

- Wide 4:1 input voltage range
- Compact SIP-8 package
- Cost optimized design
- Temperature range -40°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 cm² (0.3 square inch) of board space.

An excellent efficiency allows -40°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 _{max} | Vnom | I _{max} | |
| 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: 60 mA typ. 24 Vin models: 25 mA typ. 48 Vin models: 15 mA typ. |
| | - At full load | 12 Vin models: 300 mA typ. 24 Vin models: 150 mA typ. 48 Vin models: 75 mA typ. |
| Surge Voltage | | 12 Vin models: 25 VDC max. (1 s max.) 24 Vin models: 50 VDC max. (1 s max.) 48 Vin models: 100 VDC max. (1 s max.) |
| Under Voltage Lockout | | 12 Vin models: 4 VDC max. 24 Vin models: 8 VDC max. 48 Vin models: 16 VDC max. |
| Recommended Input Fuse | | 12 Vin models: 1'500 mA (slow blow) 24 Vin models: 700 mA (slow blow) 48 Vin models: 350 mA (slow blow) (The need of an external fuse has to be assessed in the final application.) |
| Input Filter | | Internal Capacitor |
| Short Circuit Input Power | | 2.5 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 (25 - 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. |
| Ripple and Noise | - 20 MHz Bandwidth | 75 mVp-p max. |
| Capacitive Load | - single output | 3,3 Vout models: 1'760 µF max. 5 Vout models: 1'000 µF max. 12 Vout models: 170 µF max. 15 Vout models: 110 µF max. |
| | - dual output | 5 / -5 Vout models: 470 / 470 µF max. 12 / -12 Vout models: 100 / 100 µF max. 15 / -15 Vout models: 47 / 47 µF max. |
| Minimum Load | | 25 % of Iout max. (Operation at lower load condition is safe but a higher output ripple will be experienced) |
| Temperature Coefficient | | ±0.02 %/K max. |
| Short Circuit Protection | | Automatic recovery |
| Overload Protection | | Foldback Mode |
| Output Current Limitation | | 110% min. of Iout max. 140% typ. of Iout max. |
| Transient Response | - Response Deviation | 5% max. (25% Load Step) |
| | - Response Time | 300 µs typ. / 500 µs max. (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 | www.tracopower.com/overview/tmr3wie |

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: www.tracopower.com/overview/tmr3wie |

General Specifications

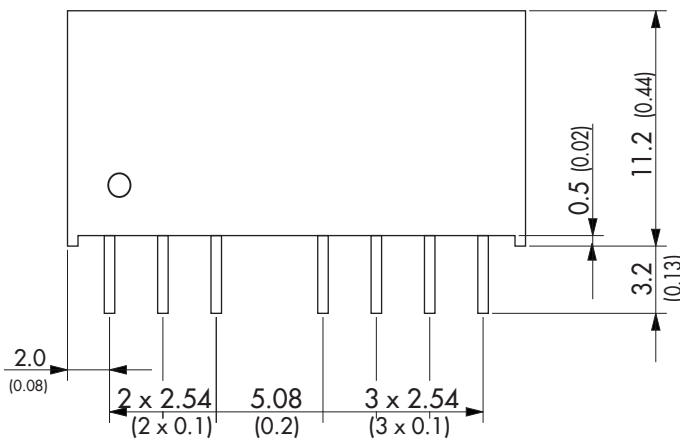
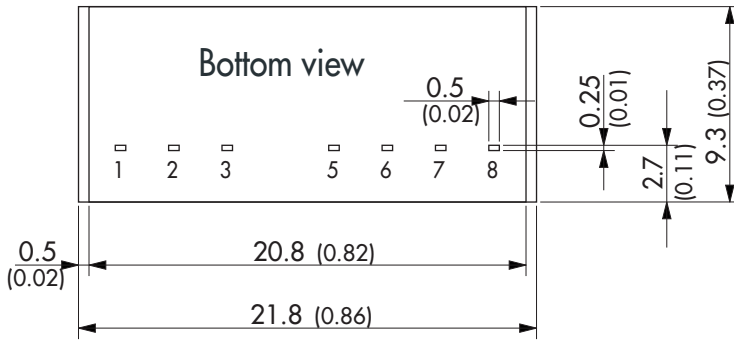
| | | |
|---------------------------|---------------------------------|---|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature | -40°C to +85°C |
| | - Case Temperature | +105°C max. |
| | - Storage Temperature | -55°C to +125°C |
| Power Derating | - High 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 | www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant |
| | - RoHS Declaration | www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7a |

Supporting Documents

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| Overview Link (for additional Documents) | www.tracopower.com/overview/tmr3wie |
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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: ±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