

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
- ◆ Optional with input filter to meet EN55022 class B
- ◆ Overtemperature protection
- ◆ Wide Operating temperature range: -40°C to +75°C
- ◆ Reverse input protection
- ◆ Under voltage lock-out
- ◆ I/O isolation 2250 VDC
- ◆ 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°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 % |

Options

| | |
|-----------|--|
| suffix -F | Modules with input filter to meet EN 555022 class B, see page 5 |
| on demand | Negative (passive = Off) remote On/Off function (standard is passive = On) |

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 – 24 VDC models: 80 mA typ. 24 Vin, 28 – 48 VDC models: 130 mA typ. 48 Vin, 12 – 24 VDC models: 60 mA typ. 48 Vin, 28 – 48 VDC models: 70 mA typ. |
| Start-up voltage / under voltage lock-out | 24 Vin models: 8.8 VDC / 8.2 VDC typ. 48 Vin models: 17.6 VDC / 16.2 VDC typ. |
| Surge voltage (1sec. 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 – suffix F |
| 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 (with input capacitor for models without filter module) | EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±1 kV perf. criteria A |
| – 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 models with filter module (suffix F): no input capacitor required |
| Conducted immunity | EN 61000-4-6, 10 Vrms, perf. criteria A |
| Reverse voltage protection | parallel diode (input fuse required) |
| 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. |

General Specifications

| | | |
|---|--|--|
| Temperature ranges | <ul style="list-style-type: none"> - Operating - Case temperature - Storage | <ul style="list-style-type: none"> -40°C to +75°C +100°C max. -55°C to +125°C |
| Thermal consideration | <ul style="list-style-type: none"> - Mounting surface - Derating and temperature test point | Optimize thermal coupling to heat conducting surface. Not to mount on flammable surface! see application note |
| Over temperature protection | | at 110°C (auto restart) |
| Vibration and thermal shock | | acc. MIL-STD-810F |
| Humidity (non condensing) | | 95 % rel H max. |
| Reliability, calculated MTBF (MIL-HDBK-217F, ground benign) | | >135'000 h at 40°C |
| Isolation voltage (60sec.) | <ul style="list-style-type: none"> - Input/Output - Input/Case - Output/Case | <ul style="list-style-type: none"> 2250 VDC (functional insulation) 1500 VDC 1500 VDC |
| Isolation capacitance | - Input/Output | 3500 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 style="list-style-type: none"> - UL/cUL 60950-1 (entry pending) - CB report according to IEC 60950-1 | www.ul.com -> certifications -> File E188913 www.tracopower.com/products/tep150wi-cb.pdf |
| Remote On/Off | <ul style="list-style-type: none"> - positive logic (standard) - negative logic (option -N) - Off idle current: | <ul style="list-style-type: none"> - 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 | <ul style="list-style-type: none"> - Reach - RoHS | www.tracopower.com/products/tep150wi-reach.pdf RoHS directive 2002/95/EC |

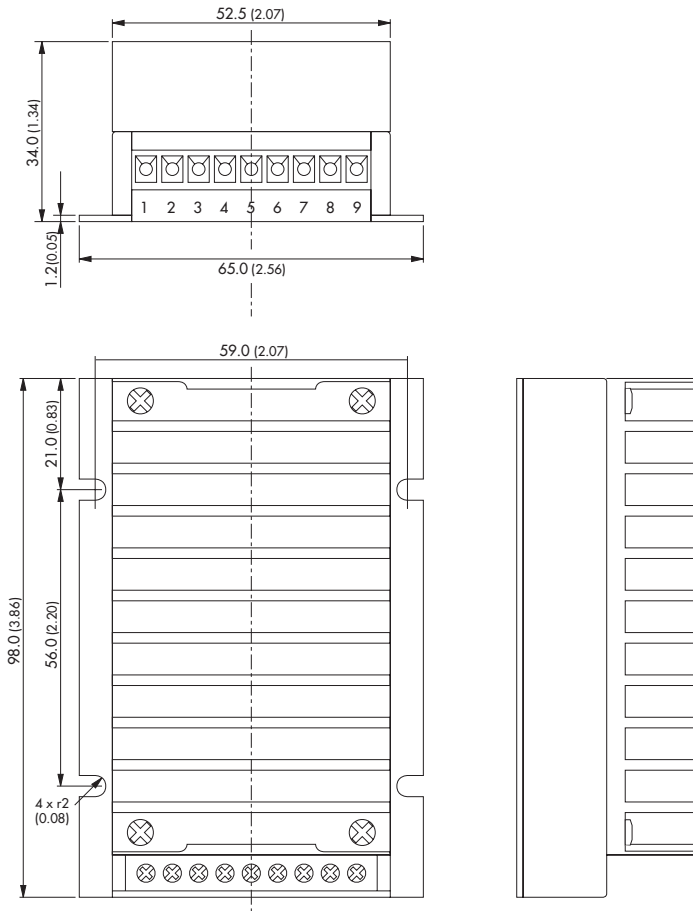
Physical Specifications

| | |
|------------------|--------------------------------------|
| Casing material | metal |
| Potting material | silicon (UL 94V-0 rated) |
| Case protection | IP 50 (in accordance to IEC/EN60529) |
| Weight | 300 g (10.6 oz) |

Application note: 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

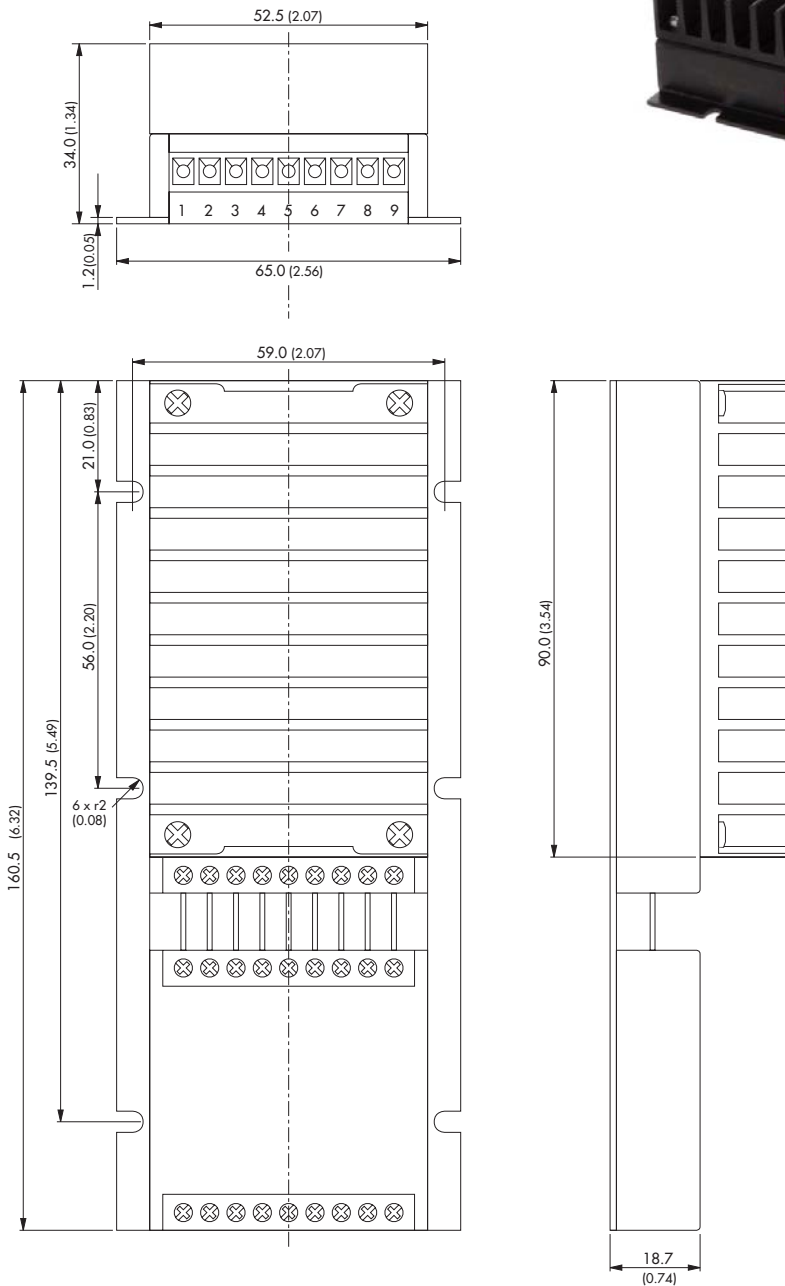


| Pin Connection | | |
|----------------|---------------|------------------|
| pin | function | recommended wire |
| 1 | + Vin | 14 - 16 AWG |
| 2 | + Vin | 14 - 16 AWG |
| 3 | - Vin | 14 - 16 AWG |
| 4 | - Vin | 14 - 16 AWG |
| 5 | Remote On/Off | 14 - 24 AWG |
| 6 | + Vout | 14 - 16 AWG |
| 7 | - Vout | 14 - 16 AWG |
| 8 | Trim | 14 - 24 AWG |
| 9 | Trim | 14 - 24 AWG |

Weight: 300g (10.6 oz)

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

Outline Dimensions



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|----------------|---------------|------------------|
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| 3 | - Vin | 14 – 16 AWG |
| 4 | - Vin | 14 – 16 AWG |
| 5 | Remote On/Off | 14 – 24 AWG |
| 6 | + Vout | 14 – 16 AWG |
| 7 | - Vout | 14 – 16 AWG |
| 8 | Trim | 14 – 24 AWG |
| 9 | Trim | 14 – 24 AWG |

Weight: 435g (15.3 oz)

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

Specifications can be changed any time without notice.