

# TM3TM3

Input/output analog module, Modicon TM3, 2 or temperature inputs, 1 output (screw) 24 VDC



## Main

Range of product	Modicon TM3
Product or component type	Input/output analog module
Range compatibility	Modicon M221 Modicon M241 Modicon M251 Modicon M262
Analogue input number	2
Analogue input type	Current 4...20 mA Current 0...20 mA Voltage 0...10 V Voltage - 10...10 V Thermocouple - 200...1000 °C with thermocouple J Thermocouple - 200...1300 °C with thermocouple K Thermocouple 0...1760 °C with thermocouple R Thermocouple 0...1760 °C with thermocouple S Thermocouple 0...1820 °C with thermocouple B Thermocouple - 200...400 °C with thermocouple T Thermocouple - 200...1300 °C with thermocouple N Thermocouple - 200...800 °C with thermocouple E Thermocouple 0...2315 °C with thermocouple C Ni 100/Ni 1000 temperature probe - 60...180 °C Pt 100 temperature probe - 200...850 °C Pt 1000 temperature probe - 200...600 °C
Analogue output number	1
Analogue output type	Current: 4...20 mA Current: 0...20 mA Voltage: 0...10 V Voltage: - 10...10 V

## Complementary

Analogue input resolution	16 bits 15 bits + sign
Permissible continuous overload	13 V, analogue input type: voltage 40 mA, analogue input type: current
Input impedance	<= 50 Ohm current >= 1 MOhm voltage >= 1 MOhm thermocouple >= 1 MOhm temperature probe
Analogue output resolution	12 bits
LSB value	0.15 mV 0...10 Vvoltage 0.30 mV - 10...10 Vvoltage 0.30 µA 0...20 mAcurrent 0.244 µA 4...20 mAcurrent 0.1 °Ctemperature probe 0.1 °Cthermocouple 2.44 mV 0...10 V voltage 4.88 mV - 10...10 V voltage 4.88 µA 0...20 mA current 3.91 µA 4...20 mA current
Load type	Resistive
Load impedance ohmic	1 kOhm voltage 300 Ohm current
Stabilisation time	1 ms

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Conversion time	100 ms + 100 ms per channel + 1 controller cycle time for analogue input thermocouple 100 ms + 100 ms per channel + 1 controller cycle time for analogue input temperature probe 10 ms + 10 ms per channel + 1 controller cycle time for analogue input voltage/current
Sampling duration	10 Ms, analogue input type: voltage/current 100 Ms, analogue input type: voltage/current 100 Ms, analogue input type: thermocouple 100 ms, analogue input type: temperature probe
Absolute accuracy error	+/- 6 °C at 25 °C for thermocouple R, S 0...200 °C +/- 0.4 % of full scale at 25 °C for thermocouple K - 200...0 °C +/- 0.4 % of full scale at 25 °C for thermocouple J - 200...0 °C +/- 0.4 % of full scale at 25 °C for thermocouple E - 200...0 °C +/- 0.4 % of full scale at 25 °C for thermocouple T - 200...0 °C +/- 0.4 % of full scale at 25 °C for thermocouple N - 200...0 °C +/- 0.1 % of full scale at 25 °C for analogue input voltage/current +/- 0.1 % of full scale at 25 °C for thermocouple C 0...2315 °C +/- 0.1 % of full scale at 25 °C for Pt 100/Pt 1000, Ni 100/ Ni 1000 temperature probe +/- 0.1 % of full scale at 25 °C for thermocouple R, S 200...1760 °C +/- 0.1 % of full scale at 25 °C for thermocouple B 300...1820 °C +/- 0.1 % of full scale at 25 °C for thermocouple K 0...1300 °C +/- 0.1 % of full scale at 25 °C for thermocouple J 0...1000 °C +/- 0.1 % of full scale at 25 °C for thermocouple E 0...800 °C +/- 0.1 % of full scale at 25 °C for thermocouple T 0...400 °C +/- 0.1 % of full scale at 25 °C for thermocouple N 0...1300 °C +/- 0.1 % of full scale at 25 °C for analogue output voltage/current
Temperature drift	+/- 0.006 %FS/°C
Repeat accuracy	+/-0.5 %FS for input +/- 0.4 %FS for output
Non-linearity	+/- 0.01 %FS, analogue output type: analog output +/- 0.1 %FS, analogue input type: analog input
Output ripple	20 mV
Cross talk	<= 1 LSB
[Us] rated supply voltage	24 V DC
Supply voltage limits	20.4...28.8 V
Type of cable	Twisted shielded pairs cable <30 m for input/output circuit
Current consumption	55 mA at 24 V DC via external supply no load 55 mA at 5 V DC via bus connector no load 60 mA at 5 V DC via bus connector full load 80 mA at 24 V DC via external supply full load
Local signalling	1 LED (green) for PWR
Electrical connection	11 x 2.5 mm <sup>2</sup> removable screw terminal block with pitch 5.08 mm adjustment for inputs, outputs and supply
Insulation	Between input and supply at 1500 V AC Between input and internal logic at 500 V AC Between output and supply at 1500 V AC Between output and internal logic at 500 V AC
Marking	CE
Surge withstand	1 KV power supply common mode conforming to EN/IEC 61000-4-5 0.5 KV power supply differential mode conforming to EN/IEC 61000-4-5 1 KV I/O common mode conforming to EN/IEC 61000-4-5 0.5 kV I/O differential mode conforming to EN/IEC 61000-4-5
Mounting support	Top hat type TH35-15 rail conforming to IEC 60715 Top hat type TH35-7.5 rail conforming to IEC 60715 Plate or panel with fixing kit
Height	90 mm
Depth	70 mm
Width	23.6 mm
Net weight	0.115 kg

## Environment

Standards	EN/IEC 61010-2-201 EN/IEC 61131-2
Resistance to electrostatic discharge	8 kV in air conforming to EN/IEC 61000-4-2 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 3 V/M 1.4 GHz...2 GHz conforming to EN/IEC 61000-4-3 1 V/m 2 GHz...3 GHz conforming to EN/IEC 61000-4-3
Resistance to magnetic fields	30 A/m conforming to EN/IEC 61000-4-8
Resistance to fast transients	1 kV (I/O) conforming to EN/IEC 61000-4-4
Resistance to conducted disturbances	10 V 0.15...80 MHz conforming to EN/IEC 61000-4-6 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 dB $\mu$ V/m QP class A (10 m) at 30...230 MHz conforming to EN/IEC 55011 Radiated emissions - test level: 47 dB $\mu$ V/m QP class A (10 m) at 230...1000 MHz conforming to EN/IEC 55011
Immunity to microbreaks	10 ms
Ambient air temperature for operation	-10...55 °C horizontal installation -10...35 °C vertical installation
Ambient air temperature for storage	-25...70 °C
Relative humidity	10...95 %, without condensation (in operation) 10...95 %, without condensation (in storage)
IP degree of protection	IP20
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 3 gn at 8.4...150 Hz on DIN rail
Shock resistance	15 gn for 11 ms

## Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Weight	220.0 g
Package 1 Height	7.611 cm
Package 1 width	10.688 cm
Package 1 Length	12.753 cm
Unit Type of Package 2	S04
Number of Units in Package 2	42
Package 2 Weight	10.421 kg
Package 2 Height	30 cm
Package 2 width	40 cm
Package 2 Length	60 cm

## Offer Sustainability

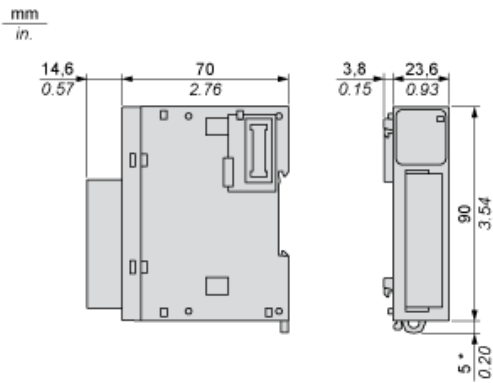
Sustainable offer status	Green Premium product
REACH Regulation	<a href="#">REACH Declaration</a>
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope) <a href="#">EU RoHS Declaration</a>
Toxic heavy metal free	Yes
Mercury free	Yes
RoHS exemption information	<a href="#">Yes</a>
China RoHS Regulation	<a href="#">China RoHS Declaration</a>
Environmental Disclosure	<a href="#">Product Environmental Profile</a>
Circularity Profile	<a href="#">End Of Life Information</a>

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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 <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>

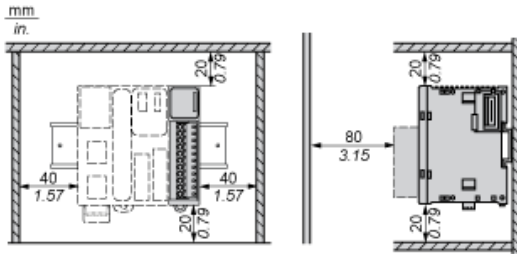
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Dimensions

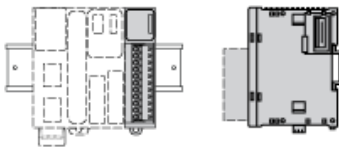


(\*) 8.5 mm/0.33 in when the clamp is pulled out.

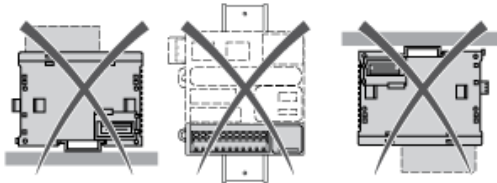
Spacing Requirements



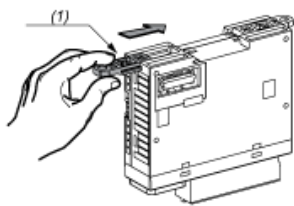
Mounting on a Rail



Incorrect Mounting

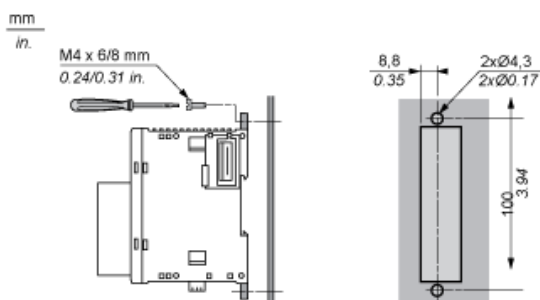


Mounting on a Panel Surface



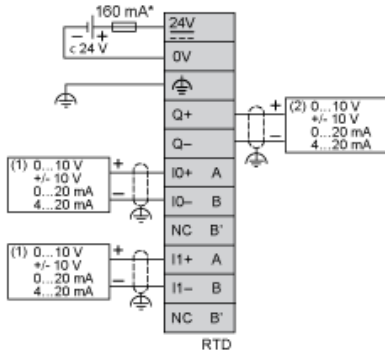
(1) Install a mounting strip

Mounting Hole Layout



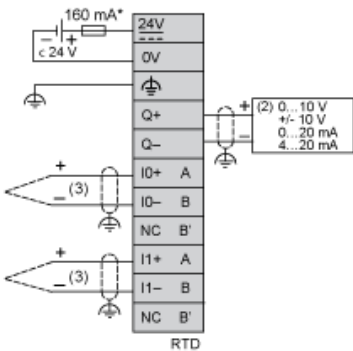
Analogue Mixed I/O Module

Wiring Diagram (Current/Voltage type)



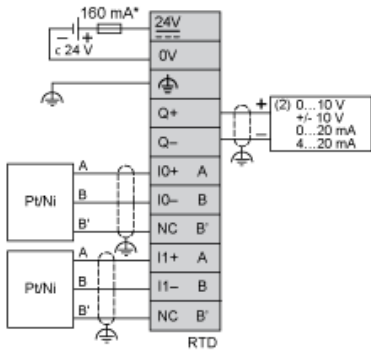
- (\*) Type T fuse
- (1) Current/Voltage analog output device
- (2) Current/Voltage analog input device

Wiring Diagram (Thermocouple input type)



- (\*) Type T fuse
- (2) Current/Voltage analog input device
- (3) Thermocouple

Wiring Diagram (Temperature probe input type)



- (\*) Type T fuse
- (2) Current/Voltage analog input device