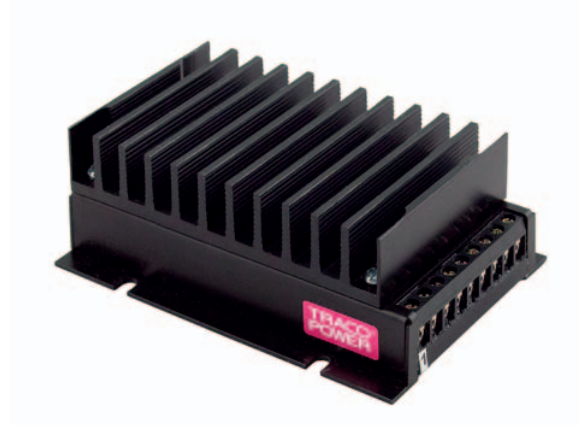


#### Features

- ◆ Shielded metal case with screw terminals
- ◆ Compact dimensions: 98 x 52 x 34 mm
- ◆ Ultra-wide 4:1 input voltage range
- ◆ Very high efficiency up to 87%
- ◆ Constant current output characteristic for battery load applications
- ◆ Overtemperature protection
- ◆ Operating temp. range  $-40^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$
- ◆ Reverse input protection
- ◆ I/O isolation 2250 VDC (basic insulation)
- ◆ Easy chassis and wall mounting
- ◆ 3-year product warranty



The TEP-150WI Series is a family of high power density dc-dc converter modules with ultra-wide 4:1 input voltage range which come in an ultra-compact metal case with screw terminal connection. Suitable for a wide range of applications, the TEP-150WI series was particularly designed with industrial applications in mind. The modules have flanges for easy chassis or wall mounting. A very high efficiency allows an operating temperature up to  $+50^{\circ}\text{C}$  with natural convection cooling. Further features include adjustable output voltage with constant current characteristic for battery charger applications.

Models				
Order code*	Input voltage	Output voltage	Output current max.	Efficiency typ.
TEP 150-2412WI	9 – 36 VDC (24 VDC nominal)	12 VDC	12.5 A	85 %
TEP 150-2413WI		15 VDC	10 A	85 %
TEP 150-2415WI		24 VDC	6.3 A	86 %
TEP 150-2416WI		28 VDC	5.4 A	86 %
TEP 150-2418WI		48 VDC	3.2 A	86 %
TEP 150-4812WI	18 – 75 VDC (48 VDC nominal)	12 VDC	12.5 A	86 %
TEP 150-4813WI		15 VDC	10 A	86 %
TEP 150-4815WI		24 VDC	6.3 A	87 %
TEP 150-4816WI		28 VDC	5.4 A	87 %
TEP 150-4818WI		48 VDC	3.2 A	87 %

\* – add suffix **-N** for negative remote control, see page 3 -> Remote On/Off

### Input Specifications

Input current (full load)	24 Vin models: 7.5 A typ. 48 Vin models: 3.7 A typ.
Input current (no load)	24 Vin, 12 – 15 VDC models: 80 mA typ. 24 Vin, 24 – 48 VDC models: 120 mA typ. 48 Vin, 12 – 15 VDC models: 60 mA typ. 48 Vin, 24 – 48 VDC models: 70 mA typ.
Start-up voltage / under voltage shut down	24 Vin models: 8.8 VDC / 8.2 VDC typ. 48 Vin models: 17.6 VDC / 16.2 VDC typ.
Surge voltage (100 msec. max.)	24 Vin models: 50 V 48 Vin models: 100 V
Conducted noise (input)	EN 55022 class A, FCC part 15, class A without external components. optional filter for class B – ask factory
ESD (electrostatic discharge)	EN 61000-4-2, air ±8 kV, contact ±6 kV, perf. criteria A
Radiated immunity	EN 61000-4-3, 10 V/m, perf. criteria A
Fast transient / Surge	EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±1 kV perf. criteria A
– With external input capacitor:	24 VDC models: Nippon chemi-con KY 470 µF, 50 V, ESR 45 mOhm 48 VDC models: Nippon chemi-con KY 220 µF, 100 V, ESR 48 mOhm
Conducted immunity	EN 61000-4-6, 10 Vrms, perf. criteria A
Reverse voltage protection	parallel diode
Recommended input fuse (slow blow)	24 Vin models: 15 A 48 Vin models: 10 A

### Output Specifications

Voltage set accuracy	±1 %
Output voltage adjustment	+20 % by external resistor (see application note)
Regulation	– Input variation Vin min. to Vin max. 0.2 % max. – Load variation 0 – 100 % 0.4 % max.
Temperature coefficient	±0.02 %/K
Minimum load	not required
Ripple and noise (20 MHz Bandwidth)	12 & 15 VDC models: 100 mVpk-pk max. 24 & 28 VDC models: 200 mVpk-pk max. 48 VDC models: 350 mVpk-pk max.
Start up time (nominal Vin and constant resistive load)	25 ms typ. (at power On or remote On)
Transient response (25 % load step change)	200 µs typ.
Output current	– Constant voltage (CV) up to 110 % of Iout max. – Constant current (CC) above 110 % of Iout max.
Over voltage protection	at 125 –140 % of Vout nom.
Short circuit protection	indefinite, automatic recovery
Capacitive load	12 VDC models: 40'000 µF max. 15 VDC models: 26'000 µF max. 24 VDC models: 10'000 µF max. 28 VDC models: 7'600 µF max. 48 VDC models: 2'600 µF max.

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

### General Specifications

Temperature ranges	– Operating – Case temperature – Storage	–40°C to +75°C +100°C max. –55°C to +125°C
Derating		see application note
Over temperature protection		at 110°C (auto restart)
Thermal shock		acc. MIL-STD-810F
Humidity (non condensing)		95 % rel H max.
Reliability, calculated MTTF (MIL-HDBK-217F, @+25°C, ground benign)		>180'000 h
Isolation voltage (60sec.)	– Input/Output – Input/Case – Output/Case	2250 VDC (functional insulation) 1500 VDC 1500 VDC
Isolation capacitance	– Input/Output	2500 pF max.
Isolation resistance	– Input/Output (500 VDC)	>1 GOhm min.
Switching frequency		220 – 330 kHz depending on model (puls width modulation)
Safety standards		UL 60950-1, IEC/EN 60950-1
Safety approvals	– UL/cUL 60950-1 – CB report according to IEC 60950-1	<a href="http://www.ul.com">www.ul.com</a> -> certifications -> File E188913 <a href="http://www.tracopower.com/products/tep150wi-cb.pdf">www.tracopower.com/products/tep150wi-cb.pdf</a>
Remote On/Off	– positive logic (standard)  – negative logic (option -N)  – Off idle current:	– On: 3 to 12 VDC or open circuit – Off: 0 to 1.2 VDC or short circuit pin 5 and 3 – On: 0 to 1.2 VDC or short circuit pin 5 and 3 – Off: 3 to 12 VDC or open circuit 3 mA
Environmental compliance	– Reach – RoHS	<a href="http://www.tracopower.com/products/tep150wi-reach.pdf">www.tracopower.com/products/tep150wi-reach.pdf</a> RoHS directive 2002/95/EC

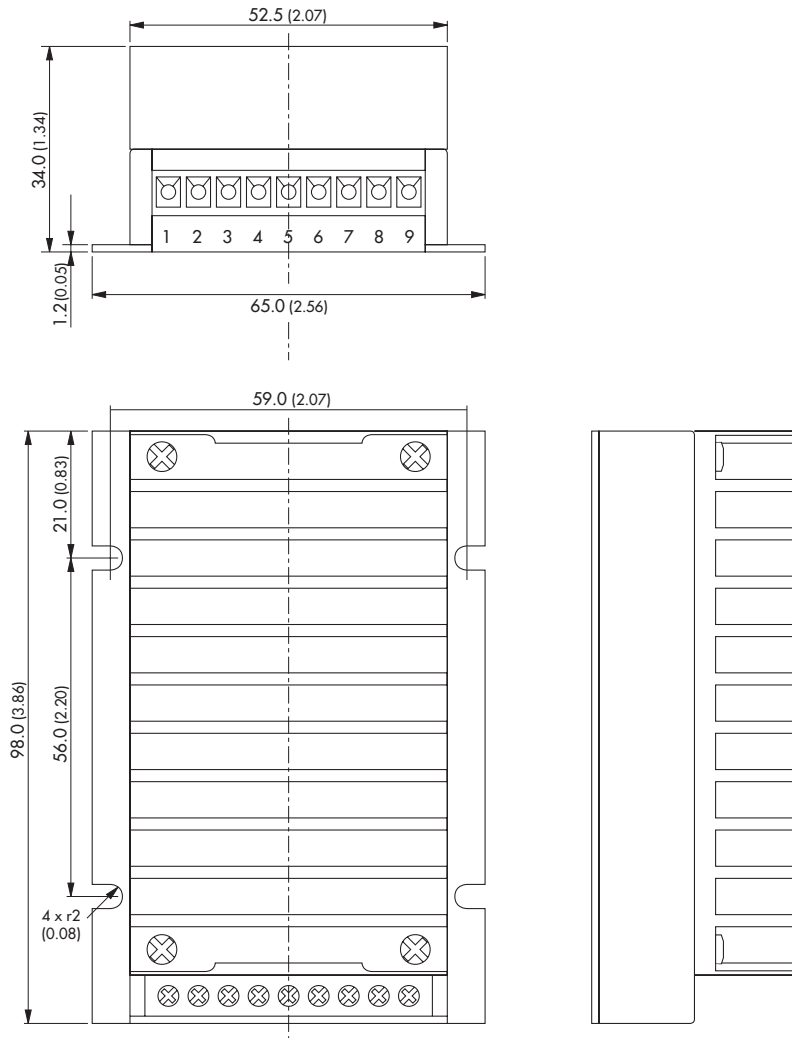
### Physical Specifications

Casing material		metal
Potting material		silicon (UL 94V-0 rated)
Weight		300 g (10.6 oz)
Mounting recommendation		not to mount on plastic surface (temperature!)

**Application note:** [www.tracopower.com/products/tep150wi-application.pdf](http://www.tracopower.com/products/tep150wi-application.pdf)

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

**Outline Dimensions**



Pin-Out	
Pin	
1	+ Vin
2	+ Vin
3	- Vin
4	- Vin
5	Remote On/Off
6	+ Vout
7	- Vout
8	Trim
9	Trim

Dimensions in [mm], ( ) = Inch  
 Mounting slot tolerance:  $\pm 0.25$  ( $\pm 0.001$ )  
 Case tolerances:  $\pm 0.5$  ( $\pm 0.02$ )