

- Enclosed power supplies with screw terminal block
- Universal input range 90 to 264 VAC
- Ready to meet ErP directive, < 0.3 W no load power consumption
- Adjustable output voltage
- 4242 VDC I/O-isolation
- High efficiency up to 88%
- Operating temperature range: -30°C to +70°C max.
- Short circuit and over voltage protection



UL 62368-1 IEC 62368-1

The TXH 060 series is a family of power supplies in metal enclosure, designed for a wide range of cost critical applications. The high efficiency of up to 88% is achieved through an innovative design for free air convection cooling. This design also qualifies the power supply to meet the ErP directive (< 0.3 W no load power consumption). The units are equipped with screw terminal blocks and 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. |
|-------------|-------------------|----------------------------------|---------------------|-----------------|
| TXH 060-105 | 50 W              | 5 VDC (4.8 - 5.3 VDC)            | 10'000 mA           | 81 %            |
| TXH 060-112 | 60 W              | 12 VDC (11.4 - 12.6 VDC)         | 5'000 mA            | 87 %            |
| TXH 060-115 |                   | 15 VDC (14.3 - 15.8 VDC)         | 4'000 mA            | 87 %            |
| TXH 060-124 |                   | 24 VDC (22.8 - 25.2 VDC)         | 2'500 mA            | 88 %            |
| TXH 060-148 |                   | 48 VDC (45.6 - 50.4 VDC)         | 1'250 mA            | 88 %            |

### 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>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>   |
| Input Current          | - Full Load & Vin = 230 VAC | <b>1'000 mA max.</b>  |
|                        | - Full Load & Vin = 115 VAC | <b>2'000 mA max.</b>  |
| Power Consumption      | - No load & Vin = 230 VAC   | <b>300 mW max.</b> (Ready to meet ErP directive)  |
|                        | - No load & Vin = 115 VAC   | <b>300 mW max.</b>  |
| Input Inrush Current   | - At 230 VAC                | <b>70 A max.</b>  |
|                        | - At 115 VAC                | <b>35 A max.</b><br>(An external Thermistor has to be integrated in the circuit at the converter input L. Thermistor recommendation: 10R / 15z) |
| Recommended Input Fuse |                             | (The need of an external fuse has to be assessed in the final application.)   |

### Output Specifications

|  |                                 |   |
|--|---------------------------------|---|
| Output Voltage Adjustment              |                                 | <b>±5%</b> (By trim potentiometer)<br>Output power must not exceed rated power! |
| Voltage Set Accuracy                   |                                 | <b>±2% max.</b>   |
| Regulation                             | - Input Variation (Vmin - Vmax) | <b>1% max.</b>  |
|  | - Load Variation (0 - 100%)     | <b>1% max.</b>  |
| Ripple and Noise<br>(20 MHz Bandwidth) | 5 VDC model:                    | <b>75 mVp-p max.</b> (w/ 0.1 µF // 47 µF)                                       |
|  | 12 VDC model:                   | <b>100 mVp-p max.</b> (w/ 0.1 µF // 47 µF)                                      |
|  | 15 VDC model:                   | <b>125 mVp-p max.</b> (w/ 0.1 µF // 47 µF)                                      |
|  | 24 VDC model:                   | <b>150 mVp-p max.</b> (w/ 0.1 µF // 47 µF)                                      |
|  | 48 VDC model:                   | <b>200 mVp-p max.</b> (w/ 0.1 µF // 47 µF)                                      |
| Capacitive Load                        | 5 VDC model:                    | <b>10'000 µF max.</b>   |
|  | 12 VDC model:                   | <b>5'000 µF max.</b>  |
|  | 15 VDC model:                   | <b>4'000 µF max.</b>  |
|  | 24 VDC model:                   | <b>2'000 µF max.</b>  |
|  | 48 VDC model:                   | <b>1'000 µF max.</b>  |
| Minimum Load                           |                                 | <b>Not required</b>   |
| Temperature Coefficient                |                                 | <b>±0.02 %/K max.</b>   |
| Hold-up Time                           | - At 230 VAC                    | <b>55 ms min.</b>   |
|  | - At 115 VAC                    | <b>10 ms min.</b>   |
| Start-up Time                          | - At 230 VAC                    | <b>400 ms max.</b>  |
|  | - At 115 VAC                    | <b>500 ms max.</b>  |
| Short Circuit Protection               |                                 | <b>Continuous, Automatic recovery</b>   |
| Output Current Limitation              |                                 | <b>115 - 160% of Iout max.</b>  |
| Overvoltage Protection                 |                                 | <b>105 - 145% of Vout nom.</b><br>(By Zener diode)                              |
| Transient Response                     | - Response Deviation            | <b>2% max.</b> (75% to 100% Load Step)  |
|  | - Response Time                 | <b>500 µs typ.</b> (75% to 100% Load Step)                                      |

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

## Safety Specifications

|                       |                             |  |
|-----------------------|-----------------------------|--|
| Safety 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/txh060">www.tracopower.com/overview/txh060</a> |
| Protection Class      |                             | Class I (Prepared): Connection to PE   |
| Pollution Degree      |                             | PD 2   |
| Over Voltage Category |                             | OVC II   |

## EMC Specifications

|               |  |  |
|---------------|--|--|
| EMI Emissions | - Conducted Emissions<br>- Radiated Emissions<br>- Harmonic Current Emissions<br>- Voltage Fluctuations & Flicker  | EN 55032 class B (internal filter)<br>EN 55032 class B (internal filter)<br>EN 61000-3-2, class B<br>EN 61000-3-3  |
| EMS Immunity  | - Electrostatic Discharge<br>- RF Electromagnetic Field<br>- EFT (Burst) / Surge<br><br>- Conducted RF Disturbances<br>- PF Magnetic Field<br>- Voltage Dips & Interruptions | EN 55024 (IT Equipment)<br>Air: EN 61000-4-2, $\pm 8$ kV, perf. criteria A<br>Contact: EN 61000-4-2, $\pm 4$ kV, perf. criteria A<br>EN 61000-4-3, 10 V/m, perf. criteria A<br>EN 61000-4-4, $\pm 2$ kV, perf. criteria A<br>L to L: EN 61000-4-5, $\pm 2$ kV, perf. criteria A<br>L to PE: EN 61000-4-5, $\pm 2$ kV, perf. criteria A<br>EN 61000-4-6, 10 Vrms, perf. criteria A<br>Continuous: EN 61000-4-8, 30 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 C |

## General Specifications

|                           |  |  |
|---------------------------|--|--|
| Relative Humidity         |  | 95% max. (non condensing)  |
| Temperature Ranges        | - Operating Temperature<br>- Storage Temperature                                       | -30°C to +70°C<br>-50°C to +85°C   |
| Power Derating            | - High Temperature<br>- Low Input Voltage  | Depending on model<br>2 %/V below 100 VAC  |
|                           | See application note:  | <a href="http://www.tracopower.com/overview/txh060">www.tracopower.com/overview/txh060</a> |
| Cooling System            |  | Natural convection (20 LFM)  |
| Altitude During Operation |  | 3'100 m max.   |
| Switching Frequency       |  | 60 - 70 kHz (PWM)  |
| Insulation System         |  | Reinforced Insulation  |
| Working Voltage (rated)   |  | 305 VAC  |
| Isolation Test Voltage    | - Input to Output, 60 s<br>- Input to Case or PE, 60 s<br>- Output to Case or PE, 60 s | 3'000 VAC<br>1'500 VAC<br>500 VAC  |
| Creepage                  | - Input to Output  | 5 mm min.  |
| Clearance                 | - Input to Output  | 4 mm min.  |
| Leakage Current           | - Earth Leakage Current<br>- Touch Current   | 1000 $\mu$ A max.<br>750 $\mu$ A max.  |
| Reliability               | - Calculated MTBF  | 130'000 h (MIL-HDBK-217F, ground benign)   |
| Environment               | - Vibration  | 2 g, 3 axis, 60 min, 10-500 Hz, 10 min/cycle   |
| Housing Type              |  | Metal Case   |
| Mounting Type             |  | Chassis Mount  |
| Connection Type           |  | Screw Terminal   |

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

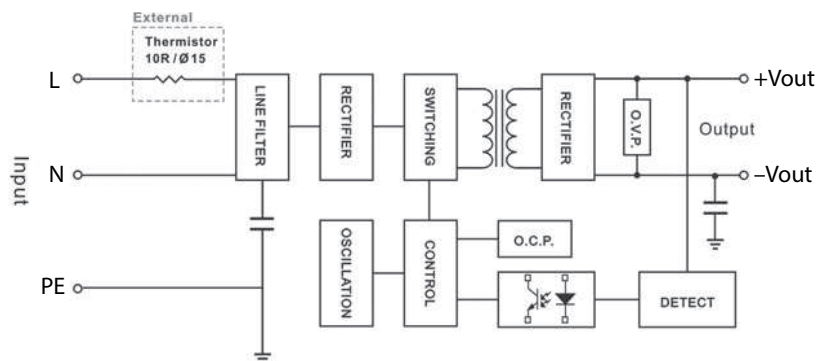
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|--|--|
| Weight                                       | 220 g  |
| Environmental Compliance - REACH Declaration | <a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a>   |
| - RoHS Declaration                           | 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: 7a, 7c-1<br>(RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).<br>The SCIP number is provided on request.) |

### Supporting Documents

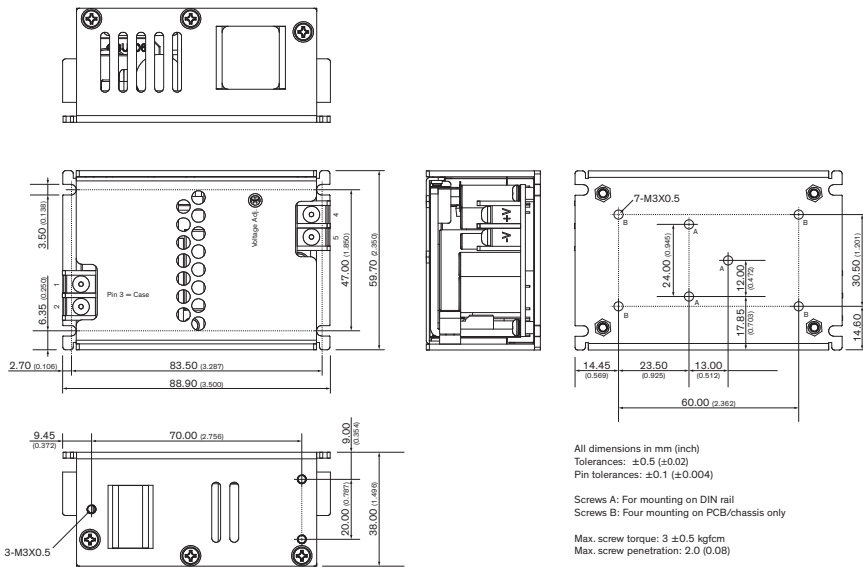
Overview Link (for additional Documents)

[www.tracopower.com/overview/txh060](http://www.tracopower.com/overview/txh060)

### Blockdiagram



### Outline Dimensions



### Pin Connections

| Pin | Function  |
|-----|-----------|
| 1   | AC IN (N) |
| 2   | AC IN (L) |
| 3   | PE        |
| 4   | +Vout     |
| 5   | -Vout     |