

- Highest power density 100 W open frame power supply in 2" x 3" 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 100A Series of 100 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 3.0" 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 (< 0.3 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. | Efficiency typ. |
|----------------|-------------------|----------------------------------|---------------------|-----------------|
| TPI 100-112A-J | 100 W             | 12 VDC (10.8 - 13.2 VDC)         | 8'340 mA            | 91 %            |
| TPI 100-115A-J |                   | 15 VDC (13.5 - 16.5 VDC)         | 6'670 mA            | 92 %            |
| TPI 100-124A-J |                   | 24 VDC (21.6 - 26.4 VDC)         | 4'170 mA            | 92 %            |
| TPI 100-128A-J |                   | 28 VDC (25.2 - 30.8 VDC)         | 3'580 mA            | 92 %            |
| TPI 100-136A-J |                   | 36 VDC (32.4 - 39.6 VDC)         | 2'780 mA            | 91 %            |
| TPI 100-148A-J |                   | 48 VDC (43.2 - 52.8 VDC)         | 2'090 mA            | 91 %            |

## Input Specifications

|                        |  |  |
|------------------------|--|--|
| Input Voltage          | - AC Range   | Operational Range: <b>85 - 264 VAC</b> (Full Range)<br>Rated Range: <b>100 - 240 VAC</b> (Full Range)        |
|                        | - DC Range   | Operational Range: <b>120 - 370 VDC</b> (Designed for, no certification)<br>Polarity: <b>+DC: L / -DC: N</b> |
| Input Frequency        |  | Operational Range: <b>47 - 440 Hz</b><br>Certified: <b>50/60 Hz</b>  |
| Power Consumption      | - No load & Vin = 230 VAC<br>- No load & Vin = 115 VAC     | <b>300 mW max.</b> (Ready to meet ErP directive)<br><b>300 mW max.</b>                                       |
| Input Current          | - Full load & Vin = 230 VAC<br>- Full load & Vin = 115 VAC | <b>550 mA max.</b><br><b>1'150 mA max.</b>   |
| Input Inrush Current   | - At 230 VAC<br>- At 115 VAC                               | <b>100 A max.</b><br><b>55 A max.</b>  |
| Power Factor           | - At 230 VAC<br>- At 115 VAC                               | <b>0.95 min.</b><br><b>0.95 min.</b>   |
| Input Protection       |  | <b>T 3.15 A / 250 VAC</b> (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              |  | <b>±10%</b> (By trim potentiometer)<br>Output power must not exceed rated power!   |
| Voltage Set Accuracy                   |  | <b>±1% max.</b>  |
| Regulation                             | - Input Variation (Vmin - Vmax)<br>- Load Variation (0 - 100%) | <b>0.2% max.</b><br><b>0.5% max.</b>   |
| Ripple and Noise<br>(20 MHz Bandwidth) |  | 12 VDC model: <b>120 mVp-p typ.</b> (w/ 10 µF X7R)<br>15 VDC model: <b>150 mVp-p typ.</b> (w/ 10 µF X7R)<br>24 VDC model: <b>160 mVp-p typ.</b> (w/ 1 µF X7R)<br>28 VDC model: <b>180 mVp-p typ.</b> (w/ 1 µF X7R)<br>36 VDC model: <b>190 mVp-p typ.</b> (w/ 1 µF X7R)<br>48 VDC model: <b>340 mVp-p typ.</b> (w/ 0.1 µF X7R) |
| Capacitive Load                        |  | 12 VDC model: <b>6'950 µF max.</b><br>15 VDC model: <b>4'450 µF max.</b><br>24 VDC model: <b>1'750 µF max.</b><br>28 VDC model: <b>1'280 µF max.</b><br>36 VDC model: <b>770 µF max.</b><br>48 VDC model: <b>430 µF max.</b>   |
| Minimum Load                           |  | <b>Not required</b>  |
| Temperature Coefficient                |  | <b>±0.02 %/K max.</b>  |
| Hold-up Time                           | - At 230 VAC<br>- At 115 VAC                                   | <b>22 ms min.</b><br><b>22 ms min.</b>   |
| Start-up Time                          | - At 230 VAC<br>- At 115 VAC                                   | <b>1'000 ms max.</b><br><b>1'000 ms max.</b>   |
| Short Circuit Protection               |  | <b>Continuous, Automatic recovery</b>  |
| Output Current Limitation              |  | <b>115 - 150% of Iout max.</b>   |
| Overvoltage Protection                 |  | <b>115 - 135% of Vout nom.</b>   |
| Transient Response                     | - Response Deviation<br>- Response Time                        | <b>3% max.</b> (50% to 75% Load Step)<br><b>500 µs typ.</b> (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<br>EN 62368-1<br>IEC 60950-1<br>IEC 62368-1<br>UL 60950-1<br>UL 62368-1           |
|                       | - Certification Documents   | <a href="http://www.tracopower.com/overview/tpi100a">www.tracopower.com/overview/tpi100a</a> |
| 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)<br>EN 55011 class B (internal filter)<br>EN 55032 class B (internal filter)<br>FCC 47 Part 15 class B (internal filter)  |
|                     | - Radiated Emissions             | EN 55011 class A (internal filter)<br>EN 55032 class A (internal filter)<br>FCC 47 Part 15 class A (internal filter)   |
|                     | - Harmonic Current Emissions     | EN 61000-3-2, class A<br>EN 61000-3-2, class D   |
|                     | - Voltage Fluctuations & Flicker | EN 61000-3-3   |
| EMS (Immunity)      | - Electrostatic Discharge        | EN 55024 (IT Equipment)<br>EN 55035 (Multimedia)<br>Air: EN 61000-4-2, $\pm 8$ kV, perf. criteria A<br>Contact: EN 61000-4-2, $\pm 6$ kV, perf. criteria A<br>EN 61000-4-3, 20 V/m, perf. criteria A<br>EN 61000-4-4, $\pm 2$ kV, perf. criteria A |
|                     | - RF Electromagnetic Field       | L to L: EN 61000-4-5, $\pm 1$ kV, perf. criteria A<br>EN 61000-4-6, 20 Vrms, perf. criteria A  |
|                     | - EFT (Burst) / Surge            | Continuous: EN 61000-4-8, 10 A/m, perf. criteria A<br>230 VAC / 50 Hz: EN 61000-4-11<br>30%, 25 periods, perf. criteria A<br>>95%, 0.5 periods, perf. criteria A<br>>95%, 250 periods, perf. criteria B  |
|                     | - Conducted RF Disturbances      | 115 VAC / 60 Hz: EN 61000-4-11<br>30%, 25 periods, perf. criteria A<br>>95%, 0.5 periods, perf. criteria A<br>>95%, 250 periods, perf. criteria B  |
|                     | - PF Magnetic Field              |  |
|                     | - Voltage Dips & Interruptions   |  |
| EMC / Environmental | - Certification Documents        | <a href="http://www.tracopower.com/overview/tpi100a">www.tracopower.com/overview/tpi100a</a>   |

## General Specifications

|                           |                         |  |
|---------------------------|-------------------------|--|
| Relative Humidity         |                         | 95% max. (non condensing)  |
| Temperature Ranges        | - Operating Temperature | -40°C to +80°C   |
|                           | - Storage Temperature   | -40°C to +85°C<br>(-40°C startup: 80% load max. at Vin >100 VAC<br>-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: <a href="http://www.tracopower.com/overview/tpi100a">www.tracopower.com/overview/tpi100a</a> |
| Cooling System            |                         | Natural convection (20 LFM)  |
| Altitude During Operation |                         | 5'000 m max.   |
| Regulator Topology        |                         | Flyback Converter  |
| Switching Frequency       |                         | 45 - 75 kHz (PWM QR)   |
| Insulation System         |                         | Reinforced Insulation  |

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

|  |                              |  |
|--|------------------------------|--|
| <b>Working Voltage</b> (rated)         |                              | 344 VAC  |
| <b>Isolation Test Voltage</b>          | - Input to Output, 60 s      | 3'000 VAC  |
|  | - Input to Case or PE, 60 s  | 1'500 VAC  |
|  | - Output to Case or PE, 60 s | 1'500 VAC  |
| <b>Isolation Resistance</b>            | - Input to Output, 500 VDC   | 100 MΩ min.  |
| <b>Leakage Current</b><br>(at 264 VAC) | - Touch Current              | 300 μA max.  |
| <b>Reliability</b>                     | - Calculated MTBF            | 790'000 h (MIL-HDBK-217F, ground benign)   |
| <b>Environment</b>                     | - Vibration                  | IEC 60068-2-6<br>1 g, 3 axis, sine sweep, 10-55 Hz, 1 oct/min  |
|  | - Mechanical Shock           | IEC 60068-2-27<br>10 g, 3 axis, half sine, 11 ms   |
|  |                              | 20 g, 3 axis, 3 shocks   |
|  |                              |  |
| <b>Housing Type</b>                    |                              | Open Frame   |
| <b>Mounting Type</b>                   |                              | Chassis Mount  |
| <b>Connection Type</b>                 |                              | Pin Connector  |
| <b>Weight</b>                          |                              | 156 g  |
| <b>Environmental Compliance</b>        | - REACH Declaration          | <a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a><br>REACH SVHC list compliant<br>REACH Annex XVII compliant  |
|  | - RoHS Declaration           | <a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a><br>Exemptions: 7a, 7c-1<br>(RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).) |
|  | - SCIP Reference Number      | f11746f8-c399-40bd-b2b3-fcd7fddaaf3d   |

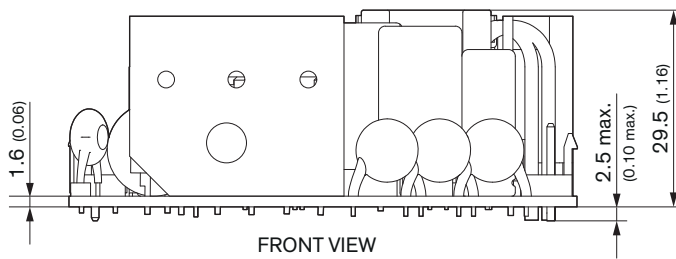
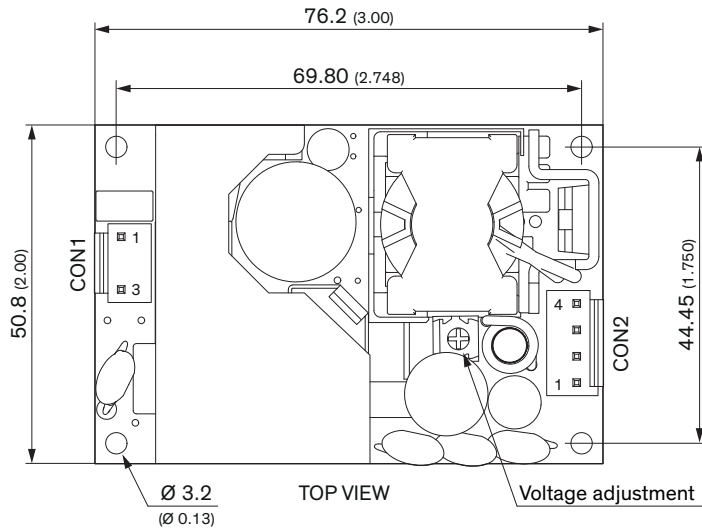
## Supporting Documents

Overview Link (for additional Documents)

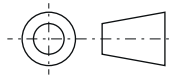
[www.tracopower.com/overview/tpi100a](http://www.tracopower.com/overview/tpi100a)

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### Outline Dimensions



Dimension in mm (inch)  
 Tolerances: x.x  $\pm 0.50$  ( $\pm 0.02$ )  
 x.xx  $\pm 0.25$  ( $\pm 0.01$ )



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

### Pin connectors

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

\*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-4N