-4ca9-be94-53320f28057d
	- SCIP Reference Number
	ca75035d-51b1-4ca9-be94-53320f28057d

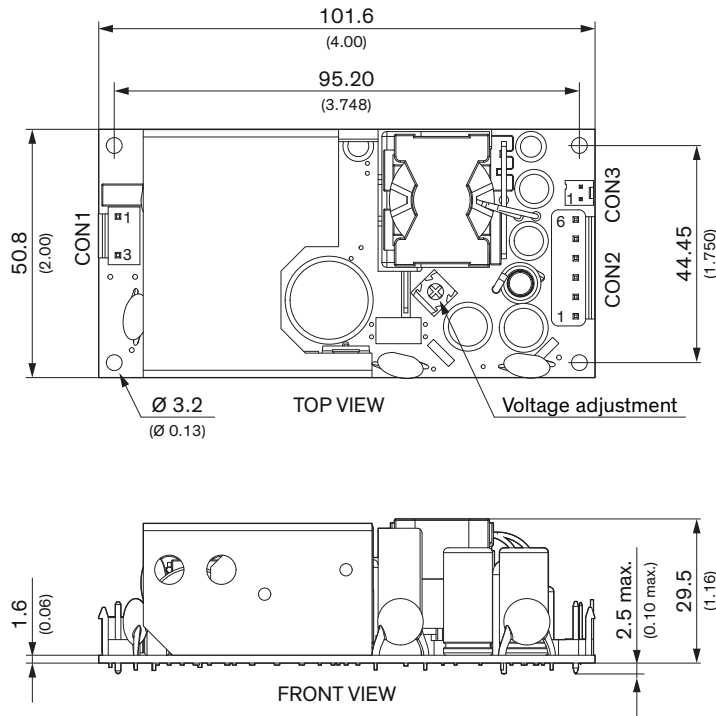
Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/tpi150a

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Outline Dimensions



Dimension in mm (inch)

Tolerances: x.x ± 0.50 (± 0.02)
x.xx ± 0.25 (± 0.01)

Mounting screw locked torque: max. 5.0 kgfcm / 0.49 Nm

Pin connectors

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 10 A max.
(at higher current connection has to be split)

CON1: JST series
mates with JST crimp terminal: SVH-21T-P1.1
and terminal housing: VHR-3N

CON2: JST series
mates with JST crimp terminal: SVH-21T-P1.1
and terminal housing: VHR-6N

CON3: Molex series
mates with Molex crimp terminals: 2759
and Molex housing: 22-01-1022