# Product data sheet

Specifications

**Green Premium™**

## Discrete I/O module, Modicon TM3, 24 IO (16 inputs, 8 relay outputs, screw) 24 VDC

TM3DM24R

## Main

| | |
|---|---|
| **Range of product** | Modicon TM3 |
| **Product or component type** | Discrete I/O module |
| **Range compatibility** | Modicon M241<br>Modicon M251<br>Modicon M221<br>Modicon M262 |
| **Discrete input number** | 16 for input conforming to IEC 61131-2 Type 1 |
| **Discrete input logic** | Sink or source (positive/negative) |
| **Discrete input voltage** | 24 V |
| **Discrete input current** | 7 mA for input |
| **Discrete output type** | Relay normally open |
| **Discrete output number** | 8 |
| **Discrete output logic** | Positive or negative |
| **Discrete output voltage** | 24 V DC for relay output<br>240 V AC for relay output |
| **Discrete output current** | 2000 mA for relay output |

## Complementary

| | |
|---|---|
| **Discrete I/O number** | 24 |
| **Current consumption** | 5 mA at 5 V DC via bus connector (at state off)<br>0 mA at 24 V DC via bus connector (at state on)<br>0 mA at 24 V DC via bus connector (at state off)<br>65 mA at 5 V DC via bus connector (at state on) |
| **Discrete input voltage type** | DC |
| **Voltage state 1 guaranteed** | 15...28.8 V for input |
| **Current state 1 guaranteed** | >= 2.5 mA (input) |
| **Voltage state 0 guaranteed** | 0...5 V for input |
| **Current state 0 guaranteed** | <= 1 mA (input) |
| **Input impedance** | 3.4 kOhm |
| **Response time** | 4 ms (turn-on)<br>4 ms (turn-off) |
| **Maximum current per output common** | 7 A |
| **Mechanical durability** | 20000000 cycles |

| | |
|---|---|
| Minimum load | 10 mA at 5 V DC for relay output |
| Local signalling | 1 LED per channel (green) for I/O state |
| Electrical connection | 17 x 1.5 mm² removable screw terminal block with pitch 3.81 mm adjustment for inputs<br>11 x 1.5 mm² removable screw terminal block with pitch 3.81 mm adjustment for outputs |
| Maximum cable distance between devices | Unshielded cable: <30 m for regular input |
| Insulation | Between input and internal logic at 500 V AC<br>Non-insulated between inputs<br>Between input groups and output groups at 1500 V AC<br>Between open contact at 750 V AC<br>Between output and internal logic at 500 V AC<br>Non-insulated between outputs |
| Marking | CE |
| Mounting support | Top hat type TH35-15 rail conforming to IEC 60715<br>Top hat type TH35-7.5 rail conforming to IEC 60715<br>plate or panel with fixing kit |
| Height | 90 mm |
| Depth | 84.6 mm |
| Width | 42.9 mm |

## Environment

| | |
|---|---|
| Standards | EN/IEC 61131-2<br>EN/IEC 61010-2-201 |
| Product certifications | cULus<br>C-Tick |
| Resistance to electrostatic discharge | 8 kV in air conforming to EN/IEC 61000-4-2<br>4 kV on contact conforming to EN/IEC 61000-4-2 |
| Resistance to electromagnetic fields | 10 V/m 80 MHz...1 GHz conforming to EN/IEC 61000-4-3<br>3 V/m 1.4 GHz...2 GHz conforming to EN/IEC 61000-4-3<br>1 V/m 2 GHz...3 GHz conforming to EN/IEC 61000-4-3 |
| Resistance to magnetic fields | 30 A/m 50/60 Hz conforming to EN/IEC 61000-4-8 |
| Resistance to fast transients | 1 kV for I/O conforming to EN/IEC 61000-4-4<br>2 kV for relay output conforming to EN/IEC 61000-4-4 |
| Surge withstand | 2 kV output common mode conforming to EN/IEC 61000-4-5<br>1 kV input common mode conforming to EN/IEC 61000-4-5 |
| Resistance to conducted disturbances | 10 V 0.15...80 MHz conforming to EN/IEC 61000-4-6<br>3 V spot frequency (2, 3, 4, 6.2, 8.2, 12.6, 16.5, 18.8, 22, 25 MHz) conforming to Marine specification (LR, ABS, DNV, GL) |
| Electromagnetic emission | Radiated emissions - test level: 40 dBµV/m QP class A ( 10 m) at 30...230 MHz conforming to EN/IEC 55011<br>Radiated emissions - test level: 47 dBµV/m QP class A ( 10 m) at 230…1000 MHz conforming to EN/IEC 55011 |
| Ambient air temperature for operation | -10…35 °C vertical installation<br>-10…55 °C horizontal installation |
| Ambient air temperature for storage | -25…70 °C |
| Relative humidity | 10…95 %, without condensation (in operation)<br>10…95 %, without condensation (in storage) |
| IP degree of protection | IP20 with protective cover in place |
| Pollution degree | 2 |
| Operating altitude | 0...2000 m |
| Storage altitude | 0…3000 m |
| Vibration resistance | 3.5 mm at 5…8.4 Hz on DIN rail<br>3 gn at 8.4…150 Hz on DIN rail<br>3.5 mm at 5…8.4 Hz on panel<br>3 gn at 8.4…150 Hz on panel |
| Shock resistance | 15 gn for 11 ms |

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## Packing Units

| | |
|---|---|
| **Unit Type of Package 1** | PCE |
| **Number of Units in Package 1** | 1 |
| **Package 1 Height** | 7.551 cm |
| **Package 1 Width** | 10.686 cm |
| **Package 1 Length** | 12.849 cm |
| **Package 1 Weight** | 281.0 g |
| **Unit Type of Package 2** | CAR |
| **Number of Units in Package 2** | 42 |
| **Package 2 Height** | 30.6 cm |
| **Package 2 Width** | 40.1 cm |
| **Package 2 Length** | 57.6 cm |
| **Package 2 Weight** | 12.61 kg |

## Offer Sustainability

| | |
|---|---|
| **Sustainable offer status** | Green Premium product |
| **REACh Regulation** | REACh Declaration |
| **REACh free of SVHC** | Yes |
| **EU RoHS Directive** | Pro-active compliance (Product out of EU RoHS legal scope)<br>EU RoHS Declaration |
| **Toxic heavy metal free** | Yes |
| **Mercury free** | Yes |
| **RoHS exemption information** | Yes |
| **China RoHS Regulation** | China RoHS declaration |
| **Environmental Disclosure** | Product Environmental Profile |
| **Circularity Profile** | End of Life Information |
| **WEEE** | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins |
| **PVC free** | Yes |
| **California proposition 65** | WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov |

## Dimensions



(*)        8.5 mm/0.33 in. when the clamp is pulled out.
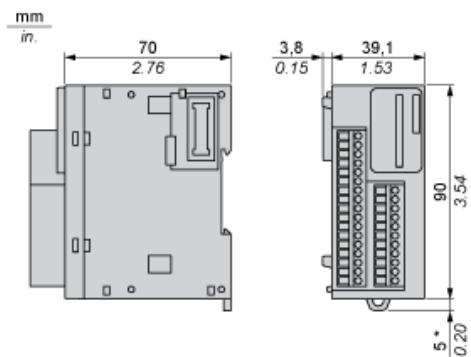
**Spacing Requirements**
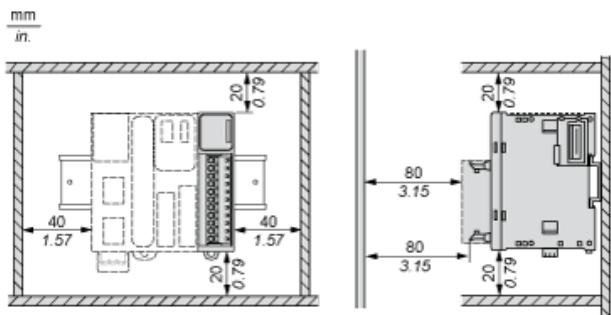
## Mounting on a Rail
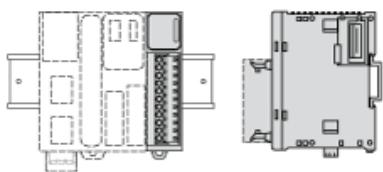


## Incorrect Mounting
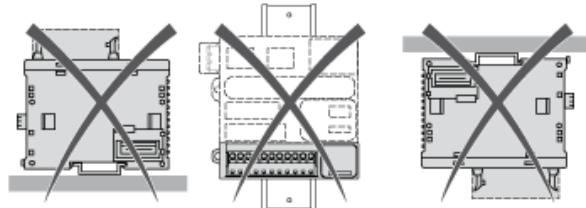
## Mounting on a Panel Surface
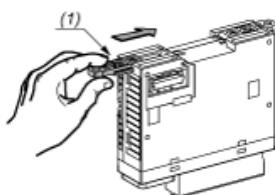


**(1)**      Install a mounting strip

## Mounting Hole Layout
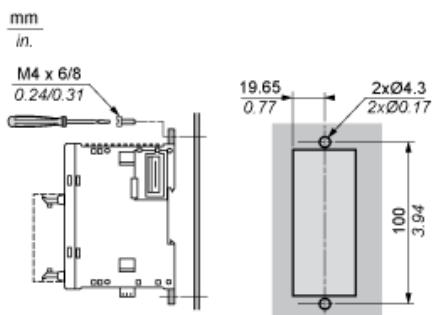
**Digital Mixed I/O Module (24-channel)**

## Wiring Diagram (Source)
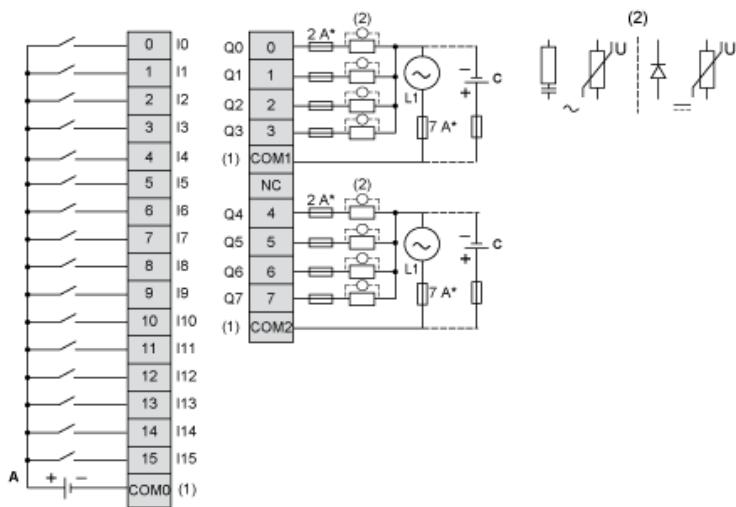


| (*) | Type T fuse |
|---|---|
| (1) | The COM0, COM1 and COM2 terminals are **not** connected internally. |
| (2) | To improve the life time of the contacts, and to protect from potential inductive load damage, it is recommended to connect a free wheeling diode |
| (A) | Sink wiring (positive logic) |
| (C) | Source wiring (positive logic) |

## Wiring Diagram (Sink)
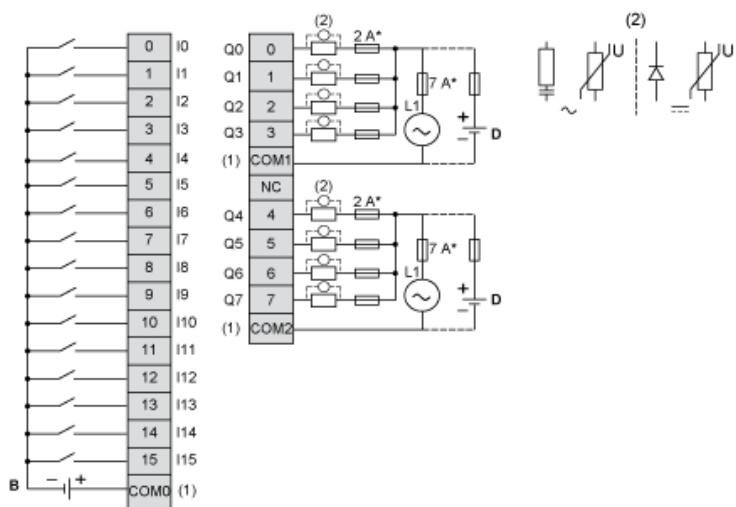


| (*) | Type T fuse |
|---|---|
| (1) | The COM0, COM1 and COM2 terminals are **not** connected internally. |
| (2) | To improve the life time of the contacts, and to protect from potential inductive load damage, it is recommended to connect a free wheeling diode |
| (B) | Source wiring (negative logic) |
| (D) | Sink wiring (negative logic) |

## Recommended replacement(s)