

#### Features

- ◆ Fully encapsulated low profile plastic case
- ◆ Ultra wide 4 : 1 input voltage range
- ◆ Operating temperature range  
-40°C to +90°C
- ◆ I/O isolation 2500 VDC
- ◆ Excellent efficiency up to 91 %
- ◆ Input filter to meet EN 55032, class A
- ◆ Optional DIN-Rail mount adapter
- ◆ No minimum load required
- ◆ Power good LED indicator
- ◆ Remote On/Off
- ◆ 3-year product warranty



The TMDC 20 Series is a range of encapsulated high performance DC/DC converter modules. With a very high efficiency of up to 91% and the use of highest grade components these 20 W converters are made for a reliable operation in the temperature range of -40°C up to 90°C. They come in chassis mount version with screw terminal block. The 8 models have a wide 4:1 input voltage range and a tight output voltage regulation. They do not need a minimum load and offer a high efficiency also at low load conditions. They feature a remote control input and a green power good LED which indicates the presence of the output voltage. Protection against overload and short circuit are standard features of these converters. EMC characteristics and safety certifications are aligned for the operation in industrial environment.

#### Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency
TMDC 20-2411	<b>9 – 36 VDC</b> (nominal 24 VDC)	5.1 VDC	4'000 mA	90 %
TMDC 20-2412		12 VDC	1'670 mA	91 %
TMDC 20-2415		24 VDC	835 mA	91 %
TMDC 20-2418		48 VDC	420 mA	89 %
TMDC 20-4811	<b>18 – 75 VDC</b> (nominal 48 VDC)	5.1 VDC	4'000 mA	90 %
TMDC 20-4812		12 VDC	1'670 mA	91 %
TMDC 20-4815		24 VDC	835 mA	91 %
TMDC 20-4818		48 VDC	420 mA	89 %

### Input Specifications

Input current at no load (nominal input voltage)	24 Vin models: 70 mA typ. 48 Vin models: 35 mA typ.
Surge voltage (100 msec. max.)	24 Vin models: 50 V max. 48 Vin models: 100 V max.
Start up time	30 ms max.
Start-up voltage	24 Vin models: 9 VDC max. 48 Vin models: 18 VDC max.
Under voltage shut down	24 Vin models: 7.5 VDC typ. 48 Vin models: 16 VDC typ.
EMI Conducted	EN 55032 class A, FCC part 15 class A without external components
EMI Radiated	EN 55032 class A, FCC part 15 class A with external components
ESD (electrostatic discharge)	EN 61000-4-2, air $\pm 8$ kV, contact $\pm 4$ kV, perf. criteria A
Radiated immunity	EN 61000-4-3, 10 V/m, perf. criteria A
Fast transient / surge	EN 61000-4-4, $\pm 2$ kV, perf. criteria A EN 61000-4-5, $\pm 2$ kV, perf. criteria A
Conducted immunity	EN 61000-4-6, 10 Vrms, perf. criteria A

### Output Specifications

Voltage set accuracy	$\pm 2.0$ % max.
Regulation	- Input variation Vin min. to Vin max.    0.5 % max. - Load variation 0 – 100 %                    0.5 % max.
Minimum load	not required
Temperature coefficient	$\pm 0.02$ %/K
Ripple and noise (20 MHz Bandwidth)	5.1 VDC models: 100 mVpk-pk. typ. 12 & 24 VDC models: 150 mVpk-pk typ. 48 VDC models: 200 mVpk-pk. typ.
Transient response (alignment to 1% at load step change 75% to 100% )	250 $\mu$ s typ.
Over voltage protection	120 % of Vout (Zener diode clamp)
Output current limitation	at 150% of Iout max.
Short circuit protection	hiccup mode, automatic recovery
Capacitive load	5.1 VDC models: 6'800 $\mu$ F max. 12.0 VDC models: 1'160 $\mu$ F max. 24.0 VDC models: 300 $\mu$ F max. 48.0 VDC models: 75 $\mu$ F max.

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

### General Specifications

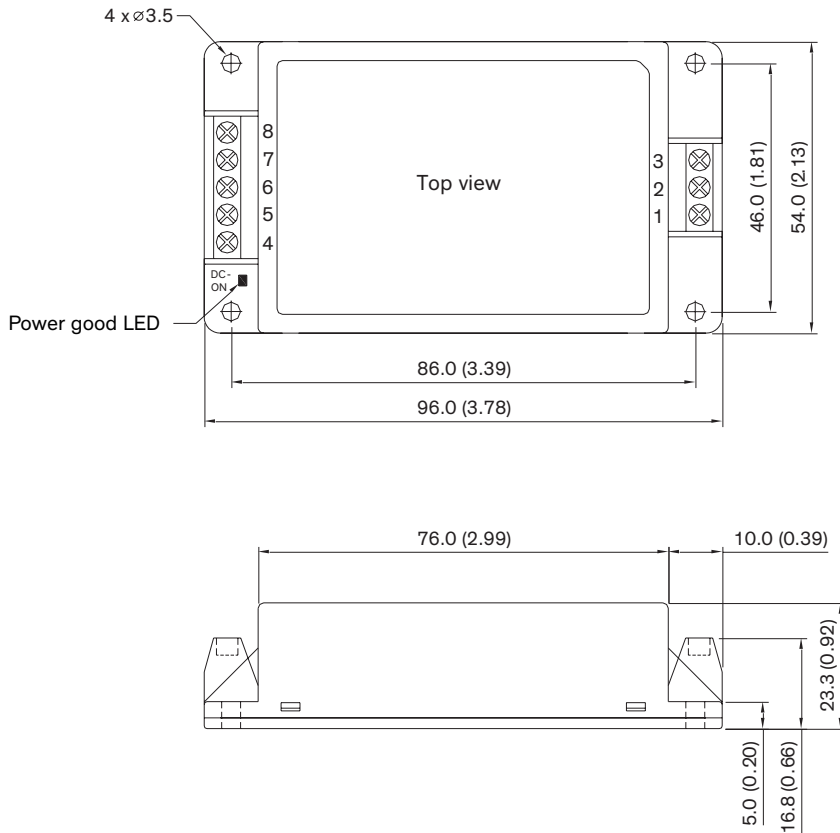
Temperature ranges	<ul style="list-style-type: none"> <li>- Operating (natural convection 20 LFM)</li> <li>- IEC/EN/UL60950-1 approved ambient</li> <li>- Case temperature</li> <li>- Storage</li> </ul>	-40°C to +90°C (with derating) +80°C max. (without derating) +95°C max. -50°C to +125°C
Load derating	- natural convection 20 LFM	10%/K above 85°C
Thermal impedance	- Natural convection 20 LFM	3.9°C/W
Humidity (non condensing)		95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)		>775'200 h
Isolation voltage (60 sec.)	- Input/Output	2500 VDC
Isolation capacitance	- Input/Output	2200 pF max. (100 kHz, 1 V)
Isolation resistance	- Input/Output	>1000 Mohm (500 VDC)
Altitude during operation		2'000 m max.
Switching frequency		285 kHz typ.
Remote On/Off	<ul style="list-style-type: none"> <li>- On:</li> <li>- Off:</li> <li>- Off idle current:</li> </ul>	3.5 to 12 VDC to -Vin or open circuit. 0 to +1.2 VDC or short circuit to -Vin 3 mA typ.
Safety standards	<ul style="list-style-type: none"> <li>- CB test report</li> <li>- UL test certificat</li> <li>- Certification documents</li> </ul>	UL/cUL 60950-1 2nd edition, IEC 60950-1:2005 (2nd edition)+Am1:2009 +Am2:2013, EN 60950-1:2006+A11:2009+A1: 2010+A12:2011+A2:2013 UL/cUL 60950-1 2nd edition, CSA C22.2 No. 60950-1-07, 2nd Ed. <a href="http://www.tracopower.com/overview/tmdc20">www.tracopower.com/overview/tmdc20</a>

### Physical Specifications

Casing material		plastic resin (UL 94V-0 rated)
Weight		107 g (3.77 oz)
Environmental compliance	<ul style="list-style-type: none"> <li>- Reach declaration</li> <li>- RoHS</li> </ul>	<a href="http://www.tracopower.com/overview/tmdc20">www.tracopower.com/overview/tmdc20</a> directive 2011/65/EU

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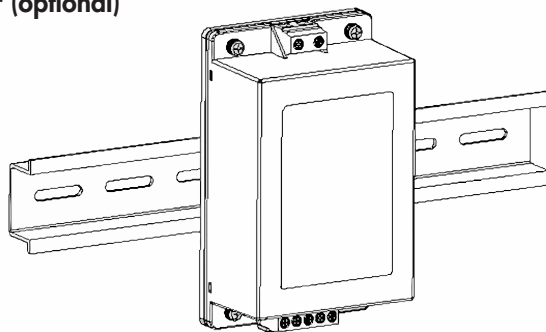
**Outline Dimensions**



Pin-Out	
Pin	Single
1	Remote On/Off
2	-Vin (GND)
3	+Vin (Vcc)
4	NC
5	-Vout
6	NC
7	+Vout
8	NC

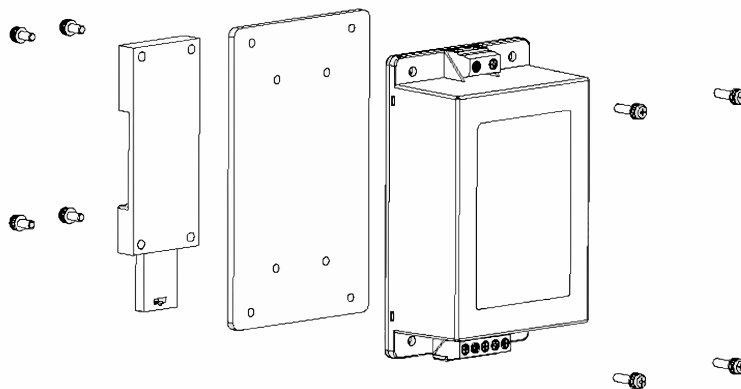
Dimensions in [mm], ( ) = Inch  
 Terminals: Wires 1.5mm<sup>2</sup> max.  
 Recommended tightening torque:  
 0.5 to 0.7 Nm (4.5 to 6.2 lb.in.)  
 Case tolerances: ±0.25 (±0.01)

**DIN-Rail mount adapter (optional)**



**Order code: TMP-MK1**

**Weight: 59 g (2.08oz) without converter**



Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at [www.tracopower.com](http://www.tracopower.com)