

- Compact metal package
- Ultra wide 4:1 input voltage ranges
9–36, 18–75, 43–160 VDC
- EN 50155 approval for railway applications
- Very high efficiency up to 91%
- No minimum load
- Soft start
- Under voltage lock-out circuit
- Adjustable output voltage +10 / -20%
- Sense line



The TEP 200WIR Series is a family of isolated high performance DC/DC converter modules with ultra-wide 4:1 input voltage ranges. They come in rugged, sealed industry standard half brick package. A very high efficiency allows full power operation at 25°C with only 100 LFM air flow cooling and operation at 60°C with only 40% power derating. The very wide input voltage range and reverse input voltage protection make these converters interesting solution for battery operated systems. Typical applications are in telecom/datacom, industry control and railway systems for onboard power distribution.

| Models | | | | |
|-----------------|--------------------------------|---------------------|---------------------|-----------------|
| Order Code | Input Voltage Range | Output Voltage nom. | Output Current max. | Efficiency typ. |
| TEP 200-2412WIR | 9 - 36 VDC (24 VDC nom.) | 12 VDC | 15'000 mA | 89 % |
| TEP 200-2413WIR | | 15 VDC | 12'000 mA | 90 % |
| TEP 200-2415WIR | | 24 VDC | 7'500 mA | 90 % |
| TEP 200-2416WIR | | 28 VDC | 6'500 mA | 90 % |
| TEP 200-2418WIR | | 48 VDC | 3'700 mA | 89 % |
| TEP 200-4812WIR | 18 - 75 VDC (48 VDC nom.) | 12 VDC | 18'000 mA | 90 % |
| TEP 200-4813WIR | | 15 VDC | 14'000 mA | 91 % |
| TEP 200-4815WIR | | 24 VDC | 9'000 mA | 90 % |
| TEP 200-4816WIR | | 28 VDC | 7'500 mA | 91 % |
| TEP 200-4818WIR | | 48 VDC | 4'500 mA | 90 % |
| TEP 200-7212WIR | 43 - 160 VDC (110 VDC nom.) | 12 VDC | 20'000 mA | 89 % |
| TEP 200-7213WIR | | 15 VDC | 16'000 mA | 90 % |
| TEP 200-7215WIR | | 24 VDC | 10'000 mA | 89 % |
| TEP 200-7216WIR | | 28 VDC | 8'500 mA | 90 % |
| TEP 200-7218WIR | | 48 VDC | 5'000 mA | 89 % |

Options

| | |
|--|--|
| TEP-HS1 | - Heat-sink for standard version (incl. thermal pad and mounting screws) |
| on demand (backorder with MOQ non stocking item) | <ul style="list-style-type: none"> - Optional model with 3.3 VDC / 50'000 mA Output and 9 - 36 VDC Input - Optional model with 5 VDC / 36'000 mA Output and 9 - 36 VDC Input - Optional model with 3.3 VDC / 50'000 mA Output and 18 - 75 VDC Input - Optional model with 5 VDC / 40'000 mA Output and 18 - 75 VDC Input - Optional model with 53 VDC / 3'800 mA Output and 33 - 75 VDC Input - Optional model with 3.3 VDC / 57'000 mA Output and 43 - 160 VDC Input - Optional model with 5 VDC / 44'000 mA Output and 43 - 160 VDC Input - 2:1 Input models - Negative (passive = Off) Remote On/Off function - Sync pin to synchronize switching frequency of up to 3 units (EMC reason) |

Input Specifications

| | | |
|------------------------|--------------|---|
| Input Current | - At no load | 24 Vin models: 35 mA typ. 48 Vin models: 20 mA typ. 110 Vin models: 10 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: 7.3 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: 32'000 mA (fast acting) 48 Vin models: 20'000 mA (fast acting) 110 Vin models: 10'000 mA (fast acting) (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% (By external trim resistor) See application note: www.tracopower.com/overview/tep200wir Output power must not exceed rated power! |
| Voltage Set Accuracy | | ±1% max. |
| Regulation | - Input Variation (Vmin - Vmax) - Load Variation (0 - 100%) | 0.1% max. 0.1% max. |
| Ripple and Noise (20 MHz Bandwidth) | | 3.3 Vout models: 75 mVp-p max. (with 1 µF X7R // 25 µF poscap) 5 Vout models: 75 mVp-p max. (with 1 µF X7R // 25 µF poscap) 12 Vout models: 100 mVp-p max. (with 1 µF X7R // 25 µF poscap) 15 Vout models: 100 mVp-p max. (with 1 µF X7R // 25 µF poscap) 24 Vout models: 200 mVp-p max. (with 4.7 µF X7R) 28 Vout models: 200 mVp-p max. (with 4.7 µF X7R) 48 Vout models: 300 mVp-p max. (with 2.2 µF X7R) |

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

| | | |
|--------------------|---------------------------|--|
| Capacitive Load | - 24 Vin input | 3.3 Vout models: 151'000 µF max. 5 Vout models: 72'000 µF max. 12 Vout models: 12'500 µF max. 15 Vout models: 8'000 µF max. 24 Vout models: 3'100 µF max. 28 Vout models: 2'300 µF max. 48 Vout models: 770 µF max. |
| | - 48 Vin input | 3.3 Vout models: 151'000 µF max. 5 Vout models: 80'000 µF max. 12 Vout models: 15'000 µF max. 15 Vout models: 9'300 µF max. 24 Vout models: 3'700 µF max. 28 Vout models: 2'600 µF max. 48 Vout models: 930 µF max. |
| | - 110 Vin input | 3.3 Vout models: 172'000 µF max. 5 Vout models: 88'000 µF max. 12 Vout models: 16'600 µF max. 15 Vout models: 10'600 µF max. 24 Vout models: 4'100 µF max. 28 Vout models: 3'000 µF max. 48 Vout models: 1'000 µF max. |
| | Minimum Load | Not required |
| | Temperature Coefficient | ±0.02 %/K max. |
| | Start-up Time | 75 ms typ. |
| | Short Circuit Protection | Continuous, Automatic recovery |
| | Output Current Limitation | 120 - 150% of Iout max. |
| | Oversvoltage Protection | 115 - 130% of Vout nom. |
| Transient Response | - Response Time | 200 µs typ. / 250 µs max. (25% Load Step) |

Safety Specifications

| | | |
|-----------------------|-----------------------------|--|
| Safety Standards | - IT / Multimedia Equipment | IEC 60950-1 EN 60950-1 UL 60950-1 |
| | - Railway Applications | EN 50155 |
| | - Certification Documents | www.tracopower.com/overview/tep200wir |
| Pollution Degree | | PD 2 |
| Over Voltage Category | | OVC II |

EMC Specifications

| | | |
|---------------|-----------------------------|---|
| EMI Emissions | - Conducted Emissions | EN 55011 class B (with external filter) EN 55032 class B (with external filter) |
| | - Radiated Emissions | EN 55011 class B (with external filter) EN 55032 class B (with external filter) |
| | External filter proposal: | www.tracopower.com/overview/tep200wir |
| EMS Immunity | | EN 50155 (Railway Applications) EN 50121-3-2 (EMC for Rolling Stock) |
| | - 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 |
| | - Conducted RF Disturbances | Ext. input component: 24 & 48 Vin models: 2 x KY 20 µF 110 Vin models: 2 x KXJ 150 µF 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 |

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

General Specifications

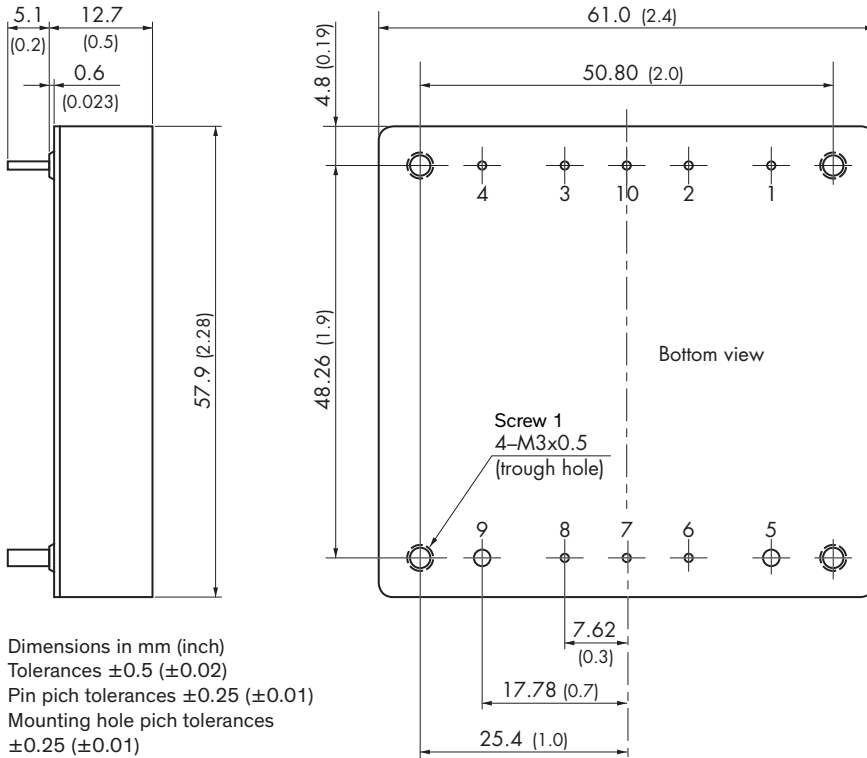
| | | |
|--|---|--|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature - Case Temperature - Storage Temperature | -40°C to +75°C +105°C max. -55°C to +125°C |
| Power Derating | - High Temperature | See application note: www.tracopower.com/overview/tep200wir |
| Over Temperature Protection Switch Off | - Protection Mode - Measurement Point | 115°C typ. (Automatic recovery at 105°C) Base-Plate |
| Cooling System | | Natural convection (20 LFM) |
| Sense Function | | 10% max. of Vout nom. (Sense line to be connected to the output either at the module or at the load under regard of polarity.) |
| Remote Control | - Voltage Controlled Remote - Off Idle Input Current - Remote Pin 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. -0.5 to 1.0 mA |
| Altitude During Operation | | 2'000 m max. |
| Switching Frequency | | 225 - 275 kHz (PWM) 250 kHz typ. (PWM) |
| Insulation System | | Reinforced Insulation |
| Isolation Test Voltage | - Input to Output, 60 s - Input to Case, 60 s - Output to Case, 60 s | 3'000 VAC (110 Vin models) 2'121 VAC (other models) 1'500 VAC (110 Vin models) 1'121 VAC (other models) 1'500 VAC (110 Vin models) 1'121 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 | 300'000 h (MIL-HDBK-217F, ground benign) |
| Environment | - Vibration - Mechanical Shock - Thermal Shock | MIL-STD-810F EN 61373 MIL-STD-810F EN 61373 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 | | 105 g |
| Thermal Impedance | - with Heat Sink | 6.1 K/W 4.6 K/W |
| Environmental Compliance | - Reach - RoHS - Flammability (EN 45545-2) | www.tracopower.com/info/reach-declaration.pdf www.tracopower.com/info/rohs-declaration.pdf www.tracopower.com/info/en45545-declaration.pdf |

Supporting Documents

| | |
|--|--|
| Overview Link (for additional Documents) | www.tracopower.com/overview/tep200wir |
|--|--|

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

Outline Dimensions



Dimensions in mm (inch)
 Tolerances ± 0.5 (± 0.02)
 Pin pitch tolerances ± 0.25 (± 0.01)
 Mounting hole pitch tolerances
 ± 0.25 (± 0.01)

Pin diameter pins 5 & 9: 2.0 (0.08)
 Pin diameter other pins: 1.0 (0.04)

Pinout

| Pin | Function |
|-----|------------------|
| 1 | -Vin (GND) |
| 2 | NC |
| 3 | Remote |
| 4 | +Vin (Vcc) |
| 5 | -Vout |
| 6 | -Sense |
| 7 | Trim |
| 8 | +Sense |
| 9 | +Vout |
| 10 | Sync (on demand) |

NC: No Connection

The screw 1 locked torque
 (24 and 48Vout models):
 MAX 5.0kgf-cm/0.49N-m

The screw 1 locked torque
 (110Vout models):
 MAX 3.5kgf-cm/0.34N-m



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.