Industrial DC/DC-Converter

TCL-DC Series, 24 to 60 Watt

CB Scheme cULus UL 508

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: TCL 024 & TCL 060 models:	8.4 VDC / 7.6 VDC 17.2 VDC / 15.7 VDC
Reverse polarity protection		by internal fuse
Efficiency		86 % typ.

Output Specifications

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

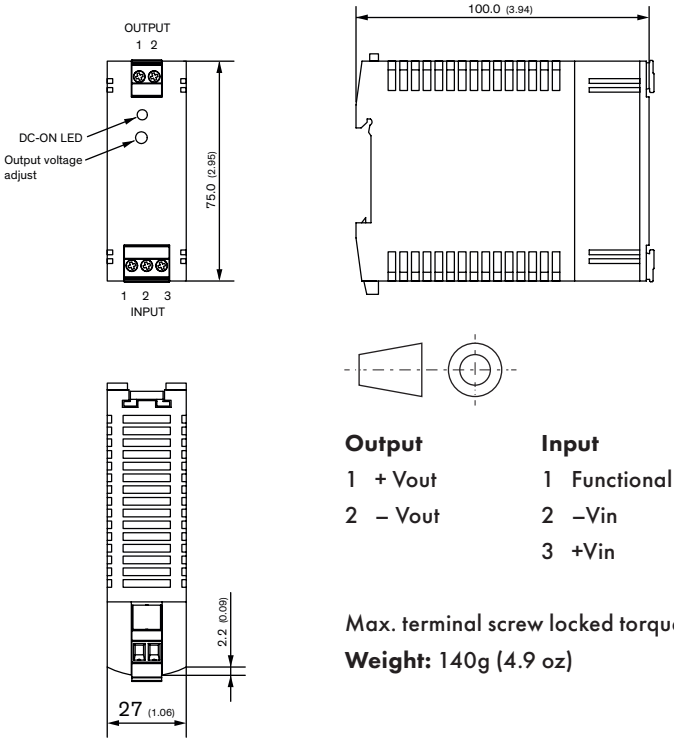
General Specifications

Temperature ranges	– Operating – Storage (non operating)	–25°C to +70°C max. –25°C to +85°C
Temperature derating	TCL 012 & TCL 024 models: TCL 060 models:	1.5 %/K above +50°C 2.0 %/K above +50°C
Humidity (non condensing)		95 % rel. H max.
Temperature coefficient		0.02 %/K
Switching frequency		55 – 180 kHz depending on load (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 – Industrial control equipment – Electronic equipment for power installation – Electrical equipment for machines – 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 IEC 61010-1, EN 61010-1 IEC 61010-2-201, EN 61010-2-201
Safety approvals	– UL approval	www.ul.com -> certifications UL 508C listed, CSA C22.2 No.14 File e210002
Electromagnetic compatibility (EMC), emissions	– Conducted RI suppression on input – Radiated RI suppression	EN 61000-6-3 EN 55022 class B EN 55022 class B
Electromagnetic compatibility (EMC), immunity	– Electrostatic discharge (ESD) – Radiated RF field immunity – Electrical fast transient / burst immunity – Surge immunity – Immunity to conducted RF disturbances	EN 61000-6-2 EN 61000-4-2 4 kV / 8 kV EN 61000-4-3 10 V/m EN 61000-4-4 Level 3 EN 61000-4-5 Level 3 EN 61000-4-6 10 Vrms
Environmental compliance	– Reach – RoHS	www.tracopower.com/info/reach-declaration.pdf 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 (snap-on with self-locking spring) bracket for wall/chassis mount included
Installation instructions		www.tracopower.com/overview/tcl-dc

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 Functional Ground
2 – Vout	2 –Vin
	3 +Vin

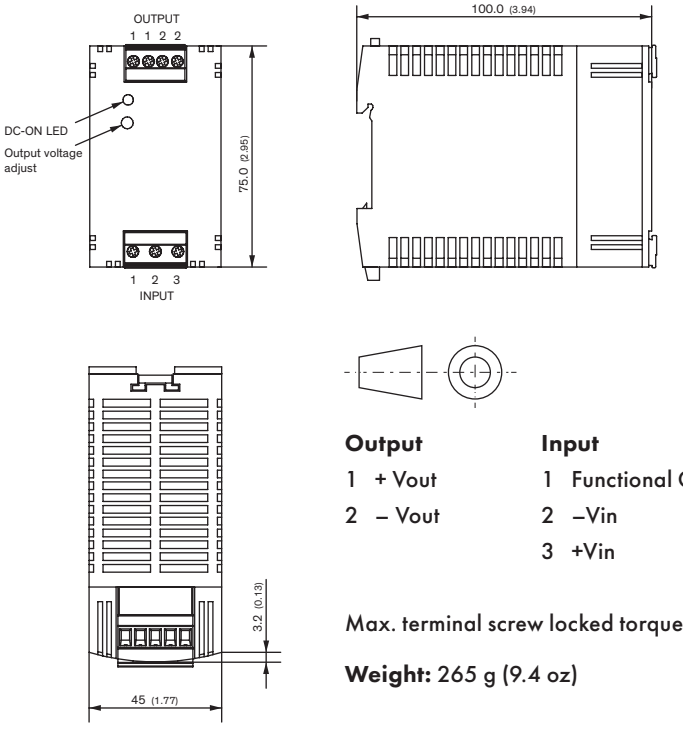
Max. terminal screw locked torque: 0.4 Nm

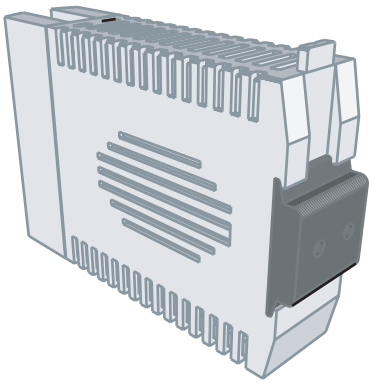
Weight: 140g (4.9 oz)

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 Functional Ground
2 – Vout	2 –Vin
	3 +Vin

Max. terminal screw locked torque: 0.4 Nm

Weight: 265 g (9.4 oz)

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