

#### Features

- Ultracompact Plastic Case
- Connection by Cage Clamps Terminals or Plug-in Screw Terminals
- Reliable snap-on Mounting on DIN-Rails
- Adaptor for Wall Mounting
- Universal Input 85-264 VAC, 50/60 Hz
- Models with 5, 12, 24 and 48VDC Output
- Output Voltage adjustable
- Power Good Signal
- Low Ripple and Noise
- Overload and Short-circuit Protection
- Parallel Operation possible
- Worldwide Safety Approvals
- 3 Year Product Warranty



The TRACOPOWER TCL series are a new generation 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, EN50178), North America (UL/cUL60950, UL508C listed) or elsewhere in the world (with CB-Report IEC60950).

Models								
Ordercode	Input Voltage Range	Output Power max.	*Output Voltage nom.	Output Current max.	Connection			
TCL 024-105 TCL 024-112 TCL 024-124	85 -264 VAC Universal Input 50 / 60 Hz		5.1 VDC	4.0 A	Plug-in Screw Terminals			
TCL 060-112 TCL 060-124 TCL 060-148			60 W	12 VDC 24 VDC 48 VDC		4.0 A 2.5 A 1.25 A		
			TCL 120-112 TCL 120-124	120 W		12 VDC 24 VDC	8.0 A 5.0 A	
		TCL 024-124C		24 W		24 VDC	1.0 A	
TCL 060-112C TCL 060-124C TCL 060-148C		60 W	48 VDC	12 VDC		4.0 A	Cage-Clamps	
				TCL 120-112C TCL 120-124C		120 W		12 VDC 24 VDC

\*Output adjustable

**Input Specifications**

Input voltage range	85...264 VAC / 85...375 VDC	
output derating at operation between 85...93VAC/85...130VDC:	15% for TCL 060 & TCL 120 models 20% for TCL 024-112 & TCL 024-124 30% for TCL 024-105	
Input frequency	47 – 63 Hz	
Harmonic limits	EN610000-3-2 Class A	
Input current at full load (typ.)	115 VAC	230 VAC
	TCL 24 models:	0.35 A      0.2 A
	TCL 60 models:	1.2 A      0.6 A
	TCL 120 models:	2.0 A      1.0 A
Recommended circuit breaker (characteristic C or slow blow fuse)	5.0 A	

**Output Specifications**

Output voltage adj. range (pot. meter 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	
Overvoltage protection, triggerpoint	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
Power good signal (TCL 60 & TCL 120 only)	trigger point	output signal (reference to – Vout)
	12 VDC models	>11V      11.0 V ±1.0V / 60 mA max.
	24 VDC models	>22V      22.0 V ±2.0V / 30 mA max.
	48 VDC models	>44V      44.0 V ±4.0V / 15 mA max.

**General Specifications**

Temperature ranges	– Operating	– 10 °C...+70 °C max.
	– Storage (non operating)	– 25 °C...+ 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

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

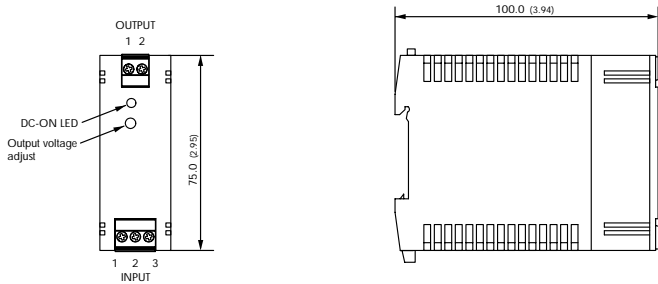
## General Specifications

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	according to IEC/EN 60950, UL 60950, UL 508, EN 50178, EN 60204, EN 61558-2-8	
Reliability, calculated MTBF @ 25°C (according to IEC-1709)	TCL 24 models	>2.68 Mio h
	TCL 60 models	>2.94 Mio h
	TCL 120 models	>1.62 Mio h
Safety standards	IEC 60950, EN 60950 (output SELV), UL 60950, UL 508, EN 50178, EN 60204, EN 61558-2-8. - NEC class 2 (TCL 60 models only)	
Safety approvals (TCL 24 models pending)	UL/cUL 60950 recognized, File E181381 UL 508C listed, File E210002 CB-Report per IEC 60950	
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 FR2010-110C (UL 94V-0 rated)	
Mounting	35 mm DIN-rails as per EN 50022-35x15/7.5 (snap-on with self-locking spring) Adapter for Wall-/Chassi Mounting (included)	
Options	output characteristic optimized for battery charging available on request	

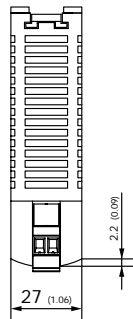
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

**Outline Dimensions mm (inches)**

**TCL 24**



**Weight: 140g (4.9 oz)**



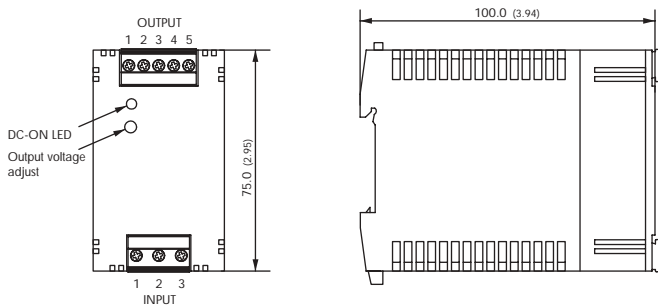
**Output**

- 1 +Vout
- 2 -Vout

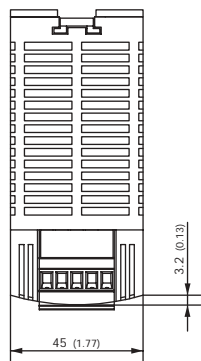
**Input**

- 1 AC Ground
- 2 Neutral
- 3 Live

**TCL 60**



**Weight: 265g (9.4 oz)**



**Output**

- 1 +Vout
- 2 +Vout
- 3 -Vout
- 4 -Vout
- 5 Power Good

**Input**

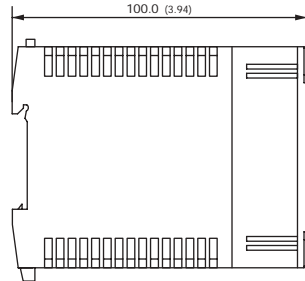
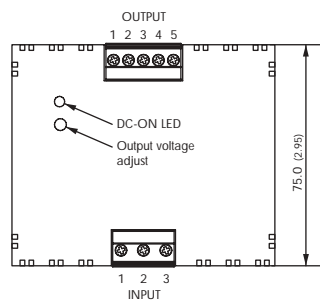
- 1 AC Ground
- 2 Neutral
- 3 Live

Tolerances:  $\pm 0.5\text{mm}$  ( $\pm 0.02$ )

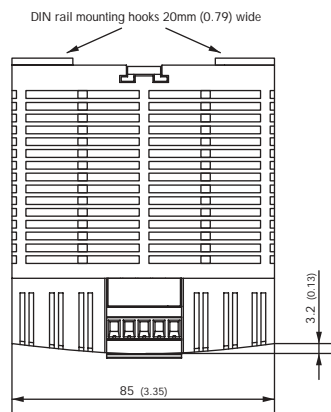
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

**Outline Dimensions mm (inches)**

TCL 120



Weight: 440g (15.5 oz)



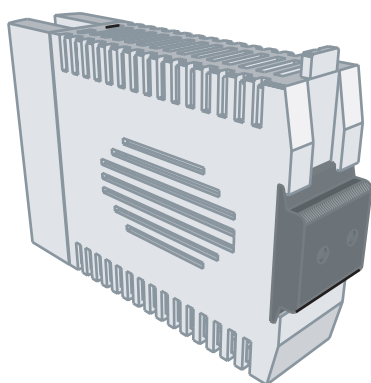
**Output**

- 1 +Vout
- 2 +Vout
- 3 -Vout
- 4 -Vout
- 5 Power Good

**Input**

- 1 AC Ground
- 2 Neutral
- 3 Live

Tolerances:  $\pm 0.5\text{mm}$  ( $\pm 0.02$ )



Wall Mounting

Instead on a DIN-rail, the module can be easily mounted on a chassis or wall with help of a mounting bracket which is supplied as standard with the DC/DC-Converter.

Specifications can be changed without notice