The TEP 75WICM Series is a family of isolated high performance DC/DC converter modules. They come in chassis mount version with screw terminal block. These converters are suitable for a wide range of applications, but the product is designed particularly also for industrial applications where often no PCB mounting is possible but the module has to be mounted on a chassis. Four threaded M3 inserts in the module makes chassis mount or attachment of a heatsink for optimal thermal management very simple. 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

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TEP 75-2411WI-CM</td>
<td>9 - 36 VDC (24 VDC nom.)</td>
<td>5 VDC</td>
<td>15'000 mA</td>
<td>88 %</td>
<td></td>
</tr>
<tr>
<td>TEP 75-2412WI-CM</td>
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<td>12 VDC</td>
<td>6'300 mA</td>
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<tr>
<td>TEP 75-2413WI-CM</td>
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<td>15 VDC</td>
<td>5'000 mA</td>
<td>88 %</td>
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<tr>
<td>TEP 75-2415WI-CM</td>
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<td>24 VDC</td>
<td>3'200 mA</td>
<td>87 %</td>
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<tr>
<td>TEP 75-2416WI-CM</td>
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<td>28 VDC</td>
<td>2'700 mA</td>
<td>87 %</td>
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<tr>
<td>TEP 75-2418WI-CM</td>
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<td>48 VDC</td>
<td>1'600 mA</td>
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<tr>
<td>TEP 75-4811WI-CM</td>
<td>18 - 75 VDC (48 VDC nom.)</td>
<td>5 VDC</td>
<td>15'000 mA</td>
<td>90 %</td>
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<td>TEP 75-4812WI-CM</td>
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<tr>
<td>TEP 75-4813WI-CM</td>
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<tr>
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<td>28 VDC</td>
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<tr>
<td>TEP 75-4818WI-CM</td>
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<td>48 VDC</td>
<td>1'600 mA</td>
<td>87 %</td>
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<tr>
<td>TEP 75-7211WI-CM</td>
<td>43 - 160 VDC (110 VDC nom.)</td>
<td>5 VDC</td>
<td>15'000 mA</td>
<td>91 %</td>
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</tr>
<tr>
<td>TEP 75-7212WI-CM</td>
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<td>12 VDC</td>
<td>6'300 mA</td>
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<td>48 VDC</td>
<td>1'600 mA</td>
<td>90 %</td>
<td></td>
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Options

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>on demand</td>
<td>- Optional model with 3.3 VDC / 20'000 mA Output and 9 - 36 VDC Input</td>
</tr>
<tr>
<td></td>
<td>- Optional model with 3.3 VDC / 20'000 mA Output and 18 - 75 VDC Input</td>
</tr>
<tr>
<td></td>
<td>- Optional model with 3.3 VDC / 20'000 mA Output and 43 - 160 VDC Input</td>
</tr>
<tr>
<td></td>
<td>- Inverse Remote On/Off function (passive = off)</td>
</tr>
</tbody>
</table>

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)

Note: The need of an external fuse has to be assessed in the final application.

**Reverse Voltage Protection**
Parallel diode (external input fuse required)

**Input Filter**
Internal Pi-Type

Output Specifications

**Output Voltage Adjustment**
See application note: www.tracopower.com/overview/tep75wicm
- -20% to +10% (By external trim resistor)
- Output power must not exceed rated power!

**Voltage Set Accuracy**
±1% max.

**Regulation**
- Input Variation (Vmin - Vmax)
  - 0.1% max.
- Load Variation (0 - 100%)
  - 0.1% max.

**Ripple and Noise**
(20 MHz Bandwidth)
- 3.3 Vout models: 100 mVp-p max. (w/ 4.7 µF)
- 5 Vout models: 100 mVp-p max. (w/ 4.7 µF)
- 12 Vout models: 125 mVp-p max. (w/ 4.7 µF)
- 15 Vout models: 125 mVp-p max. (w/ 4.7 µF)
- 24 Vout models: 250 mVp-p max. (w/ 4.7 µF)
- 28 Vout models: 250 mVp-p max. (w/ 4.7 µF)
- 48 Vout models: 350 mVp-p max. (w/ 2.2 µF)

**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

**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

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

- 150% typ. of Iout max.
  - (110 Vin models)
  - 110 - 140% (other models)

Overvoltage Protection

- 115 - 130% of Vout nom.
- Response Time: 200 µs typ. / 250 µs max. (25% Load Step)

Safety Specifications

Safety Standards

- IT / Multimedia Equipment: EN 60950-1
- IEC 62368-1
- IEC 61000-4-1
- UL 60950-1
- UL 62368-1
- Railway Applications: EN 50155
- Certification Documents: www.tracopower.com/overview/tep75wicm

EMC Specifications

EMI Emissions

- Conducted Emissions: EN 55011 class B (with external filter)
- Radiated Emissions: EN 55032 class B (with external filter)
- External filter proposal: www.tracopower.com/overview/tep75wicm

EMS Immunity

- 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
  - 2 V/m, perf. criteria A
  - EFT (Burst) / Surge
  - Ext. input component: 24 & 48Vin models: 2 x KY 220 µF
  - Continuous: 110 Vin models: 2 x KY 150 µF
- Conducted RF Disturbances
  - PF Magnetic Field
  - Continuous: EN 61000-4-6, 10 Vrms, perf. criteria A
  - 1 s: EN 61000-4-8, 100 A/m, perf. criteria A

General Specifications

Relative Humidity

- 95% max. (non condensing)

Temperature Ranges

- Operating Temperature: -40°C to +75°C
- Case Temperature: +105°C max.
- Storage Temperature: -40°C to +105°C

Power Derating

- High Temperature: See application note: www.tracopower.com/overview/tep75wicm

Over Temperature Protection Switch Off

- Protection Mode: 115°C typ. (Automatic recovery at 105°C typ.)
- 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)

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May 31, 2021
**Working Voltage (rated)**

<table>
<thead>
<tr>
<th></th>
<th>157 VAC (110 Vin models)</th>
<th>125 VAC (other input models)</th>
</tr>
</thead>
</table>

**Isolation Test Voltage**

- Input to Output, 60 s
  - 3'000 VAC (110 Vin models)
  - 3'000 VDC (other models)
- Input to Case, 60 s
  - 1'500 VAC (110 Vin models)
  - 1'600 VDC (other models)
- Output to Case, 60 s
  - 1'500 VAC (110 Vin models)
  - 1'600 VDC (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
  - EN 50155

**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)

**Connection Type**

- Screw Terminal

**Weight**

- 200 g

**Thermal Impedance**

- 6.7 K/W

**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: 7a, 7c-I
- Flammability (EN 45545-2)

**Supporting Documents**

**Overview Link** (for additional Documents)

- www.tracopower.com/overview/tep75wicm

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

**Dimensions in mm (inch)**

- 29.6 (1.16)
- 17.3 (0.68)
- 61.0 (2.4)
- 3.5 (0.14)
- 54.0 (2.126)
- 86.0 (3.35)
- 78.0 (3.071)
- 4 x Ø 4.3 (0.17)

**Tolerances**

- x.x±0.5 (x.xx±0.02)
- x.xx±0.25 (x.xxx±0.01)

**Screw 3:**
- Type M4
- Head diameter 6.88 (0.271)
- Rated current: 15 A

---

### Pinout

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>–Vin (GND)</td>
</tr>
<tr>
<td>2</td>
<td>Case</td>
</tr>
<tr>
<td>3</td>
<td>Remote</td>
</tr>
<tr>
<td>4</td>
<td>+Vin (Vcc)</td>
</tr>
<tr>
<td>5</td>
<td>–Vout</td>
</tr>
<tr>
<td>6</td>
<td>–Sense*</td>
</tr>
<tr>
<td>7</td>
<td>Trim</td>
</tr>
<tr>
<td>8</td>
<td>+Sense*</td>
</tr>
<tr>
<td>9</td>
<td>+Vout</td>
</tr>
</tbody>
</table>

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

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