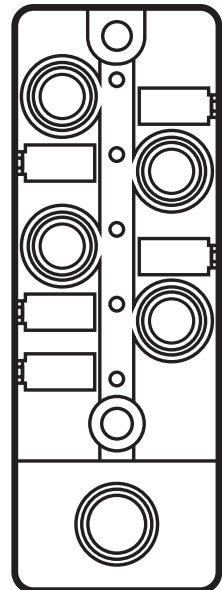


Operating instructions IO-Link module

UK

AL2410
AL2411

80260804/00 06/2017



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1 Preliminary note

Technical data, approvals, accessories and further information at www.ifm.com.

1.1 Symbols used

▶ Instructions

> Reaction, result

→ Cross-reference



Important note

Non-compliance may result in malfunction or interference.



Information

Supplementary note.

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2 Safety instructions

- Read this document before setting up the product and keep it during the entire service life.
- The product must be suitable for the corresponding applications and environmental conditions without any restrictions.
- Only use the product for its intended purpose (→ Functions and features).
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.
- The manufacturer assumes no liability or warranty for any consequences caused by tampering with the product or incorrect use by the operator.
- Installation, electrical connection, set-up, operation and maintenance of the unit must be carried out by qualified personnel authorised by the machine operator.
- Protect units and cables against damage.

3 Functions and features

The device transmits the input states of the digital type 2 inputs and the status of the sensor supply to IO-Link.

4 Function

4.1 Communication, parameter setting, evaluation

4.1.1 IO-Link data

The device

- transmits the current states of the digital inputs cyclically in byte 0. Byte 1 is not used and always transfers the value '0'.
- transmits the device information "short circuit" (SC) cyclically in byte 2.
- transmits the equipment identification cyclically in byte 3.
- provides the equipment identification for writing acyclically (index 688, sub-index 0).

AL2410 (4 DI)

Bit no.	7	6	5	4	3	2	1	0
Byte no.	0							
Assignment	0	0	0	0	X1.3	X1.2	X1.1	X1.0
Byte no.	1							
Assignment	0	0	0	0	0	0	0	0
Byte no.	2							
Assignment	0	0	0	0	0	0	0	KS1
Byte no.	3							
Assignment	Equipment identification							

For AL2410 the data bits 4...7 of byte 0 are transmitted with '0'.

AL2411 (8 DI)

Bit no.	7	6	5	4	3	2	1	0
Byte no.	0							
Assignment	X1.7	X1.6	X1.5	X1.4	X1.3	X1.2	X1.1	X1.0
Byte no.	1							
Assignment	0	0	0	0	0	0	0	0
Byte no.	2							

Assignment	0	0	0	0	0	0	KS2	KS1
Byte no.	3							
Assignment	Equipment identification							

4.1.2 Visual indication

The device

- indicates the current state of an input (yellow LED).
- indicates a correct operation (green PWR/FLT LED lights).
- indicates a short circuit of one or several sensor supplies (red PWR/FLT LED lights).

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4.1.3 Parameter setting

Device-specific parameter lists for IO-Link parameter setting are available

→ www.ifm.com

4.2 Digital inputs

Depending on the version the device has 4 (AL2410) or 8 (AL2411) digital inputs (type 2 input to IEC 61131-2). All inputs refer to the sensor supply potential.

4.3 Sensor supply

Depending on the version the device has 4 (AL2410) or 8 (AL2411) process connections on the front panel. Each process connection has a sensor supply rated for a nominal current of 100 mA.

The short-circuit protection applies to a group of 4 inputs

- group 1: inputs X1.0...X1.3
- group 2: inputs X1.4 - X1.7 (only AL2411)

and is rated for 400 mA per group.

So the total current of the group of 4 inputs can be taken from one of the process connections of the corresponding group.



Maximum cable length < 30 m.

A short circuit or overload has no effect on the sensor supply of the other group (only AL2411). Moreover every sensor supply has a short-circuit and overload

detection which is indicated by the red PWR/FLT LED and via the IO-Link interface.

A correct operation is indicated by the green PWR/FLT LED. The output voltage of the sensor supply is in linear proportion to the input voltage (positive supply cable of the IO-Link port). Voltage can vary within the IO-Link specification (18...30 V).

5 Installation



- ▶ Disconnect power before installation.



- ▶ For installation choose a flat mounting surface.
The entire bottom of the module must lie flat on the mounting surface.

- ▶ Fasten the module onto the mounting surface using M4 screws and washers (1). Tightening torque 1.2...1.5 Nm.

Connect the plugs of the sensors to the M8 sockets.

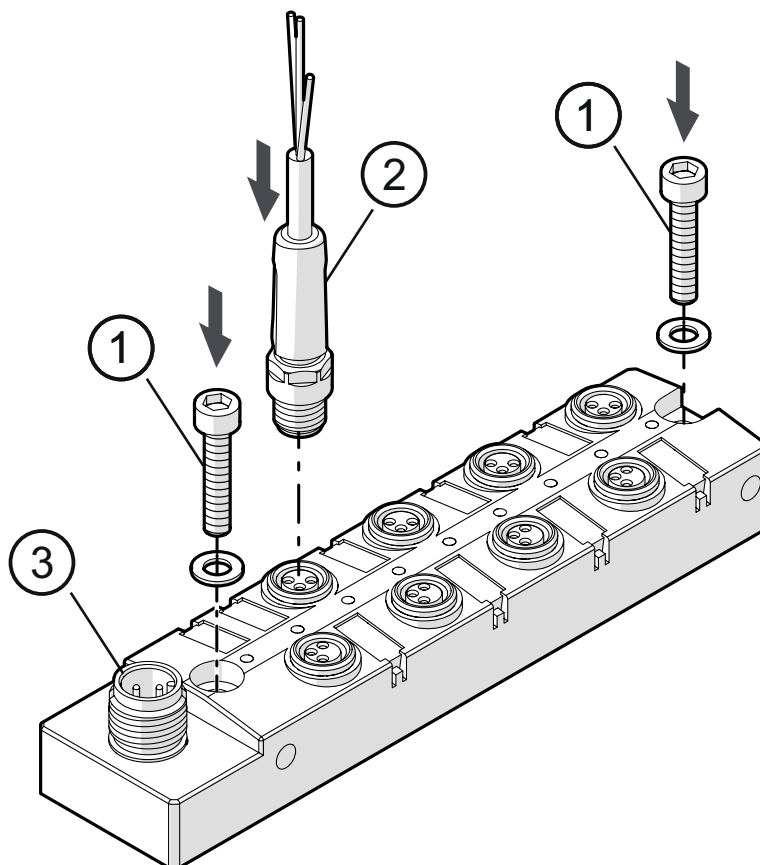
- ▶ Tighten firmly, recommended tightening torque 0.3...0.5 Nm.



As an alternative the module can be mounted laterally using two M4 screws, tightening torque max. 1 Nm.

To ensure the protection rating

- ▶ Cover the unused sockets with the enclosed protective caps. Tighten firmly, recommended tightening torque 0.3...0.5 Nm.



- 1: M4 screws and washers (not supplied with the device). Tightening torque 1.2...1.5 Nm.
 2: M8 connector
 3: M12 connector IO-Link (X1)



Observe the maximum tightening torque of the connection cable.

6 Electrical connection



The unit must be connected by a qualified electrician.
 The national and international regulations for the installation of electrical equipment must be adhered to.



Intended for connection to class 2 (cULus class 2) circuits only.

- ▶ Disconnect power.
- ▶ Connect M12 plug (IO-Link) to the M12 socket. Tightening torque 0.6...0.8Nm.
- ▶ Connect the device.

6.1 IO-Link connection

The IO-Link port must be connected according to the IO-Link specification. The current required by the devices depends on the current load of the sensor supplies.

The total current (AL2410 = 550 mA and AL2411 = 1050 mA) must be provided by the connected IO-Link master.

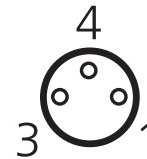


If the positive supply cable is interrupted the device may be supplied via the IO-Link cable. This may lead to an unwanted system behaviour.

7 Pin connection

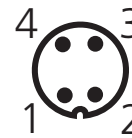
Inputs

- 1: Sensor supply +
- 3: Sensor supply -
- 4: Data input

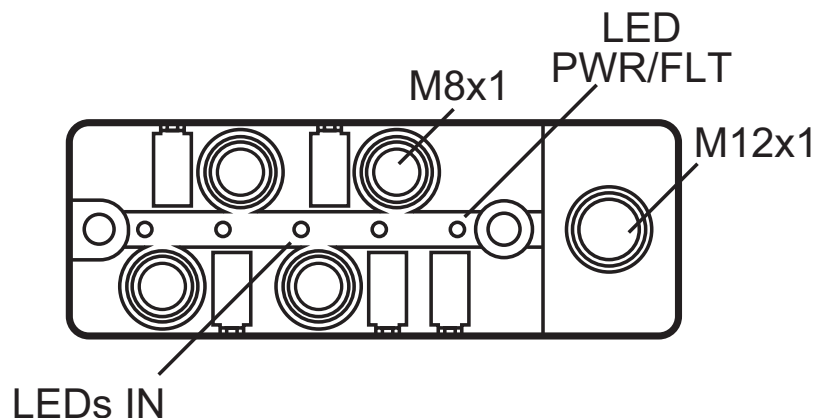


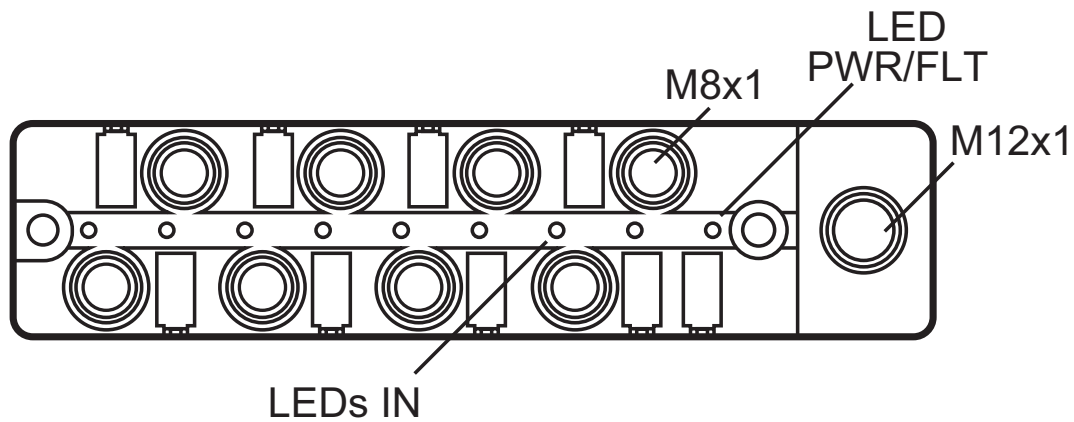
M12 connector IO-Link (X1)

- 1: L+
- 2: not connected
- 3: L-
- 4: C/Q / I/O-Link



8 Operating and display elements





Green LED PWR / FLT on:	everything ok
Red LED PWR / FLT on:	short circuit on one or several sensor supplies
LED PWR / FLT off:	undervoltage or disconnected system
Yellow LED IN input on:	input provides a type 2 HIGH signal
Yellow LED IN input off:	input provides a type 2 LOW signal

9 Maintenance, repair and disposal

The operation of the unit is maintenance-free.

After use dispose of the unit in an environmentally friendly way in accordance with the applicable national regulations.