

- Wide 4:1 input voltage range
- Compact SIP-8 package
- Cost optimized design
- Temperature range  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- I/O isolation 1600 VDC
- Remote On/Off control
- 3-year product warranty



The TMR 3WIE series is a family of isolated 3 W DC/DC converter modules with regulated output, featuring wide 4:1 input voltage ranges. The product comes in a compact SIP-8 plastic package with small footprint occupying only 2.0 cm<sup>2</sup> (0.3 square inch) of board space.

An excellent efficiency allows  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  operation temperature. Further features include remote On/Off control and continuous short circuit protection. The compact dimensions and cost optimized design make this converters an ideal solution for applications in communication equipment, instrumentation and industrial electronics.

Models						
Order Code	Input Voltage Range	Output 1		Output 2		Efficiency typ.
		Vnom	I <sub>max</sub>	Vnom	I <sub>max</sub>	
TMR 3-1210WIE	4.5 - 18 VDC (12 VDC nom.)	3.3 VDC	700 mA			74 %
TMR 3-1211WIE		5 VDC	600 mA			78 %
TMR 3-1212WIE		12 VDC	250 mA			80 %
TMR 3-1213WIE		15 VDC	200 mA			80 %
TMR 3-1221WIE		+5 VDC	300 mA	-5 VDC	300 mA	80 %
TMR 3-1222WIE		+12 VDC	125 mA	-12 VDC	125 mA	80 %
TMR 3-1223WIE		+15 VDC	100 mA	-15 VDC	100 mA	80 %
TMR 3-2410WIE	9 - 36 VDC (24 VDC nom.)	3.3 VDC	700 mA			75 %
TMR 3-2411WIE		5 VDC	600 mA			80 %
TMR 3-2412WIE		12 VDC	250 mA			81 %
TMR 3-2413WIE		15 VDC	200 mA			81 %
TMR 3-2421WIE		+5 VDC	300 mA	-5 VDC	300 mA	79 %
TMR 3-2422WIE		+12 VDC	125 mA	-12 VDC	125 mA	80 %
TMR 3-2423WIE		+15 VDC	100 mA	-15 VDC	100 mA	81 %
TMR 3-4810WIE	18 - 75 VDC (48 VDC nom.)	3.3 VDC	700 mA			74 %
TMR 3-4811WIE		5 VDC	600 mA			79 %
TMR 3-4812WIE		12 VDC	250 mA			79 %
TMR 3-4813WIE		15 VDC	200 mA			79 %
TMR 3-4821WIE		+5 VDC	300 mA	-5 VDC	300 mA	79 %
TMR 3-4822WIE		+12 VDC	125 mA	-12 VDC	125 mA	79 %
TMR 3-4823WIE		+15 VDC	100 mA	-15 VDC	100 mA	80 %

## Input Specifications

Input Current	- At no load	12 Vin models: <b>60 mA typ.</b> 24 Vin models: <b>25 mA typ.</b> 48 Vin models: <b>15 mA typ.</b>
	- At full load	12 Vin models: <b>300 mA typ.</b> 24 Vin models: <b>150 mA typ.</b> 48 Vin models: <b>75 mA typ.</b>
Surge Voltage		12 Vin models: <b>25 VDC max.</b> (1 s max.) 24 Vin models: <b>50 VDC max.</b> (1 s max.) 48 Vin models: <b>100 VDC max.</b> (1 s max.)
Under Voltage Lockout		12 Vin models: <b>4 VDC max.</b> 24 Vin models: <b>8 VDC max.</b> 48 Vin models: <b>16 VDC max.</b>
Recommended Input Fuse		12 Vin models: <b>1'500 mA</b> (slow blow) 24 Vin models: <b>700 mA</b> (slow blow) 48 Vin models: <b>350 mA</b> (slow blow) (The need of an external fuse has to be assessed in the final application.)
Input Filter		<b>Internal Capacitor</b>
Short Circuit Input Power		<b>2.5 W max.</b>

## Output Specifications

Voltage Set Accuracy		<b>±1% max.</b>
Regulation	- Input Variation (Vmin - Vmax)	single output models: <b>0.5% max.</b> dual output models: <b>0.5% max.</b>
	- Load Variation (25 - 100%)	single output models: <b>1% max.</b> dual output models: <b>1% max.</b> (Output 1) <b>1% max.</b> (Output 2)
	- Voltage Balance (symmetrical load)	dual output models: <b>2% max.</b>
Ripple and Noise	- 20 MHz Bandwidth	<b>75 mVp-p max.</b>
Capacitive Load	- single output	3,3 Vout models: <b>1'760 µF max.</b> 5 Vout models: <b>1'000 µF max.</b> 12 Vout models: <b>170 µF max.</b> 15 Vout models: <b>110 µF max.</b>
	- dual output	5 / -5 Vout models: <b>470 / 470 µF max.</b> 12 / -12 Vout models: <b>100 / 100 µF max.</b> 15 / -15 Vout models: <b>47 / 47 µF max.</b>
Minimum Load		<b>25 % of Iout max.</b> (Operation at lower load condition is safe but a higher output ripple will be experienced)
Temperature Coefficient		<b>±0.02 %/K max.</b>
Short Circuit Protection		<b>Automatic recovery</b>
Overload Protection		<b>Foldback Mode</b>
Output Current Limitation		<b>110% min. of Iout max.</b> <b>140% typ. of Iout max.</b>
Transient Response	- Response Deviation	<b>5% max.</b> (25% Load Step)
	- Response Time	<b>300 µs typ. / 500 µs max.</b> (25% Load Step)

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

## Safety Specifications

Safety Standards	- IT / Multimedia Equipment	CSA-C22.2, No 60950-1 EN 60950-1 EN 62368-1 IEC 60950-1 IEC 62368-1 UL 60950-1 UL 62368-1
	- Certification Documents	<a href="http://www.tracopower.com/overview/tmr3wie">www.tracopower.com/overview/tmr3wie</a>

## EMC Specifications

EMI Emissions	- Conducted Emissions	EN 55032 class A (with external filter) FCC Part 15 class A (with external filter)
	- Radiated Emissions	EN 55032 class A (with external filter) FCC Part 15 class A (with external filter)
		External filter proposal: <a href="http://www.tracopower.com/overview/tmr3wie">www.tracopower.com/overview/tmr3wie</a>

## General Specifications

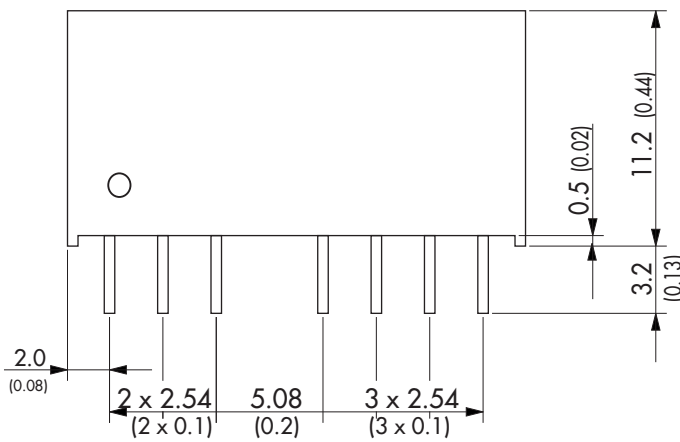
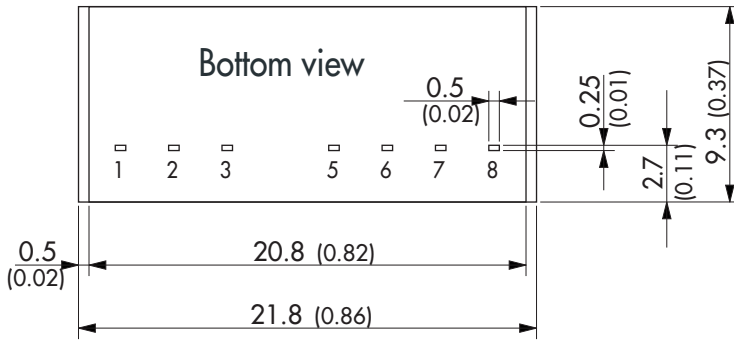
Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-40°C to +85°C
	- Case Temperature	+105°C max.
	- Storage Temperature	-55°C to +125°C
Power Derating	- High Temperature	3.3 %/K above 70°C
Cooling System		Natural convection (20 LFM)
Remote Control	- Voltage Controlled Remote	On: < 0.6 VDC or open circuit Off: 2.7 to 15 VDC Refers to 'Remote' and '-Vin' Pin
	- Off Idle Input Current	2.5 mA max.
	- Remote Pin Input Current	-1.0 to 1.0 mA
Altitude During Operation		6'000 m max.
Switching Frequency		350 kHz typ. (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 MΩ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	200 pF typ.
Reliability	- Calculated MTBF	800'000 h (MIL-HDBK-217F, ground benign)
Housing Material		Non-conductive Plastic (UL94 V-0 rated)
Potting Material		Silicone (UL 94 V-0 rated)
Pin Material		Nickel-Iron (Alloy 42)
Pin Foundation Plating		Nickel (1 μm min.)
Pin Surface Plating		Tin (3 - 5 μm), matte
Soldering Profile		260°C / 10 s max.
Connection Type		THD (Through-Hole Device)
Weight		4.8 g
Environmental Compliance	- REACH Declaration	<a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a> REACH SVHC list compliant REACH Annex XVII compliant
	- RoHS Declaration	<a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a> Exemptions: 7a

## Supporting Documents

Overview Link (for additional Documents)	<a href="http://www.tracopower.com/overview/tmr3wie">www.tracopower.com/overview/tmr3wie</a>
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**Outline Dimensions**



Dimensions in [mm], () = Inch  
 Tolerances: ±0.5 (±0.02)  
 Pin pitch tolerances: ±0.25 (±0.01)

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

NTC: Not to connect

# Mouser Electronics

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