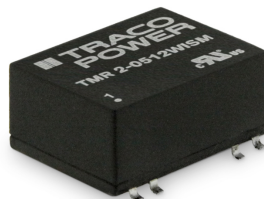


- Ultra wide 4:1 Input: 4.5–12, 9–36 and 18–75 VDC
- I/O-isolation 1'500 VDC
- Fully regulated outputs
- Operating temperature range –40°C to +80°C
- Protection against short circuit and overload
- Remote On/Off
- 3-year product warranty



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 <sub>max</sub> | Vnom     | I <sub>max</sub> |                 |
| TMR 2-0511WISM | 4.5 - 12 VDC<br>(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<br>(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<br>(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.<br>24 Vin models: 20 mA typ.<br>48 Vin models: 10 mA typ.                                      |
|                           | - At full load | 9 Vin models: 490 mA typ.<br>24 Vin models: 100 mA typ.<br>48 Vin models: 50 mA typ.                                    |
| Surge Voltage             |                | 9 Vin models: 15 VDC max. (1 s max.)<br>24 Vin models: 50 VDC max. (1 s max.)<br>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.<br>dual output models: 0.5% max.                                                          |
|                           | - Load Variation (0 - 100%)                | single output models: 1% max.<br>dual output models: 1% max. (Output 1)<br>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.<br>12 Vout models: 820 µF max.<br>15 Vout models: 680 µF max.<br>24 Vout models: 390 µF max. |
|                           | - dual output                              | 12 / -12 Vout models: 470 / 470 µF max.<br>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<br>IEC 62368-1<br>UL 62368-1                                                        |
|                  | - Certification Documents   | <a href="http://www.tracopower.com/overview/tmr2wism">www.tracopower.com/overview/tmr2wism</a> |
| Pollution Degree |                             | PD 3                                                                                           |

## EMC Specifications

|               |                       |                                                                             |
|---------------|-----------------------|-----------------------------------------------------------------------------|
| EMI Emissions | - Conducted Emissions | EN 55032 class A (internal filter)<br>FCC Part 15 class A (internal filter) |
|               | - Radiated Emissions  | EN 55032 class A (internal filter)<br>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, $\pm 8$ kV, perf. criteria A      |
|              | - EFT (Burst) / Surge       | Contact: EN 61000-4-2, $\pm 6$ kV, perf. criteria A  |
|              |                             | EN 61000-4-3, 10 V/m, perf. criteria A               |
|              |                             | EN 61000-4-4, $\pm 2$ kV, perf. criteria A           |
|              |                             | EN 61000-4-5, $\pm 1$ kV, perf. criteria A           |
|              |                             | Ext. input component: Capacitor: 220 $\mu$ F / 100 V |
|              | - Conducted RF Disturbances | EN 61000-4-6, 10 Vrms, perf. criteria A              |
|              | - PF Magnetic Field         | 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                                                                                                                                               |
|                            |                                 | Refers to 'Remote' and '-Vin' Pin                                                                                                                                |
|                            | - 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 $\Omega$ 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 (vent-hole without membrane)                                                                                                                         |
| Housing Material           |                                 | Non-conductive Plastic (UL 94 V-0 rated)                                                                                                                         |
| Pin Material               |                                 | Phosphor Bronze (C5191)                                                                                                                                          |
| Pin Foundation Plating     |                                 | Copper (1 - 3 $\mu$ m)                                                                                                                                           |
| Pin Surface Plating        |                                 | Tin (7.5 $\mu$ m min.), matte                                                                                                                                    |
| Housing Type               |                                 | Plastic Case                                                                                                                                                     |
| Mounting Type              |                                 | PCB Mount                                                                                                                                                        |
| Connection Type            |                                 | SMD (Surface-Mount Device)                                                                                                                                       |
| Footprint Type             |                                 | SMD 14 Pin                                                                                                                                                       |
| Soldering Profile          |                                 | Reflow Soldering (J-STD-020E)                                                                                                                                    |
| Weight                     |                                 | 3.5 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                                                                                                                                                   |
|                            |                                 | (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) | <a href="http://www.tracopower.com/overview/tmr2wism">www.tracopower.com/overview/tmr2wism</a> |

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 mechanical part showing three views: a side view, a front view, and a top view.

**Side View:**

- Base width: 15.4 (0.6)
- Base height: 0.8 (0.03)
- Top surface: 0.15 S
- Angle: 0-4°

**Front View:**

- Overall width: 17.0 (0.67)
- Overall height: 19.0 (0.75)
- Internal width: 14.9 (0.59)
- Internal height: 7.45 (0.29)
- Pin dimensions: 8, 9, 7, 6, 2, 1, 14

**Top View:**

- Overall width: 17.0 (0.67)
- Overall height: 9.5 (0.37)
- Internal width: 14.9 (0.59)
- Internal height: 7.45 (0.29)
- Central hole: Ø1.5 (Ø0.06)
- Pin dimensions: 2, 1, 14

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