

- 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 <sub>max</sub>	Vnom	I <sub>max</sub>	
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		
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: <b>30 mA typ.</b> 48 Vin models: <b>20 mA typ.</b>
	- at full load	24 Vin models: <b>490 mA typ.</b> 48 Vin models: <b>245 mA typ.</b>
Surge Voltage		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		24 Vin models: <b>8 VDC typ.</b> 48 Vin models: <b>16 VDC typ.</b>
Input Filter		Internal Pi-Type

### Output Specifications

Voltage Set Accuracy		<b>±2% 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 (0 - 100%)	single output models: <b>0.5% max.</b> dual output models: <b>0.5% max.</b> (Output 1) <b>0.5% max.</b> (Output 2)
	- Cross Regulation (symmetrical load)	dual output models: <b>2% max.</b>
	- Cross Regulation (25% / 100% asym. load)	dual output models: <b>5% max.</b>
Ripple and Noise (20 MHz Bandwidth)	- single output	5.1 Vout models: <b>90 mVp-p typ.</b> 12 Vout models: <b>90 mVp-p typ.</b> 15 Vout models: <b>90 mVp-p typ.</b> 24 Vout models: <b>180 mVp-p typ.</b> 48 Vout models: <b>180 mVp-p typ.</b>
	- dual output	12 / -12 Vout models: <b>90 / 90 mVp-p typ.</b> 15 / -15 Vout models: <b>90 / 90 mVp-p typ.</b> 24 / -24 Vout models: <b>180 / 180 mVp-p typ.</b>
Capacitive Load	- single output	5.1 Vout models: <b>1'000 µF max.</b> 12 Vout models: <b>470 µF max.</b> 15 Vout models: <b>330 µF max.</b> 24 Vout models: <b>150 µF max.</b> 48 Vout models: <b>68 µF max.</b>
	- dual output	12 / -12 Vout models: <b>220 / 220 µF max.</b> 15 / -15 Vout models: <b>150 / 150 µF max.</b> 24 / -24 Vout models: <b>68 / 68 µF max.</b>
Minimum Load		Not required
Temperature Coefficient		<b>±0.02 %/K max.</b>
Start-up Time		<b>60 ms max.</b>
Short Circuit Protection		Continuous, Automatic recovery
Output Current Limitation		<b>150% typ. of Iout max.</b>
Transient Response	- Response Deviation	<b>5% max.</b> (75% to 100% Load Step)
	- Response Time	<b>500 µs max.</b> (75% to 100% Load Step)

### Safety Specifications

Safety Standards	- IT / Multimedia Equipment	EN 62368-1 IEC 62368-1 UL 62368-1
	- Certification Documents	<a href="http://www.tracopower.com/overview/tmdc10">www.tracopower.com/overview/tmdc10</a>
Pollution Degree		PD 3

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

## EMC Specifications

EMC Emissions	- Conducted Emissions	EN 55032 class A (internal filter) FCC Part 15, class A
	- Radiated Emissions	EN 55032 class A (internal filter) FCC Part 15, class A
EMC Immunity		EN 55035 (Multimedia)
	- Electrostatic Discharge	Air: EN 61000-4-2, $\pm 8$ kV, perf. criteria A Contact: EN 61000-4-2, $\pm 6$ kV, perf. criteria A
	- RF Electromagnetic Field	EN 61000-4-3, 10 V/m, perf. criteria A
	- EFT (Burst)	EN 61000-4-4, $\pm 2$ kV, perf. criteria A
	- Surge	EN 61000-4-5, $\pm 2$ kV, perf. criteria A
	- Conducted RF Disturbances	EN 61000-4-6, 10 Vrms, perf. criteria A
	- PF Magnetic Field	EN 61000-4-8, 100 A/m, perf. criteria A

## General Specifications

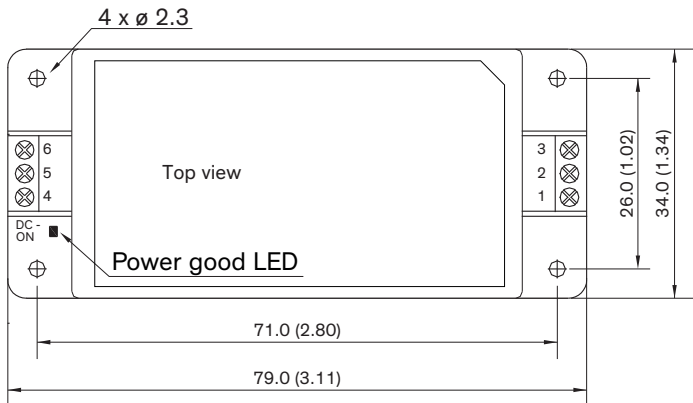
Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-40°C to +93°C
	- Case Temperature	+105°C max.
	- Storage Temperature	-50°C to +125°C
Power Derating	- High Temperature	4 %/K above 80°C
Cooling System		Natural convection (20 LFM)
Remote Control	- Voltage Controlled 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 MOhm 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 94V-0 rated)
Connection Type		Screw Terminal
Weight		65.8 g
Thermal Impedance		4.3 K/W (at 20 LFM and 70°C)
Environmental Compliance	- Reach	<a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a>
	- RoHS	<a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a>

## Supporting Documents

Overview Link (for additional Documents)	<a href="http://www.tracopower.com/overview/tmdc10">www.tracopower.com/overview/tmdc10</a>
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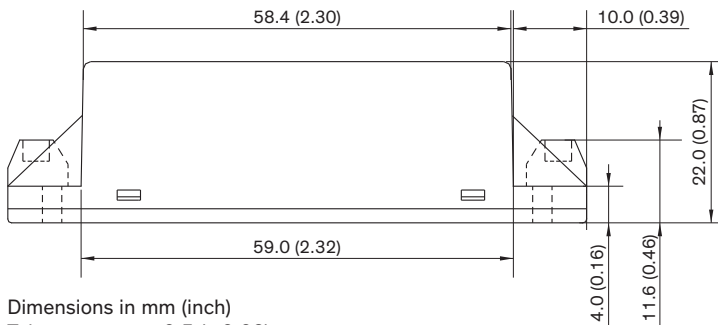
All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

### Outline Dimensions



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



Dimensions in mm (inch)  
 Tolerances: x.x ±0.5 (±0.02)  
 x.xx ±0.25 (±0.01)