XM-AI2-AO2 Analog Input and Output Expansion Module

Data sheet applicable for:

- **XM-AI2-AO2, 2 channel Analog Inputs and 2 channel Analog Outputs Expansion Module**

Introduction

XM-AI2-AO2 is an Expansion Module that adds an extra of 2 analog inputs (AIs) and 2 analog outputs (AOs) to the XM14-DT or XM17-ADT Programmable Logic Controllers (PLCs).

Features of XM-AI2-AO2

- Easy expansion by using a plug-in bus connection between the PLC and XM-AI2-AO2 module.
- Easy fitment next to the PLC on the 35 mm DIN rail.
- Bus connection routed through an Expansion Connector that also offers protection for cable.
- 2 analog inputs and 2 analog outputs of the range 0-10 VDC, 0-20 mA or 4-20 mA.
- No external power supply required for the XM-AI2-AO2 which is energized from the bus itself.
- Convenient stacking of multiple expansion modules with connectors available on both sides of the XM-AI2-AO2 unit.
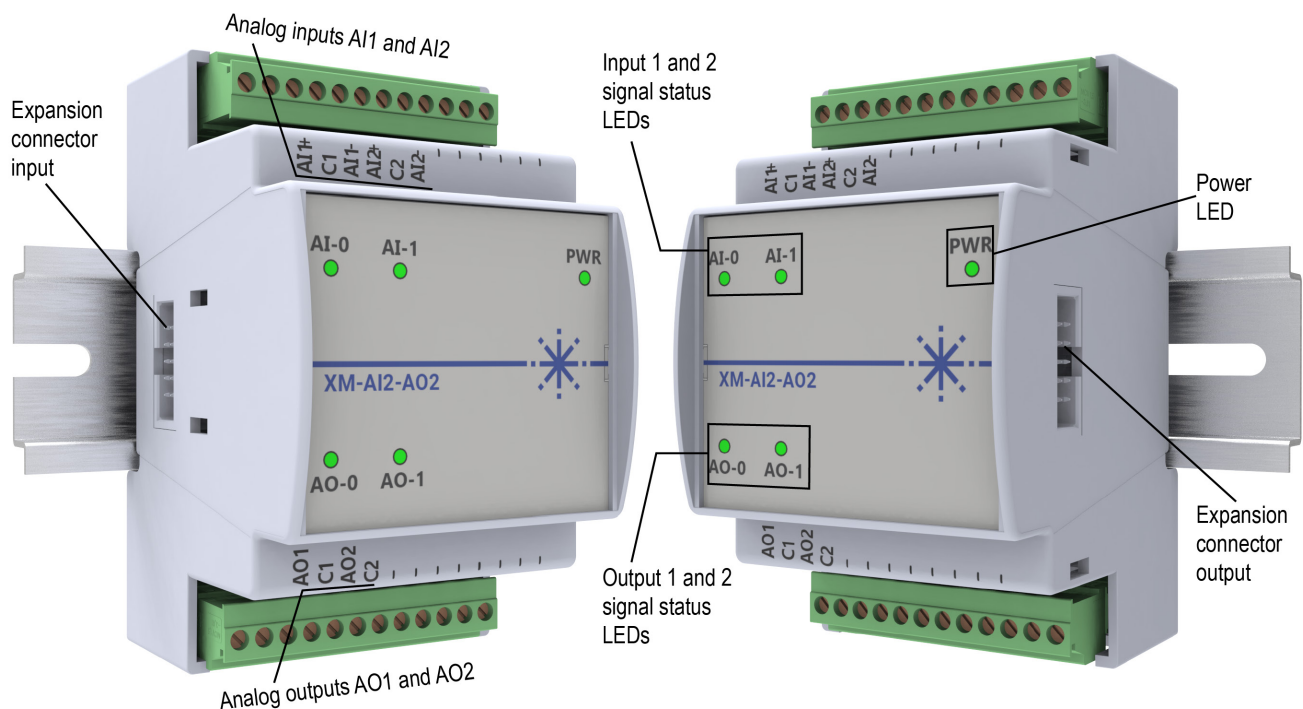
Front view

Figure 1. XM-AI2-AO2 Analog Input and Output Expansion Module

Local expansion with XM-AI2-AO2 unit

The following figure shows two Expansion Modules (such as the XM-AI2-AO2) attached to the XM14-DT PLC. Each Expansion Module connector contains a Flat Ribbon Cable (FRC) that connects the PLC with the expansion modules.
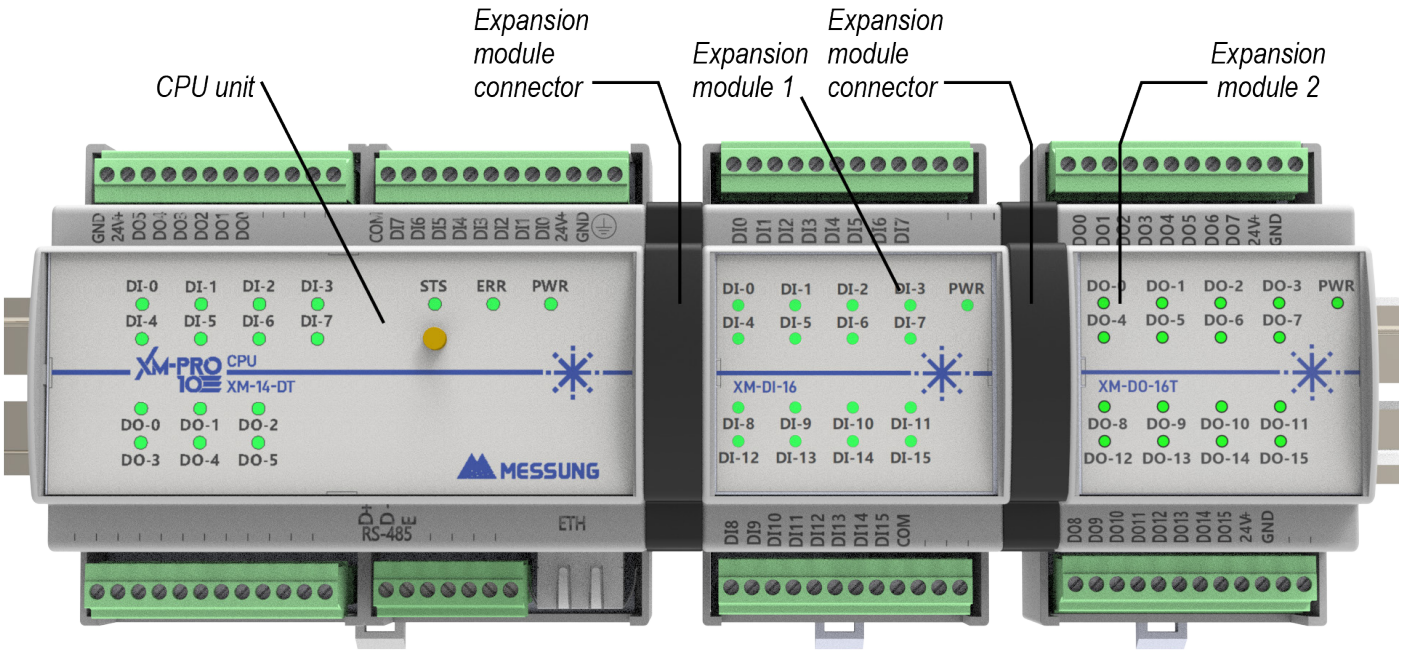
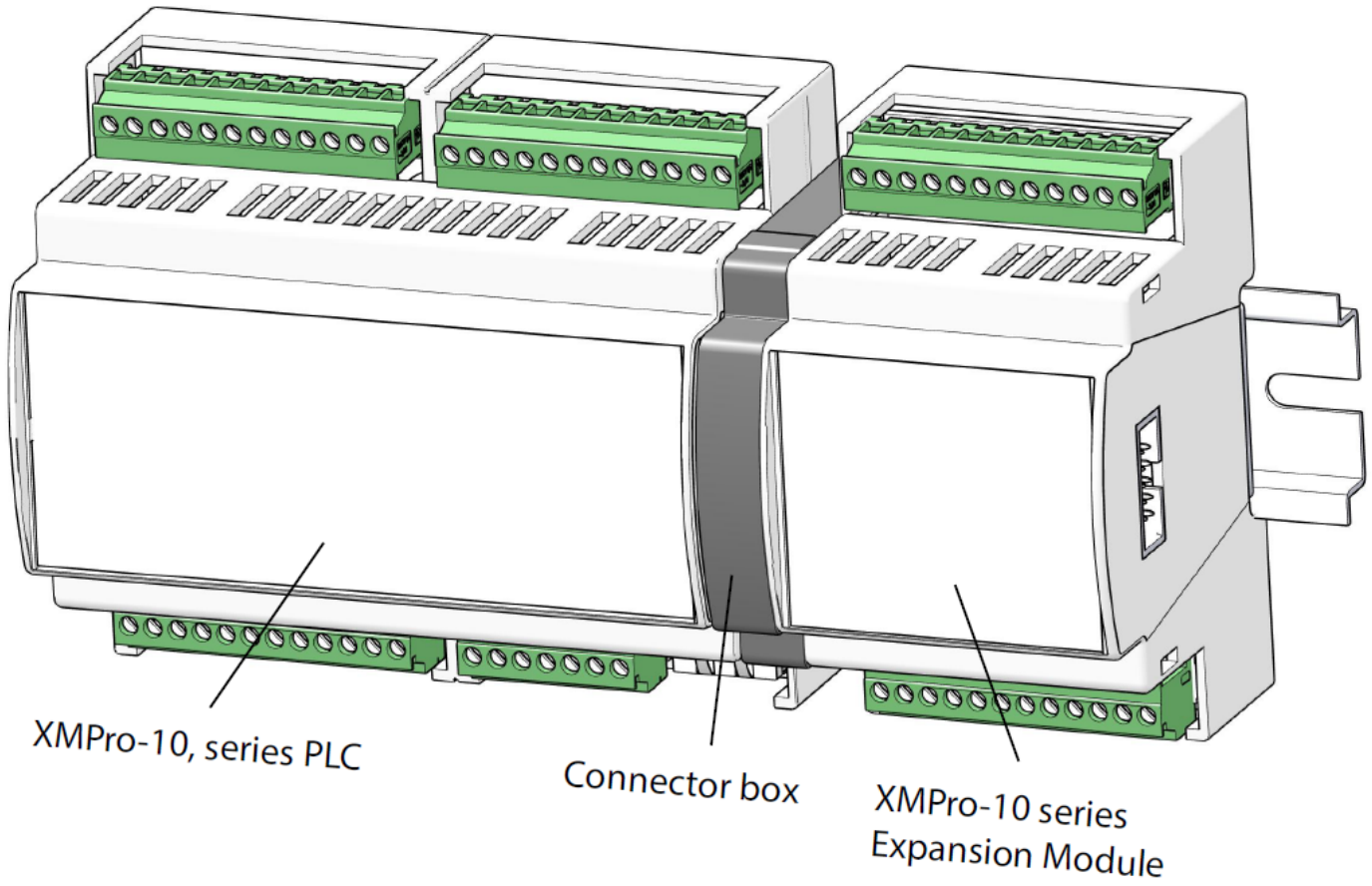**Figure 2. PLC CPU unit 2 expansion modules**

Connecting the Expansion Module

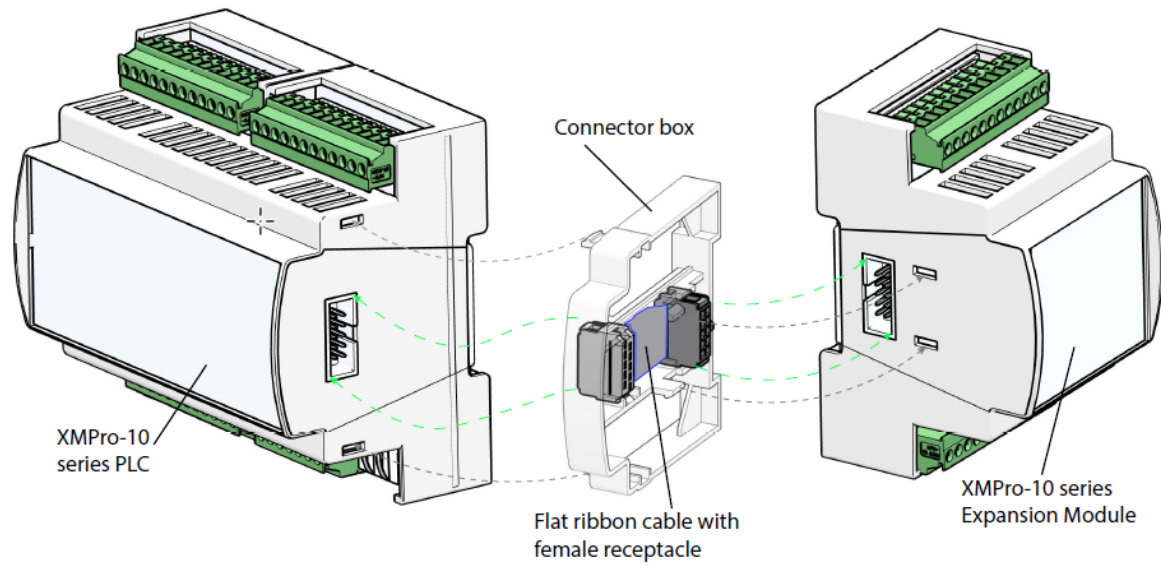**Figure 3. XMPro-10 series PLC and Expansion Module on a 35 mm DIN rail**

Figure 4. Connecting the XMPro-10 series PLC and Expansion Module

General specifications

Number of inputs	2
Number of outputs	2
Input and output type	Voltage or current, individually configurable
Protection	Available, against voltage surges
Resolution	12 bits
Scanning time	5 milliseconds with all channels enabled
Indication lamps	Input State LEDs (green) and output State LEDs (green)
Maximum input power	720 mW
Protection	Against voltage surges
Channel to channel isolation	No
IP level	IP20
Operating temperature	0°C to 55°C
Storage temperature	-5°C to +55°C
Operating and storage relative humidity	5 to 95% RH (no condensation)
Certifications	CE[a], RoHS
Dimensions	54 mm (width) x 90 mm (height) x 62mm (depth)
Weight	125 grams
Maximum wire size	0.5 mm^2 with lugs
	1.5 mm^2 without lugs
	[a]In process

Analog inputs

Input type	Voltage or current, individually configurable
Input range	0-10 VDC, 0-20 mA or 4-20 mA
Engineering scale	0 to 4095

Resolution	12 bits	
Conversion time	4 microseconds	
Data rate	60 samples per second	
Analog to digital conversion resolution	Voltage	2.5 mV
	Current	5.12 µA
Input impedance	Voltage	>1 MΩ
	Current	250 Ω
Maximum permissible input	Voltage	12 V
	Current	22 mA
Accuracy	± 0.1 % of full scale rating @ 25°C	
Indication lamps	Input state LEDs (green)	

Analog outputs

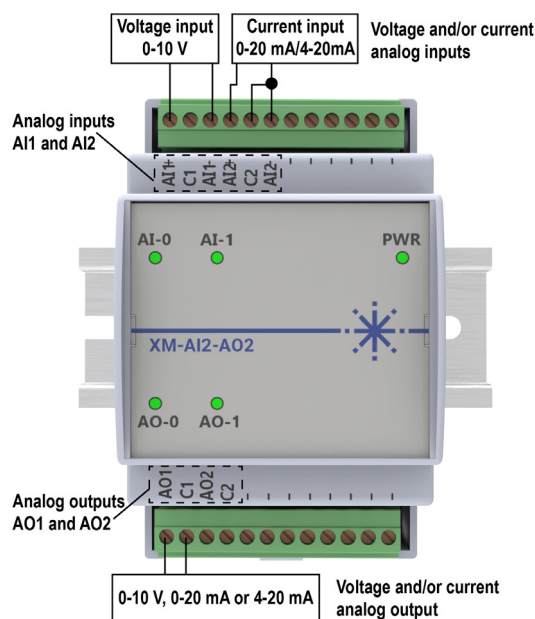| Output type	Voltage or current, individually configurable	
Output range	0-10 VDC, 0-20 mA or 4-20 mA	
Engineering scale	0 to 4095	
Resolution	12 bits	
Settling time	5 milliseconds	
Digital to analog conversion resolution	Voltage	2.5 mV
	Current	5.12 µA
Load impedance	Voltage	>1 KΩ
	Current	<500 Ω
Maximum output	Voltage	10.5 V
	Current	21 mA
Accuracy	± 0.1 % of full scale rating @ 25°C	
Indication lamps	Output state LEDs (green)	

Wiring diagram

Figure 5. Typical wiring diagram of XM-AI2-AO2 Analog Expansion Module
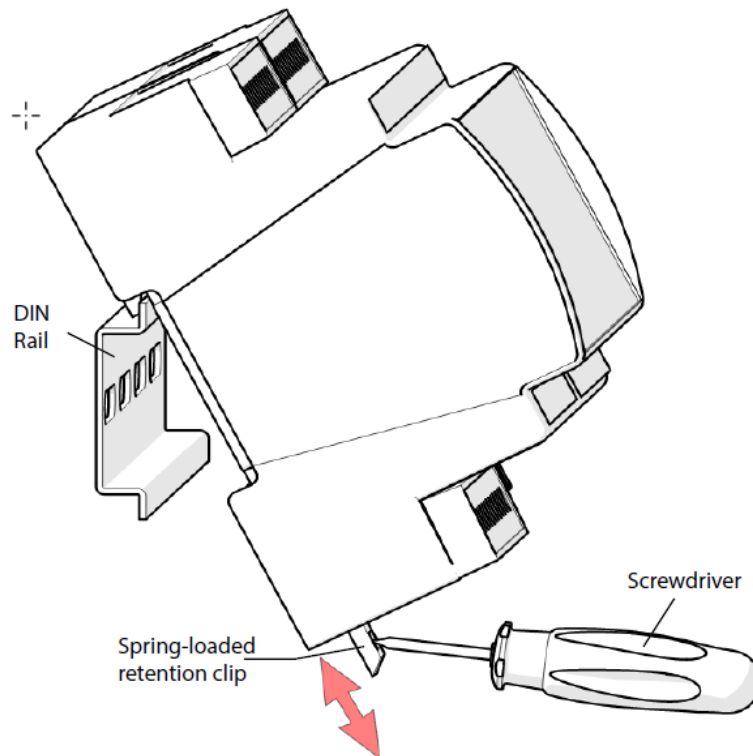
Fitting and removal

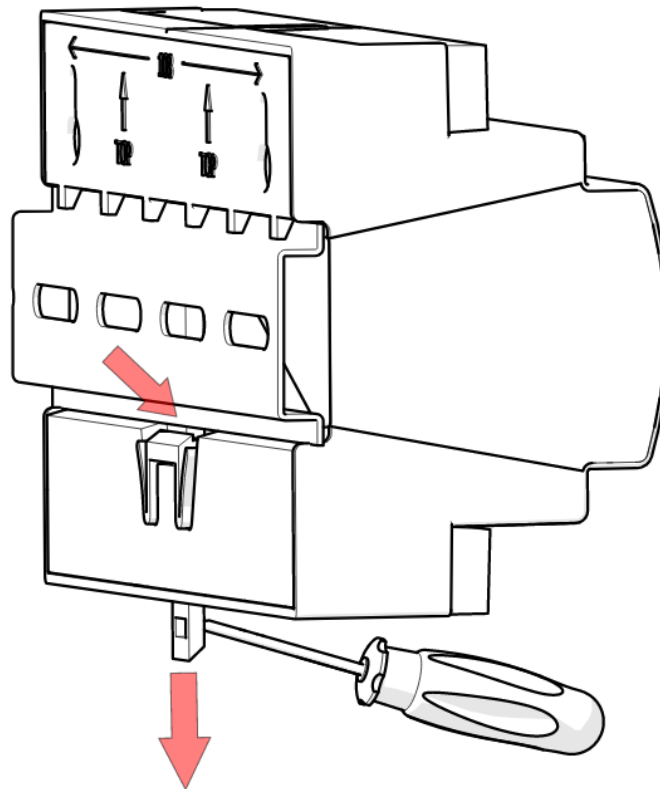**Figure 6. Engage the DIN rail and pull the retention clip**

Figure 7. Pull down the spring-loaded retention clip using a flat-blade screwdriver
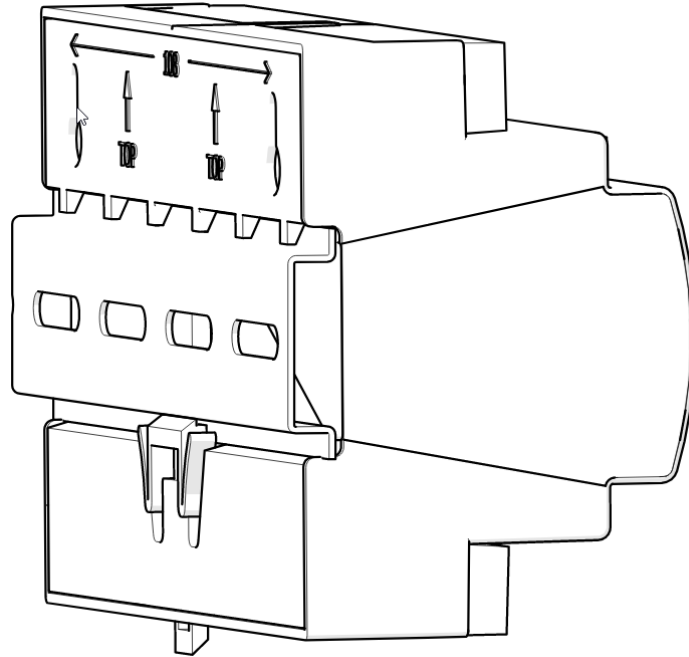
Figure 8. Lock the XM-AI2-AO2 unit on the DIN rail

⚠️ XM-AI2-AO2 unit series units fit on a 35 mm DIN rail channel.

1. Engage the slot at rear of unit to the upper edge of DIN rail. Refer Figure 6.

2. Pull down the spring-loaded retention clip using a flat-blade screwdriver.

3. Push the unit onto the DIN rail. Refer Figure 7.

4. Release the retention clip to lock the unit on the DIN rail. Refer Figure 8.

5. Reverse the procedure for removing the XM-AI2-AO2 unit from the DIN rail.

Safety instructions

⚠️ Do install the unit only by qualified professionals, following all applicable laws and regulations.

⚠️ Do not connect mains supply or any other external voltage to any terminal of the XmPro10 series unit.

⚠️ Do ensure that the panel or box with the device is locked to prevent unauthorized access.

⚠️ Do protect all electrical loads against overloads and short-circuits.

⚠️ Do ensure adequate ventilation and protection from dripping water.