

- 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



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	90 - 264 VAC (Full Range)
	- DC Range	120 - 370 VDC (Designed for, no certification)
Input Frequency		47 - 63 Hz
Input Current	- Full Load & Vin = 230 VAC	1 mA max.
	- Full Load & Vin = 115 VAC	2 mA max.
Power Consumption	- at no Load	300 mW max. (Ready to meet ErP directive)
Input Inrush Current	- at 230 VAC	70 A max.
	- at 115 VAC	35 A max.

(An external Thermistor has to be integrated in the circuit at the converter input L. Thermistor recommendation: 10R / 15z)

### Output Specifications

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

### Safety Specifications

Safety Standards	- IT / Multimedia Equipment	IEC 60950-1 EN 60950-1 UL 60950-1
	- 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

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

## EMC Specifications

EMC 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	
EMC 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)	EN 61000-4-4, $\pm 2$ kV, perf. criteria A	
	- Surge	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	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

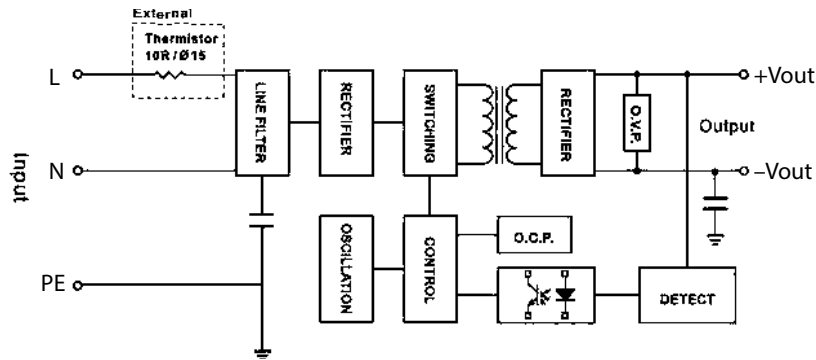
Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-30°C to +70°C
	- Storage Temperature	-50°C to +85°C
Power Derating	- High Temperature	see application note <a href="http://www.tracopower.com/overview/txh060">www.tracopower.com/overview/txh060</a>
	- Low Input Voltage	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	4'242 VDC
	- Input to Case or PE, 60 s	2'121 VDC
	- Output to Case or PE, 60 s	707 VDC
Creepage	- Input to Output	5 mm min.
Clearance	- Input to Output	4 mm min.
Leakage Current	- Earth Leakage Current	1000 $\mu$ A max.
	- Touch Current	750 $\mu$ A max.
Reliability	- Calculated MTBF	130'000 h (MIL-HDBK-217F, ground benign)
Environment	- Vibration	3 axis, 10 - 500 Hz, 2 g, 10 min/cycle, 60 min
Connection Type		Screw Terminal
Weight		220 g
Environmental Compliance	- Reach	<a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a>
	- RoHS	<a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a>

## Supporting Documents

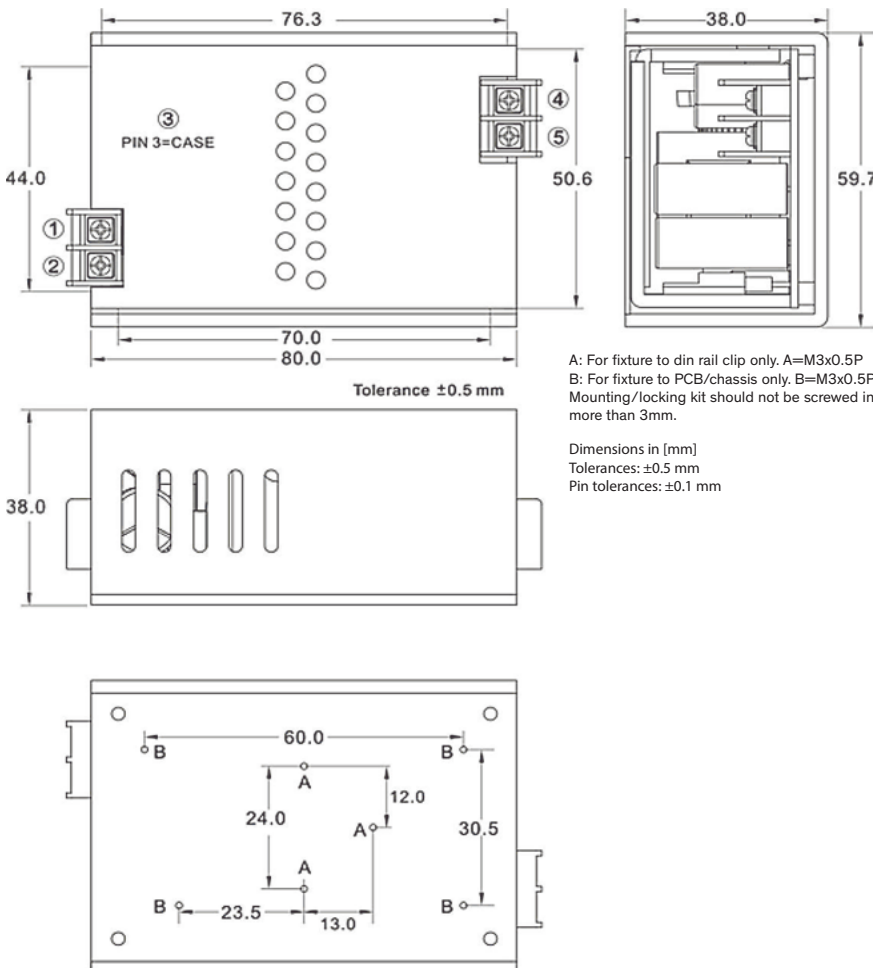
Overview Link (for additional Documents)	<a href="http://www.tracopower.com/overview/txh060">www.tracopower.com/overview/txh060</a>
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### Blockdiagram



### Outline Dimensions



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

A: For fixture to din rail clip only, A=M3x0.5P  
 B: For fixture to PCB/chassis only, B=M3x0.5P  
 Mounting/locking kit should not be screwed in more than 3mm.

Dimensions in [mm]  
 Tolerances:  $\pm 0.5$  mm  
 Pin tolerances:  $\pm 0.1$  mm