

### Features

- ◆ Ultra-wide input voltage range
- ◆ Output voltage adjustable
- ◆ Overload and short circuit protection
- ◆ Low ripple and noise
- ◆ I/O isolation 1500 VDC
- ◆ Compact, slim plastic case
- ◆ Reliable snap-on mount on DIN-rail
- ◆ Bracket for wall mount included
- ◆ 3-year product warranty



In the TCL range of DIN-rail power supplies are 6 models for DC input voltage available. The wide input ranges of 9.5–18 VDC resp. 18–75 VDC means these models can be operated from all popular DC supply voltage systems.

With tightly regulated output voltage these DC/DC converters provide a reliable power source for sensitive loads in industrial process controls, factory automation and other equipment exposed to a critical industrial environment. Further applications for these converters are isolation of a specific load or refreshing the 24 V bus voltage. Easy installation is provided with snap-on mounting on DIN-rails and detachable screw terminal block.

### Models

| Order Code     | Input Voltage Range | Output Voltage | Output Current max. |
|----------------|---------------------|----------------|---------------------|
| TCL 012-124 DC | 9.5 – 18.0 VDC      | 24 VDC         | 1.0 A               |
| TCL 024-105 DC | 18 – 75 VDC         | 5 VDC          | 5.0 A               |
| TCL 024-112 DC |                     | 12 VDC         | 2.0 A               |
| TCL 024-124 DC |                     | 24 VDC         | 1.0 A               |
| TCL 060-112 DC | 18 – 75 VDC         | 12 VDC         | 5.0 A               |
| TCL 060-124 DC |                     | 24 VDC         | 2.5 A               |

### Input Specifications

|  |   |  |
|--|---|--|
| Input power at no load                   |   | 1.0 Watt max.                            |
| Start-up voltage/under voltage shut down | TCL 012 model:<br>TCL 024 & TCL 060 models: | 8.4 VDC / 7.6 VDC<br>17.2 VDC / 15.7 VDC |
| Reverse polarity protection              |   | by internal fuse                         |
| Efficiency                               |   | 86 % typ.                                |

### Output Specifications

|                                       |   |  |
|---------------------------------------|---|--|
| Output voltage adj. range             | 5 VDC model:<br>12 VDC models:<br>24 VDC models:  | 5.0 – 5.25 VDC<br>12.0 – 15.0 VDC<br>24.0 – 28.0 VDC                       |
| Regulation                            | – Input variation $V_{in \text{ min.}}$ to $V_{in \text{ max.}}$<br>– Load variation 0...100% | 0.5 % max<br>0.5 % max   |
| Ripple and noise (20 MHz bandwidth)   |   | <50 mV pk-pk   |
| Electronic short circuit protection   |   | current limitation at 110 % typ.<br>(constant current, automatic recovery) |
| Overvoltage protection, trigger point | 5 VDC model:<br>12 VDC models:<br>24 VDC models:  | <6.5 V<br><24 V<br><42 V   |

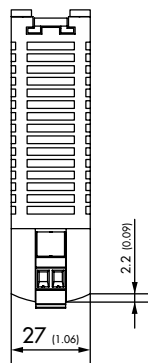
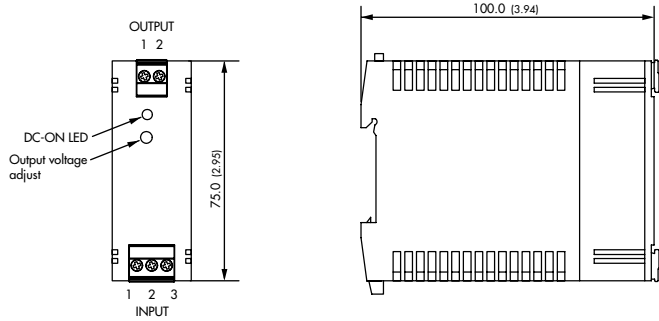
### General Specifications

|  |  |  |
|--|--|--|
| Temperature ranges   | – Operating<br>– Storage (non operating)   | –25°C to +70°C max.<br>–25°C to +85°C  |
| Temperature derating   |  | 1.5 %/K above +50°C  |
| Humidity (non condensing)                                      |  | 95 % rel. H max.   |
| Temperature coefficient  |  | 0.02 %/K   |
| Switching frequency  |  | 55 – 180 kHz depending on load<br>(frequency modulation)   |
| Isolation voltage (60 sec.)                                    | – Input/Output   | 1500 VDC   |
| Reliability, calculated MTBF at +25°C (according to IEC 61709) |  | >2.5 Mio h   |
| Safety standards   | – Information technology equipment<br><br>– Industrial control equipment<br>– Electronic equipment for power installation<br>– Electrical equipment for machines               | IEC 60950-1, EN 60950-1 (output SELV),<br>UL Std. 60950-1 (2nd Edition) +Am1:2011,<br>CAN/CSA-C22.2 No. 60950-1-07 +Am1:2011<br>UL 508<br>EN 50178<br>EN 60204   |
| Safety approvals   | – CB test certificate (IEC 60950-1)<br>– UL approval<br><br>– CSA certification<br><br>– GS certification  | <a href="http://www.tracopower.com/products/tcl-cb.pdf">www.tracopower.com/products/tcl-cb.pdf</a><br><a href="http://www.ul.com">www.ul.com</a> -> certifications<br>UL 508C listed, CSA C22.2 No.14 File e210002<br>UL 60950-1, CSA 60950-1-03<br><a href="http://www.tracopower.com/products/tcl-csa.pdf">www.tracopower.com/products/tcl-csa.pdf</a><br><a href="http://www.tracopower.com/products/tcl060dc_gs.pdf">www.tracopower.com/products/tcl060dc_gs.pdf</a> |
| Electromagnetic compatibility (EMC), emissions                 | – Conducted RI suppression on input<br>– Radiated RI suppression   | EN 61000-6-3<br>EN 55022 class B<br>EN 55022 class B   |
| Electromagnetic compatibility (EMC), immunity                  | – Electrostatic discharge (ESD)<br>– Radiated RF field immunity<br>– Electrical fast transient / burst immunity<br>– Surge immunity<br>– Immunity to conducted RF disturbances | EN 61000-6-2<br>EN 61000-4-2 4 kV / 8 kV<br>EN 61000-4-3 10 V/m<br>EN 61000-4-4 Level 3<br>EN 61000-4-5 Level 3<br>EN 61000-4-6 10 Vrms  |
| Environmental compliance                                       | – Reach<br>– RoHS  | <a href="http://www.tracopower.com/products/reach-declaration.pdf">www.tracopower.com/products/reach-declaration.pdf</a><br>RoHS directive 2011/65/EU  |
| Case protection  |  | IP 20 (IEC 60529)  |
| Enclosure material   |  | plastic UL 94V-0 rated   |
| Mounting   |  | DIN-rails as per EN 50022-35x15/7.5<br>(snap-on with self-locking spring)<br>bracket for wall/chassis mount included   |
| Installation instructions                                      |  | <a href="http://www.tracopower.com/products/tcl-dc-inst.pdf">www.tracopower.com/products/tcl-dc-inst.pdf</a>   |

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

**Case Dimensions**

**TCL 012 and TCL 024 models**



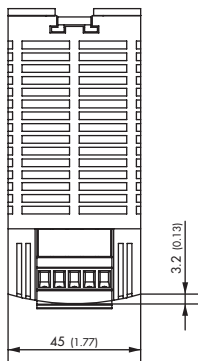
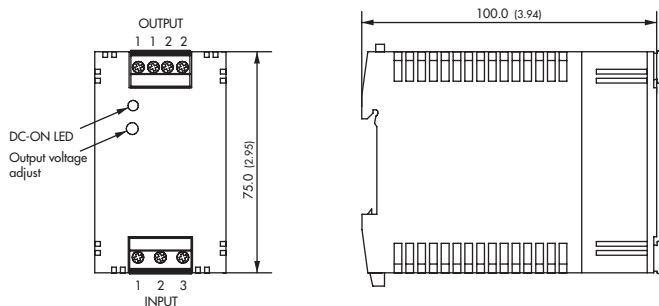
| Output   | Input              |
|----------|--------------------|
| 1 + Vout | 1 Protective earth |
| 2 - Vout | 2 -Vin             |
|          | 3 +Vin             |

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

**Wall Mounting Bracket**

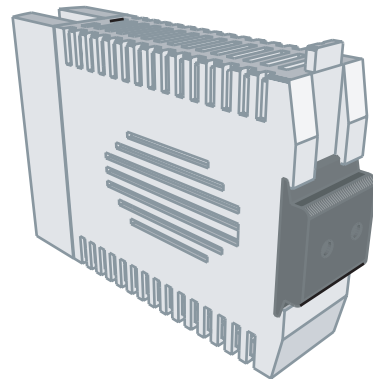
Instead on a DIN-rail, the modules can be also mounted on a chassis or wall with help of a mounting bracket which is supplied as standard with each Converter

**TCL 060 model**



| Output   | Input              |
|----------|--------------------|
| 1 + Vout | 1 Protective earth |
| 2 - Vout | 2 -Vin             |
|          | 3 +Vin             |

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



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