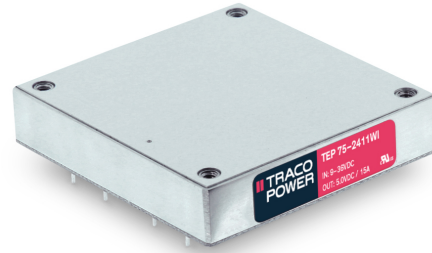


- Rugged, compact metal case
- Screw terminal adaptor available for easy connection
- EN 50155 approval for railway applications
- Ultra wide 4:1 input voltage range
- Full load operation up to +60°C with convection cooling
- Undervoltage lockout
- Reverse input voltage protection
- Input protection filter
- 3-year product warranty



The TEP-75WI Series is a family of isolated high performance DC/DC converter modules with ultra-wide 4:1 input voltage ranges which come in a rugged, sealed metal case. These converters are suitable for a wide range of applications. For easy connection there is also an unique adaptor available with screw terminals. A very high efficiency allows an operating temperature up to +60°C with natural convection cooling without power derating. Further features include output voltage trimming, Remote On/Off and under voltage lockout. The very wide input voltage range and reverse input voltage protection make these converters also an interesting solution for battery operated systems.

Models				
Order Code	Input Voltage Range	Output Voltage nom.	Output Current max.	Efficiency typ.
TEP 75-2411WI	9 - 36 VDC (24 VDC nom.)	5 VDC	15'000 mA	88 %
TEP 75-2412WI		12 VDC	6'300 mA	88 %
TEP 75-2413WI		15 VDC	5'000 mA	88 %
TEP 75-2415WI		24 VDC	3'200 mA	87 %
TEP 75-2416WI		28 VDC	2'700 mA	87 %
TEP 75-2418WI		48 VDC	1'600 mA	87 %
TEP 75-4811WI	18 - 75 VDC (48 VDC nom.)	5 VDC	15'000 mA	90 %
TEP 75-4812WI		12 VDC	6'300 mA	90 %
TEP 75-4813WI		15 VDC	5'000 mA	89 %
TEP 75-4815WI		24 VDC	3'200 mA	88 %
TEP 75-4816WI		28 VDC	2'700 mA	88 %
TEP 75-4818WI		48 VDC	1'600 mA	87 %
TEP 75-7211WI	43 - 160 VDC (110 VDC nom.)	5 VDC	15'000 mA	91 %
TEP 75-7212WI		12 VDC	6'300 mA	91 %
TEP 75-7213WI		15 VDC	5'000 mA	91 %
TEP 75-7215WI		24 VDC	3'200 mA	90 %
TEP 75-7216WI		28 VDC	2'700 mA	90 %
TEP 75-7218WI		48 VDC	1'600 mA	90 %

Options

TEP-HS1	- Heat-sink for standard version (incl. thermal pad and 2 clamps)
Suffix -CM	- Chassis mount models without filter: www.tracopower.com/products/tep75wcm.pdf
Suffix -CMF	- Chassis mount models with filter to meet EN 55032 class A: www.tracopower.com/products/tep75wcmf.pdf
on demand (backorder with MOQ non stocking item)	- Optional model with 3.3 VDC / 20'000 mA Output and 9 - 36 VDC Input - Optional model with 3.3 VDC / 20'000 mA Output and 18 - 75 VDC Input - Optional model with 3.3 VDC / 20'000 mA Output and 43 - 160 VDC Input - Inverse Remote On/Off function (passive = off)

Input Specifications

Input Current	- At no load	24 Vin models: 85 mA typ. 48 Vin models: 60 mA typ. 110 Vin models: 10 mA typ.
	- At full load	24 Vin models: 3'600 mA max. 48 Vin models: 1'800 mA max. 110 Vin models: 1'350 mA max.
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: 7.3 VDC min. / 7.7 VDC typ. / 8.1 VDC max. 48 Vin models: 15.5 VDC min. / 16 VDC typ. / 16.3 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)
Reverse Voltage Protection		Parallel diode (24 Vin and 48 Vin models only) (external input fuse required)
Input Filter		Internal Pi-Type (For 24 Vin models an input capacitor 4.7 μ F X7R or 68 μ F Nippon chemi-con KY is recommended for a reliable supply.)

Output Specifications

Output Voltage Adjustment		-20% to +10% (By external trim resistor) See application note: www.tracopower.com/overview/tep75wi Output power must not exceed rated power!
Voltage Set Accuracy		$\pm 1\%$ max.
Regulation	- Input Variation (Vmin - Vmax)	0.1% max.
	- Load Variation (0 - 100%)	0.1% max.
Ripple and Noise (20 MHz Bandwidth)		3.3 Vout models: 100 mVp-p max. (with 4.7 μ F) 5 Vout models: 100 mVp-p max. (with 4.7 μ F) 12 Vout models: 125 mVp-p max. (with 4.7 μ F) 15 Vout models: 125 mVp-p max. (with 4.7 μ F) 24 Vout models: 250 mVp-p max. (with 4.7 μ F) 28 Vout models: 250 mVp-p max. (with 4.7 μ F) 48 Vout models: 350 mVp-p max. (with 2.2 μ F)
Capacitive Load		3.3 Vout models: 60'600 μF max. 5 Vout models: 30'000 μF max. 12 Vout models: 5'250 μF max. 15 Vout models: 3'330 μF max. 24 Vout models: 1'330 μF max. 28 Vout models: 960 μF max. 48 Vout models: 330 μF max.
Minimum Load		Not required

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

Temperature Coefficient	±0.02 %/K max.
Start-up Time	60 ms typ. (110 Vin models) 25 ms typ. (other models)
Short Circuit Protection	Continuous, Automatic recovery
Output Current Limitation	150% typ. of I _{out} max. (110 Vin models) 110 - 140% (other models)
Overvoltage Protection	115 - 130% of V _{out} nom.
Transient Response	- Response Time 200 µs typ. / 250 µs max. (25% Load Step)

Safety Specifications

Safety Standards	- IT / Multimedia Equipment - Railway Applications - Certification Documents	IEC 60950-1 EN 60950-1 UL 60950-1 EN 50155 www.tracopower.com/overview/tep75wi
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EMC Specifications

EMI Emissions	- Conducted Emissions - Radiated Emissions	EN 55011 class B (with external filter) EN 55032 class B (with external filter) EN 55011 class B (with external filter) EN 55032 class B (with external filter) External filter proposal: www.tracopower.com/overview/tep75wi
EMS Immunity	- Electrostatic Discharge - RF Electromagnetic Field - EFT (Burst) / Surge - Conducted RF Disturbances - PF Magnetic Field	EN 50155 (Railway Applications) EN 55024 (IT Equipment) Air: EN 61000-4-2, ±8 kV, perf. criteria A Contact: EN 61000-4-2, ±6 kV, perf. criteria A EN 61000-4-3, 20 V/m, perf. criteria A EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±2 kV, perf. criteria A Ext. input component: 24 & 48 Vin models: 2 x KY 220 µF 110 Vin models: 2 x KY 150 µF Continuous: EN 61000-4-6, 10 Vrms, perf. criteria A 1 s: EN 61000-4-8, 100 A/m, perf. criteria A EN 61000-4-8, 1000 A/m, perf. criteria A

General Specifications

Relative Humidity	95% max. (non condensing)	
Temperature Ranges	- Operating Temperature - Case Temperature - Storage Temperature	-40°C to +75°C +105°C max. -55°C to +125°C
Power Derating	- High Temperature	See application note: www.tracopower.com/overview/tep75wi
Over Temperature	- Protection Mode	115°C typ. (Automatic recovery at 105 °C)
Protection Switch Off	- Measurement Point	Base-Plate
Cooling System	Natural convection (20 LFM)	
Sense Function	10% max. of Vout nom.	
Remote Control	- Voltage Controlled Remote - Off Idle Input Current	On: 3.0 to 12 VDC or open circuit Off: 0 to 1.2 VDC or short circuit Refers to 'Remote' and '-Vin' Pin 3 mA typ. (Optional models with inverse logic available)
Altitude During Operation	2'000 m max.	
Switching Frequency	270 - 330 kHz (PWM) 300 kHz typ. (PWM)	
Insulation System	Reinforced Insulation (110 Vin models) Basic Insulation (other models)	

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

Isolation Test Voltage	- Input to Output, 60 s	3'000 VAC (110 Vin models) 2'121 VAC (other models)
	- Input to Case, 60 s	1'500 VAC (110 Vin models) 1'131 VAC (other models)
	- Output to Case, 60 s	1'500 VAC (110 Vin models) 1'131 VAC (other models)
Isolation Resistance	- Input to Output, 500 VDC	1'000 MΩ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	2'500 pF max.
Reliability	- Calculated MTBF	336'000 h (MIL-HDBK-217F, ground benign)
Environment	- Vibration	MIL-STD-810F EN 61373
	- Mechanical Shock	MIL-STD-810F EN 61373
	- Thermal Shock	MIL-STD-810F
Housing Material		Alu base-plate w. plastic case (110 Vin models) Alu base-plate w. metal case (other models)
Base Material		Non-conductive FR4 (UL94 V-0 rated) (24 Vin & 48 Vin models only)
Potting Material		Silicone (UL 94 V-0 rated)
Pin Material		Copper
Pin Foundation Plating		Nickel (2 - 3 μm)
Pin Surface Plating		Tin (3 - 5 μm), matte
Connection Type		THD (Through-Hole Device)
Weight		97 g
Thermal Impedance		6.7 K/W
	- with Heat Sink	4.7 K/W
Environmental Compliance	- Reach	www.tracopower.com/info/reach-declaration.pdf
	- RoHS	www.tracopower.com/info/rohs-declaration.pdf
	- Flammability (EN 45545-2)	www.tracopower.com/info/en45545-declaration.pdf

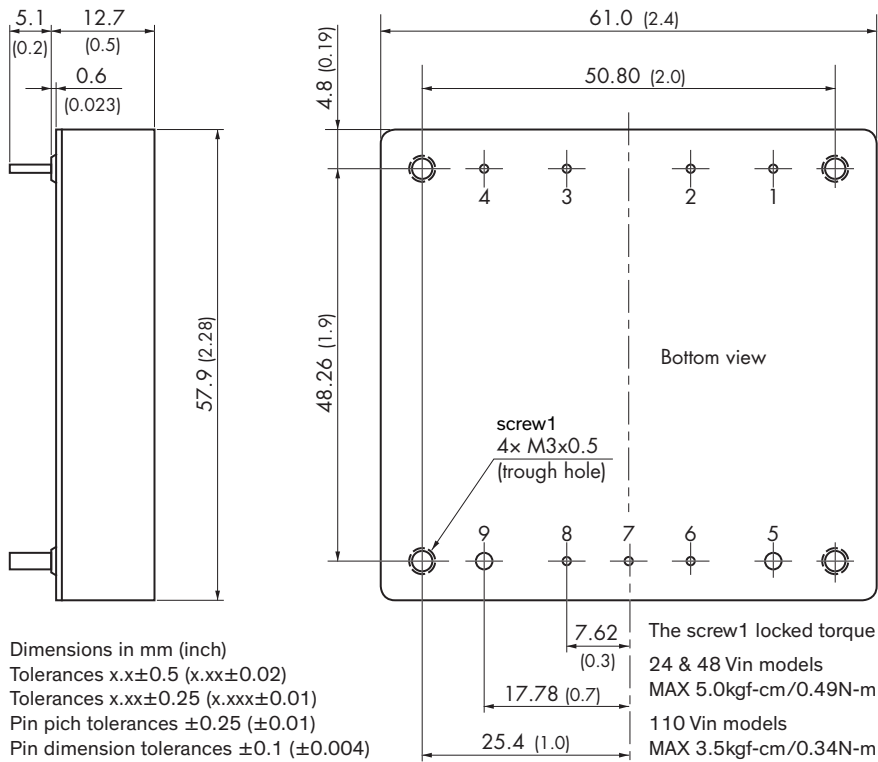
Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/tep75wi

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

Outline Dimensions



Pinout	
Pin	Function
1	-Vin (GND)
2	Case
3	Remote
4	+Vin (Vcc)
5	-Vout
6	-Sense*
7	Trim
8	+Sense*
9	+Vout

*Sense line to be connected to the output either at the module or at the load under regard of polarity.

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