

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 | 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 W | 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 | | 85 – 375 VDC | 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 | Spring clamp terminals |
| TCL 024-124C | 85 – 264 VAC Universal Input 50/60 Hz | 24 W | 24 VDC | 1.0 A | |
| 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 | 85 – 375 VDC | 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: TCL 060 models: TCL 120 models: TCL 240 model: | 0.35 A / 0.2 A 1.2 A / 0.6 A 2.0 A / 1.0 A 3.3 A / 1.7 A |
| Recommended circuit breaker | TCL 240 model: all other models: | 10 A (characteristic C or slow blow fuse) 5 A (characteristic C or slow blow fuse) |

Output Specifications

| | | | | | | | | | | |
|--|--|--|---------------|--|------|----------------------------|------|----------------------------|------|----------------------------|
| Output voltage adjustable range (potentiometer on frontpanel) | 5.1 VDC model: 12 VDC models: 24 VDC models: 48 VDC models: | 5.0 – 5.25 VDC 12 – 15 VDC (12 - 16 VDC for TCL 024-112) 24 – 28 VDC 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: 12/24 VDC models: 48 VDC models: | <6.5 VDC <40 VDC <60 VDC | | | | | | | | |
| Hold-up time (115 VAC / 230 VAC) | TCL 240 model: | min. 15 ms / min. 125 ms min. 15 ms / min. 40 ms | | | | | | | | |
| Power OK signal (TCL 60, 120 & 240 models only) | 12 VDC models: 24 VDC models: 48 VDC models: | <table border="0"> <tr> <td>trigger point</td> <td>output signal (reference to – Vout)</td> </tr> <tr> <td>>11V</td> <td>11.0 V ±1.0 V / 60 mA max.</td> </tr> <tr> <td>>22V</td> <td>22.0 V ±2.0 V / 30 mA max.</td> </tr> <tr> <td>>44V</td> <td>44.0 V ±4.0 V / 15 mA max.</td> </tr> </table> | trigger point | output signal (reference to – Vout) | >11V | 11.0 V ±1.0 V / 60 mA max. | >22V | 22.0 V ±2.0 V / 30 mA max. | >44V | 44.0 V ±4.0 V / 15 mA max. |
| trigger point | output signal (reference to – Vout) | | | | | | | | | |
| >11V | 11.0 V ±1.0 V / 60 mA max. | | | | | | | | | |
| >22V | 22.0 V ±2.0 V / 30 mA max. | | | | | | | | | |
| >44V | 44.0 V ±4.0 V / 15 mA max. | | | | | | | | | |

General Specifications

| | | |
|---------------------------|--|---|
| Temperature ranges | – Operating – Storage (non operating) | –10°C to +70°C max. –25°C to +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 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 | <ul style="list-style-type: none"> - Information technology equipment - Industrial control equipment - Electronic equipment for power installation - Electrical equipment for machines - Safety transformers for SMPS - Measurement, Control & Laboratory |
| | 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 UL 508 EN 50178 EN 60204 EN 61558-2-16 IEC 61010-1, EN 61010-1 IEC 61010-2-201, EN 61010-2-201 |
| Safety approvals | <ul style="list-style-type: none"> - CB test certificate - UL approval - UL approval - CSA certification - Certification documents |
| | IEC 60950-1 UL 508 listed, CSA C22.2 No. 14 File e210002 www.ul.com -> certifications UL 60950, File e181381 (except TCL 240) www.ul.com -> certifications UL 60950-1, CSA 60950-1-03 www.tracopower.com/overview/tcl |
| Environmental compliance | <ul style="list-style-type: none"> - Reach - RoHS |
| | www.tracopower.com/info/reach-declaration.pdf 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.



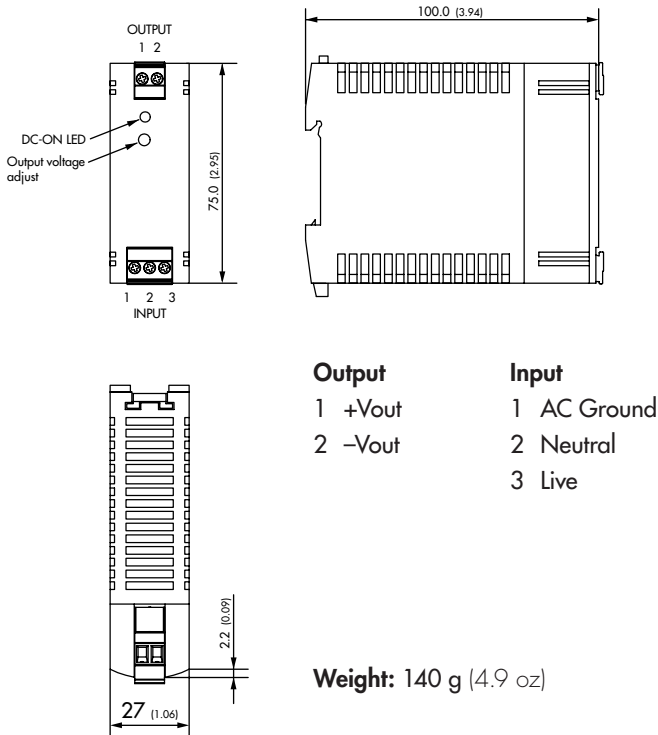
| Order Code | Nominal Input Voltage | Input Voltage Range | Max Power per Input | Output Voltage | Output Current max. |
|------------|-----------------------|---------------------|---------------------|--------------------|---------------------|
| TCL-REM240 | 5...48 VDC | 5...60 VDC | 200 W | $V_{in} - 0.9$ 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

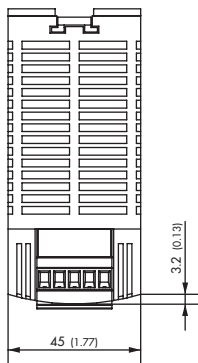
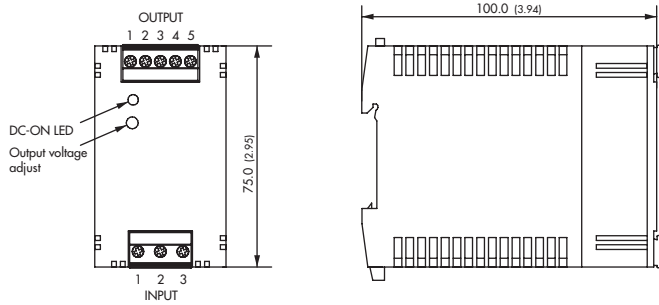
TCL 024 and TCL-REM240 models



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

Case Dimensions

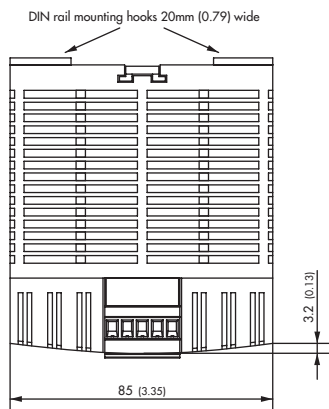
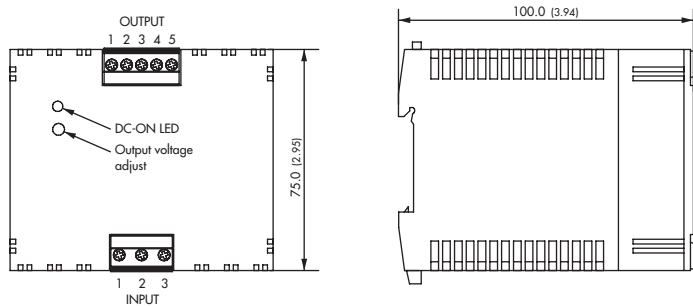
TCL 60 models



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

Weight: 265 g (9.4 oz)

TCL 120 models



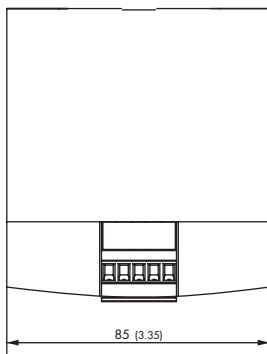
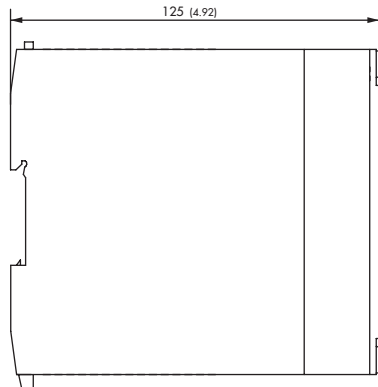
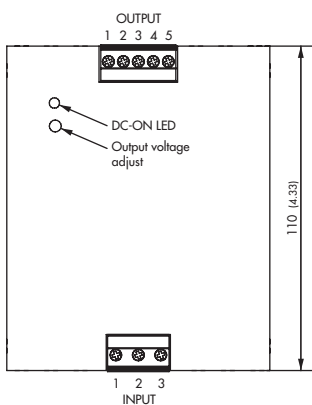
| Output | Input |
|------------|-------------|
| 1 +Vout | 1 AC Ground |
| 2 +Vout | 2 Neutral |
| 3 -Vout | 3 Live |
| 4 -Vout | |
| 5 Power OK | |

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 | |

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)