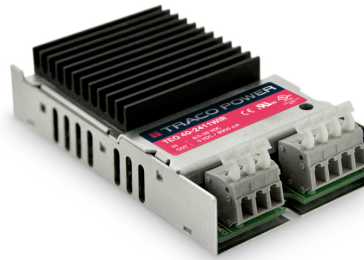


- High power block with excellent thermal convection
- Operating temperature -40°C to +92°
- Ultra wide 4:1 input voltage range
- EN 50155 approval for railway applications
- Excellent efficiency up to 91%
- Input filter meet EN 55022, class B
- I/O isolation up to 2121 VAC
- Under voltage lock-out circuit
- Protection against overvoltage, overtemperature and short circuit
- Output LED indicator



The TEQ 40WIR 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 metal case. 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. A very high efficiency and the heatsink construction allows an operating temperature up to +83°C with natural convection cooling without power derating and up to +92°C with power derating. Further features include under voltage lockout, over temperature protection and short circuit protection.

Models

| Order Code | Input Voltage Range | Output 1 | | Output 2 | | Efficiency typ. |
|----------------|--------------------------------|----------|------------------|----------|------------------|-----------------|
| | | Vnom | I _{max} | Vnom | I _{max} | |
| TEQ 40-2411WIR | 9.5 - 36 VDC (24 VDC nom.) | 5 VDC | 8'000 mA | | | 90 % |
| TEQ 40-2412WIR | | 12 VDC | 3'330 mA | | | 91 % |
| TEQ 40-2413WIR | | 15 VDC | 2'670 mA | | | 91 % |
| TEQ 40-2415WIR | | 24 VDC | 1'670 mA | | | 90 % |
| TEQ 40-2422WIR | | +12 VDC | 1'670 mA | -12 VDC | 1'670 mA | 89 % |
| TEQ 40-2423WIR | | +15 VDC | 1'330 mA | -15 VDC | 1'330 mA | 89 % |
| TEQ 40-2425WIR | | +24 VDC | 830 mA | -24 VDC | 830 mA | 90 % |
| TEQ 40-4811WIR | 18 - 75 VDC (48 VDC nom.) | 5 VDC | 8'000 mA | | | 90 % |
| TEQ 40-4812WIR | | 12 VDC | 3'330 mA | | | 91 % |
| TEQ 40-4813WIR | | 15 VDC | 2'670 mA | | | 91 % |
| TEQ 40-4815WIR | | 24 VDC | 1'670 mA | | | 90 % |
| TEQ 40-4822WIR | | +12 VDC | 1'670 mA | -12 VDC | 1'670 mA | 89 % |
| TEQ 40-4823WIR | | +15 VDC | 1'330 mA | -15 VDC | 1'330 mA | 89 % |
| TEQ 40-4825WIR | | +24 VDC | 830 mA | -24 VDC | 830 mA | 90 % |
| TEQ 40-7211WIR | 43 - 160 VDC (110 VDC nom.) | 5 VDC | 8'000 mA | | | 88 % |
| TEQ 40-7212WIR | | 12 VDC | 3'330 mA | | | 90 % |
| TEQ 40-7213WIR | | 15 VDC | 2'670 mA | | | 90 % |
| TEQ 40-7215WIR | | 24 VDC | 1'670 mA | | | 89 % |
| TEQ 40-7222WIR | | +12 VDC | 1'670 mA | -12 VDC | 1'670 mA | 88 % |
| TEQ 40-7223WIR | | +15 VDC | 1'330 mA | -15 VDC | 1'330 mA | 88 % |
| TEQ 40-7225WIR | | +24 VDC | 830 mA | -24 VDC | 830 mA | 90 % |

Input Specifications

| | | |
|----------------------------|--------------|--|
| Input Current | - At no load | 24 Vin models: 19 mA typ. 48 Vin models: 14 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: 170 VDC max. (1 s max.) |
| Input Inrush Current | | 15 A typ. |
| Under Voltage Lockout | | 24 Vin models: 7 VDC min. / 8 VDC typ. / 9 VDC max. 48 Vin models: 15 VDC min. / 16 VDC typ. / 17.5 VDC max. 110 Vin models: 37 VDC min. / 40 VDC typ. / 42 VDC max. |
| Recommended Input Fuse | | 24 Vin models: 8'000 mA (fast acting) 48 Vin models: 4'000 mA (slow blow) 110 Vin models: 2'000 mA (slow blow) (The need of an external fuse has to be assessed in the final application.) |
| Reverse Voltage Protection | | Parallel diode |

Output Specifications

| | | |
|--|--|---|
| Voltage Set Accuracy | | ±1% max. (Single Output) +1% / -1.2% (Dual Output) |
| Regulation | - Input Variation (Vmin - Vmax) - Load Variation (0 - 100%) - Cross Regulation (25% / 100% asym. load) | single output models: 0.5% max. dual output models: 0.5% max. single output models: 1.5% max. (5 VDC models) 1% max. (other models) dual output models: 1% max. (Output 1) 1% max. (Output 2) dual output models: 5% max. |
| Ripple and Noise (20 MHz Bandwidth) | - single output - dual output | 5 Vout models: 75 mVp-p max. 12 Vout models: 100 mVp-p max. 15 Vout models: 100 mVp-p max. 24 Vout models: 150 mVp-p max. 12 / -12 Vout models: 100 / 100 mVp-p max. 15 / -15 Vout models: 100 / 100 mVp-p max. 24 / -24 Vout models: 150 / 150 mVp-p max. |
| Capacitive Load | - single output - dual output | 5 Vout models: 20'000 µF max. 12 Vout models: 3'900 µF max. 15 Vout models: 2'600 µF max. 24 Vout models: 1'300 µF max. 12 / -12 Vout models: 2'600 / 2'600 µF max. 15 / -15 Vout models: 1'600 / 1'600 µF max. 24 / -24 Vout models: 650 / 650 µF max. |
| Minimum Load | | Not required |
| Temperature Coefficient | | ±0.02 %/K max. |
| Hold-up Time | | 10 ms min. |
| Start-up Time | | 100 ms typ. |
| Short Circuit Protection | | Continuous, Automatic recovery |
| Output Current Limitation | | 150% typ. of Iout max. |
| Overvoltage Protection | | 125% typ. of Vout nom. |
| Transient Response | - Response Time | 250 µs typ. (25% Load Step) |

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

Safety Specifications

| | | |
|------------------|--------------------------------|--|
| Safety Standards | - IT / Multimedia Equipment | EN 60950-1 IEC 60950-1 UL 60950-1 |
| | - Industrial Control Equipment | UL 508 (single output models only) |
| | - Railway Applications | EN 50155 |
| | - Certification Documents | www.tracopower.com/overview/teq40wir |
| Pollution Degree | | PD 2 |

EMC Specifications

| | | |
|---------------|-----------------------------|--|
| EMI Emissions | - Conducted Emissions | EN 50121-3-2 (EMC for Rolling Stock) EN 55032 class B (internal filter) |
| | - Radiated Emissions | EN 55032 class B (internal filter) |
| EMS Immunity | - Electrostatic Discharge | EN 50155 (Railway Applications) EN 50121-3-2 (EMC for Rolling Stock) 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, ± 1 kV, perf. criteria A EN 61000-4-6, 10 Vrms, perf. criteria A Continuous: EN 61000-4-8, 100 A/m, perf. criteria A |
| | - RF Electromagnetic Field | |
| | - EFT (Burst) / Surge | |
| | - Conducted RF Disturbances | |
| | - PF Magnetic Field | |

General Specifications

| | | |
|--|---------------------------------|--|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature | -40°C to +83°C |
| | - Storage Temperature | -40°C to +105°C |
| Power Derating | - High Temperature | See application note: www.tracopower.com/overview/teq40wir |
| Over Temperature Protection Switch Off | - Protection Mode | 105°C min. / 115°C typ. / 120°C max. (Automatic recovery) |
| Cooling System | | Natural convection (20 LFM) |
| Altitude During Operation | | 2'000 m max. |
| Switching Frequency | | 225 - 275 kHz (PWM) |
| | | 250 kHz typ. (PWM) |
| Insulation System | | Functional Insulation |
| Isolation Test Voltage | - Input to Output, 60 s | 3'000 VDC |
| | - Input to Case, 60 s | 2'000 VDC |
| | - Output to Case, 60 s | 2'000 VDC |
| Isolation Resistance | - Input to Output, 500 VDC | 1'000 M Ω min. |
| Isolation Capacitance | - Input to Output, 100 kHz, 1 V | 5'000 pF typ. |
| Reliability | - Calculated MTBF | 1'000'000 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 | | Aluminium |
| Connection Type | | Clip |
| Weight | | 129 g |
| Status Indicator | | Indicated by green LED |
| 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 |

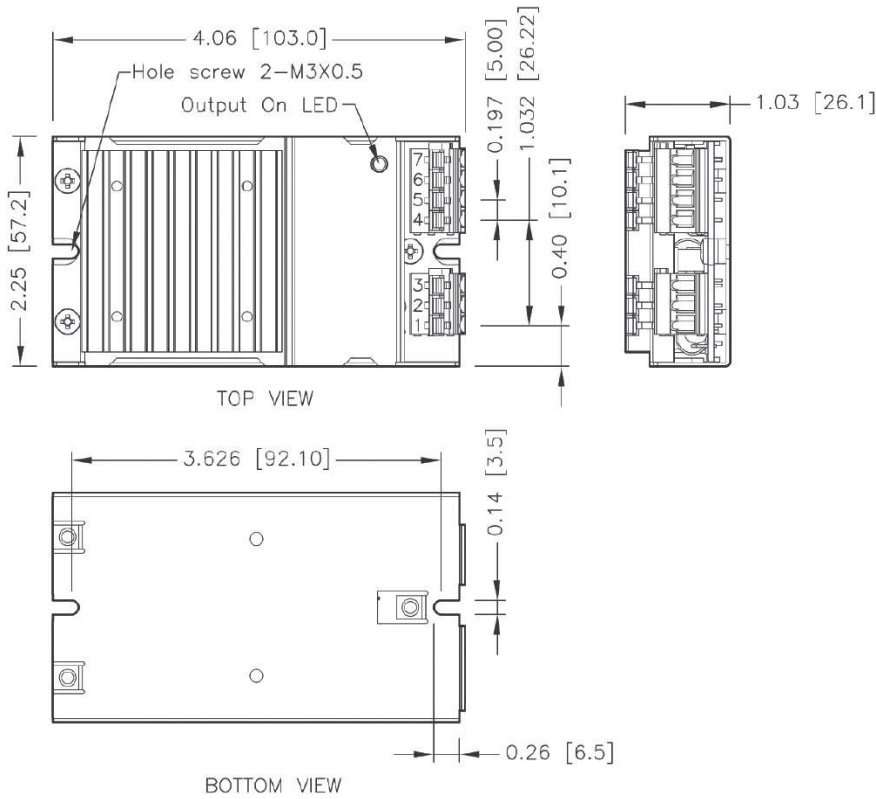
All specifications valid at nominal voltage, full load and +25°C after warm-up time unless otherwise stated.

Supporting Documents

[Overview Link](#) (for additional Documents)

www.tracopower.com/overview/teq40wir

Outline Dimensions



| Pinout | | |
|--------|---------------|-------------|
| Pin | Single Output | Dual Output |
| 1 | +Vin | +Vin |
| 2 | -Vin (GND) | -Vin (GND) |
| 3 | NC | NC |
| 4 | NC | -Vout |
| 5 | -Vout | Common |
| 6 | +Vout | Common |
| 7 | NC | +Vout |

NC: No Connection

Dimensions in inch [mm]

Tolerances: x.x ±0.02 [±0.5]

x.xx ±0.01 [±0.25]

Screw max. torque: 5.0 kgf - cm (0.49 Nm)

Spring terminals: 12 - 18 AWG