

MOSAIC MA4 ANALOG INPUT MODULE

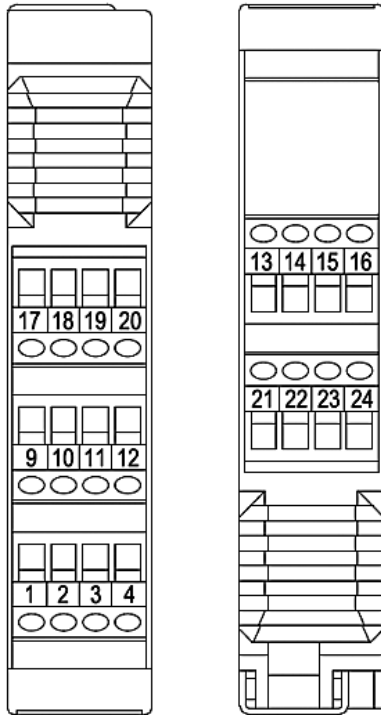
The analog input module MA4 provides up to 4 independent or 2 pairs of safety analog inputs.

- ◆ The inputs could be used to connect transducers with 0/4...20mA current signals or 0...10VDC (sw selectable) voltage signals.
- ◆ A wide range of analog sensors can be used (typically in a redundant configuration) such as temperature sensors, level sensors, load cell, position sensors and many others.
- ◆ Each channel can supply the sensors with 24 VDC@30 mA.
- ◆ By means of the MSD configuration tool it is possible to define threshold values for each input.
- ◆ The module is just 22.5 mm wide.



MA4 safety module

Electrical connections



Pin	Operation	
1	24 VDC Power Supply	
2	Node Selection: Node 0	
3	Node Selection: Node 1	
4	0 VDC	
Pin	Current reading	Voltage reading
9	Power Supply sensor 1	Power Supply sensor 1
10	Current Input sensor 1	Negative Input sensor 1
11	Current Output sensor 1	Positive Input sensor 1
12	0 VDC sensor 1	0 VDC sensor 1
13	Power Supply sensor 3	Power Supply sensor 3
14	Current Input sensor 3	Negative Input sensor 3
15	Current Output sensor 3	Positive Input sensor 3
16	0 VDC sensor 3	0 VDC sensor 3
17	Power Supply sensor 2	Power Supply sensor 2
18	Current Input sensor 2	Negative Input sensor 2
19	Current Output sensor 2	Positive Input sensor 2
20	0 VDC sensor 2	0 VDC sensor 2
21	Power Supply sensor 4	Power Supply sensor 4
22	Current Input sensor 4	Negative Input sensor 4
23	Current Output sensor 4	Positive Input sensor 4
24	0 VDC sensor 4	0 VDC sensor 4



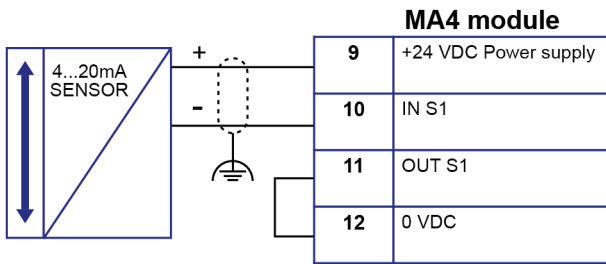
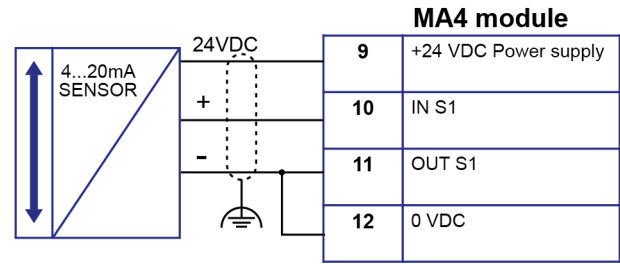
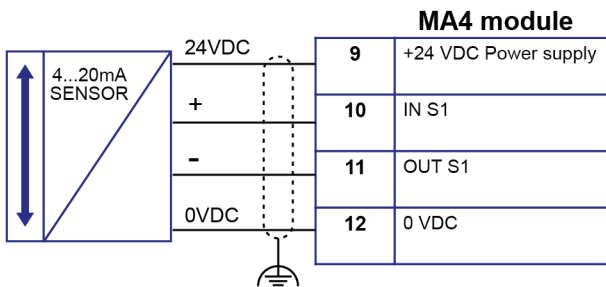
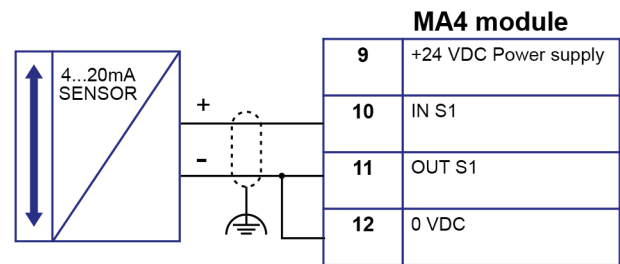
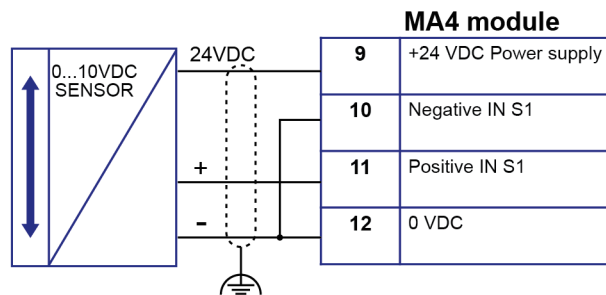
Signals

		LED					
		ON	RUN	IN FAIL	EXT FAIL	SEL 0/1	CHAN 1/4
		GREEN	GREEN	RED	RED	ORANGE	RED/GREEN
	OFF Modulo spento	OFF the module waits the first communication from the MASTER		OFF operation OK	OFF operation OK	Shows the NODE_SEL0/1 selection (Ref. MOSAIC technical manual)	OFF Sensor not configured
	ON Modulo acceso	BLINKING configuration does not require the INPUT or OUTPUT from Module					RED BLINKING Sensor configured Fault detected
	ON configuration requires the INPUT or OUTPUT from Module		GREEN Sensor configured Normal operation				

Technical Data

Module	MA4
PFH _d (IEC 61508:2010)	1,53E-8
Power Supply	+24 VDC ±20%
Reverse polarity protection	Yes
Power consumption	5 W
Connection with Master module (M1S)	Via MSC 5-way proprietary bus
Enclosure material	Polyamide
Enclosure protection class	IP 20
Terminal blocks protection class	IP 2X
Max operation altitude (above sea level)	2000 m (a.s.l.)
Fastening	Quick coupling to DIN rail (EN 60715)
Dimensions	108 x 22.5 x 114.5
Current reading	
Number of Channels	4, fully isolated (500 VDC)
Range	4...20 mA (0...25 mA)
Maximum output current per channel	30 mA
Conversion bit numbers	16
Resolution	381 nA
Conversion internal resistance	200 Ohm
Voltage reading	
Number of Channels	4, fully isolated (500 VDC)
Range	0...10 VDC
Maximum output current per channel	30 mA
Conversion bit numbers	16
Resolution	152 uV
Conversion internal resistance	250 kOhm
Max operative temperature	+55 °C
Min operative temperature	-10 °C
Relative humidity	10%...95% (non-condensing)
Max storage temperature	+85 °C
Min storage temperature	-20 °C

Examples of connection with external sensors

2 WIRES CURRENT SENSOR

3 WIRES CURRENT SENSOR

4 WIRES CURRENT SENSOR

3 WIRES CURRENT SENSOR WITH EXTERNAL POWER SUPPLY

3 WIRES VOLTAGE SENSOR


- ⚡ If shielded cables are not used or if the shield connection to PE is not properly wired, electromagnetic disturbance could cause signal corruption. A corrupted signal could lead to unexpected behavior of the module which as a consequence could lead to potentially severe damage to people or things.

Redundant sensors connection

- ⇒ The available pair of channels that the user can choose for redundant sensors configuration are:
- ◆ Channel 1 – Channel 2
 - ◆ Channel 3 – Channel 4
- ⇒ Other combinations are refused by MSD software.