TRACO POWER

AC/DC Power Supply

TXO 200 Series, 200 Watt

- **Industrial AC/DC power supplies for cost sensitive applications in 4" x 3" package**
- **Universal input range 90 to 264 VAC**
- **Operating temperature range: -20°C to +70°C**
- **Protection class II prepared**
- **Internal EN 55032 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 200 is a compact 200 Watt AC/DC open frame module with reinforced I/O isolation designed for a wide range of cost sensitive applications. A high efficiency of 90% allows the TXO 200 to deliver 150 Watt up to +50°C with convection cooling and 200 Watt up to +50°C with forced air cooling, while going up to +70°C with derating. It comes with an active power factor correction and EMC characteristics dedicated for applications in industrial/automation and test & measurement fields making these power supplies an ideal solution for various industrial and cost sensitive applications.

Models

Order Code	Output Power max.	Output Voltage nom.	Output Current max. (Forced air cooling)	Output Current max. (Natural convection)	Efficiency typ.
TXO 200-112-J	200 W	12 VDC	16'670 mA	11'670 mA	89 %
TXO 200-115-J		15 VDC	13'340 mA	9'340 mA	89 %
TXO 200-124-J		24 VDC	8'340 mA	6'250 mA	90 %
TXO 200-148-J		48 VDC	4'170 mA	3'125 mA	90 %

Options

TCI-AC1	- Optional Cable: www.tracopower.com/overview/tci-ac1
TXO 300-DC	- Optional Cable: www.tracopower.com/overview/txo300-dc
on demand (backorder with MOQ non stocking item)	- Optional model with 36 VDC and 5'560 mA - Optional model with 56 VDC and 3'580 mA

Note - Total output power must not exceed 150 W for convection cooling applications

Input Specifications

Input Voltage	- AC Range	Operational Range:	90 - 264 VAC (Full Range)
		Rated Range:	100 - 240 VAC (Full Range)
	- DC Range	Operational Range:	120 - 370 VDC (Designed for, no certification)
		Polarity:	irrelevant
Input Frequency		Operational Range:	47 - 63 Hz
		Certified:	50/60 Hz
Power Consumption	- No load & Vin = 230 VAC		5'000 mW max.
	- No load & Vin = 115 VAC		8'500 mW max.
Input Current	- Full load & Vin = 230 VAC		1'100 mA max.
	- Full load & Vin = 115 VAC		2'100 mA max.
Input Inrush Current	- At 230 VAC		110 A max.
	- At 115 VAC		65 A max.
Power Factor	- At 230 VAC		0.9 min. (Active Power Factor Correction)
	- At 115 VAC		0.9 min. (Active Power Factor Correction)
Input Protection			T 4.0 A / 250 VAC (Internal Fuse in L & N)
Recommended Input Fuse			4'000 mA (slow blow) (The need of an external fuse has to be assessed in the final application.)

Output Specifications

Voltage Set Accuracy			±3% max.
Regulation	- Input Variation (Vmin - Vmax)		1% max.
	- Load Variation (10 - 100%)		3% max.
Ripple and Noise (20 MHz Bandwidth)		12 VDC model:	200 mVp-p max. (w/ 22 µF ELCO || 0.1 µF MLCC)
		15 VDC model:	200 mVp-p max. (w/ 22 µF ELCO || 0.1 µF MLCC)
		24 VDC model:	240 mVp-p max. (w/ 22 µF ELCO || 0.1 µF MLCC)
		36 VDC model:	360 mVp-p max. (w/ 22 µF ELCO || 0.1 µF MLCC)
		48 VDC model:	480 mVp-p max. (w/ 22 µF ELCO || 0.1 µF MLCC)
		56 VDC model:	560 mVp-p max. (w/ 22 µF ELCO || 0.1 µF MLCC)
Capacitive Load		12 VDC model:	20'000 µF max.
		15 VDC model:	16'000 µF max.
		24 VDC model:	8'000 µF max.
		36 VDC model:	4'700 µF max.
		48 VDC model:	2'600 µF max.
		56 VDC model:	2'000 µF max.
Minimum Load			Not required
Temperature Coefficient			±0.05 %/K max.
Hold-up Time	- At 230 VAC		10 ms min.
	- At 115 VAC		10 ms min.
Start-up Time	- At 230 VAC		3'500 ms max.
	- At 115 VAC		3'500 ms max.
Start-up Overshoot Voltage			10% max.
Short Circuit Protection			Continuous, Automatic recovery
Output Current Limitation			110 - 200% of Iout max.
Overvoltage Protection			105 - 150% of Vout nom.
Transient Response	- Response Deviation		5% typ. / 8% max. (50% to 75% Load Step)
	- Response Time		1'000 µs typ. / 2'000 µs max. (50% to 75% Load Step)

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

Safety Specifications

Standards	- IT / Multimedia Equipment	EN 62368-1 IEC 62368-1 UL 62368-1
	- Certification Documents	www.tracopower.com/overview/txo200
Protection Class		Class I & II (Prepared): Reinforced Insulation
Pollution Degree		PD 2
Over Voltage Category		OVC II

EMC Specifications

EMI (Emissions)	- Conducted Emissions		EN 55032 class A (internal filter) FCC 47 Part 15 class A (internal filter)
	- Radiated Emissions		EN 55032 class A (internal filter) FCC 47 Part 15 class A (internal filter)
	- Harmonic Current Emissions		EN 61000-3-2, class A
	- Voltage Fluctuations & Flicker		EN 61000-3-3
EMS (Immunity)			EN 55035 (Multimedia)
	- Electrostatic Discharge	Air:	EN 61000-4-2, ±8 kV, perf. criteria A
		Contact:	EN 61000-4-2, ±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, ±1 kV, perf. criteria A
		L to L:	EN 61000-4-5, ±1 kV, perf. criteria A
		L to PE:	EN 61000-4-5, ±2 kV, perf. criteria A
	- Conducted RF Disturbances		EN 61000-4-6, 3 Vrms, perf. criteria A
	- PF Magnetic Field	Continuous:	EN 61000-4-8, 1 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 B
		115 VAC / 60 Hz:	EN 61000-4-11 30%, 30 periods, perf. criteria B >95%, 300 periods, perf. criteria B

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		Depending on model
		See application note:	www.tracopower.com/overview/txo200
Over Temperature Protection Switch Off	- Protection Mode		95°C min. / 105°C typ. / 115°C max. (Automatic recovery at 60°C typ.)
	- Measurement Point		Internal IC temperature
Cooling System	- Option 1		Forced air cooling (with external fan, 15 CFM)
	- Option 2		Natural convection (20 LFM)
Fan Power Source	- Characteristic		Constant fan speed (continuous)
	- Output Voltage		12 VDC
	- Output Current		300 mA max.
Altitude During Operation			2'000 m max.
Regulator Topology			LLC Converter
Switching Frequency			100 - 260 kHz (PFM)
Insulation System			Reinforced Insulation
Working Voltage (rated)			528 VAC

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

Isolation Test Voltage	- Input to Output, 60 s	4'242 VDC
Creepage	- Input to Output	5 mm min.
	- Input to Case or PE	5 mm min.
	- Output to Case or PE	0.85 mm min.
Clearance	- Input to Output	3 mm min.
	- Input to Case or PE	3 mm min.
	- Output to Case or PE	0.85 mm min.
Isolation Resistance	- Input to Output, 500 VDC	100 MΩ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	1'630 pF typ. / 1'956 pF max.
Leakage Current (at 264 VAC / 60 Hz)	- Earth Leakage Current	300 µA max.
	- Touch Current	500 µA max.
Distance Through Isolation		0.16 mm
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, half sine, 10 ms, total 6 shocks
Housing Type		Open Frame
Mounting Type		Chassis Mount
Connection Type		Pin Connector
Weight		340 g
Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf
		REACH SVHC list compliant
		REACH Annex XVII compliant
	- RoHS Declaration	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	e0d3eec3-a4ef-49f3-8a6d-f45a9ef39acc

Supporting Documents

Overview Link (for additional Documents)	www.tracopower.com/overview/txo200

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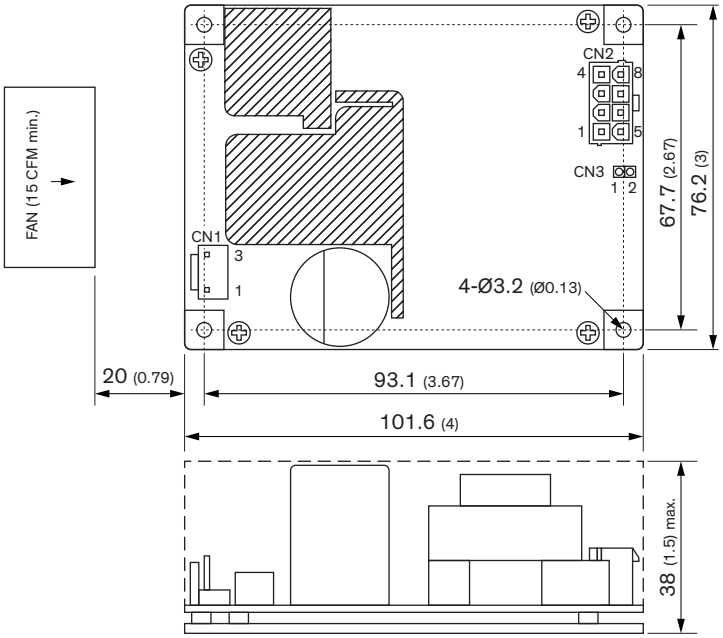
Outline Dimensions



Dimensions in mm (inch)
Tolerances: ±0.5 (±0.02)

Pin connectors			
Input (CN1)		**Output** (CN2)	
Pin	**Function**	**Pin**	**Function**
1	AC (L)	**1,2,5,6**	–Vout
3	AC (N)	**3,4,7,8**	+Vout

AUX (CN3)			
Pin	**Function**	**Pin**	**Function**
1	+Fan (12 V)	**2**	GND

Input: JST B3P-VH, 3.96 mm
mating connector: tbd

Output: Molex 39-28-1083 Mini-Fit Jr. Vertical Header, 2×4 pins, 4.20mm pitch
mating connector: Molex 39-01-2080 or equivalent

AUX: Molex 22-27-2021 Wafer, 2.54 mm pitch
mating connector: Molex 22-01-2021 or equivalent