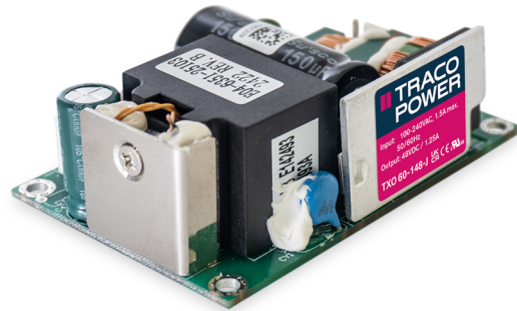


- Compact open frame power supply with pin connectors
- Universal input range 85 to 264 VAC
- Convection cooled (no-fan)
- Operating temperature range: -20°C to +70°C
- Internal EN55032 class B filter
- Short circuit, overvoltage and overload protection
- IEC/EN/UL 62368-1 safety approvals
- Compliance to EN 61000-3-2
- 3-year product warranty



UL 62368-1 IEC 62368-1

The TXO 60 is a compact 60 Watt AC/DC open frame module with reinforced I/O isolation designed for a wide range of cost sensitive applications. Excellent temperature behaviour allows full load operation from -20°C to +50°C while going up to +70°C with derating. The TXO 60 series features short circuit protection, over current limitation and overvoltage protection and complies with European EMC standards and the Low Voltage Directive (LVD).

### Models

Order Code	Output Power max.	Output Voltage nom.	Output Current max.	Efficiency typ.
TXO 60-112-J	60 W	12 VDC	5'000 mA	85 %
TXO 60-115-J		15 VDC	4'000 mA	85 %
TXO 60-124-J		24 VDC	2'500 mA	85 %
TXO 60-148-J		48 VDC	1'250 mA	85 %

### Options

<b>TCI 130-DC</b>	- Optional Cable: <a href="http://www.tracopower.com/overview/tci130-dc">www.tracopower.com/overview/tci130-dc</a>
<b>TCI-AC1</b>	- Optional Cable: <a href="http://www.tracopower.com/overview/tci-ac1">www.tracopower.com/overview/tci-ac1</a>
<b>on demand</b> (backorder with MOQ non stocking item)	- Optional model with 36 VDC and 1'670 mA - Optional model with 56 VDC and 1'070 mA

### Input Specifications

Input Voltage	- AC Range	Operational Range: <b>85 - 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>irrelevant</b>
Input Frequency		Operational Range: <b>47 - 63 Hz</b> Certified: <b>50/60 Hz</b>
Power Consumption	- No load & Vin = 230 VAC - No load & Vin = 115 VAC	<b>100 mW max.</b> (Ready to meet ErP directive) <b>100 mW max.</b>
Input Current	- Full load & Vin = 230 VAC - Full load & Vin = 115 VAC	<b>750 mA max.</b> <b>1'250 mA max.</b>
Input Inrush Current	- At 230 VAC - At 115 VAC	<b>80 A max.</b> <b>40 A max.</b>
Input Protection		<b>T 3.15 A / 250 VAC</b> (Internal Fuse in L)
Recommended Input Fuse		<b>3'150 mA</b> (slow blow) (The need of an external fuse has to be assessed in the final application.)

### Output Specifications

Voltage Set Accuracy		<b>±2% max.</b>
Regulation	- Input Variation (Vmin - Vmax) - Load Variation (10 - 100%)	<b>0.5% max.</b> <b>3% max.</b>
Ripple and Noise (20 MHz Bandwidth)		12 VDC model: <b>120 mVp-p typ.</b> (w/ 10 µF Alu    0.1 µF MLCC) 15 VDC model: <b>150 mVp-p typ.</b> (w/ 10 µF Alu    0.1 µF MLCC) 24 VDC model: <b>240 mVp-p typ.</b> (w/ 10 µF Alu    0.1 µF MLCC) 36 VDC model: <b>360 mVp-p typ.</b> (w/ 10 µF Alu    0.1 µF MLCC) 48 VDC model: <b>480 mVp-p typ.</b> (w/ 10 µF Alu    0.1 µF MLCC) 56 VDC model: <b>560 mVp-p typ.</b> (w/ 10 µF Alu    0.1 µF MLCC)
Capacitive Load		12 VDC model: <b>4'600 µF max.</b> 15 VDC model: <b>3'300 µF max.</b> 24 VDC model: <b>1'800 µF max.</b> 36 VDC model: <b>1'060 µF max.</b> 48 VDC model: <b>500 µF max.</b> 56 VDC model: <b>360 µF max.</b>
Minimum Load		<b>Not required</b>
Temperature Coefficient		<b>±3 %/K max.</b>
Hold-up Time	- At 230 VAC - At 115 VAC	<b>60 ms min.</b> <b>15 ms min.</b>
Start-up Time	- At 230 VAC - At 115 VAC	<b>1.5 s max.</b> <b>3 s max.</b>
Short Circuit Protection		<b>Continuous, Automatic recovery</b>
Output Current Limitation		<b>110 - 200% of Iout max.</b>
Overvoltage Protection		<b>110 - 170% of Vout nom.</b> (Latch mode)
Transient Response	- Response Deviation - Response Time	<b>3% typ. / 5% max.</b> (50% to 75% Load Step) <b>1 ms typ. / 1.5 ms max.</b> (50% to 75% Load Step)

### Safety Specifications

Standards	- IT / Multimedia Equipment  - Certification Documents	<b>EN 62368-1</b> <b>IEC 62368-1</b> <b>UL 62368-1</b> <a href="http://www.tracopower.com/overview/txo60">www.tracopower.com/overview/txo60</a>
Protection Class		<b>Class I &amp; II</b> (Prepared): <b>Reinforced Insulation</b>
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 B (internal filter) FCC 47 Part 15 class B (internal filter)	
	- Radiated Emissions	EN 55032 class B (internal filter) FCC 47 Part 15 class B (internal filter)	
	- Harmonic Current Emissions	EN 61000-3-2, class A	
	- Voltage Fluctuations & Flicker	EN 61000-3-3	
EMS (Immunity)	- Electrostatic Discharge	EN 55035 (Multimedia) 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, 3 V/m, perf. criteria A	
	- EFT (Burst) / Surge	EN 61000-4-4, $\pm 1$ kV, perf. criteria A	
	- Conducted RF Disturbances	L to L: EN 61000-4-5, $\pm 1$ kV, perf. criteria A	
	- PF Magnetic Field	EN 61000-4-6, 3 Vrms, perf. criteria A	
	- Voltage Dips & Interruptions	Continuous: EN 61000-4-8, 1 A/m, perf. criteria A 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 B	
	EMC / Environmental	- Certification Documents	<a href="http://www.tracopower.com/overview/txo60">www.tracopower.com/overview/txo60</a>

## General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-20°C to +70°C
	- Approved Ambient Temp.	+70°C max. (for 50% load) +50°C max. (for 100% load) (for compliance to 62368-1)
	- Storage Temperature	-40°C to +85°C
Power Derating	- High Temperature	2.5 %/K above 50°C
	- Low Input Voltage	2 %/V below 90 VAC
	See application note:	<a href="http://www.tracopower.com/overview/txo60">www.tracopower.com/overview/txo60</a>
Cooling System		Natural convection (20 LFM)
Altitude During Operation		2'000 m max.
Regulator Topology		Flyback Converter
Switching Frequency		65 kHz typ. (PWM)
Insulation System		Reinforced Insulation
Working Voltage (rated)		576 VAC
Isolation Test Voltage	- Input to Output, 60 s	3'000 VAC (4'242 VDC)
Creepage	- Input to Output	6 mm min.
Clearance	- Input to Output	6 mm min.
Isolation Resistance	- Input to Output, 500 VDC	100 M $\Omega$ min.
Leakage Current	- Touch Current	100 $\mu$ A max.
(at 264 VAC / 60 Hz)		
Reliability	- Calculated MTBF	100'000 h (MIL-HDBK-217F, ground benign)
Washing Process		Not allowed
Environment	- Vibration	2.4 g, 3 axis, random waveform, 30 min
	- Mechanical Shock	20 g, 3 axis, 6 shocks
Housing Type		Open Frame
Mounting Type		Chassis Mount
Connection Type		Pin Connector
Weight		120 g

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

Environmental Compliance - REACH Declaration

[www.tracopower.com/info/reach-declaration.pdf](http://www.tracopower.com/info/reach-declaration.pdf)

- RoHS Declaration

REACH SVHC list compliant

REACH Annex XVII compliant

[www.tracopower.com/info/rohs-declaration.pdf](http://www.tracopower.com/info/rohs-declaration.pdf)

Exemptions: 7a

(RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule))

- SCIP Reference Number

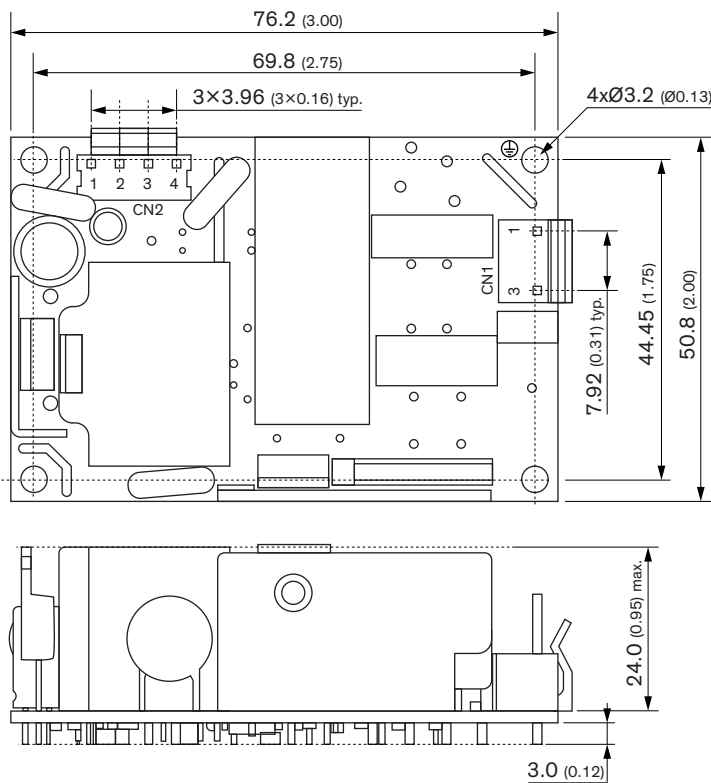
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### Supporting Documents

Overview Link (for additional Documents)

[www.tracopower.com/overview/txo60](http://www.tracopower.com/overview/txo60)

### Outline Dimensions



Dimensions in mm (inch)

General tolerances:  $\pm 0.5$  ( $\pm 0.02$ )

Mounting screw tightening torque: 0.59 Nm max. (6.0 kgfcm max.)

### Pin connectors

Input (CN1)		Output (CN2)	
Pin	Function	Pin	Function
1	AC (L)	1	-Vout
3	AC (N)	2	
		3	+Vout
		4	

**Input:** JST series, B3P-VH(LF)(SN), 3.96mm mates with JST crimp terminal: SVH-21T-P1.1 or equivalent and terminal housing: VHR-3N or equivalent

**Output:** JST series, B4P-VH(LF)(SN), 3.96mm mates with JST crimp terminal: SVH-21T-P1.1 or equivalent and terminal housing: VHR-4N or equivalent