TRACO POWER

DC/DC Converter

TEQ 100WIR Series, 100 Watt

- **High power block with excellent thermal convection**
- **Operating temperature -40°C to +85°C without derating**
- **Increased shock & vibration resistance**
- **Ultra wide 4:1 input voltage range**
- **EN 50155 approval for railway applications**
- **Excellent efficiency up to 90%**
- **Input filter meet EN 55022, class A**
- **I/O isolation 1591 VAC**
- **Under voltage lock-out circuit**
- **Soft start**

UL 508 UL 60950-1 IEC 60950-1

The TEQ 100WIR 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 +85°C with natural convection cooling without power derating and up to +95°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 100-2412WIR	10 - 36 VDC (24 VDC nom.)	12 VDC	8'400 mA	90 %
TEQ 100-2415WIR		24 VDC	4'200 mA	90 %
TEQ 100-2416WIR		28 VDC	3'600 mA	90 %
TEQ 100-2418WIR		48 VDC	2'100 mA	90 %
TEQ 100-4812WIR	19 - 75 VDC (48 VDC nom.)	12 VDC	8'400 mA	90 %
TEQ 100-4815WIR		24 VDC	4'200 mA	90 %
TEQ 100-4816WIR		28 VDC	3'600 mA	90 %
TEQ 100-4818WIR		48 VDC	2'100 mA	90 %
TEQ 100-7212WIR	43 - 160 VDC (110 VDC nom.)	12 VDC	8'400 mA	89 %
TEQ 100-7215WIR		24 VDC	4'200 mA	90 %
TEQ 100-7216WIR		28 VDC	3'600 mA	90 %
TEQ 100-7218WIR		48 VDC	2'100 mA	90 %

Options

TEQ-MK1	- Optional DIN-Rail Clip: www.tracopower.com/products/teq-mk1.pdf

Input Specifications

Input Current	- At no load	24 Vin models:	25 mA typ.
		48 Vin models:	20 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:	185 VDC max. (1 s max.)
Under Voltage Lockout		24 Vin models:	7.3 - 8 VDC
		48 Vin models:	15.8 - 17 VDC
		110 Vin models:	34.5 - 37.5 VDC
Input Filter			Internal Common Mode Choke + Pi-Type

Output Specifications

Output Voltage Adjustment			−20% to +10% (By trim potentiometer) 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)		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		12 Vout models:	7'000 µF max.
		24 Vout models:	1'750 µF max.
		28 Vout models:	1'280 µF max.
		48 Vout models:	430 µF max.
Minimum Load			Not required
Temperature Coefficient			±0.02 %/K max.
Start-up Time			75 ms typ.
Short Circuit Protection			Continuous, Automatic recovery
Output Current Limitation			120 - 150% of Iout max. (150% typ. for 110 VDC models)
Overvoltage Protection			115 - 130% of Vout nom.
Transient Response	- Response Time		200 µs typ. / 250 µs max. (25% Load Step)

Safety Specifications

Safety Standards	- IT / Multimedia Equipment	IEC 60950-1
		EN 60950-1
		UL 60950-1
	- Industrial Control Equipment	UL 508
	- Railway Applications	EN 50155
	- Certification Documents	www.tracopower.com/overview/teq100wir
Pollution Degree		PD 2

EMC Specifications

EMI Emissions		EN 50121-3-2 (EMC for Rolling Stock)
	- Conducted Emissions	EN 55011 class A (internal filter)
		EN 55032 class A (internal filter)
	- Radiated Emissions	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) EN 61204-3 (Low Voltage Power Supplies)
	- Electrostatic Discharge	Air: Contact:	EN 61000-4-2, ±8 kV, perf. criteria A EN 61000-4-2, ±6 kV, perf. criteria A
	- RF Electromagnetic Field		EN 61000-4-3, 20 V/m, perf. criteria A
	- EFT (Burst)		EN 61000-4-4, ±2 kV, perf. criteria A
	- Surge		EN 61000-4-5, ±1 kV, perf. criteria A
	- Conducted RF Disturbances		EN 61000-4-6, 10 Vrms, perf. criteria A
	- PF Magnetic Field	Continuous:	EN 61000-4-8, 100 A/m, perf. criteria A

General Specifications

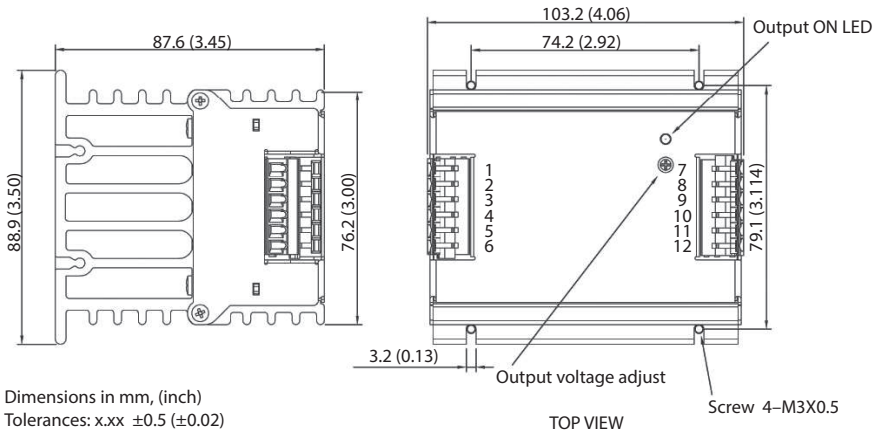
Relative Humidity			95% max. (non condensing)
Temperature Ranges	- Operating Temperature		–40°C to +95°C
	- Storage Temperature		–40°C to +105°C
Power Derating	- High Temperature	See application note:	www.tracopower.com/overview/teq100wir
Over Temperature Protection Switch Off			105°C min. / 110°C typ. / 120°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
	- Off Idle Input Current		7 mA max.
	- Remote Pin Input Current		-0.5 to 1.0 mA
Altitude During Operation			2'000 m max.
Switching Frequency			300 kHz typ. (PWM) (±10%, 110 VDC models) 250 kHz typ. (PWM) (±10%, other outp. models)
Insulation System			Reinforced Insulation
Isolation Test Voltage	- Input to Output, 60 s		1'591 VAC
	- Input to Case, 60 s		1'131 VAC
	- Output to Case, 60 s		1'131 VAC
Isolation Resistance	- Input to Output, 500 VDC		1'000 MOhm min.
Reliability	- Calculated MTBF		711'000 h (MIL-HDBK-217F at 55°C, ground benign)
Environment	- Vibration		MIL-STD-810F 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			800 g
Thermal Impedance			1.45 K/W
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/teq100wir

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

Outline Dimensions



Dimensions in mm, (inch)
Tolerances: x.xx ±0.5 (±0.02)

Terminal connection		
Terminal	**Pin Function**	**Recommended Wire**
1,2	–Vin	12 AWG
3	NC	NC
4	On/Off Ctrl	14 - 18 AWG
5, 6	+Vin	12 AWG
7, 8	–Vout	12 AWG
9	–Sense*	14 - 18 AWG
10	+Sense*	14 - 18 AWG
11, 12	+Vout	12 AWG

NC: No Connection

* Sense line to be connected to the output either at the module or at the load under regard of polarity.
- The current rating of the terminal block is 15 A/pole.
- Using 2 poles in parallel if the peak output current can exceed 15 A.
- Wire size shall be selected to withstand the peak output current (Iout max + Current limitation).

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