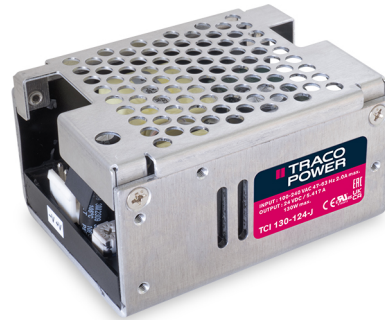


- Conduction cooled design approach
- Fanless operation with up to 100% output power
- Operating temperature range  $-30^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$
- I/O reinforced isolation 4250 VAC
- Over voltage category (OVC III)
- High efficiency up to 92%
- Operating up to 5000 m altitude
- Internal EN 55032 conducted class B filter
- Protection class I prepared
- 3-year product warranty



UL 62368-1 IEC 62368-1

The TCI 130 is a 130 Watt conduction cooled AC/DC encased power supply series with a 4250 VAC reinforced isolation system. Traco Power's new TCI line focuses on maximizing the proficiency of conduction cooled systems as it offers superior temperature behavior when mounted on a metal chassis or baseplate. This way the TCI 130 can deliver up to 100% of the maximum output power without the need for a fan. Excellent efficiency of up to 91% allows the TCI series to operate from  $-30$  to  $+50^{\circ}\text{C}$  without derating, while going up to  $+80^{\circ}\text{C}$  with either load derating or forced cooling. They also meet OVC III requirements and can operate at up to 5000 m altitude. Active power factor correction, EMC characteristics dedicated for applications in industrial/automation and test & measurement fields and high reliability make the new TCI line an ideal solution for any demanding industrial application.

### Models

| Order Code    | Output Power max. | Output Voltage nom. (adjustable) | Output Current max. (Forced air / Conduction cooling) | Output Current max. (Natural convection) | Efficiency typ. |
|---------------|-------------------|----------------------------------|---|--|-----------------|
| TCI 130-112-J | 130 W             | 12 VDC (10.8 - 13.2 VDC)         | 10'833 mA   | 9'917 mA                                 | 90 %            |
| TCI 130-124-J |                   | 24 VDC (21.6 - 26.4 VDC)         | 5'417 mA  | 5'000 mA                                 | 90 %            |
| TCI 130-148-J |                   | 48 VDC (43.2 - 52.8 VDC)         | 2'708 mA  | 2'604 mA                                 | 91 %            |

### Options

|   |  |
|---|--|
| TCI-AC1   | - Optional Cable: <a href="http://www.tracopower.com/products/tci-ac1.pdf">www.tracopower.com/products/tci-ac1.pdf</a>     |
| TCI130-DC   | - Optional Cable: <a href="http://www.tracopower.com/products/tci130-dc.pdf">www.tracopower.com/products/tci130-dc.pdf</a> |
| on demand<br>(backorder with MOQ non stocking item) | - Optional models with U-Bracket   |

### Input Specifications

|                        |  |   |
|------------------------|--|---|
| Input Voltage          |  | Operational Range: <b>90 - 264 VAC</b> (Full Range)<br>Rated Range: <b>100 - 240 VAC</b> (Full Range) |
| Input Frequency        |  | Operational Range: <b>47 - 63 Hz</b><br>Certified: <b>50/60 Hz</b>                                    |
| Input Current          | - Full Load & Vin = 230 VAC<br>- Full Load & Vin = 115 VAC | <b>1'000 mA max.</b><br><b>2'000 mA max.</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 Inrush Current   | - At 230 VAC<br>- At 115 VAC                               | <b>85 A max.</b><br><b>50 A max.</b>  |
| Power Factor           | - At 230 VAC<br>- At 115 VAC                               | <b>0.9 min.</b> (Active Power Factor Correction)<br><b>0.9 min.</b> (Active Power Factor Correction)  |
| Input Protection       |  | <b>T 4 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>±2% max.</b>   |
| Regulation                             | - Input Variation (Vmin - Vmax)<br>- Load Variation (10 - 100%) | <b>1% max.</b><br><b>1% max.</b>  |
| Ripple and Noise<br>(20 MHz Bandwidth) |   | 12 VDC model: <b>160 mVp-p max.</b> (w/ 0.1 µF ceramic    47 µF KY)<br>24 VDC model: <b>240 mVp-p max.</b> (w/ 0.1 µF ceramic    47 µF KY)<br>48 VDC model: <b>340 mVp-p max.</b> (w/ 0.1 µF ceramic    47 µF KY) |
| Capacitive Load                        |   | 12 VDC model: <b>4'000 µF max.</b><br>24 VDC model: <b>1'000 µF max.</b><br>48 VDC model: <b>330 µF max.</b>  |
| Minimum Load                           |   | <b>Not required</b>   |
| Temperature Coefficient                |   | <b>±0.05 %/K max.</b>   |
| Hold-up Time                           | - At 230 VAC<br>- At 115 VAC                                    | <b>27 ms min.</b><br><b>8 ms min.</b>   |
| Start-up Time                          | - At 230 VAC<br>- At 115 VAC                                    | <b>1'350 ms max.</b><br><b>1'000 ms max.</b>  |
| Short Circuit Protection               |   | <b>Continuous, Automatic recovery</b> (Level 1, nom.)<br><b>Latch</b> (Level 2, instantaneous high current)   |
| Output Current Limitation              |   | <b>117 - 196% of Iout max.</b>  |
| Overvoltage Protection                 |   | <b>108 - 130% of Vout nom.</b>  |
| Transient Response                     | - Response Deviation<br>- Response Time                         | <b>3% typ. / 5% max.</b> (25% to 100% Load Step)<br><b>500 µs typ. / 750 µs max.</b> (25% to 100% Load Step)  |

### Safety Specifications

|                       |  |  |
|-----------------------|--|--|
| Standards             | - IT / Multimedia Equipment<br><br>- Certification Documents | <b>EN 62368-1</b><br><b>IEC 62368-1</b><br><b>UL 62368-1</b><br><a href="http://www.tracopower.com/overview/tci130">www.tracopower.com/overview/tci130</a> |
| Protection Class      |  | <b>Class I</b> (Prepared): <b>Connection to PE</b>   |
| Pollution Degree      |  | <b>PD 2</b>  |
| Over Voltage Category |  | <b>OVC II</b><br><b>OVC III</b>  |

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

## EMC Specifications

|               |                                |  |
|---------------|--------------------------------|--|
| EMI Emissions | - Conducted Emissions          | EN 55032 class B (internal filter)   |
|               | - Radiated Emissions           | EN 55032 class A (internal filter)   |
|               | - Harmonic Current Emissions   | EN 61000-3-2, class A  |
| EMS Immunity  |                                | EN 55035 (Multimedia)  |
|               | - Electrostatic Discharge      | Air: EN 61000-4-2, $\pm 8$ kV, perf. criteria A<br>Contact: EN 61000-4-2, $\pm 4$ kV, perf. criteria A     |
|               | - RF Electromagnetic Field     | EN 61000-4-3, 3 V/m, perf. criteria A  |
|               | - EFT (Burst) / Surge          | EN 61000-4-4, $\pm 1$ kV, perf. criteria A   |
|               |                                | L to L: EN 61000-4-5, $\pm 1$ kV, perf. criteria A   |
|               |                                | L to PE: EN 61000-4-5, $\pm 2$ kV, perf. criteria A  |
|               | - Conducted RF Disturbances    | EN 61000-4-6, 3 Vrms, perf. criteria A   |
|               | - PF Magnetic Field            | Continuous: EN 61000-4-8, 1 A/m, perf. criteria A  |
|               | - Voltage Dips & Interruptions | 230 VAC / 50 Hz: EN 61000-4-11<br>30%, 25 periods, perf. criteria A<br>>95%, 250 periods, perf. criteria B |
|               |                                | 115 VAC / 60 Hz: EN 61000-4-11<br>30%, 25 periods, perf. criteria A<br>>95%, 250 periods, perf. criteria B |

## General Specifications

|  |                              |  |
|--|------------------------------|--|
| Relative Humidity                      |                              | 90% max. (non condensing)  |
| Temperature Ranges                     | - Operating Temperature      | -30°C to +80°C   |
|  | - Storage Temperature        | -30°C to +80°C   |
| Power Derating                         | - High Temperature           | Depending on model   |
|  | - Low Input Voltage          | 2 %/V below 100 VAC  |
|  |                              | See application note: <a href="http://www.tracopower.com/overview/tci130">www.tracopower.com/overview/tci130</a> |
| Over Temperature Protection Switch Off | - Protection Mode            | 115°C min. / 120°C typ. / 125°C max.<br>(Automatic recovery at 90°C typ.)  |
|  | - Measurement Point          | Internal IC temperature  |
| Cooling System                         |                              | Forced air (with external fan, 8 CFM)  |
|  |                              | Natural convection (20 LFM)  |
|  |                              | Conduction Cooling (with a 300 x 300 x 3.0 mm aluminum plate)  |
| Altitude During Operation              |                              | 4'000 m max. (for OVC III)   |
|  |                              | 5'000 m max. (for OVC II)  |
| Regulator Topology                     |                              | QR Flyback Converter   |
| Switching Frequency                    |                              | 45 - 76 kHz (PWM, PFM) (Above 25% load PWM is used, below 25% load PFM is used)                                  |
|  |                              | 60 kHz typ. (PWM, PFM) (Above 25% load PWM is used, below 25% load PFM is used)                                  |
| Insulation System                      |                              | Reinforced Insulation  |
| Working Voltage (rated)                |                              | 391 VAC  |
| Isolation Test Voltage                 | - Input to Output, 60 s      | 4'250 VAC (6'000 VDC)  |
|  | - Input to Case or PE, 60 s  | 2'830 VAC (4'000 VDC)  |
|  | - Output to Case or PE, 60 s | 1'500 VAC (2'121 VDC)  |
| Isolation Resistance                   | - Input to Output, 500 VDC   | 100 M $\Omega$ min.  |
| Leakage Current (at 264 VAC / 63 Hz)   | - Earth Leakage Current      | 750 $\mu$ A max.   |
| Distance Through Isolation             |                              | 7.1 mm   |
| Reliability                            | - Calculated MTBF            | 400'000 h (MIL-HDBK-217F, ground benign)   |
| Washing Process                        |                              | Not allowed  |
| Environment                            | - Vibration                  | IEC 60068-2-6<br>2 g, 3 axis, 60 min, 10-500 Hz, 10 min/cycle  |
|  | - Mechanical Shock           | IEC 60068-2-27<br>50 g, 3 axis, half sine, 11 ms   |

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

|                          |  |
|--------------------------|--|
| Housing Material         | Aluminum   |
| Potting Material         | Silicone (UL 94 V-0 rated)<br>(the converter is partly potted on the bottom)   |
| Housing Type             | Metal Case   |
| Mounting Type            | Chassis Mount  |
| Connection Type          | Pin Connector  |
| Weight                   | 292 g (for standard version)<br>280 g (for optional U-Bracket models)  |
| Environmental Compliance | - REACH Declaration<br><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<br>- RoHS Declaration<br><a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a><br>Exemptions: 7a, 7c-I<br>(RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule.)<br>- SCIP Reference Number<br>4cf2bfa3-142d-4255-a827-ca241ce874db |

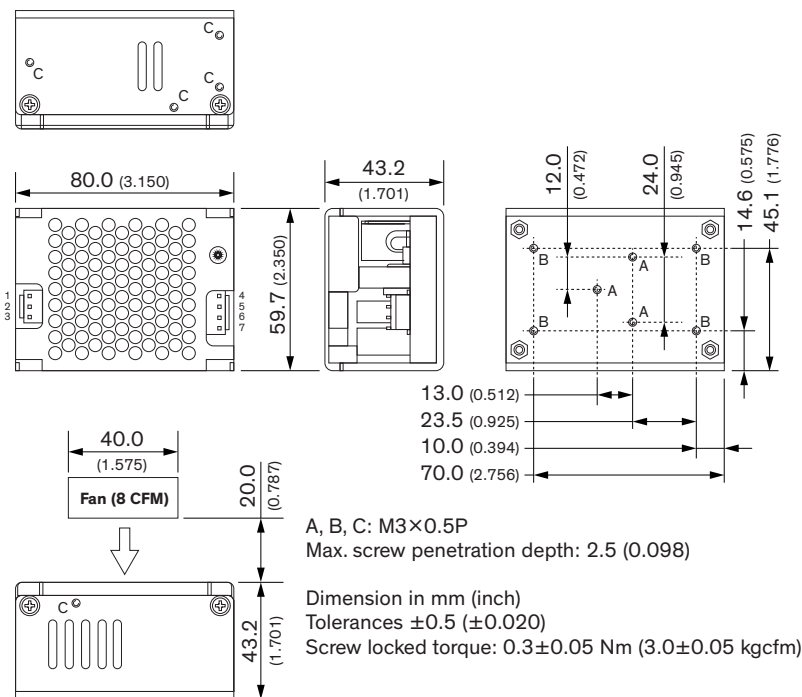
### Supporting Documents

Overview Link (for additional Documents)

[www.tracopower.com/overview/tci130](http://www.tracopower.com/overview/tci130)

### Outline Dimensions

#### Standard version



#### Pin connectors

| Input |          | Output |          |
|-------|----------|--------|----------|
| Pin   | Function | Pin    | Function |
| 1     | AC (N)   | 4-5    | +Vout    |
| 2     | No Pin   | 6-7    | -Vout    |
| 3     | AC (L)   |        |          |

#### Case

(no dedicated connector)

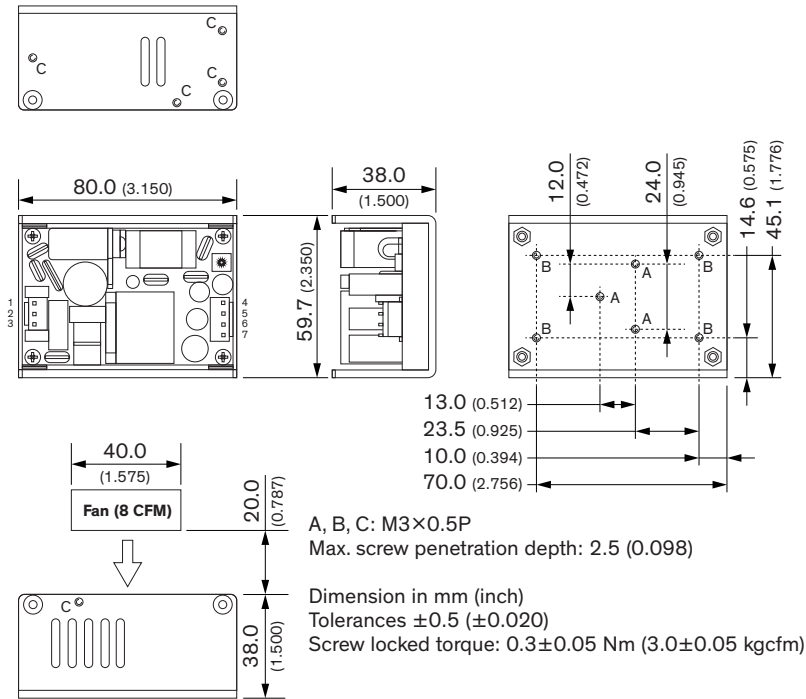
| Pos | Function  |
|-----|---|
| A   | For mounting on chassis only                      |
| B   | For mounting on PCB or chassis, and connecting PE |
| C   | For connecting PE only                            |

**Input:** JST series  
mates with JST crimp terminal: SVH-41T-P1.1 or Equivalent  
and terminal housing: VHR-3N or Equivalent

**Output:** JST series  
mates with JST crimp terminal: SVH-41T-P1.1 or Equivalent  
and terminal housing: VHR-4N or Equivalent

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

### Optional version with U-Bracket



### Pin connectors

| Input |          | Output |          |
|-------|----------|--------|----------|
| Pin   | Function | Pin    | Function |
| 1     | AC (N)   | 4-5    | +Vout    |
| 2     | No Pin   | 6-7    | -Vout    |
| 3     | AC (L)   |        |          |

### Case

(no dedicated connector)

| Pos | Function  |
|-----|---|
| A   | For mounting on chassis only                      |
| B   | For mounting on PCB or chassis, and connecting PE |
| C   | For connecting PE only                            |

**Input:** JST series  
 mates with JST crimp terminal: SVH-41T-P1.1 or Equivalent  
 and terminal housing: VHR-3N or Equivalent

**Output:** JST series  
 mates with JST crimp terminal: SVH-41T-P1.1 or Equivalent  
 and terminal housing: VHR-4N or Equivalent