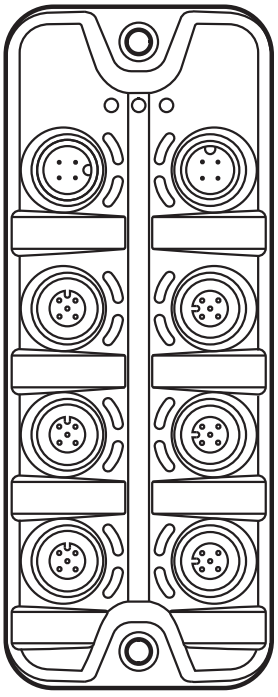
UK

Operating instructions
IO-Link module

AL2230
AL2330



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Contents

1 Preliminary note

▶ Instructions

> Reaction, result

Important note
Non-compliance may result in malfunction or interference.

Information
Supplementary note.

UK

2 Safety instructions

- Please read the operating instructions prior to set-up of the device. Ensure that the product is suitable for your application without any restrictions.
- The unit complies with 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.
- Installation, electrical connection, set-up, operation and maintenance of the unit must be carried out by qualified personnel authorised by the machine operator.

3 Functions and features

The AL2230 unit has a grey housing and is suitable for use in the food and beverage industry (use of cleaning agents at high pressure and high temperatures).

The AL2330 unit (orange) must not be used in these areas.

3.1 IO-Link

3.1.1 General information

The unit has an IO-Link communication interface which requires an IO-Link capable module (IO-Link master).

The IO-Link interface enables direct access to diagnostic data and provides the possibility to set the device parameters during operation.

3.1.2 Device-specific information

You will find the IODDs necessary for the configuration of the IO-Link unit and detailed information about process data structure, diagnostic information and parameter addresses at www.ifm.com

3.1.3 Parameter setting tools

You will find all necessary information about the required IO-Link hardware and software at www.ifm.com

3.1.4 Response when the IO-Link communication is interrupted

The parameter "Output state COM lost / PD invalid" (index 15000) is used to set how the outputs are to respond when the IO-Link communication is interrupted. For every output it can be defined separately if it:

- is to be switched on (HIGH)
- is to be switched off (LOW)
- or is to keep the last state

4 Function

After power on, the unit is in the RUN mode (normal operating mode).

4.1.1 Electrical isolation of the voltage supply

The voltage supply of the outputs is electrically isolated from the IO-Link master. Moreover, the voltage supplies of the left and right side are electrically isolated in the device (UA left and UA right to connector X31).

4.1.2 Visual indication

The unit

- indicates the current state of an output (yellow LED DO1/DO2)
- signals a correct operation (green LED UAL/UAR on, red LED L/R off)

4.1.3 Parameter setting

Device-specific parameter lists for IO-Link parameter setting are available at www.ifm.com

4.1.4 Digital outputs

The unit has 6x2 digital outputs.

4.1.5 Separate deactivation of the outputs

The outputs of the left side are electrically isolated from the outputs of the right side. Therefore the outputs of one side can be switched off without switching off the outputs of the other side. This does not disturb the IO-Link communication.

4.1.6 Variable output currents

The unit monitors the total currents of both output sides. 1800 mA can be switched on every side. The individual outputs have no additional current limitation and can therefore be loaded variably. If the total current of an output side is too high, the unit switches off this side. To activate again the outputs of this side the voltage supply must be disconnected and connected again. The activation of deactivated outputs can also be made via IO-Link (send a "PDout": bytes 0 and 2 are set to 0, reset of the outputs left, bytes 1 and 3 are set to 0, reset of the outputs right).

4.1.7 Response in case of undervoltage

If the voltage supply of the outputs falls below 16.5 V, all outputs switch off.

5 Installation

▶ Disconnect the system from power before installation.

▶ For installation choose a flat mounting surface.

▶ Fasten the module onto the mounting surface using M5 screws and washers. Tightening torque 1.8 Nm.

▶ Connect the plugs of the sensors to the M12 sockets.Tightening torque max. 1 Nm.

▶ Cover unused sockets with protective caps (E12542). Tightening torque 0.6...0.8 Nm.

Observe the maximum tightening torque of the connection cables.

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.

Voltage supply according to SELV, PELV

▶ Disconnect power.

▶ Connect the unit.

Do not connect more than 30 m of cable to the outputs.

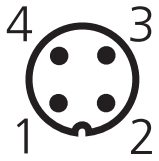
Do not apply external voltage to the outputs.

6.1 IO-Link connection

The IO-Link port must be connected according to the IO-Link specification.

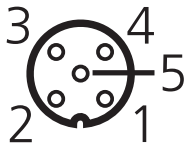
7 Pin connection

M12 connector IO-Link (X1)
1: + 24 V DC (US)
2: not connected
3: GND (US)
4: IO-Link

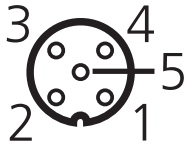


M12 connector Power AUX (X31)
1: + 24 V DC (UAL)
2: GND (UAR)
3: GND (UAL)
4: + 24 V DC (UAR)

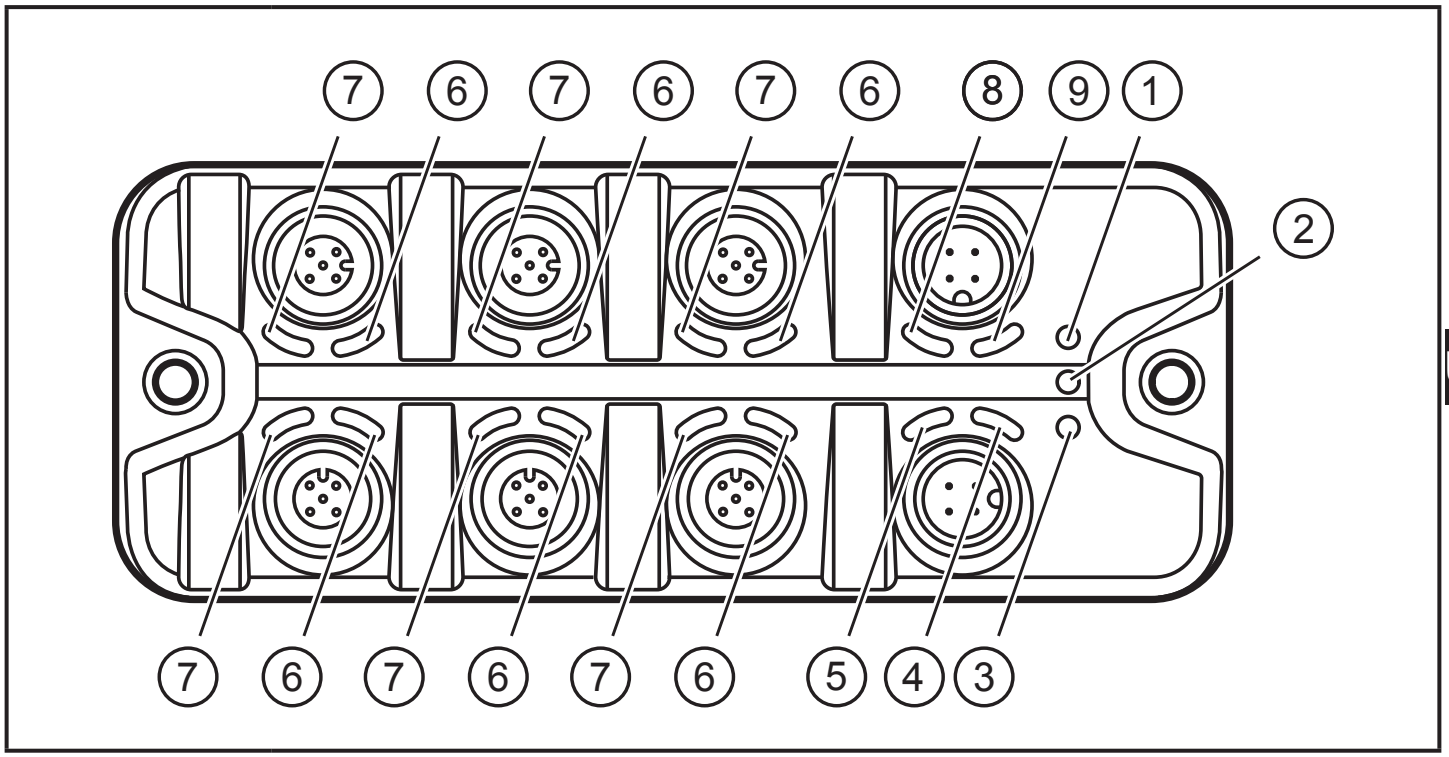
Outputs left (X1.0, X1.2, X1.4)
1: not connected
2: output DO2
3: GND (UAL)
4: output DO1
5: not connected



Outputs right (X1.1, X1.3, X1.5)
1: not connected
2: output DO2
3: GND (UAR)
4: output DO1
5: not connected



8 Operating and display elements

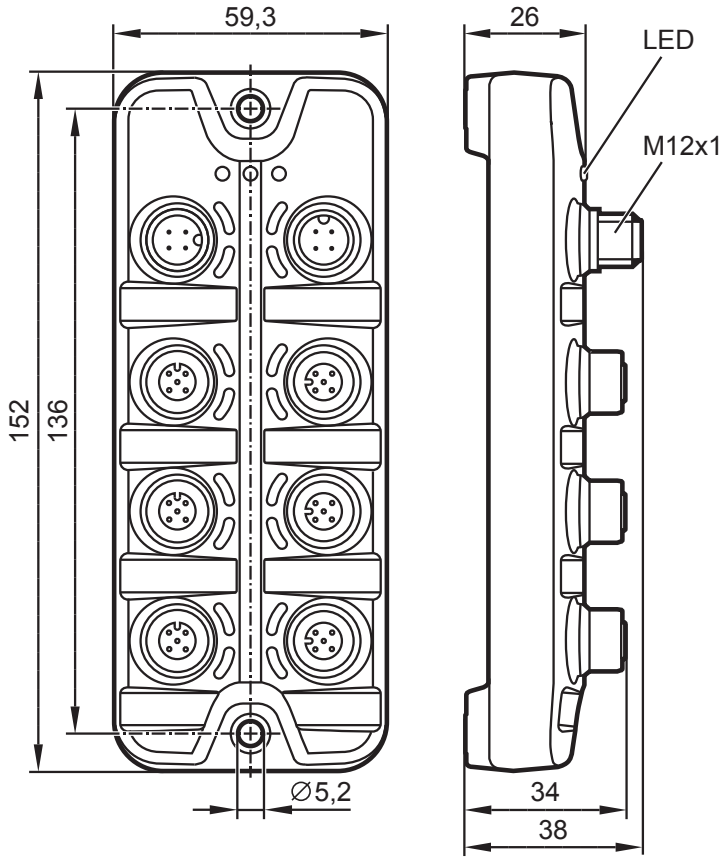


1: LED INT internal fault
2: LED L fault on the left side
3: LED R fault on the right side
4: LED UAL voltage supply left ok
5: LED UAR voltage supply right ok
6: LED DO2 status output DO2
7: LED DO1 status output DO1
8: LED IO-Link communication
9: LED US supply voltage

8.1 LEDs

LED	Colour	Status	Description
INT	red	on	internal fault
L	red	on	short circuit or undervoltage on the left side
		off	no fault on the left side unit in the operating mode
R	red	on	short circuit or undervoltage on the right side
		off	no fault on the right side unit in the operating mode
UAL	green	on	voltage supply on the left side ok
		off	voltage on the left side < 16.5 V
UAR	green	on	voltage supply on the right side ok
		off	voltage on the right side < 16.5 V
DO1, DO2	yellow	on	output signal high
		off	output signal low
	green	on	IO-Link communication active
US	green	on	voltage supply ≥ 17 V
		off	voltage supply < 17 V

9 Scale drawing



Dimensions [mm]

10 Technical data

		AL2230	AL2330
Operating voltage DC	[V]	18...30	
Nominal voltage DC	[V]	24	
Power consumption			
P_{US}	[W]	1.5	
P_{UA}	[W]	4	
Output function		transistor PNP	
Max. total current per output side	[mA]	≤ 1800	
Housing		polyamide, grey, socket: stainless steel (1.4404/316L)	polyamide, orange, socket: nickel-plated brass
Protection rating		IP 68 / IP 69K	IP 67
Ambient temperature	[°C]	-25…60	

Storage temperature	[°C]	-25…70
Max. permissible relative humidity	[%]	5...75
Maximum operating altitude	[m]	2000 above sea level
Permissible air pressure	[hPa]	750...1060
Connectors		M12 connector, 4 poles M12 socket, 5 poles

10.1 IO-Link device

Transmission type		COM2 (38.4 kbaud)
IO-Link revision		1.1
SDCI standard		IEC 61131-9
IO-Link device ID		893 d / 00 03 7d h
SIO mode		no
Input load current at input C/Q to V0	[mA]	< 50
Required master port type		A
Number of digital outputs		12
Data length digital outputs	[Byte]	PDout: 4 / PDin: 8
Min. process cycle time	[ms]	5.6

11 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.

11.1 Cleaning the housing surface

▶ Disconnect the unit.

▶ Clean the unit from dirt using a soft, chemically untreated and dry cloth.

▶ In case of heavy dirt, use a damp cloth.

Micro-fibre cloths without chemical additives are recommended.

12 Approvals/standards

EC declarations of conformity, approvals etc. can be downloaded at: www.ifm.com