

# Product datasheet

Specifications



## analog input module X80 - 4 inputs - temperature

BMXART0414

Price: 19,213.36 ZAR

### Main

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| Range Of Product           | Modicon X80                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Product Or Component Type  | Analog input module                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 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<br>Voltage +/- 160 mV<br>Voltage +/- 320 mV<br>Voltage +/- 40 mV<br>Voltage +/- 640 mV<br>Voltage +/- 80 mV<br>Resistor 400 Ohm 2 wires<br>Resistor 400 Ohm 3 wires<br>Resistor 400 Ohm 4 wires<br>Resistor 4000 Ohm 2 wires<br>Resistor 4000 Ohm 3 wires<br>Resistor 4000 Ohm 4 wires<br>Temperature probe -100...+260 °C Cu 10<br>Temperature probe -100...+450 °C Pt 100 conforming to UL/JIS<br>Temperature probe -100...+450 °C Pt 1000 conforming to UL/JIS<br>Temperature probe -200...+850 °C Pt 100 conforming to IEC<br>Temperature probe -200...+850 °C Pt 1000 conforming to IEC<br>Temperature probe -60...+180 °C Ni 100<br>Temperature probe -60...+180 °C Ni 1000<br>Thermocouple +130...+1820 °C thermocouple B<br>Thermocouple +270...+1300 °C thermocouple N<br>Thermocouple -200...+600 °C thermocouple U<br>Thermocouple -200...+760 °C thermocouple J<br>Thermocouple -200...+900 °C thermocouple L<br>Thermocouple -270...+1000 °C thermocouple E<br>Thermocouple -270...+1370 °C thermocouple K<br>Thermocouple -270...+400 °C thermocouple T<br>Thermocouple -50...+1769 °C thermocouple R<br>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<br>+/- 7.5 V +/- 160 mV<br>+/- 7.5 V +/- 320 mV<br>+/- 7.5 V +/- 40 mV<br>+/- 7.5 V +/- 640 mV<br>+/- 7.5 V +/- 80 mV |
| Common Mode Rejection        | 120 dB 50/60 Hz                                                                                                                            |
| Differential Mode Rejection  | 60 dB 50/60 Hz                                                                                                                             |

Excluding VAT and subject to change. Please check with your local distributor through "Where to buy"

Disclaimer: 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

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cold Junction Compensation | External by Pt100 probe                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Type Of Filter             | First order digital filtering                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Nominal Read Cycle Time    | 400 ms with temperature probe<br>200 ms with thermocouple                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Measurement Error          | +/- 0.7 °C Ni 1000 25 °C<br>+/- 1.3 °C Ni 1000 0...60 °C<br>+/- 2 °C Pt 100 0...60 °C<br>+/- 2 °C Pt 1000 0...60 °C<br>+/- 2.1 °C Ni 100 25 °C<br>+/- 2.1 °C Pt 100 25 °C<br>+/- 2.1 °C Pt 1000 25 °C<br>+/- 2.7 °C thermocouple U 25 °C<br>+/- 2.8 °C thermocouple J 25 °C<br>+/- 3 °C Ni 100 0...60 °C<br>+/- 3 °C thermocouple L 25 °C<br>+/- 3.2 °C thermocouple R 25 °C<br>+/- 3.2 °C thermocouple S 25 °C<br>+/- 3.5 °C thermocouple B 25 °C<br>+/- 3.7 °C thermocouple E 25 °C<br>+/- 3.7 °C thermocouple K 25 °C<br>+/- 3.7 °C thermocouple N 25 °C<br>+/- 3.7 °C thermocouple T 25 °C<br>+/- 4 °C Cu 10 0...60 °C<br>+/- 4 °C Cu 10 25 °C<br>+/- 4.5 °C thermocouple J 0...60 °C<br>+/- 4.5 °C thermocouple L 0...60 °C<br>+/- 4.5 °C thermocouple R 0...60 °C<br>+/- 4.5 °C thermocouple S 0...60 °C<br>+/- 4.5 °C thermocouple U 0...60 °C<br>+/- 5 °C thermocouple B 0...60 °C<br>+/- 5 °C thermocouple E 0...60 °C<br>+/- 5 °C thermocouple K 0...60 °C<br>+/- 5 °C thermocouple N 0...60 °C<br>+/- 5 °C thermocouple T 0...60 °C<br><= 0.15 % of full scale +/- 1.28 V 0...60 °C<br><= 0.15 % of full scale +/- 160 mV 0...60 °C<br><= 0.15 % of full scale +/- 320 mV 0...60 °C<br><= 0.15 % of full scale +/- 40 mV 0...60 °C<br><= 0.15 % of full scale +/- 640 mV 0...60 °C<br><= 0.15 % of full scale +/- 80 mV 0...60 °C<br><= 0.2 % of full scale 400 Ohm 0...60 °C<br><= 0.2 % of full scale 4000 Ohm 0...60 °C<br>0.05 % of full scale +/- 1.28 V 25 °C<br>0.05 % of full scale +/- 160 mV 25 °C<br>0.05 % of full scale +/- 320 mV 25 °C<br>0.05 % of full scale +/- 40 mV 25 °C<br>0.05 % of full scale +/- 640 mV 25 °C<br>0.05 % of full scale +/- 80 mV 25 °C<br>0.12 % of full scale 400 Ohm 25 °C<br>0.12 % of full scale 4000 Ohm 25 °C |
| Temperature Drift          | 25 ppm/°C 400 Ohm<br>25 ppm/°C 4000 Ohm<br>25 ppm/°C Ni 1000<br>25 ppm/°C thermocouple B<br>25 ppm/°C thermocouple E<br>25 ppm/°C thermocouple J<br>25 ppm/°C thermocouple K<br>25 ppm/°C thermocouple L<br>25 ppm/°C thermocouple N<br>25 ppm/°C thermocouple R<br>25 ppm/°C thermocouple S<br>25 ppm/°C thermocouple T<br>25 ppm/°C thermocouple U<br>30 ppm/°C +/- 1.28 V<br>30 ppm/°C +/- 160 mV<br>30 ppm/°C +/- 320 mV<br>30 ppm/°C +/- 40 mV<br>30 ppm/°C +/- 640 mV<br>30 ppm/°C +/- 80 mV<br>30 ppm/°C Cu 10<br>30 ppm/°C Ni 100<br>30 ppm/°C Pt 100<br>30 ppm/°C Pt 1000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Recalibration              | Internal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Isolation Voltage</b>         | 1400 V DC between channels and bus<br>750 V DC between channels<br>750 V DC between channels and ground                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Detection Type</b>            | Open circuit Cu 10<br>Open circuit Ni 100<br>Open circuit Ni 1000<br>Open circuit Pt 100<br>Open circuit Pt 1000<br>Open circuit thermocouple B<br>Open circuit thermocouple E<br>Open circuit thermocouple J<br>Open circuit thermocouple K<br>Open circuit thermocouple L<br>Open circuit thermocouple N<br>Open circuit thermocouple R<br>Open circuit thermocouple S<br>Open circuit thermocouple T<br>Open circuit thermocouple U                                                                                                                      |
| <b>Maximum Wiring Resistance</b> | 20 Ohm 2 wires Cu 10<br>20 Ohm 2 wires Ni 100<br>20 Ohm 2 wires Pt 100<br>20 Ohm 3 wires Cu 10<br>20 Ohm 3 wires Ni 100<br>20 Ohm 3 wires Pt 100<br>200 Ohm 2 wires Ni 1000<br>200 Ohm 2 wires Pt 1000<br>200 Ohm 3 wires Ni 1000<br>200 Ohm 3 wires Pt 1000<br>50 Ohm 4 wires Cu 10<br>50 Ohm 4 wires Ni 100<br>50 Ohm 4 wires Pt 100<br>500 Ohm 4 wires Ni 1000<br>500 Ohm 4 wires Pt 1000                                                                                                                                                                |
| <b>Measurement Resolution</b>    | 0.1 °C Cu 10<br>0.1 °C Ni 100<br>0.1 °C Ni 1000<br>0.1 °C Pt 100<br>0.1 °C Pt 1000<br>0.1 °C thermocouple B<br>0.1 °C thermocouple E<br>0.1 °C thermocouple J<br>0.1 °C thermocouple K<br>0.1 °C thermocouple L<br>0.1 °C thermocouple N<br>0.1 °C thermocouple R<br>0.1 °C thermocouple S<br>0.1 °C thermocouple T<br>0.1 °C thermocouple U<br>1280/2exp14 mV +/- 1.28 V<br>160/2exp14 mV +/- 160 mV<br>320/2exp14 mV +/- 320 mV<br>40/2exp14 mV +/- 40 mV<br>12.5 mOhm 400 Ohm<br>125 mOhm 4000 Ohm<br>640/2exp14 mV +/- 640 mV<br>80/2exp14 mV +/- 80 mV |
| <b>Maximum Conversion Value</b>  | +/- 100 % 400 Ohm<br>+/- 100 % 4000 Ohm<br>+/- 102.5 % +/- 1.28 V<br>+/- 102.5 % +/- 160 mV<br>+/- 102.5 % +/- 320 mV<br>+/- 102.5 % +/- 40 mV<br>+/- 102.5 % +/- 640 mV<br>+/- 102.5 % +/- 80 mV                                                                                                                                                                                                                                                                                                                                                           |
| <b>Mtbf Reliability</b>          | 1400000 H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Operating Altitude</b>        | 0...2000 m<br>2000...5000 m with derating factor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Status Led</b>                | 1 LED (green) RUN<br>1 LED per channel (green) channel diagnostic<br>1 LED (red) ERR<br>1 LED (red) I/O                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Net Weight</b>                | 0.135 kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                     |                                        |
|---------------------|----------------------------------------|
| Current Consumption | 150 mA at 3.3 V DC<br>40 mA at 24 V DC |
|---------------------|----------------------------------------|

## Environment

|                                       |                                                                                  |
|---------------------------------------|----------------------------------------------------------------------------------|
| Vibration Resistance                  | 3 gn                                                                             |
| Shock Resistance                      | 30 gn                                                                            |
| Ambient Air Temperature For Storage   | -40...85 °C                                                                      |
| Ambient Air Temperature For Operation | 0...60 °C                                                                        |
| Relative Humidity                     | 5...95 % at 55 °C without condensation                                           |
| Ip Degree Of Protection               | IP20                                                                             |
| Directives                            | 2014/35/EU - low voltage directive<br>2014/30/EU - electromagnetic compatibility |
| Product Certifications                | EAC<br>RCM<br>UL<br>Merchant Navy<br>CSA<br>CE                                   |
| Standards                             | EN 61131-2<br>EN 61000-6-4<br>EN 61000-6-2<br>EN 61010-2-201                     |

## Packing Units

|                              |           |
|------------------------------|-----------|
| Unit Type Of Package 1       | PCE       |
| Number Of Units In Package 1 | 1         |
| Package 1 Height             | 5.500 cm  |
| Package 1 Width              | 11.000 cm |
| Package 1 Length             | 11.500 cm |
| Package 1 Weight             | 164.000 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             | 2.750 kg  |

## Contractual warranty

|          |           |
|----------|-----------|
| Warranty | 18 months |
|----------|-----------|

## Sustainability

**Green Premium™ label** is Schneider Electric's commitment to delivering products with best-in-class environmental performance. Green Premium promises compliance with the latest regulations, transparency on environmental impacts, as well as circular and low-CO<sub>2</sub> products.

**Guide to assessing product sustainability** is a white paper that clarifies global eco-label standards and how to interpret environmental declarations.

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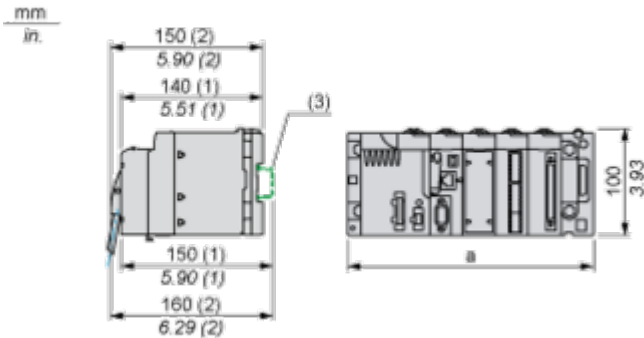
## Well-being performance

|                                                                                                              |                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
|  Mercury Free               |                                                                                                                             |
|  Rohs Exemption Information | <a href="#">Yes</a>                                                                                                         |
| Reach Regulation                                                                                             | <a href="#">REACH Declaration</a>                                                                                           |
| Eu Rohs Directive                                                                                            | Pro-active compliance (Product out of EU RoHS legal scope)                                                                  |
| China Rohs Regulation                                                                                        | <a href="#">China RoHS declaration</a>                                                                                      |
| Weee                                                                                                         | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins |

Dimensions Drawings

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    |

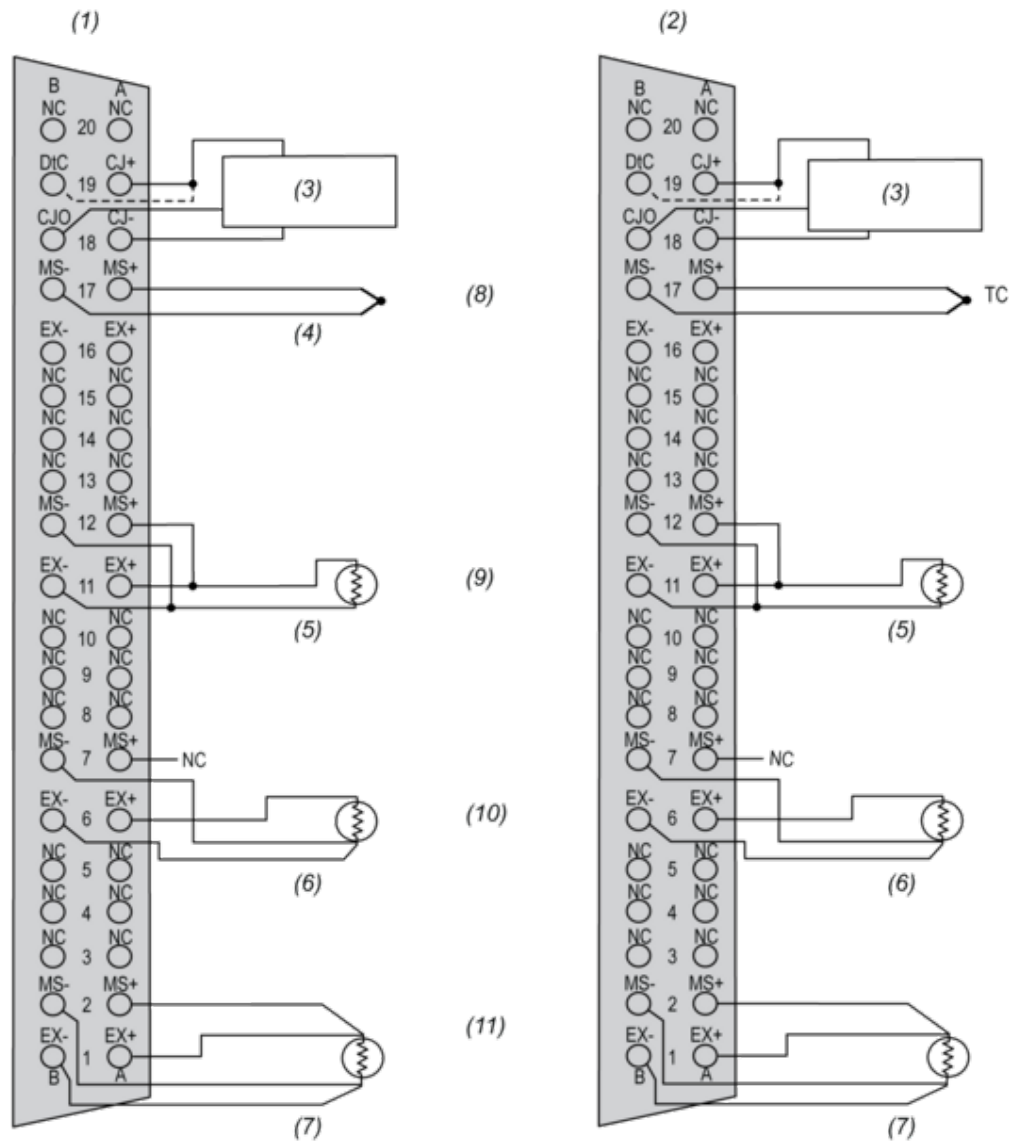
Connections and Schema

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.