DC/DC Converters

TMDC 20 Series, 20 Watt

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 55022, 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	9 – 36 VDC (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	18 – 75 VDC (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: 48 Vin models:	70 mA typ 35 mA typ.
Surge voltage (100 msec. max.)	24 Vin models: 48 Vin models:	50 V max. 100 V max.
Start up time		30 ms max.
Conducted noise (input)		EN 55022 class A, FCC part 15 class A without external components
Start-up voltage / under voltage shut down	24 Vin models: 48 Vin models:	9 VDC max./ 7.5 VDC typ. 18 VDC max./ 16 VDC typ.
ESD (electrostatic discharge)		EN 61000-4-2, air ±8 kV, contact ±4 kV, perf. criteria A
Radiated immunity		EN 61000-4-3, 10 V/m, perf. criteria A
Fast transient / surge		EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±2 kV, perf. criteria A
Conducted immunity		EN 61000-4-6, 10 Vrms, perf. criteria A

Output Specifications

Voltage set accuracy		±2.0 % max.
Regulation	– Input variation Vin min. to Vin max. – Load variation 0 – 100 %	0.5 % max. 0.5 % max.
Minimum load		not required
Temperature coefficient		±0.02 %/K
Ripple and noise (20 MHz Bandwidth)	5.1 VDC models: 12 & 24 VDC models: 48 VDC models:	100 mVpk-pk. typ. 150 mVpk-pk typ. 200 mVpk-pk. typ.
Transient response (alignment to 1% at load step change 75% to 100%)		250 µs 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: 12.0 VDC models: 24.0 VDC models: 48.0 VDC models:	6'800 µF max. 1'160 µF max. 300 µF max. 75 µF max.

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

General Specifications

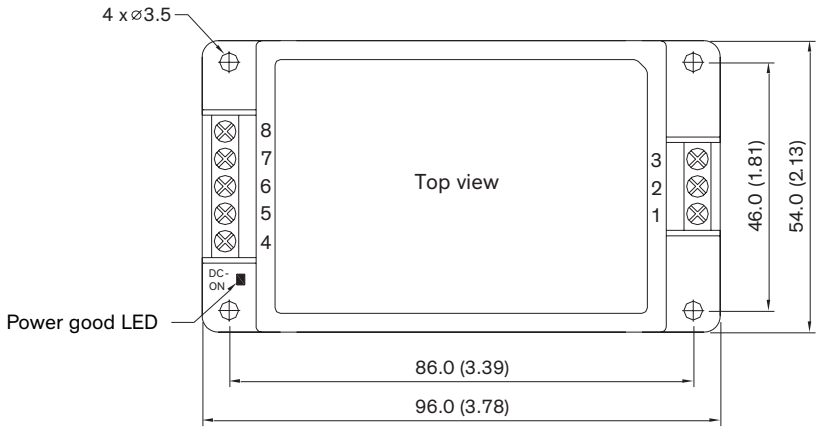
Temperature ranges	– Operating (natural convection 20 LFM) – IEC/EN/UL60950-1 approved ambient – Case temperature – Storage	–40°C to +90°C (with derating) +80°C max. (without derating) +95°C max. –50°C to +125°C
Load derating	– natural convection 20 LFM	10%/K above 85°C
Thermal impedance	– Natural convection 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	– On: – Off: – Off idle current:	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	– CB test report – UL test certificat – Certification documents	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. www.tracopower.com/overview/tmdc20

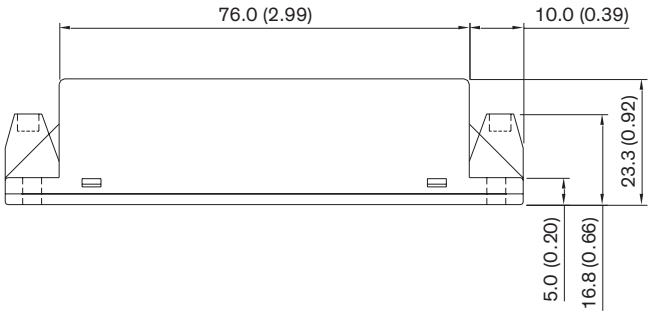
Physical Specifications

Casing material		plastic resin (UL 94V-0 rated)
Weight		107 g (3.77 oz)
Environmental compliance	– Reach declaration – RoHS	www.tracopower.com/overview/tmdc20 directive 2011/65/EU

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

Outline Dimensions

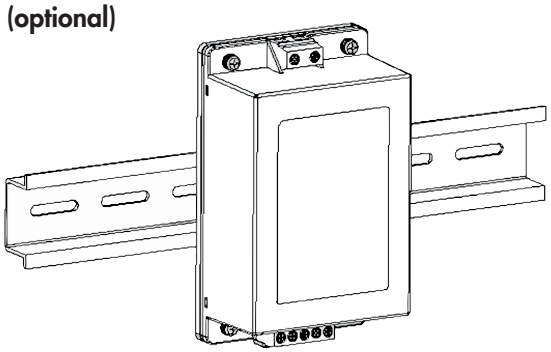


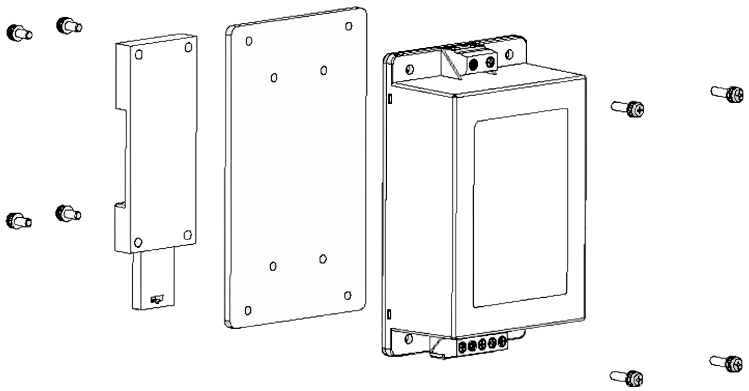


Pin-Out	
Pin	**Single**
1	Remote On/Off
2	–Vin (GND)
3	+Vin (Vcc)
4	NC
5	–Vout
6	NC
7	+Vout
8	NC

Dimensions in [mm], () = Inch
Terminals: Wires 1.5mm² 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