

DC/DC Converter

TMDC 10 Series, 10 Watt

- Fully encapsulated chassis mount modules
- Harsh industrial EMC capabilities: Integrated filters for emission (EN 55032) & immunity (EN 55035)
- Ultra wide 4:1 input voltage range: 9-36 and 18-75 VDC
- Operating temperature range -40 to +80 °C without derating
- I/O-isolation 3'000 VDC
- Protection against overload, undervoltage and short circuit
- DC-OK (LED) and Remote On/Off function
- IEC/EN/UL 62368-1 safety approvals
- 3-year product warranty



The TMDC 10 series (10 Watt) is the latest additions to Traco Power's existing TMDC line of Industrial DC/DC off-board modules. Equipped with integrated filters which limit conducted and radiated emissions (EN 55032 class A) but also increase the modules EMC immunity (EN 55035), this series is suitable for many harsh industrial applications which require increased EMC and isolation (3000 VDC I/O-isolation) capabilities.

The modules come in fully encapsulated 3.11" x 1.34" x 0.87" plastic package and feature a temperature range from -40° to 80°C without derating. All models have an ultra wide 4:1 input voltage range from either 9-36 VDC or 18-75 VDC and fully regulated outputs. Latest IT safety certifications (UL 62368-1) and DC-OK and remote on/off functions complete the package to provide an ideal solution for many harsh industrial applications.

| Models | | | | | | |
|--------------|------------------------------|----------|------------------|----------|------------------|-----------------|
| Order Code | Input Voltage Range | Output 1 | | Output 2 | | Efficiency typ. |
| | | Vnom | I _{max} | Vnom | I _{max} | |
| TMDC 10-2411 | 9 - 36 VDC (24 VDC nom.) | 5.1 VDC | 2'000 mA | | | 84 % |
| TMDC 10-2412 | | 12 VDC | 833 mA | | | 86 % |
| TMDC 10-2413 | | 15 VDC | 666 mA | | | 86 % |
| TMDC 10-2415 | | 24 VDC | 416 mA | | | 86 % |
| TMDC 10-2418 | | 48 VDC | 208 mA | | | 84 % |
| TMDC 10-2422 | | +12 VDC | 416 mA | -12 VDC | 416 mA | 86 % |
| TMDC 10-2423 | | +15 VDC | 333 mA | -15 VDC | 333 mA | 86 % |
| TMDC 10-2425 | | +24 VDC | 208 mA | -24 VDC | 208 mA | 85 % |
| TMDC 10-4811 | 18 - 75 VDC (48 VDC nom.) | 5.1 VDC | 2'000 mA | | | 84 % |
| TMDC 10-4812 | | 12 VDC | 833 mA | | | 86 % |
| TMDC 10-4813 | | 15 VDC | 666 mA | | | 86 % |
| TMDC 10-4815 | | 24 VDC | 416 mA | | | 86 % |
| TMDC 10-4818 | | 48 VDC | 208 mA | | | 84 % |
| TMDC 10-4822 | | +12 VDC | 416 mA | -12 VDC | 416 mA | 86 % |
| TMDC 10-4823 | | +15 VDC | 333 mA | -15 VDC | 333 mA | 86 % |
| TMDC 10-4825 | | +24 VDC | 208 mA | -24 VDC | 208 mA | 85 % |

Input Specifications

| | | |
|------------------------|---|---|
| Input Current | - At no load | 24 Vin models: 30 mA typ. 48 Vin models: 20 mA typ. |
| | - At full load | 24 Vin models: 490 mA typ. 48 Vin models: 245 mA typ. |
| Surge Voltage | | 24 Vin models: 50 VDC max. (1 s max.) 48 Vin models: 100 VDC max. (1 s max.) |
| Under Voltage Lockout | | 24 Vin models: 8 VDC typ. 48 Vin models: 16 VDC typ. |
| Recommended Input Fuse | (The need of an external fuse has to be assessed in the final application.) | |
| Input Filter | Internal Pi-Type | |

Output Specifications

| | | |
|--|--|---|
| Voltage Set Accuracy | | ±2% 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: 0.5% max. dual output models: 0.5% max. (Output 1) 0.5% 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) | - single output | 5.1 Vout models: 90 mVp-p typ. 12 Vout models: 90 mVp-p typ. 15 Vout models: 90 mVp-p typ. 24 Vout models: 180 mVp-p typ. 48 Vout models: 180 mVp-p typ. |
| | - dual output | 12 / -12 Vout models: 90 / 90 mVp-p typ. 15 / -15 Vout models: 90 / 90 mVp-p typ. 24 / -24 Vout models: 180 / 180 mVp-p typ. |
| Capacitive Load | - single output | 5.1 Vout models: 1'000 µF max. 12 Vout models: 470 µF max. 15 Vout models: 330 µF max. 24 Vout models: 150 µF max. 48 Vout models: 68 µF max. |
| | - dual output | 12 / -12 Vout models: 220 / 220 µF max. 15 / -15 Vout models: 150 / 150 µF max. 24 / -24 Vout models: 68 / 68 µF max. |
| Minimum Load | | Not required |
| Temperature Coefficient | | ±0.02 %/K max. |
| Start-up Time | | 60 ms max. |
| Short Circuit Protection | | Continuous, Automatic recovery |
| Output Current Limitation | | 150% typ. of Iout max. |
| Transient Response | - Response Deviation | 5% max. (75% to 100% Load Step) |
| | - Response Time | 500 µs max. (75% to 100% Load Step) |

Safety Specifications

| | | |
|------------------|-----------------------------|--|
| Safety Standards | - IT / Multimedia Equipment | EN 62368-1 IEC 62368-1 UL 62368-1 |
| | - Certification Documents | www.tracopower.com/overview/tmdc10 |
| Pollution Degree | | PD 3 |

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

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) |
| EMS Immunity | | EN 55035 (Multimedia) |
| | - Electrostatic Discharge | Air: EN 61000-4-2, ± 8 kV, perf. criteria A Contact: EN 61000-4-2, ± 6 kV, perf. criteria A |
| | - RF Electromagnetic Field | EN 61000-4-3, 10 V/m, perf. criteria A |
| | - EFT (Burst) / Surge | EN 61000-4-4, ± 2 kV, perf. criteria A EN 61000-4-5, ± 2 kV, perf. criteria A |
| | - Conducted RF Disturbances | EN 61000-4-6, 10 Vrms, perf. criteria A |
| | - PF Magnetic Field | Continuous: EN 61000-4-8, 100 A/m, perf. criteria A |

General Specifications

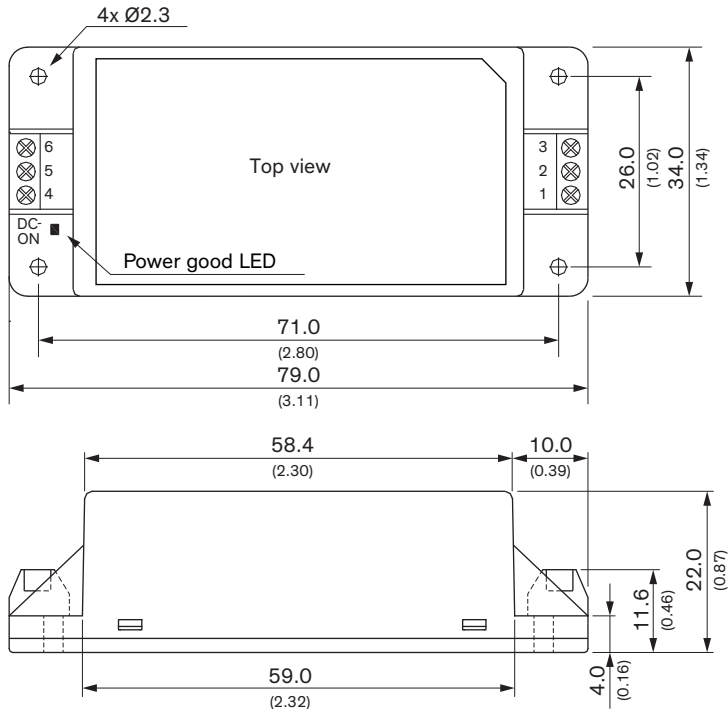
| | | |
|---------------------------|---------------------------------|--|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature | -40°C to +93°C |
| | - Case Temperature | +105°C max. |
| | - Storage Temperature | -50°C to +125°C |
| Power Derating | - High Temperature | 4 %/K above 80°C |
| Cooling System | | Natural convection (20 LFM) |
| Remote Control | - Voltage Controlled Remote | On: 3.5 to 12 VDC or open circuit Off: 0 to 1.2 VDC or short circuit Refers to 'Remote' and '-Vin' Pin |
| | - Off Idle Input Current | 2.5 mA typ. |
| | - Remote Pin Input Current | -0.5 to 0.5 mA |
| Altitude During Operation | | 5'000 m max. |
| Switching Frequency | | 330 kHz typ. (PWM) |
| Insulation System | | Functional Insulation |
| Isolation Test Voltage | - Input to Output, 60 s | 3'000 VDC |
| Isolation Resistance | - Input to Output, 500 VDC | 1'000 M Ω min. |
| Isolation Capacitance | - Input to Output, 100 kHz, 1 V | 2'200 pF typ. |
| Reliability | - Calculated MTBF | 4'100'000 h (MIL-HDBK-217F, ground benign) |
| Housing Material | | Plastic resin (UL 94 V-0 rated) |
| Connection Type | | Screw Terminal |
| Weight | | 65.8 g |
| Thermal Impedance | | 4.3 K/W (at 70°C) |
| Environmental Compliance | - Reach | www.tracopower.com/info/reach-declaration.pdf |
| | - RoHS | www.tracopower.com/info/rohs-declaration.pdf |

Supporting Documents

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| Overview Link (for additional Documents) | www.tracopower.com/overview/tmdc10 |
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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: x.x ±0.5 (±0.02)
x.xx ±0.25 (±0.01)

| Pinout | | |
|--------|---------------|-------------|
| Pin* | Single Output | Dual Output |
| 1 | Remote | Remote |
| 2 | -Vin (GND) | -Vin (GND) |
| 3 | +Vin (Vcc) | +Vin (Vcc) |
| 4 | -Vout | -Vout |
| 5 | NC | Common |
| 6 | +Vout | +Vout |

NC: No Connection

* Wires 1.5 mm² max.