

DC/DC Converter

TEQ 300WIR Series, 300 Watt

- 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 55032 class A
- I/O isolation 3000 VDC
- Infinite capacitive load
- Under voltage lock-out circuit
- Soft start
- Input protection filter



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 +60°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	Output voltage	Output current max.	Efficiency typ.
TEQ 300-4812WIR	18 - 75 VDC (nominal 48 VDC)	12 VDC	25 A	89 %
TEQ 300-4815WIR		24 VDC	12.5 A	92 %
TEQ 300-4816WIR		28 VDC	10.8 A	91 %
TEQ 300-4818WIR		48 VDC	6.3 A	92 %
TEQ 300-7212WIR	43 - 160 VDC (nominal 110 VDC)	12 VDC	25 A	89 %
TEQ 300-7215WIR		24 VDC	12.5 A	91 %
TEQ 300-7216WIR		28 VDC	10.8 A	91 %
TEQ 300-7218WIR		48 VDC	6.3 A	92 %

Input Specifications

Input current no load	48 Vin models: 30 mA typ. 110 Vin models: 25 mA typ.
Surge voltage (1 s max.)	48 Vin models: 100 V max. 110 Vin models: 185 V max.
Start-up voltage	48 Vin models: 18 VDC (or lower) 110 Vin models: 43 VDC (or lower)
Under voltage shut down	48 Vin models: 16.8 VDC (or lower) 110 Vin models: 36.0 VDC (or lower)
External fuse (required)	48 Vin models: 25 A (fast acting) 110 Vin models: 12 A (fast acting)
Input filter	Common mode choke and Pi type
EMC emissions	– Conducted and radiated input suppression EN 55032, EN 55011 class A (internal filter)
EMC immunity	– ESD (electrostatic discharge) EN 61000-4-2, air ± 8 kV, contact ± 6 kV, perf. criteria A – Radiated immunity EN 61000-4-3, 20 V/m, perf. criteria A – Fast transient / surge EN 61000-4-4, ± 2 kV, perf. criteria A (without external input capacitor) EN 55024: EN 61000-4-5, ± 1 kV perf. criteria A EN 50155: EN 61000-4-5, ± 2 kV perf. criteria A – Conducted immunity EN 61000-4-6, 10 Vrms, perf. criteria A – Power frequency magnetic field EN 61000-4-8, 100 A/m, perf. criteria A

Output Specifications

Voltage adjustability	– Max. output deviation is incl. remote sense	± 20 %
Remote Sense	– Remote sense can compensate maximal	+10% of Vout nom.
Voltage set accuracy		± 1 %
Output power	– Rated output power – Max. output power	300W up to 400W (depending on temperature and duty cycle)
Regulation	– Input variation (Vin min. to Vin max.) – Load variation (0 to 100 %)	0.2 % max. 0.5 % max.
Temperature coefficient		± 0.02 %/K typ.
Start up time (constant resistive load)		140 ms
Minimum load		not required
Ripple and noise (20 MHz Bandwidth)	12 Vout models: 125 mVp-p max. 24 & 28 Vout models: 250 mVp-p max. 48 Vout models: 350 mVp-p max.	
Transient response (25% load step change)		250 μ s typ.
Over voltage protection		at 125 - 140 % of Vout nom. (Latch mode)
Over current protection (constant current mode)		at 105 - 120 % of rated lout max.
Short circuit protection		continuous, automatic recovery
Capacitive load		infinite
Power sharing	– Max. output power of 2 pcs. paralleled – Max. output power of 3 pcs. paralleled – Load share accuracy – For further information refere to application note	540 W 810 W 10 % max. www.tracopower.com/overview/teq300wir

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

General Specifications

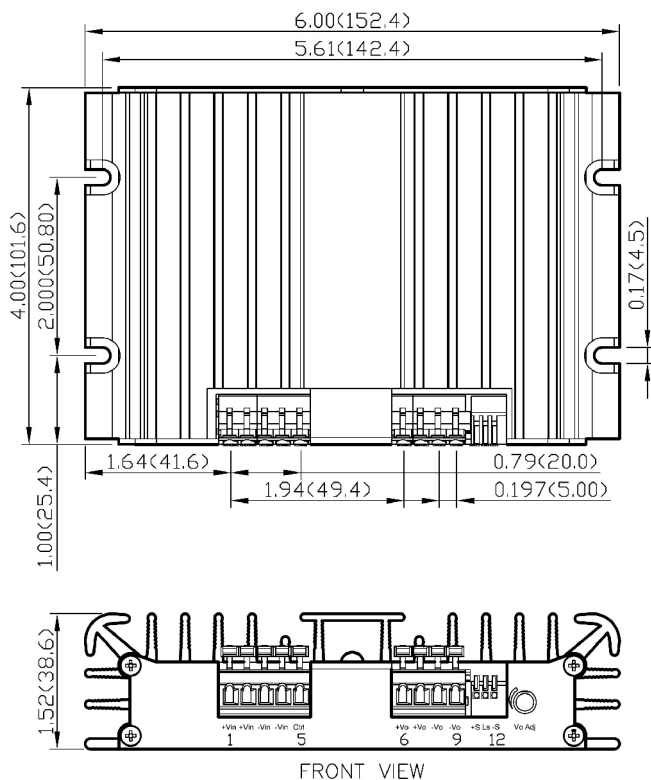
Temperature ranges	– Operating (natural convection: 20 LFM, 0.1 m/s)	–40°C to +80°C
	– Storage temperature	–40°C to +105°C
Thermal impedance (mounted on metal plate 19"x5.25"x0.063")		1.1 K/W
Derating		2.2 %/K above 60°C
Over temperature protection		at 105°C typ.
Humidity (non condensing)		5 - 95 % rel H max.
Mechanical shock		acc. EN61373, MIL-STD-810F
Thermal shock		acc. MIL-STD-810F
Vibration		20 - 2000Hz, 7.6grms, 3 axes (total 3 hours)
Isolation voltage (60 s)	– Input/Output to Case	1'500 VAC
	– Input to Output	3'000 VAC
Isolation capacitance (input to output)		14'000 pF typ.
Isolation resistance (input to output)		>1 GOhm
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		149'000 h
Altitude during operation		3000 m max.
Switching frequency	48 Vin models:	225 kHz typ. (PWM)
	110 Vin models:	200 kHz typ. (PWM)
Safety standards & approvals	– CB test certificate	IEC/EN 62368-1, IEC/EN 60950-1
	– UL online certification E188913, OQGO2	UL 60950-1
	– CSA certificate of compliance	UL 508
	– Railway immunity	EN 50155
	– Certification documents	www.tracopower.com/overview/teq300wir
Remote On/Off	– Positive logic	On: 3 to 12 VDC or open circuit
	– Off idle current:	Off: 0 to 1.2 VDC or short circuit 3 & 4 with 5 4 mA
Environmental compliance	– Reach	www.tracopower.com/info/reach-declaration.pdf
	– RoHS	RoHS directive 2011/65/EU
	– Flamability identified acc. EN 45545-2	www.tracopower.com/info/en45545-declaration.pdf

Physical Specifications

Casing material	aluminium
Potting material	silicone (UL94 V-0 rated)
Weight	900 g (31.74 oz)

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Outline Dimensions



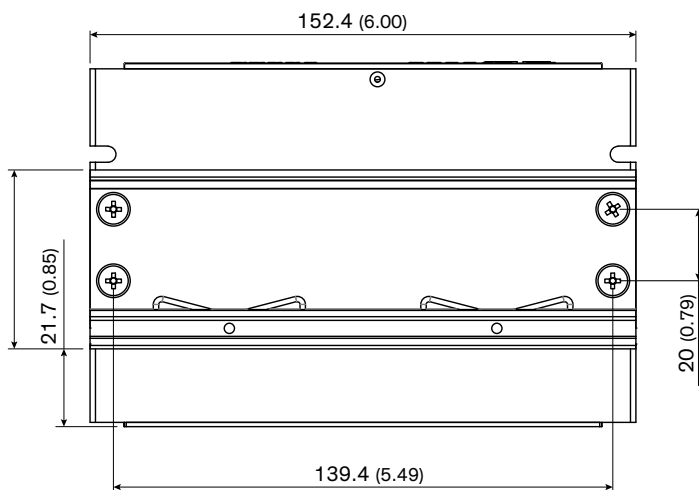
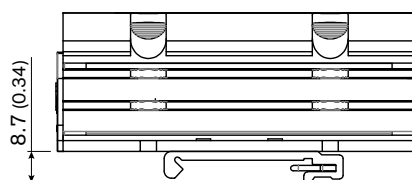
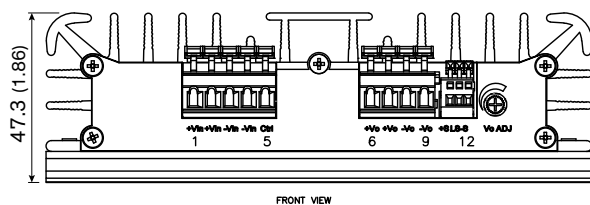
Terminal connection

Terminal	Pin Function	Recommended Wire
1, 2	+Vin	12–16 AWG
3, 4	–Vin (GND)	12–16 AWG
5	On/Off Ctrl	12–28 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)

Dimensions in [Inch], () = mm
Tolerances: x.xx ±0.5 (±0.02)

DIN-Rail clip:

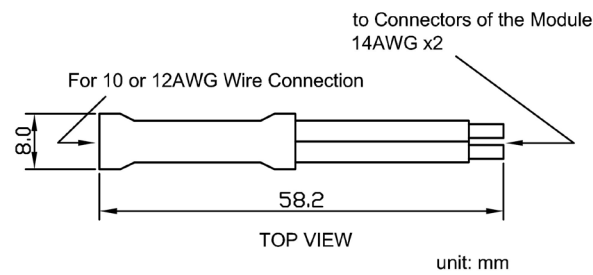


Order Code: **TEQ-MK2**

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

Current Line Splitter

each 48 Vin module has 2 bypacked splitters included



The current rating of the terminal block is 15 A/pole. It's recommended to use 2 poles in parallel if the peak output current can exceed 15 A.

Table for Input voltage vs. Input terminal specifications:

Output power	Input voltage	Input terminal
300 W CV mode	≥ 23 Vin	1 pole
	< 23 Vin	2 poles
400 W CC mode	≥ 32 Vin	1 pole
	< 32 Vin	2 poles

