

# Product data sheet

Specifications



analog IO module, Modicon TM3,  
2 analog or temperature inputs, 1  
analog output, screw, 24V DC

TM3TM3

## 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 thermocouple J thermocouple - 200...1300 °C thermocouple K thermocouple 0...1760 °C thermocouple R thermocouple 0...1760 °C thermocouple S thermocouple 0...1820 °C thermocouple B thermocouple - 200...400 °C thermocouple T thermocouple - 200...1300 °C thermocouple N thermocouple - 200...800 °C thermocouple E thermocouple 0...2315 °C 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 voltage 40 mA 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 V voltage 0.30 mV - 10...10 V voltage 0.30 µA 0...20 mA current 0.244 µA 4...20 mA current 0.1 °C temperature probe 0.1 °C thermocouple 2.44 mV 0...10 V voltage

4.88 mV - 10...10 V voltage  
 4.88  $\mu$ A 0...20 mA current  
 3.91  $\mu$ A 4...20 mA current

<b>Load type</b>	Resistive
<b>Load impedance ohmic</b>	1 kOhm voltage 300 Ohm current
<b>Stabilisation time</b>	1 ms
<b>Conversion time</b>	100 ms + 100 ms per channel + 1 controller cycle time thermocouple 100 ms + 100 ms per channel + 1 controller cycle time temperature probe 10 ms + 10 ms per channel + 1 controller cycle time voltage/current
<b>Sampling duration</b>	10 ms voltage/current 100 ms voltage/current 100 ms thermocouple 100 ms temperature probe
<b>Absolute accuracy error</b>	+/- 6 °C at 77 °F (25 °C) for thermocouple R, S 0...200 °C +/- 0.4 % of full scale at 77 °F (25 °C) for thermocouple K - 200...0 °C +/- 0.4 % of full scale at 77 °F (25 °C) for thermocouple J - 200...0 °C +/- 0.4 % of full scale at 77 °F (25 °C) for thermocouple E - 200...0 °C +/- 0.4 % of full scale at 77 °F (25 °C) for thermocouple T - 200...0 °C +/- 0.4 % of full scale at 77 °F (25 °C) for thermocouple N - 200...0 °C +/- 0.1 % of full scale at 77 °F (25 °C) for analogue input voltage/current +/- 0.1 % of full scale at 77 °F (25 °C) for thermocouple C 0...2315 °C +/- 0.1 % of full scale at 77 °F (25 °C) for Pt 100/Pt 1000, Ni 100/ Ni 1000 temperature probe +/- 0.1 % of full scale at 77 °F (25 °C) for thermocouple R, S 200...1760 °C +/- 0.1 % of full scale at 77 °F (25 °C) for thermocouple B 300...1820 °C +/- 0.1 % of full scale at 77 °F (25 °C) for thermocouple K 0...1300 °C +/- 0.1 % of full scale at 77 °F (25 °C) for thermocouple J 0...1000 °C +/- 0.1 % of full scale at 77 °F (25 °C) for thermocouple E 0...800 °C +/- 0.1 % of full scale at 77 °F (25 °C) for thermocouple T 0...400 °C +/- 0.1 % of full scale at 77 °F (25 °C) for thermocouple N 0...1300 °C +/- 0.1 % of full scale at 77 °F (25 °C) for analogue output voltage/current
<b>Temperature Drift</b>	+/- 0.006 %FS/°C
<b>Repeat accuracy</b>	+/-0.5 %FS input +/- 0.4 %FS output
<b>Non-linearity</b>	+/- 0.01 %FS analog output +/- 0.1 %FS analog input
<b>Output ripple</b>	20 mV
<b>Cross talk</b>	<= 1 LSB
<b>[Us] rated supply voltage</b>	24 V DC
<b>Supply voltage limits</b>	20.4...28.8 V
<b>Type of cable</b>	Twisted shielded pairs cable <98.43 ft (30 m) input/output
<b>Current consumption</b>	55 mA 24 V DC via external supply no load 55 mA 5 V DC via bus connector no load 60 mA 5 V DC via bus connector full load 80 mA 24 V DC via external supply full load
<b>Local signalling</b>	for PWR 1 LED (green)
<b>Electrical connection</b>	11 x 2.5 mm <sup>2</sup> removable screw terminal block pitch 5.08 mm for inputs, outputs and supply
<b>Insulation</b>	Between input and supply 1500 V AC Between input and internal logic 500 V AC Between output and supply 1500 V AC Between output and internal logic 500 V AC
<b>Marking</b>	CE
<b>Surge withstand</b>	1 kV power supply common mode EN/IEC 61000-4-5 0.5 kV power supply differential mode EN/IEC 61000-4-5 1 kV I/O common mode EN/IEC 61000-4-5 0.5 kV I/O differential mode EN/IEC 61000-4-5
<b>Mounting support</b>	Top hat type TH35-15 rail IEC 60715 Top hat type TH35-7.5 rail IEC 60715 plate or panel with fixing kit
<b>Height</b>	3.54 in (90 mm)
<b>Depth</b>	2.76 in (70 mm)
<b>Width</b>	0.93 in (23.6 mm)
<b>Net Weight</b>	0.25 lb(US) (0.115 kg)

## Environment

<b>Standards</b>	EN/IEC 61131-2
<b>Product Certifications</b>	CE UKCA RCM EAC cULus cULus HazLoc
<b>Resistance to electrostatic discharge</b>	8 kV in air EN/IEC 61000-4-2 4 kV on contact EN/IEC 61000-4-2
<b>Resistance to electromagnetic fields</b>	9.14 V/m (10 V/m) 80 MHz...1 GHz EN/IEC 61000-4-3 2.74 V/m (3 V/m) 1.4 GHz...2 GHz EN/IEC 61000-4-3 0.91 V/m (1 V/m) 2 GHz...3 GHz EN/IEC 61000-4-3
<b>Resistance to magnetic fields</b>	98.43 A/m (30 A/m) EN/IEC 61000-4-8
<b>Resistance to fast transients</b>	1 kV EN/IEC 61000-4-4 I/O)
<b>Resistance to conducted disturbances</b>	10 V 0.15...80 MHz 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) Marine specification (LR, ABS, DNV, GL)
<b>Electromagnetic emission</b>	Radiated emissions 40 dB $\mu$ V/m QP class A 10 m)30...230 MHz EN/IEC 55011 Radiated emissions 47 dB $\mu$ V/m QP class A 10 m)230...1000 MHz EN/IEC 55011
<b>Immunity to microbreaks</b>	10 ms
<b>Ambient Air Temperature for Operation</b>	14...131 °F (-10...55 °C) horizontal installation 14...95 °F (-10...35 °C) vertical installation
<b>Ambient Air Temperature for Storage</b>	-13...158 °F (-25...70 °C)
<b>Relative humidity</b>	10...95 %, without condensation in operation) 10...95 %, without condensation in storage)
<b>IP Degree of Protection</b>	IP20
<b>Pollution degree</b>	2
<b>Operating altitude</b>	0...6561.68 ft (0...2000 m)
<b>Storage altitude</b>	0.00...9842.52 ft (0...3000 m)
<b>Vibration resistance</b>	3.5 mm 5...8.4 Hz DIN rail 3 gn 8.4...150 Hz DIN rail
<b>Shock resistance</b>	15 gn 11 ms

## Ordering and shipping details

<b>Category</b>	22533-M2XX PLC & ACCESSORIES
<b>Discount Schedule</b>	MSX
<b>GTIN</b>	3606480649042
<b>Returnability</b>	Yes
<b>Country of origin</b>	JP

## Packing Units

<b>Unit Type of Package 1</b>	PCE
<b>Number of Units in Package 1</b>	1
<b>Package 1 Height</b>	3.00 in (7.611 cm)
<b>Package 1 Width</b>	4.21 in (10.688 cm)
<b>Package 1 Length</b>	5.02 in (12.753 cm)
<b>Package 1 Weight</b>	7.76 oz (220.0 g)
<b>Unit Type of Package 2</b>	S04
<b>Number of Units in Package 2</b>	42

Package 2 Height	11.81 in (30 cm)
Package 2 Width	15.75 in (40 cm)
Package 2 Length	23.62 in (60 cm)
Package 2 Weight	22.97 lb(US) (10.421 kg)
Unit Type of Package 3	P12
Number of Units in Package 3	504
Package 3 Height	41.34 in (105 cm)
Package 3 Width	47.24 in (120 cm)
Package 3 Length	31.50 in (80 cm)
Package 3 Weight	286.60 lb(US) (130 kg)

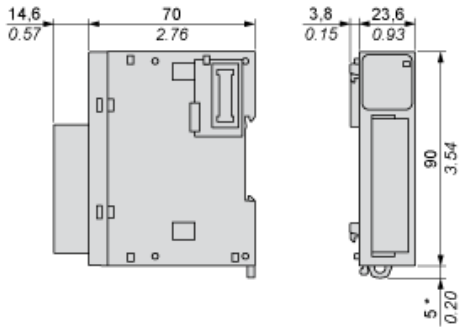
## Offer Sustainability

Sustainable offer status	Green Premium product
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>
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
China RoHS Regulation	<a href="#">China RoHS declaration</a>
RoHS exemption information	<a href="#">Yes</a>
Environmental Disclosure	<a href="#">Product Environmental Profile</a>
Circularity Profile	<a href="#">End of Life Information</a>
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins.
PVC free	Yes

Dimensions

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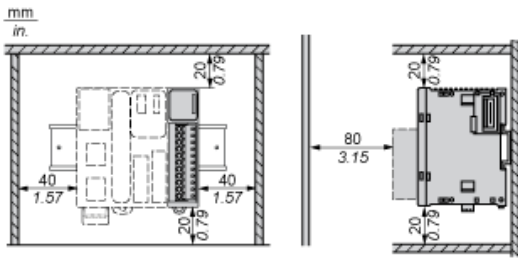
mm  
in.



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

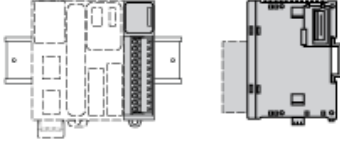
Spacing Requirements

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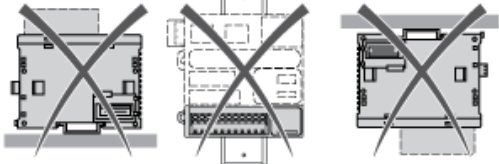


**Mounting on a Rail**

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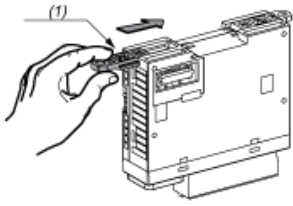


**Incorrect Mounting**



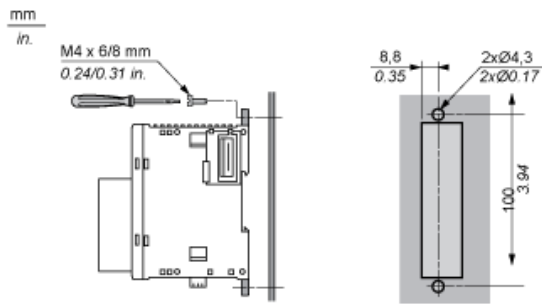
**Mounting on a Panel Surface**

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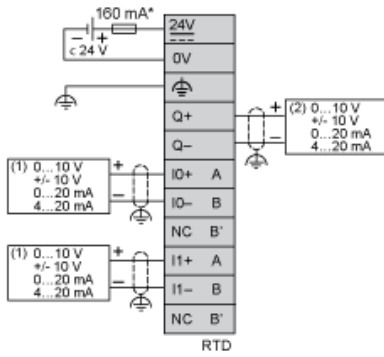
(1) Install a mounting strip

**Mounting Hole Layout**



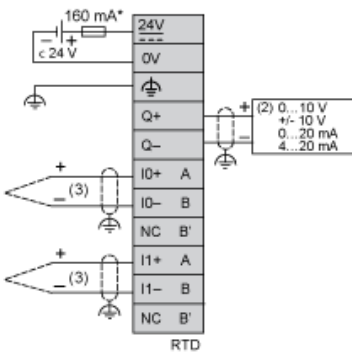
**Analogue Mixed I/O Module**

**Wiring Diagram (Current/Voltage type)**



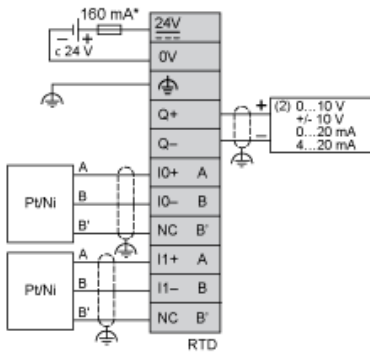
- (\*) Type T fuse
- (1) Current/Voltage analog output device
- (2) Current/Voltage analog input device

**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

**Recommended replacement(s)**