

- 50 Watt open frame power supplies in a 3" x 1.5" package
- Compact and cost efficient design
- Peak power function up to 140%
- I/O reinforced isolation 3000 VAC
- Operating temperature range -40°C to +85°C
- No load input power <0.3W (acc. ErP directive)
- High efficiency up to 93%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3 year product warranty



The TPI 50A-J is a 50 Watt AC/DC open frame power supplies series with a 3000 VAC reinforced isolation system. Our TPI line specifically focuses on providing cost efficient industrial power supplies in compact designs. This series offers a peak power function which enables the unit to deliver up to 140% of the rated power for up to 5 seconds. Excellent efficiency of up to 93% allows a compact design and an operating temperature range (natural convection) of -40°C to +60°C without derating, while going up to +85°C with either load derating or forced cooling. They are designed to meet the ErP directive (< 0.3 W no load power consumption) and come with an EMC characteristics dedicated for applications in industrial/automation and test & measurement fields. High reliability is provided by use of industrial high-quality grade components and an excellent thermal management. It makes the TPI 50A-J an ideal solution for any demanding industrial devices or space critical applications.

Models					
Order Code	Output Power max.	Output Voltage nom. (adjustable)	Output Current max.	Output Current peak	Efficiency typ.
TPI 50-105A-J	40 W	5 VDC (4.5 - 5.5 VDC)	8'000 mA	11'200 mA	91 %
TPI 50-112A-J	50 W	12 VDC (9.6 - 13.2 VDC)	4'170 mA	5'835 mA	93 %
TPI 50-115A-J		15 VDC (13.5 - 16.5 VDC)	3'340 mA	4'670 mA	93 %
TPI 50-124A-J		24 VDC (19.2 - 26.4 VDC)	2'085 mA	2'920 mA	93 %
TPI 50-136A-J		36 VDC (28.8 - 39.6 VDC)	1'390 mA	1'945 mA	92 %
TPI 50-148A-J		48 VDC (38.4 - 52.8 VDC)	1'045 mA	1'460 mA	92 %
TPI 50-153A-J		53 VDC (42.4 - 58.3 VDC)	950 mA	1'325 mA	92 %

Options	
on demand (backorder with MOQ non stocking item)	- Optional model with 7.5 VDC / 6'670 mA - Optional model with 9 VDC / 5'560 mA - Optional model with 18 VDC / 2'780 mA

### Input Specifications

Input Voltage	- AC Range	Operational Range: <b>85 - 264 VAC</b> (Full Range) Rated Range: <b>100 - 240 VAC</b> (Full Range)
	- DC Range	Operational Range: <b>120 - 370 VDC</b> (Designed for, no certification) Polarity: <b>+DC: L / -DC: N</b>
Input Frequency		<b>47 - 63 Hz</b>
Input Current	- Full Load & Vin = 230 VAC	<b>800 mA max.</b>
	- Full Load & Vin = 115 VAC	<b>1'300 mA max.</b>
Power Consumption	- At no load	<b>150 mW max.</b> (Ready to meet ErP directive)
Input Inrush Current	- At 230 VAC	<b>60 A max.</b>
	- At 115 VAC	<b>35 A max.</b>
Input Protection		<b>T 3.15 A / 250 VAC</b>
Recommended Input Fuse		(The need of an external fuse has to be assessed in the final application.)

### Output Specifications

Output Voltage Adjustment		<b>±10%</b> (By trim potentiometer) Output power must not exceed rated power!
Voltage Set Accuracy		<b>±1% max.</b>
Regulation	- Input Variation (Vmin - Vmax)	<b>0.2% max.</b>
	- Load Variation (0 - 100%)	<b>0.7% max.</b>
Boost Power		Output Current peak: See model table Peak power time: <b>5 s max.</b> Peak power duty cycle: <b>20% max.</b> Average operation power: <b>70% of full load</b> (detailed description see application note)
Ripple and Noise (20 MHz Bandwidth)	5 VDC model:	<b>100 mVp-p max.</b> (w/ 10 µF)
	7.5 VDC model:	<b>100 mVp-p max.</b> (w/ 10 µF)
	9 VDC model:	<b>100 mVp-p max.</b> (w/ 10 µF)
	12 VDC model:	<b>120 mVp-p max.</b> (w/ 10 µF)
	15 VDC model:	<b>120 mVp-p max.</b> (w/ 10 µF)
	18 VDC model:	<b>120 mVp-p max.</b> (w/ 10 µF)
	24 VDC model:	<b>120 mVp-p max.</b> (w/ 1 µF)
	36 VDC model:	<b>120 mVp-p max.</b> (w/ 1 µF)
	48 VDC model:	<b>150 mVp-p max.</b> (w/ 0.1 µF)
	53 VDC model:	<b>150 mVp-p max.</b> (w/ 0.1 µF)
	5 VDC model:	<b>75 mVp-p typ.</b> (w/ 10 µF)
	7.5 VDC model:	<b>75 mVp-p typ.</b> (w/ 10 µF)
	9 VDC model:	<b>75 mVp-p typ.</b> (w/ 10 µF)
	12 VDC model:	<b>100 mVp-p typ.</b> (w/ 10 µF)
	15 VDC model:	<b>100 mVp-p typ.</b> (w/ 10 µF)
	18 VDC model:	<b>100 mVp-p typ.</b> (w/ 10 µF)
	24 VDC model:	<b>100 mVp-p typ.</b> (w/ 1 µF)
36 VDC model:	<b>100 mVp-p typ.</b> (w/ 1 µF)	
48 VDC model:	<b>100 mVp-p typ.</b> (w/ 0.1 µF)	
53 VDC model:	<b>100 mVp-p typ.</b> (w/ 0.1 µF)	
Capacitive Load	5 VDC model:	<b>16'000 µF max.</b>
	7.5 VDC model:	<b>8'900 µF max.</b>
	9 VDC model:	<b>6'200 µF max.</b>
	12 VDC model:	<b>3'500 µF max.</b>
	15 VDC model:	<b>2'300 µF max.</b>
	18 VDC model:	<b>1'600 µF max.</b>
	24 VDC model:	<b>870 µF max.</b>
	36 VDC model:	<b>390 µF max.</b>
48 VDC model:	<b>220 µF max.</b>	
53 VDC model:	<b>180 µF max.</b>	

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

Minimum Load		Not required
Temperature Coefficient		±0.02 %/K max.
Hold-up Time	- At 230 VAC - At 115 VAC	50 ms min. 12 ms min.
Start-up Time	- At 230 VAC - At 115 VAC	600 ms max. 800 ms max.
Short Circuit Protection		Continuous, Automatic recovery
Output Current Limitation		165% typ. of I <sub>out</sub> max.
Overvoltage Protection		115 - 135% of V <sub>out</sub> nom.
Transient Response	- Response Deviation - Response Time	3% max. (50% to 75% Load Step at 2.5 A/μs) 300 μs typ. (50% to 75% Load Step at 2.5 A/μs)

### Safety Specifications

Safety Standards	- IT / Multimedia Equipment  - Certification Documents	EN 62368-1 IEC 62368-1 UL 62368-1  <a href="http://www.tracopower.com/overview/tpi50a-j">www.tracopower.com/overview/tpi50a-j</a>
Protection Class		Class I & II (Prepared): Reinforced Insulation
Pollution Degree		PD 2
Over Voltage Category		OVC III

### EMC Specifications

EMI Emissions	- Conducted Emissions  - Radiated Emissions  - Harmonic Current Emissions - Voltage Fluctuations & Flicker	EN 55032 class B (internal filter) FCC Part 15 class B (internal filter) EN 55032 class B (internal filter) FCC Part 15 class B (internal filter) EN 61000-3-2, class A EN 61000-3-3
EMS Immunity	- Electrostatic Discharge  - RF Electromagnetic Field - EFT (Burst) / Surge  - Conducted RF Disturbances - PF Magnetic Field  - Voltage Dips & Interruptions	EN 55024 (IT Equipment) Air: EN 61000-4-2, ±8 kV, perf. criteria A Contact: EN 61000-4-2, ±6 kV, perf. criteria A EN 61000-4-3, 20 V/m, perf. criteria A EN 61000-4-4, ±2 kV, perf. criteria A L to L: EN 61000-4-5, ±1 kV, perf. criteria A L to PE: EN 61000-4-5, ±2 kV, perf. criteria A EN 61000-4-6, 20 V <sub>rms</sub> , perf. criteria A Continuous: EN 61000-4-8, 10 A/m, perf. criteria A 1 s: EN 61000-4-8, 1000 A/m, perf. criteria A 230 VAC / 50 Hz: EN 61000-4-11 115 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

### General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature - Storage Temperature	-40°C to +85°C -40°C to +85°C
Power Derating	- High Temperature  - Low Input Voltage	2.8 %/K above 60°C (230 VAC models) 2.3 %/K above 55°C (115 VAC models) 4 %/V below 90 VAC
Cooling System		Natural convection (20 LFM)
Altitude During Operation		5'000 m max.
Switching Frequency		70 - 135 kHz (PWM) 100 kHz typ. (PWM)

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

Insulation System		Reinforced Insulation
Working Voltage (rated)		250 VAC
Isolation Test Voltage	- Input to Output, 60 s	3'000 VAC
	- Input to Case or PE, 60 s	2'000 VAC
	- Output to Case or PE, 60 s	2'000 VAC
Creepage	- Input to Output	6 mm min.
	- Input to Case or PE	3 mm min.
	- Output to Case or PE	3 mm min.
Clearance	- Input to Output	6 mm min.
	- Input to Case or PE	3 mm min.
	- Output to Case or PE	3 mm min.
Isolation Resistance	- Input to Output, 500 VDC	100 MΩ min.
Leakage Current	- Touch Current	300 μA max.
Reliability	- Calculated MTBF	1'487'000 h (MIL-HDBK-217F, ground benign)
Environment	- Vibration	IEC 60068-2-6 5 g, 3 axis, sine sweep, 3x30 min, 5-500 Hz
	- Mechanical Shock	IEC 60068-2-27 50 g, 3 axis, 11 ms
	- Thermal Shock	MIL-STD-810F -40 to +85°C, 72 cycles, 30 min each
Housing Type		Open Frame
Mounting Type		Chassis Mount
Connection Type		Pin Connector
Weight		78 g
Environmental Compliance	- REACH Declaration	<a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a> REACH SVHC list compliant REACH Annex XVII compliant
	- RoHS Declaration	<a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a> Exemptions: 6a, 7c-l (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule). The SCIP number is provided on request.)

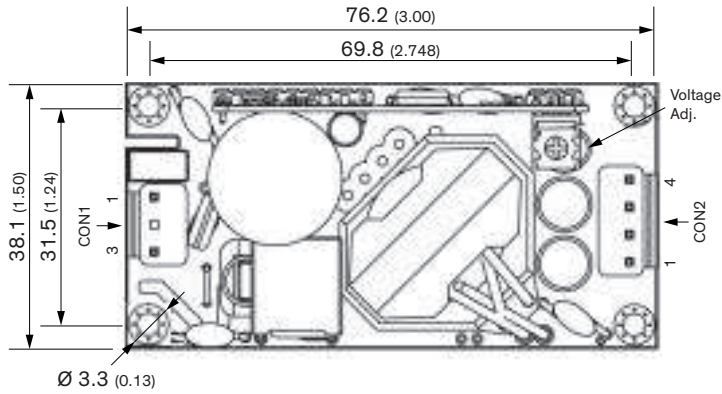
## Supporting Documents

Overview Link (for additional Documents)

[www.tracopower.com/overview/tpi50a-j](http://www.tracopower.com/overview/tpi50a-j)

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

**Outline Dimensions**



Pin connectors			
Input (CON1)		Output (CON2)	
Pin	Function	Pin	Function
1	Line	1,2	-Vout
3	Neutral	3,4	+Vout

**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-4N

