TRACO POWER

DC/DC Railway Converter

TER 75WIR Series, 75 Watt

- **Wide 4:1 input range**
- **EN 50155 and EN 61373 certified**
- **EN 45545-2 fire behavior**
- **Encapsulated quarter-brick (2.3”x1.45”x0.5”) package**
- **–40°C up to +85°C operating temperature without derating**
- **Up to 4'242 VDC I/O isolation**
- **Remote on/off and trim function**
- **Undervoltage lockout (UVLO), short-circuit protection (SCP), overvoltage protection (OVP) and overtemperature protection (OTP)**
- **3-year product warranty**



UL 62368-1 IEC 62368-1

The TER 75WIR is a series of high-performance 75 Watt DC/DC converters with a wide 4:1 input voltage range. The TER 75WIR comes in a compact, fully encapsulated quarter-brick package for highest reliability. The converter features continuous short-circuit protection and automatic recovery from over-temperature events, guaranteeing safe and dependable operation. The TER 75WIR is EN 50155 certified for rolling stock applications, EN 61373 certified for mechanical shock and vibration, and EN 45545-2 certified for fire behavior. It comes with IEC/EN/UL 62368-1 safety approvals.

Models

Order Code	Input Voltage Range	Output Voltage nom. (adjustable)	Output Current max. (Forced air cooling)	Efficiency typ.
TER 75-2410WIR	9 - 36 VDC (24 VDC nom.)	3.3 VDC (2.64 - 3.63 VDC)	20'000 mA	89 %
TER 75-2411WIR		5 VDC (4.0 - 5.5 VDC)	15'000 mA	90 %
TER 75-2412WIR		12 VDC (9.6 - 13.2 VDC)	6'300 mA	91 %
TER 75-2413WIR		15 VDC (12.0 - 16.5 VDC)	5'000 mA	92 %
TER 75-2415WIR		24 VDC (19.2 - 26.4 VDC)	3'200 mA	91 %
TER 75-2418WIR		48 VDC (38.4 - 52.8 VDC)	1'600 mA	90 %
TER 75-4810WIR	18 - 75 VDC (48 VDC nom.)	3.3 VDC (2.64 - 3.63 VDC)	20'000 mA	89 %
TER 75-4811WIR		5 VDC (4.0 - 5.5 VDC)	15'000 mA	90 %
TER 75-4812WIR		12 VDC (9.6 - 13.2 VDC)	6'300 mA	91 %
TER 75-4813WIR		15 VDC (12.0 - 16.5 VDC)	5'000 mA	91 %
TER 75-4815WIR		24 VDC (19.2 - 26.4 VDC)	3'200 mA	91 %
TER 75-4818WIR		48 VDC (38.4 - 52.8 VDC)	1'600 mA	90 %
TER 75-7210WIR	40 - 160 VDC (110 VDC nom.)	3.3 VDC (2.64 - 3.63 VDC)	20'000 mA	89 %
TER 75-7211WIR		5 VDC (4.0 - 5.5 VDC)	15'000 mA	90 %
TER 75-7212WIR		12 VDC (9.6 - 13.2 VDC)	6'300 mA	91 %
TER 75-7213WIR		15 VDC (12.0 - 16.5 VDC)	5'000 mA	91 %
TER 75-7215WIR		24 VDC (19.2 - 26.4 VDC)	3'200 mA	91 %
TER 75-7218WIR		48 VDC (38.4 - 52.8 VDC)	1'600 mA	90 %

Options

T4B-HS10	- Optional Heat Sink: www.tracopower.com/overview/t4b-hs10
TEP-HS2	- Optional Heat Sink: www.tracopower.com/overview/tep-hs2
TEP-HS4	- Optional Heat Sink: www.tracopower.com/overview/tep-hs4
on demand (backorder with MOQ non stocking item)	- Optional Heat Sink: www.tracopower.com/overview/t4b-hs11 - Optional model(s) with different ratings - Optional models with pre-assembled heatsink - Optional models with inverse Remote On/Off function (passive = off) - Optional models without threads

Input Specifications

Input Current	- At no load	24 Vin models:	**35 mA typ.**
		48 Vin models:	**15 mA typ.**
		110 Vin models:	**8 mA typ.**
Surge Voltage		24 Vin models:	**50 VDC max.** (1 s max.)
		48 Vin models:	**100 VDC max.** (1 s max.)
		110 Vin models:	**185 VDC max.** (1 s max.)
Under Voltage Lockout		24 Vin models:	**7.5 VDC min. / 8 VDC typ. / 8.8 VDC max.**
		48 Vin models:	**15.5 VDC min. / 16.2 VDC typ. / 17.5 VDC max.**
		110 Vin models:	**33 VDC min. / 34.5 VDC typ. / 36 VDC max.**
Recommended Input Fuse		24 Vin models:	**15'000 mA** (fast acting)
		48 Vin models:	**8'000 mA** (fast acting)
		110 Vin models:	**3'150 mA** (slow blow)
			(The need of an external fuse has to be assessed in the final application.)
Input Filter			Internal Pi-Type

Output Specifications

Output Voltage Adjustment			**–20% to +10%** (except 54 Vout models) **–20% to 0%** (54 Vout models) (By external trim resistor) See application note: www.tracopower.com/ter75wir-adj/ Output power must not exceed rated power!
Voltage Set Accuracy			**±1% max.**
Regulation	- Input Variation (Vmin - Vmax)		**0.1% max.**
	- Load Variation (0 - 100%)		**0.2% max.** (3.3 & 5 Vout models) **0.1% max.** (other models)
Ripple and Noise	- 20 MHz Bandwidth		**100 mVp-p max.** (3.3/5 Vout) (w/ 1µF/25V || 47µF/20V) **75 mVp-p typ.** (3.3/5 Vout) (w/ 1µF/25V || 47µF/20V) **130 mVp-p max.** (12/15 Vout) (w/ 22µF/25V) **90 mVp-p typ.** (12/15 Vout) (w/ 22µF/25V) **265 mVp-p max.** (24/28 Vout) (w/ 4.7µF/50V) **200 mVp-p typ.** (24/28 Vout) (w/ 4.7µF/50V) **400 mVp-p max.** (48/54 Vout) (w/ 4.7µF/100V) **290 mVp-p typ.** (48/54 Vout) (w/ 4.7µF/100V)

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

Capacitive Load		3.3 Vout models:	65'300 µF max.
		5 Vout models:	30'000 µF max.
		12 Vout models:	5'400 µF max.
		15 Vout models:	3'330 µF max.
		24 Vout models:	1'360 µF max.
		28 Vout models:	960 µF max.
		48 Vout models:	340 µF max.
		54 Vout models:	240 µF max.
Minimum Load			Not required
Temperature Coefficient			±0.02 %/K max.
Hold-up Time			10 ms min. (acc. to EN 50155 Class S2, see application note for ext. capacitor calculation: www.tracopower.com/info/holdup_en50155.pdf)
Start-up Time			70 ms typ. / 100 ms max.
Short Circuit Protection			Continuous, Automatic recovery
Output Current Limitation			125 - 170% of Iout max. 155% typ. of Iout max.
Overvoltage Protection			112 - 125% of Vout nom. (48 Vout models) 102 - 111 % of Vout nom. (54 Vout models) 115 - 130 % of Vout nom. (other models)
Transient Response	- Response Deviation		5% typ. / 10% max. (25% Load Step)
	- Response Time		250 µs typ. (25% Load Step)

Safety Specifications

Standards	- IT / Multimedia Equipment		EN 62368-1 IEC 62368-1 UL 62368-1
	- Railway Applications		EN 50155
	- Certification Documents		www.tracopower.com/ter75wir-safety-cert/
Pollution Degree			PD 2
Over Voltage Category			Not mains connected

EMC Specifications

EMI (Emissions)			EN 50121-3-2 (EMC for Rolling Stock)
	- Conducted Emissions		EN 55032 class A (with external filter) EN 55032 class B (with external filter)
	- Radiated Emissions		EN 55032 class A (with external filter) EN 55032 class B (with external filter)
		External filter proposal:	www.tracopower.com/ter75wir-emc-filter/
EMS (Immunity)			EN 50121-3-2 (EMC for Rolling Stock) EN 55035 (Multimedia)
	- Electrostatic Discharge	Air:	EN 61000-4-2, ±8 kV, perf. criteria A
		Contact:	EN 61000-4-2, ±6 kV, perf. criteria A
	- RF Electromagnetic Field		EN 61000-4-3, 20 V/m, perf. criteria A
	- EFT (Burst) / Surge		EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±2 kV, perf. criteria A
		Ext. input component:	2x 330µF/100V/KY (24 & 48 Vin models) 2x 150µF/200V/KXJ (110 Vin models)
	- Conducted RF Disturbances		EN 61000-4-6, 10 Vrms, perf. criteria A
	- PF Magnetic Field	Continuous:	EN 61000-4-8, 100 A/m, perf. criteria A
		1 s:	EN 61000-4-8, 1000 A/m, perf. criteria A

General Specifications

Relative Humidity			95% max. (non condensing)

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

Temperature Ranges	- Operating Temperature	−40°C to +75°C −40°C to +80°C (with heatsink TEP-HS2) −40°C to +80°C (with heatsink TEP-HS4) −40°C to +92°C (with heatsink T4B-HS10) −40°C to +95°C (with heatsink T4B-HS11)
	- Case Temperature	+105°C max.
	- Storage Temperature	−55°C to +125°C
Power Derating	- High Temperature	Depending on model Depending on model (with heatsink TEP-HS2) Depending on model (with heatsink TEP-HS4) Depending on model (with heatsink T4B-HS10) Depending on model (with heatsink T4B-HS11)
	See application note:	www.tracopower.com/ter75wir-cc/
Over Temperature Protection Switch Off	- Protection Mode	108°C typ. (Automatic recovery at 103°C typ.)
	- Measurement Point	Base-Plate
Cooling System	- Option 1	Forced air cooling (with external fan, 400 LFM)
	- Option 2	Conduction Cooling (with a 450 x 450 x 3.0 mm aluminum plate)
Sense Function		10% max. of Vout nom. (If sense function is not used, sense pins must be connected to corresponding polarity output pins.)
Remote Control	- Voltage Controlled Remote (passive = on)	On: 3.0 to 15 VDC or open circuit Off: 0 to 1.2 VDC or short circuit Refers to 'Remote' and '-Vin' Pin
	- Off Idle Input Current	3 mA typ.
	- Remote Pin Input Current	-0.5 to 1.0 mA (Optional models with inverse Remote On/Off function (passive = off))
Altitude During Operation		5'000 m max.
Regulator Topology		Flyback Converter
Switching Frequency		145 - 245 kHz (PWM) 190 kHz typ. (PWM)
Insulation System		Reinforced Insulation (110 Vin models) Basic Insulation (other models)
Working Voltage (rated)	- IEC/EN 62368-1	384 VAC
Isolation Test Voltage	- Input to Output, 60 s	4'242 VDC (110 Vin models) 2'500 VDC (other models)
	- Input to Case, 60 s	2'500 VDC (110 Vin models) 1'600 VDC (other models)
	- Output to Case, 60 s	2'500 VDC (110 Vin models) 1'600 VDC (other models)
Creepage	- Input to Output	4.5 mm min.
Clearance	- Input to Output	4.5 mm min.
Isolation Resistance	- Input to Output, 500 VDC	1'000 MΩ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	1'470 pF max.
Distance Through Isolation		0.4 mm
Reliability	- Calculated MTBF	698'800 h (MIL-HDBK-217F, ground benign)
Washing Process		According to Cleaning Guideline www.tracopower.com/info/cleaning.pdf
Environment	- Vibration	MIL-STD-810F EN 61373
	- Mechanical Shock	MIL-STD-810F EN 61373
	- Thermal Shock	MIL-STD-810F
	- Flammability	EN 45545-2 www.tracopower.com/info/en45545-declaration.pdf
Housing Material		Alu base-plate w. plastic case

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

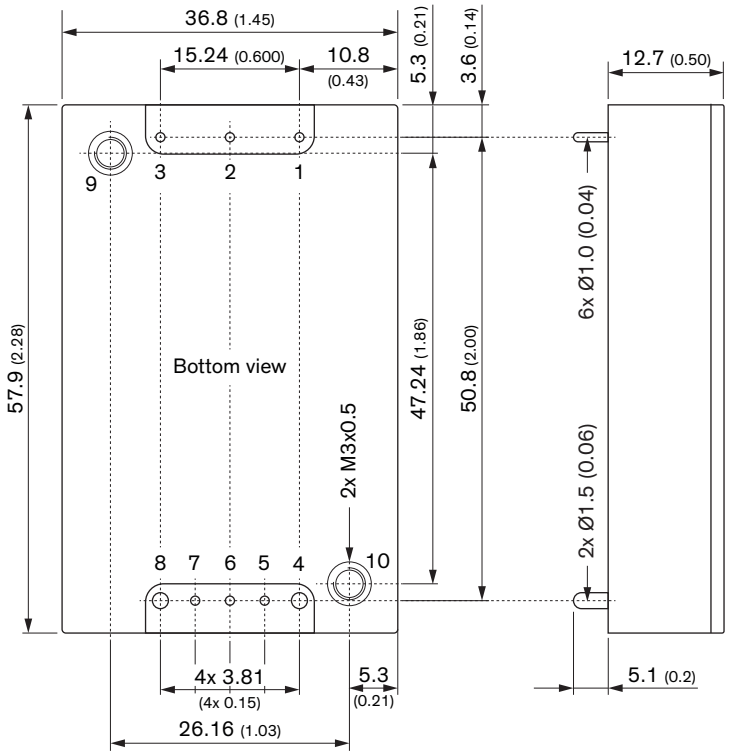
Base Material		Non-conductive FR4 (UL 94 V-0 rated)
Potting Material		Silicone (UL 94 V-0 rated)
Pin Material		Tinned Copper
Pin Foundation Plating		Nickel (3 - 5 µm)
Pin Surface Plating		Tin (5 - 7 µm), matte
Housing Type		Plastic Case
Mounting Type		PCB Mount
Connection Type		THD (Through-Hole Device)
Footprint Type		Quarter-Brick
Soldering Profile		Lead-Free Wave Soldering 260°C / 6 s max.
Weight		66.5 g
Thermal Impedance	- Case to Ambient	9.0 K/W typ. 7.1 K/W typ. (with heatsink TEP-HS2) 7.1 K/W typ. (with heatsink TEP-HS4) 4.2 K/W typ. (with heatsink T4B-HS10) 3.4 K/W typ. (with heatsink T4B-HS11)
Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant
	- RoHS Declaration	www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7(a), 7(c)-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).)
	- SCIP Reference Number	2b8dd361-d75b-4369-b814-211ac9641e05

Additional Information

Supporting Documents	www.tracopower.com/overview/ter75wir
Frequently Asked Questions	www.tracopower.com/glossary-faq
Glossary	www.tracopower.com/info/glossary.pdf
Service Portal	www.tracoserviceportal.com
Product Notification Subscription	www.tracopower.com/pcn-sub/ter75wir

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

Outline Dimensions



Dimensions in mm (inch)
Tolerances: x.x ±0.5 (±0.02)
x.xx ±0.25 (±0.01)
Pin diameter tolerances: ±0.1 (±0.004)
Mounting screw tightening torque: Max. 0.34 N·m (3.5 kgf·cm)

Pinout	
Pin	**Function**
1	–Vin
2	Remote On/Off
3	+Vin
4	–Vout
5	–Sense
6	Trim
7	+Sense
8	+Vout
9	Case
10	Case

Avoid routing PCB traces under the converter.

© Copyright 2026 Traco Electronic AG