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Industrial Power Supplies

TCL Series, 24 to 240 Watt

UL 60950 UL 508C UL 60950-1

Features

- For industrial, office and residential applications
- Ultracompact plastic housing
- Connection by spring clamp terminals or detachable screw terminal block
- Reliable snap-on mounting on DIN-rails
- Adaptor for wall mounting
- Universal input 85–264 VAC, 50/60 Hz
- Models with 5, 12, 24 & 48 VDC output
- Output voltage adjustable
- Power OK signal
- Low ripple and noise
- Overload and short-circuit protection
- Parallel operation possible
- Worldwide safety approvals
- Redundancy module
- 3-year product warranty



The TRACO POWER TCL series is a family of DIN-rail power supplies with an excellent price/performance ratio. With tightly regulated output voltage and high immunity against electrical disturbances on the mains they provide a reliable power source for sensitive loads in industrial process controls, machine tools and other equipment exposed to a difficult industrial environment. Compact size, light weight, easy snap-on mounting on DIN-rails and the choice of two connection terminal versions are other features of these power supplies. The TCL series complies with all major safety standards for Europe (EN60950-1, EN50178), North America (UL/cUL 60950, UL 508 listed) or elsewhere in the world (CB-Report).

Models

Order Code	Input Voltage Ranges	Output Power max.	*Output Voltage nom.	Output Current max.	Connection
TCL 024–105	85 – 264 VAC Universal Input 50/60 Hz 85 – 375 VDC	20 W	5 VDC	4.0 A	Detachable screw terminal blocks
TCL 024–112		24 W	12 VDC	2.0 A	
TCL 024–124			24 VDC	1.0 A	
TCL 060–112		48 W	12 VDC	4.0 A	
TCL 060–124		60 W	24 VDC	2.5 A	
TCL 060–148			48 VDC	1.25 A	
TCL 120–112		96 W	12 VDC	8.0 A	
TCL 120–124		120 W	24 VDC	5.0 A	
TCL 240–124	85–132/187–264 VAC	240 W	24 VDC	10.0 A	
TCL 024–124C	85 – 264 VAC Universal Input 50/60 Hz 85 – 375 VDC	24 W	24 VDC	1.0 A	Spring clamp terminals
TCL 060–112C		48 W	12 VDC	4.0 A	
TCL 060–124C		60 W	24 VDC	2.5 A	
TCL 060–148C			48 VDC	1.25 A	
TCL 120–112C		96 W	12 VDC	8.0 A	
TCL 120–124C		120 W	24 VDC	5.0 A	

* adjustable

Input Specifications

Input voltage range			**85–264 VAC/85–375 VDC**
		TCL 240 model:	**85–132/187–264 VAC** autoselect (no DC input)
Output derating	– at operation between 85...93 VAC/85...130 VDC		**15% for TCL 060 & TCL 120** **20% for TCL 024-112 & TCL 024-124 & TCL 240** **30% for TCL 024-105**
Input frequency			**47–63 Hz**
Harmonic limits			**EN 61000-3-2, Class A**
Input current at full load (typ.) (115 VAC / 230 VAC)		TCL 024 models:	**0.35 A / 0.2 A**
		TCL 060 models:	**1.2 A / 0.6 A**
		TCL 120 models:	**2.0 A / 1.0 A**
		TCL 240 model:	**3.3 A / 1.7 A**
Recommended circuit breaker		TCL 240 model:	**10 A** (characteristic C or slow blow fuse)
		all other models:	**5 A** (characteristic C or slow blow fuse)

Output Specifications

Output voltage adjustable range (potentiometer on frontpanel)		5.1 VDC model:	**5.0 – 5.25 VDC**
		12 VDC models:	**12 – 15 VDC** (12 - 16 VDC for TCL 024-112)
		24 VDC models:	**24 – 28 VDC**
		48 VDC models:	**48 – 56 VDC**
Output regulation (10 to 90% load variation)			**2.5 % (1 % for TCL 60-112)**
Ripple and noise (20MHz bandwidth)			**<50 mV pk-pk**
Electronic short circuit protection			**current limitation at 120 % typ.** **(constant current, automatic recovery** **TCL 24 models: foldback, automatic recovery)**
Parallel operation			**output current characteristic suitable for parallel operation of max. 5 units** (not for TCL 240-124)
Overvoltage protection, trigger point		5.1 VDC model:	**<6.5 VDC**
		12/24 VDC models:	**<40 VDC**
		48 VDC models:	**<60 VDC**
Hold-up time (115 VAC / 230 VAC)			**min. 15 ms / min. 125 ms**
		TCL 240 model:	**min. 15 ms / min. 40 ms**
Power OK signal (TCL 60, 120 & 240 models only)			**trigger point** / **output signal** (reference to – Vout)
		12 VDC models:	**>11V** / **11.0 V ±1.0 V / 60 mA max.**
		24 VDC models:	**>22V** / **22.0 V ±2.0 V / 30 mA max.**
		48 VDC models:	**>44V** / **44.0 V ±4.0 V / 15 mA max.**

General Specifications

Temperature ranges	– Operating	**–10°C to +70°C max.**
	– Storage (non operating)	**–25°C to +85°C**
Temperature derating	– at 187...264 VAC or 265...375 VDC operation	**1.7 %/K above +50°C**
	– at 93...132 VAC or 130...187 VDC operation	**1.1 %/K above +40°C**
	– at 85...130 VDC operation	**1.3 %/K above +30°C**
Humidity (non condensing)		**95 % rel. H max.**
Temperature coefficient		**0.02 %/K**
Switching frequency		**55 – 180 kHz** depending on load (frequency modulation)
Efficiency		**88 % typ.**
Isolation voltage	– I/O isolation voltage (60 s)	**3000 VAC**

General Specifications

Reliability, calculated MTBF at +25°C (according to IEC-1709)	TCL 024 models:	**>2.68 Mio h**
	TCL 060 models:	**>2.70 Mio h**
	TCL 120 models:	**>1.62 Mio h**
	TCL 240 models:	**>1.38 Mio h**
Safety standards	– Information technology equipment	**IEC 60950-1, EN 60950-1 (output SELV), UL Std. 60950-1 (2nd Edition) +Am1:2011, CAN/CSA-C22.2 No. 60950-1-07 +Am1:2011**
	– Industrial control equipment	**UL 508**
	– Electronic equipment for power installation	**EN 50178**
	– Electrical equipment for machines	**EN 60204**
	– Safety transformers for SMPS	**EN 61558-2-16**
	– Measurement, Control & Laboratory	**IEC 61010-1, EN 61010-1 IEC 61010-2-201, EN 61010-2-201**
Safety approvals	– CB test certificate	**IEC 60950-1**
	– UL approval	**UL 508 listed, CSA C22.2 No. 14 File e210002** www.ul.com **-> certifications**
	– UL approval	**UL 60950, File e181381** (except TCL 240) www.ul.com **-> certifications**
	– CSA certification	**UL 60950-1, CSA 60950-1-03**
	– Certification documents	www.tracopower.com/overview/tcl
Environmental compliance	– Reach	www.tracopower.com/info/reach-declaration.pdf
	– RoHS	**RoHS directive 2011/65/EU**
Electromagnetic compatibility (EMC), emissions		**EN 61000-6-3**
Electromagnetic compatibility (EMC), immunity		**EN 61000-6-2**
Safety class		**degree of protection class 1**
Case protection		**IP 20** (IEC 60529)
Enclosure material		**plastic 94V-0 rated**
Mounting		**DIN-rails as per EN 50022-35x15/7.5** (snap-on with self-locking spring) **Adapter for wall-/chassis mounting (included)**
Installation instructions		www.tracopower.com/overview/tcl

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

TCL–REM240 Redundancy Module

This module enables redundant operation of any two TCL models by decoupling the 2 power supplies. It can also be used to separate sensitive loads from the main power source.



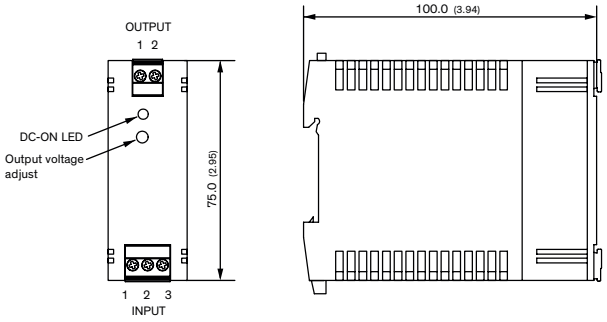
Order Code	Nominal Input Voltage	Input Voltage Range	Max Power per Input	Output Voltage	Output Current max.
TCL–REM240	5...48 VDC	5...60 VDC	200 W	Vin – 0.9 VDC	**8 A**

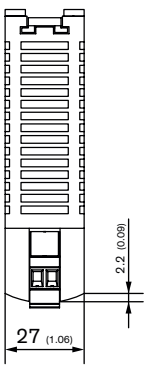
Specifications

Operating temperature	–10°C to +70°C max. (14°F ... +158°F) derating above +40°C (104°F): 1.5 %/K
Electromagnetic compatibility	in correspondence to connected units (no internal switching device)
Dimensions	same as model TCL 024 (see page 4)
Connection	detachable screw terminal block
Installation instructions	www.tracopower.com/overview/tcl

Case Dimensions

TCL 024 and TCL-REM240 models





Output	Input
1 +Vout	1 AC Ground
2 –Vout	2 Neutral
	3 Live

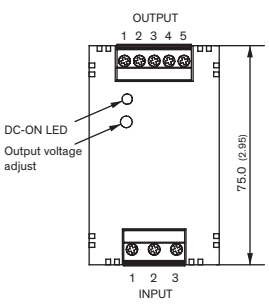
Max. terminal screw locked torque: 0.4 Nm

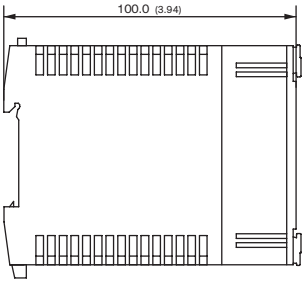
Weight: 140 g (4.9 oz)

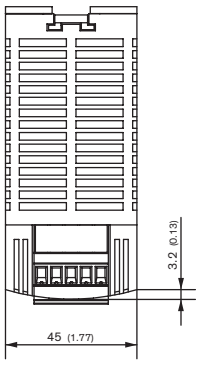
Dimensions in [mm], ( ) = Inch
Tolerances: ±0.5 mm (±0.02)

Case Dimensions

TCL 60 models





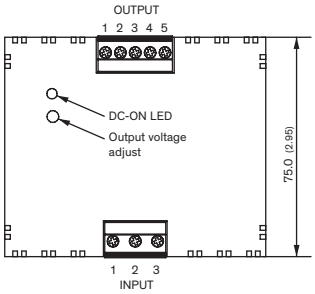


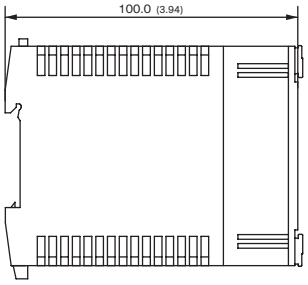
Output		Input	
1	+Vout	1	AC Ground
2	+Vout	2	Neutral
3	–Vout	3	Live
4	–Vout		
5	Power OK		

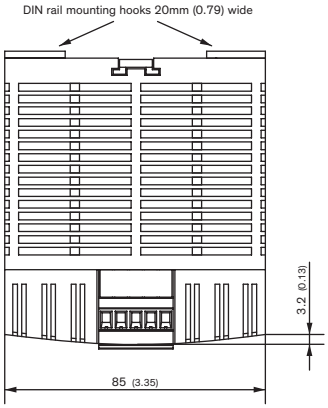
Max. terminal screw locked torque: 0.4 Nm

Weight: 265 g (9.4 oz)

TCL 120 models







Output		Input	
1	+Vout	1	AC Ground
2	+Vout	2	Neutral
3	–Vout	3	Live
4	–Vout		
5	Power OK		

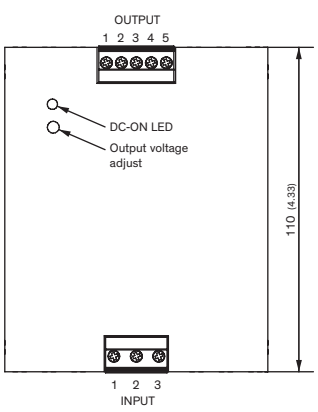
Max. terminal screw locked torque: 0.4 Nm

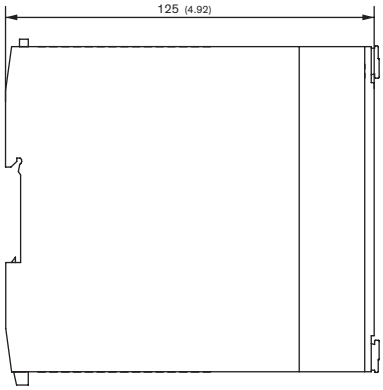
Weight: 440 g (15.5 oz)

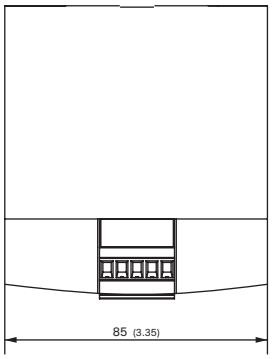
Dimensions in [mm], ( ) = Inch
Tolerances: ±0.5 mm (±0.02)

Case Dimensions

TCL 240 model



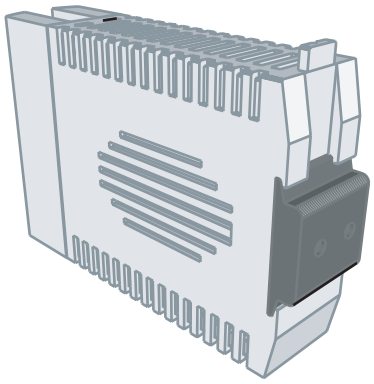




Output		Input	
1	+Vout	1	AC Ground
2	+Vout	2	Neutral
3	–Vout	3	Live
4	–Vout		
5	Power OK		

Max. terminal screw locked torque: 0.4 Nm

Weight: 950 g (33.5 oz)



Wall Mounting Bracket

Instead on a DIN-rail, the modules can be also mounted on a chassis or wall with help of a mounting bracket which is supplied as standard with each power supply

Dimensions in [mm], ( ) = Inch
Tolerances: ±0.5 mm (±0.02)

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