



THE ORANGE
BOOK

INSPIRATION FOR AUTOMATION

2021/2022

ifm products

THE ORANGE BOOK 2021/2022

ifm.com



5 YEARS
Warranty
on ifm products



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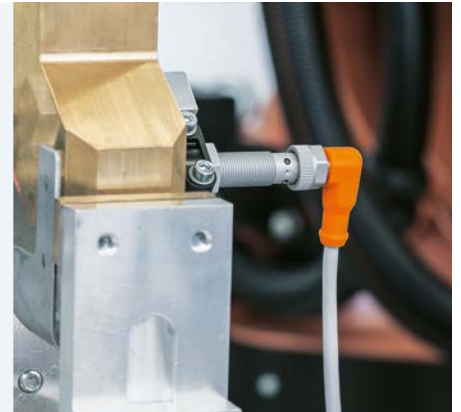
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Position sensors

Electromagnetic field immune Kplus sensors for welding areas



Inductive sensors



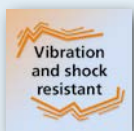
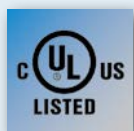
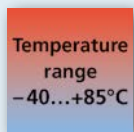
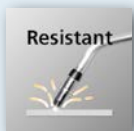
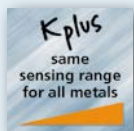
Uniform sensing range for the reliable detection of all metals

No sticking of weld slag thanks to non-stick coating

Electromagnetic field immune sensor technology to prevent incorrect switching

Wide temperature range for universal use

IP 65 to IP 69K for greater reliability



For use in harsh welding applications

The inductive Kplus sensors withstand the harsh operating conditions that are found in welding processes. The sensor housing and the fixing nuts have a non-stick coating to prevent sticking of weld slag. What is more, the new sensor technology is robust against the strong magnetic fields that occur during welding and therefore reliably prevents incorrect switching.

The quick connection with the standard M12 connector and matching cable from the ecolink range is the ideal basis for permanent use.


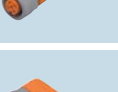




Type	Total length [mm]	Sensing range [mm]	Installation [mm]	Switching frequency [Hz]	Current rating [mA]	Order no.
3-wire · M12 connector						
M8 x 1	50	3	flush	2000	100	IEW205
M8 x 1	50	6	non flush	2000	100	IEW206
M12 x 1	45	4	flush	2000	100	IFW210
M18 x 1	45	8	flush	2000	100	IGW205
M30 x 1.5	45	15	flush	2000	100	IIW204

Accessories

Type	Description	Order no.
	M8 mounting sleeve with end stop, non-stick	E12753
	M12 mounting sleeve with end stop, non-stick	E12452
	M18 mounting sleeve with end stop, non-stick	E12453
	M30 mounting sleeve with end stop, non-stick	E12454

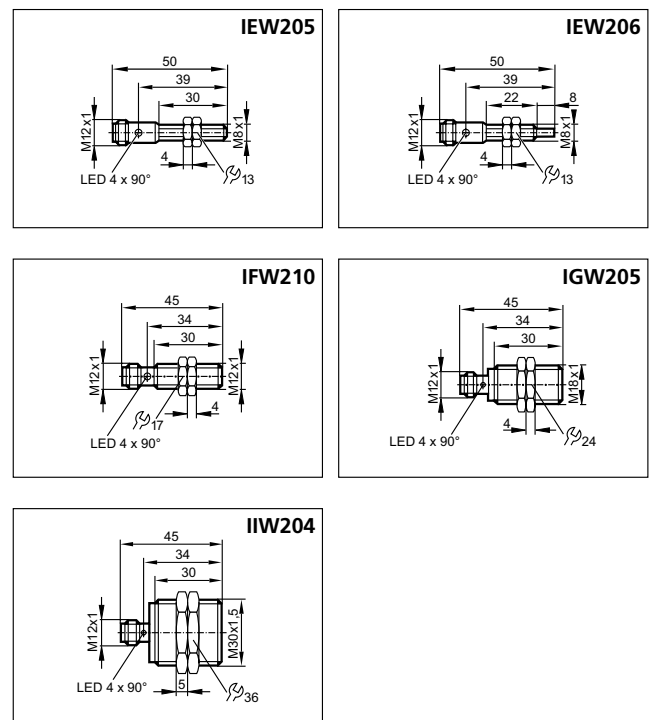
Connection technology

	M12 socket, 2 m grey, PUR cable	EVW001
	M12 socket, 5 m grey, PUR cable	EVW002
	M12 socket, 2 m grey, PUR cable	EVW004
	M12 socket, 5 m grey, PUR cable	EVW005

Further technical data

Operating voltage [V]	10...30
Current consumption [mA]	< 10
Electromagnetic field immunity [mT]	300
Short-circuit protection	yes
Reverse polarity protection	yes
Protection rating	IP 65, IP 66, IP 67, IP 68, IP 69K
Protection class	II
Ambient temperature [°C]	-40...85
Housing material	sensing face: black LCP housing: brass, non-stick LED window: PEI
Switching status indication	4 x LED yellow

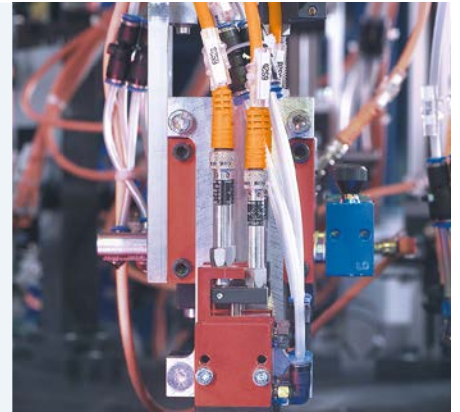
Dimensions





Position sensors

Inductive M8 sensor for limited space



Inductive sensors



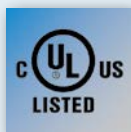
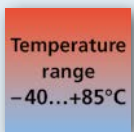
Reliable detection due to increased sensing ranges

Wide temperature range for universal application areas

High reliability thanks to protection rating IP 65 to IP 69K

Quick, correct connection via M12 connector

Robust version with stainless steel housing



Light, small and powerful

The extremely compact housing has its strength wherever there is restricted space for sensors or where the additional mass is to be kept low: In factory automation, on machine tools or on fast moving robot arms the miniature sensor scores with a sensing range that is almost as long as that of larger designs.

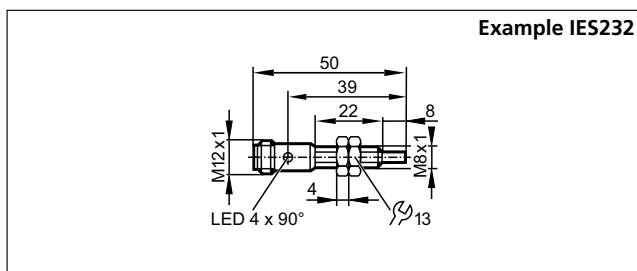
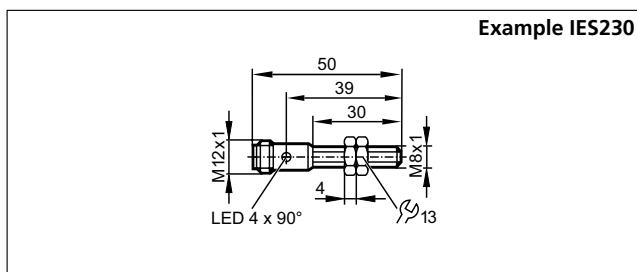
Ready for every application

The high-grade stainless steel housing makes the sensor extremely resistant, the temperature range from -40 to 85 °C and the protection rating IP 65 to IP 69K open up almost unlimited application possibilities. The LED switching status indication is easy to read even in places where access is difficult, the standard M12 connector allows a quick and correct connection.



Type	Total length [mm]	Sensing range [mm]	Installation [mm]	Electrical design	Switching output	Order no.
3-wire · M12 connector						
M8 x 1	50	3	flush	PNP	NO	IES230
M8 x 1	50	3	flush	PNP	NC	IES231
M8 x 1	50	6	non flush	PNP	NO	IES232
M8 x 1	50	6	non flush	PNP	NC	IES233
M8 x 1	50	3	flush	NPN	NO	IES234
M8 x 1	50	3	flush	NPN	NC	IES235
M8 x 1	50	6	non flush	NPN	NO	IES236
M8 x 1	50	6	non flush	NPN	NC	IES237

Dimensions



Further technical data

Operating voltage [V]	10...30
Current consumption [mA]	< 10
Short-circuit protection	yes
Reverse polarity protection	yes
Protection rating	IP 65, IP 66, IP 67, IP 68, IP 69K
Protection class	III
Ambient temperature [°C]	-40...85
Housing material	sensing face: LCP natural, housing: stainless steel, LED window: PEI
Switching status indication	4 x LED yellow

Accessories

Type	Description	Order no.
	Angle bracket M8	E10734
	Mounting clamp	E11521

Connection technology

	M12 socket, straight, 4-pole, 2 m black, PUR cable	EVC001
	M12 socket, straight, 4-pole, 5 m black, PUR cable	EVC002
	M12 socket, angled, 4-pole, 2 m black, PUR cable	EVC004
	M12 socket, angled, 4-pole, 5 m black, PUR cable	EVC005



Position sensors

They could hardly be smaller: inductive sensors in M8 design



Inductive sensors

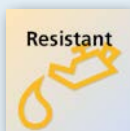
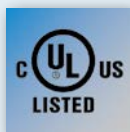
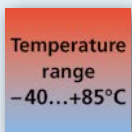


Compact dimensions enable their use in a confined space

Robust design, sensing face also available in stainless steel

Sealed: protection ratings IP 65 to IP 69K

Wide temperature range for universal use



Light, small and powerful

The extremely compact housing has its strength wherever there is restricted space for sensors or where the additional mass is to be kept low: In factory automation, on machine tools or on fast moving robot arms the miniature sensor scores with a range that is almost as long as that of larger designs.

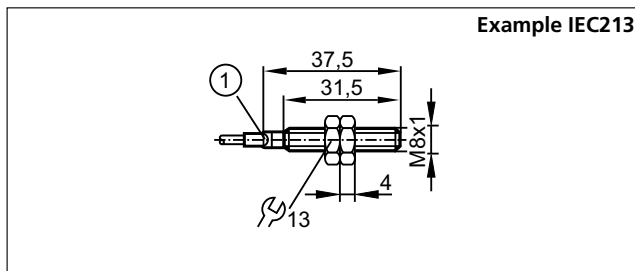
Ready for every application

The high-grade stainless steel housing makes the sensor extremely resistant, the temperature range from -40 to 85 °C and the protection class IP 65 to IP 69K open up almost unlimited application possibilities. The LED switching status indication is easy to read even in places where access is difficult.

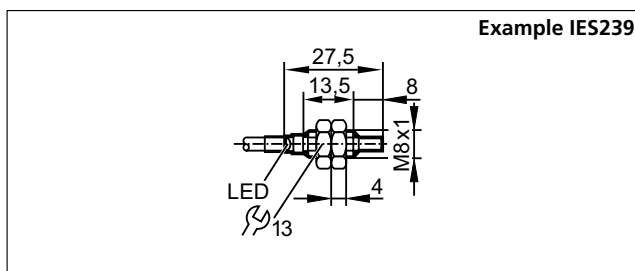
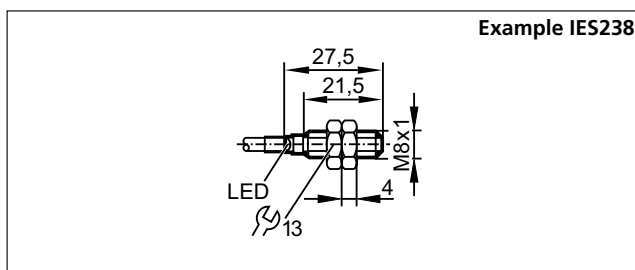


Type	Total length [mm]	Sensing range [mm]	Installation [mm]	Electrical design	Switching output	Order no.
3-wire · full metal sensor · sensing face of high-grade stainless steel · LED in cable end part · PUR connection cable						
M8 x 1	37.5	2	flush	PNP	NO	IEC213
M8 x 1	37.5	2	flush	PNP	NC	IEC214
M8 x 1	37.5	2	flush	NPN	NO	IEC215
M8 x 1	37.5	2	flush	NPN	NC	IEC216
3-wire · stainless steel sleeve · sensing face LCP natural · LED in cable end part · PUR connection cable						
M8 x 1	27.5	3	flush	PNP	NO	IES238
M8 x 1	27.5	6	non flush	PNP	NO	IES239
M8 x 1	27.5	3	flush	PNP	NC	IES240
M8 x 1	27.5	6	non flush	PNP	NC	IES241
M8 x 1	27.5	3	flush	NPN	NO	IES242
M8 x 1	27.5	6	non flush	NPN	NO	IES243
M8 x 1	27.5	3	flush	NPN	NC	IES244
M8 x 1	27.5	6	non flush	NPN	NC	IES245
2-wire · stainless steel sleeve · sensing face LCP natural · LED in cable end part · PUR connection cable						
M8 x 1	27.5	3	flush	PNP / NPN	NO	IES246
M8 x 1	27.5	6	non flush	PNP / NPN	NO	IES247

Dimensions



1) LED yellow



Further technical data

Operating voltage [V]	10...30
Current consumption [mA]	< 10
Short-circuit protection	yes
Reverse polarity protection	yes
Protection rating	IP 65, IP 66, IP 67, IP 68, IP 69K
Protection class	II
Ambient temperature [°C]	-40...85
Housing material	sensing face: LCP natural or stainless steel, housing: stainless steel, LED window: PEI
Switching status indication	4 x LED yellow
Connection cable	2 m PUR 3 x 0.14 mm ²

Accessories

Type	Description	Order no.
	Angle bracket M8	E10734
	Mounting clamp	E11521



Position sensors

Huge IO-Link performance in a tiny M8 housing



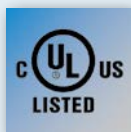
Inductive sensors



Long sensing range, minimal space required

Easy installation and replacement thanks to standard M8 connector

- The ideal solution where space is at a premium: remote IO-Link parameter setting
- Process reliability guaranteed by switch point monitoring for detection of wear
- Diagnostic functions, such as internal unit temperature monitoring, help prevent failures





Excellent performance in a small housing

With 3 mm (flush) and 6 mm (non-flush), the sensing range is much than the standard of conventional M8 sensors. Thanks to the high switching frequency of 600 Hz, the sensors also solve demanding position detection tasks where space is limited.

More performance thanks to IO-Link

In addition to the switching output, the sensor has an IO-Link interface. Convenient remote parameter setting is also possible. Thanks to the high precision, the user can monitor the switch point to the nearest millimetre and detect mechanical deviations e.g. caused by wear at an early stage. Extensive diagnostic functions, such as integrated unit temperature monitoring, provide additional safety in the installation by sending early warnings in critical applications.






Type	Installation	Measuring range [mm]	Setting range [mm]	Correction factor	Order no.
	flush	0.3...3	0.56...2.8	Steel 1 · stainless steel 0.7 · brass 0.4 aluminium 0.4 · copper 0.3	IE5457
	non flush	0.6...6	1.23...5.61	Steel 1 · stainless steel 0.7 · brass 0.5 aluminium 0.5 · copper 0.4	IE5456





Accessories

Type	Description	Order no.
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Installation

	Mounting bracket for M8 housing, stainless steel	E10734
	Mounting clamp for M8 housing, aluminium, black anodized	E10221
	Mounting clamp for type M8, PC	E11521

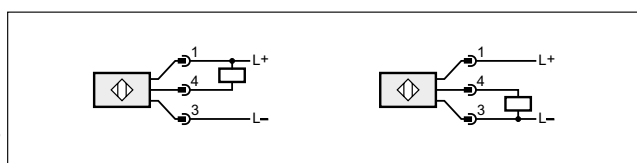
IO-Link

	IO-Link master DataLine, USB	AL1060
	Memory plug, parameter memory for IO-Link sensors	E30398
	moneo configure SA (Stand-alone) licence, software for online and offline parameter setting of IO-Link devices including maintenance and support until the end of the following year	QMP010
	IO-Link display	E30391

Connection technology

	Connection cable, M8, 3-pole, 2 m, black, PUR cable	EVC268
	Connection cable, M8, 3-pole, 5 m, black, PUR cable	EVC269

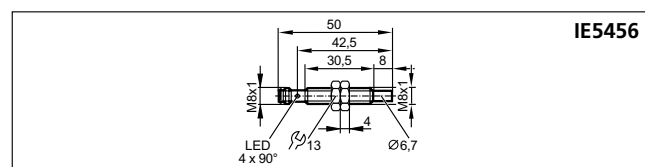
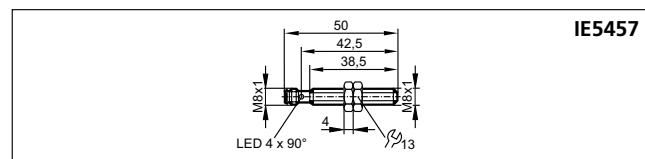
Wiring diagram



Further technical data

Design	M8 x 1	
Housing length [mm]	50	
Electrical design	DC PNP / NPN can be set via IO-Link	
Output function	NC / NO adjustable via IO-Link	
Operating voltage [V DC]	10...30	
Current rating [mA]	100	
Reverse polarity protection	yes	
Short-circuit protection	yes	
Protection rating	IP 65 / IP 66 / IP 67 / IP 68 / IP 69 K	
Protection class	III	
Switching frequency DC [Hz]	600	
Ambient temperature [°C]	-40...75	
Switching status indication [LED]	4 x yellow	
IO-Link process data (cyclic)	Function	Bit length
	Process value	16
	Device status	4
	Binary switching information	2
IO-Link process data (acyclical)	Switching cycles counter, switch-on cycles counter, operating hours counter, internal temperature, application-specific marking	

Dimensions



We reserve the right to make technical alterations without prior notice. · 04.2021



Position sensors

Twice as good: inductive sensors with analogue output and IO-Link



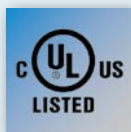
Inductive sensors



High-precision distance measurement for early diagnosis of mechanical changes

Distance measurement and switch using only one unit

- **Flexible use due to adaptable output range**
- **Measured value transmission without any loss via IO-Link**
- **More functionality with full compatibility using standard input devices**



Prepared for plant retrofit

The new inductive analogue sensors are fully compatible for use in existing plants. A wide range of functions and information are provided additionally via IO-Link.








Increased measurement accuracy with IO-Link

On the one hand, conversion losses or electromagnetic interference are avoided thanks to digital communication. On the other hand, the detection range of the sensor is freely scalable via IO-Link – allowing also adjustment of the switch-on curve. Thus, the resolution can be specifically maximised whenever tiny changes in distance, for example caused by first stages of wear, need to be detected quickly. When connected to an ERP, the digital data can be used to implement automated, demand-based maintenance.

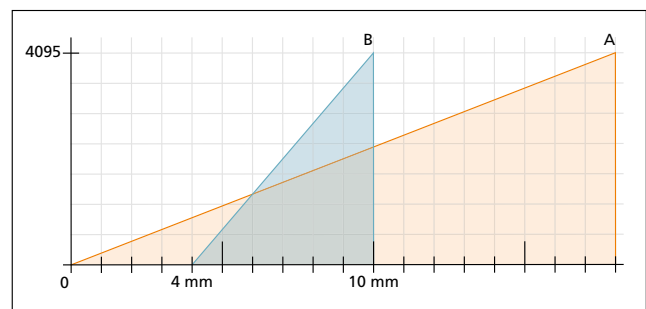


Type	Total length [mm]	Measuring range [mm]	Installation	Output signal	Protection rating	Order no.
M12 connector · analogue output programmable/ IO-Link						
M12	70	0.2...2	flush	4...20 mA	IP 65...IP 69K	IF6028
M12	70	0.2...2	flush	0...10 V	IP 65...IP 69K	IF6029
M12	70	0.4...4	non flush	4...20 mA	IP 65...IP 69K	IF6030
M12	70	0.4...4	non flush	0...10 V	IP 65...IP 69K	IF6031
M18	60	0.8...8	non flush	4...20 mA	IP 65...IP 69K	IG6083
M18	60	0.8...8	non flush	0...10 V	IP 65...IP 69K	IG6084
M18	60	0.5...5	flush	4...20 mA	IP 65...IP 69K	IG6086
M18	60	0.5...5	flush	0...10 V	IP 65...IP 69K	IG6087
M30	65	1...15	non flush	4...20 mA	IP 65...IP 69K	II6913
M30	65	1...15	non flush	0...10 V	IP 65...IP 69K	II5914
M30	65	1...10	flush	0...10 V	IP 65...IP 69K	II5917
rectangular	40 x 40 x 54	1...15	flush	4...20 mA	IP 67	IM5139
rectangular	40 x 40 x 54	1...15	flush	0...10 V	IP 67	IM5140
rectangular	40 x 40 x 54	1...26	non flush	4...20 mA	IP 67	IM5141
rectangular	40 x 40 x 54	1...26	non flush	0...10 V	IP 67	IM5142
rectangular	40 x 40 x 54	3...35	non flush	0...10 V	IP 67	IM5143
rectangular	40 x 40 x 54	3...35	non flush	0...10 V	IP 67	IM5175

Accessories

Type	Description	Order no.
Installation		
	Angle bracket for M12 design, stainless steel	E10735
	Angle bracket for M18 design, stainless steel	E10736
	Angle bracket for M30 design, stainless steel	E10737
IO-Link		
	1-port IO-Link master (connects IO-Link sensors to the PC via USB)	AL1060
	Memory plug, parameter memory for IO-Link sensors	E30398
	IO-Link master EtherNet/IP, 4-port	AL1320
	moneo configure SA (Stand-alone) licence, software for online and offline parameter setting of IO-Link devices including maintenance and support until the end of the following year	QMP010

Focus area with highest resolution



A = detection zone, B = focus zone

In the case of measuring sensors, the 4096 measuring points (i.e. the resolution) extend over the entire detection zone (A).

With the new analogue sensors, however, this resolution can be (e.g.) specifically maximised in any focus zone where minimal changes in distance need to be detected quickly.

For this purpose, all available 4096 measuring points are "placed" in the particular zone to be considered.

In present example, this results in the highest possible resolution of 628 measuring points per mm. This precise measurement accuracy not only increases process reliability, but can also prevent rejects, thus allowing substantial savings.



Position sensors

Robust full-metal ultrasonic sensor for harsh environments



Ultrasonic sensors



Continuous non-contact level measurement and object detection regardless of environmental condition

Resistant to aggressive media

Long range of up to 2500 mm

Digital or analogue measured value output

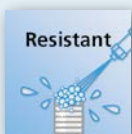
Easy parameter setting, measured value transmission and diagnostic information via IO-Link



IO-Link



Ultrasound



Resistant



High-grade stainless steel



IP 69 K



ECOLAB certified

Level monitoring in any application


Whether in tanks or silos, whether liquids, bulk material or individual objects: The universal level and distance measurement using ultrasound is reliable and accurate. However, even if there is no direct contact with the medium, aggressive vapours and fumes can severely affect the function and life of a sensor. But thanks to ifm's new full-metal ultrasonic sensor, this is now a thing of the past. From the diaphragm to the connector, the sensor is completely enclosed in resistant high-grade stainless steel. Thus, it is resistant to external influences and benefits from an extended service life.

IO-Link included

Using IO-Link communication, distance values can be transmitted digitally or the measuring range can be set. Thanks to the feedback on the echo quality, the alignment of the sensor can be optimised during installation and the functional reliability can be continuously monitored.



Products


Type	Total length [mm]	Output	Order no.
M30, IO-Link			
	103	2 x PNP / 2 x NPN*	UIT300
	103	PNP + 4...20 mA / NPN + 4...20 mA*	UIT301
	103	PNP + 0...10 V / NPN + 0...10 V*	UIT302

* Selectable via IO-Link


Further technical data


Operating voltage	[V DC]	10...30
Switching frequency	[Hz]	1
Current rating	[mA]	100
Switching output		
Operating temperature range	[°C]	-10...60
Temperature compensation		•
Protection rating		IP 65, IP 67, IP 68, IP 69K
Housing material		High-grade stainless steel
Connection		M12 connector
Switching status indication	[LED]	Yellow


Accessories

Type	Description	Order no.
	Angle bracket for type M30, stainless steel	E10737



IO-Link

	IO-Link master DataLine, USB	AL1060
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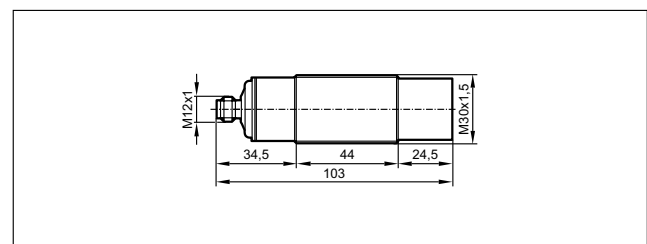
	USB connection cable, 1 m, PUR	E12689
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	moneo configure SA (Stand alone) licence, software for online and offline parameter setting of IO-Link devices incl. maintenance and support until the end of the following year	QMP010
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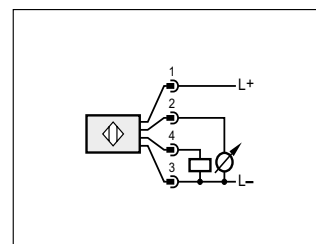
Connection technology

	Socket, M12, 4 poles 2 m, grey, MPPE cable	EVF064
	Socket, M12, 4 poles 5 m, grey, MPPE cable	EVF001
	Socket, M12, 4 poles 2 m, grey, MPPE cable	EVF067
	Socket, M12, 4 poles 5 m, grey, MPPE cable	EVF004

Dimensions



Wiring





Position sensors

Measuring light grids for easy object monitoring in intralogistics



Photoelectric sensors



Simple object dimensioning in intralogistics without complex programming

High resolution for precise object detection

- Ease of integration due to a standardised IO-Link interface
- Selective evaluation of beams to determine the dimensions or distances between objects



For optimised logistic processes

The measuring light grids are perfectly suitable for monitoring intralogistics processes. An evaluation of how many and which light beams are obstructed is provided and can be used to detect whether the conveyed objects are in the correct and safe transport position.

With a beam distance of 10 millimetres, the height and width of pallets, packages and boxes, too, can be precisely detected.

Precise monitoring with IO-Link

Five different measured values in total can be transmitted via IO-Link using the multi-beam system. The height, position, but also the contour of one or several objects can be derived from these values. What is more, diagnostic information on operating hours are determined and transmitted digitally for needs-based maintenance.



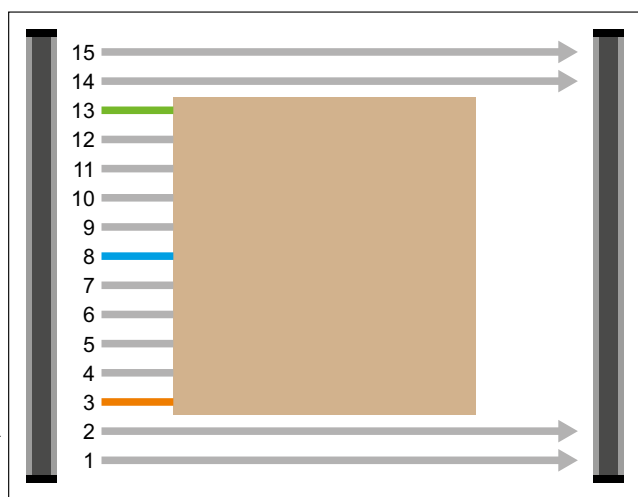
Products

Height Light grids [mm]	Height Measuring range [mm]	Number of beams	Order no.
Measuring light grids with IO-Link			
213	140	15	OY5100
663	590	60	OY5103
1113	1040	105	OY5106
1713	1640	165	OY5110
2163	2090	210	OY5113
2613	2540	255	OY5116

Common technical data

Operating voltage	[V DC]	24 +/- 20%
Ambient temperature	[°C]	-10...55
Max. range* (distance from transmitter to receiver)	[m]	10
Protection rating, Protection class		IP 65 / IP 67 III
Type of light		infrared
Distance of beams	[mm]	10
Output**		PNP / NPN
Output		H / D
H = light-on / D = dark-on mode		
* with Y splitter cable EY5053, ** switchable via IO-Link		

Functional principle



Accessories

Type	Description	Order no.
Mounting accessories		
	Mounting and fine adjustment unit	EY3013
	Adjustable brackets	EY3004
	Laser adjustment aid	EY3099
	USB IO-Link master set	ZZ1060
Connection technology		
	Socket, M12, 5 poles 1 m, black, PUR cable	EVC196
	Socket, M12, 5 poles 2 m, black, PUR cable	EVC070
	Socket, M12, 5 poles 5 m, black, PUR cable	EVC071
	Socket, M12, 5 poles 10 m, black, PUR cable	EVC072
	Y splitter cable Range: 1...10 m	EY5053
	Y splitter cable Range: 0...2 m	EY5054

Multi-beam system with 5 measured values

The five different measured values in total are used to derive the height, position and but also the contour of one or several objects.



- FBO** First beam occupied: **3**
- LBO** Last beam occupied: **13**
- CBO** Central beam occupied: **8**
- NBO** Number of beams occupied: **11**
- NCBO** Number of consecutive beams occupied: **11**



Always know where you stand: position feedback for ball valves



Valve feedback systems



The ball valve's type and position are directly visible in the plant

Direct visualisation thanks to the flexible position indicator for T-port, L-port, and Y-port directional flow valves

Free angular adjustment of the targets reduces type versions and stock-keeping

Universally applicable on drives according to VDI/VDE 3845



Flexible position feedback

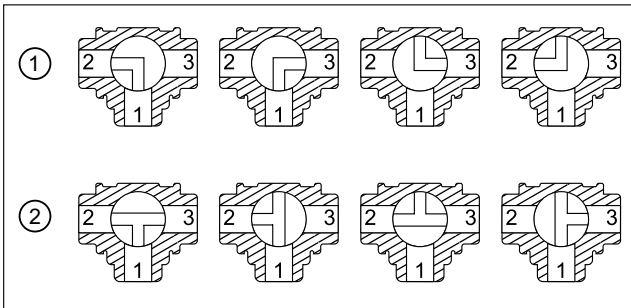
The switching cams are mounted on ball valves for position feedback. Adjustable damping elements allow the pucks to be used in both standard and individual position feedback applications.

Position of the ball valve at a glance

The uniqueness of this puck is the adjustable position indicator on the top, which can be flexibly adapted to L-port and, via an additional indicator element, also to T-port and Y-port valves. This makes it possible to clearly visualise the position of the ball valve directly in the system.



The flow direction can be clearly seen via the position indicator



- 1) L-port valve
- 2) T-port valve



The user can set the position indicator according to the type of ball valve (I, L, T or Y)



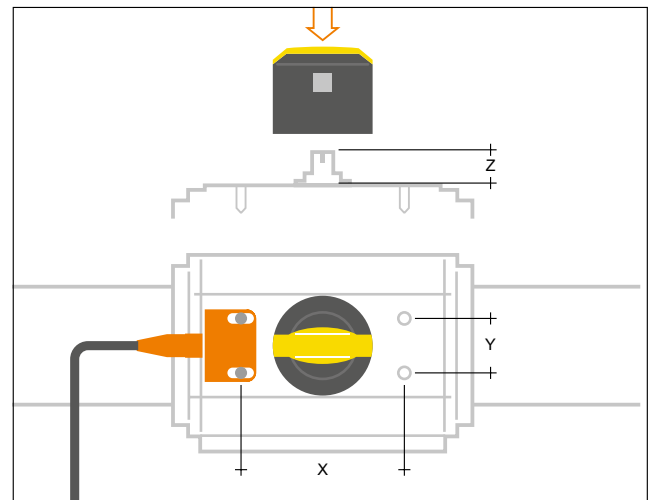
The position of the ball valve can be seen directly in the plant




Target pucks

Mounting dimensions [X / Y mm]	Height of the actuator shaft [Z mm]	Description	Order no.
Ø shaft stub: ≤ 58 mm			
80 / 30	30	Puck basic	E12724
80 / 30	30	Puck adjustable	E12725
-	-	Multi-cover indicator for T/Y	E12726
Ø shaft stub: ≤ 38 mm			
80 / 30	30	Puck adjustable	E12516
80 / 30	30	Puck basic	E12517

Dimensions



Accessories

Type	Description	Order no.
	Spacer, 10 mm	E12526



Sensors for motion control

A safe choice: draw-wire mechanisms for encoders



Encoders

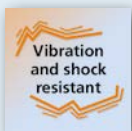


**Precise position detection
including over long distances**

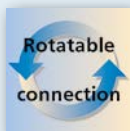
**High operational reliability
thanks to robust mechanical
construction even under
permanent strain**

**Mechanically compatible
across manufacturers, for
encoders with synchro flange**

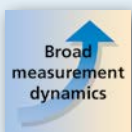
**Compact design even with
rope spans up to 15 m**



Vibration
and shock
resistant



Rotatable
connection



Broad
measurement
dynamics

Exact positioning including over long distances

Draw-wire mechanisms for encoders are the ideal choice when positions must be accurately determined over straight distances. Examples of use range from short distances, for example with scissor lifts or fork lift trucks, to long distances, such as those covered by trolleys on crane booms or transport systems in high-bay warehouses.

Solid connection, robust against external influences

Advantage of the pulley principle: there is an uninterrupted connection between the encoder and the moving object. Adverse effects on distance detection e.g. caused by dirt with optical distance measurement, are mostly eliminated.

The mechanical components are designed for industrial, long-lasting use with up to 1 million pulls.



Draw-wire mechanisms

Type	Dimensions [mm]	Linearity [%]	Housing type/ Housing material	Rope spans up to* [m]	Order no.
	80 x 48 x 82	± 0.02	cylindrical / metal, aluminium, anodised	1.9	E61439
	60 x 57 x 89	± 0.1	cylindrical / PA	2.4	E61440
	78 x 40 x 75	± 0.01	rectangular / die-cast zinc, plastic	3	E61441
	115 x 103 x 115	± 0.01	rectangular / aluminium, anodised	5	E61442

* draw wire mechanisms with other lengths on request

Encoders

Draw wire mechanisms in combination with encoder						
	HTL TTL			SSI		
RMU300	RU3100	RM9007	RM3006	RMU400	RMU100	RMU200
IO-Link multiturn, 31 bits	Incremental (IO-Link), 3 tracks	CANopen 24 bits	PROFIBUS 25 bits	SSI 24 bits	Analogue 4...20 mA	Analogue 0...10 V

These encoder versions solve the majority of applications. In principle, other encoders with 58 mm diameter, synchro flange and 6 mm shaft diameter can also be used with the draw wire mechanisms. You will find further encoders at ifm.com.

Accessories

Description	Order no.
Pulley	E61445
IO-Link master Profinet, 4 ports	AL1100
IO-Link master, EtherNet/IP, 4 ports	AL1120

Connection technology

Description	Order no.
M12 socket, 5-pole, 5 m black, PUR cable	EVC545
M12 socket, 8-pole, 5 m black, PUR cable	E12403

We reserve the right to make technical alterations without prior notice. · 04.2021



The new Dualis: pays attention to every detail of surfaces and contours



Vision sensors



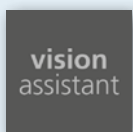
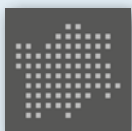
Combinable 2D inspection of surfaces and contours for maximum quality assurance

User-friendly software simplifies inspection task set-up

Powerful algorithms master even demanding requirements

Reliable functioning in changing light conditions

Maladjustment monitoring ensures reliable quality control



Extraneous-light resistant search and find expert

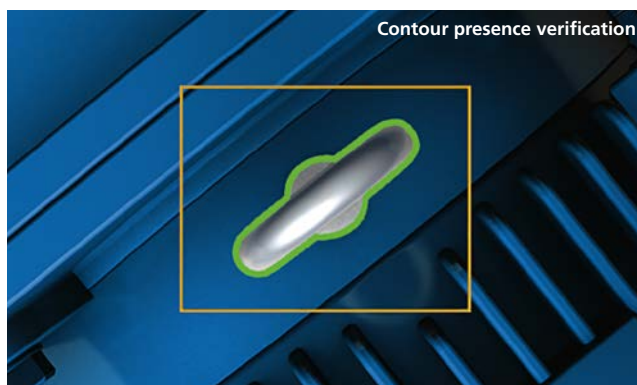
Missing retaining clips, threads that have not been milled properly, too much adhesive or incorrectly shaped components: The new Dualis detects all this with ease – as well as any other deviation of an object from the specified target conditions. Surface areas, contours, omissions or object rotation can be checked and evaluated individually as well as in combination. Thanks to the integrated daylight filter, the Dualis is extremely resistant to extraneous light. The version with integrated polarisation filter is ideal for applications with particularly highly reflective objects.

The new Dualis is set up with the user-friendly ifm Vision Assistant software. Even complex tasks are quickly defined. Real-time maintenance options ensure reliable quality assurance. For example, changes in the continuously checked image sharpness and the image brightness indicate an unintentional maladjustment. In this case, the sensor can automatically issue a warning.

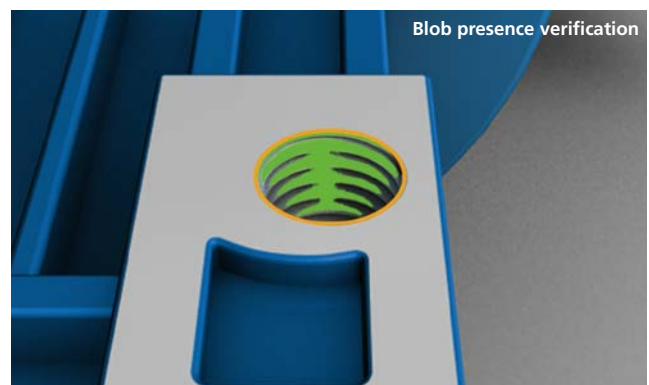


Type	Description	Interface	Order no.
Integrated infrared illumination			
	Standard lens, angle of view 16°	EtherNet/IP, TCP/IP	O2D520
	Wide-angle lens, angle of view 30°	EtherNet/IP, TCP/IP	O2D522
	Telephoto lens, angle of view 10°	EtherNet/IP, TCP/IP	O2D524
	Standard lens, angle of view 16°	PROFINET, TCP/IP	O2D530
	Wide-angle lens, angle of view 30°	PROFINET, TCP/IP	O2D532
	Telephoto lens, angle of view 10°	PROFINET, TCP/IP	O2D534
Integrated RGB-W illumination, with polarisation filter			
	Standard lens, angle of view 16°	EtherNet/IP, TCP/IP	O2D500
	Wide-angle lens, angle of view 30°	EtherNet/IP, TCP/IP	O2D502
	Telephoto lens, angle of view 10°	EtherNet/IP, TCP/IP	O2D504
	Standard lens, angle of view 16°	PROFINET, TCP/IP	O2D510
	Wide-angle lens, angle of view 30°	PROFINET, TCP/IP	O2D512
	Telephoto lens, angle of view 10°	PROFINET, TCP/IP	O2D514

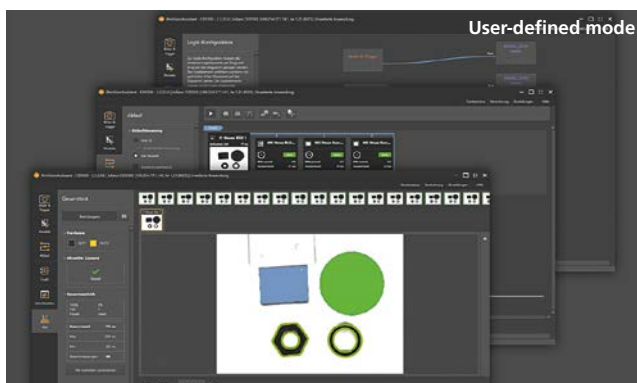
Simply solve your application step by step:



A contour presence verification wizard supports you in solving simple contour presence checks. Even inexperienced users can set up the application within 2 minutes.



Using the blob presence verification wizard, you can easily set up an application to analyse blobs. Blobs are contiguous pixels that form an area. These areas can be checked for their size, shape or other properties.



With the "user-defined mode", more complex applications as well as combinations of blob and contour detection can be solved.

Many options for perfect quality control

The Dualis is available with infrared or RGB-W illumination. The latter makes it possible to distinguish objects by their colour. Highly reflective objects can also be detected easily thanks to the polarisation filter.

In strongly fluctuating light conditions, the Dualis takes up to 5 images with different exposure times and then selects the optimally illuminated image for quality control.

Fast replacement thanks to memory stick

The Dualis is equipped with an ifm memory stick on which the parameters are stored. In the event of a device replacement, the stick can be used to easily transfer all settings and parameters required for operation to the new Dualis. This considerably reduces the workload.

We reserve the right to make technical alterations without prior notice. · 09.2021



Flexible LED strip for illumination and signalling



Illumination



LEDs in RGB and white can be controlled directly via digital inputs

Extremely robust, fully potted design with protection rating IP 68

Bent or straight installation

Powerful LEDs for high light yield

Different length versions available



Illumination and signalling all-in-one.

LED strips cannot only be used as machine light but also indicate the machine status with different light colours. The LED strips are available in different lengths and flexible in use. They can be quickly and securely fastened with optional aluminium profiles so that even out-of-the way corners are lit up without casting shadows. Their robust design with protection rating IP 68 allows for a wide range of applications.

Enough colour

The LED strips consist of powerful LEDs in the colours RGB and white. Triggering is via four digital inputs that can be used to produce the colours Red, Yellow, Green, Blue, Cyan and Purple, as well as pure white light. Indeed any colour shade is possible with using pulse width modulation control.



Type	Dimensions [mm]	Illuminated area length [mm]	Current consumption [mA]	Luminous flux [lm]	Order no.
LED strip RGBW					
	77.5 x 14.2 x 4.5	62.5	100	red: 12.6 / green: 23.6 / blue: 4.6 / white: 35.6	DV1000
	265 x 14.2 x 4.5	250	400	red: 25.3 / green: 67.2 / blue: 9.2 / white: 71.3	DV1001
	515 x 14.2 x 4.5	500	800	red: 50.6 / green: 94.4 / blue: 18.5 / white: 142.6	DV1002
	765 x 14.2 x 4.5	750	1200	red: 75.9 / green: 161.6 / blue: 27.7 / white: 213.9	DV1003
	1015 x 14.2 x 4.5	1000	1600	red: 101.2 / green: 188.8 / blue: 37 / white: 285.2	DV1004

Accessories

Type	Description	Order no.
Mounting accessories		
	Mounting profile 62.5 mm	E89030
	Mounting profile 250 mm	E89031
	Mounting profile 500 mm	E89032
	Mounting profile 750 mm	E89033
	Mounting profile 1000 mm	E89034
	Mounting clip	E70442

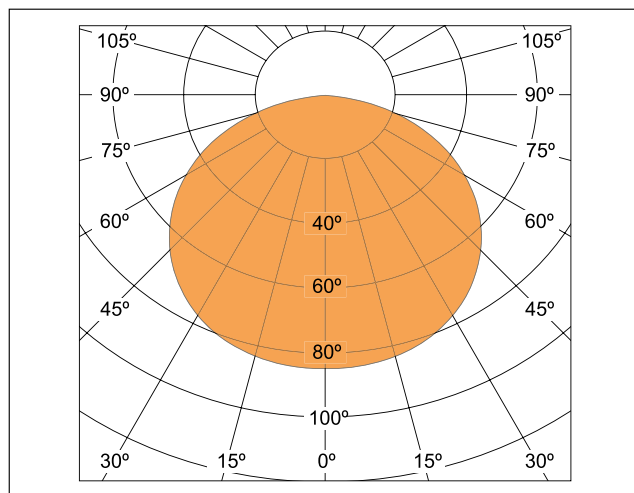
Connection technology

	Y cable for connection to output modules	EVC854
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Common technical data

Operating voltage	[V DC]	21.6...26.4
Nominal voltage	[V DC]	24 (according to SELV / PELV)
Colour temperature	[K]	4,000
Typ. life cycle	[h]	30,000
Input circuit digital inputs	[V PNP]	24
Input current high	[mA]	10
Ambient temperature	[°C]	-20...45
Max. permissible relative humidity	[%]	90
Max. height above sea level	[m]	4,000
Protection		IP 68
Degree of soiling		2

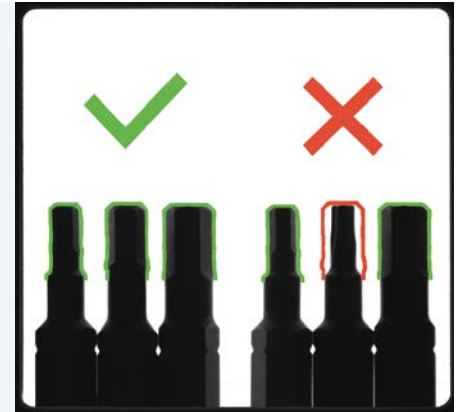
Diagrams and graphs



For further technical details, please visit: ifm.com



Ultra-flat backlight for vision sensors



Bit detection using a backlight

Illumination



Powerful permanent light for contour and position verification

Longer life through pulse operation

Homogeneous illumination with red or infrared light

Space-saving installation – only 9.8 mm overall height

Three different illuminated area sizes available

Industrially-compatible M12 connector



Perfect illumination

These powerful backlights create homogeneous light, ensuring optimal, shadow-free illumination of the objects to be inspected. The outer contours are strongly highlighted by the background illumination and can be optimally analysed by a vision sensor. The sensor verifies contours and positions rapidly and reliably. The backlight can be operated in permanent or pulsed mode. In addition to many other advantages, this especially results in a longer life of the unit.

Ultra-flat design

Due to its extremely flat design with an overall height of only 9.8 mm, ifm's new generation of backlights allows for a very space-saving installation. Optional mounting sets ensure quick and easy fastening.



Type	Active illuminated area [mm]	Current consumption [mA]	Length [mm]	Width [mm]	Height [mm]	Weight [g]	Order no.
Backlight · Light colour red 617 nm							
	25 x 25	< 80	70.5	33.4	9.5	58	O2D940
	50 x 50	< 205	105	81	9.8	160	O2D942
	100 x 100	< 410	155	133	9.8	347	O2D944

Backlight · Light colour infrared 875 nm							
	25 x 25	< 95	70.5	33.4	9.5	58	O2D941
	50 x 50	< 325	105	81	9.8	160	O2D943
	100 x 100	< 620	155	133	9.8	347	O2D945

Type	Description	Order no.	Further technical data
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Mounting accessories

	Mounting set for backlight 25 x 25 mm	E2D107
	Mounting set for backlight 50 x 50 mm	E2D108
	Mounting set for backlight 100 x 100 mm	E2D109
	Connection piece for clamps, stainless steel	E21076
	Clamp, stainless steel, Ø 12 mm	E21110
	Rod, 150 mm, Ø 12 mm, stainless steel	E21111
	Rod, 200 mm, Ø 12 mm, stainless steel	E21112
	Rod, 300 mm, Ø 12 mm, stainless steel	E21113

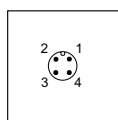
Operating voltage	[V DC]	24
Trigger	[V DC]	5...24
Protection rating, protection class		IP 54, III
Ambient temperature	[°C]	-10...50
Connection		Connection cable 0.3 m, PUR with M12 connector, gold-plated contacts
Housing materials		Anodised aluminium, illuminated area: glass

Homogeneity

In industrial imaging applications, the use of backlights is essential to ensure fast and reliable object recognition. Especially with flat lighting concepts, creating a homogeneous illuminated area poses a challenge.

The new powerful backlights from ifm improve the lighting of application backgrounds. This results in shorter exposure times of industrial cameras and reduces the influence of extraneous light.

Wiring diagram



M12 connector
 Pin 1: 24 V DC
 Pin 2: N.C.
 Pin 3: 0 V
 Pin 4: on / trigger



Process sensors

Front flush miniature pressure sensor with G1/4 process connection



Pressure sensors

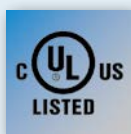


Compact design (SW 19)

High measuring accuracy
 $< \pm 0.5 \%$

Precise repeatability
 $< \pm 0.05 \%$

Robust low-cost solution with welded stainless steel housing



Small and flush-mount

The new miniature pressure sensors of the PL54 series have a flush-mount diaphragm seal with G1/4 thread directly welded to the sensor. This measuring cell guarantees high accuracy in a very compact housing with only 19 mm across flats. In addition, the sensors feature a particularly cost-optimised price-performance ratio.

Applications

The PL54 sensors are especially used for pressure measurement in applications where flush mounting is required. This is usually the case with adhesives, glues, sealants, foams and other viscous media that would cure in dead spaces. The flush connection prevents clogging of the process connection even with contaminated media.

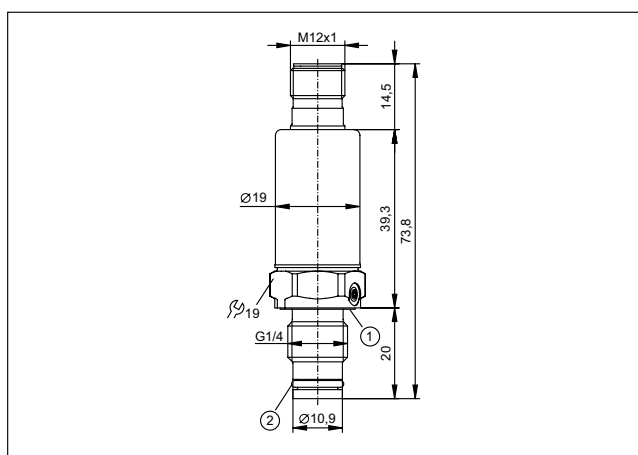


Measuring range relative pressure [bar]	P _{overload} max. (static) [bar]	P _{bursting} min. [bar]	Order no.
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Output function 4...20 mA

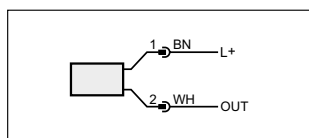
0...400	1000	1,700	PL5400
0...250	625	1,200	PL5401
0...160	400	1,100	PL5412
0...100	250	1000	PL5402
0...60	150	900	PL5423

Dimensions



- 1) Seal
2) O-ring

Wiring



Common technical data

Operating voltage	[V DC]	8.5...36
Reverse polarity protection		•
Step response time	[ms]	1
Accuracy / deviations (in % of the span)		
Linearity error		< ± 0.5
Linearity		< ± 0.1 (BFSL) / < ± 0.2 (LS)
Hysteresis		< ± 0.2
Repeatability		< ± 0.05
Long-term stability		< ± 0.1
Temperature coefficients (TEMPCO) in the temperature range -40...90°C (in % of the span per 10 K)		
TEMPCO of zero		< ± 0.1 (-25...90 °C) / < ± 0.2 (-40...-25 °C)
TEMPCO of the span		< ± 0.1 (-25...90 °C) / < ± 0.2 (-40...-25 °C)
Medium temperature	[°C]	-40...90
Protection		IP 67 / IP 69K
Materials (wetted parts)		NBR, high-grade stainless steel (630 / 1.4542)

Accessories

Type	Description	Order no.
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Installation

	Seal FKM	E30145
	Seal EPDM	E30442
	Welding adapters G1/4	E30503
	Welding aid	E30508

Connection technology

	M12 socket, 2 m black, PUR cable	EVC001
	M12 socket, 5 m black, PUR cable	EVC002
	M12 socket, 2 m black, PUR cable	EVC004
	M12 socket, 5 m black, PUR cable	EVC005



Process sensors

With E1 approval: Pressure transmitters for mobile machines



Pressure sensors



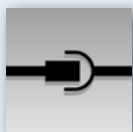
Compact design with 19 mm across flats and G 1/4-inch process connection

Fast response time of only 2 milliseconds

Measuring accuracy $< \pm 0.8\%$, repeatability $< \pm 0.05\%$

Easy connection via M12 or DEUTSCH connector

Welded stainless steel housing for reliable use in harsh working environments



E1 type approval for mobile applications

The PT/PU-type sensors are suited for mobile applications and especially for hydraulic and pneumatic applications with high operating pressure. They offer high vibration and shock resistance, a high degree of protection and very good EMC resistance. They also have the E1 type approval.

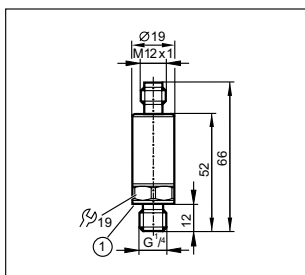
High measuring accuracy in compact housing

The thin-film measuring cell of the sensor is directly welded to the process connection and features a high measuring accuracy and short response time. The measurement technology used also enables the extremely compact housing dimensions with a width across flats of only 19 millimetres. This facilitates installation even where space is at a premium.

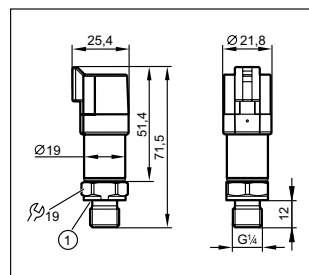


Measuring range relative pressure [bar]	P _{overload} max. (static) [bar]	P _{bursting} min. [bar]	Order no.
Output function 4...20 mA, M12 connector			
0...600	1500	2500	PT560E
0...400	1000	1700	PT500E
0...250	625	1200	PT501E
0...100	250	1000	PT502E
0...25	65	600	PT503E
0...10	25	300	PT504E
Output function 4...20 mA, DEUTSCH connector			
0...600	1500	2500	PT760E
0...400	1000	1700	PT700E
0...250	625	1200	PT701E
0...100	250	1000	PT702E
0...25	65	600	PT703E
0...10	25	300	PT704E
Output function 0.5...4.5 V, M12 connector			
0...600	1500	2500	PU560E
0...400	1000	1700	PU500E
0...250	625	1200	PU501E
0...100	250	1000	PU502E
0...60	150	900	PU523E
0...25	65	600	PU503E
0...10	25	300	PU504E

Dimensions

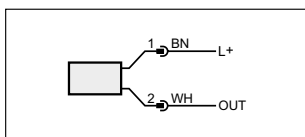


PT5 / PU5

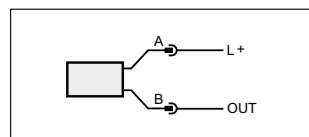


PT7
1) Seal: FKM / DIN 3869

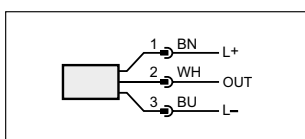
Wiring diagram



PT5



PT7



PU5

Common technical data		
Operating voltage	[V DC]	8...32
Reverse polarity protection		•
Accuracy / deviation (in % of the span)		
Linearity error		< ± 0.8
Linearity		< ± 0.25 (BFSL) / < ± 0.5 (LS)
Hysteresis		< ± 0.2
Repeatability		< ± 0.05
Long-term stability		< ± 0.1
Temperature coefficient (TEMPCO) in the temperature range -40...125°C (in % of the span per 10 K)		
TEMPCO of zero + span		< ± 0.1 (0...80 °C) < ± 0.2 (-40...0 °C and 80...125 °C)
Medium temperature	[°C]	-40...125
Protection		IP 67 / IP 69K
Materials (wetted parts)		high-grade stainless steel (1.4542) (17-4 PH / 630)
Restrictor		•
EMC		compliant with UN ECE R10 Rev. 5 ISO 11452-2: 100 V/m EN61326-1

Accessories

Type	Description	Order no.
------	-------------	-----------

Installation		
	Adapter G 1/4 – G 1/2, high-grade stainless steel (1.4571/316Ti)	E30135
	Seal FKM	E30145
	Seal EPDM	E30442

Connection technology		
	Socket, M12, 2 m, PUR cable, halogen-free, black	EVM001
	Socket, M12, 5 m, PUR cable, halogen-free, black	EVM002
	Socket, M12, 10 m, PUR cable, halogen-free, black	EVM003
	Socket, M12, 2 m, PUR cable, halogen-free, black	EVM004
	Socket, M12, 5 m, PUR cable, halogen-free, black	EVM005
	Socket, M12, 10 m, PUR cable, halogen-free, black	EVM006

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Process sensors

Accurate detection of high-pressure cleaning



Flow sensors / flow meters



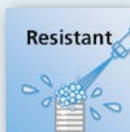
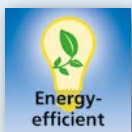
Robust housing for high-pressure applications up to 200 bar

Resistant to cleaning agents thanks to stainless steel components

Flexible: IO-Link, analogue, switching and frequency output

Integrated temperature sensor saves hardware costs

IO-Link enables documentation of cleaning operations




Fast and pressure-resistant

When documenting cleaning processes and high-pressure applications, the mechatronic measuring principle with its fast response time is the first choice. The integrated temperature sensor and the versatile diagnostic functions via IO-Link save both additional hardware costs and maintenance costs. Moreover, the use of a stainless steel housing makes the sensor resistant to standard cleaning agents.

Documentation of cleaning processes

All measured values can be transmitted to the controller in digital form, without any conversion losses, via IO-Link. Flow and temperature values can thus be easily documented for each cleaning process.



Type	Measuring range	Medium	Order no.
	1...50 l/min	Liquid media, water	SBZ224

Further technical data		
Pressure rating	[bar]	200
Response time	[s]	0.01
Materials (wetted parts)		Stainless steel (316 S 13 / 1.4401); Stainless steel (316L / 1.4404); O-ring: FKM
Operating voltage	[V DC]	18...30
Accuracy flow measurement		± (4 % MV + 1 % VMR)
Repeatability flow measurement		± 1 % VMR
Temperature measuring range	[°C]	-10...100
Accuracy temperature measurement [K]		3
Protection rating		IP 65, IP 67
Output signal		Switching signal; analogue signal; frequency signal; IO-Link

Further advantages and customer benefits

Fast response time

The mechatronic measuring principle is characterised by an extremely fast response time allowing for even short spray bursts during the high-pressure cleaning process to be precisely recorded in terms of quantity.

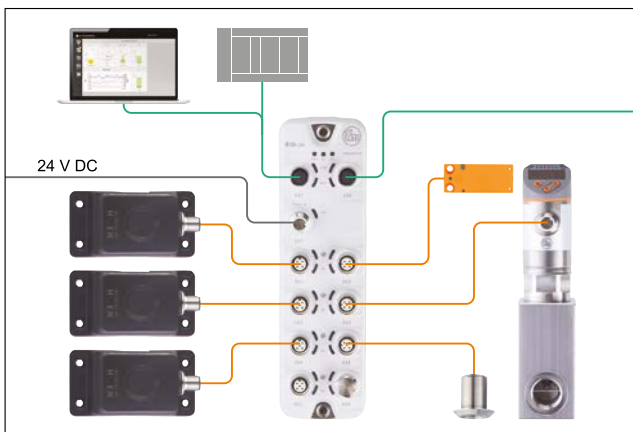
No inlet and outlet pipe lengths required

Turbulence and air bubbles do not impact the measurement. This allows for the sensor to be installed anywhere in the pipework.

Application example

With IO-Link, monitoring of a high-pressure cleaning system, including documentation of the cleaning processes, can be implemented easily and quickly with little hardware costs, for example for use in modern slaughterhouses. ifm offers all the required hardware and software components in order to also provide supermarket chains, among others, with the requested transparency.

MV = value of the measuring range,
VMR = final value of the measuring range



We reserve the right to make technical alterations without prior notice. · 11.2021



Process sensors

Absolutely unique: measuring air gaps more accurately than ever before



Flow sensors / flow meters



Output of the air gap as an absolute value with repeat accuracy in the micrometre range

Accurate values at all times thanks to the pressure-compensated measuring principle

All important information including gap value, flow and pressure at a glance

The self-cleaning measuring channel even withstands the purge air pressure

Easy teaching of target status with just one click




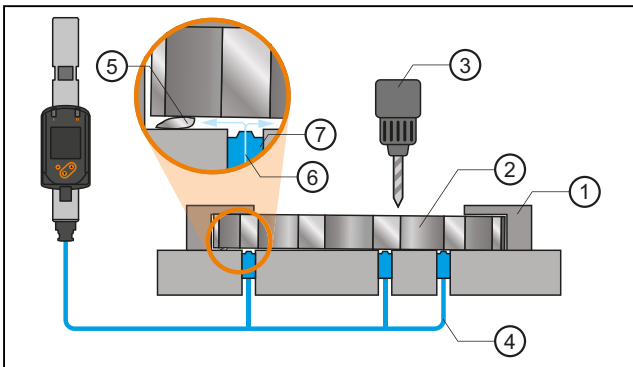
Permanently accurate position monitoring

The SDP air gap sensor detects the distance between the surface and object with consistent high accuracy and outputs it as an absolute value. The sensor reliably detects even a flat position on the surface, the so-called zero gap. Since the gap is calculated on the basis of pressure and flow, the measurement remains accurate at all times within the usual operating pressure range between 1 and 3 bars, regardless of pressure fluctuations, number and diameter of the nozzles.

High pressure rating with self-cleaning effect

The robust measuring pipe also withstands the purge air pressure. This eliminates the need to switch between flushing and measuring. Positive effect: the measuring element is also cleaned and malfunctions due to contamination are prevented.

Type	Medium	Measuring range [μm]	Process connection	Order no.
	Compressed air	0...400	G1/4 (DN8)	SDP110



- | | |
|------------------------|-----------------|
| 1) Clamping jaw | 5) Cutting chip |
| 2) Toothed wheel | 6) Air |
| 3) Drill | 7) Air nozzle |
| 4) Compressed air line | |

When smallest tolerances are required.

Air gap measurement can be used to ensure the exact positioning of a workpiece or a tool. Since the SDP is capable to reliably detect even the smallest deviations of the actual position from the target position, it is suitable for use wherever smallest tolerances must be guaranteed.

Quick set-up.

The air gap sensor can be taught to detect the target state both via the buttons and via the external input, or with just one click via IO-Link.

The set-up time of the system can therefore be greatly reduced during a production changeover.

Further technical data	
Distance measurement	
Measuring range	[μm] 0...400
Accuracy	± (5 % MW + 5 μm); (pressure 1...3 bars)
Repeatability	± (3 % MW + 2 μm); (pressure 1...6 bars)
Resolution	[μm] 1
Flow measurement	
Measuring range	[l/min] 0.8...100
Accuracy	± (2.0 MW + 1.0 MEW)
Repeatability	± (0.8 MW + 0.4 MEW)
Pressure	
Measuring range	[bar] -1...16
Linearity error	[%] < ± 0.5 (BFSL)
Repeatability	[%] ± 0.2
Response time	[s] 0.05
Output signal	Switching output, analogue output, IO-Link (configurable)
Input signal	Distance teach input

MW = value of the measuring range

MEW = final value of the measuring range



Process sensors

Precise & convenient: radar level sensor with IO-Link



Level sensors



80 GHz frequency enables level measurement with millimetre precision of up to 10 metres

Non-contact measuring principle: no malfunctions due to deposits or wear

Certified for use in hygienic areas

Simple installation and maintenance-free operation

Remote sensor parameter setting and level monitoring via connection to the IT system



Trouble-free monitoring of large tanks

With the LW2720 level sensor, levels of liquid media in tanks with a height of up to 10 metres can be monitored precisely and without blind areas. The non-contact radar measuring principle prevents malfunctions or failures of the sensor caused by the adhesion of viscous media or damage from agitators. The 80 GHz frequency used ensures stable and precise measurement results even in the presence of steam or condensate in the tank. The sensor is designed for use in hygienic areas, so that even CIP and SIP processes or the use of spray balls do not impair its proper functioning.

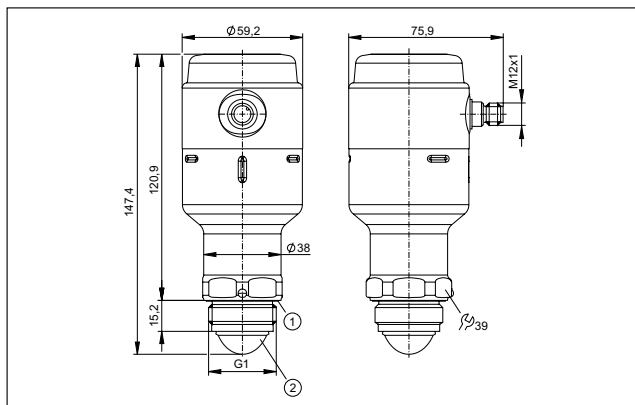


Type	Process connection	Outputs	Order no.
	Aseptoflex Vario G 1	2 switching outputs or 1 switching and 1 analogue output 4...20 mA	LW2720

More convenience thanks to IO-Link

The powerful LW2720 package is completed by the following comfort factors: Sensor installation only takes a few minutes, and sensor parameters can be conveniently set and read out remotely via IO-Link.

Dimensions



- 1) seal
- 2) antenna

Accessories

Description	Order no.
-------------	-----------

Mounting accessories IO-Link

USB IO-Link master for parameter setting and analysis of units, supported communication protocols: IO-Link (4.8, 38.4 and 230 kbits/s)	ZZ1060
moneo configure SA Stand-alone licence, software for online and offline parameter setting of IO-Link devices including maintenance and support until the end of the following year	QMP010
IO-Link Bluetooth adapter	EIO330
IO-Link Bluetooth adapter	E30446
IO-Link data splitter PNP	E43406
IO-Link data splitter NPN	E43410

Connection technology

M12 socket, 4-pole, 5 m grey, MPPE cable	EVF001
M12 socket, 4-pole, 2 m grey, MPPE cable	EVF064
M12 socket, 4-pole, 5 m grey, MPPE cable	EVF004
M12 socket, 4-pole, 2 m grey, MPPE cable	EVF067

Further technical data

Operating voltage	[V DC]	18...30
Current consumption		<= 80 mA
Measuring range		0.01...10 m
Measurement accuracy		± 2 mm
Measuring principle		FMCW (80 GHz)

Accessories

Description	Order no.
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Product-related documentation

Inspection certificate: Material EN10204-3.1 and test report EN10204-2.2	ZC0076
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Mounting adapters

Ø 50 mm – G 1 Aseptoflex Vario, with leakage port	E30130
Clamp DN25...DN40 (1...1.5") – G 1 Aseptoflex Vario, with leakage port	E33208
Clamp DN50 (2") – G 1 Aseptoflex Vario, with leakage port	E33209
Pipe fitting DN32 (1.25") – G 1 Aseptoflex Vario	E33211
Pipe fitting DN40 (1.5") – G 1 Aseptoflex Vario	E33212
Pipe fitting DN50 (2") – G 1 Aseptoflex Vario	E33213
Varivent type F, DN25 (1"), Ø 50 mm – G 1 Aseptoflex Vario, with leakage port	E33228
Varivent type N, DN40...DN150, Ø 68 mm – G 1 Aseptoflex Vario, with leakage port	E33229
Universal process adapter Rd 52 – G 1 Aseptoflex Vario	E33340
O-ring FKM 24 x 2, 1 piece	E30123
O-ring FKM 24 x 2, 5 pieces	E30053
O-ring EPDM 24 x 2, 5 pieces	E30054

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Process sensors

For pure water: measure conductivity from 0.04 $\mu\text{S}/\text{cm}$



Analytical sensors



For effective, permanent control of water and process quality

Hygienic approval according to EHEDG and 3A*

Compact sensor requires no further hardware for operation

High resolution enables detection of the smallest deviations



EC 1935 / 2004




IP 67
IP 68
IP 69 K

Safe solution for permanent process quality

The LDL101 conductivity sensor is the right choice where the purity of water is crucial for product quality or process reliability. The sensor detects the conductivity of water from a value of 0.04 $\mu\text{S}/\text{cm}$. This makes it ideal for applications where purified water of all levels is used. This is the case in food and beverage production as well as in the semiconductor industry, the pharmaceutical industry and in energy production. In combination with the SU PureSonic ultrasonic flow sensor, reliable quality control can be established in filtration processes, for example.

*in preparation



Type	Process connection	Insertion depth [mm]	Order no.
	G 1/2	23	LDL101

Quality assurance and condition monitoring

The high resolution and the loss-free digital transmission of the measured values via IO-Link enable a permanently precise analysis of the water quality, ensuring flawless processes.



If the conductivity value rises, this can indicate, for example, that filters in the production process of highly purified water require maintenance.

Used in the monitoring of the cooling circuit, the LDL101 can detect increasing mineralisation of the water so that countermeasures can be taken before the piping system suffers major damage.

Accessories

Type	Description	Order no.
Welding adapters		
	G 1/2 – Ø 30 mm for tanks	E43300
	G 1/2 – Ø 29 mm for pipes	E43301
	G 1/2 – Ø 30 mm for tanks, with leakage port	E43309
	G 1/2 – Ø 29 mm with leakage port, for pipes; pressure rating up to 16 bar	E43412
	G 1/2 – Ø 29 mm with leakage port, for pipes; pressure rating up to 50 bar	E43310
	G 1/2 – Ø 45 mm collar	E30056
	G 1/2 – Ø 35 mm ball	E30055
	G 1/2 – welding mandrel	E43314





Mounting adapters and T-pieces

	G 1/2 – Varivent type N 1.5, (DN40-150); Ø 68 mm	E43307
	G 1/2 – Varivent type F1, (DN25); Ø 50 mm	E43306
	G 1/2 – T-piece, DN50	E43318
	G 1/2 – T-piece, DN40	E43317
	G 1/2 – T-piece, DN25	E43316



Further technical data		
Operating voltage	[V DC]	18...30
Current consumption	[mA]	< 60
Measuring range conductivity	[µS/cm]	0.04...1,000
Measuring range medium temperature	[°C]	-25...100 (< 1h: 150)
Pressure rating	[bar]	16
Conductivity accuracy		3 % MW ± 0.03 µS/cm
Conductivity repeatability		1.5 % MW ± 0.015 µS/cm
Materials		stainless steel (316L/1.4435, 1.4404); PEEK; FKM

MW = value of the measuring range

Accessories

Type	Description	Order no.
IO-Link		
	USB IO-Link master for parameter setting and analysis of units; supported communication protocols: IO-Link (4.8, 38.4 and 230 kbits/s)	ZZ1060
	moneo configure SA Stand-alone licence, software for online and offline parameter setting of IO-Link devices including maintenance and support until the end of the following year	QMP010
	IO-Link Bluetooth adapter	EIO330
	IO-Link Bluetooth adapter	E30446

Connection technology

	M12 socket, 4-pole, 5 m grey, MPPE cable	EVF001
	M12 socket, 4-pole, 2 m grey, MPPE cable	EVF064
	M12 socket, 4-pole, 5 m grey, MPPE cable	EVF004
	M12 socket, 4-pole, 2 m grey, MPPE cable	EVF067

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Process sensors

The new versatility: conductivity measurement in any pipe size



Analytical sensors



Versions in the common connection sizes G 1/2 and G 1

Efficient CIP monitoring even in small pipes from DN25 upwards

- Easy installation and commissioning
- Loss-free digital transmission of measured values



EC 1935 / 2004



IP 67
IP 68
IP 69 K





For CIP monitoring on any scale

With different process connections in the common sizes G 1 and G 1/2, the conductivity sensors of the LDL2xx group offer the right solution for precise CIP monitoring for every pipe size from DN25 – without the need for costly pipe extensions or obstructions.

Easy installation thanks to their compact design

Thanks to the compact design and the integrated evaluation unit, the conductivity sensors can be flexibly positioned in the system pipework. Further hardware to be positioned downstream is not required. The low wiring complexity is further reduced by the standard M12 connection.



Type	Process connection	Insertion depth [mm]	Order no.
	G 1 Aseptoflex Vario	37	LDL200
	G 1 Aseptoflex Vario	77	LDL201
	G 1/2 sealing cone	24	LDL220
	G 1 sealing cone	31	LDL210

Common technical data

Operating voltage	[V DC]	18...30
Current consumption	[mA]	< 70
Measuring range conductivity	[µS/cm]	100...1,000,000
Measuring range medium temperature	[°C]	-25...100 (< 1h: 150)
Pressure rating	[bar]	16
Conductivity accuracy		2 % MW ± 25 µS/cm
Conductivity repeatability		1 % MW ± 25 µS/cm
Materials		stainless steel (316L/1.4404); PEEK; PEI; FKM

MW = value of the measuring range

Accessories

Description	Order no.
IO-Link	
USB IO-Link master for parameter setting and analysis of units; supported communication protocols: IO-Link (4.8, 38.4 and 230 kbits/s)	ZZ1060
moneo configure SA Stand-alone licence, software for online and offline parameter setting of IO-Link devices including maintenance and support until the end of the following year	QMP010
LDL200 / LDL201 welding adapters	
G 1 – external thread Aseptoflex Vario, Ø 50 mm	E30122
G 1 – external thread Aseptoflex Vario with leakage port, Ø 50 mm	E30130
G 1 – welding mandrel	E30435

Accessories

Description	Order no.
LDL200 Varivent	
G 1 – external thread Aseptoflex Vario – Varivent type N, (DN40-150); Ø 68 mm	E33222
G 1 – external thread Aseptoflex Vario – Varivent type N, (DN40-150); Ø 68 mm, cert. acc. to 3A & EHEDG	E33229
G 1 – external thread Aseptoflex Vario – Varivent type F, (DN25); Ø 50 mm	E33221
G 1 – external thread Aseptoflex Vario – Varivent type F, (DN25); Ø 50 mm, cert. acc. to 3A & EHEDG	E33228
LDL201 clamp and pipe fittings	
Tri-Clamp – G 1 Aseptoflex Vario 2" with leakage port	E33209
Tri-Clamp – G 1 Aseptoflex Vario 2"	E33202
Tri-Clamp – G 1 Aseptoflex Vario 1.5" with leakage port	E33208
Tri-Clamp – G 1 Aseptoflex Vario 1 – 1.5" with leakage port	E33201
Pipe fitting – G 1 Aseptoflex Vario 1.5"	E33212
Pipe fitting – G 1 Aseptoflex Vario 2"	E33213
Pipe fitting – G 1 Aseptoflex Vario 1.25"	E33211
LDL210 welding adapters and Varivent	
G 1 – Ø 50 mm	E30013
G 1 – welding mandrel	E30435
G 1 – Varivent type N, (DN40-150); Ø 68 mm	E33622
LDL220 welding adapters	
G 1/2 – Ø 30 mm for tanks	E43300
G 1/2 – Ø 29 mm for pipes	E43301
G 1/2 – Ø 30 mm for tanks, with leakage port	E43309
G 1/2 – Ø 29 mm with leakage port, for pipes; pressure rating up to 16 bar	E43412
G 1/2 – Ø 29 mm with leakage port, for pipes; pressure rating up to 50 bar	E43310
G 1/2 – Ø 45 mm collar	E30056
G 1/2 – Ø 35 mm ball	E30055
G 1/2 – welding mandrel	E43314
LDL220 mounting adapters and T-pieces	
G 1/2 – Ø 29 mm with leakage port, for pipes; pressure rating up to 50 bar	E43310
G 1/2 – Varivent type N 1.5, (DN40-150); Ø 68 mm	E43307
G 1/2 – Varivent type F1, (DN25); Ø 50 mm	E43306
G 1/2 – T-piece, DN50	E43318
G 1/2 – T-piece, DN40	E43317
G 1/2 – T-piece, DN25	E43316

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For AS-i and IO-Link: passive power distributor for hygienic areas



AS-i interface I/O modules,
field modules for wet areas



**Robust field module supplies
up to 8 IO-Link masters or AS-i
participants**

**Housing material meets the
hygiene requirements for
food production**

**Voltage supply via standard
M12 supply cables, A-coded**

**Overcurrent detection for
each port**



Two options

The passive power distributor can be operated either in AS-i networks or in IO-Link structures. This helps to minimise stock-holding, especially where both technologies are used. Up to 8 participants, either intelligent AS-i sensors or actuators or IO-Link masters, can be connected via standard M12 sockets.

Robust design for demanding applications

The special housing material and the high ingress protection allow operation in areas with frequent intensive cleaning processes, for example in the food industry. The module signals an excessive current flow per port via a red LED. Malfunctions or damage to infrastructure, actuators or even the plant can thus be avoided.

Advantages and customer benefits

• AS-i or IO-Link power distributor

These power distributors can be used in hygienic applications due to the materials used and their innovative housing design.

The 4-way or 8-way power distributors can either be used to supply up to 8 AS-i participants, e.g. valve heads, quarter-turn sensors, motor controls etc., or to supply power to IO-Link masters.

Overcurrent detection indicates by a red-flashing LED at the respective M12 connection that more than the permitted 4.4 A per channel are being drawn.

Technical data

AS-i or IO-Link power distributor

AC2950 (4-way), AC2951 (8-way)

AS-i operation



Operating voltage	[V DC]	18...31.6; (AS-i)
Additional voltage supply	[V DC]	15...30; (AUX)

IO-Link operation


Operating voltage	[V DC]	20 ... 30 US
Additional voltage supply	[V DC]	20 ... 30 UA
Total current rating	[A]	8; (AS-i 4; AUX: 4; US:4; UA:4)

Overcurrent detection		yes (per channel)
Ambient temperature	[°C]	-25...60
Storage temperature	[°C]	-25...85
Protection rating		IP 65, IP 66, IP 67, IP 69K
Housing materials		polyamide; socket stainless steel
M12 plugs / sockets		A-coded

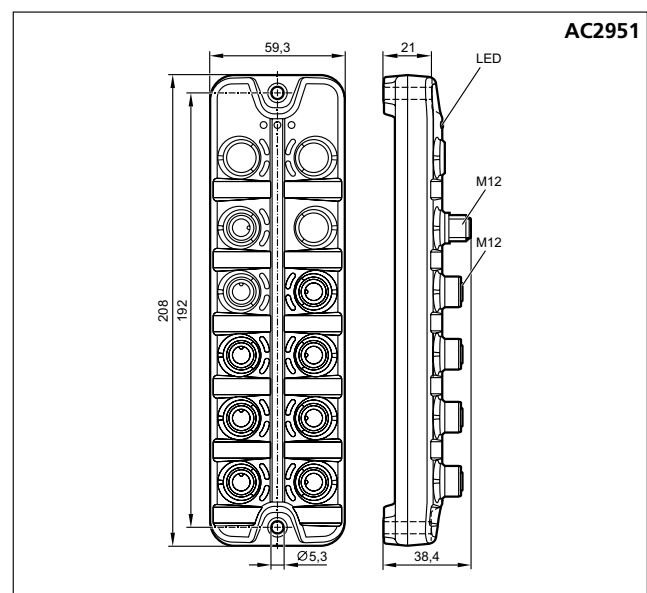
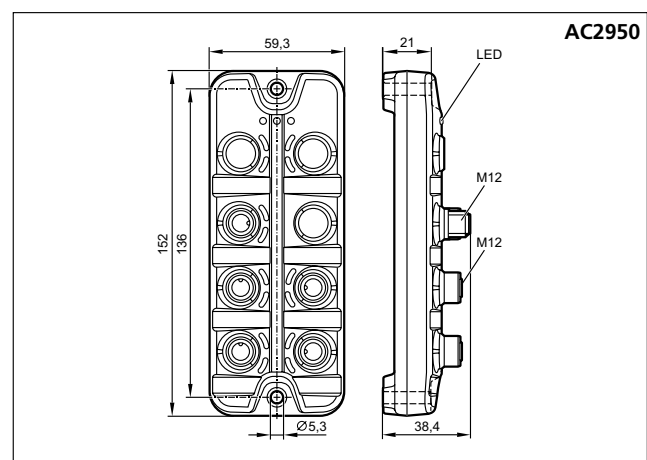
Accessories

Type	Description	Order no.
	M12 protective caps, 4 pcs, stainless steel (1.4404 / 316L)	E12542
	AS-Interface FC insulation displacement connector, stainless steel (1.4404 / 316L)	E70354

Connection technology

Type	Description	Order no.
M12 1 mm²		
	0.25 m	EVF490
	0.5 m	EVF491
	1 m	EVF492
	2 m	EVF493
	5 m	EVF494

Dimensions





edgeGateway: Reliable connection between sensors and IT



edgeDevices

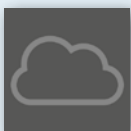


Easy connection of the sensor level to the cloud

Translates sensor data into readable information

Two separate networks for maximum protection of the sensitive plant network

Housing and technology designed for use in demanding environments



Competent performer even in harsh conditions

The edgeGateway is the powerful, convenient and secure solution for transmitting data from the sensor level into the IT infrastructure.

Powerful because the edgeGateway can operate in the most harsh environments: Even at ambient temperatures of up to 60°C, the 1.3 GHz quad-core processor works at maximum performance level inside a housing that, like the 12.3 inch display, is sealed according to IP 65.

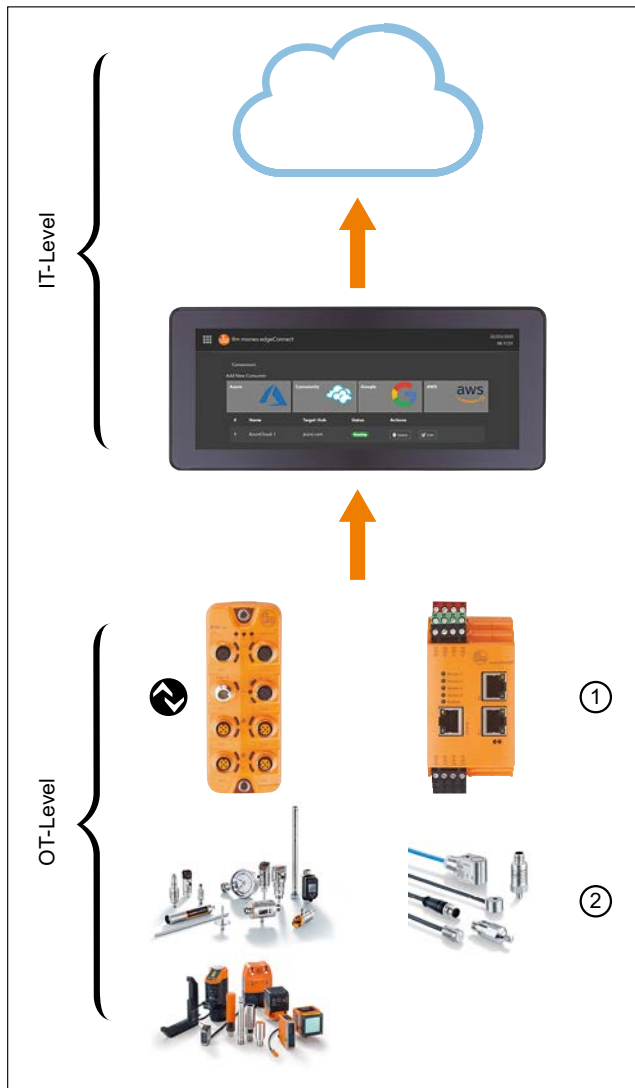
Convenient because setting-up of the edgeGateway is very easy and allows for all relevant plant data to be sent as readable information into different cloud platforms.

Secure because there are two independent network ports, one for the plant network and one for the IT infrastructure. The physical separation of the two ports ensures a high degree of safety for the sensitive machine data.



Direct connection to different clouds

The edgeGateway directly transmits the recorded and prepared data to the most common cloud platforms such as AWS, Microsoft Azure, Google Cloud and Cumulocity.



- 1) Middleware: ifm devices
 2) Sensors: ifm and other manufacturers
 IT = Information Technology
 OT = Operational Technology

Products

Description	Order no.
edgeGateway , colour display with touch function	AE1203
moneo edgeGateway Software LIC (required)	QM9104

Technical data		
Operating voltage	[V DC]	20...32
Display resolution	[px]	1280 x 480
Display size		12.3"
Display background illumination		LED
Protection rating		IP 65
Ambient temperature	[°C]	-35...60
Housing material		diecast aluminium, powder coated
Dimensions	[mm]	339.1 x 160.5 x 47.7

Accessories

Type	Description	Order no.
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Installation		
	RAM mount set	EC1414
	Mounting frame and vibration absorber	EC0733

Connection technology		
	Device connection cable (voltage supply), 0.6 m, M12 connector	E70450
	Device connection cable (voltage supply), 2 m, open cable end	E70451
	edgeGateway / USB case, screw housing for USB cable including housing adapter	E70452
	USB connection cable M12 / USB, connection of displays and dialogue modules	EC2099

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Industrial communication

edgeController: an all-rounder, which leaves nothing to be desired



edgeDevices



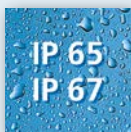
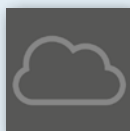
All in one: cloud connector, visualisation and powerful controller

Programmable via CODESYS V3.5

Plug & play access to the I/O level via Ethernet

No need for control cabinets thanks to high protection rating IP 65

Housing and technology designed for use in demanding environments



The ultimate in function and convenience

Thanks to its multifunctionality as an IT gateway, visualisation system and powerful controller, the edgeController stands out as a powerful, communicative and flexible solution for the digitisation of machines and systems. Powerful because the edgeController can operate in the harshest of environments: Even at ambient temperatures of up to 60 °C, the 1.3 GHz quad-core processor works at maximum performance level inside a housing that, like the 12.3 inch display, is sealed according to IP 65.

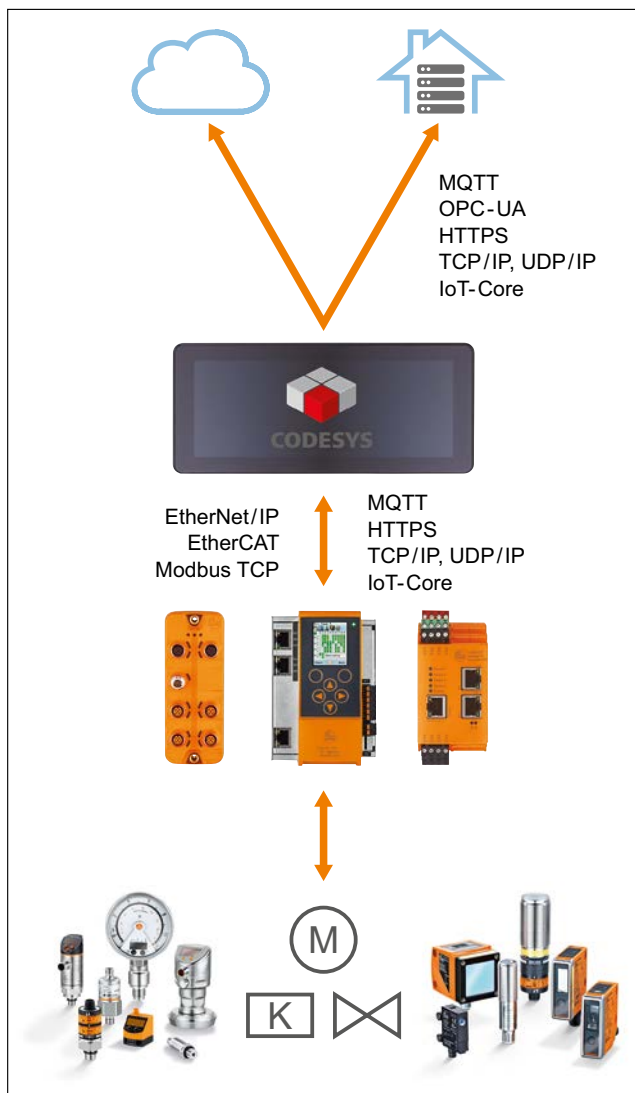
Communicative because the edgeController allows for data exchange, easier than ever, with cloud or on-premise platforms. Moreover, access to I/O data via plug & play is also possible as various Ethernet based protocols are supported. Flexible because the edgeController can be freely programmed using CODESYS V3.5 or be used as a platform for pre-defined solutions without any programming being necessary.




Connection to different clouds

The edgeController allows for transmission of the recorded and prepared data to the most common cloud platforms such as AWS, Microsoft Azure, Google Cloud and AnyViz. Furthermore, the edgeController speaks the common standard digitisation languages such as OPC UA and MQTT.

Whenever data is to be recorded and processed in real time, I/Os can be read and controlled by using Industrial Ethernet protocols such as EtherCAT, EtherNet/IP or Modbus TCP. The display contents are just as freely programmable.



Products

Type	Description	Order no.
	edgeController, colour display with touch function	AE1300

Technical data		
Operating voltage	[V DC]	20...32
Display resolution	[px]	1280 x 480
Display size		12.3"
Display background illumination		LED
Protection rating		IP 65
Ambient temperature	[°C]	-35...60
Housing material		diecast aluminium, powder coated
Dimensions	[mm]	339.1 x 160.5 x 47.7

Accessories

Type	Description	Order no.
Installation		
	RAM mount set	EC1414
	Mounting frame and vibration absorber	EC0733
Connection technology		
	Device connection cable (voltage supply), 0.6 m, M12 connector	E70450
	Device connection cable (voltage supply), 2 m, open cable end	E70451
	edgeGateway / USB case, screw housing for USB cable including housing adapter	E70452
	USB connection cable M12 / USB, connection of displays and dialogue modules 1.5 m, black, PVC cable	EC2099



Robust data distribution: Ethernet switches for field applications



Industrial Ethernet switches (unmanaged)

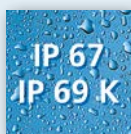


6-port Ethernet switch compatible with all common automation protocols and IIoT applications

Flexible voltage supply with or without daisy chain

Suited for mobile machines thanks to increased operating voltage and temperature range

Robust housings, food-grade option available



Ethernet switches for field applications



The decentralised modules serve as network nodes between the participants in the field. They are connected directly via robust and reliable M12 connection cables. The use of EVC connection cables with ecolink technology ensures a particularly robust connection and thus reliable data transfer. The M12 connector ensures a much more secure connection than an RJ-45 connector - especially outside the control cabinet.

Robust proven materials

The Ethernet modules are the perfect choice, even in the most difficult environments: The materials and production methods are identical to the EVC jumper cables.



Products

Type	Description	Order no.	
		Coolant	Food
Ethernet 6-port switches (unmanaged)			
	StandardLine IIoT (TCP/IP), EtherNet/IP, Modbus TCP	AL3050	AL3051
	StandardLine PROFINET CC-A	AL3000	AL3001
	PerformanceLine IIoT (TCP/IP), EtherNet/IP, Modbus TCP	AL3150	AL3151
	PerformanceLine PROFINET CC-A	AL3100	AL3101

Advantages and customer benefits

• Expansion of the IO-Link master family

The Ethernet switches are the perfect addition to ifm's IO-Link master family. They feature the same design, port configuration and standardised M12 connections.

• Also suited for mobile machines

With their increased operating temperature and voltage range as well as high vibration and shock resistance, the switches are also suited for harsh environments. In addition, the E20 approval means that the product is also suited for use outside vehicles.

• Simple voltage supply

The Ethernet modules offer different connection options for the voltage supply: an A-coded M12 connector and an L-coded M12 connector. The latter can be daisy-chained to other modules of the product family.

Connection technology

Type	Description	Order no.	
		Coolant	Food
Ethernet cable		RJ45 - M12	
	0.5 m	EVC924	EVF549
	2 m	EVC926	EVF551
	5 m	EVC927	EVF552
	10 m	EVC928	EVF553
Ethernet cable		M12 - M12	
	0.5 m	EVC904	EVF429
	2 m	EVC906	EVF531
	5 m	EVC907	EVF532
	10 m	EVC908	EVF533
	20 m	EVC909	EVF534
Socket, A-coded (power)		M12 - open	
	2 m; 1 mm ²	EVC706	EVF480
	5 m; 1 mm ²	EVC707	EVF481
	10 m; 1 mm ²	EVC708	EVF482
		-	-
Socket, L-coded (power)		M12 - open	
	2 m; 2.5 mm ²	E12641	-
	5 m; 2.5 mm ²	E12642	-
	10 m; 2.5 mm ²	E12643	-
		-	-
Connection cable, L-coded (power)		M12 - M12	
	2 m; 2.5 mm ²	E12654	-
	5 m; 2.5 mm ²	E12655	-
	10 m; 2.5 mm ²	E12656	-
		-	-

Further technical data

Unmanaged Ethernet switches	AL3050 IIoT / AL3000 PROFINET CC-A	AL3051 IIoT / AL3001 PROFINET CC-A	AL3150 IIoT / AL3100 PROFINET CC-A	AL3151 IIoT / AL3101 PROFINET CC-A
	StandardLine		PerformanceLine	
Operating voltage [V DC]	8...32 (US; to SELV / PELV)			
Current consumption [mA]	100 (US)			
Interface	Ethernet			
Number of ports	6			
Transmission standard	10Base-T (IEEE 802.3i); 100Base-TX (802.3u)			
Transmission rate [Mbits/s]	10; 100			
Ambient temperature [°C]	-25...70			
Daisy chain voltage supply	no		yes	
Voltage supply connection	M12 A-coded		M12 L-coded	
Protection rating	IP 65, IP 66, IP 67	IP 65, IP 66, IP 67, IP 69K	IP 65, IP 66, IP 67	IP 65, IP 66, IP 67, IP 69K
Housing material	polyamide; socket: nickel-plated brass	polyamide; socket: stainless steel	polyamide; socket: nickel-plated brass	polyamide; socket: stainless steel

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IO-Link

IO-Link master: Connection of sensors to the PLC and to the IT world



IO-Link master
DataLine Coolant / Food



Industry 4.0 ready via new IoT core

Separation between automation and IT network

4 or 8 IO-Link ports with full V1.1 functionality

PROFINET, EtherNet/IP, EtherCat, Modbus TCP, TCP/IP JSON or Powerlink

Master and device configurable via the LR DEVICE software



IO-Link master for the automation and IT world

The decentralised IO-Link master modules serve as a gateway between intelligent IO-Link sensors and the field bus. Besides, important information of the intelligent sensors can simultaneously be sent into the IT world. With a separate IoT Ethernet socket the IT network can be set up completely separated from the automation network. Sensor information is transferred into the IT world via the established TCP/IP JSON interface.

Robust field bus modules for demanding applications

Thanks to their special housing materials and high ingress resistance (IP 67 or IP 69K), they can be used in coolant applications or directly in wet areas in the food industry. The ecolink technology guarantees reliable, permanently ingress-resistant M12 connections of the connection cables.



Advantages and customer benefits

• Separation between automation and IT network

Machine uptime is of highest priority. The automation network must by no means be interrupted by external factors. Therefore the unit features a separate IoT Ethernet socket separating IT and automation network. This means that important sensor information can be safely sent to the IT and ERP system.

• Sensor configuration with LR DEVICE

The intuitive software finds all IO-Link masters in the network and creates an overview of the whole plant. In addition, all connected sensors are displayed with the respective parameters. This makes it possible to set the parameters of all sensors in the system from one central point.

• Easy sensor connection

The sensors and actuators are connected via standard M12 connection cables without screening. Depending on the device type, up to 4 or 8 IO-Link sensors can be connected and supplied with up to 3.6 A. With the EVC693 or EVF693 accessories, additional auxiliary power for the connection of IO-Link actuators can be supplied. The cable can be up to 20 m long.

Connection technology

Type	Description	Order no.	
		Coolant	Food
Ethernet cable (fieldbus)			
	0.5 m	E12490	EVF530
	2 m	E12090	EVF531
	5 m	E12491	EVF532
	10 m	E12492	EVF533
M12 socket 1 mm² (power)			
	2 m	EVC706	EVF480
	5 m	EVC707	EVF481
	10 m	EVC708	EVF482
	20 m	EVC709	EVF483
M12 jumper cable 0.34 mm² (sensor)			
	1 m	EVC042	EVF042
	2 m	EVC043	EVF043
	5 m	EVC044	EVF044
	10 m	EVC493	EVF045
Y splitter (adapter A port / B port)			
	1 m	EVC693	EVF693
	2 m	EVC694	EVF694
	5 m	EVC695	EVF695
	10 m	EVC696	EVF696

The products

Type	Description	Order no.	
		Coolant	Food
IO-Link master DataLine			
	PROFINET + IoT 4 Port	AL1300	AL1301
	EtherNet/IP + IoT 4 Port	AL1320	AL1321
	EtherCat + IoT 4 Port	AL1330	AL1331
	Modbus TCP + IoT 4 Port	AL1340	AL1341
	IoT only 4 Port	AL1350	AL1351
	Powerlink + IoT 4 Port	AL1370	AL1371
	PROFINET + IoT 8 Port	AL1302	AL1303
	EtherNet/IP + IoT 8 Port	AL1322	AL1323
	EtherCat + IoT 8 Port	AL1332	AL1333
	Modbus TCP + IoT 8 Port	AL1342	AL1343
	IoT only 8 Port	AL1352	AL1353
	Powerlink + IoT 8 Port	AL1372	AL1373

Technical data

IO-Link master DataLine Coolant / Food	Order no.			
	AL1300	AL1302	AL1301	AL1303
AL1320	AL1322	AL1321	AL1323	
AL1330	AL1332	AL1331	AL1333	
AL1340	AL1342	AL1341	AL1343	
AL1350	AL1352	AL1351	AL1353	
AL1370	AL1372	AL1371	AL1373	
Operating voltage	20...30 V DC			
Total current consumption	≤ 3.9 A			
IO-Link version	1.1			
Number of IO-Link ports	4 A ports	8 A ports	4 A ports	8 A ports
Number of binary inputs	4 + 4	8 + 8	4 + 4	8 + 8
Number of binary outputs	4	8	4	8
Parameter memory	•			
Current for all A ports	≤ 3.6 A (device supply)			
Protection	IP 65, IP 67		IP 65, IP 67, IP 69K	
Ambient temperature	-25...60 °C			
Housing materials / socket	Polyamide / brass nickel-plated		Polyamide / stainless steel	

Accessories

Type	Description	Order no.
	LR DEVICE (supplied on USB flash drive) Software for online and offline parameter setting of IO-Link sensors and actuators	QA0011
	Coolant, protective caps M12, (10 pcs)	E73004

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ifm – close to you!

For further technical details please visit: ifm.com



IO-Link

IO-Link master for intelligent sensors in the control cabinet



IO-Link master
CabinetLine



Separation between automation and IT network

Industry 4.0 ready via new IoT core

8 IO-Link ports with full V1.1 functionality

PROFINET, EthernNet/IP, EtherCat, Modbus TCP, TCP/IP JSON or Powerlink

Master and device configurable via the LR DEVICE software



IP 20



EthernNet/IP



Modbus

IO-Link master for the automation and IT world

The IO-Link master modules for the control cabinet serve as a gateway between intelligent IO-Link sensors and the field bus. Besides, important information of the intelligent sensors can simultaneously be sent into the IT world.

With a separate IoT Ethernet socket the IT network can be set up completely separated from the automation network. Sensor information is transferred into the IT world via the established TCP/IP JSON interface.



Advantages and customer benefits

• Separation between automation and IT network

Machine uptime is of highest priority. The automation network must by no means be interrupted by external factors. Therefore the unit features a separate IoT Ethernet socket separating IT and automation network. This means that important sensor information can be safely sent to the IT and ERP systems.

• Sensor configuration with LR DEVICE

The intuitive software finds all IO-Link masters in the network and creates an overview of the whole plant. In addition, all connected sensors are displayed with the respective parameters. This makes it possible to set the parameters of all sensors in the system from one central point.

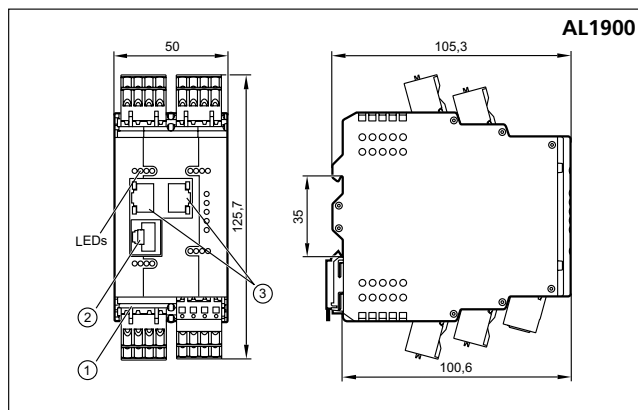
• Easy sensor connection

The sensors and actuators are connected via standard M12 connection cables without screening. The connection cables are fixed via removable COMBICON connectors on the IO-Link master. Up to 8 IO-Link sensors can be connected and be supplied with up to 3.6 A. The cable can be up to 20 m long.

• Reliable digital data

The sensor data is transferred digitally. Unlike analogue signals, contact resistance and EMC interference cannot corrupt the signals.

Dimensions



- 1) Combicon connector
- 2) IoT-Port
- 3) Profinet IO data interface

The products

Type	Description	Order no.
IO-Link master CabinetLine		
	PROFINET + IoT 8-port	AL1900
	EtherNet/IP + IoT 8-port	AL1920
	EtherCat + IoT 8-port	AL1930
	Modbus TCP + IoT 8-port	AL1940
	Powerlink + IoT 8 Port	AL1970
	IoT only 8-port	AL1950

Technical data

IO-Link master CabinetLine AL1900, AL1920, AL1930, AL1940, AL1970		
Operating voltage	[V DC]	20...30
Total current consumption	[A]	≤ 3.9
IO-Link version		1.1
Number of IO-Link ports		8 A ports
Number of binary inputs		8 + 8
Number of binary outputs		8
Parameter memory		•
Current for all ports (device supply)	[A]	≤ 3.6
Protection		IP 20
Electrical connections		COMBICON connector
Installation		DIN rail
Ambient temperature	[°C]	-25...65
Dimensions	[mm]	114.2 x 50 x 105.3

Accessories

Type	Description	Order no.
	LR DEVICE (supplied on USB flash drive) Software for online and offline parameter setting of IO-Link sensors and actuators	QA0011
	Ethernet adapter M12 / RJ45	E21140

Connection technology

Type	Description	Order no.
M12 socket		
	1 m black, PUR cable	EVC471
	2 m black, PUR cable	EVC001
	5 m black, PUR cable	EVC002
	10 m black, PUR cable	EVC003
	20 m black, PUR cable	EVC083

For further technical details please visit: ifm.com



IO-Link

Mobile data memory for IO-Link: small in size, big in space



IO-Link devices



128 kBytes offer sufficient memory capacity for relevant data and histories

Process-relevant information is provided locally

Digital type label: simple registration of interchangeable components to the PLC

↻ The COM3 interface ensures fast data transmission

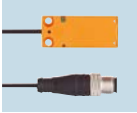


Local information exchange in the plant network

The external IO-Link memory DSU is a mobile all-purpose device for local data transmission. Connected to an IO-Link master, the small device makes the stored data available to all connected receivers. For example, if used as a digital type label for an interchangeable tool, the PLC can identify it independently and reliably, extract information about operating hours and alert the operator when maintenance is due to prevent damage to the tool or workpiece.

During operation, the data is continuously written to the history memory. Thanks to the COM3 interface with 230.4 kbit/s per second. A total of 128 kBytes offer enough space for all relevant data.



Type	Description	Memory size	Dimensions [mm]	Ambient temperature [°C]	Protection rating	Connection	Order no.
	IO-Link memory	128 kBytes	20 x 7 x 48	-20...60	IP 67 / IP 69K	1 m cable, PUR; 3 x 0.14 mm ² , M12 connector	DSU100

Configuration and reading of data via moneo|configure

The IO-Link memory can also be parameterised and read via the IoT software **moneo|configure**. In this way, recorded data of total operating hours, maintenance intervals or system-relevant maximum and minimum values such as pressure, temperature or vibration data, can be easily read. An optional write protection protects against accidental overwriting of sensitive device information.

Description of the technology

The DSU100 is a 128 kBytes FRAM data carrier which serves as a storage medium in industrial environments. Parameter setting and data exchange take place via the integrated IO-Link interface and can be carried out, for example, via the **moneo|configure** software while the system is not in operation.

Device-specific information


The IODD required for the configuration of the unit, detailed information about process data structure, diagnostic information, parameter addresses and the necessary information about the required IO-Link hardware and software can be found at www.ifm.com

Operating modes of the device




The device supports various operating modes, such as reading the device-specific globally unique UID, reading and writing up to 28 bytes of data in one IO-Link cycle and reading and writing larger amounts of data, with length restrictions usually only imposed by the PLC.

Automatic access to the memory stick during operation can be defined via numerous commands that regulate and control the read and write access.

Accessories

Type	Description	Order no.
	Mounting adapter for free-standing mounting	E12153

IO-Link master

	PROFINET, 4-port	AL1300
	EtherNet/IP, 4-port	AL1320
	PROFINET, 8-port	AL1302
	Modbus TCP 8-port	AL1342



No compromises: robust UHF evaluation system for harsh environments



RFID UHF



Antenna, evaluation unit and switch, all in one device, reduces installation time

Reads up to 16 tags at a distance of up to 3 meters

Installation in metallic or wet environments is possible

Fieldbus interface and digital inputs and outputs, minimise field wiring



So compact, so flexible

The new RFID UHF evaluation systems convince with their compact design and the maximum flexibility they offer. Complete with antenna, evaluation unit and switch, the hardware provides everything required for a quick and easy installation. What is more, the optimised operating principle of the system allows direct installation in metallic or wet environments – without any loss of performance.

Transferring data over the network, controlling actuators directly

At maximum performance level, the antenna can detect up to 16 rapidly moving tags, at a distance of up to 3 m. The tag reading can be refined further via selective RSSI values. Using an additional fieldbus interface offers the possibility to directly connect another network point. The digital output can be used to control an actuator.



Advantages of ifm's UHF RFID solution:

Robust and expandable

Antenna, evaluation unit and interface are integrated in one compact, robust housing with protection rating IP 67. This makes the system perfectly suited for use in harsh industrial environments.

Powerful antenna

Thanks to the internal antenna with circular polarisation, the device can be installed in metallic housings without reception being affected.

Integrated web server

The evaluation systems have an integrated web server. Users log in via an HTTP address to get full access to the device set-up and, in case of cloud integration, to monitoring and diagnostic data.

Universal interface

The UHF RFID evaluation units with their interfaces for Profinet, EtherNet/IP and TCP/IP are ideal for direct connection to PCs, industrial PCs or PLCs. Using an additional fieldbus interface, it is also possible to pass through signals and minimise field wiring.

Additional digital inputs




The unit has two additional digital inputs and outputs. The inbuilt logic function can be used to provide additional control functionality directly, e.g. to immediately control a light tower when required.

Applications

The benefits of the evaluation systems really come in to their own in track and trace and traceability applications. Thanks to the long ranges, for example, tags on vehicles with access rights can be detected and evaluated at a distance of up to 3 meters, after detection it is possible to control the barriers or gates directly from the unit. Without time consuming programming effort.




In intralogistics, the system is used for seamless product tracking. It is possible to read up to 16 tags simultaneously and the products can be clearly assigned to their designated storage stations or pallets. This ensures that the correct quantity of the correct product reaches its destination on time.

Products

Type	Description	Order no.
PROFINET interface		
	RFID UHF compact unit 865...868 MHz (ETSI)	DTE801
	RFID UHF compact unit 902...928 MHz (FCC)	DTE901
EtherNet/IP interface		
	RFID UHF compact unit 865...868 MHz (ETSI)	DTE802
	RFID UHF compact unit 902...928 MHz (FCC)	DTE902
TCP/IP interface		
	RFID UHF compact unit 865...868 MHz (ETSI)	DTE804
	RFID UHF compact unit 902...928 MHz (FCC)	DTE904

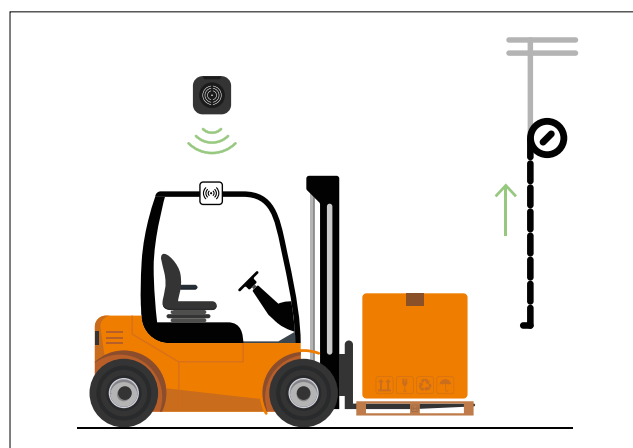
Further country approvals and interfaces for IO-Link and IoT (cloud connection) are in preparation.

Mounting accessories for DTE801, DTE802, DTE804

	Mounting bracket, 1.4301 (stainless steel / 304)	E80335
	Mounting plate, 1.4301 (stainless steel / 304)	E80336
	Mounting rod 1.4301 (stainless steel / 304)	E80337

Selection RFID transponders

ID-TAG / R30x10 / 04 – 865...870 MHz, 96 bit	E80353
ID-TAG / 73.5x21.2 / 04 – 1000 pieces on reel	E80386
ID-TAG / 139 x 53 x 15 / 04	E80393
ID-TAG / 174 x 70 x 17.6 / 04	E80394



RFID solution for automated gate opening.



Identification systems

RFID for Industry 4.0: IoT solutions with direct connection to the IT infrastructure



RFID Systems

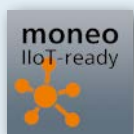


Lean infrastructure: direct data exchange between RFID system and IT level

Standard Ethernet protocols simplify integration and interoperability

Product diversity covers any requirement at any location

IoT Core Visualizer simplifies the selection and transmission of data point URLs





Track-and-trace IT solution without detours

RFID systems are an excellent solution when it comes to product tracking in intralogistics. The new IoT-enabled RFID solutions of the DTExx5 series now make the implementation of track-and-trace systems even simpler and leaner thanks to establishing a direct connection to the IT system.

IoT Core Visualizer: easy access to data point URLs

The portfolio comprises compact UHF and HF solutions as well as an HF evaluation unit for up to 4 antennas. All units come with an Ethernet interface for bidirectional transfer of information via HTTP, JSON, or MQTT. Thanks to the concise IoT Core Visualizer, users can easily access the URL of each data point. This makes integration into their own software application very easy to achieve.



Type	Description	Order no.
	RFID HF evaluation unit for up to 4 antennas	DTE105
	RFID HF compact unit	DTE605
	RFID UHF compact unit EU	DTE805
	RFID UHF compact unit US/CA	DTE905

ifm IoT Core: easy IT integration

With ifm's IoT Core, devices can make data, events and services available to interested parties. The ifm IoT Core supports various protocols in the Internet ecosystem such as HTTP, MQTT and JSON.

The right solution for every application:

DTE105 HF and antennas

Applications are found in production lines where the evaluation unit is used for material flow control, or in guided material handling systems for coding of workpiece carriers.


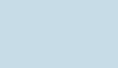

DTE605 HF compact unit

The compact unit is ideal for long writing/reading distances.

DTE805/905 UHF compact unit

The compact UHF RFID system is suited for long ranges. In material logistics, for example, the device can determine whether the right material is available in the required quantity for the production order.

Connection technology

Type	Description	Order no.
	Ethernet connection cable, PUR, 5 m, M12 / RJ45	EVC933
	Ethernet connection cable, PUR, 10 m, M12 / RJ45	EVC934
	Ethernet connection cable, PUR, 5 m, M12 / M12	EVC907

Accessories

Type	Description	Order no.
Mounting accessories for DTE605, DTE805, DTE905		
	Angle bracket RFID compact system	E80335
	Mounting plate RFID compact system	E80336
	Mounting rod RFID compact system	E80337
Selection RFID transponders		
	ID tag/110x25x12.7/04	E80413
	ID tag/51x48x12.6/04	E80414
	ID tag/51x37x7.5	E80417
	ID tag/47x10/06	E80341
	ID tag/10.1x3.9/03	E80415

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Condition monitoring systems

Configurable signal lamps



Signalling and display systems



Perfect visibility

Modern LED RGB technology – long life, reduced stock-keeping

Different modes configurable via IO-Link or setting menu

Also as standard version with digital inputs

Easy installation



High performance


Signal lamps are used for status indication or as warning device everywhere in factories on machines, conveyors and installations. ifm's innovative signal lamps offer several advantages over conventional signal lamps and are therefore suitable for demanding applications.

Flexible configuration

In general signal lamps must be adapted to the application. Instead of spending time and effort on screwing modules of different colours together, the new LED RGB technology makes it possible to adjust the signal lamp as needed via IO-Link or setting button (e.g. permanently on, low flash rate, high flash rate, different colours, siren). This reduces type variety and stock-keeping.



Type	Communication	Items supplied	Protection rating	Order no.	
				3 segments	5 segments

Signal lamps · M12 connectors					
	Digital inputs / IO-Link	Mounting base	IP 65	DV1300	DV1500
	Digital inputs / IO-Link	Mounting base and siren	IP 54	DV1310	DV1510
	Digital inputs / IO-Link	–	IP 65	DV1320	DV1520
	Digital inputs / IO-Link	Siren	IP 54	DV1330	DV1530
	IO-Link	Mounting base	IP 65	DV2300	DV2500
	IO-Link	Mounting base and siren	IP 54	DV2310	DV2510
	IO-Link	–	IP 65	DV2320	DV2520
	IO-Link	Siren	IP 54	DV2330	DV2530

Versions

The signal lamps DV13xx / DV15xx have digital inputs and can be configured by means of a setting button on the device. The signal lamps DV23xx / DV25xx can be controlled and set via IO-Link without a setting button.

For demanding environments

Neither water nor dust stick to the smooth surface of the lamp body. This prevents dirt from sticking, ensuring visibility of the signal lamp in the long run.

No metallic components such as screws or connectors are exposed. This means that the lamps are particularly suited for use in the food industry and in the medical, pharmaceutical or chemical sector.

Optimum visibility

The patented technology creates a strong contrast between the light spot of the LED and the environment. This ensures optimum visibility, in particular in the event of extraneous light, for example in the vicinity of large windows.

Long life

The use of LED technology means the signal lamp has a very long life.

Adaptable

The LED RGB technology allows the signal lamp to be individualised (permanently on, low flash rate, high flash rate, different colours). This reduces type variety and stock-keeping.




The lamp can be put into different operating modes, e.g. analogue mode for level indication. 7 different signal sounds can be set for the siren.

Easy installation



A fixture is supplied with the device. In addition, a version with a mounting base is available which allows raised installation. This mounting base can be rotated by 90 degrees so that wall mounting is possible without further accessories. Moreover, accessories for pole mounting are available.

Common technical data		
Operating voltage	[V DC]	18...30
Current consumption	[mA]	< 200
Ambient temperature	[°C]	-25...50
Light technology		RGB
Number of segments		3 / 5
MTTF in hours		660,000
Housing materials		ABS, PC

Accessories

Type	Description	Order no.
	Basic fixture	E89060
	Wall fixture	E89061
	Spacer pole 100 mm	E89065
	Spacer pole 300 mm	E89066
	Spacer pole 800 mm	E89067

Connection technology

Type	Description	Order no.
	Socket, M12, 8 poles, 2 m black, PUR cable	E11950
	Socket, M12, 8 poles, 5 m black, PUR cable	E11807
	Socket, M12, 8 poles, 10 m black, PUR cable	E11311
	Socket, M12, 8 poles, 15 m black, PUR cable	E11856
	Jumper M12 / M12, 1 m black, PUR cable	E12572

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Systems for mobile machines

ioControl – rugged I/O module with integrated controller



I/O modules



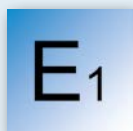
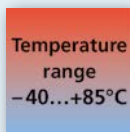
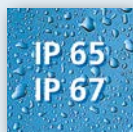
I/O module for mobile applications with high protection rating and DEUTSCH connectors or M12 connectors.

Can be used as independent, CODESYS-programmable mini controller

Display and keyboard interface for parameter setting

Configurable input/output function

Two CAN interfaces with CANopen and J1939 protocol



Decentralised I/O module and mini controller in one unit

ioControl is a decentralised I/O module connected to the controller via CAN bus. It is installed away from the controller on remote machine parts right where the signals are generated. The high protection rating makes it suitable for outdoor installation in wet and dirty areas.

DEUTSCH connectors or alternatively M12 connectors, which are widely used in mobile automation, ensure an easy and safe connection of sensors and actuators. Networking of the CAN bus is effected via prewired drop cables. ioControl can either be used as a configurable I/O module or as a mini controller in the field. CODESYS is used as a programming system.



Features and benefits

The decentralised I/O modules of the ioControl system connect binary and analogue sensors to a controller via CAN bus using the CANopen protocol. Furthermore, I/O modules provide additional functions for signal preprocessing.

The compact, glass-fibre reinforced housing features reverse-polarity protected DEUTSCH connectors or M12 connectors suitable for mobile use, providing all the necessary connections for inputs, outputs, communication and programming. An integrated two-colour LED display with keyboard serves to indicate the most important system messages, the baud rate and the node number as well as for device configuration. An extensive range of connection cables completes the offer.

• Configurable inputs and outputs

A high degree of flexibility is provided by the configurable inputs and outputs. There is a choice of analogue and digital inputs. The analogue inputs can be set as current inputs (0...20 mA) or voltage inputs (0...10 V / 0...32 V).

For digital and analogue I/O modules, the profile DSP 401 has been defined. The input/output functions of the module are configured via the device object directory.

• The electronics

The core of the controller, which has been designed according to the applicable standards for electronics in mobile applications, is a modern 32-bit processor. Its monitoring and protective functions enable reliable operation even under extreme operating conditions.

Programmable to IEC 61131-3 with CODESYS

Apart from their application as I/O modules, all units can also be used as freely programmable mini controllers with CANopen and J1939 among others. Programming is done via CODESYS by means of the standardised IEC 61131-3 languages, allowing the user to build the application software with ease. In addition, libraries are available for special functions of the controller.

• Communication interfaces

ioControl is equipped with two CAN interfaces to ISO 11898 for programming and data exchange with connected modules, controllers, displays or an engine controller.

Products

ioControl	Order no.		
M12	CR2040	CR2041	CR2042
DEUTSCH	CR2050	CR2051	CR2052

Number of inputs (can be configured)

Analogue multifunctional/digital	8	–	–
Analogue multifunctional/frequency/digital	–	–	4
Frequency/digital	4	–	–
Resistance/digital	4	–	4

Number of outputs (can be configured)

PWMI/digital 4.0 A	–	4	4
PWM/digital 4.0 A	–	4	–
PWMI/digital 2.5 A	–	4	4
PWM/digital 2.5 A	–	4	–

Common technical data – ioControl

Housing	impact-resistant polyamide	
Device connection	inputs/outputs CAN interface 1	6 poles (Deutsch DT04-6p) or 5-pole (M12 connector)
	supply voltage CAN interface 2	6 poles (Tyco/AMP)
Protection	IP 65, IP 67	
Operating voltage	[V DC]	8...32
Current consumption	[mA]	≤ 200 (without external load)
Temperature range operation/storage	[°C]	-40...85
Interfaces	CAN	2.0 A/B CiA DS 301 V4, CiA DS 401 V 1.4 ISO 11898, 20 Kbits/s...1 Mbit/s (default 250 Kbits/s)
Protocols	CAN	CANopen, SAE J 1939 or free protocol
Programming	CODESYS V 2.3	
Total memory	1536 kBytes	
Application memory	512 kBytes	
Standards and tests (extract)	CE, E1 (UN-ECE R10), EN 50 155	

Accessories

Description	Order no.	
	DEUTSCH	M12
Connection cable for 1 input, 2 m	E12544	EVM085
Connection cable for 2 inputs, 2 m	E12562	EVM093
Connection cable for 1 output, 2 m	E12550	EVM085
Connection cable, CAN, 1m	E12556	EVC953
Connection cable, AMP for module supply, 2 m	E12565	
CAN programming interface CANfox	EC2112	
Adapter set CAN/RS232 for CANfox	EC2113	



ecolink M12, Ethernet D-Code for industrial applications



Industrial applications / factory automation



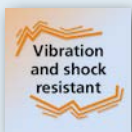
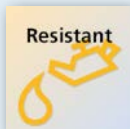
Halogen-free and silicone-free

Optimum sealing even when fastened by hand

Permanent vibration protection with saw tooth contour

Protection rating IP 65, IP 67

Ethernet CAT 5 / CAT 5e



ecolink M12 for demanding applications

Most applications require special solutions. Only high-quality materials, assured production processes and faultless assembly lead to success in the long run.

The asymmetrically acting vibration protection holds the M12 screw connection tight in its position, guaranteeing optimum and permanent sealing.

No tools are needed for installation and removal as this can be done manually without any problem.

High-quality materials especially suited to the application and intensive monitoring during and after production guarantee maximum quality standards.



Technical data:

Operating voltage: 30 V AC / 60 V DC
 Nominal current: 4 A
 Protection rating: IP 65, IP 67
 in locked condition with the matching counterpart.
 Tightening torque
 Threaded sleeve: 0.6 Nm – 1.2 Nm
 Note the maximum value of the counterpart
 Ambient temperature: -25...90 °C
 Drag chain: > 3 million bending cycles

Materials:

Housing / moulded body: TPU
 Coupling nut: brass
 Contacts: Gold-plated

Cable:

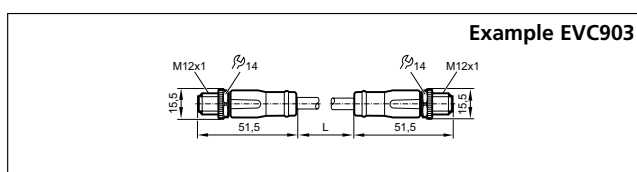
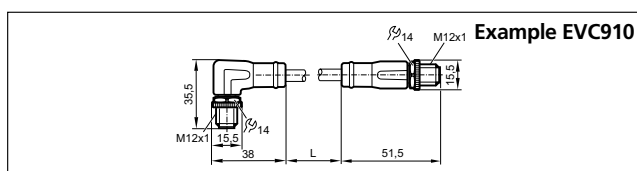
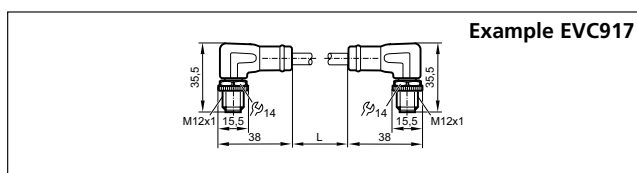
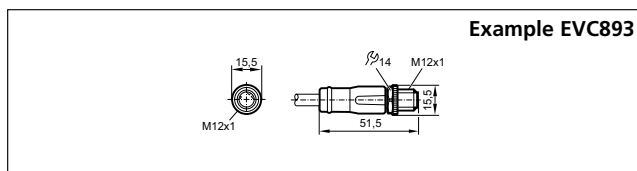
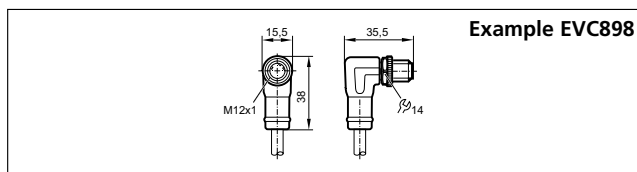
PUR, halogen-free, silicone-free
 4 x 0.34 mm² (7 x Ø 0.25 mm), Ø 6.5 mm

Approvals:

UL approval in preparation

Applications: industrial applications

Dimensions



Products

Type	Description	Order no.
------	-------------	-----------

M12 cable plug · 4 poles · straight

	2.0 m	EVC893
	5.0 m	EVC894
	10.0 m	EVC895
	20.0 m	EVC896
	50.0 m	EVC897

M12 cable plug · 4 poles · angled

	2.0 m	EVC898
	5.0 m	EVC899
	10.0 m	EVC900
	20.0 m	EVC901
	50.0 m	EVC902

M12 connection cable · 4 poles · straight-straight

	0.25 m	EVC903
	0.5 m	EVC904
	1.0 m	EVC905
	2.0 m	EVC906
	5.0 m	EVC907
	10.0 m	EVC908
20.0 m	EVC909	

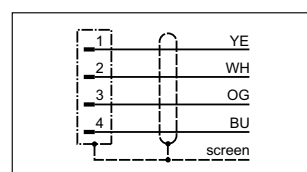
M12 cable plug · 4 poles · straight-angled

	0.25 m	EVC910
	0.5 m	EVC911
	1.0 m	EVC912
	2.0 m	EVC913
	5.0 m	EVC914
	10.0 m	EVC915
20.0 m	EVC916	

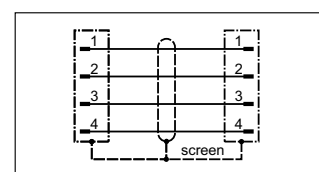
M12 connection cable · 4 poles · angled-angled

	0.25 m	EVC917
	0.5 m	EVC918
	1.0 m	EVC919
	2.0 m	EVC920
	5.0 m	EVC921
	10.0 m	EVC922
20.0 m	EVC923	

Wiring diagram



Example EVC898



Example EVC917

We reserve the right to make technical alterations without prior notice. · 04.2021



ecolink M12 / RJ45: Ethernet cables for industrial applications



Industrial applications /
factory automation



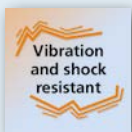
Halogen-free and silicone-free

**Optimum sealing even
when fastened by hand**

**Permanent vibration protection
with saw tooth contour**

Protection rating IP 65, IP 67

Ethernet CAT 5 / CAT 5e



ecolink M12 for demanding applications

Most applications require special solutions. Only high-quality materials, assured production processes and faultless assembly lead to success in the long run.

The asymmetrically acting vibration protection holds the M12 screw connection tight in its position, guaranteeing optimum and permanent sealing.

No tools are needed for installation and removal as this can be done manually without any problem.

High-quality materials especially suited to the application and intensive monitoring during and after production guarantee maximum quality standards.



Technical data:

Operating voltage: 30 V AC / 60 V DC
 Nominal current: 1.5 A
 Protection rating: IP 65, IP 67 (M12 connector)
 in locked condition with the matching counterpart.
 RJ45 connector: IP 20
 Tightening torque
 Threaded sleeve: 0.6...1.2 Nm
 Note the maximum value of the counterpart
 Ambient temperature:
 M12 connector: -25...90 °C
 RJ45 connector: -40...70 °C
 Drag chain: > 3 million bending cycles

Materials:

Housing / moulded body:
 M12 connector: TPU
 RJ45 connector: PC
 Coupling nut: brass

Cable:



PUR, halogen-free, silicone-free
 4 x 0.34 mm² (7 x Ø 0.25 mm), Ø 6.5 mm

Approvals:

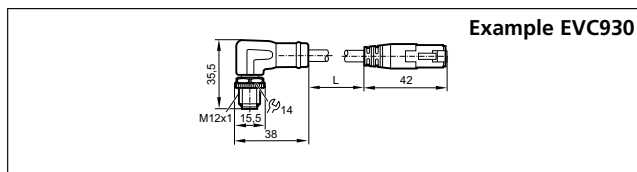
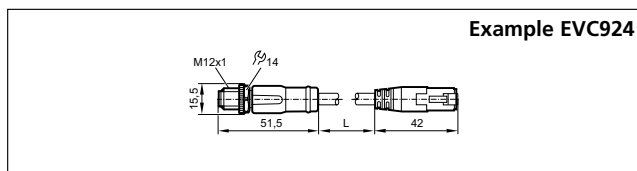
UL approval in preparation

Applications: industrial applications

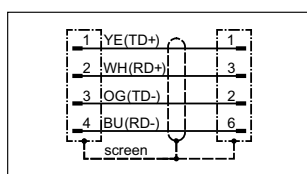
Products

Type	Description	Order no.
Connection cable · connector M12 straight / connector RJ45		
	0.5 m	EVC924
	1.0 m	EVC925
	2.0 m	EVC926
	3.0 m	EVC936
	5.0 m	EVC927
	6.0 m	EVC937
	10.0 m	EVC928
	12.0 m	EVC938
20.0 m	EVC929	
Connection cable · connector M12 angled / connector RJ45		
	0.5 m	EVC930
	1.0 m	EVC931
	2.0 m	EVC932
	5.0 m	EVC933
	10.0 m	EVC934
	20.0 m	EVC935

Dimensions



Wiring



Example EVC924

We reserve the right to make technical alterations without prior notice. · 04.2021



Power supplies

Intelligent power supply directly in the field



24 V DC power supplies



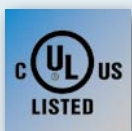
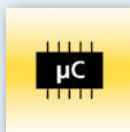
Field mounting reduces voltage losses due to long cable runs

No control cabinet required thanks to protection class IP 67

Outputs protected by electronic fuses

Output voltage adjustable, current for each output can be set separately

Status and diagnostic LEDs



Power supply directly in the field


More and more users mount control components decentrally on the machine instead of in the control cabinet, for example IO-Link masters or other field modules.

With classic power supply from the control cabinet, critical voltage drops occur due to the high currents through the long cables. To prevent this, ifm offers a powerful power supply for mounting directly in the field.

Protection in the secondary circuit

Integrated electronic fuses reliably protect the components connected to the 24 V power supply against excessive current and short circuits.



Type	Operating voltage [V AC]	Output voltage [V DC]	Output power (permanent) [W]	Number of output circuits	Plug for output circuits	Order no.
	380...480 ±15% (3-phase)	24	500	4	2 x M12, L-coded	DN4234

Further advantages and customer benefits

Adjustable outputs

The 24 V voltage of the output circuits can be set to a limited extent via buttons on the power supply. It can be slightly increased, for example, so that despite voltage drop on longer supply lines, exactly 24 V still arrives at the connected consumer. The user can also set the tripping current of the four electronic fuses. This provides maximum protection in the event of a short circuit or overload in the secondary circuit.

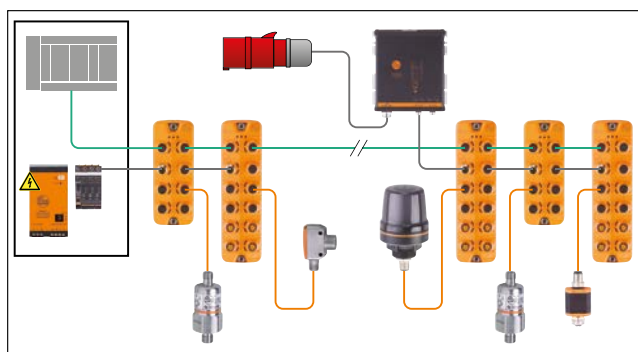
Operation and display

On the front panel, the power supply has three buttons for setting the current and voltage values. A row of different coloured LEDs also provides a quick overview of the status and allows rapid diagnosis in case of a fault. It shows the current load of the power supply unit or the individual output circuits from 0...200 %, set current and voltage values and which fuses have tripped. A fuse reset button is provided for each output circuit.

More reliability

Electronic fuses reliably detect short circuits even with high line resistances. Due to the four individually fused output circuits, a faulty circuit is selectively switched off, the intact circuits continue to function reliably. Even with high current peaks, such as when switching capacitive loads, the supply is guaranteed.





Use of the power supply directly in the field:



Further technical data

Output power	[W]	500
Operating voltage	[V AC]	380...400 ±15%
Mains frequency	[Hz]	50...60 ±6%
AC peak inrush current	[A]	1.5
Degree of efficiency at 400 V AC	[%]	95.8
Mains buffering time	[ms]	20
Ambient temperature	[°C]	-25...70

Accessories

Design	Description	Order no.
DC connection technology		
	Wirable M12 connector, L-coded	E12673
	Wirable M12 socket, L-coded,	E12672
	M12 connection cable, L-coded	E12641
	M12 connection cable, L-coded	E12653
AC connection technology		
	T-splitter 7/8" 5-pole	E12778
	Wirable connector 7/8" 5-pole	E12776
	Wirable socket 7/8" 5-pole	E12774
	Connection cable 2 m, socket	E12772
	Connection cable 5 m, socket	E12773

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Power supplies

Circuit protection with monitoring function for the 24 V circuit



Electronic 24 V DC circuit breakers

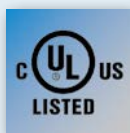
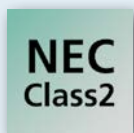
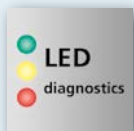


Modular and selective protection in plant and machinery

Reliable circuit protection allows reduction of wire cross-sections

Potential modules for quick and easy wiring available as an option

- **Recognition of the trigger cause (via IO-Link)**
- **Current and voltage measurement in each channel (via IO-Link)**



Safety on the 24 V side

As opposed to the 230 V primary side, the circuit protection in the secondary circuit is often neglected. Another issue is that in the event of a failure of the 24 V DC voltage supply standard mechanical circuit breakers often do not trigger. This may happen with long cables, for example. The electronic circuit breakers from ifm monitor the circuit ideally and, if required, disconnect reliably. Individual branch circuits can be selectively disconnected. This allows a reduction of wire cross-sections in the load circuit of the switched-mode power supplies. On the new adjustable protection modules, the tripping current can be set, allowing for optimum adaptation of the plant's circuits to the machinery. Thanks to the optional potential modules, the fuse block can be expanded into an intelligent wiring system. The IO-Link version also allows evaluation of important diagnostic data.



Modular installation

The system has a modular structure and consists of a supply module to feed max. 40 A. The protection modules can be mounted side by side. This is done via a simple clip mechanism, completely without any bridges, jumpers or the like. An additional feed module that can be installed in the centre or to the right of the protection elements provides for an uninterrupted replacement of the protection modules in the event of a failure. Potential modules are used to distribute the circuits and wire the ground lead. Easy mounting and minimised wiring complexity save cost and time. With the standard version the user can connect up to 10 and with the IO-Link version up to 8 circuit breaker modules to the supply module.

The new protection module DF2524 can be connected to both the IO-Link supply modules and to the standard supply modules (see table).

Feedback

In addition to the triggering mechanism, the modules feature an LED for signalling if the module has triggered, if it is active and in to what extent it is utilised. By means of a pushbutton each channel can be activated, deactivated or set. The feed module has an additional collective output to provide a warning signal if a module has triggered.

More transparency with IO-Link

The IO-Link version has the same functions; there is, however, additional information about each channel:

- effective nominal current (1 byte cyclical)
- output voltage (acyclical)
- triggering counter (acyclical)
- current device status (1 byte, cyclical)
 - short circuit
 - overload
 - undervoltage
 - limit value reached (80 % I_N)
- activation/deactivation
- reset with triggering
- reset of the tripping-counter
- min. / max. value generation of the measured current and voltage value for each channel over any period of time
- averaging of the measured current and voltage value for each channel over any period of time

The protection modules are available in the fixed sizes 2 A, 4 A, 6 A, 8 A and 10 A. Adjustable variants, 1...4 A (Class2) and 1...10 A, are also available. The fixed current values prevent subsequent misuse by changing the max. current value.

The adjustable modules enable flexible set-up.

Products

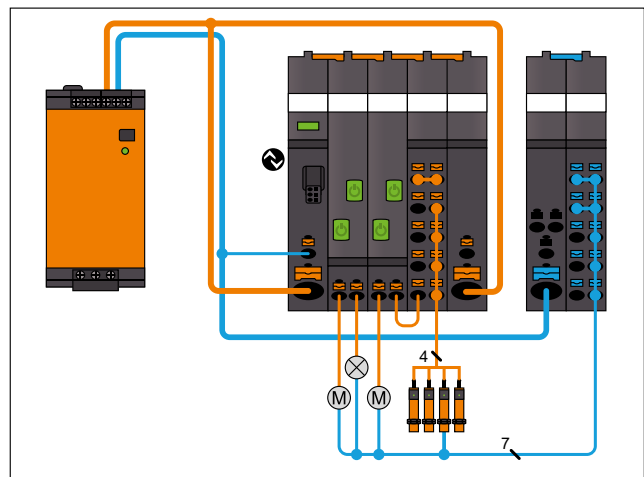
Inputs [V DC]	Nominal current [A]	Order no.	
Supply module		IO-Link	Standard
24, 40 A	–	DF2101	DF1100
Circuit protection module		IO-Link	Standard
–	2 x 2	DF2212	DF1212
–	2 x 4	DF2214	DF1214
–	2 x 6	DF2216	DF1216
–	1 x 8	DF2208	DF1208
–	1 x 10	DF2210	DF1210
–	2 x 1...10	DF2220	DF1220
–	2 x 1...4	DF2524	
GND and load modules		IO-Link	Standard
Feed module GND, 1 x 10 mm ²		DF3100	
Potential module GND, 10 x 2.5 mm ²		DF3110	
Potential module LOAD 2 x 5 x 2.5 mm ²		DF3200	
Feed module for central or ring feed		DF3210	

Further technical data

Operating voltage	[V DC]	24 (18...30)
Switch-off characteristics		Time-current characteristic
Approvals		UL508listed, NEC Class2 (for DF1212 / DF1214 DF2212 / DF2214 and DF2321)

Accessories

Description	Order no.
IO-Link connection cable, 0.5 m, M12 connector	E12613
IO-Link connection cable, 2 m, open end	E12614



For further technical details, please visit: ifm.com

Who says we can only do hardware?

moneo. The all-you-want software for industrial evolution.

One thing is clear: proper industrial digitisation begins with the sensor and extends into the IT structure. If you are already using IO-Link in your plant, you have taken the first important step towards more efficiency and less unplanned downtime. And you are ready for the second step. You are ready to get even more out of your plant with the help of simple and ingenious software.

Turning values into added value

With moneo, you can easily access the entire IO-Link network. And, thanks to the logical tree structure, you will have quick and efficient access to each individual sensor at any time. As soon as your IO-Link network is integrated into moneo, values will no longer be just separate pieces of information. moneo makes values useful and transforms them into added value. You can, for example, combine the level values of all tanks into one overall stock figure. This overall stock figure can then be clearly displayed along with other relevant information in the cockpit. This gives you a continuous overview of all the important values in your plant or process. If things become critical in your

absence, for example because the level is running low or the vibration on a fan rotor is dangerously increasing, moneo will immediately alert and inform you by e-mail. This allows you to schedule maintenance in good time or initiate manual refill processes to keep things moving. In short: moneo will optimise your processes and ensure that they will be trouble-free.

A new kind of flexibility thanks to moneo

As you have seen, moneo leaves nothing to be desired. It is a great piece of software to begin with, but its actual extent will always depend on your specific requirements. You can, for example, simply begin with parameter setting and the cockpit function for one part of your plant and explore the possibilities of real-time maintenance later, when you are ready for the next step. To put it in a nutshell: moneo offers the flexibility to simply grow with your requirements. The days of unmanageable, oversized and confusing software are over. It is time for simplicity, user-friendliness and ingenuity. It is time for moneo!

| starterkit

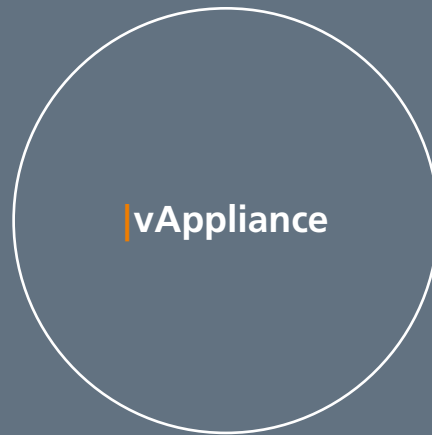



moneo|starterkit
brings condition
monitoring for motors


on fans, pumps and many other machines to a new level. The complete package based on well-coordinated hardware and software enables you to keep an eye on the condition of your system and to plan maintenance requirements in advance. And it's more user-friendly and convenient than ever.

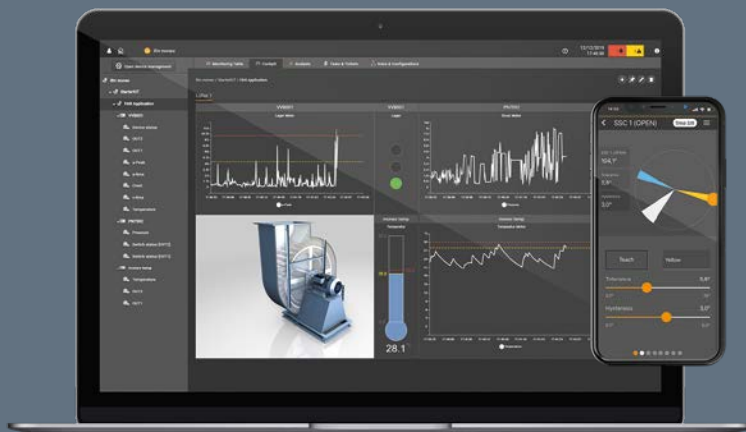
In short:

The moneo|starterkit is the perfect start into digital evolution.



 **moneo|appliance** is the hardware component that is precisely tailored to the requirements of the software and acts as a powerful, reliable node in the network infrastructure. It provides the software modules with the necessary computing power, stores and backs up data and serves as an interface for software updates and system maintenance. moneo|appliance can be used without high-level IT skills and can be integrated into the manufacturing environment, in the production network and in the computing centre.

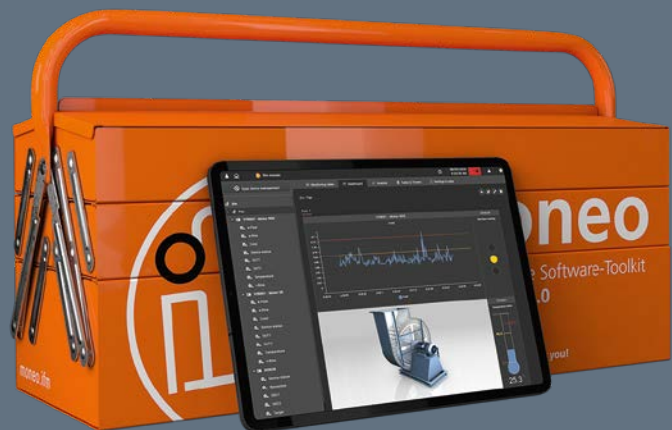
 **moneo|vAppliance** is the virtual machine for operating moneo securely, reliably and with high-performance in existing IT virtualisation environments. It is therefore key to making in particular high-availability solutions usable for moneo. moneo|vAppliance is provided in the Open Virtualization Format (OVF) and can be easily integrated into virtual environments. With the Appliance Management System (AMS), its system management is identical to that of the physical moneo|appliance.

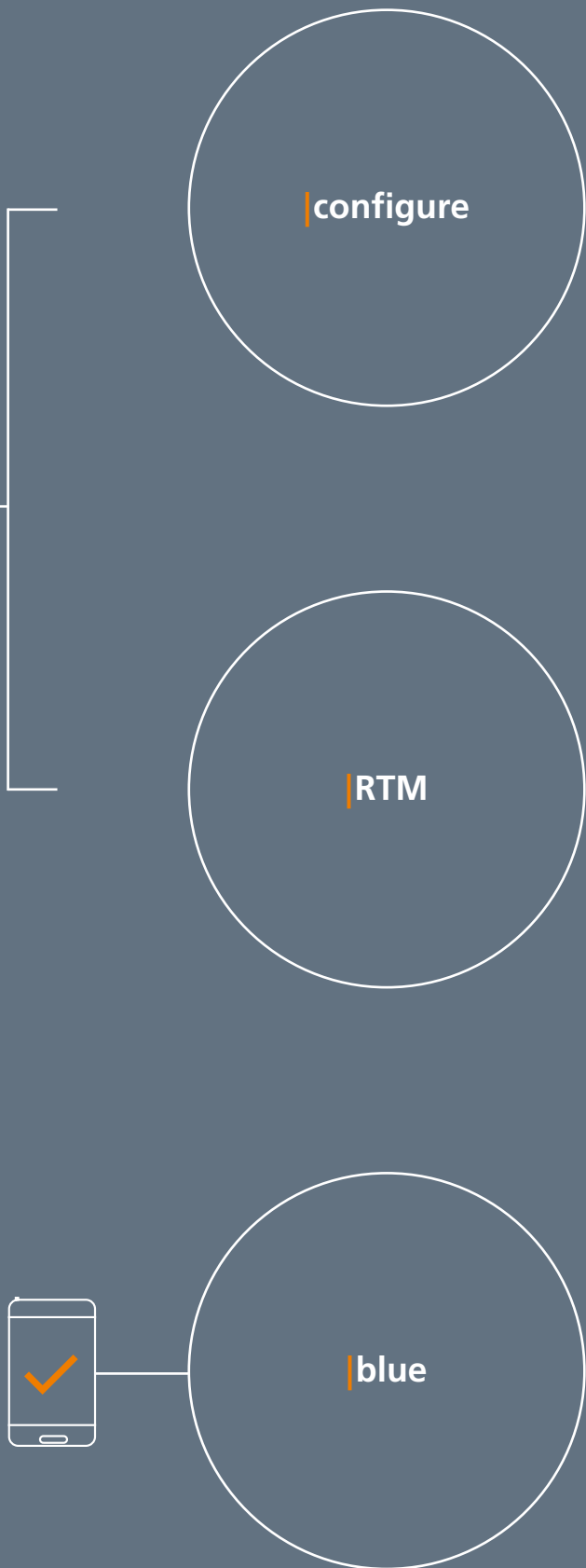


moneo|OS



moneo|OS is the convenient software basis and management tool for all software products of the moneo IIoT toolkit. In moneo|OS, you can easily manage your moneo licences. In addition, the intelligent, easy-to-use data flow model enables you to combine individual pieces of sensor data into meaningful values. This makes it possible to quickly analyse and optimise your processes.





moneo|configure is the convenient management tool for your IO-Link network. Set the parameters of the IO-Link devices in your machines with just a few clicks. The visualisation in the cockpit facilitates both set-up and error diagnostics. The user-friendly parameter data set management contributes to speeding up new sensor integration.

moneo|configure SA The management tool is also available as a stand-alone version for those who wish to configure parameters easily via IO-Link.



moneo|RTM The advantages of powerful and transparent condition monitoring with moneo|RTM are obvious: less downtime, more efficient maintenance planning and detailed data analysis. This is how efficient maintenance works with the objective to implement cost-optimised production processes.



moneo|blue Quickly check sensor values while walking through the plant and simply adjust parameters on site. The free moneo|blue app makes this possible in combination with the Bluetooth Multi-Plug. Simply connect the plug to an IO-Link master and you will have access to the sensors connected to it. The app can, of course, also manage multiple plugs. It couldn't be any easier.



We love it when a plan comes together.



moneo|RTM: level monitoring in containers with 2-component casting resin.

In order to protect the electronics of the sensors from shock, vibration and moisture, potting processes are an essential part of sensor production. For a smooth production process, but also for a constantly high product quality, permanent availability of casting resin and casting hardener in the storage tank containers is essential. The level monitoring application implemented at ifm prover gmbh thus contributes to a reliable logistics organisation of temperature-critical media in the production process.



moneo|RTM: vibration monitoring on fans of an extraction system.

In various production processes of ifm prover gmbh, an exhaust air system permanently guarantees and secures the quality of the products, machine uptime and high air quality.

The fan capacity is therefore a relevant factor in the entire production process.



moneo|RTM: consumption monitoring for sustainably optimised processes.

In production, cooling water is provided, for example, for cooling of lasers. A decreasing cooling capacity, for example caused by an insufficient water supply that is detected too late will increase energy costs and, in the worst case, lead to overheating and, thus, to a plant failure. This can be remedied by measuring the consumption and calculating the heat output of the cooling circuit.



moneo|RTM: optimisation of the level monitoring in a calibration plant.

Flow sensors are calibrated in the calibration plant at ifm prover gmbh. To ensure maximum measuring accuracy, both hot and cold water is sent through the sensors. The measured values are used for calibration.

ifm system sales – solutions for your installation from a single source



Competence:

Trust our application know-how. We have been developing automation solutions for our customers for 50 years and know tomorrow's requirements.

Automation from a single source:

We do not only offer hardware, but also the matching software and IT connection.

Personal:

You have a permanent contact who supports your project on site.

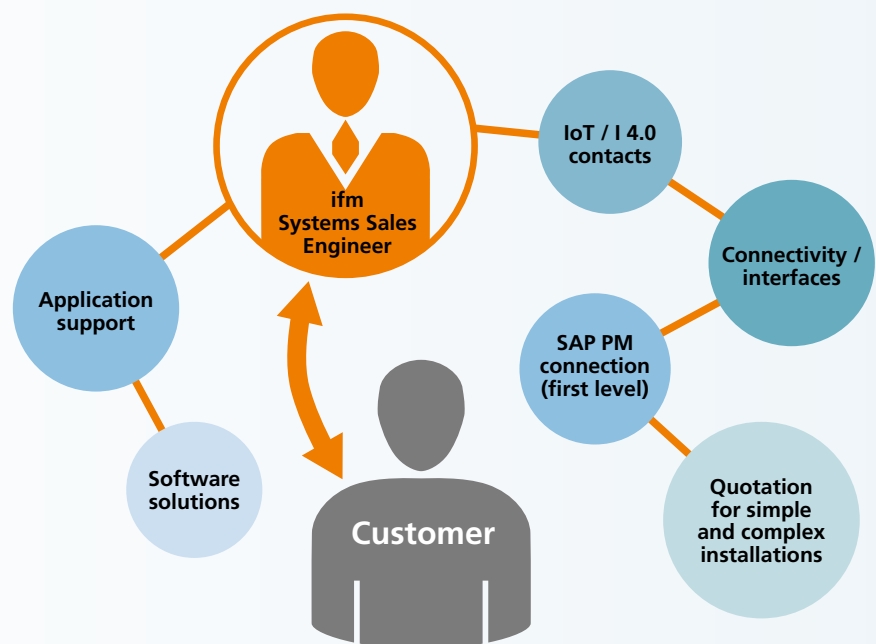
Together:

We support your project from advice and quotation to set-up. Even after project completion, we will continue to support you as a reliable partner.

ifm system consulting.

You want to make your application transparent? Fans, pumps, compressors or cooling circuits: Our system consultant helps you to find the ideal solution for monitoring your installation. Our service includes competent advice at your site, a fair offer, personal project assistance and support for set-up. We offer sensors, evaluation systems and software for connection to ERP systems – all from a single source. Together we will make your project successful.

Do not hesitate to contact us:
info@ifm.com



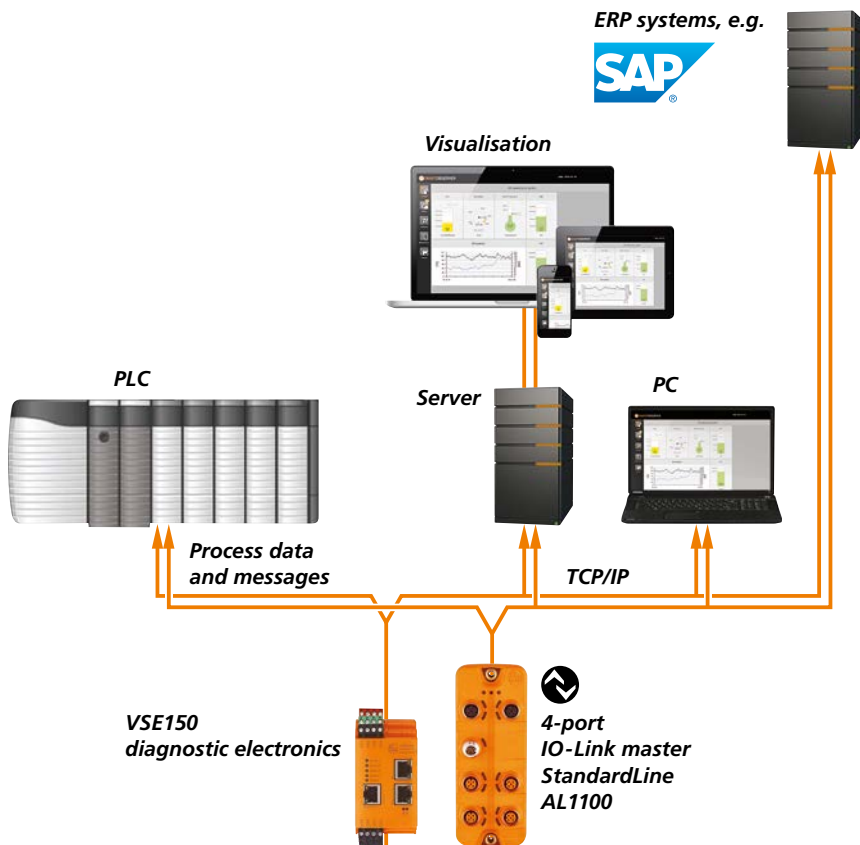
ifm system sales network.

Your personal ifm System Sales Engineer will provide you with the entire ifm know-how to realise and optimise your plant monitoring.



Reduce costs, prevent downtime, optimise processes – system solutions from ifm.

Example: fan monitoring



SMARTOBSERVER

LR SMARTOBSERVER

The software visualises, logs and exports process data. Maintenance tasks can be planned by means of alarm and notification functions and worldwide connectivity.

LR SMARTOBSERVER has an integrated database and can be installed as a stand-alone or server application.

VSE diagnostic electronics

Records process data from sensors, interprets and prepares it and transmits the results to the PLC, PC or higher-level IT systems.

IO-Link master

The module records process data from sensors and transmits it to the PLC, PC or higher-level IT systems. It offers all advantages and possibilities of IO-Link.

Detection of unbalance on rotor blades
With the VSE150 diagnostic electronics and the VSA001 vibration sensor

Vibration monitoring on bearings
With the VSE150 diagnostic electronics and the VSA001 vibration sensor

Speed monitoring
With the VSE150 diagnostic electronics and an inductive sensor

Filter monitoring
With the AL1100 IO-Link master and the PQ3809 pressure sensor

Vibration monitoring on motors
With the VSE150 diagnostic electronics and the VSA001 vibration sensor

Temperature monitoring on motors
With the VSE150 diagnostic electronics and the TS2229 + TP3237 temperature sensors

Contact us: info@ifm.com
Or visit our webshop:
ifm.com

The ifm sales platform



Overview:

The ifm product range is clearly structured and the individual product platforms ensure quick orientation.

Selectors:

Choose between the most important technical data and you will get the product selection suitable for your requirements.

Compare:

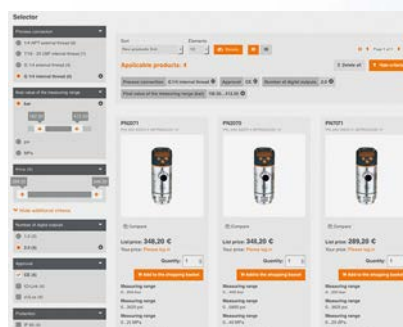
You can compare the technical data of up to 3 products. Differences are marked in colour.

Search and find:

Enter the search term in the full text search and get suggestions for products, topics and product groups.

Order:

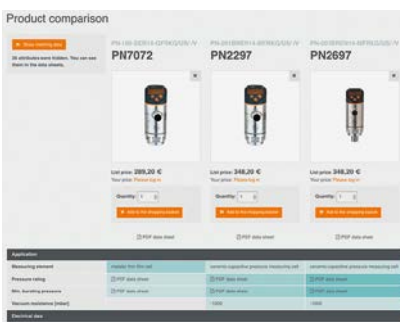
We provide a quick-order and csv import function for the shopping basket on the product pages.



More clarity

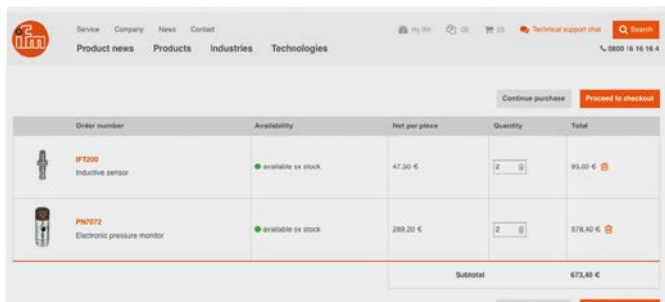
For each product group you can make a first selection via the platforms.

A clear visual language and explanatory texts give you a first impression of the products.



Compare products with each other

The selectors are the heart of the product search. The displayed selection criteria are adapted to each product range and the technical features of the products. The results can be displayed as tiles or lists.

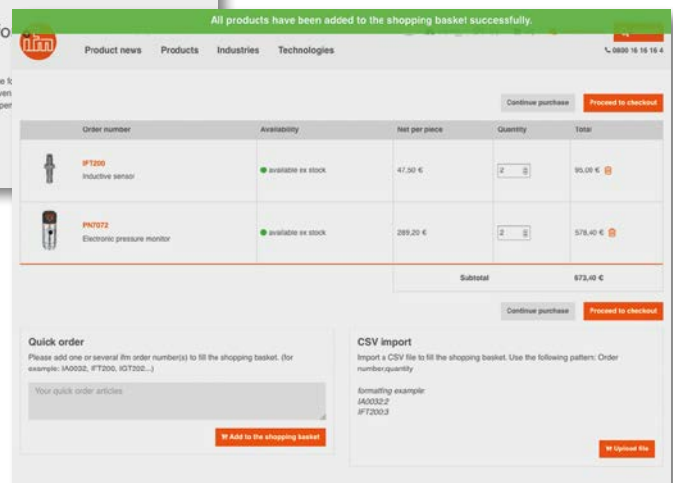
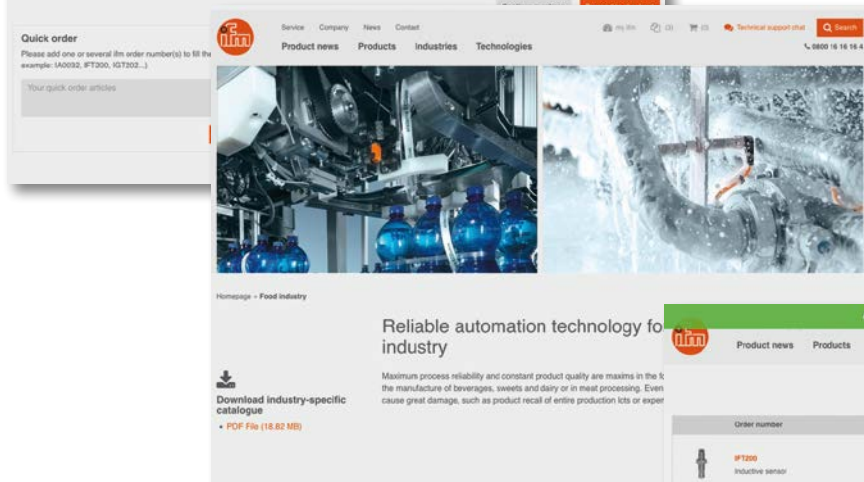


Easy purchasing

You are in control of everything in the shopping basket: quantity, modes of shipment and payment. We provide you with everything you can expect from a modern shop.

Customers relying on long-standing tried-and-tested articles can quickly order by entering the article number in the shopping basket. This saves time, in particular when a product has to be quickly reordered.

Navigation in the menu structure is no longer necessary.



For all types of display

Whether PC, laptop, tablet or smartphone – the design of the sales platform adapts to any screen size thus increasing user-friendliness. This also makes it possible to buy products using mobile equipment such as a smartphone.

Try us.
Click here to directly get to our homepage:
ifm.com



That's it? Not by far!

Our entire product portfolio is available online!

