



### Main

Range of product	Modicon X80
Product or component type	Analog input module
Product specific application	For severe environments
Electrical connection	40 ways 1 connector
Isolation between channels	Isolated
Input level	Low level
Analogue input number	4
Analogue input type	Voltage +/- 1.28 V Voltage +/- 160 mV Voltage +/- 320 mV Voltage +/- 40 mV Voltage +/- 640 mV Voltage +/- 80 mV Resistor 400 Ohm 2 wires Resistor 400 Ohm 3 wires Resistor 400 Ohm 4 wires Resistor 4000 Ohm 2 wires Resistor 4000 Ohm 3 wires Resistor 4000 Ohm 4 wires Temperature probe -100...+260 °C Cu 10 Temperature probe -100...+450 °C Pt 100 conforming to UL/JIS Temperature probe -100...+450 °C Pt 1000 conforming to UL/JIS Temperature probe -200...+850 °C Pt 100 conforming to IEC Temperature probe -200...+850 °C Pt 1000 conforming to IEC Temperature probe -60...+180 °C Ni 100 Temperature probe -60...+180 °C Ni 1000 Thermocouple +130...+1820 °C thermocouple B Thermocouple +270...+1300 °C thermocouple N Thermocouple -200...+600 °C thermocouple U Thermocouple -200...+760 °C thermocouple J Thermocouple -200...+900 °C thermocouple L Thermocouple -270...+1000 °C thermocouple E Thermocouple -270...+1370 °C thermocouple K Thermocouple -270...+400 °C thermocouple T Thermocouple -50...+1769 °C thermocouple R Thermocouple -50...+1769 °C thermocouple S

### Complementary

Analog/digital conversion	Sigma delta 16 bits
Analogue input resolution	15 bits + sign
Permitted overload on inputs	+/- 7.5 V +/- 1.28 V +/- 7.5 V +/- 160 mV +/- 7.5 V +/- 320 mV +/- 7.5 V +/- 40 mV +/- 7.5 V +/- 640 mV +/- 7.5 V +/- 80 mV
Common mode rejection	120 dB 50/60 Hz
Differential mode rejection	60 dB 50/60 Hz
Cold junction compensation	External by Pt100 probe
Type of filter	First order digital filtering
Nominal read cycle time	200 ms with thermocouple 400 ms with temperature probe

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Measurement error	<p>+/- 0.7 °C Ni 1000 25 °C  +/- 2.1 °C Ni 100 25 °C  +/- 2.1 °C Pt 100 25 °C  +/- 2.1 °C Pt 1000 25 °C  +/- 2.7 °C thermocouple U 25 °C  +/- 2.8 °C thermocouple J 25 °C  +/- 3 °C thermocouple L 25 °C  +/- 3.2 °C thermocouple R 25 °C  +/- 3.2 °C thermocouple S 25 °C  +/- 3.5 °C thermocouple B 25 °C  +/- 3.7 °C thermocouple E 25 °C  +/- 3.7 °C thermocouple K 25 °C  +/- 3.7 °C thermocouple N 25 °C  +/- 3.7 °C thermocouple T 25 °C  +/- 4 °C Cu 10 25 °C  0.05 % of full scale +/- 1.28 V 25 °C  0.05 % of full scale +/- 160 mV 25 °C  0.05 % of full scale +/- 320 mV 25 °C  0.05 % of full scale +/- 40 mV 25 °C  0.05 % of full scale +/- 640 mV 25 °C  0.05 % of full scale +/- 80 mV 25 °C  0.12 % of full scale 400 Ohm 25 °C  0.12 % of full scale 4000 Ohm 25 °C  +/- 1.5 °C Ni 1000 - 25...70 °C  +/- 3.5 °C Ni 100 - 25...70 °C  +/- 3.5 °C Pt 100 - 25...70 °C  +/- 3.5 °C Pt 1000 - 25...70 °C  +/- 4.5 °C Cu 10 - 25...70 °C  +/- 5.5 °C thermocouple J - 25...70 °C  +/- 5.5 °C thermocouple L - 25...70 °C  +/- 5.5 °C thermocouple R - 25...70 °C  +/- 5.5 °C thermocouple S - 25...70 °C  +/- 5.5 °C thermocouple U - 25...70 °C  +/- 6 °C thermocouple B - 25...70 °C  +/- 6 °C thermocouple E - 25...70 °C  +/- 6 °C thermocouple K - 25...70 °C  +/- 6 °C thermocouple N - 25...70 °C  +/- 6 °C thermocouple T - 25...70 °C  &lt;= 0.2 % of full scale +/- 1.28 V - 25...70 °C  &lt;= 0.2 % of full scale +/- 160 mV - 25...70 °C  &lt;= 0.2 % of full scale +/- 320 mV - 25...70 °C  &lt;= 0.2 % of full scale +/- 40 mV - 25...70 °C  &lt;= 0.2 % of full scale +/- 640 mV - 25...70 °C  &lt;= 0.2 % of full scale +/- 80 mV - 25...70 °C  &lt;= 0.3 % of full scale 400 Ohm - 25...70 °C  &lt;= 0.3 % of full scale 4000 Ohm - 25...70 °C</p>
Temperature drift	<p>25 ppm/°C 400 Ohm  25 ppm/°C 4000 Ohm  25 ppm/°C Ni 1000  25 ppm/°C thermocouple B  25 ppm/°C thermocouple E  25 ppm/°C thermocouple J  25 ppm/°C thermocouple K  25 ppm/°C thermocouple L  25 ppm/°C thermocouple N  25 ppm/°C thermocouple R  25 ppm/°C thermocouple S  25 ppm/°C thermocouple T  25 ppm/°C thermocouple U  30 ppm/°C +/- 1.28 V  30 ppm/°C +/- 160 mV  30 ppm/°C +/- 320 mV  30 ppm/°C +/- 40 mV  30 ppm/°C +/- 640 mV  30 ppm/°C +/- 80 mV  30 ppm/°C Cu 10  30 ppm/°C Ni 100  30 ppm/°C Pt 100  30 ppm/°C Pt 1000</p>
Recalibration	Internal

Detection type	Open circuit Cu 10 Open circuit Ni 100 Open circuit Ni 1000 Open circuit Pt 100 Open circuit Pt 1000 Open circuit thermocouple B Open circuit thermocouple E Open circuit thermocouple J Open circuit thermocouple K Open circuit thermocouple L Open circuit thermocouple N Open circuit thermocouple R Open circuit thermocouple S Open circuit thermocouple T Open circuit thermocouple U
Maximum wiring resistance	20 Ohm 2 wires Cu 10 20 Ohm 2 wires Ni 100 20 Ohm 2 wires Pt 100 20 Ohm 3 wires Cu 10 20 Ohm 3 wires Ni 100 20 Ohm 3 wires Pt 100 200 Ohm 2 wires Ni 1000 200 Ohm 2 wires Pt 1000 200 Ohm 3 wires Ni 1000 200 Ohm 3 wires Pt 1000 50 Ohm 4 wires Cu 10 50 Ohm 4 wires Ni 100 50 Ohm 4 wires Pt 100 500 Ohm 4 wires Ni 1000 500 Ohm 4 wires Pt 1000
Measurement resolution	0.1 °C Cu 10 0.1 °C Ni 100 0.1 °C Ni 1000 0.1 °C Pt 100 0.1 °C Pt 1000 0.1 °C thermocouple B 0.1 °C thermocouple E 0.1 °C thermocouple J 0.1 °C thermocouple K 0.1 °C thermocouple L 0.1 °C thermocouple N 0.1 °C thermocouple R 0.1 °C thermocouple S 0.1 °C thermocouple T 0.1 °C thermocouple U 1280/2exp14 mV +/- 1.28 V 160/2exp14 mV +/- 160 mV 320/2exp14 mV +/- 320 mV 40/2exp14 mV +/- 40 mV 12.5 mOhm 400 Ohm 125 mOhm 4000 Ohm 640/2exp14 mV +/- 640 mV 80/2exp14 mV +/- 80 mV
Maximum conversion value	+/- 100 % 400 Ohm +/- 100 % 4000 Ohm +/- 102.5 % +/- 1.28 V +/- 102.5 % +/- 160 mV +/- 102.5 % +/- 320 mV +/- 102.5 % +/- 40 mV +/- 102.5 % +/- 640 mV +/- 102.5 % +/- 80 mV
MTBF reliability	1400000 H
Operating altitude	0...2000 m 2000...5000 m with derating factor
Status LED	1 LED (green) RUN 1 LED per channel (green) channel diagnostic 1 LED (red) ERR 1 LED (red) I/O
Net weight	0.135 kg
Current consumption	150 mA at 3.3 V DC

## Environment

Vibration resistance	3 gn
Shock resistance	30 gn
Ambient air temperature for storage	-40...85 °C
Ambient air temperature for operation	-25...70 °C
Relative humidity	5...95 % at 55 °C without condensation
IP degree of protection	IP20
Directives	2014/35/EU - low voltage directive 2014/30/EU - electromagnetic compatibility
Product certifications	IEC-Ex[RETURN]Merchant Navy[RETURN]UL[RETURN]RCM[RETURN]EAC[RETURN]CSA[RETURN]CE[RETURN]ATEX
Standards	EN 61131-2 EN 61000-6-4 EN 61000-6-2 EN 61010-2-201
Environmental characteristic	Gas resistant class Gx Gas resistant class 3C4 Dust resistant class 3S4 Sand resistant class 3S4 Salt resistant level 2 Mold growth resistant class 3B2 Fungal spore resistant class 3B2 Hazardous location class I division 2
Protective treatment	Conformal coating

## Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	5.500 cm
Package 1 Width	11.500 cm
Package 1 Length	11.800 cm
Package 1 Weight	172.000 g
Unit Type of Package 2	S02
Number of Units in Package 2	15
Package 2 Height	15.000 cm
Package 2 Width	30.000 cm
Package 2 Length	40.000 cm
Package 2 Weight	2.921 kg

## Offer Sustainability

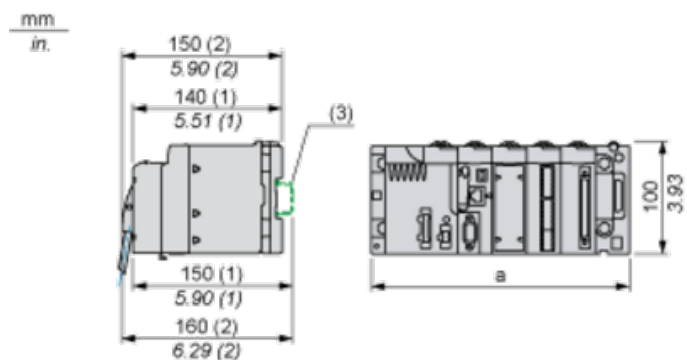
Sustainable offer status	Green Premium product
REACH Regulation	<a href="#">REACH Declaration</a>
EU RoHS Directive	Pro-active compliance (Product out of EU RoHS legal scope)
Mercury free	Yes
China RoHS Regulation	<a href="#">China RoHS Declaration</a>
RoHS exemption information	<a href="#">Yes</a>
Environmental 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
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>

## Contractual warranty

Warranty	18 months
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Modules Mounted on Racks

Dimensions



(1) With removable terminal block (cage, screw or spring).

(2) With FCN connector.

(3) On AM1 ED rail: 35 mm wide, 15 mm deep. Only possible with BMXXBP0400/0400H/0600/0600H/0800/0800H rack.

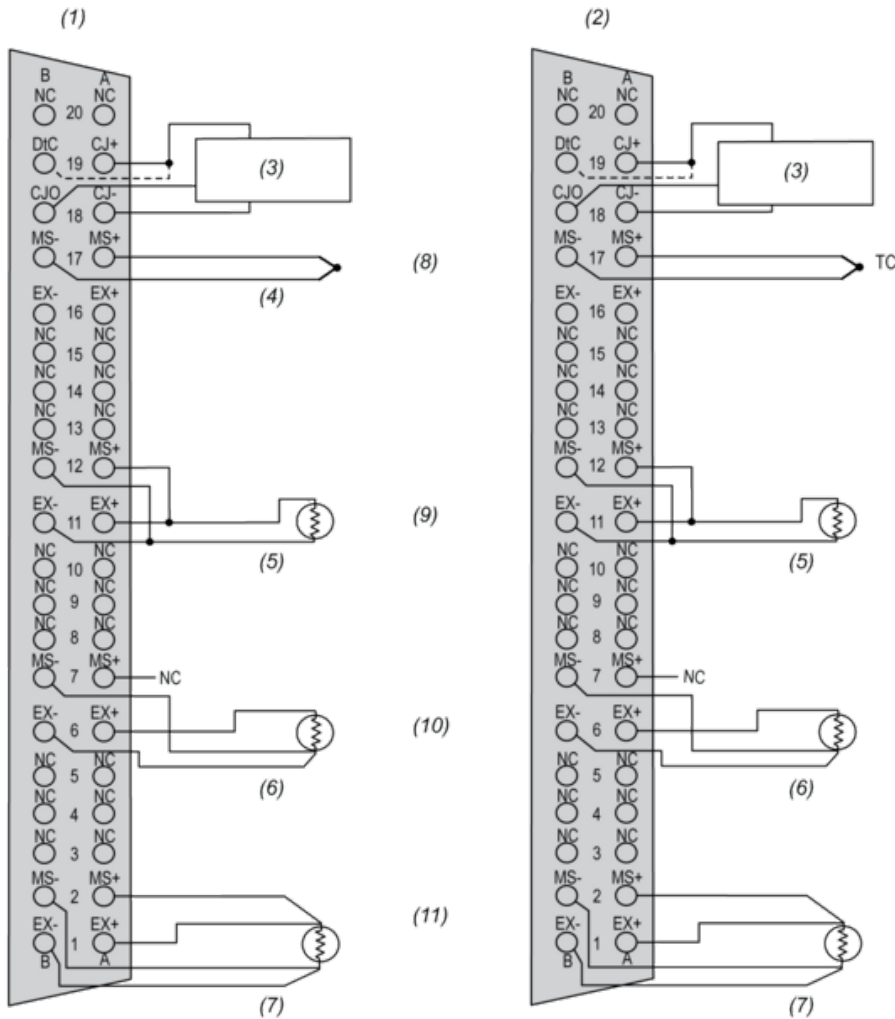
Rack references	a in mm	a in in.
BMXXBP0400 and BMXXBP0400H	242.4	09.54
BMXXBP0600 and BMXXBP0600H	307.6	12.11
BMXXBP0800 and BMXXBP0800H	372.8	14.68
BMXXBP1200 and BMXXBP1200H	503.2	19.81

Connections and Schema

Below example shows a probe configuration with:

- Channel 0/4: Thermocouple
- Channel 1/5: 2-wires RTD
- Channel 2/6: 3-wires RTD
- Channel 3/7: 4-wires RTD

Module Front View - cabling view



- (1) Left connector
- (2) Right connector (BMX ART 414 only)
- (3) Cold Junction temperature sensor
- (4) Thermocouple
- (5) 2-wire RTD probe
- (6) 3-wire RTD probe
- (7) 4-wire RTD probe
- (8) Channel 4/0
- (9) Channel 5/1
- (10) Channel 6/2
- (11) Channel 7/3

MS+ RTD Measure + input / Thermocouple + input  
 MS- RTD Measure - input / Thermocouple - input  
 EX+ RTD probe current generator + output

EX- RTD probe current generator - output

NC Not connected

DtC The CJC sensor detection input is connected to CJ+ if the sensor type is DS600. It is not connected (NC) if the sensor type is LM31.

NOTE: The CJC sensor is needed for TC only.