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TRACO POWER

AC/DC Industrial Power Supply

TCI 240 Series, 240 Watt

- **Conduction cooled design approach**
- **Fanless operation with up to 100% output power**
- **Operating temperature range –30°C to +80°C**
- **I/O reinforced isolation 4250 VAC**
- **Over voltage category (OVC III)**
- **High efficiency up to 92%**
- **Operating up to 5000 m altitude**
- **Internal EN 55032 conducted class B filter**
- **Protection class I prepared**
- **3-year product warranty**



UL 62368-1 IEC 62368-1

The TCI 240 is a 240 Watt conduction cooled AC/DC encased power supply series with a 4250 VAC reinforced isolation system. Traco Power's new TCI line focuses on maximizing the proficiency of conduction cooled systems as it offers superior temperature behavior when mounted on a metal chassis or baseplate. This way the TCI 240 can deliver up to 100% of the maximum output power without the need for a fan. Excellent efficiency of up to 94% allows the TCI series to operate from –30 to +50°C without derating, while going up to +80°C with either load derating or forced cooling. They also meet OVC III requirements and can operate at up to 5000 m altitude. Active power factor correction, EMC characteristics dedicated for applications in industrial/automation and test & measurement fields and high reliability make the new TCI line an ideal solution for any demanding industrial application.

Models

Order Code	Output Power max.	Output Voltage nom. (adjustable)	Output Current max. (Forced air / Conduction cooling)	Output Current max. (Natural convection)	Efficiency typ.
TCI 240-112-J	240 W	12 VDC (11.4 - 12.6 VDC)	20'000 mA	19'500 mA	93 %
TCI 240-124-J		24 VDC (22.8 - 25.2 VDC)	10'000 mA	10'000 mA	93 %
TCI 240-148-J		48 VDC (45.6 - 50.4 VDC)	5'000 mA	5'000 mA	94 %

Options

TCI 240-DC	- Optional Cable: www.tracopower.com/overview/tci240-dc
TCI-AC1	- Optional Cable: www.tracopower.com/overview/tci-ac1
on demand (backorder with MOQ non stocking item)	- Optional models with U-Bracket

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Input Specifications

Input Voltage		Operational Range:	90 - 264 VAC (Full Range)
		Rated Range:	100 - 240 VAC (Full Range)
Input Frequency		Operational Range:	47 - 63 Hz
		Certified:	50/60 Hz
Power Consumption	- No load & Vin = 230 VAC		500 mW max. (Ready to meet ErP directive)
	- No load & Vin = 115 VAC		500 mW max.
Input Current	- Full load & Vin = 230 VAC		1'500 mA max.
	- Full load & Vin = 115 VAC		3'000 mA max.
Input Inrush Current	- At 230 VAC		90 A max.
	- At 115 VAC		45 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 A / 250 VAC (Internal Fuse in L & N)
Recommended Input Fuse			(The need of an external fuse has to be assessed in the final application.)

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)		12 VDC model:	120 mVp-p max. (w/ 0.1 µF ceramic || 47 µF KY)
		24 VDC model:	240 mVp-p max. (w/ 0.1 µF ceramic || 47 µF KY)
		48 VDC model:	480 mVp-p max. (w/ 0.1 µF ceramic || 47 µF KY)
Capacitive Load		12 VDC model:	8'000 µF max.
		24 VDC model:	3'000 µF max.
		48 VDC model:	470 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		900 ms max.
	- At 115 VAC		900 ms max.
Short Circuit Protection			Continuous, Automatic recovery (Level 1, nom.) Latch (Level 2, instantaneous high current)
Output Current Limitation			108 - 192% of Iout max.
Overvoltage Protection			111 - 130% of Vout nom.
Transient Response	- Response Deviation		3% typ. / 5% max. (25% to 100% Load Step)
	- Response Time		500 µs typ. / 750 µs max. (25% to 100% Load Step)

Safety Specifications

Standards	- IT / Multimedia Equipment	EN 62368-1 IEC 62368-1 UL 62368-1
	- Certification Documents	www.tracopower.com/overview/tci240
Protection Class		Class I (Prepared): Connection to PE
Pollution Degree		PD 2
Over Voltage Category		OVC II OVC III

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

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EMC Specifications

EMI (Emissions)	- Conducted Emissions		EN 55032 class B (internal filter)
	- Radiated Emissions		EN 55032 class A (internal filter)
	- Harmonic Current Emissions		EN 61000-3-2, class A
EMS (Immunity)			EN 55035 (Multimedia)
	- Electrostatic Discharge	Air:	EN 61000-4-2, ±4 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%, 250 periods, perf. criteria B
		115 VAC / 60 Hz:	EN 61000-4-11 30%, 25 periods, perf. criteria A >95%, 250 periods, perf. criteria B
EMC / Environmental	- Certification Documents		www.tracopower.com/overview/tci240

General Specifications

Relative Humidity			90% max. (non condensing)
Temperature Ranges	- Operating Temperature		–30°C to +80°C
	- Storage Temperature		–30°C to +80°C
Power Derating	- High Temperature		Depending on model
	- Low Input Voltage		2 %/V below 100 VAC
		See application note:	www.tracopower.com/overview/tci240
Over Temperature Protection Switch Off	- Protection Mode		115°C min. / 120°C typ. / 125°C max. (Automatic recovery at 90°C typ.)
	- Measurement Point		Internal IC temperature
Cooling System			Forced air (with external fan, 8 CFM) Natural convection (20 LFM) Conduction Cooling (with a 300 x 300 x 3.0 mm aluminum plate)
Altitude During Operation			4'000 m max. (for OVC III) 5'000 m max. (for OVC II)
Regulator Topology			LCC Converter
Switching Frequency			90 - 132 kHz (PFM) 110 kHz typ. (PFM)
Insulation System			Reinforced Insulation
Working Voltage (rated)			280 VAC
Isolation Test Voltage	- Input to Output, 60 s		4'250 VAC (6'000 VDC)
	- Input to Case or PE, 60 s		2'830 VAC (4'000 VDC)
	- Output to Case or PE, 60 s		1'500 VAC (2'121 VDC)
Isolation Resistance	- Input to Output, 500 VDC		100 MΩ min.
Leakage Current (at 264 VAC / 63 Hz)	- Earth Leakage Current		750 µA max.
Distance Through Isolation			7.1 mm
Reliability	- Calculated MTBF		400'000 h (MIL-HDBK-217F, ground benign)
Washing Process			Not allowed
Environment	- Vibration		IEC 60068-2-6 2 g, 3 axis, 60 min, 10-500 Hz, 10 min/cycle
	- Mechanical Shock		IEC 60068-2-27 50 g, 3 axis, half sine, 11 ms
Housing Material			Aluminum

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

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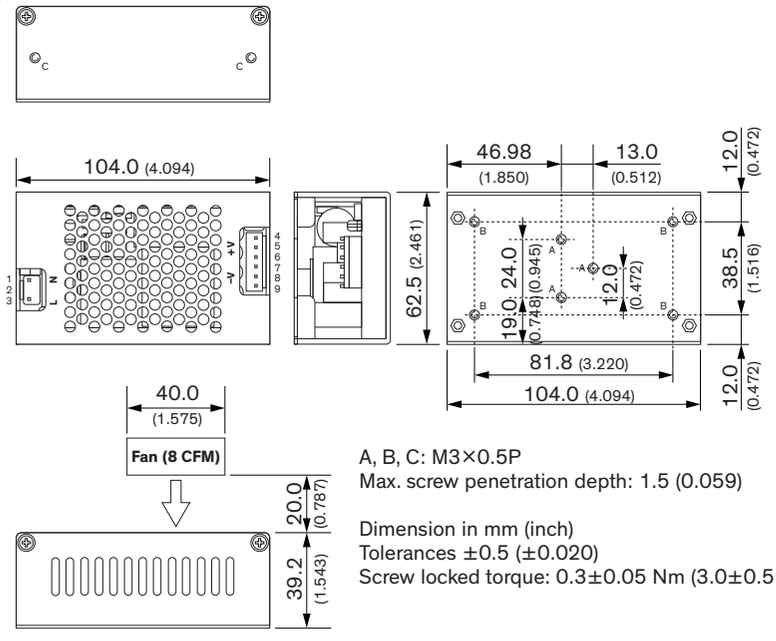
Potting Material		Silicone (UL 94 V-0 rated) (the converter is partly potted on the bottom)
Housing Type		Metal Case
Mounting Type		Chassis Mount
Connection Type		Pin Connector
Weight		365 g (for standard version) 650 g (for optional U-Bracket models)
Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf
		REACH SVHC list compliant REACH Annex XVII compliant
	- RoHS Declaration	www.tracopower.com/info/rohs-declaration.pdf
		Exemptions: 7a, 7c-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).)
	- SCIP Reference Number	0841b696-b53c-4fae-a062-5132d1598eab

Supporting Documents

Overview Link (for additional Documents)	www.tracopower.com/overview/tci240

Outline Dimensions

Standard version



A, B, C: M3×0.5P
Max. screw penetration depth: 1.5 (0.059)

Dimension in mm (inch)
Tolerances ±0.5 (±0.020)
Screw locked torque: 0.3±0.05 Nm (3.0±0.5 kgcfm)

Pin connectors

Input		Output	
Pin	**Function**	**Pin**	**Function**
1	AC (N)	**4-6**	+Vout
2	No Pin	**7-9**	–Vout
3	AC (L)		

Case

(no dedicated connector)

Pos	Function
A	For mounting on chassis only
B	For mounting on PCB or chassis, and connecting PE
C	For connecting PE only

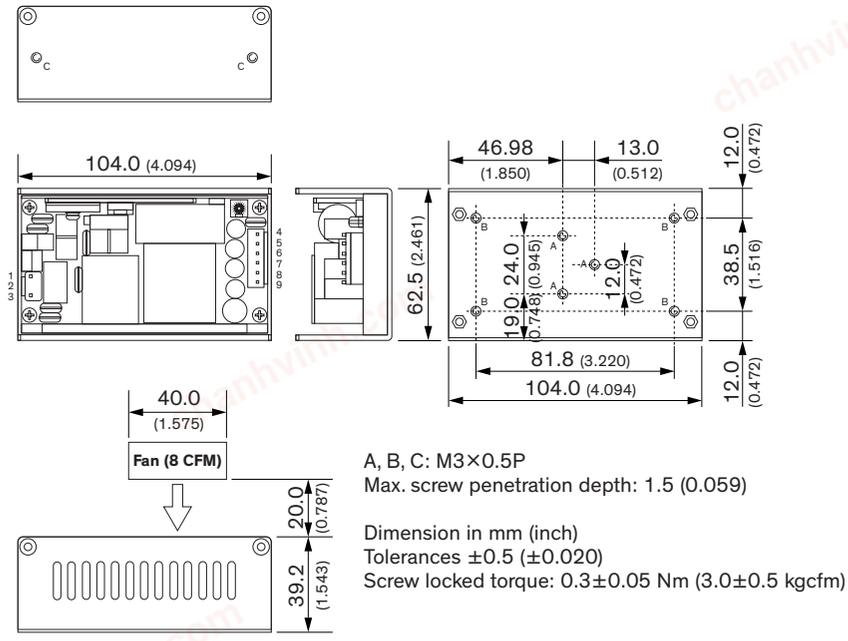
Input: JST series
mates with JST crimp terminal: SVH-41T-P1.1 or Equivalent
and terminal housing: VHR-3N or Equivalent

Output: JST series
mates with JST crimp terminal: SVH-41T-P1.1 or Equivalent
and terminal housing: VHR-6N or Equivalent

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

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Optional version with U-Bracket



A, B, C: M3×0.5P
Max. screw penetration depth: 1.5 (0.059)

Dimension in mm (inch)
Tolerances ±0.5 (±0.020)
Screw locked torque: 0.3±0.05 Nm (3.0±0.5 kgcfm)

Pin connectors			
Input		Output	
Pin	Function	Pin	Function
1	AC (N)	4-6	+Vout
2	No Pin	7-9	–Vout
3	AC (L)		

Case	
(no dedicated connector)	
Pos	Function
A	For mounting on chassis only
B	For mounting on PCB or chassis, and connecting PE
C	For connecting PE only

Input: JST series
mates with JST crimp terminal: SVH-41T-P1.1 or Equivalent
and terminal housing: VHR-3N or Equivalent

Output: JST series
mates with JST crimp terminal: SVH-41T-P1.1 or Equivalent
and terminal housing: VHR-6N or Equivalent

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