

- Fully encapsulated chassis mount modules
- High 2:1 input voltage range: 80-160 VDC
- Reinforced I/O-isolation 3'000 VAC
- Harsh industrial EMC capabilities: Integrated filters for emission (EN 55032) & immunity (EN 55035)
- Operating temperature range -40 to +80°C without derating
- 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 06H series complements Traco Power's successful TMDC line of Industrial DC/DC off-board modules. All models provide a high 2:1 input voltage range from 80-160 VDC and a reinforced 3000 VAC isolation voltage as well as fully regulated outputs. Internal filters limit conducted and radiated emissions (EN 55032 class A) but also increase the modules EMC immunity (EN 55035). The modules come in fully encapsulated plastic packages and feature a high temperature range from -40° up to 80°C without derating. 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 and 110 VDC battery applications in need of a reinforced isolation to provide a safe SELV output.

Models

| Order Code | Input Voltage Range | Output 1 | | Output 2 | | Efficiency typ. |
|---------------|--------------------------------|----------|------------------|----------|------------------|-----------------|
| | | Vnom | I _{max} | Vnom | I _{max} | |
| TMDC 06-7211H | 80 - 160 VDC (110 VDC nom.) | 5.1 VDC | 1'200 mA | | | 79 % |
| TMDC 06-7212H | | 12 VDC | 500 mA | | | 83 % |
| TMDC 06-7213H | | 15 VDC | 400 mA | | | 83 % |
| TMDC 06-7215H | | 24 VDC | 250 mA | | | 84 % |
| TMDC 06-7218H | | 48 VDC | 125 mA | | | 82 % |
| TMDC 06-7222H | | +12 VDC | 250 mA | -12 VDC | 250 mA | 84 % |
| TMDC 06-7223H | | +15 VDC | 200 mA | -15 VDC | 200 mA | 84 % |
| TMDC 06-7225H | | +24 VDC | 125 mA | -24 VDC | 125 mA | 83 % |

Options

| | |
|----------|--|
| TMDC-MK1 | - Optional DIN-Rail Mounting Kit: www.tracopower.com/products/tmdc-mk1.pdf |
|----------|--|

Input Specifications

| | | |
|------------------------|----------------|---|
| Input Current | - At no load | 8 mA typ. |
| | - At full load | 66 mA typ. |
| Surge Voltage | | 170 VDC max. (1 s max.) |
| Under Voltage Lockout | | 69 VDC min. / 74 VDC typ. |
| Recommended Input Fuse | | 1'250 mA (slow blow) (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: 75 mVp-p typ. 12 Vout models: 75 mVp-p typ. 15 Vout models: 75 mVp-p typ. 24 Vout models: 180 mVp-p typ. 48 Vout models: 180 mVp-p typ. |
| | - dual output | 12 / -12 Vout models: 75 / 75 mVp-p typ. 15 / -15 Vout models: 75 / 75 mVp-p typ. 24 / -24 Vout models: 180 / 180 mVp-p typ. |
| Capacitive Load | - single output | 5.1 Vout models: 680 µF max. 12 Vout models: 330 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: 150 / 150 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 | | 30 ms typ. / 60 ms max. |
| Short Circuit Protection | | Continuous, Automatic recovery |
| Output Current Limitation | | 120 - 180% of Iout max. 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/tmdc06h |
| Pollution Degree | | PD 3 |

All specifications valid at nominal voltage, resistive 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 |
| | - Conducted RF Disturbances | EN 61000-4-5, ± 2 kV, perf. criteria A |
| | - PF Magnetic Field | Continuous: EN 61000-4-6, 10 Vrms, perf. criteria A EN 61000-4-8, 100 A/m, perf. criteria A |

General Specifications

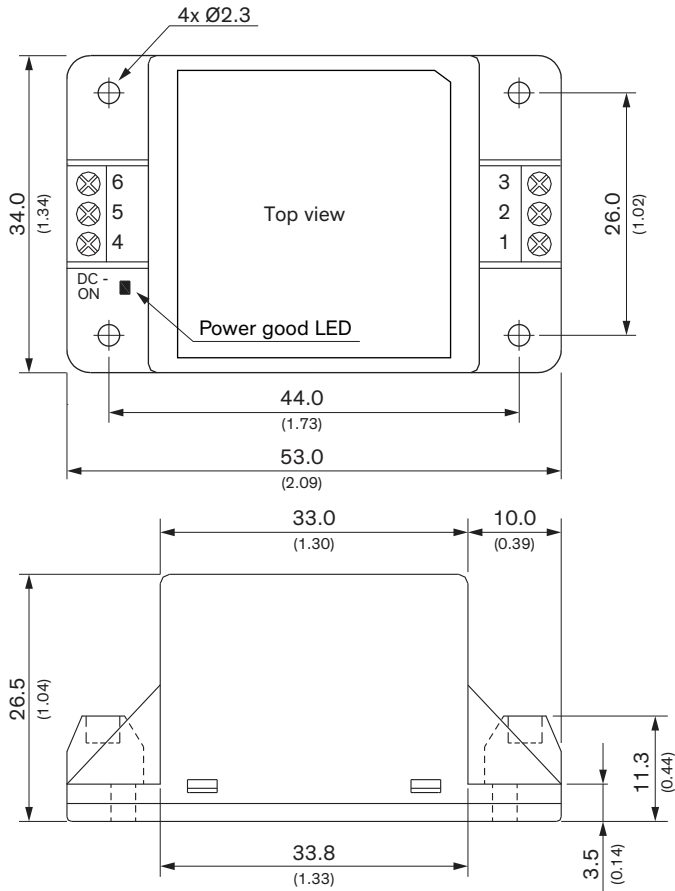
| | | |
|---------------------------|---------------------------------|---|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature | -40°C to +93°C |
| | - Case Temperature | +105°C max. |
| | - Storage Temperature | -50°C to +125°C |
| Power Derating | - High Temperature | 4 %/K above 80°C |
| | | See application note: www.tracopower.com/overview/tmdc06h |
| 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 | | 220 - 280 kHz (PWM) |
| | | 250 kHz typ. (PWM) |
| Insulation System | | Reinforced Insulation |
| Working Voltage (rated) | | 1'000 VAC |
| Isolation Test Voltage | - Input to Output, 60 s | 3'000 VAC |
| 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 | 4'163'000 h (MIL-HDBK-217F, ground benign) |
| Housing Material | | Plastic resin (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 | | 48 g |
| 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, 7a (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule)) |
| | - SCIP Reference Number | 3b583642-a1b6-4a79-9fe6-c04049e41c13 |

Supporting Documents

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| Overview Link (for additional Documents) | www.tracopower.com/overview/tmdc06h |
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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)
 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: Not connected
 * Wires 1.5 mm² max.