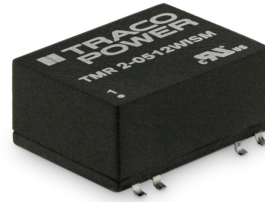


- Ultra wide 4:1 Input: 4.5–12, 9–36 and 18–75 VDC
- I/O-isolation 1'500 VDC
- Fully regulated outputs
- Operating temperature range –40°C to +80°C
- Protection against short circuit and overload
- Remote On/Off
- 3-year product warranty



The TMR 2WISM Series is a set of 2 Watt SMD DC/DC converters. They operate up to 70°C environment temperature at full load or up to 80°C with a 50% load derating. With UL 60950-1 certification, 1'500 VDC I/O-isolation voltage, external On/Off and short current protection they cover a wide range of application when space is limited. The input of the converters is designed for a wide voltage range (4:1) and minimum load is not required.

Models						
Order Code	Input Voltage Range	Output 1		Output 2		Efficiency typ.
		Vnom	I _{max}	Vnom	I _{max}	
TMR 2-0511WISM	4.5 - 12 VDC (9 VDC nom.)	5 VDC	400 mA			80 %
TMR 2-0512WISM		12 VDC	167 mA			84 %
TMR 2-0513WISM		15 VDC	134 mA			83 %
TMR 2-0515WISM		24 VDC	83 mA			84 %
TMR 2-0522WISM		+12 VDC	83 mA	–12 VDC	83 mA	83 %
TMR 2-0523WISM		+15 VDC	67 mA	–15 VDC	67 mA	82 %
TMR 2-2411WISM	9 - 36 VDC (24 VDC nom.)	5 VDC	400 mA			80 %
TMR 2-2412WISM		12 VDC	167 mA			84 %
TMR 2-2413WISM		15 VDC	134 mA			85 %
TMR 2-2415WISM		24 VDC	83 mA			85 %
TMR 2-2422WISM		+12 VDC	83 mA	–12 VDC	83 mA	83 %
TMR 2-2423WISM		+15 VDC	67 mA	–15 VDC	67 mA	83 %
TMR 2-4811WISM	18 - 75 VDC (48 VDC nom.)	5 VDC	400 mA			78 %
TMR 2-4812WISM		12 VDC	167 mA			82 %
TMR 2-4813WISM		15 VDC	134 mA			83 %
TMR 2-4815WISM		24 VDC	83 mA			84 %
TMR 2-4822WISM		+12 VDC	83 mA	–12 VDC	83 mA	82 %
TMR 2-4823WISM		+15 VDC	67 mA	–15 VDC	67 mA	82 %

Input Specifications

Input Current	- At no load	9 Vin models: 40 mA typ. 24 Vin models: 20 mA typ. 48 Vin models: 10 mA typ.
	- At full load	9 Vin models: 490 mA typ. 24 Vin models: 100 mA typ. 48 Vin models: 50 mA typ.
Surge Voltage		9 Vin models: 15 VDC max. (1 s max.) 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 Pi-Type
Short Circuit Input Power		1.5 W max.

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	50 mVp-p max.
Capacitive Load	- single output	5 Vout models: 1'680 µF max. 12 Vout models: 820 µF max. 15 Vout models: 680 µF max. 24 Vout models: 390 µF max.
	- dual output	12 / -12 Vout models: 470 / 470 µF max. 15 / -15 Vout models: 330 / 330 µF max.
Minimum Load		Not required
Temperature Coefficient		±0.02 %/K max.
Start-up Time		30 ms max.
Short Circuit Protection		Automatic recovery
Overload Protection		Foldback Mode
Output Current Limitation		160% typ. of Iout max.
Transient Response	- Response Deviation	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/tmr2wism
Pollution Degree		PD 3

EMC Specifications

EMI Emissions	- Conducted Emissions	EN 55032 class A (internal filter) FCC Part 15 class A (internal filter)
	- Radiated Emissions	EN 55032 class A (internal filter) FCC Part 15 class A (internal filter)

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

EMS Immunity	- Electrostatic Discharge	EN 55024 (IT Equipment)
	- RF Electromagnetic Field	Air: EN 61000-4-2, ± 8 kV, perf. criteria A
	- EFT (Burst) / Surge	Contact: EN 61000-4-2, ± 6 kV, perf. criteria A
	- Conducted RF Disturbances	EN 61000-4-3, 10 V/m, perf. criteria A
	- PF Magnetic Field	EN 61000-4-4, ± 2 kV, perf. criteria A
		EN 61000-4-5, ± 1 kV, perf. criteria A
		Ext. input component: Capacitor: 220 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 +80°C
	- Case Temperature	+95°C max.
	- Storage Temperature	-55°C to +125°C
Power Derating	- High Temperature	4 %/K above 70°C
Cooling System		Natural convection (20 LFM)
Remote Control	- Voltage Controlled Remote	On: < 0.6 VDC or open circuit
		Off: 4.7 to 15 VDC
	- Current Controlled Remote	On: open circuit
		Off: 2 to 4 mA current
	- Off Idle Input Current	3 mA max.
Altitude During Operation		5'000 m max.
Switching Frequency		100 kHz min. (PFM)
Insulation System		Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s	1'500 VDC
	- Input to Output, 1 s	1'800 VDC
Isolation Resistance	- Input to Output, 500 VDC	1'000 M Ω min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	500 pF typ.
Reliability	- Calculated MTBF	6'430'000 h (MIL-HDBK-217F, ground benign)
Moisture Sensitivity (MSL)		Level 2 (J-STD-033C)
Washing Process		Not allowed (non-hermetical product)
Housing Material		Non-conductive Plastic (UL 94 V-0 rated)
Pin Material		Phosphor Bronze (C5191)
Pin Foundation Plating		Copper (1 - 3 μ m)
Pin Surface Plating		Tin (7.5 μ m min.), matte
Soldering Profile		Reflow Soldering (J-STD-020E)
Connection Type		SMD (Surface-Mount Device)
Weight		3.5 g
Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf
	- RoHS Declaration	REACH SVHC list compliant REACH Annex XVII compliant www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7a (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule). The SCIP number is provided on request.)

Supporting Documents

Overview Link (for additional Documents)	www.tracopower.com/overview/tmr2wism
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All specifications valid at nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.

Pinout		
Pin	Single Output	Dual Output
1	−Vin (GND)	−Vin (GND)
2	Remote	Remote
6	NC	Common
7	NC	−Vout
8	+Vout	+Vout
9	−Vout	Common
14	+Vin (Vcc)	+Vin (Vcc)

Technical drawing of a 14-pin connector showing three views: side, top, and front.

Side View (Top): Shows a cross-section of the connector. Dimensions include a width of 15.4 mm (0.6 inches) and a height of 0.8 mm (0.03 inches). A 0-4° angle is indicated on the right side. A feature 'S' is shown with a tolerance of 0.15 mm.

Top View: Shows the top of the connector. Dimensions include a width of 17.0 mm (0.67 inches) and a height of 19.0 mm (0.75 inches). A central hole is dimensioned as Ø1.5 mm (Ø0.06 inches). Pin locations are numbered 1 through 14. A feature 'S' is shown with a tolerance of 0.15 mm.

Front View (Bottom): Shows the front of the connector. Dimensions include a width of 8.7 mm (0.35 inches) and a height of 1.9 mm (0.07 inches). Pin locations are numbered 1 through 14. A feature 'S' is shown with a tolerance of 0.15 mm.

Dimensions in mm (inch)
 Tolerances: x.xx ±0.5 (±0.02)
 x.xx ±0.25 (±0.01)
 Pin dimension tolerance: ±0.05 (±0.002)