

### Features

- ◆ For Industrial, Office and Residential Application
- ◆ Ultracompact Plastic Housing
- ◆ Connection by Spring Clamp Terminals or plugable 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 48 VDC Output
- ◆ Output Voltage adjustable
- ◆ Power Good Signal
- ◆ Low Ripple and Noise
- ◆ Overload and Short-Circuit Protection
- ◆ Parallel Operation possible
- ◆ Worldwide Safety Approvals
- ◆ Redundancy Module
- ◆ 3 Year Product Warranty



The TRACOPOWER TCL series are 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, 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	24 W	5.1 VDC	4.0 A	Detachable Screw Terminal Blocks
12 VDC			2.0 A		
24 VDC			1.0 A		
TCL 060-112 TCL 060-124 TCL 060-148		60 W	12 VDC	4.0 A	
24 VDC			2.5 A		
48 VDC			1.25 A		
TCL 120-112 TCL 120-124		120 W	12 VDC	8.0 A	Spring Clamp Terminals
24 VDC			5.0 A		
TCL 024-124C			24 W	24 VDC	
TCL 060-112C TCL 060-124C TCL 060-148C		60 W	12 VDC	4.0 A	
24 VDC			2.5 A		
48 VDC			1.25 A		
TCL 120-112C TCL 120-124C	120 W	12 VDC	8.0 A		
24 VDC		5.0 A			

\*Output adjustable

### Input Specifications

Input voltage range output derating at operation between 85...93VAC/85...130VDC:	85...264 VAC / 85...375 VDC 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	EN61000-3-2 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 – Storage (non operating)	– 10 °C...+70 °C max. – 25 °C...+85 °C
Temperature derating	– at 187...264 VAC or 265...375 VDC operation – at 93...132 VAC or 130...187 VDC operation – at 85...130 VDC operation	1.7% /K above 50°C 1.1% /K above 40°C 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		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: TCL 60 models: TCL 120 models:	>2.68 Mio h >2.94 Mio h >1.62 Mio h

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

**General Specifications**

Safety standards	IEC 60950-1, EN 60950-1 (output SELV), UL 60950-1, UL 508, EN 50178, EN 60204, EN 61558-2-8. - NEC class 2 (TCL 60 models only)
Safety approvals	<ul style="list-style-type: none"> <li>- UL certification (not for TCL 024 models)</li> <li>- CSA certification</li> <li>- BG certification</li> </ul> <p><a href="http://www.ul.com">www.ul.com</a> -&gt; certifications UL/cUL 60950 rec., File E181381 UL/cUL 508C liste, File E210002 for UL/cUL 60950-1 <a href="http://www.tracopower.com/products/tcl_csa.pdf">www.tracopower.com/products/tcl_csa.pdf</a> for IEC 60950-1-03 <a href="http://www.tracopower.com/products/tcl_bg.pdf">www.tracopower.com/products/tcl_bg.pdf</a></p>
Electromagnetic compatibility (EMC), Emissions	EN 61000-6-3
Electromagnetic compatibility (EMC), Immunity	EN 61000-6-2 <a href="http://www.tracopower.com/products/TCL_SemiF47.pdf">www.tracopower.com/products/TCL_SemiF47.pdf</a>
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

**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.



**Models**

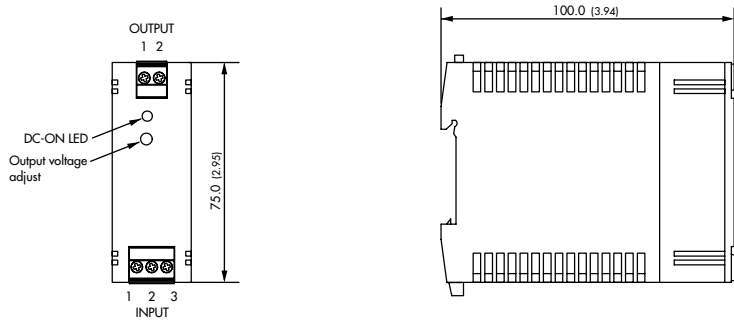
Order code	Inputs Vin	Max power per input	Output voltage	Output current max.	Connection
TCL-REM240	2 x 5...60 VDC	144 W	Vin - 0.9 VDC	8 A	detachable screw terminal block

**Specifications**

Operating temperature	- 10°C...+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 24 (see page 4)

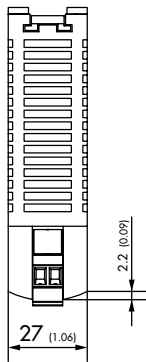
**Outline Dimensions mm (inches)**

**TCL 24 and TCL-REM240**

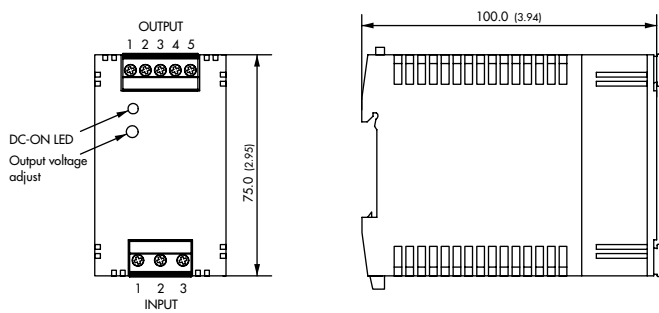


Output	Input
1 +Vout	1 AC Ground
2 -Vout	2 Neutral
	3 Live

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

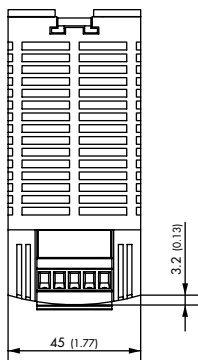


**TCL 60**



Output	Input
1 +Vout	1 AC Ground
2 +Vout	2 Neutral
3 -Vout	3 Live
4 -Vout	
5 Power Good	

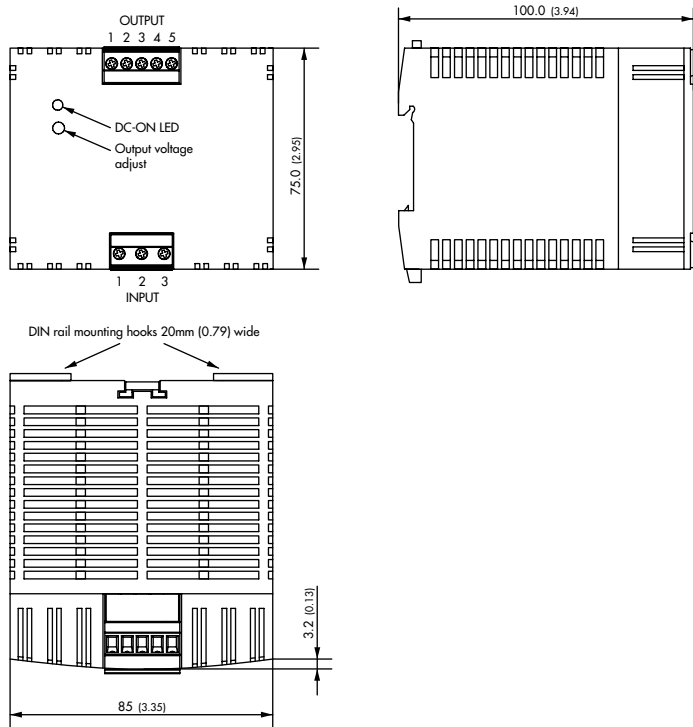
**Weight: 265g (9.4 oz)**



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

**Outline Dimensions mm (inches)**

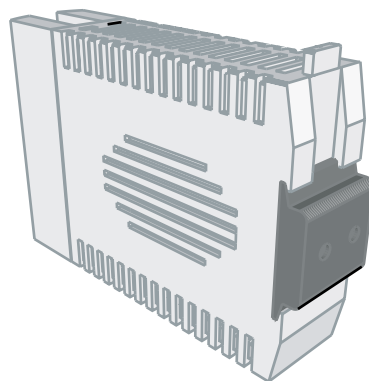
**TCL 120**



<b>Output</b>	<b>Input</b>
1 +Vout	1 AC Ground
2 +Vout	2 Neutral
3 -Vout	3 Live
4 -Vout	
5 Power Good	

**Weight:** 440g (15.5 oz)

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



**Wall Mounting Bracket**

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 each Power Supply

Specifications can be changed without notice