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# TRACO POWER

## AC/DC Power Supply

## TPI 65A-J Series, 65 Watt

- **65 Watt open frame power supplies in a 3" x 2" 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**




UL 62368-1 IEC 62368-1

The TPI 65A-J is a 65 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 10 seconds. Excellent efficiency of up to 93% allows a compact design and an operating temperature range (natural convection) of –40°C to +70°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 65A-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 65-105A-JP** | 50 W | 5 VDC (4.0 - 5.5 VDC) | 10'000 mA | 13'000 mA | 90 % |
| **TPI 65-112A-JP** | 65 W | 12 VDC (9.6 - 13.2 VDC) | 5'420 mA | 7'500 mA | 93 % |
| **TPI 65-115A-JP** | | 15 VDC (12.0 - 16.5 VDC) | 4'340 mA | 6'000 mA | 94 % |
| **TPI 65-124A-JP** | | 24 VDC (19.2 - 26.4 VDC) | 2'710 mA | 3'750 mA | 94 % |
| **TPI 65-136A-JP** | | 36 VDC (28.8 - 39.6 VDC) | 1'810 mA | 2'500 mA | 93 % |
| **TPI 65-148A-JP** | | 48 VDC (38.4 - 52.8 VDC) | 1'360 mA | 1'875 mA | 93 % |
| **TPI 65-153A-JP** | | 53 VDC (42.4 - 58.3 VDC) | 1'240 mA | 1'698 mA | 93 % |

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## 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 | | 180 mW max. (Ready to meet ErP directive) |
| | - No load & Vin = 115 VAC | | 180 mW max. |
| Input Current | - Full load & Vin = 230 VAC | | 900 mA max. |
| | - Full load & Vin = 115 VAC | | 1'600 mA max. |
| Input Inrush Current | - At 230 VAC | | 75 A max. |
| | - At 115 VAC | | 40 A max. |
| Input Protection | | | T 3.15 A / 250 VAC (Internal Fuse in L) |
| Recommended Input Fuse | | | (The need of an external fuse has to be assessed in the final application.) |

## Output Specifications

| | | | |
|---|---|---|---|
| Output Voltage Adjustment | | | –20% to +10% (By trim potentiometer)<br>Output power must not exceed rated power! |
| Voltage Set Accuracy | | | ±1% max. |
| Regulation | - Input Variation (Vmin - Vmax) | | 0.2% max. |
| | - Load Variation (0 - 100%) | | 0.7% max. (5 VDC model)<br>0.5% max. (other output models) |
| Boost Power | | | Output Current peak: See model table<br>Peak power time: 5 s max.<br>Peak power duty cycle: 20% max.<br>Average operation power: 70% of full load<br>(detailed description see application note) |
| Ripple and Noise<br>(20 MHz Bandwidth) | | 5 VDC model: | 75 mVp-p typ. (w/ 10 µF, 25 V, MLCC) |
| | | 12 VDC model: | 75 mVp-p typ. (w/ 10 µF, 25 V, MLCC) |
| | | 15 VDC model: | 75 mVp-p typ. (w/ 10 µF, 25 V, MLCC) |
| | | 24 VDC model: | 75 mVp-p typ. (w/ 1 µF,50 V, MLCC) |
| | | 36 VDC model: | 75 mVp-p typ. (w/ 1 µF,50 V, MLCC) |
| | | 48 VDC model: | 150 mVp-p typ. (w/ 0.1 µF,100 V, MLCC) |
| | | 53 VDC model: | 150 mVp-p typ. (w/ 0.1 µF,100 V, MLCC) |
| Capacitive Load | | 5 VDC model: | 20'000 µF max. |
| | | 12 VDC model: | 4'520 µF max. |
| | | 15 VDC model: | 2'900 µF max. |
| | | 24 VDC model: | 1'130 µF max. |
| | | 36 VDC model: | 520 µF max. |
| | | 48 VDC model: | 285 µF max. |
| | | 53 VDC model: | 235 µF max. |
| Minimum Load | | | Not required |
| Temperature Coefficient | | | ±0.02 %/K max. |
| Hold-up Time | - At 230 VAC | | 90 ms min. |
| | - At 115 VAC | | 15 ms min. |
| Start-up Time | - At 230 VAC | | 800 ms max. |
| | - At 115 VAC | | 950 ms max. |
| Short Circuit Protection | | | Continuous, Automatic recovery |
| Output Current Limitation | | | 165% typ. of Iout max. |
| Overvoltage Protection | | | 125 - 140% of Vout nom. |
| Transient Response | - Response Deviation | | 3% max. (50% to 75% Load Step at 2.5 A/µs) |
| | - Response Time | | 600 µs typ. (50% to 75% Load Step at 2.5 A/µs) |

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

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## Safety Specifications

| | | | |
|---|---|---|---|
| Standards | - IT / Multimedia Equipment | | EN 62368-1<br>IEC 62368-1<br>UL 62368-1 |
| | - Certification Documents | | www.tracopower.com/tpi65a-j-safety-cert/ |
| Protection Class | | | Class I & II (Prepared): Reinforced Insulation |
| | | See application note: | www.tracopower.com/info/protection-class.pdf |
| Energy Source | - Output, acc. to 62368-1 | | ES1 |
| Power Source | - Output, acc. to 62368-1 | | PS3 |
| Pollution Degree | | | PD 2 |
| Over Voltage Category | | | OVC I<br>OVC II |

## EMC Specifications

| | | | |
|---|---|---|---|
| EMI (Emissions) | - Conducted Emissions | | EN 55011 class A (internal filter)<br>EN 55011 class B (internal filter)<br>EN 55032 class A (internal filter)<br>EN 55032 class B (internal filter)<br>FCC 47 Part 15 class A (internal filter)<br>FCC 47 Part 15 class B (internal filter) |
| | - Radiated Emissions | | EN 55011 class A (internal filter)<br>EN 55011 class B (internal filter)<br>EN 55032 class A (internal filter)<br>EN 55032 class B (internal filter)<br>FCC 47 Part 15 class A (internal filter)<br>FCC 47 Part 15 class B (internal filter) |
| | - Harmonic Current Emissions | | EN 61000-3-2, class A |
| | - Voltage Fluctuations & Flicker | | EN 61000-3-3 |
| EMS (Immunity) | | | EN 55024 (IT Equipment)<br>EN 55035 (Multimedia) |
| | - Electrostatic Discharge | Air: | EN 61000-4-2, ±15 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, ±4 kV, perf. criteria A |
| | | L to L: | EN 61000-4-5, ±2 kV, perf. criteria A |
| | - Conducted RF Disturbances | | EN 61000-4-6, 20 Vrms, perf. criteria A |
| | - PF Magnetic Field | Continuous: | EN 61000-4-8, 100 A/m, perf. criteria A |
| | - Voltage Dips & Interruptions | 230 VAC / 50 Hz: | EN 61000-4-11 |
| | | 115 VAC / 60 Hz: | EN 61000-4-11 |

## General Specifications

| | | | |
|---|---|---|---|
| Relative Humidity | | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature | | –40°C to +85°C |
| | - Storage Temperature | | –40°C to +85°C |
| Power Derating | - High Temperature | | Depending on model |
| | - Low Input Voltage | | 4.0 %/V below 90 VAC |
| | | See application note: | www.tracopower.com/tpi65a-j-cc/ |
| Cooling System | | | Natural convection (20 LFM) |
| Altitude During Operation | | | 5'000 m max. |
| Regulator Topology | | | Flyback Converter |
| Switching Frequency | | | 60 kHz typ. (PWM QR) (5 VDC models)<br>120 kHz typ. (PWM QR) (other models) |
| Insulation System | | | Reinforced Insulation |
| Working Voltage (rated) | | | 273 VAC |
| Isolation Test Voltage | - Input to Output, 60 s | | 3'000 VAC |
| Creepage | - Input to Output | | 8 mm min. |

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

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| | | |
|---|---|---|
| Clearance | - Input to Output | 8 mm min. |
| Isolation Resistance | - Input to Output, 500 VDC | 100 MΩ min. |
| Leakage Current (at 264 VAC) | - Earth Leakage Current | 75 µA max. |
| Distance Through Isolation | | 0.4 mm |
| Reliability | - Calculated MTBF | 1'490'000 h (MIL-HDBK-217F, ground benign) |
| Environment | - Vibration | IEC 60068-2-6 |
| | - Mechanical Shock | IEC 60068-2-27 |
| Housing Type | | Open Frame |
| Mounting Type | | Chassis Mount |
| Connection Type | | Pin Connector |
| Weight | | 117 g |
| Environmental Compliance | - REACH Declaration | www.tracopower.com/info/reach-declaration.pdf<br>REACH SVHC list compliant<br>REACH Annex XVII compliant |
| | - RoHS Declaration | www.tracopower.com/info/rohs-declaration.pdf<br>Exemptions: 7(a), 7(c)-I<br>(RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).) |
| | - SCIP Reference Number | 54f38b10-a6c9-46f7-9475-640404133b0c |

## Additional Information

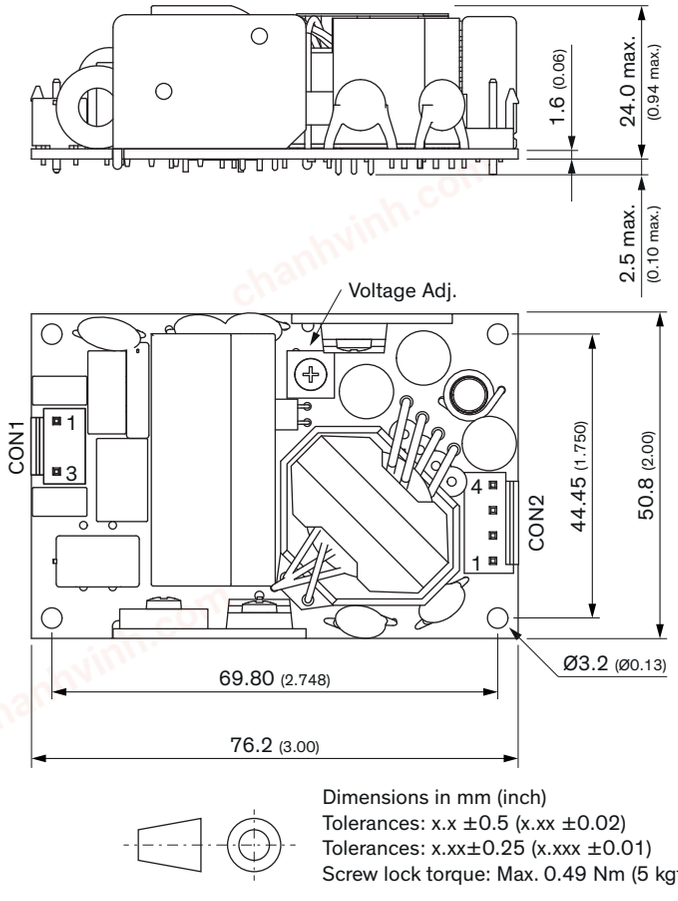
| | |
|---|---|
| Supporting Documents | www.tracopower.com/overview/tpi65a-j |
| Frequently Asked Questions | www.tracopower.com/glossary-faq |
| Glossary | www.tracopower.com/info/glossary.pdf |
| Service Portal | www.tracoserviceportal.com |

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## Outline Dimensions






Dimensions in mm (inch)
Tolerances: x.x ±0.5 (x.xx ±0.02)
Tolerances: x.xx±0.25 (x.xxx ±0.01)
Screw lock torque: Max. 0.49 Nm (5 kgfcm)

| 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 per pin.
(at higher current connection has to be split)

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

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

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