

- 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) Rated Range: <b>100 - 240 VAC</b> (Full Range)
	- DC Range	Operational Range: <b>120 - 370 VDC</b> (Designed for, no certification) Polarity: <b>+DC: L / -DC: N</b>
Input Frequency		<b>47 - 63 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	- At no load	<b>300 mW max.</b> (Ready to meet ErP directive)
Input Inrush Current	- At 230 VAC	<b>70 A max.</b>
	- At 115 VAC	<b>35 A max.</b> (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) 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 (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> (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)

### Safety Specifications

Safety Standards	- IT / Multimedia Equipment	EN 60950-1 EN 62368-1 IEC 60950-1 IEC 62368-1 UL 60950-1 UL 62368-1
	- Certification Documents	<a href="http://www.tracopower.com/overview/txh060">www.tracopower.com/overview/txh060</a>
Protection Class		<b>Class I (Prepared): Connection to PE</b>

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

Pollution Degree	PD 2
Over Voltage Category	OVC II

### EMC Specifications

EMI Emissions	- Conducted Emissions	EN 55032 class B (internal filter)
	- Radiated Emissions	EN 55032 class B (internal filter)
	- Harmonic Current Emissions	EN 61000-3-2, class B
	- Voltage Fluctuations & Flicker	EN 61000-3-3
EMS Immunity	- Electrostatic Discharge	Air: EN 61000-4-2, $\pm 8$ kV, perf. criteria A 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 A L to PE: EN 61000-4-5, $\pm 2$ kV, perf. criteria A
	- 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
	- Voltage Dips & Interruptions	230 VAC / 50 Hz: EN 61000-4-11 30%, 25 periods, perf. criteria A >95%, 0.5 periods, perf. criteria A >95%, 250 periods, perf. criteria C

### General Specifications

Relative Humidity	95% max. (non condensing)
Temperature Ranges	- Operating Temperature: $-30^{\circ}\text{C}$ to $+70^{\circ}\text{C}$ - Storage Temperature: $-50^{\circ}\text{C}$ to $+85^{\circ}\text{C}$
Power Derating	- High Temperature: See application note: <a href="http://www.tracopower.com/overview/txh060">www.tracopower.com/overview/txh060</a> - Low Input Voltage: 2 %/V below 100 VAC
Cooling System	Natural convection (20 LFM)
Altitude During Operation	3'100 m max.
Switching Frequency	60 - 70 kHz
Insulation System	Reinforced Insulation
Working Voltage (rated)	305 VAC
Isolation Test Voltage	- 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: 500 VAC
Creepage	- Input to Output: 5 mm min.
Clearance	- Input to Output: 4 mm min.
Leakage Current	- Earth Leakage Current: 1000 $\mu\text{A}$ max. - Touch Current: 750 $\mu\text{A}$ 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
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> REACH SVHC list compliant REACH Annex XVII compliant - RoHS Declaration: <a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a> Exemptions: 7a, 7c-1 (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule). The SCIP number is provided on request.)

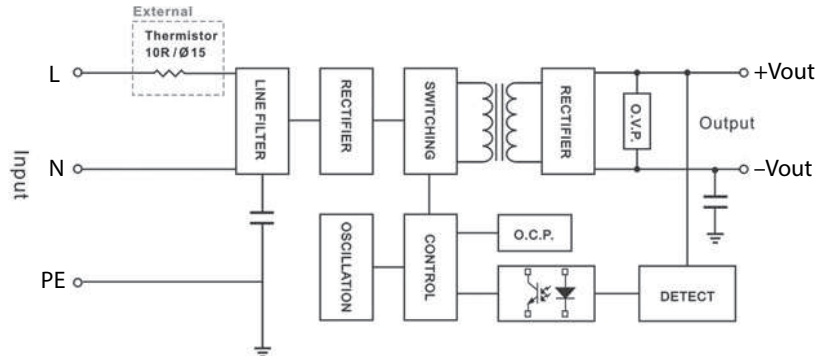
All specifications valid at nominal voltage, resistive full load and  $+25^{\circ}\text{C}$  after warm-up time, unless otherwise stated.

### Supporting Documents

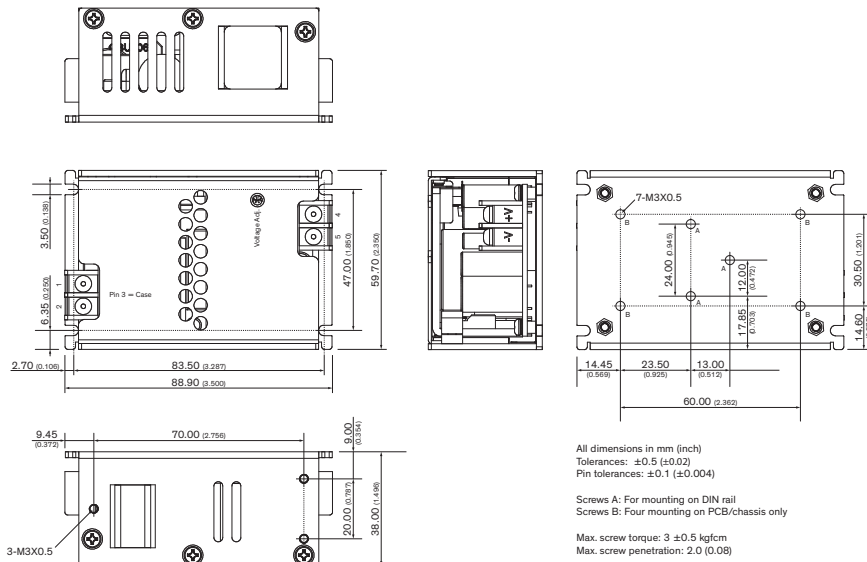
Overview Link (for additional Documents)

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

### Blockdiagram



### Outline Dimensions



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

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