Product datasheet
Characteristics

TM3TM3
module TM3 - 2 temperature inputs and 1 analog output

Main

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

Complementary

Analogue input resolution	15 bits + sign 16 bits
Permissible continuous overload	13 V voltage 40 mA current
Input impedance	>= 1 MOhm thermocouple >= 1 MOhm voltage <= 50 Ohm current >= 1 MOhm temperature probe
Analogue output resolution	12 bits
LSB value	0.1 °C thermocouple 0.15 mV, analogue input: 0...10 V voltage 0.30 mV, analogue input: - 10...10 V voltage 0.30 µA, analogue input: 0...20 mA current 0.244 µA, analogue input: 4...20 mA current 0.1 °C temperature probe 2.44 mV, analogue output: 0...10 V voltage 4.88 mV, analogue output: - 10...10 V voltage 4.88 µA, analogue output: 0...20 mA current 3.91 µA, analogue output: 4...20 mA current

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein.
This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications.
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Load type	Resistive
Load impedance ohmic	1 kOhm voltage 300 Ohm current
Stabilisation time	1 ms
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 for analogue input voltage/current 100 ms for analogue input voltage/current 100 ms for analogue input thermocouple 100 ms for analogue input temperature probe
Absolute accuracy error	+/- 1 % of full scale +/- 0.1 % of full scale at 25 °C for analogue input voltage/current +/- 0.1 % of full scale for thermocouple C +/- 0.1 % of full scale for Pt 100/Pt 1000, Ni 100/ Ni 1000 temperature probe +/- 6 °C at 0...200 °C for thermocouple R +/- 6 °C at 0...200 °C for thermocouple S +/- 0.4 % of full scale at <= 0 °C for thermocouple K +/- 0.4 % of full scale at <= 0 °C for thermocouple J +/- 0.4 % of full scale at <= 0 °C for thermocouple E +/- 0.4 % of full scale at <= 0 °C for thermocouple T +/- 0.4 % of full scale at <= 0 °C for thermocouple N +/- 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 analog output +/- 0.1 %FS 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	<= 30 m twisted shielded pairs cable for input/output circuit
Current consumption	55 mA at 24 V DC (no load) via external supply 55 mA at 5 V DC (no load) via bus connector 60 mA at 5 V DC (full load) via bus connector 80 mA at 24 V DC (full load) via external supply
Local signalling	1 LED green for PWR
Electrical connection	11 x 2.5 mm² removable screw terminal block with pitch 5.08 mm adjustment for inputs, outputs and supply
Insulation	500 V AC between output and internal logic 500 V AC between input and internal logic 1500 V AC between input and supply 1500 V AC between output and supply
Marking	CE
Surge withstand	1 kV for power supply with common mode protection conforming to EN/IEC 61000-4-5 0.5 kV for power supply with differential mode protection conforming to EN/IEC 61000-4-5 1 kV for I/O with common mode protection conforming to EN/IEC 61000-4-5 0.5 kV for I/O with differential mode protection 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
Product weight	0.115 kg

Environment

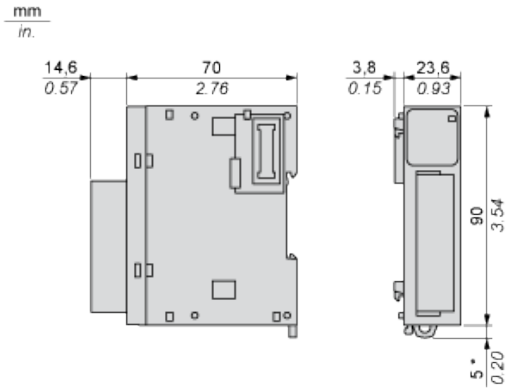
standards	EN/IEC 61131-2 EN/IEC 61010-2-201
resistance to electrostatic discharge	4 kV on contact conforming to EN/IEC 61000-4-2

	8 kV in air conforming to EN/IEC 61000-4-2
resistance to electromagnetic fields	10 V/m at 80 MHz...1 GHz conforming to EN/IEC 61000-4-3 3 V/m at 1.4 GHz...2 GHz conforming to EN/IEC 61000-4-3 1 V/m at 2 GHz...3 GHz conforming to EN/IEC 61000-4-3
resistance to magnetic fields	30 A/m at 50...60 Hz 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, induced by radio frequency fields	10 V at 0.15...80 MHz conforming to EN/IEC 61000-4-6 3 V at 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 Radiated emissions, test level: 47 dBµV/m QP class A (10 m at 230 MHz...1 GHz) 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 with DIN rail mounting support 3 gn at 8.4...150 Hz with DIN rail mounting support
shock resistance	15 gn during 11 ms

Offer Sustainability

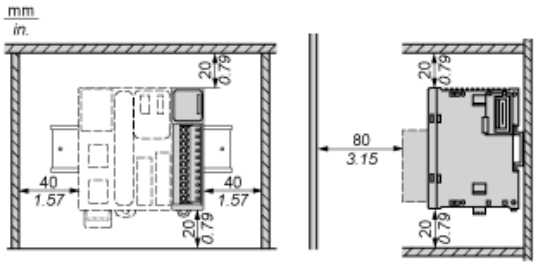
Sustainable offer status	Green Premium product
RoHS (date code: YYWW)	Compliant - since 1415 - Schneider Electric declaration of conformity
REACh	Reference not containing SVHC above the threshold
Product environmental profile	Available
Product end of life instructions	Available

Dimensions

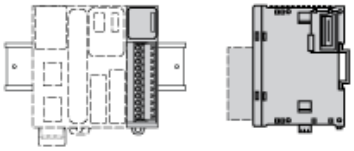


(*) 8.5 mm/0.33 in when the clamp is pulled out.

Spacing Requirements

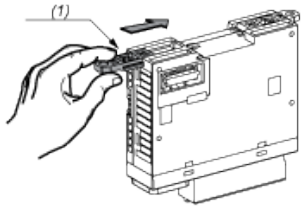


Mounting on a Rail



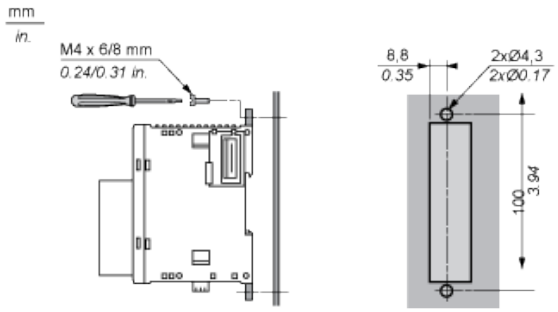
Incorrect Mounting

Mounting on a Panel Surface



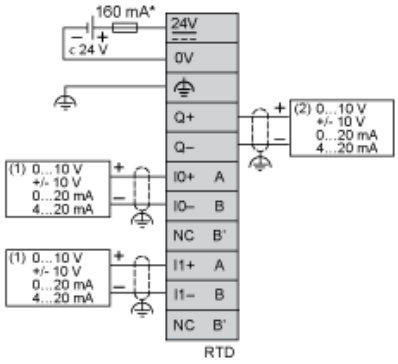
(1) Install a mounting strip

Mounting Hole Layout



Analogue Mixed I/O Module

Wiring Diagram (Current/Voltage type)

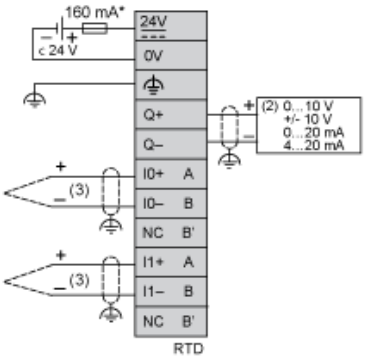


(*) Type T fuse

(1) Current/Voltage analog output device

(2) Current/Voltage analog input device

Wiring Diagram (Thermocouple input type)

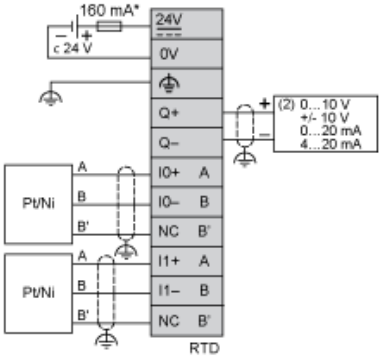


(*) Type T fuse

(2) Current/Voltage analog input device

(3) Thermocouple

Wiring Diagram (Temperature probe input type)



(*) Type T fuse

(2) Current/Voltage analog input device