

ifm electronic



Operating instructions

AS interface

ClassicLine
analogue module

AC5223

UK

7390597/02 11/2015



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1 Safety instructions

- Please read the product description prior to set-up of the unit. Ensure that the product is suitable for your application without any restrictions.
- The unit conforms to the relevant regulations and EC directives.
- Improper or non-intended use may lead to malfunctions of the unit or to unwanted effects in your application.

That is why installation, electrical connection, set-up, operation and maintenance of the unit must only be carried out by qualified personnel authorised by the machine operator.

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2 Functions and features

The slave converts analogue input signals and transfers them to the AS-i master via the AS-Interface. The AS-i module operates as a slave with bidirectional data transfer in the AS-i network.

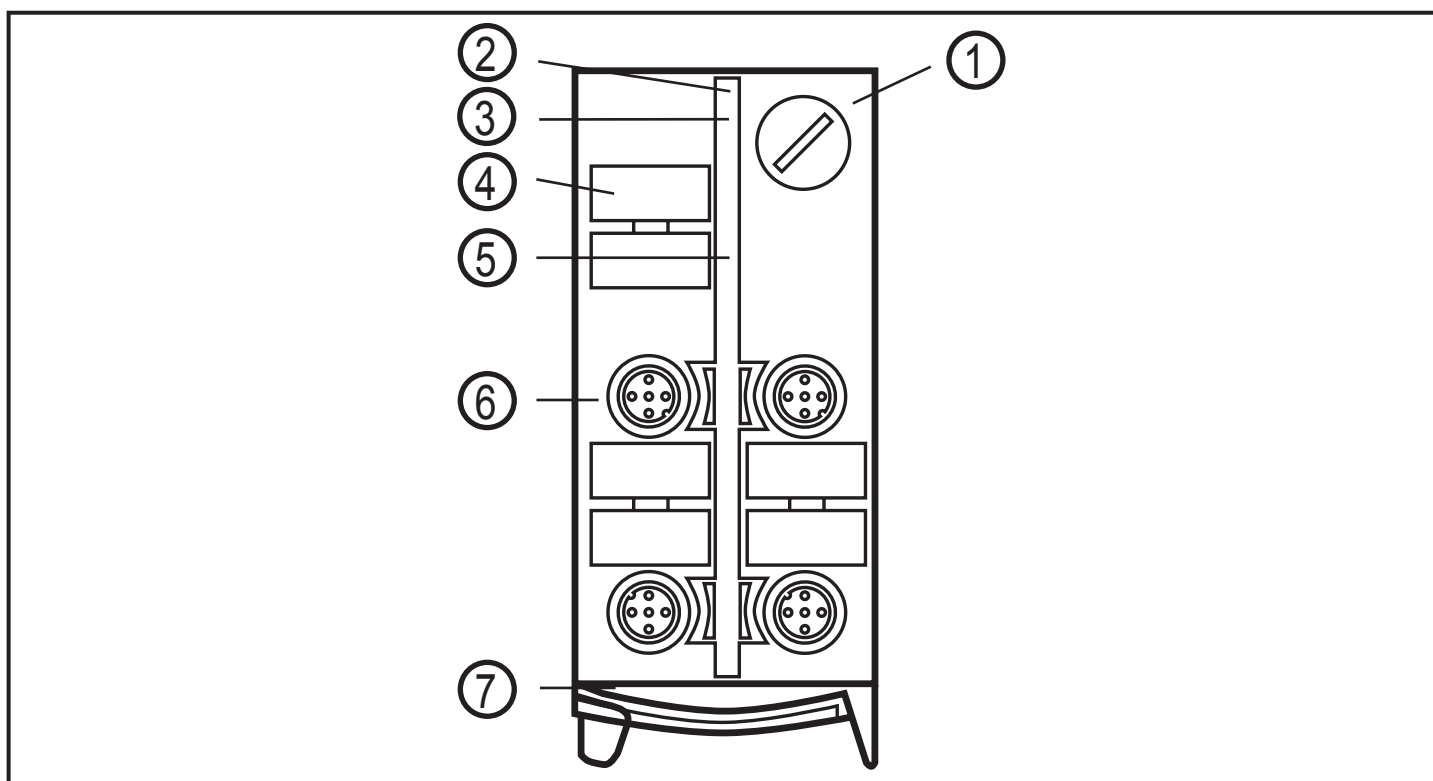
The data transfer to the host is asynchronous according to the AS-i profile S-7.3.D and the AS-i specification 3.0, downward compatible.

- Maximum number of modules per master: 31
- Current measurement 4...20 mA
- Time for converting the measured values in the slave
 - for one channel: 60 ms
 - for two channels: 120 ms

The analogue inputs and AS-i are electrically separated. This separation is only effective in case of an external supply of the sensors.

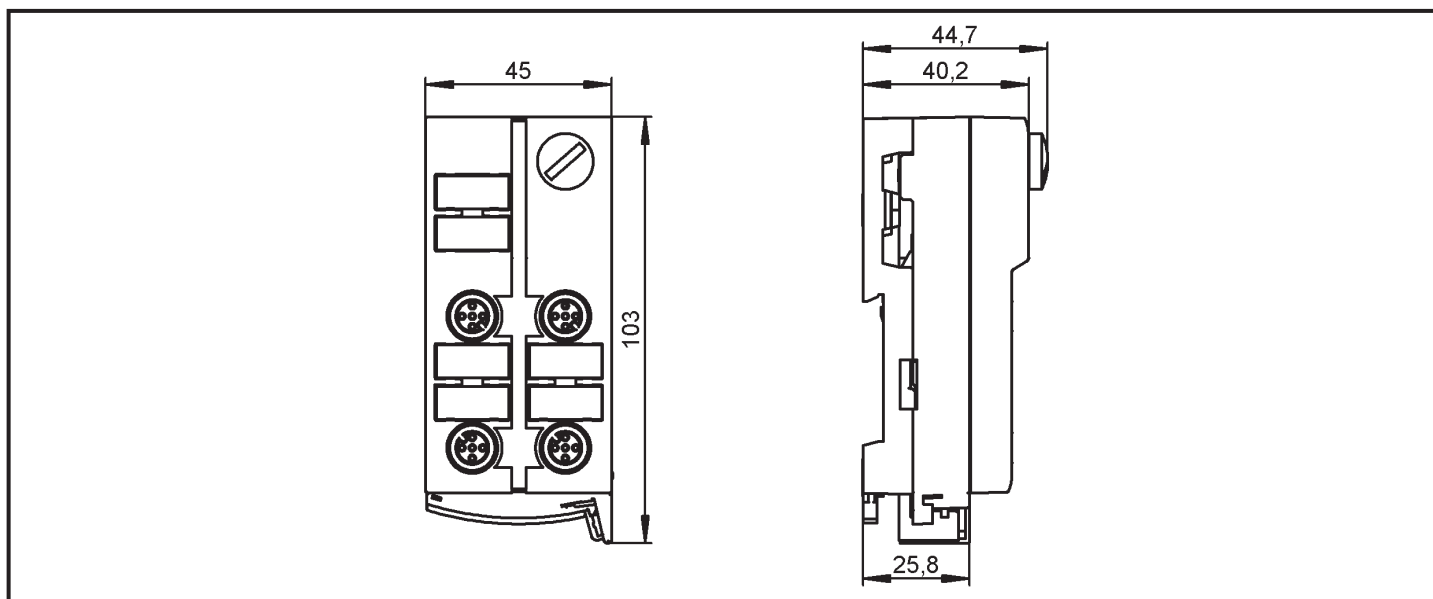
If a sensor is supplied via AS-i, the electrical separation for this input is bridged. The load must not exceed a maximum of 200 mA.

3 Operating and display elements



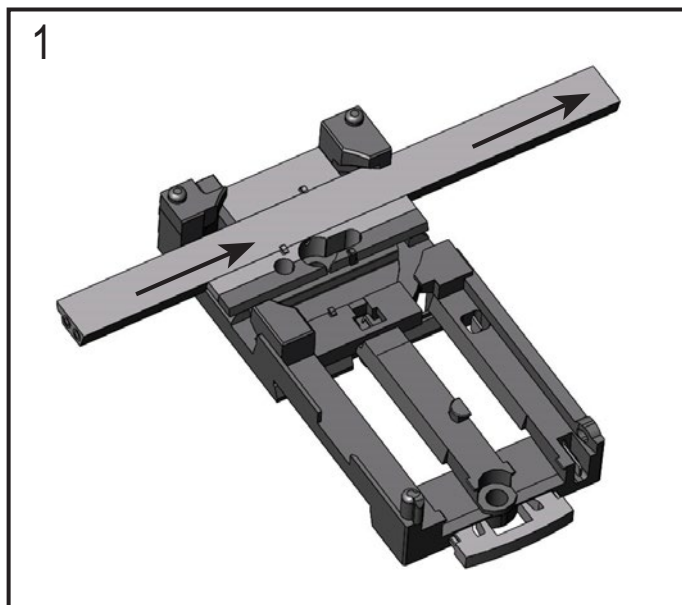
1. Addressing interface
2. LED PWR
3. LED FAULT
4. Labels
5. LED 1
6. 2 M12 sockets
7. Earthing lead

Scale drawing



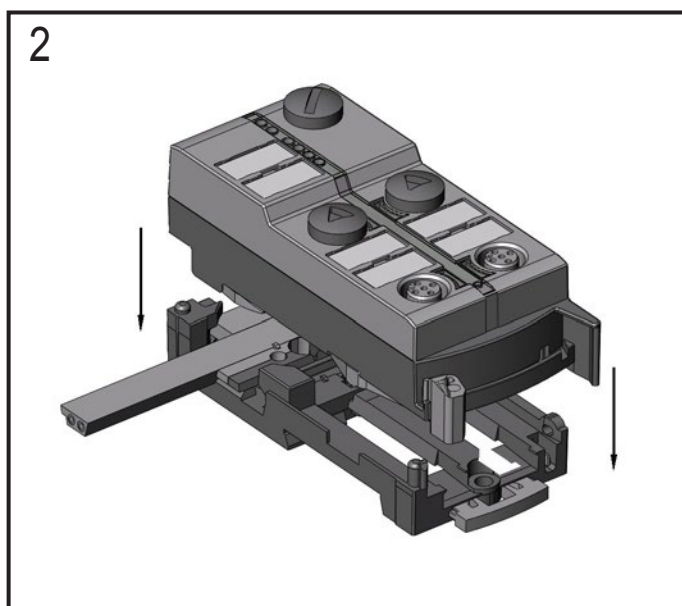
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4 Installation



Alignment of the flat cable on delivery

Carefully place the yellow AS-i flat cable into the profile slot.

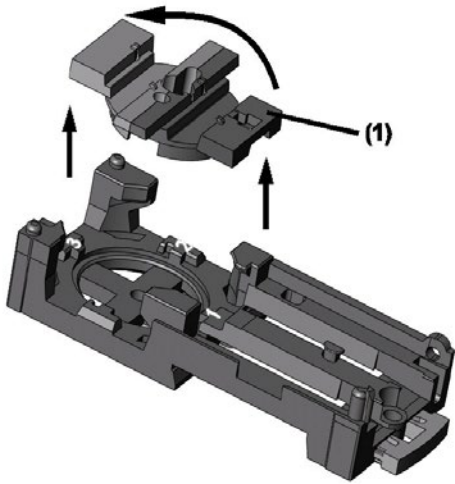


Mount the upper part.

3

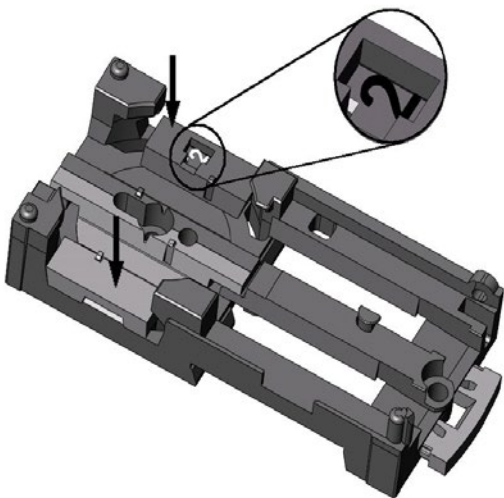


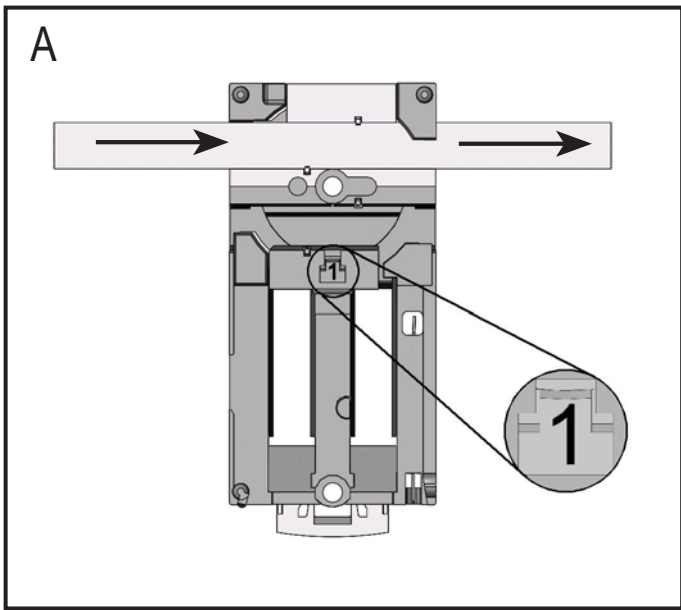
Lock the unit.



With the supplied lower part the flat cable can be aligned in three directions.

For the requested direction place the flat cable guide (1) accordingly.

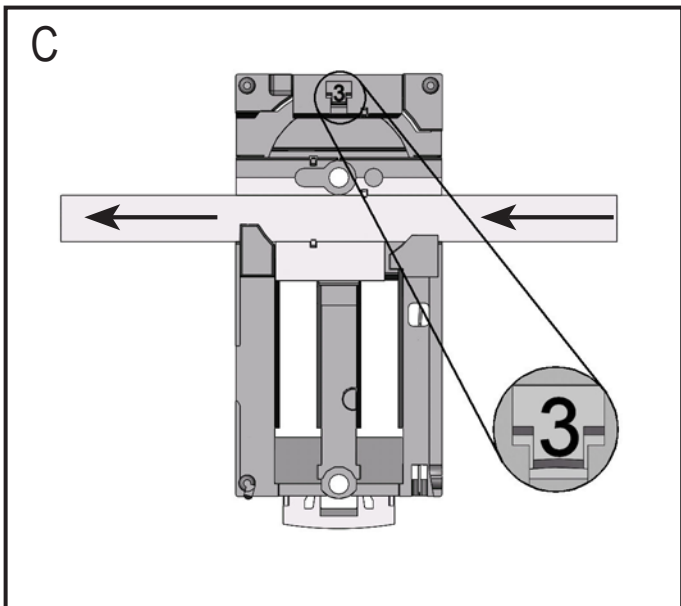
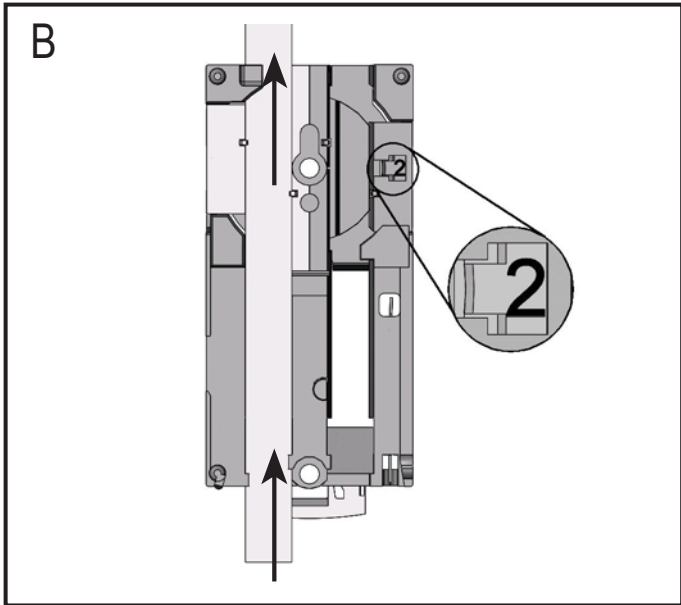


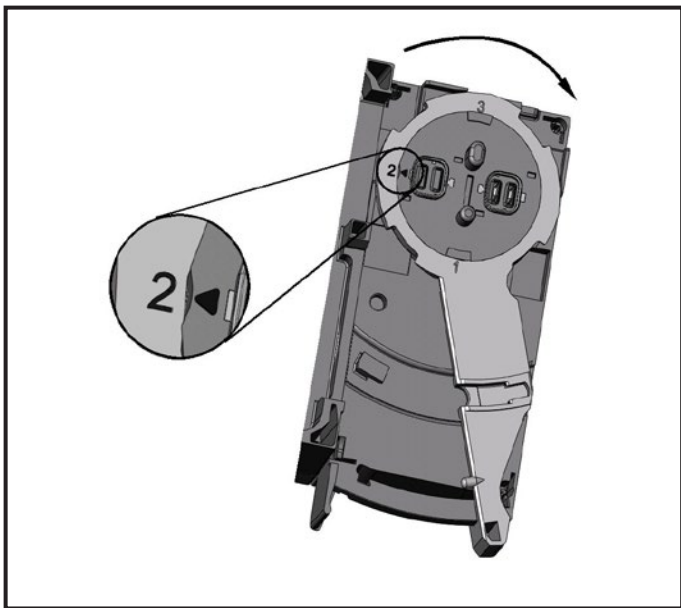


Settings at the lower part

Select the position 1, 2 or 3 depending on the required flat cable alignment (→).

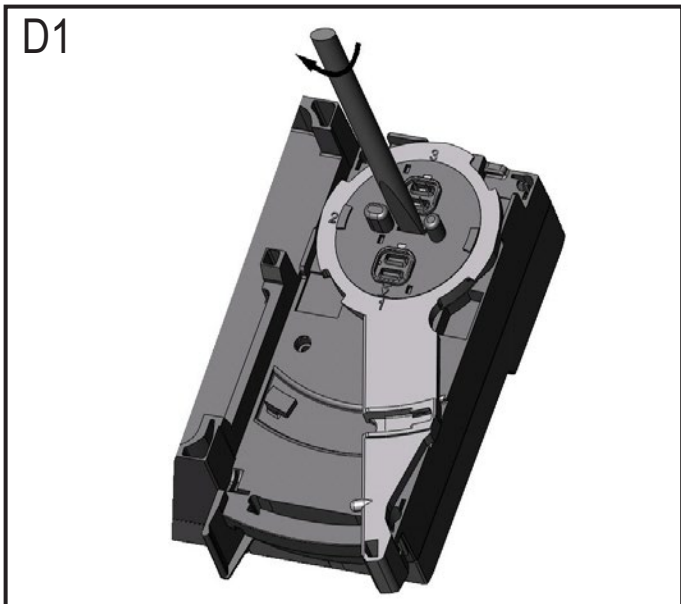
A = factory setting



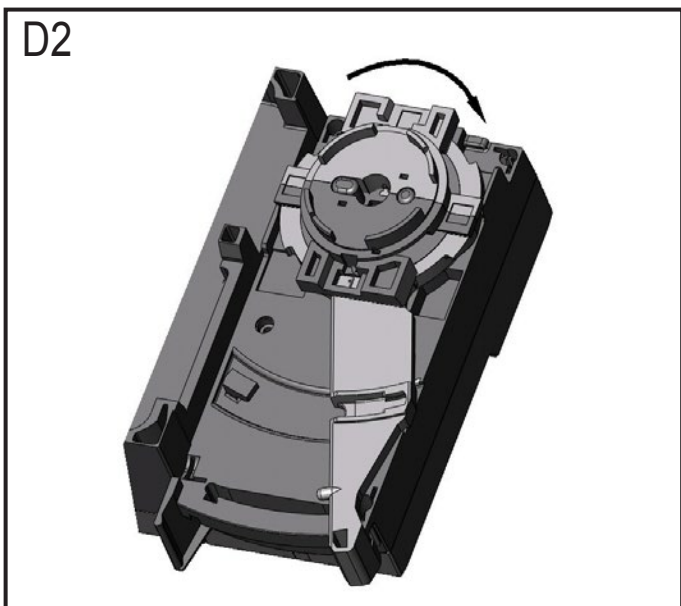


Settings at the upper part

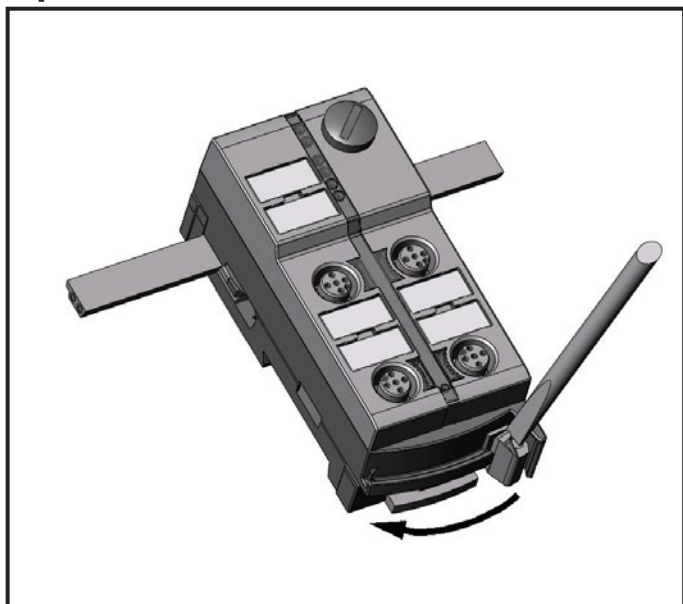
Then set the selected position at the upper part. To do so, turn the triangle to the corresponding number (figures D1 and D2).



Use a tool, e.g. a screwdriver (figure D1) or the yellow / black flat cable guide (figure D2).

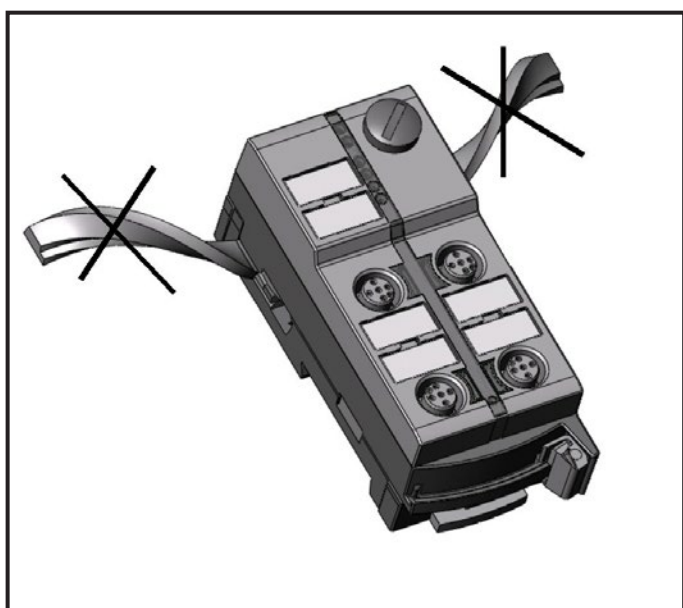


Open the unit



Open the unit using a tool as shown (e.g. screwdriver).

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Take care in laying the AS-i flat cable, the flat cable should be laid straight for about 15 cm.

5 Addressing

The address is set to 0 at the factory.

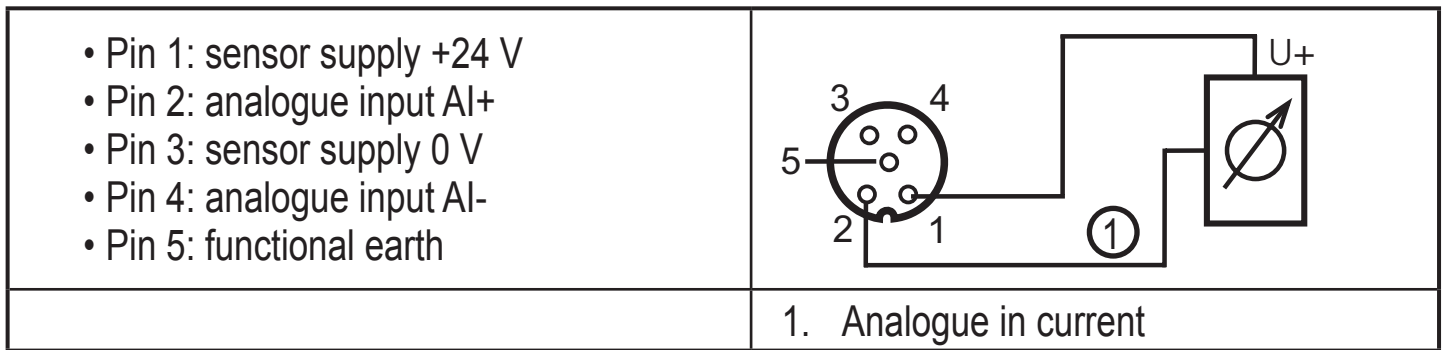
5.1 Addressing with the AC1154 addressing unit

When mounted and wired the module can be addressed with the addressing cable (E70213) via the integrated addressing interface.

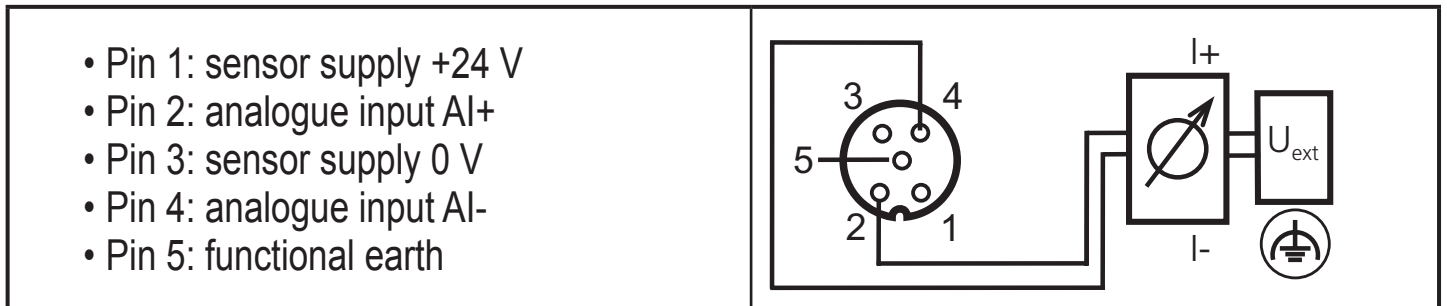
6 Current measurement

In all the following wiring diagrams the indicated pin connection refers to the analogue module.

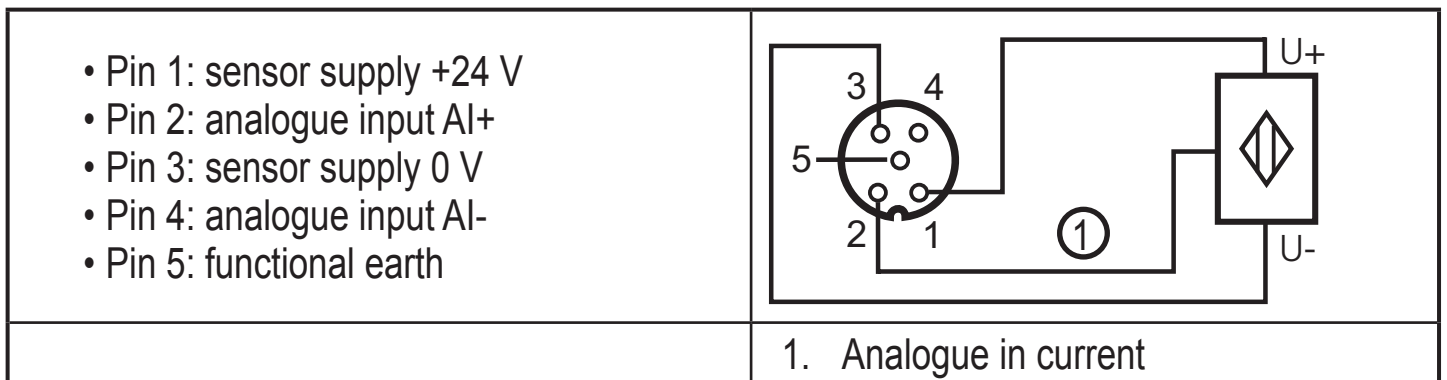
Wiring of a 2-wire sensor without own supply



Wiring of a 2-wire sensor with own (grounded) supply



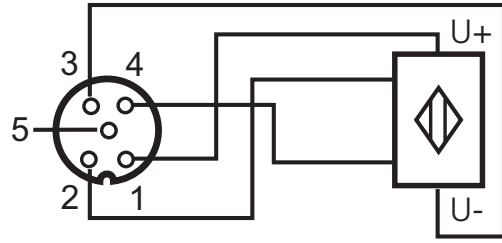
Wiring of a 3-wire sensor without own supply



When connecting a 2-wire or 3-wire sensor without own supply there has to be an external link between pin 3 and pin 4.

Wiring of a 4-wire sensor without own supply

- Pin 1: sensor supply +24 V
- Pin 2: analogue input AI +
- Pin 3: sensor supply 0 V
- Pin 4: analogue input AI -
- Pin 5: functional earth FE



7 Parameter setting of the analogue module

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| Parameter bit / designation | Description | | Comments |
|-----------------------------|-------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P0 filter | 1* | 50 Hz filter in the A/D converter active | The 50 Hz filter applies to the whole of Europe |
| | 0 | 60 Hz filter in the A/D converter active | |
| P1 channel 2 | 1 | Channel 2 enabled | The configuration has an effect on the conversion time in the AS-i slave, the transmission via the AS-Interface, the LED function and the periphery fault messages. LED indication and periphery fault messages are then no longer influenced by this channel. By disabling channel 2 the conversion time in the slave can be reduced considerably. |
| | 0 | Channel 2 not enabled | |
| P2 periphery fault | 1 | Periphery fault active | * Default setting |
| | 0 | Periphery fault not active | |
| P3 not used | 1 | Reserved | |
| | 0 | Reserved | |

8 Electrical connection

Connect the plugs of the sensors / actuators to the M12 sockets. Cover the unused sockets with protective caps (E73004)*, the addressing socket with the supplied protective cap. Tightening torque 0.8 Nm.

The flat cable end seal (E70413)* must be used if the module is at the end of the cable line. *to be ordered separately

The earthing lead (2.8 x 0.5 mm) on the supplied lower part is connected to pin 5, functional earth of the M12 sockets.

9 Operation



Avoid build-up of dirt and dust on the upper and lower parts so that the locking mechanism is not affected.

| | |
|--------------------------|--------------------------------------------------------------------|
| • LED green PWR on: | AS-i voltage is applied |
| • LED red FAULT on: | AS-i communication error |
| • LED red FAULT flashes: | Periphery fault* |
| • LED1 yellow off: | Sensor input is deactivated (see parameter bit P1) |
| • LED1 yellow on: | Analogue signal in the measuring range |
| • LED 1 yellow flashes: | Analogue signal outside the measuring range or no sensor connected |

* A periphery fault is displayed:

- if at least one of the analogue signals is outside the value range
- if nothing is connected to at least one analogue channel although the respective channel (P2) is enabled
- in case of overload or short circuit of the sensor supply

10 Measuring range of the module

For the measuring range and its significance refer to the following tables:

Analogue input module 4...20 mA

| Range [mA] | Unit dec. | Unit hex. | LED | Periphery fault | Description |
|------------|----------------------------|-------------------------|----------|-----------------|------------------------------|
| < 3.4 | 32768 → 32767 * | 8000 → 7FFF * | flashing | on*** | wire break |
| 3.4...3.59 | 3400...3599 → 32767 * | 0D48...0E0F → 7FFF * | flashing | off | below nominal range |
| 3.6...22 | 3600.. 22000 | 0E10.. 55F0 | on | off | extended and nominal range** |
| 22.01...23 | 22001...23000 → 32767 * | 55F1.. 59D8 → 7FFF * | flashing | off | above nominal range |
| > 23 | 32767 | 7FFF | flashing | on*** | overflow |

* The master replaces the value transmitted by the slave with the default value 7FFFh (32767).

** The accuracy is only achieved in the nominal range (4...20 mA) but not in the extended nominal range.

*** Only for the parameter bit 2 = 1

11 Technical data

Technical data and further information at
www.ifm.com

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