

## AC/DC Power Supply

## TXLN 960 Series, 960 Watt

- Compact metal case with screw terminal block
- Universal input 90-264 VAC
- High efficiency up to 89%
- Active PFC >0.95
- Compliance to EN 61000-3-2
- Short circuit, overvoltage and overload protection
- IEC/EN/UL 62368-1 safety approvals
- Remote On/Off and Remote Sense
- Standard features: Power Good Signal, Load Sharing, 12 V Standby Output
- 3-year product warranty



The TXLN series is a family of encased power supplies designed for a wide range of cost critical applications. With a low profile metal case and screw terminal block connection, they are easy to install in any equipment. These power supplies have universal input and comply with European EMC standards and the Low Voltage Directive (LVD).

| Models       |                   |                                  |                     |                 |
|--------------|-------------------|----------------------------------|---------------------|-----------------|
| Order Code   | Output Power max. | Output Voltage nom. (adjustable) | Output Current max. | Efficiency typ. |
| TXLN 960-112 | 960 W             | 12 VDC (10.8 - 13.2 VDC)         | 80'000 mA           | 87 %            |
| TXLN 960-115 |                   | 15 VDC (13.5 - 16.5 VDC)         | 64'000 mA           | 88 %            |
| TXLN 960-124 |                   | 24 VDC (21.6 - 26.4 VDC)         | 40'000 mA           | 88 %            |
| TXLN 960-148 |                   | 48 VDC (43.2 - 52.8 VDC)         | 20'000 mA           | 89 %            |

## Input Specifications

|                        |                             |                                                                                                             |
|------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------|
| Input Voltage          | - AC Range                  | Operational Range: <b>90 - 264 VAC</b> (Full Range)<br>Rated Range: <b>100 - 240 VAC</b> (Full Range)       |
|                        | - DC Range                  | Operational Range: <b>127 - 375 VDC</b> (Designed for, no certification)<br>Polarity: <b>irrelevant</b>     |
| Input Frequency        |                             | Operational Range: <b>47 - 63 Hz</b><br>Certified: <b>50/60 Hz</b>                                          |
|                        |                             |                                                                                                             |
| Input Current          | - Full load & Vin = 230 VAC | <b>6'500 mA max.</b>                                                                                        |
|                        | - Full load & Vin = 115 VAC | <b>10'500 mA max.</b>                                                                                       |
| Input Inrush Current   | - At 230 VAC                | <b>90 A max.</b>                                                                                            |
|                        | - At 115 VAC                | <b>50 A max.</b>                                                                                            |
| Power Factor           | - At 230 VAC                | <b>0.95 min.</b> (Active Power Factor Correction)                                                           |
|                        | - At 115 VAC                | <b>0.95 min.</b> (Active Power Factor Correction)                                                           |
| Input Protection       |                             | <b>T 12 A / 250 VAC</b> (Internal Fuse)                                                                     |
| Recommended Input Fuse |                             | <b>12'000 mA</b> (slow blow)<br>(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) | <b>0.5% max.</b>                                                                             |
|                                        | - Load Variation (0 - 100%)     | <b>1% max.</b>                                                                               |
| Ripple and Noise<br>(20 MHz Bandwidth) | 12 VDC model:                   | <b>150 mVp-p max.</b> (w/ 0.1 µF    47 µF)                                                   |
|                                        | 15 VDC model:                   | <b>150 mVp-p max.</b> (w/ 0.1 µF    47 µF)                                                   |
|                                        | 24 VDC model:                   | <b>200 mVp-p max.</b> (w/ 0.1 µF    47 µF)                                                   |
|                                        | 48 VDC model:                   | <b>250 mVp-p max.</b> (w/ 0.1 µF    47 µF)                                                   |
| Capacitive Load                        |                                 | <b>108'000 µF max.</b>                                                                       |
| Minimum Load                           |                                 | <b>Not required</b>                                                                          |
| Temperature Coefficient                |                                 | <b>±0.03 %/K max.</b>                                                                        |
| Hold-up Time                           | - At 230 VAC                    | <b>14 ms min.</b>                                                                            |
|                                        | - At 115 VAC                    | <b>14 ms min.</b>                                                                            |
| Start-up Time                          | - At 230 VAC                    | <b>2'000 ms max.</b>                                                                         |
| Short Circuit Protection               |                                 | <b>Continuous, Automatic recovery</b>                                                        |
| Output Current Limitation              |                                 | <b>105 - 135% of Iout max.</b>                                                               |
| Overvoltage Protection                 |                                 | <b>115 - 140% of Vout nom.</b>                                                               |
| Load Share Function                    | - Refer to application note     | <a href="http://www.tracopower.com/overview/txln960">www.tracopower.com/overview/txln960</a> |
| Load Share Accuracy                    |                                 | <b>10%</b>                                                                                   |

## Safety Specifications

|                       |                             |                                                                                                                                                                                            |
|-----------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards             | - IT / Multimedia Equipment | <b>EN 62368-1</b><br><b>IEC 62368-1</b><br><b>UL 62368-1</b>                                                                                                                               |
|                       | - Certification Documents   | <a href="http://www.tracopower.com/overview/txln960">www.tracopower.com/overview/txln960</a>                                                                                               |
| Protection Class      |                             | <b>Class I</b> (Prepared): <b>Connection to PE</b><br>See application note: <a href="http://www.tracopower.com/info/protection-class.pdf">www.tracopower.com/info/protection-class.pdf</a> |
| Pollution Degree      |                             | <b>PD 2</b>                                                                                                                                                                                |
| Over Voltage Category |                             | <b>OVC II</b>                                                                                                                                                                              |

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

### EMC Specifications

|                 |                                  |                                                                                                                                                   |
|-----------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| EMI (Emissions) | - Conducted Emissions            | EN 55032 class A (internal filter)<br>EN 55032 class B (internal filter)                                                                          |
|                 | - Radiated Emissions             | EN 55032 class A (internal filter)<br>EN 55032 class B (internal filter)                                                                          |
|                 | - Harmonic Current Emissions     | EN 61000-3-2, class D                                                                                                                             |
|                 | - Voltage Fluctuations & Flicker | EN 61000-3-3                                                                                                                                      |
| EMS (Immunity)  |                                  | EN 55024 (IT Equipment)<br>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, 10 V/m, perf. criteria A                                                                                                            |
|                 | - EFT (Burst) / Surge            | EN 61000-4-4, $\pm 2$ kV, perf. criteria A                                                                                                        |
|                 |                                  | L to L: EN 61000-4-5, $\pm 2$ kV, perf. criteria B                                                                                                |
|                 |                                  | L to PE: EN 61000-4-5, $\pm 4$ kV, perf. criteria B                                                                                               |
|                 | - Conducted RF Disturbances      | EN 61000-4-6, 10 Vrms, perf. criteria A                                                                                                           |
|                 | - PF Magnetic Field              | Continuous: EN 61000-4-8, 30 A/m, perf. criteria A                                                                                                |
|                 |                                  | 1 s: EN 61000-4-8, 300 A/m, perf. criteria A                                                                                                      |
|                 | - Voltage Dips & Interruptions   | 230 VAC / 50 Hz: EN 61000-4-11<br>30%, 25 periods, perf. criteria C<br>>95%, 0.5 periods, perf. criteria B<br>>95%, 250 periods, perf. criteria C |

### General Specifications

|                                        |                                                                                                                    |                                                                                                                    |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Relative Humidity                      |                                                                                                                    | 90% max. (non condensing)                                                                                          |
| Temperature Ranges                     | - Operating Temperature                                                                                            | -20°C to +70°C                                                                                                     |
|                                        | - Storage Temperature                                                                                              | -40°C to +85°C                                                                                                     |
| Power Derating                         | - High Temperature                                                                                                 | 2.5 %/K above 50°C                                                                                                 |
|                                        | - Low Input Voltage                                                                                                | Depending on model                                                                                                 |
|                                        | See application note: <a href="http://www.tracopower.com/overview/txln960">www.tracopower.com/overview/txln960</a> |                                                                                                                    |
| Over Temperature Protection Switch Off | - Protection Mode                                                                                                  | 90°C min. / 95°C typ. / 100°C max. (Automatic recovery)                                                            |
| Cooling System                         |                                                                                                                    | Forced air cooling (with internal fan)                                                                             |
| Fan Power Source                       | - Characteristic                                                                                                   | Constant fan speed (continuous)                                                                                    |
|                                        | - Output Voltage                                                                                                   | 12 VDC                                                                                                             |
|                                        | - Output Current                                                                                                   | 480 mA max.<br>(6'800 RPM / 38 CFM)                                                                                |
| Standby Power Source                   | - Output Voltage                                                                                                   | 12 VDC                                                                                                             |
|                                        | - Output Current                                                                                                   | 300 mA max.                                                                                                        |
| Remote Control                         | - Voltage Controlled Remote                                                                                        | See application note: <a href="http://www.tracopower.com/overview/txln960">www.tracopower.com/overview/txln960</a> |
| Altitude During Operation              |                                                                                                                    | 4'000 m max.                                                                                                       |
| Regulator Topology                     |                                                                                                                    | Flyback Converter                                                                                                  |
| Switching Frequency                    |                                                                                                                    | 55 - 65 kHz (PWM)                                                                                                  |
| Insulation System                      |                                                                                                                    | Reinforced Insulation                                                                                              |
| Isolation Test Voltage                 | - Input to Output, 60 s                                                                                            | 3'000 VAC                                                                                                          |
|                                        | - Input to Case or PE, 60 s                                                                                        | 1'800 VAC                                                                                                          |
|                                        | - Output to Case or PE, 60 s                                                                                       | 500 VAC                                                                                                            |
| Isolation Resistance                   | - Input to Output, 500 VDC                                                                                         | 100 M $\Omega$ min.                                                                                                |
| Isolation Capacitance                  | - Input to Output, 100 kHz, 1 V                                                                                    | 20'000 pF max.                                                                                                     |
| Leakage Current<br>(at 264 VAC / 60Hz) | - Earth Leakage Current                                                                                            | 1500 $\mu$ A max.                                                                                                  |
| Distance Through Isolation             |                                                                                                                    | 6 mm                                                                                                               |
| Reliability                            | - Calculated MTBF                                                                                                  | 84'100 h (MIL-HDBK-217F, ground benign)                                                                            |
| Housing Material                       |                                                                                                                    | Aluminum                                                                                                           |
| Housing Type                           |                                                                                                                    | Metal Case                                                                                                         |
| Mounting Type                          |                                                                                                                    | Chassis Mount                                                                                                      |

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

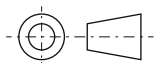
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|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connection Type          | Screw Terminal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Weight                   | 2'500 g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Power OK Signal          | Voltage source output                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| - Power OK               | High level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| - Power Off              | Low level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                          | (Refers to 'PG' and 'GND' Pin)                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Status Indicator         | Indicated by green LED                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Sense Function           | (to be done)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Environmental Compliance | <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><a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a><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).)<br>da352870-36d9-4f59-bf3b-c8691a73b195 |
| - REACH Declaration      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| - RoHS Declaration       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| - SCIP Reference Number  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

### Additional Information

|                            |                                                                                                |
|----------------------------|------------------------------------------------------------------------------------------------|
| Supporting Documents       | <a href="http://www.tracopower.com/overview/txln960">www.tracopower.com/overview/txln960</a>   |
| Frequently Asked Questions | <a href="http://www.tracopower.com/glossary-faq">www.tracopower.com/glossary-faq</a>           |
| Glossary                   | <a href="http://www.tracopower.com/info/glossary.pdf">www.tracopower.com/info/glossary.pdf</a> |

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

Included in shipment:  
- 6x M3 mounting screw



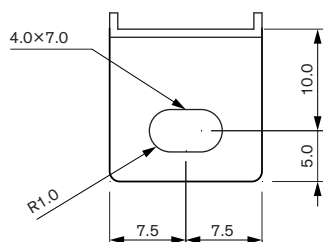
| Output |          |
|--------|----------|
| CN11   |          |
| Pin    | Function |
| 1-3    | +Vout    |
| 4-6    | -Vout    |

**CN1:**  
3 pin, 10mm pitch  
with PC cover  
Max. Terminal screw locked  
torque: 0.7 Nm

**CN11:**  
6 pin, 11 mm pitch  
Max. Terminal screw locked  
torque: 0.7 Nm

**CN3 Crimp Contact:**  
HRS DF11-EP22SCB

### Mounting Bracket (included)



Dimensions in mm

- Included in shipment:
- 4x Mounting Bracket
  - 4x M4 mounting screw

