

- Compact SIP-8 package
- Wide 4:1 input voltage range
- Temperature range -40° to $+70^{\circ}\text{C}$ without derating
- High efficiency up to 83%
- I/O isolation 1600 VDC
- Protection against short-circuit and over load
- Fully regulated outputs
- Remote On/Off control
- 3-year product warranty



The TMR 4WI is a regulated 4 Watt DC/DC converter series with 4:1 input voltage range. It comes in a compact SIP-8 package featuring single and dual output models, I/O isolation voltage of 1600 VDC and protection against short-circuit and over load. Being a 4 Watt converter this series acts as an excellent gap closer between the more common 3 & 6 Watt converters. It offers a cost-efficient alternative to 5 and 6 Watt converters in applications where a 3 Watt converter would operate at the absolute technical limits (e.g. output power). The intelligent design provides efficiencies up to 83% and a temperature range of -40°C to $+70^{\circ}\text{C}$ without derating which enables an unrestricted use of this converter series in applications with demanding temperature requirements. Additionally, the integrated remote On/Off function offers a convenient way to control your application. Certified according to the latest IEC/EN/UL 62368-1 industrial standard the TMR 4WI is designed to deliver a high quality, cost efficient and compact solution for many applications.

Models						
Order Code	Input Voltage Range	Output 1		Output 2		Efficiency typ.
		Vnom	I _{max}	Vnom	I _{max}	
TMR 4-2411WI	9 - 36 VDC (24 VDC nom.)	5 VDC	800 mA			79 %
TMR 4-2412WI		12 VDC	333 mA			83 %
TMR 4-2413WI		15 VDC	266 mA			83 %
TMR 4-2415WI		24 VDC	166 mA			83 %
TMR 4-2422WI		+12 VDC	166 mA	-12 VDC	166 mA	83 %
TMR 4-2423WI		+15 VDC	133 mA	-15 VDC	133 mA	83 %
TMR 4-4811WI	18 - 75 VDC (48 VDC nom.)	5 VDC	800 mA			78 %
TMR 4-4812WI		12 VDC	333 mA			82 %
TMR 4-4813WI		15 VDC	266 mA			82 %
TMR 4-4815WI		24 VDC	166 mA			82 %
TMR 4-4822WI		+12 VDC	166 mA	-12 VDC	166 mA	82 %
TMR 4-4823WI		+15 VDC	133 mA	-15 VDC	133 mA	82 %

Input Specifications

Input Current	- At no load	24 Vin models: 20 mA typ. 48 Vin models: 10 mA typ.
	- At full load	24 Vin models: 202 mA typ. 48 Vin models: 102 mA typ.
Surge Voltage		24 Vin models: 50 VDC max. (1 s max.) 48 Vin models: 100 VDC max. (1 s max.)
Recommended Input Fuse		(The need of an external fuse has to be assessed in the final application.)
Input Filter		Internal Capacitor

Output Specifications

Voltage Set Accuracy		±1% max.
Regulation	- Input Variation (Vmin - Vmax)	single output models: 0.5% max. dual output models: 0.5% max.
	- Load Variation (0 - 100%)	single output models: 1% max. dual output models: 1% max. (Output 1) 1% max. (Output 2)
	- Voltage Balance (symmetrical load)	dual output models: 2% max.
	- Cross Regulation (25% / 100% asym. load)	dual output models: 5% max.
Ripple and Noise	- 20 MHz Bandwidth	80 mVp-p max.
Capacitive Load	- single output	5 Vout models: 1'800 µF max. 12 Vout models: 1'000 µF max. 15 Vout models: 820 µF max. 24 Vout models: 470 µF max.
	- dual output	12 / -12 Vout models: 560 / 560 µF max. 15 / -15 Vout models: 390 / 390 µF max.
Minimum Load		Not required
Temperature Coefficient		±0.02 %/K max.
Start-up Time		30 ms typ.
Short Circuit Protection		Continuous, Automatic recovery
Overload Protection		Foldback Mode
Output Current Limitation		160% typ. of Iout max.
Transient Response	- Response Deviation	3% typ. / 5% max. (25% Load Step)
	- Response Time	250 µs typ. (25% Load Step)

Safety Specifications

Safety Standards	- IT / Multimedia Equipment	EN 62368-1 IEC 62368-1 UL 62368-1
	- Certification Documents	www.tracopower.com/overview/tmr4wi

EMC Specifications

EMI Emissions	- Conducted Emissions	EN 55032 class A (with external filter) EN 55032 class B (with external filter) FCC Part 15 class A (with external filter) FCC Part 15 class B (with external filter)
	- Radiated Emissions	EN 55032 class A (with external filter) EN 55032 class B (with external filter) FCC Part 15 class A (with external filter) FCC Part 15 class B (with external filter)
External filter proposal:		www.tracopower.com/overview/tmr4wi

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

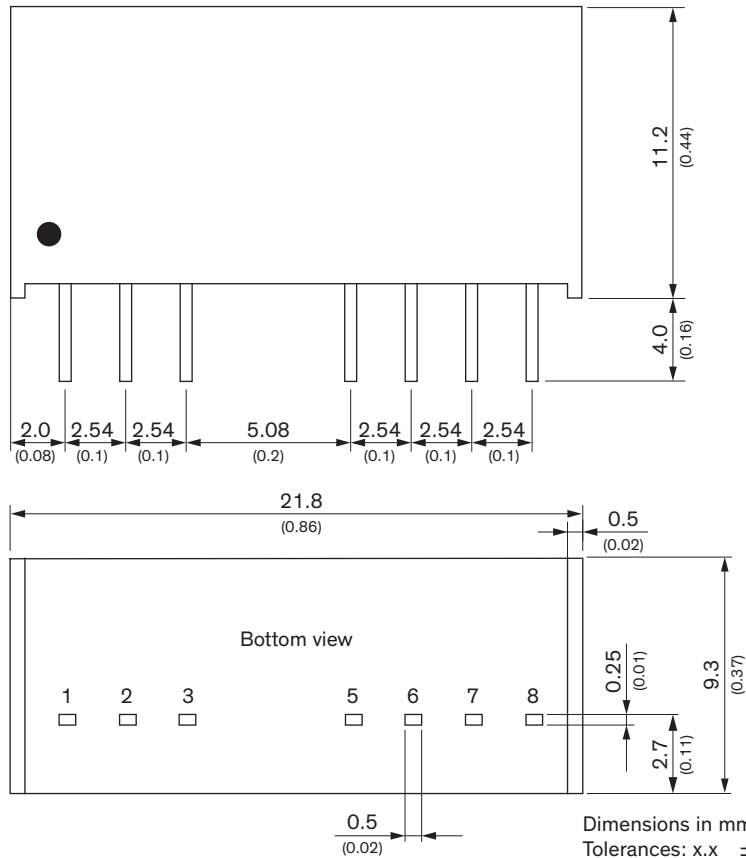
EMS Immunity		EN 55024 (IT Equipment)
		EN 55035 (Multimedia)
- Electrostatic Discharge - RF Electromagnetic Field - EFT (Burst) / Surge	Air:	EN 61000-4-2, ± 8 kV, perf. criteria A
	Contact:	EN 61000-4-2, ± 6 kV, perf. criteria A
		EN 61000-4-3, 10 V/m, perf. criteria A
		EN 61000-4-4, ± 2 kV, perf. criteria A
		EN 61000-4-5, ± 1 kV, perf. criteria A
- Conducted RF Disturbances - PF Magnetic Field	Ext. input component:	24 Vin models: 330 μ F, 80 V
		48 Vin models: 330 μ F, 100 V
		EN 61000-4-6, 10 Vrms, perf. criteria A
	Continuous:	EN 61000-4-8, 3 A/m, perf. criteria A

General Specifications		
Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-40°C to +85°C
	- Case Temperature	+100°C max.
	- Storage Temperature	-55°C to +125°C
Power Derating	- High Temperature	3.33 %/K above 70°C
Cooling System		Natural convection (20 LFM)
Remote Control	- Voltage Controlled Remote	On: < 0.6 VDC or open circuit
	- Off Idle Input Current	Off: 6 to 15 VDC 2.5 mA typ.
Switching Frequency		100 kHz min. (PFM)
Insulation System		Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s	1'600 VDC
	- Input to Output, 1 s	1'920 VDC
Isolation Resistance	- Input to Output, 500 VDC	1'000 M Ω min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	200 pF typ.
Reliability	- Calculated MTBF	2'860'000 h (MIL-HDBK-217F, ground benign)
Housing Material		Non-conductive Plastic (UL94 V-0 rated)
Pin Material		Tinned Copper
Connection Type		THD (Through-Hole Device)
Weight		4.8 g
Environmental Compliance	- Reach	www.tracopower.com/info/reach-declaration.pdf
	- RoHS	www.tracopower.com/info/rohs-declaration.pdf

Supporting Documents	
Overview Link (for additional Documents)	www.tracopower.com/overview/tmr4wi

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Outline Dimensions



Pinout		
Pin	Single	Dual
1	–Vin (GND)	–Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote On/Off	Remote On/Off
5	NC	NC
6	+Vout	+Vout
7	–Vout	Common
8	NC	–Vout

NC: Not connected

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TRACO Power:

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