

- Highest power density in SIP package
- Wide 4:1 input voltage range
- Ultra-compact SIP-8 package
- Smallest footprint 6 W converter
- Temperature range -40° to $+84^{\circ}\text{C}$
- High efficiency up to 88%
- Indefinite short-circuit protection
- I/O isolation 1600 VDC
- Remote On/Off control
- 3-year product warranty



The TMR 6WI series is a new family of isolated 6 W DC/DC converter modules with regulated output, featuring wide 4:1 input voltage ranges. The product comes in a ultra-compact SIP-8 plastic package with a small footprint occupying only 2.0 cm² (0.3 square inch) of board space. An excellent efficiency allows -40° to $+84^{\circ}\text{C}$ operation temperatures. Further features include remote On/Off control and continuous short circuit protection. The very compact dimensions of these converters make them an ideal solution for many space critical applications in communication equipment, instrumentation and industrial electronics.

Models

Order Code	Input Voltage Range	Output 1		Output 2		Efficiency typ.
		Vnom	I _{max}	Vnom	I _{max}	
TMR 6-2410WI	9 - 36 VDC (24 VDC nom.)	3.3 VDC	1'500 mA			81 %
TMR 6-2411WI		5 VDC	1'200 mA			84 %
TMR 6-2419WI		9 VDC	666 mA			86 %
TMR 6-2412WI		12 VDC	500 mA			87 %
TMR 6-2413WI		15 VDC	400 mA			88 %
TMR 6-2415WI		24 VDC	250 mA			87 %
TMR 6-2421WI		+5 VDC	600 mA	-5 VDC	600 mA	84 %
TMR 6-2422WI		+12 VDC	250 mA	-12 VDC	250 mA	87 %
TMR 6-2423WI		+15 VDC	200 mA	-15 VDC	200 mA	87 %
TMR 6-4810WI	18 - 75 VDC (48 VDC nom.)	3.3 VDC	1'500 mA			81 %
TMR 6-4811WI		5 VDC	1'200 mA			84 %
TMR 6-4819WI		9 VDC	666 mA			85 %
TMR 6-4812WI		12 VDC	500 mA			87 %
TMR 6-4813WI		15 VDC	400 mA			87 %
TMR 6-4815WI		24 VDC	250 mA			87 %
TMR 6-4821WI		+5 VDC	600 mA	-5 VDC	600 mA	84 %
TMR 6-4822WI		+12 VDC	250 mA	-12 VDC	250 mA	87 %
TMR 6-4823WI		+15 VDC	200 mA	-15 VDC	200 mA	87 %

Input Specifications

Input Current	- At no load	24 Vin models: 6 mA typ. 48 Vin models: 6 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		24 Vin models: 1'600 mA (slow blow) 48 Vin models: 1'000 mA (slow blow) (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: 0.2% max. dual output models: 0.2% max.
	- Load Variation (0 - 100%)	single output models: 0.5% max. dual output models: 1% max. (Output 1) 1% max. (Output 2)
	- Cross Regulation (25% / 100% asym. load)	dual output models: 5% max.
Ripple and Noise (20 MHz Bandwidth)	- single output	3.3 Vout models: 50 mVp-p max. 5 Vout models: 50 mVp-p max. 9 Vout models: 50 mVp-p max. 12 Vout models: 75 mVp-p max. 15 Vout models: 75 mVp-p max. 24 Vout models: 75 mVp-p max.
	- dual output	5 / -5 Vout models: 50 / 50 mVp-p max. 12 / -12 Vout models: 75 / 75 mVp-p max. 15 / -15 Vout models: 75 / 75 mVp-p max.
Capacitive Load	- single output	3.3 Vout models: 2'200 µF max. 5 Vout models: 1'100 µF max. 9 Vout models: 680 µF max. 12 Vout models: 470 µF max. 15 Vout models: 470 µF max. 24 Vout models: 180 µF max.
	- dual output	5 / -5 Vout models: 680 / 680 µF max. 12 / -12 Vout models: 330 / 330 µF max. 15 / -15 Vout models: 180 / 180 µF max.
Minimum Load		Not required
Temperature Coefficient		±0.02 %/K max.
Start-up Time		30 ms typ.
Short Circuit Protection		Continuous, Automatic recovery
Output Current Limitation		180% typ. of Iout max.
Transient Response	- Response Time	250 µs typ. (25% Load Step)

Safety Specifications

Standards	- IT / Multimedia Equipment	EN 62368-1 IEC 62368-1 UL 62368-1 www.tracopower.com/tmr6wi-safety-cert
	- Certification Documents	
Energy Source	- Output, acc. to 62368-1	ES1
Power Source	- Output, acc. to 62368-1	PS1
Pollution Degree		PD 2
Over Voltage Category		Not mains connected

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

EMC Specifications

EMI (Emissions)	- Conducted Emissions	EN 55032 class A (with external filter)
	- Radiated Emissions	EN 55032 class B (with external filter)
External filter proposal:		www.tracopower.com/tmr6wi-emc-filter
EMS (Immunity)	- 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
	- EFT (Burst) / Surge	EN 61000-4-3, 20 V/m, perf. criteria A
		EN 61000-4-4, ± 2 kV, perf. criteria A
		EN 61000-4-5, ± 2 kV, perf. criteria A
		Ext. input component: 24 VDC models: KY 220 μ F TVS (SMDJ70A)
	- Conducted RF Disturbances	48 VDC models: KY 220 μ F TVS (SMDJ120A)
	- PF Magnetic Field	EN 61000-4-6, 10 Vrms, perf. criteria A
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 +84°C
	- Case Temperature	+100°C max.
	- Storage Temperature	-55°C to +125°C
Power Derating	- High Temperature	Depending on model
		See application note: www.tracopower.com/tmr6wi-cc
Cooling System		Natural convection (20 LFM)
Remote Control	- Voltage Controlled Remote (passive = on)	On: 0 to 0.5 VDC or open circuit
		Off: 3 to 12 VDC
		Refers to 'Remote' and '-Vin' Pin
	- Off Idle Input Current	2.5 mA typ.
	- Remote Pin Input Current	0.5 to 3.5 mA
Altitude During Operation		5'000 m max.
Regulator Topology		Flyback Converter
Switching Frequency		522 - 638 kHz (PWM)
		580 kHz typ. (PWM)
Insulation System		Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s	1'600 VDC
Isolation Resistance	- Input to Output, 500 VDC	1'000 M Ω min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	50 pF max.
Reliability	- Calculated MTBF	2'930'000 h (MIL-HDBK-217F, ground benign)
Washing Process		According to Cleaning Guideline
		www.tracopower.com/info/cleaning.pdf
Environment	- Vibration	MIL-STD-810F
	- Thermal Shock	MIL-STD-810F
Housing Material		Non-conductive Plastic (UL 94 V-0 rated)
Potting Material		Silicone (UL 94 V-0 rated)
Pin Material		Copper
Pin Foundation Plating		Nickel (2 - 3 μ m)
Pin Surface Plating		Tin (3 - 5 μ m), matte
Housing Type		Plastic Case
Mounting Type		PCB Mount
Connection Type		THD (Through-Hole Device)
Footprint Type		SIP8
Soldering Profile		Lead-Free Wave Soldering
		260°C / 6 s max.
Weight		4.8 g

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

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: 7(a), 7(c)-I

(RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).)

- SCIP Reference Number

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Additional Information

Supporting Documents

www.tracopower.com/overview/tmr6wi

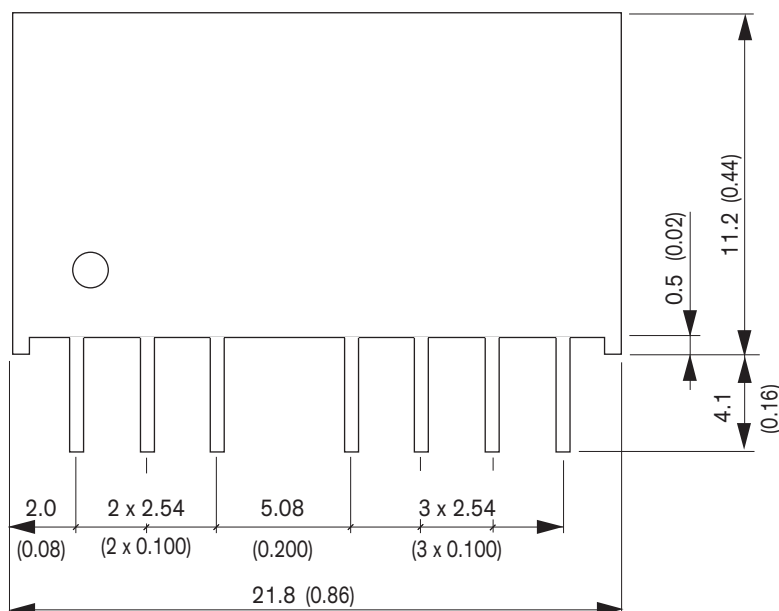
Frequently Asked Questions

www.tracopower.com/glossary-faq

Glossary

www.tracopower.com/info/glossary.pdf

Outline Dimensions



Pinout		
Pin	Single Output	Dual Output
1	-Vin (GND)	-Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote	Remote
5	NC	NC
6	+Vout	+Vout
7	-Vout	Common
8	NC	-Vout

NC: Not connected

