

- 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 and reverse input voltage protection make 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

TEQ-MK2	- Optional DIN-Rail Clip: www.tracopower.com/products/teq-mk2.pdf
Current Splitter	- Current Line Splitter (2 incl. in every 48 Vin module): www.tracopower.com/products/current-splitter.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)
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: 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. 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.
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	IEC 60950-1 EN 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)
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All specifications valid at nominal voltage, full load and +25°C after warm-up time unless otherwise stated.

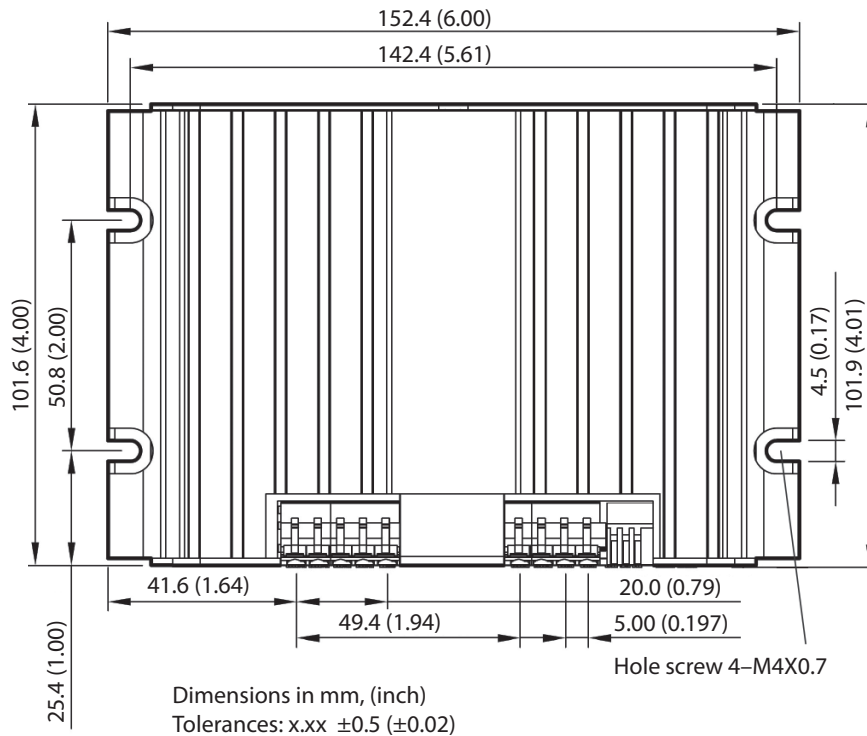
EMS Immunity		EN 50155 (Railway Applications) EN 50121-3-2 (EMC for Rolling Stock) EN 55024 (IT Equipment)
- Electrostatic Discharge	Air:	EN 61000-4-2, ± 8 kV, perf. criteria A
- RF Electromagnetic Field	Contact:	EN 61000-4-2, ± 6 kV, perf. criteria A EN 61000-4-3, 20 V/m, perf. criteria A EN 61000-4-4, ± 2 kV, perf. criteria A EN 61000-4-5, ± 1 kV, perf. criteria A EN 61000-4-5, ± 2 kV, perf. criteria A EN 61000-4-6, 10 Vrms, perf. criteria A
- EFT (Burst) / Surge		
- Conducted RF Disturbances	Continuous:	EN 61000-4-8, 100 A/m, perf. criteria A
- PF Magnetic Field		

General Specifications		
Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature - Case Temperature - Storage Temperature	-40°C to +80°C +105°C max. -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 - 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 10 mA max. -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 - Input to Case, 60 s - Output to Case, 60 s	3'000 VAC 1'500 VAC 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 - Mechanical Shock - Thermal Shock	MIL-STD-810F 20 - 2000 Hz, 7.6g, 3 Axes (each 1h) EN 61373 MIL-STD-810F EN 61373 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 - 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/teq300wir

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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).

