

- High power block with excellent thermal convection
- Operating temperature -40°C to +80°
- Increased shock & vibration resistance
- Ultra wide 4:1 input voltage range
- EN 50155 approval for railway applications
- Excellent efficiency up to 92%
- Constant current output characteristic for battery load applications
- Power sharing (up to 3 pcs in parallel)
- Input filter meet EN 55022, class A
- Under voltage lock-out circuit



The TEQ 300WIR 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, sealed 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 overall heatsink construction allows an operating temperature up to +55°C with natural convection cooling without power derating and up to +80°C with power derating. Further features include output voltage trimming, Remote On/Off and under voltage lockout. The ultra wide input voltage range makes these converters also an interesting solution for battery operated systems.

| Models | | | | |
|-----------------|--------------------------------|---------------------|---------------------|-----------------|
| Order Code | Input Voltage Range | Output Voltage nom. | Output Current max. | Efficiency typ. |
| TEQ 300-4812WIR | 18 - 75 VDC (48 VDC nom.) | 12 VDC | 25'000 mA | 89 % |
| TEQ 300-4815WIR | | 24 VDC | 12'500 mA | 92 % |
| TEQ 300-4816WIR | | 28 VDC | 10'800 mA | 91 % |
| TEQ 300-4818WIR | | 48 VDC | 6'300 mA | 92 % |
| TEQ 300-7212WIR | 43 - 160 VDC (110 VDC nom.) | 12 VDC | 25'000 mA | 89 % |
| TEQ 300-7215WIR | | 24 VDC | 12'500 mA | 91 % |
| TEQ 300-7216WIR | | 28 VDC | 10'800 mA | 91 % |
| TEQ 300-7218WIR | | 48 VDC | 6'300 mA | 92 % |

| Options | |
|------------------|--|
| Current Splitter | - Current Line Splitter (2 incl. in every 48 Vin module): www.tracopower.com/products/current-splitter.pdf |
| TEQ-MK2 | - Optional DIN-Rail Mounting Kit: www.tracopower.com/products/teq-mk2.pdf |

Note - Max. Power up to 400 W (depending on temperature and duty cycle)

Input Specifications

| | | |
|------------------------|--------------|--|
| Input Current | - At no load | 48 Vin models: 30 mA typ. 110 Vin models: 20 mA typ. |
| Surge Voltage | | 48 Vin models: 100 VDC max. (1 s max.) 110 Vin models: 185 VDC max. (1 s max.) |
| Under Voltage Lockout | | 48 Vin models: 15.6 VDC min. / 16 VDC typ. / 16.8 VDC max. 110 Vin models: 33 VDC min. / 34.5 VDC typ. / 36 VDC max. |
| Recommended Input Fuse | | 48 Vin models: 25'000 mA (fast acting) 110 Vin models: 12'000 mA (fast acting) (The need of an external fuse has to be assessed in the final application.) |
| Input Filter | | Internal Common Mode Choke + Pi-Type |

Output Specifications

| | | |
|--|--|--|
| Output Voltage Adjustment | | ±20% (By trim potentiometer) Output power must not exceed rated power! |
| Voltage Set Accuracy | | ±1% max. |
| Regulation | - Input Variation (Vmin - Vmax) - Load Variation (0 - 100%) | 0.2% max. 0.5% max. |
| Ripple and Noise (20 MHz Bandwidth) | | 12 Vout models: 100 mVp-p typ. 24 Vout models: 200 mVp-p typ. 28 Vout models: 200 mVp-p typ. 48 Vout models: 300 mVp-p typ. 12 Vout models: 125 mVp-p max. 24 Vout models: 250 mVp-p max. 28 Vout models: 250 mVp-p max. 48 Vout models: 350 mVp-p max. |
| Capacitive Load | | Infinite |
| Minimum Load | | Not required |
| Temperature Coefficient | | ±0.02 %/K max. |
| Start-up Time | | 140 ms typ. |
| Short Circuit Protection | | Automatic recovery |
| Overload Protection | | Constant Current Mode |
| Output Current Limitation | | 105 - 115% of Iout max. |
| Overvoltage Protection | | 125 - 140% of Vout nom. |
| Transient Response | - Response Time | 250 µs typ. (25% Load Step) |
| Load Share Function | - Refer to application note | www.tracopower.com/overview/teq300wir |
| Load Share Accuracy | | 10% |

Safety Specifications

| | | |
|-----------------------|--|---|
| Safety Standards | - IT / Multimedia Equipment - Industrial Control Equipment - Railway Applications - Certification Documents | EN 60950-1 IEC 60950-1 UL 60950-1 UL 508 EN 50155 www.tracopower.com/overview/teq300wir |
| Pollution Degree | | PD 2 |
| Over Voltage Category | | OVC II |

EMC Specifications

| | | |
|---------------|---|---|
| EMI Emissions | - Conducted Emissions - Radiated Emissions | EN 50121-4 (Railway Application Signalling) EN 55011 class A (internal filter) EN 55032 class A (internal filter) EN 55011 class A (internal filter) EN 55032 class A (internal filter) |
|---------------|---|---|

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

| | | |
|-----------------------------|-------------|--|
| EMS Immunity | | EN 50155 (Railway Applications) EN 50121-3-2 (EMC for Rolling Stock) EN 55024 (IT Equipment) |
| - Electrostatic Discharge | Air: | EN 61000-4-2, ± 8 kV, perf. criteria A |
| - RF Electromagnetic Field | Contact: | EN 61000-4-2, ± 6 kV, perf. criteria A |
| - EFT (Burst) / Surge | | 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 |
| - Conducted RF Disturbances | | EN 61000-4-5, ± 2 kV, perf. criteria A |
| - PF Magnetic Field | Continuous: | EN 61000-4-6, 10 Vrms, perf. criteria A |
| | | EN 61000-4-8, 100 A/m, perf. criteria A |

General Specifications

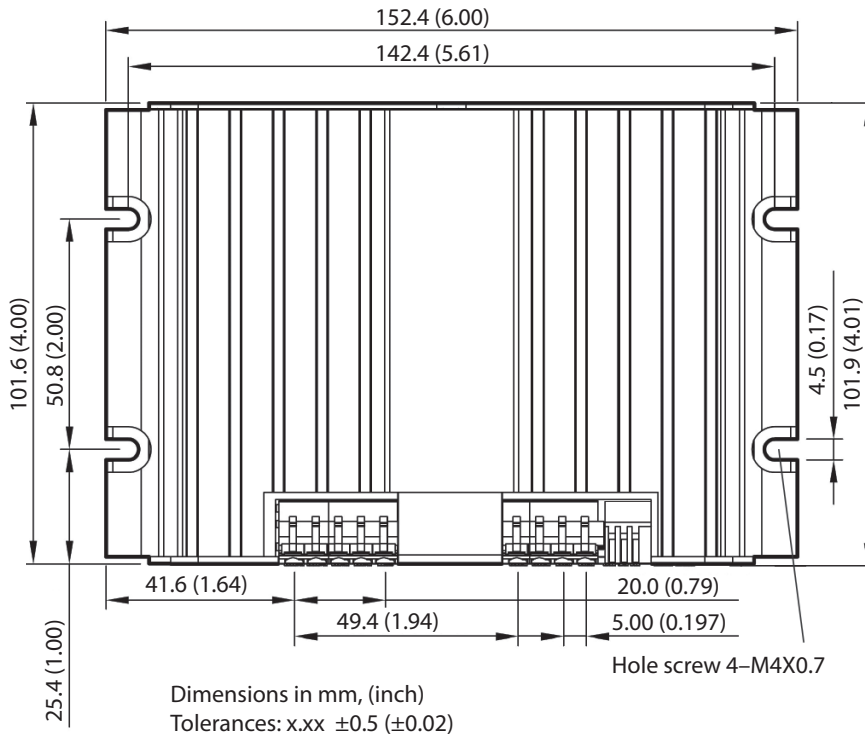
| | | |
|---|---------------------------------|--|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature | -40°C to +80°C |
| | - Case Temperature | +105°C max. |
| | - Storage Temperature | -40°C to +105°C |
| Power Derating | - High Temperature | See application note: www.tracopower.com/overview/teq300wir |
| Over Temperature Protection Switch Off | - Protection Mode | 100°C min. / 105°C typ. / 115°C max. (Automatic recovery) |
| Cooling System | | Natural convection (20 LFM) |
| Sense Function | | 10% max. of Vout nom. |
| Remote Control | - Voltage Controlled Remote | On: 3.0 to 12 VDC or open circuit Off: 0 to 1.2 VDC or short circuit Refers to 'Remote' and '-Vin' Pin |
| | - Off Idle Input Current | 10 mA max. |
| | - Remote Pin Input Current | -0.5 to 1.0 mA |
| Altitude During Operation | | 3'000 m max. |
| Switching Frequency | | 225 kHz typ. (PWM) ($\pm 10\%$, 48 VDC models) 200 kHz typ. (PWM) ($\pm 20\%$, 110 VDC model) |
| Insulation System | | Reinforced Insulation |
| Isolation Test Voltage | - Input to Output, 60 s | 3'000 VAC |
| | - Input to Case, 60 s | 1'500 VAC |
| | - Output to Case, 60 s | 1'500 VAC |
| Isolation Resistance | - Input to Output, 500 VDC | 1'000 M Ω min. |
| Isolation Capacitance | - Input to Output, 100 kHz, 1 V | 14'000 pF typ. |
| Reliability | - Calculated MTBF | 149'000 h (MIL-HDBK-217F, ground benign) |
| Environment | - Vibration | MIL-STD-810F 7.6 g, 3 axis, 60 min, 20-2000 Hz EN 61373 |
| | - Mechanical Shock | MIL-STD-810F EN 61373 |
| | - Thermal Shock | MIL-STD-810F |
| Housing Material | | Aluminium |
| Potting Material | | Silicone (UL 94 V-0 rated) |
| Connection Type | | Clip |
| Weight | | 900 g |
| Thermal Impedance | | 1.1 K/W (Mounted on 19" x 5.25" x " 0.063" iron base plate) |
| 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 |

Supporting Documents

| | |
|---|--|
| Overview Link (for additional Documents) | www.tracopower.com/overview/teq300wir |
|---|--|

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

Outline Dimensions



| Terminal connection | | |
|---------------------|----------------|------------------|
| Terminal | Pin Function | Recommended Wire |
| 1,2 | +Vin | 12 - 16 AWG |
| 3, 4 | -Vin (GND) | 12 - 16 AWG |
| 5 | On/Off Ctrl | 12 - 16 AWG |
| 6, 7 | + Vout** | 12 - 16 AWG |
| 8, 9 | - Vout** | 12 - 16 AWG |
| 10 | +Sense* | 20 - 28 AWG |
| 11 | LS (Loadshare) | 20 - 28 AWG |
| 12 | -Sense* | 20 - 28 AWG |

* Sense line to be connected to the output either at the module or at the load under regard of polarity.
** Wire size shall be selected to withstand the peak current (Iout max. + Current limitation).

