



**THE DATASHEET OF
TMDC 60-2418**



- Fully encapsulated low profile plastic case
- Ultra wide 4:1 input voltage range
- Operating temperature range -40°C to $+85^{\circ}\text{C}$
- I/O isolation 2500 VDC
- Excellent efficiency up to 92 %
- Input filter to meet EN 55022, class A
- Optional DIN-Rail mount adapter
- Power good LED indicator
- Remote on/off function
- 3-year product warranty



The TMDC 60 Series is a range of encapsulated high performance DC/DC converter modules with ultra wide input voltage ranges. With a very high efficiency of up to 92% and the use of highest grade components these 60 W converters can be operated in an ambient temperature range of -40°C up to 70°C with full load and up to 85°C with 50% load reduction. The EMC immunity is aligned for industrial applications and DIN-rail mount adapters are available as option. Remote On/Off function and power good LED indicator makes this unit a practical and reliable DC source for any application - Fit and forget!

| Models | | | | |
|--------------|------------------------------|---------------------|---------------------|-----------------|
| Order Code | Input Voltage Range | Output Voltage nom. | Output Current max. | Efficiency typ. |
| TMDC 60-2411 | 9 - 36 VDC (24 VDC nom.) | 5.1 VDC | 12'000 mA | 90 % |
| TMDC 60-2412 | | 12 VDC | 5'000 mA | 91 % |
| TMDC 60-2415 | | 24 VDC | 2'500 mA | 91 % |
| TMDC 60-2418 | | 48 VDC | 1'250 mA | 91 % |
| TMDC 60-4811 | 18 - 75 VDC (48 VDC nom.) | 5.1 VDC | 12'000 mA | 91 % |
| TMDC 60-4812 | | 12 VDC | 5'000 mA | 92 % |
| TMDC 60-4815 | | 24 VDC | 2'500 mA | 91 % |
| TMDC 60-4818 | | 48 VDC | 1'250 mA | 91 % |

| Options | |
|---------|--|
| TMP-MK2 | - Optional DIN-Rail Mounting Kit: www.tracopower.com/products/tmp-mk2.pdf |

Input Specifications

| | | |
|------------------------|----------------|---|
| Input Current | - At no load | 24 Vin models: 100 mA typ. 48 Vin models: 50 mA typ. |
| | - At full load | 24 Vin models: 2'770 mA typ. 48 Vin models: 1'380 mA typ. |
| Surge Voltage | | 24 Vin models: 50 VDC max. (100 ms max.) 48 Vin models: 100 VDC max. (100 ms max.) |
| Under Voltage Lockout | | 24 Vin models: 7.5 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) | 1.5% max. |
| | - Load Variation (0 - 100%) | 1% max. |
| Ripple and Noise (20 MHz Bandwidth) | 5.1 Vout models: | 100 mVp-p max. |
| | 12 Vout models: | 150 mVp-p max. |
| | 24 Vout models: | 150 mVp-p max. |
| | 48 Vout models: | 200 mVp-p max. |
| Capacitive Load | 5.1 Vout models: | 20'400 µF max. |
| | 12 Vout models: | 3'540 µF max. |
| | 24 Vout models: | 890 µF max. |
| | 48 Vout models: | 220 µF max. |
| Minimum Load | | Not required |
| Temperature Coefficient | | ±0.02 %/K max. |
| Start-up Time | | 50 ms max. |
| Short Circuit Protection | | Continuous, Automatic recovery |
| Output Current Limitation | | 150% typ. of Iout max. |
| Overvoltage Protection | | 120% typ. of Vout nom. |
| | | (By Zener diode) |
| Transient Response | - Response Deviation | 5% max. (75% to 100% Load Step) |
| | - Response Time | 250 µs typ. (75% to 100% Load Step) |

Safety Specifications

| | | |
|------------------|-----------------------------|--|
| Standards | - IT / Multimedia Equipment | CSA-C22.2, No. 60950-1 EN 60950-1 EN 62368-1 IEC 60950-1 IEC 62368-1 UL 60950-1 UL 62368-1 |
| | - Certification Documents | www.tracopower.com/overview/tmdc60 |
| Pollution Degree | | PD 2 |

EMC Specifications

| | | |
|---------------|---------------------------|---|
| EMI Emissions | - Conducted Emissions | EN 61000-6-4 (Generic Industrial) EN 61204-3 (Low Voltage Power Supplies) EN 55032 class A (internal filter) FCC Part 15 class A (internal filter) |
| | - Radiated Emissions | EN 55032 class A (with external filter) FCC Part 15 class A (with external filter) |
| | External filter proposal: | www.tracopower.com/overview/tmdc60 |

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

| | | |
|--------------|-----------------------------|---|
| EMS Immunity | | EN 55024 (IT Equipment) EN 55035 (Multimedia) |
| | - Electrostatic Discharge | Air: EN 61000-4-2, ± 8 kV, perf. criteria A |
| | - RF Electromagnetic Field | Contact: EN 61000-4-2, ± 4 kV, perf. criteria A |
| | - EFT (Burst) / Surge | EN 61000-4-3, 10 V/m, perf. criteria A |
| | - Conducted RF Disturbances | EN 61000-4-4, ± 2 kV, perf. criteria A |
| | - PF Magnetic Field | EN 61000-4-5, ± 2 kV, perf. criteria A |
| | | EN 61000-4-6, 10 Vrms, perf. criteria A |
| | | Continuous: EN 61000-4-8, 30 A/m, perf. criteria A |

General Specifications

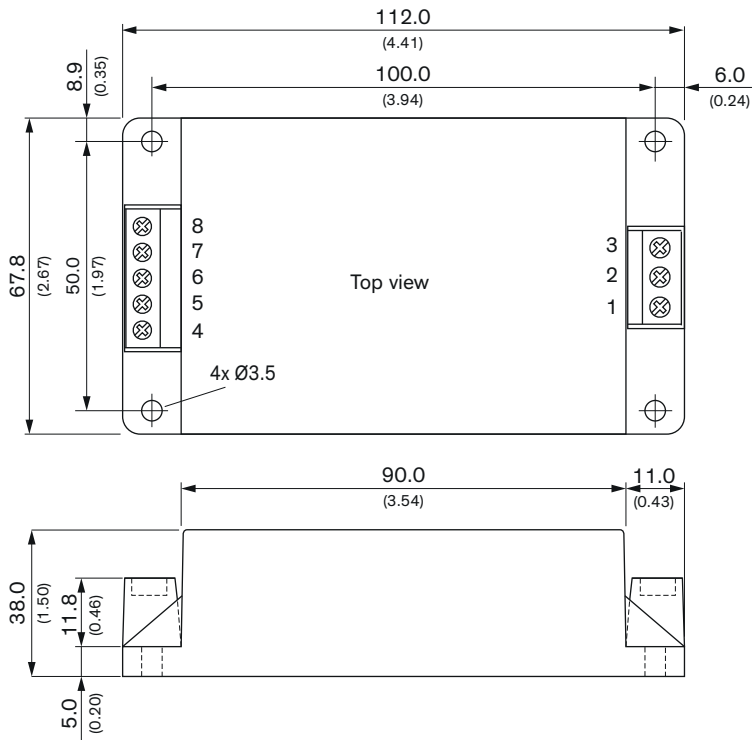
| | | |
|---------------------------|--|--|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature | -40°C to +85°C |
| | - Approved Ambient Temp. | +60°C max. (for compliance to 60950-1) |
| | - Case Temperature | +95°C max. |
| | - Storage Temperature | -50°C to +125°C |
| Power Derating | - High Temperature | 3.3 %/K above 70°C (average) |
| | | See application note: www.tracopower.com/overview/tmdc60 |
| Cooling System | | Natural convection (20 LFM) |
| Remote Control | - Voltage Controlled Remote (passive = on) | On: 3.5 to 12 VDC or open circuit |
| | - Off Idle Input Current | Off: 0 to 1.2 VDC or short circuit |
| | - Remote Pin Input Current | Refers to 'Remote' and '-Vin' Pin |
| | | 3 mA typ. |
| | | -0.5 to 0.5 mA |
| Altitude During Operation | | 6'000 m max. |
| Switching Frequency | | 210 kHz typ. (PWM) |
| Insulation System | | Functional Insulation |
| Isolation Test Voltage | - Input to Output, 60 s | 2'500 VDC |
| Isolation Resistance | - Input to Output, 500 VDC | 1'000 M Ω min. |
| Isolation Capacitance | - Input to Output, 100 kHz, 1 V | 3'000 pF max. |
| Reliability | - Calculated MTBF | 242'029 h (MIL-HDBK-217F, ground benign) |
| Housing Material | | Plastic (UL 94 V-0 rated) |
| Potting Material | | Silicone (UL 94 V-0 rated) |
| Housing Type | | Plastic Case |
| Mounting Type | | Chassis Mount |
| Connection Type | | Screw Terminal |
| Weight | | 300 g |
| Thermal Impedance | - Case to Ambient | 3.5 K/W typ. |
| Environmental Compliance | - REACH Declaration | www.tracopower.com/info/reach-declaration.pdf |
| | | REACH SVHC list compliant |
| | | REACH Annex XVII compliant |
| | - RoHS Declaration | www.tracopower.com/info/rohs-declaration.pdf |
| | | Exemptions: 6c, 7c-I |
| | | (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).) |
| | - SCIP Reference Number | b8ea32d4-bc4d-4c30-88d6-db58d43308cc |

Supporting Documents

| | |
|--|--|
| Overview Link (for additional Documents) | www.tracopower.com/overview/tmdc60 |
|--|--|

All specifications valid at nominal voltage, resistive 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)

Mounting screw locked torque: 0.49 Nm (5.0 kgfcm)

| Pinout | |
|--------|------------|
| Pin* | Function |
| 1 | Remote |
| 2 | -Vin (GND) |
| 3 | +Vin (Vcc) |
| 4 | NC |
| 5 | +Vout |
| 6 | NC |
| 7 | -Vout |
| 8 | NC |

NC: Not connected
* Wires 1.5 mm² max.

Terminal screw locked torque:
0.5 Nm max.

Looking for pricing, stock, or lifecycle information?

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- ⊖ [View TMDC 60-2418](#) on WIN SOURCE
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