# Product data sheet

Specifications

## Analog I/O expansion block, Modicon TM7, IP67, 4 AI, 0 20 mA, M12 connector

TM7BAI4CLA

## Main

| | |
|---|---|
| **Range of product** | Modicon TM7 |
| **Product or component type** | Analog I/O expansion block |
| **Range compatibility** | Modicon LMC058<br>Modicon M258 |
| **Enclosure material** | Plastic |
| **Bus type** | TM7 bus |
| **[Ue] rated operational voltage** | 24 V DC |
| **Input/output number** | 4 |
| **input/output number of block** | 4 I |

## Complementary

| | |
|---|---|
| **Analogue input number** | 4 |
| **Analogue input type** | Current |
| **Analogue input range** | 0...20 mA |
| **Analogue input resolution** | 12 bits |
| **Sensor power supply** | 24 V, 500 mA for all channels with overload, short-circuit and reverse polarity protection |
| **Electrical connection** | 1 male connector M12 - B coding - 4 ways for bus IN<br>1 female connector M12 - B coding - 4 ways for bus OUT<br>4 female connectors M12 - A coding - 5 ways for sensor<br>1 male connector M8 - 4 ways for power IN<br>1 female connector M8 - 4 ways for power OUT |
| **Local signalling** | 2 LEDs for bus diagnostic<br>2 LEDs for sensor/actuator power supply status |
| **Operating position** | Any position |
| **fixing mode** | By 2 screws |
| **Product weight** | 0.2 kg |

## Environment

| | |
|---|---|
| **Standards** | IEC 61131-2 |
| **Product certifications** | GOST-R<br>ATEX II 3g EEx nA II T5<br>C-Tick<br>cURus |
| **Marking** | CE |
| **Ambient air temperature for operation** | -10…60 °C |

| | |
|---|---|
| **Ambient air temperature for storage** | -25…85 °C |
| **Relative humidity** | 5…95 % without condensation or dripping water |
| **Pollution degree** | 2 conforming to IEC 60664 |
| **IP degree of protection** | IP67 conforming to IEC 61131-2 |
| **Operating altitude** | 0...2000 m |
| **Storage altitude** | 0…3000 m |
| **Vibration resistance** | 7.5 mm constant amplitude (f= 2…8 Hz) conforming to IEC 60721-3-5 Class 5M3<br>2 gn constant acceleration (f= 8…200 Hz) conforming to IEC 60721-3-5 Class 5M3<br>4 gn constant acceleration (f= 200…500 Hz) conforming to IEC 60721-3-5 Class 5M3 |
| **Shock resistance** | 30 gn for 11 ms conforming to IEC 60721-3-5 Class 5M3 |
| **Resistance to electrostatic discharge** | 6 kV in contact conforming to IEC 61000-4-2<br>8 kV in air conforming to IEC 61000-4-2 |
| **Resistance to electromagnetic fields** | 10 V/m 0.08…2 Hz conforming to IEC 61000-4-3<br>1 V/m 2…2.7 Hz conforming to IEC 61000-4-3 |
| **Resistance to fast transients** | 2 kV (power supply) conforming to IEC 61000-4-4<br>1 kV (input/output) conforming to IEC 61000-4-4<br>1 kV (shielded cable) conforming to IEC 61000-4-4 |
| **surge withstand for DC 24 V circuit** | 1 kV power supply (common mode) conforming to IEC 61000-4-5<br>0.5 kV power supply (differential mode) conforming to IEC 61000-4-5<br>1 kV unshielded links (common mode) conforming to IEC 61000-4-5<br>0.5 kV unshielded links (differential mode) conforming to IEC 61000-4-5<br>1 kV shielded links (common mode) conforming to IEC 61000-4-5<br>0.5 kV shielded links (differential mode) conforming to IEC 61000-4-5 |
| **Electromagnetic compatibility** | EN/IEC 61000-4-6 |
| **Disturbance radiated/conducted** | CISPR 11 |

## Packing Units

| | |
|---|---|
| **Unit Type of Package 1** | PCE |
| **Number of Units in Package 1** | 1 |
| **Package 1 Height** | 5.000 cm |
| **Package 1 Width** | 5.800 cm |
| **Package 1 Length** | 10.600 cm |
| **Package 1 Weight** | 217.000 g |
| **Unit Type of Package 2** | S02 |
| **Number of Units in Package 2** | 24 |
| **Package 2 Height** | 15.000 cm |
| **Package 2 Width** | 30.000 cm |
| **Package 2 Length** | 40.000 cm |
| **Package 2 Weight** | 5.591 kg |

## Contractual warranty

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

## Environmental Data

Schneider Electric aims to achieve Net Zero status by 2050 through supply chain partnerships, lower impact materials, and circularity via our ongoing “Use Better, Use Longer, Use Again” campaign to extend product lifetimes and recyclability.

Environmental Data explained >

How we assess product sustainability >

### Environmental footprint

| | |
|---|---|
| Environmental Disclosure | Product Environmental Profile |

## Use Better

### Materials and Substances

| | |
|---|---|
| Packaging made with recycled cardboard | No |
| Packaging without single use plastic | Yes |
| EU RoHS Directive | Pro-active compliance (Product out of EU RoHS legal scope) |
| REACh Regulation | REACh Declaration |
| 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 www.P65Warnings.ca.gov |
| PVC free | Yes |

## Use Again

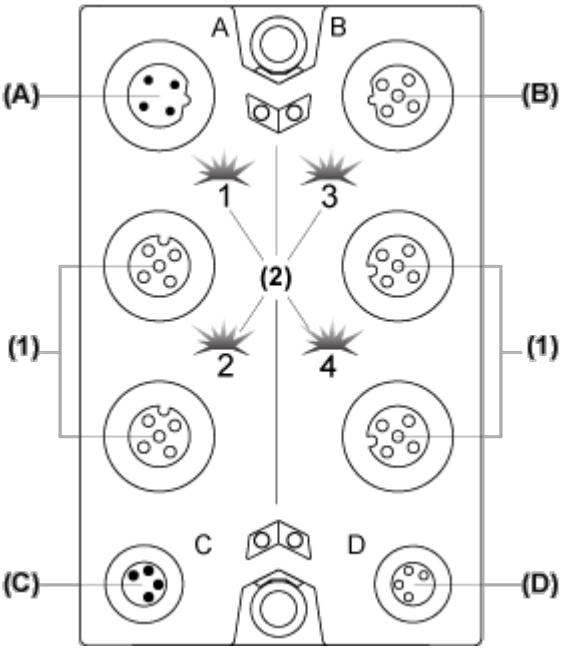
### Repack and remanufacture

| | |
|---|---|
| End of life manual availability | End of Life Information |
| Take-back | No |
| WEEE Label | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins |

## Presentation

### Analog Input Block

#### Description




(A) TM7 bus IN connector

(B) TM7 bus OUT connector

(C) 24 Vdc power IN connector

(D) 24 Vdc power OUT connector

(1) Input connectors

(2) Status LEDs

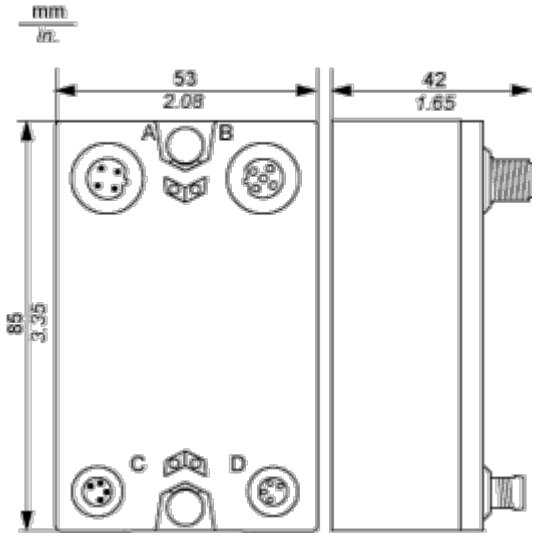
#### Connector and Channel Assignments

| Input connectors | Channel type | Channels |
|---|---|---|
| 1 | Input | I0 |
| 2 | Input | I1 |
| 3 | Input | I2 |
| 4 | Input | I3 |

Dimensions Drawings

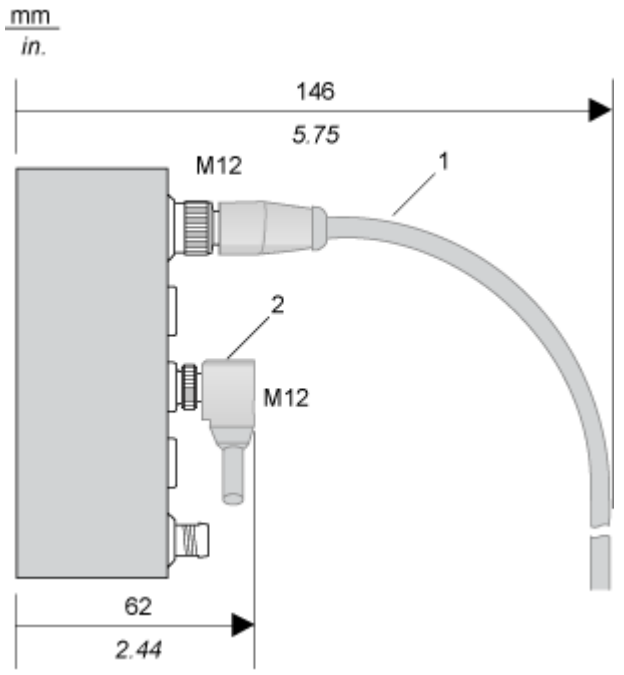
## TM7 Block, Size 1

### Dimensions



## Mounting and Clearance

### Spacing Requirements

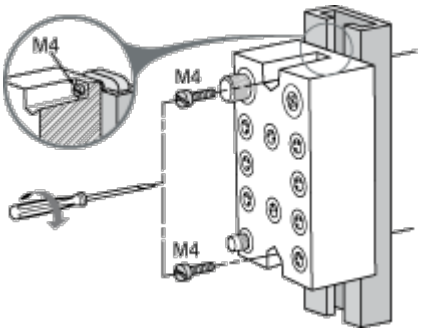



1 Straight cable

2 Elbowed cable

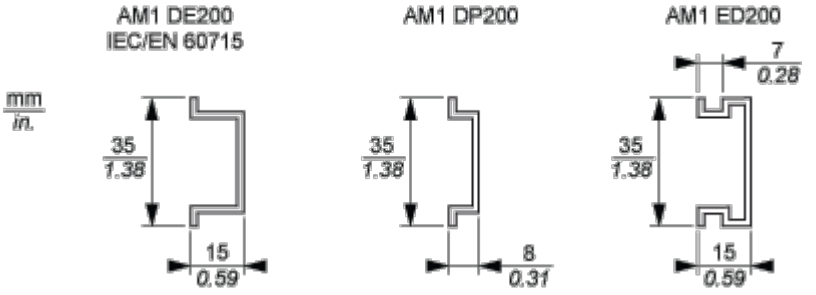
## Installation Guidelines

### TM7 Block on an Aluminium Frame




NOTE: Maximum torque to fasten the required M4 screws is 0.6 N.m (5.3 lbf-in).

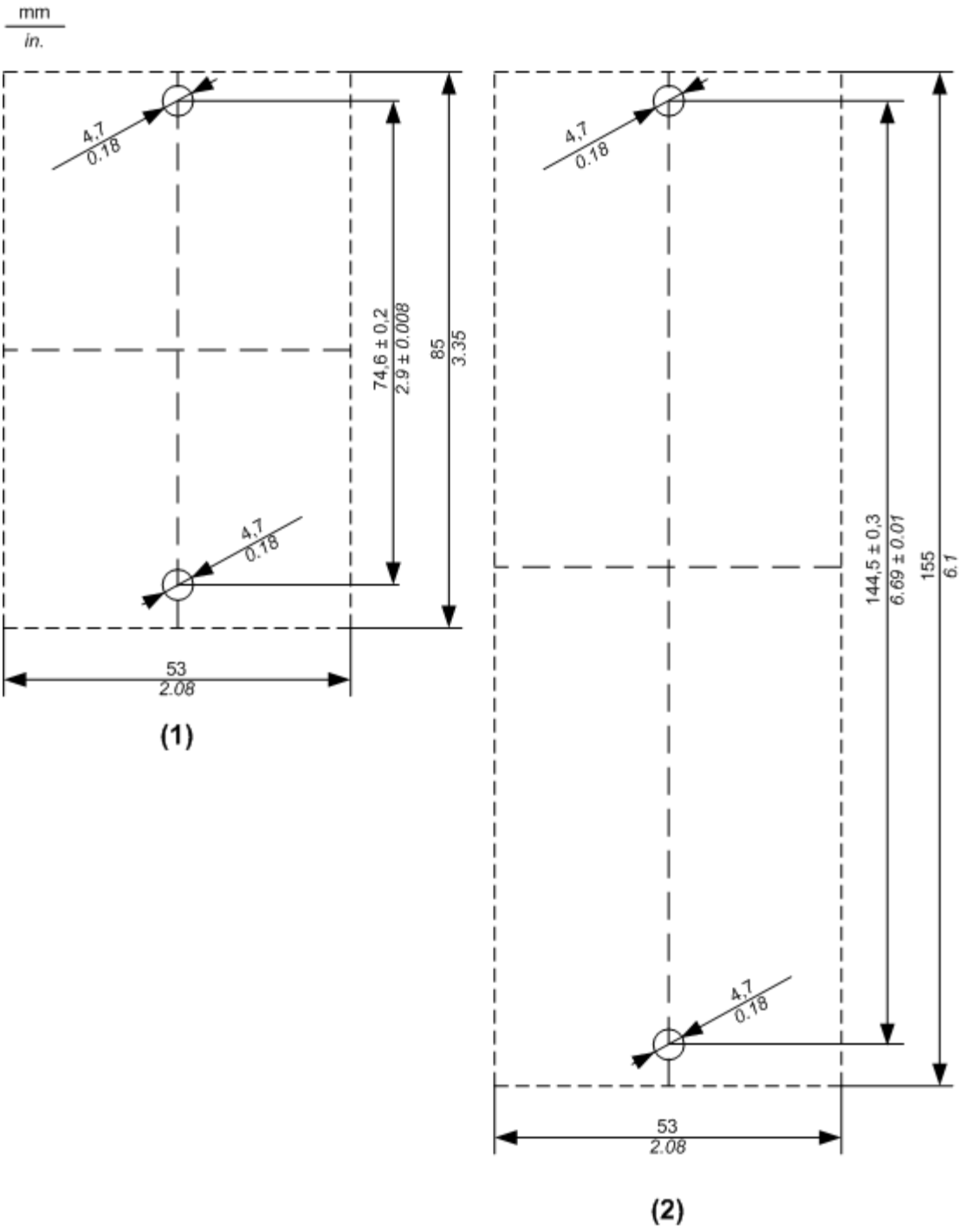
### TM7 Block on a DIN Rail




NOTE: Only size 1 (smallest) blocks can be installed on DIN rail with the TM7ACMP mounting plate.

### TM7 Block Directly on the Machine

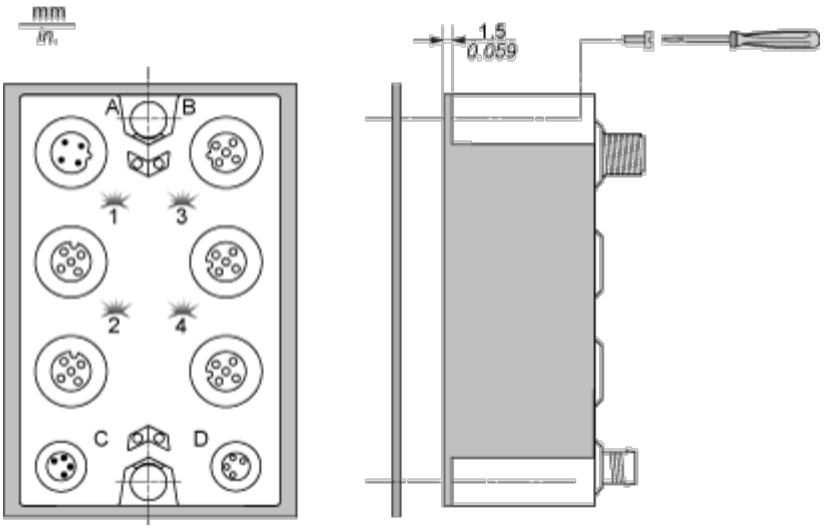
Drilling template of the block:




(1) Size 1

(2) Size 2

The thickness of the base plate should be taken into consideration when defining the screw length.

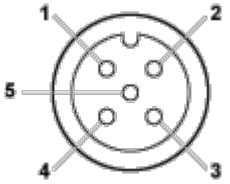



NOTE: Maximum torque to fasten the required M4 screws is 0.6 N.m (5.3 lbf-in).

Connections and Schema

## Wiring Diagram

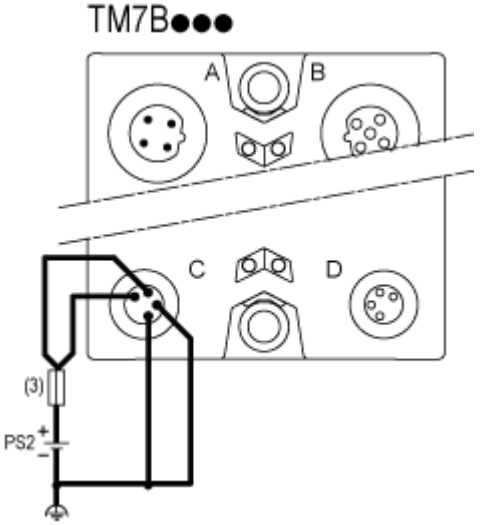
### Pin Assignments for Input Connectors

| Connection | Pin | M12 input |
|---|---|---|
|  | **1** | 24 Vdc sensor supply |
| | **2** | Analog input + |
| | **3** | 0 Vdc |
| | **4** | Analog input - |
| | **5** | Shield |

## Wiring the Power Supply

When you provide power to a TM7 I/O block using the 24 VDC Power OUT connector of the preceding I/O block, both blocks occupy the same 24 Vdc I/O power segment. However, if you connect an external isolated power supply to the 24 Vdc Power IN connector of a TM7 I/O block, you establish a new 24 Vdc I/O power segment beginning with that I/O block.

I/O block wired with one external 24 Vdc power supply:




(3) External fuse, Type T slow-blow, 8 A max., 250 V

PS2 External isolated I/O power supply, 24 Vdc