

ifm electronic



Automation Products for the Food Industry *Catalogue 2013/2014*

www.ifm.com/gb/food

ifm electronic – close to you!

Clean solutions for your applications



With over 40 years of experience in sensors and control systems we know how to achieve maximum process reliability and plant uptime: our portfolio covers innovative, high-quality position sensors, level, temperature and pressure sensors as well as diagnostic systems with high temperature and cleaning resistance, which comply with the required standards and directives. In addition, connectors, also with the protection rating IP 68 / 69K.

The world's leading manufacturers in the food industry rely on solutions from ifm electronic – in over 70 countries worldwide. ifm electronic – close to you!



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The company in your vicinity.



State-of-the-art communication.

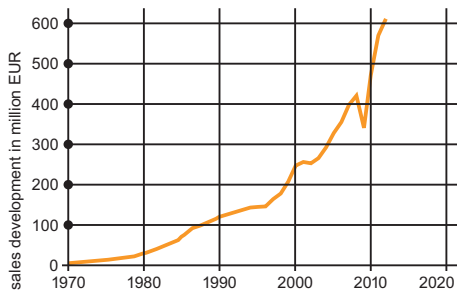
With the right address – www.ifm.com – only a mouse click separates you from the world of automation technology. See the power of our products in interactive representations. Gain an impression with 3-dimensional views of our units. Download CAD drawings for direct integration in your applications. Or order online in ifm's e-shop - fast, convenient and reliable.

We are there for you.

Close contact with our customers is part of our success. Therefore we have consistently developed our sales network right from the start. Today ifm electronic is represented in more than 70 countries – close to you! With application advice and service at the heart of our operation. For the introduction of new products and technologies we support you with workshops and seminars in our training centres or in your plant.

Security by success.

Since its foundation in 1969 ifm electronic has constantly grown, now having more than 4800 employees worldwide, and achieved a turnover of more than EUR 615 million in 2012. This success gives you the security of having a reliable partner for the implementation of your automation projects. Comprehensive service and a warranty of up to 5 years on standard units are just two examples of this reliability.



Turnover development since 1970.



Not only components.

ifm stands for a large range of different sensors and systems for automation. Our range of more than 7,800 articles guarantees flexibility and compatibility. So there is always a reliable solution for your automation projects – from the individual sensor with practical accessories to the complete system.

Availability guaranteed.

Your deadlines matter to us. That is why we are constantly optimising our production processes in order to be able to quickly and flexibly produce large quantities at a constantly high quality – and to continue to shorten delivery times. Your order is dispatched via our centralised logistics centre reliably and on time.

Quality as part of our philosophy.

The quality standard of our products is an integral part of our company philosophy. And we guarantee it! So we provide you, the users, with a maximum degree of security: By means of our own production technology, ifm film technology, as well as by means of extensive quality assurance measures such as 100 % final testing. By quality we understand, for example, ecologically conscious production – Made in Germany!



The development of innovative products is one of our core competences. From high-quality standard solutions to products specially tailored to the requirements of the individual industries – from mobile machines to the food industry.

www.ifm.com

Information around the clock and around the globe in 23 languages on the internet.



• **Information**

- product innovations
- company news
- exhibition info
- locations
- jobs

• **Documentation**

- data sheets
- operating instructions
- manuals
- approvals
- CAD data

• **Communication***

- request for documents
- recall service
- live advice
- newsletter

• **Selection**

- interactive product selection aids
- configuration tools
- data sheet direct

• **Animation**

- virtual product animations
- flash movies (video sequences)

• **Application**

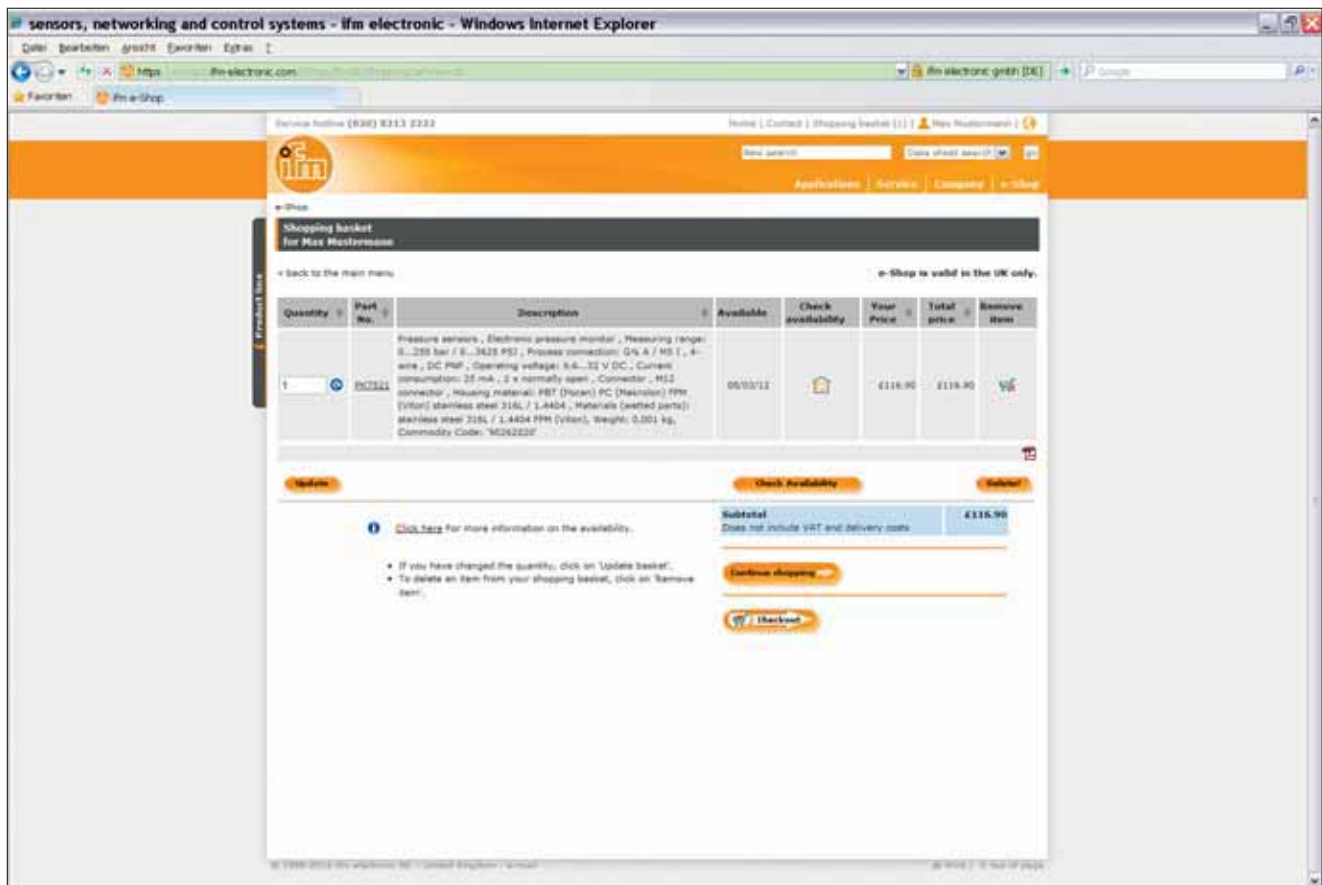
- applications
- product recommendations
- calculation aids

• **Transaction***

- e-shop processing
- e-procurement catalogues

*Some offered information is available country-specific

Convenient order processing via the e-shop** on the internet.



Secured authentication

Individual order history

Customer-related price indication

Convenient quick input form

Real time availability check

Simple order processing

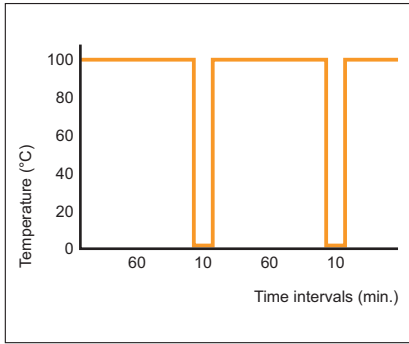
Personal product favourites

Management of shipping addresses

Online parcel tracking

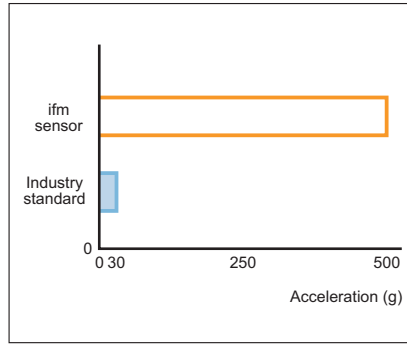
Confirmations by e-mail

** Already available in many countries.



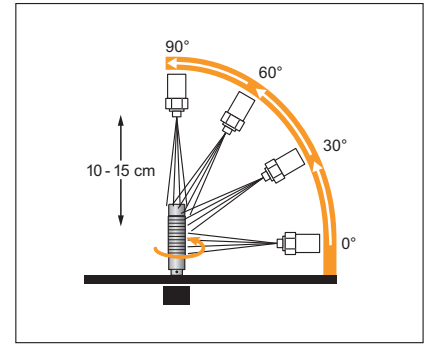
Thermal shock test

In pressure cleaning environments, proximity sensors are exposed to extreme temperature conditions. This is why ifm performs thermal shock tests on the sensors by cycling the temperature between 0 and 100 °C in short time intervals. After the test, the sensors' characteristics are tested to ensure high reliability.



Shock test

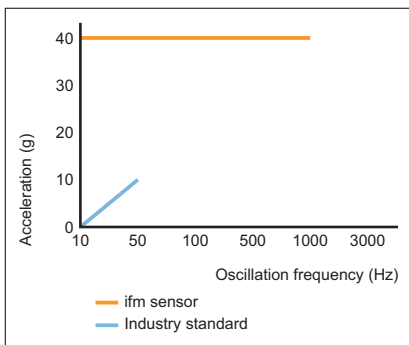
Sensors can be exposed to high levels of shock in industrial environments. This is why ifm sensors are tested at a shock level of 500 g. This test standard sets a new benchmark for inductive sensor product development.



IP 69K high-pressure cleaning test

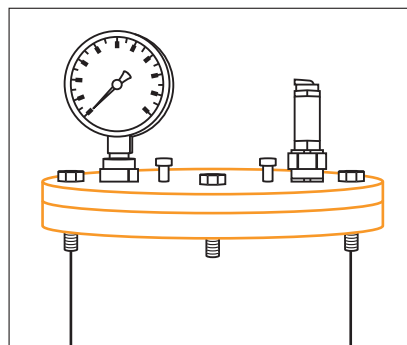
ifm inductive proximity sensors are tested in accordance with the IP 69K standard. The goal is to duplicate pressure cleaning conditions on a plant floor.

In the test fixture, the sensors are exposed to a 80 - 100 bar spray of water at a temperature of 80 °C. The duration of each cleaning cycle is 30 seconds. The test is performed at specified angles using a spray nozzle located at a distance of 10 - 15 cm from the sensor. ifm inductive sensors can withstand test conditions and are still operable providing 100 % of their sensing range.



Vibration test

A vibration test is performed on the sensors at a level of 40 g with the oscillation frequency spanned between 0 and 2,000 Hz. This test checks the integrity of the electronic circuit and the surface-mounted components. The vibration test is designed to far exceed manufacturing plant conditions on industrial automation machinery.



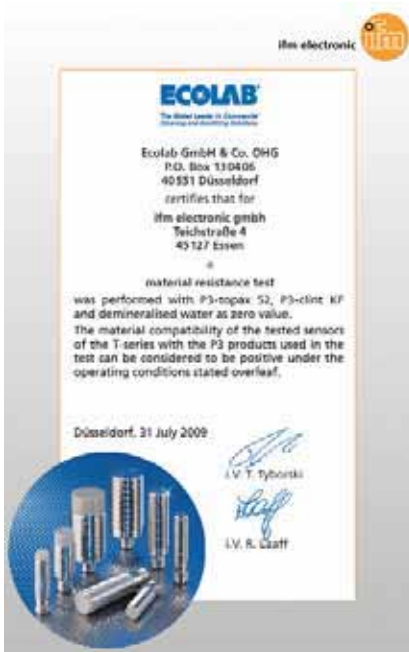
Steam boiler test

To simulate the aging process, the washdown sensors are placed in a steam boiler.

For inductive sensors: the test simulates whether penetrating water molecules can disturb the sensor behaviour. This is recognisable by a change in the sensing range.

For photoelectric sensors: the test simulates whether water can penetrate into the sensor optics. Abrupt cooling in ice water will cause any moisture to fog up the lens on the inside.

Many ifm sensors are Ecolab certified



Inductive proximity sensors



Photoelectric sensors of the O5 series for washdown



AS-i ProcessLine modules

Ecolab certified

Ecolab® is a global leader in the development of premium cleaning, sanitizing and hygiene products for the food processing, beverage, dairy and pharmaceutical industries. The integrity and quality of ifm sensors, connectors and cables for use in washdown environments was tested in accordance with the demanding Ecolab standards.

Independent tests were performed by Ecolab on the inductive sensors, photoelectric sensors of the OG series for washdown and AS-i ProcessLine modules of ifm electronic. Ecolab certified that ifm products resisted the cleaning chemicals used in the tests.

3A



3A Sanitary Standards, Inc. (3-A SSI) is an independent, not-for-profit corporation dedicated to advancing hygienic equipment design for the food, beverage, and pharmaceutical industries.

AS-i



Actuator-Sensor Interface. Bus system for the first binary field level.

ATEX



Atmosphère Explosible. ATEX comprises the directives of the European Union in the field of explosion protection. On the one hand there is the 94/9/EC ATEX product directive and on the other hand the 1999/92/EC ATEX operation directive.

CCC



CCC (China Compulsory Certification) is a compulsory Chinese certification for certain products put on the market in China. Which products are concerned is specified in a catalogue created by the Chinese authorities.

cCSAus



Testing a product by CSA according to the safety standards applicable in Canada and the USA.

CE



Conformité Européenne. By affixing the CE marking to a product, the manufacturer declares that it meets EU safety, health and environmental requirements.

cRUus



Testing components by UL according to the safety standards applicable in Canada and the USA. Components can be used when the "condition of acceptability" is complied with for the final product.

CSA



Canadian Standards Association. A non-governmental Canadian organisation that sets standards and tests and certifies products for their reliability. By now it is active worldwide.

cULus











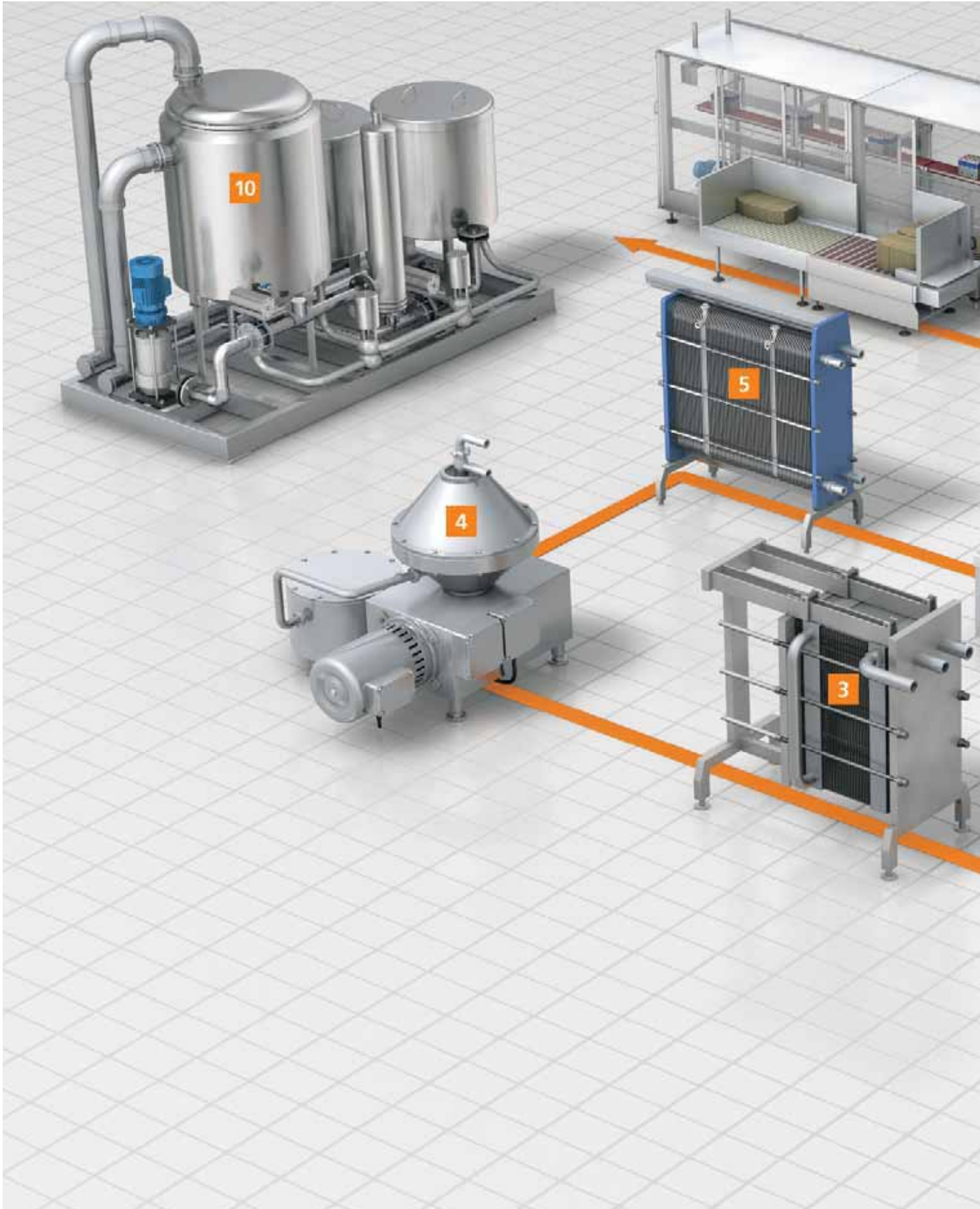
Testing components by UL according to the safety standards applicable in Canada and the USA.

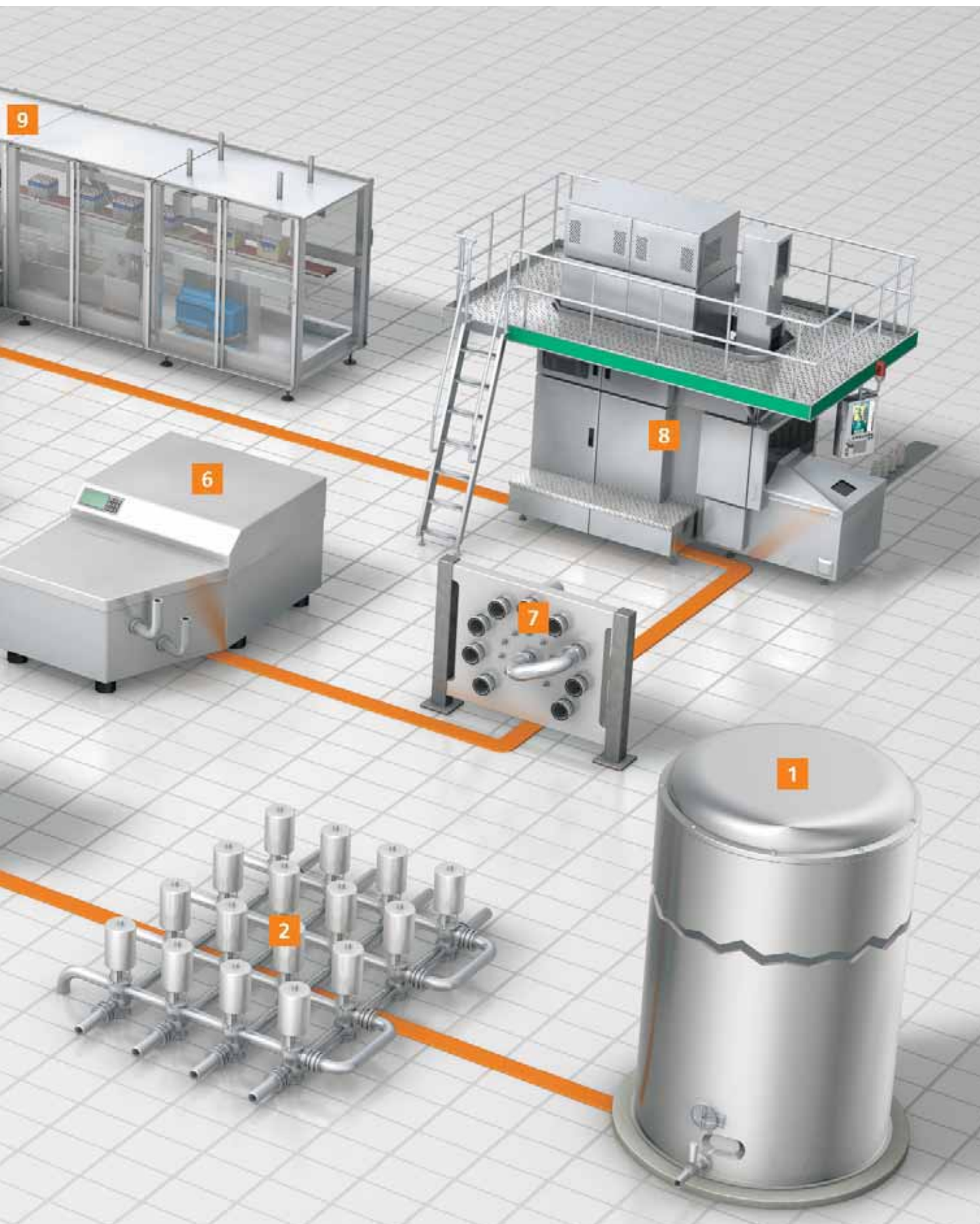
DIBt (WHG)



Deutsches Institut für Bautechnik (Federal Water Act). The Federal Water Act (WHG) is the essential part of the German law relating to water. It contains provisions for the protection and use of surface water and ground water and also regulations about the expansion of waters, water planning and flood protection.

DKD		The Deutscher Kalibrierdienst (DKD) is an association of calibration laboratories of industrial firms, research institutes, technical authorities, inspection and testing institutes. The DKD calibration certificates prove traceability to national standards as required in ISO 9000 and the ISO / IEC 17025. They also serve as a metrological basis for the control of measurement and test equipment within the framework of quality management.
e1		Approval by the Kraftfahrt-Bundesamt (German Federal Motor Transport Authority). The e1 type approval by the German Federal Motor Transport Authority certifies that the units comply with the automotive standards. Units with this marking are allowed to be mounted on vehicles without expiry of their operating permit.
EG 1935/2004		The Regulation EC 1935/2004 has been taken into account for fluid sensors from ifm electronic which are intended for use in contact with food. You can obtain a list of the corresponding products and detailed information on request.
EHEDG		European Hygienic Engineering & Design Group. European supervisory authority for food and drugs. This authority grants approvals for products and materials used in the food and pharmaceutical industries.
FDA		Food and Drug Administration. US-American supervisory authority for food and drugs. This authority grants approvals for products and materials used in the food and pharmaceutical industries.
FM		Factory Mutual Research. A US-based insurance company that specializes in loss prevention services in the property insurance market sector. They provide material research, material testing and certifications in the field of fire and explosion protection.
PROFIBUS		Process Field Bus. Fieldbus system for important data quantities. It is available in several versions such as Profibus FMS, DP or PA. Profibus DP can be used over longer distances, e.g. as fieldbus for AS-i.
TÜV		Technischer Überwachungs Verein (technical inspection association). The German TÜV is a private-sector body carrying out technical safety tests that are stipulated by government laws or instructions.
UL		Underwriters Laboratories. An organisation founded in the USA for testing and certifying products and their safety.







Machine	Application	Product group	From page
1 Tank			
	Manway monitoring	Fail-safe inductive sensors	117
	Level detection	Pressure sensors	135
	Temperature measurement	Level sensors	151
	Temperature measurement	Temperature sensors	153
2 Valves			
	Position detection	Inductive sensors	73
	Valve connection with AS-i	AS-Interface devices for valves and valve actuators	185
	Detection of rising stem valves	Feedback systems for valves and valve actuators	169
3 Pasteuriser			
	Pressure measurement	Pressure sensors	135
	Flow monitoring	Flow sensors / flow meters	145
	Temperature measurement	Temperature sensors	153
4 Separator			
	Pressure measurement	Pressure sensors	135
	Vibration monitoring	Vibration monitoring systems	193
5 Heat exchangers			
	Pressure measurement	Pressure sensors	135
	Flow monitoring	Flow sensors / flow meters	145
	Temperature measurement	Temperature sensors	153
6 Homogeniser			
	Pressure measurement	Pressure sensors	135
	Flow monitoring	Flow sensors / flow meters	145
7 Distribution plate			
	Position feedback	Inductive sensors	73
	Position feedback	Magnetic sensors	93

Machine	Application	Product group	From page
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8 Filling / conveying technology

	End position monitoring	Inductive sensors	73
	Optical detection	Photoelectric sensors for general applications	97
	Pressure measurement	Pressure sensors	135
	Level detection	Level sensors	151
	Temperature measurement	Temperature sensors	153

9 Cartoner

	End position monitoring	Inductive sensors	73
	Optical detection	Photoelectric sensors for general applications	97
	Monitoring of completeness	3D sensors	115
	End position monitoring	Cylinder sensors	95
	Reading of codes	1D/2D code readers	191

10 CIP installation

	Pressure measurement	Pressure sensors	135
	Level detection	Level sensors	151
	Temperature measurement	Temperature sensors	153
	AS-Interface as control system	AS-Interface controllers / gateways	173

Demanding requirements in milk processing



Milk is one of the most important staple foods. It can be processed into many different products such as cheese, yoghurt, ice cream or milk powder.

Reliable processing is essential in order to obtain a high-quality end product, with quality and food safety playing a decisive role. Sensors are an important element of these processes, for example when separating, homogenising or pasteurising milk.

Sensors from ifm electronic comply with required approvals such as EHEDG or 3A. In addition, they are resistant to CIP / SIP cleaning processes. A wide range of adapters enables easy and hygienic integration into the process equipment.


Storage in tanks




Level detection in a tank

ifm pressure sensors of the PG, PI or PM series detect the level as well as the system pressure in storage tanks.

Pressure sensors for level measurement · further products from page 135

Type	Process connection	Display	Measuring range	P _{overload}	P _{bursting}	U _b DC	Order no.
		LED	[bar]	max. [bar]	min. [bar]	[V]	
	Aseptoflex Vario	Display unit	-0.05...1	10	30	20...32	PI2797

Sensors for point level detection · further products from page 151

Type	Process connection	Process pressure max.	Application	Protection	Order no.
		[bar]			
	G 1/2 A	-1...16	water, water-based medium	IP 68 / IP 69K	LMT100


Valve monitoring



Monitoring of rising stem valves

efector valvis precisely detects the position of rising stem valves. It signals up to three valve positions: valve open, valve closed and any interim position such as seat lift.

Valve sensors for feedback of the valve positions · further products from page 169

Type	Dimensions	Sensing range	Material	U _b	Protection	f AC / DC	I _{load} AC / DC	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
	65 x 52 x 110	–	PA	18...36	IP 65 / IP 67	–	100	IX5010

Valve monitoring




Monitoring of rising stem valves with AS-i connection

The connection of rising stem valves via AS-i saves time and cost.

An M12 to flat cable insulation-displacement connector enables easy connection to the yellow flat cable.

Valve sensors for feedback of the valve positions · further products from page 169

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f AC / DC [Hz]	I _{load} AC / DC [mA]	Order no.
	65 x 52 x 110	–	PA	26.5...31.6	IP 65 / IP 67	–	–	IX5030


Pump system



Pump run-dry protection

When conveying dairy products the product flow has to be monitored. Flow sensors of the SI6 series monitor the flow to avoid dry running of the pump.

Flow monitor as run-dry protection · further products from page 145

Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	Probe length [mm]	Order no.
	3...300 / 200...3000	3...100 / 200...800	-25...95	30	1...10	71.8	SI6800


Pasteuriser



Redundant temperature measurement for increased process reliability

For the life of the milk it is of high importance that the correct temperatures are kept. The self-monitoring and diagnostic functions of TAD-type temperature transmitters ensure that the process runs smoothly.

Temperature transmitter with diagnostic output for temperature measurement · further products from page 153

Type	Measuring range [°C]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	-25...160	Aseptoflex Vario	87.5	18...32	3 / 6	TAD181


Separator



Continuous bearing monitoring on a separator

The efector octavis vibration diagnostic unit monitors the bearing of the motor. Maintenance measures can then be precisely planned. This increases plant uptime.

Vibration monitoring units for bearing monitoring · further products from page 193

Type	Description	Order no.
	Vibration sensor · for connection to external diagnostic electronics · Connector · housing: stainless steel 316L / 1.4404	VSA001


Heat exchangers



Temperature monitoring on a heat exchanger

In indirect heating a heat exchanger is used for the heat transmission. For the quality of a product it is decisive that the correct temperature is kept.

Temperature sensors for temperature monitoring · further products from page 153

Type	Measuring range [°C]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	-40...150	Aseptoflex	63.8	-	5 / 14	TM0061


Homogeniser




Pressure monitoring in homogenisers

An important process is the homogenisation. For a targeted and reproducible process, the pressure conditions in the pump aggregate must be precisely monitored or regulated.

Pressure sensors for pressure monitoring of the pump aggregate · further products from page 135

Type	Process connection	Display	Measuring range [bar]	P _{overload} max. [bar]	P _{bursting} min. [bar]	U _b DC [V]	Order no.
	Clamp fitting	Display unit	0...600	800	1200	20...30	PY9000

Vibration monitoring units for bearing monitoring · further products from page 193

Type	Description	Order no.
	Vibration transmitter · Connection via M12 connector · Vibration transmitter to ISO 10816 · Measuring range RMS: 0...25 mm/s · Analogue output 4...20 mA · stainless steel 316L / 1.4404	VTV122


Splitter box



Position feedback on a distribution plate

Distribution plates with swing bends are used for manual change between different lines. T series inductive sensors detect the position of the swing bend.

Inductive sensors for position feedback · further products from page 73

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
	M18 / L = 90	8 f	high-grade st. steel	10...36	IP 67	400	100	IGT241

f = flush / nf = non flush


Ice cream production



Optical distance sensor monitors ice-cream production

From a safe distance several efector pmd units check whether the pneumatic grippers have each picked a wafer.

Optical distance sensors for detection from a safe distance · further products from page 107

Type	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.
	Optical distance sensor	0.2...10 m	1...50	6	18...30	O1D100


Ice cream production



Position feedback on pneumatic cylinders

ifm cylinder sensors with protection rating IP 69K meet the high requirements in the food industry and reliably detect the piston position.

Cylinder sensors for position feedback · further products from page 95

Type	Dimensions [mm]	Material	U _b [V]	f [Hz]	Protection	I _{load} [mA]	T _a [°C]	Order no.
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67 / IP 69K	100	-25...85	MK5157


Cheese production



Compressed air meter monitors cheese production

Different types of presses are used to withdraw the remaining liquid from the curd. The compressed air of the pneumatic cylinders is monitored by the efector metris compressed air meter (SD series).

Compressed air meter for the measurement of compressed air consumption · further products from page 145

Type	Process connection	Setting range [Nm ³ /h]	Accuracy within measuring range	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
	R½ (DN15)	0.6...75.0	A): ± (3% MW + 0.3% MEW) / B): ± (6% MW + 0.6% MEW) *	16	< 0.1	18...30	SD6000


Cheese production



Photoelectric sensor monitors cheese production

In cheese presses ifm through-beam sensors of the OG wetline series monitor the correct function of the compressed air cylinders in the line in each string of the press.

Photoelectric sensors for monitoring the pressing process · further products from page 97

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Receiver	20 m	red	–	D PNP	OGS300
	Transmitter	20 m	red	800	–	OGS300


CIP / SIP system

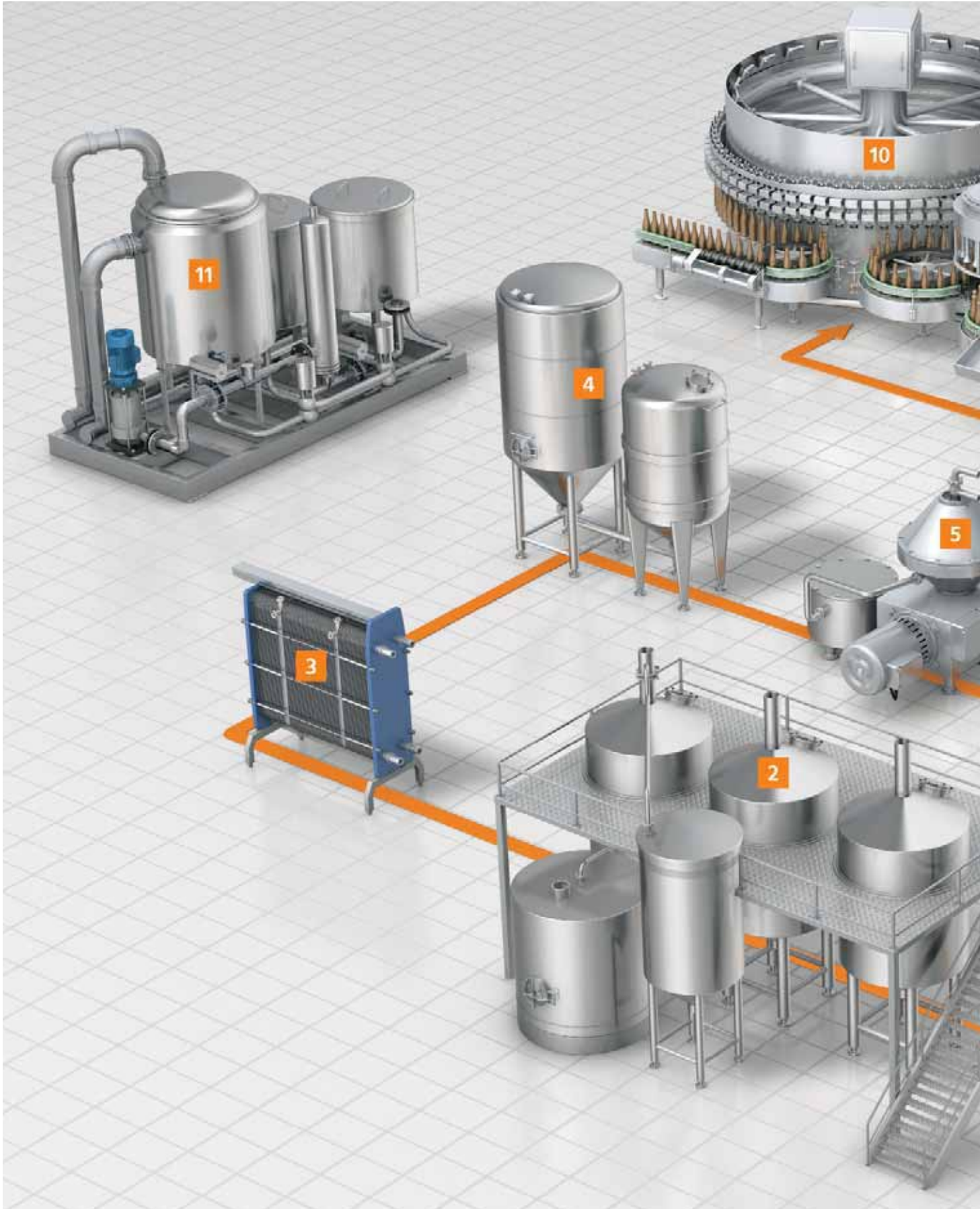


Pressure monitoring

For monitoring CIP / SIP systems ifm electronic offers many different measuring systems such as pressure and temperature sensors or electronic contact manometers.

Pressure sensors for measuring system pressure · further products from page 135

Type	Process connection	Display	Measuring range	P _{overload}	P _{bursting}	U _b DC	Order no.
		LED	[bar]	max. [bar]	min. [bar]	[V]	
	Aseptoflex Vario	Display unit	-1...10	50	150	18...32	PG2794





Machine	Application	Product group	From page
1 Malt mill			
	Position detection	Inductive sensors	73
	Level detection	Capacitive sensors	91
	Level detection	Level sensors	151
	Vibration monitoring	Vibration monitoring systems	193
2 Brewhouse tank			
	Detection of rising stem valves	Feedback systems for valves and valve actuators	169
	Level detection	Level sensors	151
	Level detection	Pressure sensors	135
	Temperature measurement	Temperature sensors	153
	Manway monitoring	Inductive sensors	73
	Position feedback	Inductive sensors	73
3 Wort cooler			
	Pressure measurement	Pressure sensors	135
	Temperature measurement	Temperature sensors	153
	Flow monitoring	Flow sensors / flow meters	145
4 Fermentation / storage tanks			
	Level detection	Level sensors	151
	Level detection	Pressure sensors	135
	Temperature measurement	Temperature sensors	153
	Manway monitoring	Fail-safe inductive sensors	117
5 Separator			
	Pressure measurement	Pressure sensors	135
	Vibration monitoring	Vibration monitoring systems	193
6 Diatomaceous earth filter			
	Pressure / differential pressure measurement	Pressure sensors	135
	Level detection	Level sensors	151
	Flow monitoring	Flow sensors / flow meters	145

Machine	Application	Product group	From page
7 Flash pasteuriser			
	Pressure measurement	Pressure sensors	135
	Temperature measurement	Temperature sensors	153
	Flow monitoring	Flow sensors / flow meters	145
8 Keg cleaning system			
	Optical detection	Photoelectric sensors for general applications	97
	Level detection	Level sensors	151
	Pressure measurement	Pressure sensors	135
	Temperature measurement	Temperature sensors	153
	Flow monitoring	Flow sensors / flow meters	145
9 Palletiser			
	Position detection	Inductive sensors	73
	Optical detection	Photoelectric sensors for general applications	97
	Safety monitoring	Safety light grids	127
	Monitoring of completeness	3D sensors	115
	AS-Interface as control system	AS-Interface controllers / gateways	173
10 Filling / conveying technology			
	End position monitoring	Inductive sensors	73
	Optical detection	Photoelectric sensors for general applications	97
	Safety monitoring	Fail-safe inductive sensors	117
	Monitoring of completeness	3D sensors	115
	Pressure measurement	Pressure sensors	135
	Level detection	Level sensors	151
	Vibration monitoring	Vibration monitoring systems	193
11 CIP installation			
	Pressure measurement	Pressure sensors	135
	Temperature measurement	Temperature sensors	153
	Level detection	Level sensors	151
	AS-Interface as control system	AS-Interface controllers / gateways	173

For the processes in the manufacture of beverages



In most cases beverages are manufactured in individual, highly-automated processes. One of the most complex food processes is that of brewing beer.

Reliable sensors guaranteeing maximum process safety are required here so that a high-quality product results without quality fluctuations.

ifm electronic offers solutions for all areas of the manufacture of beverages. From the process and the bottling or canning of the beverages to packaging and conveying.

Sensors from ifm electronic comply with required approvals such as EHEDG or 3A. In addition, they are resistant to CIP / SIP cleaning processes. A wide range of adapters enables easy and hygienic integration into the process equipment.


Malt mill



Continuous bearing monitoring on a malt mill

The ector octavis vibration sensor monitors the bearing on the mash pump. Wear rates can be detected continuously so as to predict downtimes and thus to increase plant uptime.

Vibration sensor for bearing monitoring · further products from page 193

Type	Description	Order no.
	Vibration sensor · for connection to external diagnostic electronics · Connector · housing: stainless steel 316L / 1.4404	VSA001


Brewhouse tank




Level detection on a brewhouse tank

PG series pressure sensors, with flush diaphragm and CIP resistance, are used for level detection in mash tuns, for example. A range of adapters offers many different possibilities for fitting.

Pressure sensor for level monitoring · further products from page 135

Type	Process connection	Display	Measuring range	P _{overload}	P _{bursting}	U _b DC	Order no.
		LED	[bar]	max. [bar]	min. [bar]	[V]	
	Aseptoflex Vario	Display unit	-0.05...1	10	30	18...32	PG2797

Temperature transmitter with diagnostic output for temperature measurement · further products from page 153

Type	Measuring range	Process connection	Installation length	U _b	Dynamic response T05 / T09	Order no.
	[°C]		[mm]	[V]	[s]	
	-25...160	G½ A	33	18...32	3 / 6	TAD991


Brewhouse tank



Manway monitoring on the brewhouse tank

If manways are open agitator drives and valves must be shut off. Here, fail-safe inductive sensors without magnetic target or coded actuator monitor the manway.

Fail-safe inductive sensor for monitoring manways · further products from page 117

Type	Length [mm]	Enable zone [mm]	Housing material	U _b DC [V]	Protection	Response time in case of a safety request / enable time [ms]	Order no.
	66	10...15 nf	PPE	24	IP 65 / IP 67	≤ 20 / ≤ 200	GM5045

f = flush / nf = non flush


Wort cooler




Temperature measurement on a wort cooler

Before it is fed into the fermentation tank, the wort is cooled in the wort cooler. Temperature sensors of the TAD series are used to monitor the fermentation temperature before and after the wort cooler.

Temperature transmitter with diagnostic output for temperature measurement · further products from page 153

Type	Measuring range [°C]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	-25...160	Aseptoflex Vario	33	18...32	3 / 6	TAD981

Pressure sensor for monitoring the system pressure · further products from page 135

Type	Process connection	Display LED	Measuring range [bar]	Poverload max. [bar]	Pbursting min. [bar]	U _b DC [V]	Order no.
	Aseptoflex Vario	Display unit	-1...10	50	150	18...32	PG2794

Product selectors and further information can be found at: www.ifm.com


Valve island



Valve monitoring with AS-Interface

Inductive sensors of the T series are, for example, used for position detection on valves. All signals can be transferred to the controller via AS-Interface using a flat cable.

ProcessLine module for use in wet areas · further products from page 177

Type	Inputs / outputs	Description	Order no.
	8 digital inputs (2 slaves)	Active ProcessLine module · Version 2.1 with extended addressing mode · Protection rating IP 69K · high-grade stainless steel · Digital inputs · Sockets M12 x 1 · high-grade stainless steel / Makrolon / O-ring: EPDM	AC2910

Inductive sensor for detecting the valve position · further products from page 73

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
	M12 / L = 60	3 f	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IFT240


f = flush / nf = non flush



Dual inductive sensor for position feedback on valve actuators.

Pneumatic valve actuators are used for the automatic control of butterfly valves in many different areas. Inductive dual sensors of the IND series provide feedback of the position.

Dual inductive sensor with actuator interface connection · further products from page 185

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 67	–	–	AC2316

f = flush / nf = non flush


Fermentation / storage tanks




Level detection on fermentation / storage tanks

In the cold area of the brewery there are, for example, fermentation and storage tanks. Pressure sensors of the PI series detect both the level and the pressure of the generated CO₂ in the upper part of the fermentation tank.

Pressure sensors for level measurement · further products from page 135

Type	Process connection	Display	Measuring range	P _{overload}	P _{bursting}	U _b DC	Order no.
		LED	[bar]	max. [bar]	min. [bar]	[V]	
	Aseptoflex Vario	Display unit	-0.124...2.5	20	50	20...32	PI2796

Electronic level sensor for limit value monitoring · further products from page 151


Type	Process connection	Process pressure max.	Application	Protection	Order no.
		[bar]			
	G 1/2 A	-1...16	water, water-based medium	IP 68 / IP 69K	LMT100



Temperature monitoring of the different cooling zones in fermentation tanks

Various temperature sensors measure the temperatures in the different cooling zones of the fermentation tanks.

Temperature transmitter with diagnostic output for temperature measurement · further products from page 153

Type	Measuring range	Process connection	Installation length	U _b	Dynamic response T05 / T09	Order no.
	[°C]		[mm]	[V]	[s]	
	-25...160	Aseptoflex Vario	87.5	18...32	3 / 6	TAD181


Fermentation / storage tanks



Monitoring manways on fermentation / storage tanks

Fail-safe inductive proximity switches to category 4 and SIL3 detect the stainless steel lid of the tank without contact and without any specific counterpart.

Fail-safe inductive sensor for monitoring manways · further products from page 117

Type	Length [mm]	Enable zone [mm]	Housing material	U _b DC [V]	Protection	Response time in case of a safety request / enable time [ms]	Order no.
	39	6...12 nf	high-grade st. steel	24	IP 68 / IP 69K	≤ 20 / ≤ 200	GI5055

f = flush / nf = non flush


Diatomaceous earth filter



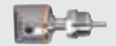
Differential pressure monitoring during filtration

After storage a variety of beers are filtered. In this respect diatomaceous earth filtering is often used. Hygienic pressure sensors of the PI series monitor the differential pressure in the filter unit.

Pressure sensor for differential pressure monitoring · further products from page 135

Type	Process connection	Display LED	Measuring range [bar]	Poverload max. [bar]	Pbursting min. [bar]	U _b DC [V]	Order no.
	Aseptoflex Vario	Display unit	-0.05...1	10	30	20...32	PI2797

Flow monitor as run-dry protection · further products from page 145

Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	Probe length [mm]	Order no.
	3...300 / 200...3000	3...100 / 200...800	-25...95	30	1...10	36.8	SI6600


Diatomaceous earth filter



Level measurement in a diatomaceous earth tank

Diatomaceous earth is mixed with the beer via a separate tank and then fed into the filter. The LMT level sensor detects the limit value for the min / max detection.

Adjustable level sensor for level measurement on diatomaceous earth tanks · further products from page 151

Type	Process connection	Process pressure max. [bar]	Application	Protection	Order no.
	G ½ A	-1...40	liquid, viscous and powdery media	IP 68 / IP 69K	LMT121


Flash pasteuriser




Temperature monitoring on a flash pasteuriser

Precise temperature measurement is indispensable for flash pasteurisation. The TM hygienic temperature sensor controls this main parameter of the process in conjunction with the TP modular transmitter.

Head transmitter for the connection to a temperature sensor · further products from page 153

Type	Measuring range [°C]	Process connection	U _b [V]	Ambient temperature [°C]	Measuring element	Order no.
	-50...300	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	TP3237

Hygienic temperature sensor with Tri-Clamp process connection · further products from page 153

Type	Measuring range [°C]	Process connection	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Order no.
	-40...150	Clamp 1-1.5, ISO 2852	30	1 x Pt 100	1 / 3	TM4801


CIP installation




Temperature measurement on a CIP installation

CIP cleaning is standard in the beverage industry. The TR2432 evaluation unit in conjunction with the TM4531 hygienic temperature sensor is, for example, used to monitor the cleaning temperature.

Temperature evaluation on CIP tanks · further products from page 153

Type	Measuring range [°C]	Process connection	Display LED	U _b [V]	Current consump. [mA]	I _{load} [mA]	Order no.
	-40...300	G½ A	Display unit	18...32	50	250	TR2432

Hygienic temperature sensor with Tri-Clamp process connection · further products from page 153

Type	Measuring range [°C]	Process connection	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Order no.
	-40...150	G½ with sealing cone	100	1 x Pt 100	1 / 3	TM4531


Bottle filling system



Flow rate measurement for water

In the filling process, water is used for example on bottle washing systems and tunnel pasteurisers. The effector mid volumetric flow sensor measures the consumed amount of water to use the resource water economically.

Flow rate measurement for water on cleaning systems and tunnel pasteurisers · further products from page 145

Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
	G½	0.25...25.00	-10...70	16	< 0.150	19...30	SM6100


Bottle filling system




Condition monitoring of pumps

Pumps convey various media in all areas of the brewery. efactor octavis continuously monitors the vibration characteristics of pumps so that beginning pump damage can be detected in time.

Vibration monitoring on feeding pumps · further products from page 193

Type	Description	Order no.
	Vibration sensor · for connection to external diagnostic electronics · Connector · housing: stainless steel 316L / 1.4404	VSA001

Pressure sensor for measuring the system pressure · further products from page 135


Type	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.
		LED	[bar]	max. [bar]	min. [bar]	[V]	
	Aseptoflex Vario	Display unit	-1...25	100	350	20...32	PI2793



Full crate inspection

The efactor pmd 3d sensor can be used for checking the completeness of beverage crates. The sensor checks the volume of the object. If bottles are missing, the volume decreases and the crate is discharged.

3D sensor for monitoring the presence of bottles · further products from page 115

Type	Operating principle	Resolution (pixels)	Angle of aperture (horizontal x vertical)	Lighting	Max. sampling rate [Hz]	Ambient temperature	Order no.
			[°]			[°C]	
	PMD 3D sensor	64 x 48	30 x 40	Infrared LED	20	-10...50	O3D200


Filling / conveying technology



Photoelectric sensor for the detection of bottles

The O5G500 photoelectric sensor reliably detects glass and PET bottles on the conveyor of the filling system. All signals can be transferred to the controller via AS-Interface using a cable.

Photoelectric sensor for the detection of bottles · further products from page 109

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Polarisation filter	0...1.5 m	red	40 / 80	H/D PNP/NPN	O5G500

ProcessLine module for use in wet areas · further products from page 177

Type	Inputs / outputs	Description	Order no.
	8 digital inputs (2 slaves)	Active ProcessLine module · Version 2.1 with extended addressing mode · Protection rating IP 69K · high-grade stainless steel · Digital inputs · Sockets M12 x 1 · high-grade stainless steel / Makrolon / O-ring: EPDM	AC2910


Keg palletising



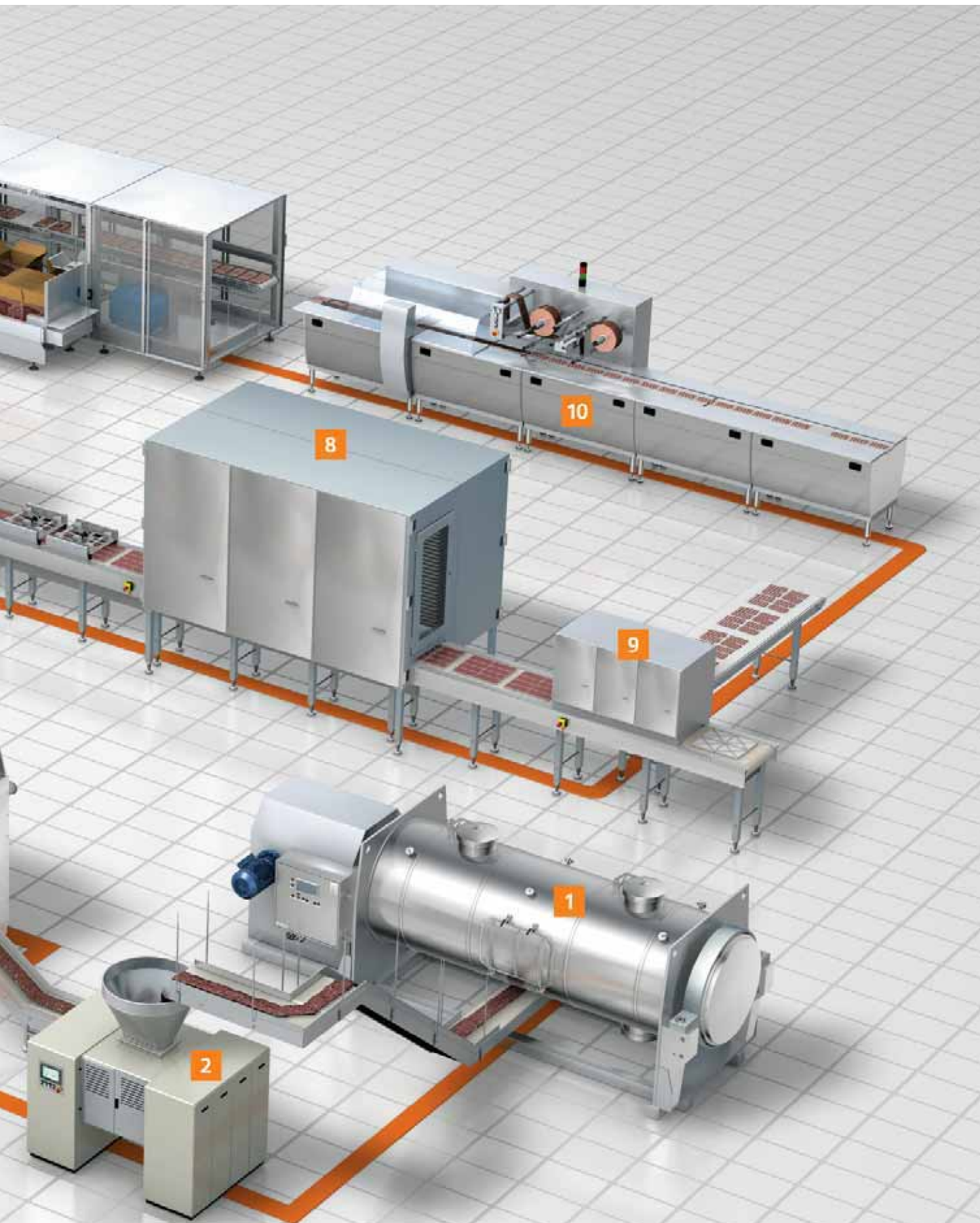
Access prevention in keg palletising

For operator protection, safety light curtains of the OY series protect accessible areas such as pallet inlet and outlet against unauthorised access. The safety light curtains correspond to type 2 or 4 to EN61496, depending on the design.




Safety light curtains for access prevention · further products from page 121

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
	1563	50	1510	0...4 / 3...12	11	24	OY090S





Machine	Application	Product group	From page
1 Mixer			
	Position detection	Inductive sensors	73
	Safety monitoring	Fail-safe inductive sensors	117
	Optical detection	Photoelectric sensors for general applications	97
	Level detection	Level sensors	151
	Vibration monitoring	Vibration monitoring systems	193
2 Refiner			
	Level detection	Level sensors	151
	Detection of pneumatic cylinders	Cylinder sensors	95
	Safety monitoring	Fail-safe inductive sensors	117
	Vibration monitoring	Vibration monitoring systems	193
3 Conche			
	Position detection	Inductive sensors	73
	Conveying pressure measurement	Pressure sensors	135
	Level monitoring	Pressure sensors	135
	Temperature measurement	Temperature sensors	153
	Vibration monitoring	Vibration monitoring systems	193
4 Tank			
	Photoelectric level detection	Level sensors	151
	Level detection	Level sensors	151
	Level detection	Pressure sensors	135
	Temperature measurement	Temperature sensors	153
	Vibration monitoring	Vibration monitoring systems	193
5 Tempering system			
	Pressure measurement	Pressure sensors	135
	Temperature measurement	Temperature sensors	153
6 Pipes			
	Magnetic detection	Magnetic sensors	93
	Temperature measurement	Temperature sensors	153

Machine	Application	Product group	From page
7 Moulding system			
	Optical detection	Photoelectric sensors for general applications	97
	Photoelectric level detection	Photoelectric sensors for general applications	97
	Mould identification / detection	RFID	189
	Mould testing	Vision sensors	111
	AS-Interface as control system	AS-Interface controllers / gateways	173
8 Cooling tunnel			
	Position detection	Inductive sensors	73
	Temperature measurement	Temperature sensors	153
	Optical detection	Photoelectric sensors for general applications	97
	Mould identification / detection	RFID	189
9 Demoulding system			
	Optical detection	Photoelectric sensors for general applications	97
	Mould identification / detection	RFID	189
	Assessment of damage	Vision sensors	111
10 Packaging machine			
	End position monitoring	Inductive sensors	73
	Optical detection	Photoelectric sensors for general applications	97
	AS-Interface as control system	AS-Interface controllers / gateways	173
11 Cartoner			
	Optical detection	Photoelectric sensors for general applications	97
	Monitoring of completeness	3D sensors	115
	Reading of codes	1D/2D code readers	191
	AS-Interface as control system	AS-Interface controllers / gateways	173
12 Palletiser			
	End position monitoring	Inductive sensors	73
	Optical detection	Photoelectric sensors for general applications	97
	Monitoring of completeness	3D sensors	115
	AS-Interface as control system	AS-Interface controllers / gateways	173

Highest quality in the confectionary industry



Many innovative solutions are required to manufacture products with constantly high quality. This includes photoelectric sensors for level monitoring in tanks as well as camera systems for the inspection of chocolate moulds, or the vibration monitoring of drives.

ifm electronic offers a wide range of solutions for the confectionary industry. This includes the corresponding mounting and process adapters as well as suitable connection technology.


Mixer



Monitoring manways

Fail-safe inductive sensors to category 4 / SIL 3 detect the stainless steel cover of the mixer directly and without contact. A specially coded target is not required.

Fail-safe inductive sensor for monitoring manways · further products from page 117

Type	Length [mm]	Enable zone [mm]	Housing material	U _b DC [V]	Protection	Response time in case of a safety request / enable time [ms]	Order no.
	39	6...12 nf	high-grade st. steel	24	IP 68 / IP 69K	≤ 20 / ≤ 200	GI5055

f = flush / nf = non flush



Refiner



Bearing monitoring on a refiner

efector octavis is suited for vibration monitoring on bearings and refiners. It does not only detect vibration data but also carries out the signal analysis and machine diagnosis already on the machine.

Vibration sensor for bearing monitoring on refiners. · further products from page 193


Type	Description	Order no.
	Vibration sensor · for connection to external diagnostic electronics · Connector · Housing materials: housing: stainless steel 316L / 1.4404	VSA001
	Diagnostic electronics for vibration sensors · 4 sensor inputs 0...10 mA · Ethernet interface · Combicon connection · Housing materials: PA	VSE100

Refiner

**Flow rate and temperature measurement of cooling water**

The SM magnetic-inductive volumetric flow sensor monitors the cooling process of refiners. It detects the smallest deviations of volumetric flow quantity, e.g. in the event of leakage. Simultaneously it also monitors the cooling water temperature.

Magnetic-inductive flow meter for measuring cooling water in refiners · further products from page 145


Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
	G1	0.7...100.0	-10...70	16	< 0.150	19...30	SM8000

Conche


**Pressure measurement on feeding pumps**

Pressure sensors are used for measuring the conveying pressure in pipes and on pumps. The fully electronic PG manometer is used. It combines the advantages of a manometer with those of electronic pressure sensors.

Pressure sensor for measuring the conveying pressure · further products from page 135

Type	Process connection	Display	Measuring range [bar]	P _{overload} max. [bar]	P _{bursting} min. [bar]	U _b DC [V]	Order no.
	Aseptoflex Vario	Display unit	-1...25	100	350	18...32	PG2793

Vibration sensor for bearing monitoring · further products from page 193

Type	Description	Order no.
	Vibration transmitter · Connection via M12 connector · Vibration transmitter to ISO 10816 · Measuring range RMS: 0...25 mm/s · Analogue output 4...20 mA · Housing materials: stainless steel 316L / 1.4404	VTV122


Conche



Position feedback on valve actuators

The devices in the IND range contain two inductive sensors for "open / close" detection of the valve position by means of target pucks. The digital output controls the solenoid valve for the pneumatic valve actuator. It is connected directly to AS-i.

Dual inductive sensor for position feedback on valve actuators · further products from page 185

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Order no.
	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 67	–	–	AC2316

f = flush / nf = non flush


Storage tank




Level monitoring on storage tanks

The O1D300 photoelectric sensor detects levels of bulk materials and non-transparent liquids without contact with the medium. It uses the time of flight measurement on the basis of a laser beam.

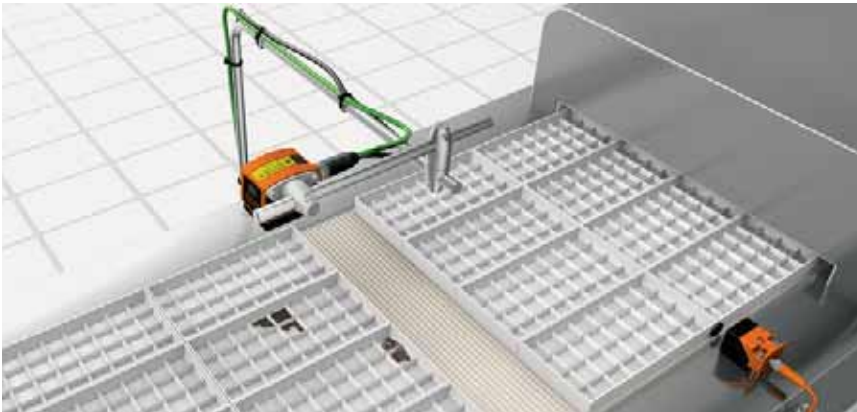
Level sensor for level detection in storage tanks · further products from page 107

Type	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U_b [V]	Order no.
	Optical level sensor	0.2...10 m	1...33	6	18...30	O1D300

Adjustable level sensor on a storage tank · further products from page 151

Type	Process connection	Process pressure max. [bar]	Application	Protection	Order no.
	G ½ A	-1...40	liquid, viscous and powdery media	IP 68 / IP 69K	LMT121


Moulding plant



Detection of empty moulds on a moulding plant

Before the liquid chocolate is filled into moulds, it has to be ensured that the moulds are empty. The O2V vision sensor is used for this task. It checks the presence, size, position or completeness on the basis of variable features.

Vision sensor for the detection of empty chocolate moulds · further products from page 111


Type	Operating principle	Max. field of view size [mm]	Resolution [mm]	Detection rate [Hz]	Type of light	Ambient temperature [°C]	Order no.
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	0.1	10	White light	-10...60	O2V100




Traceability of chocolate moulds

Traceability is of great importance in the food industry. The RFID system from ifm electronic gmbh is used to identify chocolate moulds. It ensures for example that the correct mould is used.

RFID evaluation unit for the connection of up to 4 read/write heads · further products from page 189

Type	Dimensions [mm]	Travel speed read / write [m/s]	Process interface	Order no.
	115 x 46.2 x 85	–	Profibus DP	DTE100

RFID antenna for the identification of chocolate moulds · further products from page 189

Type	Description	Order no.
	Read/write head · M12 connector · 5 positions of the sensing face selectable · Housing materials: housing: PA / Metal parts: stainless steel	ANT513


Cooling line



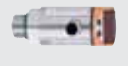
Temperature monitoring on cooling lines

After moulding, the chocolate is cooled in a controlled manner. The ifm temperature sensors have a very good response time, a high protection rating (IP 68 / IP 69K) and a sanitary surface definition.

Temperature sensor for measurement in cooling lines · further products from page 153

Type	Measuring range [°C]	Process connection	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Order no.
	-40...150	G½ with sealing cone	150	1 x Pt 100	1 / 3	TM4541

Evaluation units for temperature sensors · further products from page 153

Type	Measuring range [°C]	Process connection	Display LED	U _b [V]	Current consump. [mA]	I _{load} [mA]	Order no.
	-40...300	G½ A	Display unit	18...32	50	250	TR2432


Packaging machine



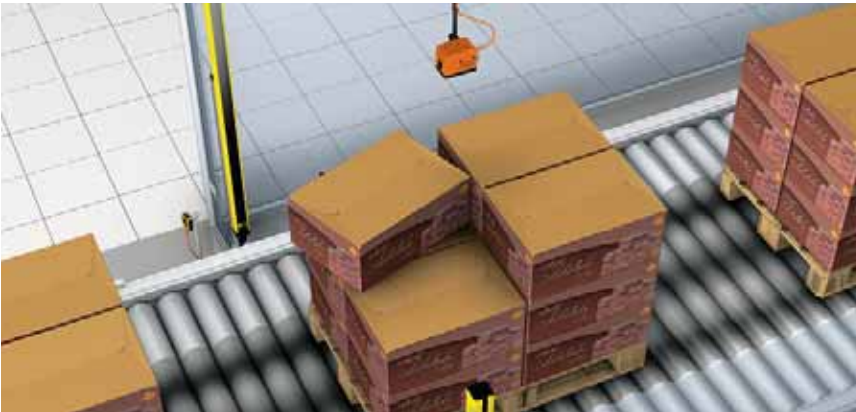
Optical detection of chocolate on a packaging machine

The O6 photoelectric sensor is used for the optical detection of chocolate on packaging machines. It has a stainless housing with a smooth surface and a plastic lens that does not shatter in case of damage.

Photoelectric sensor for use in hygienic and wet areas · further products from page 97

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Background suppression	8...200 mm	red	8	H/D PNP	O6H300


Palletiser



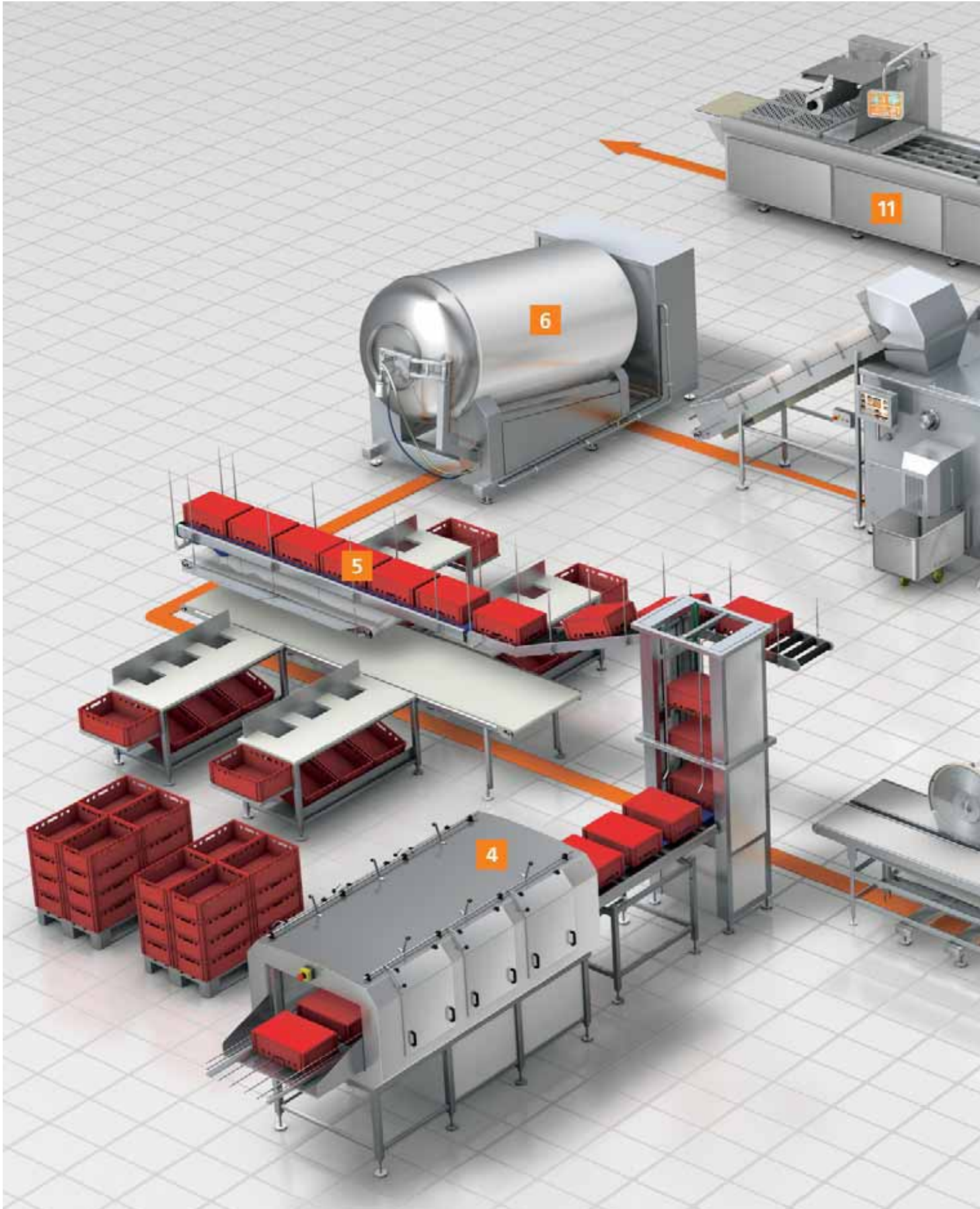
Detection of the filling status of pallets

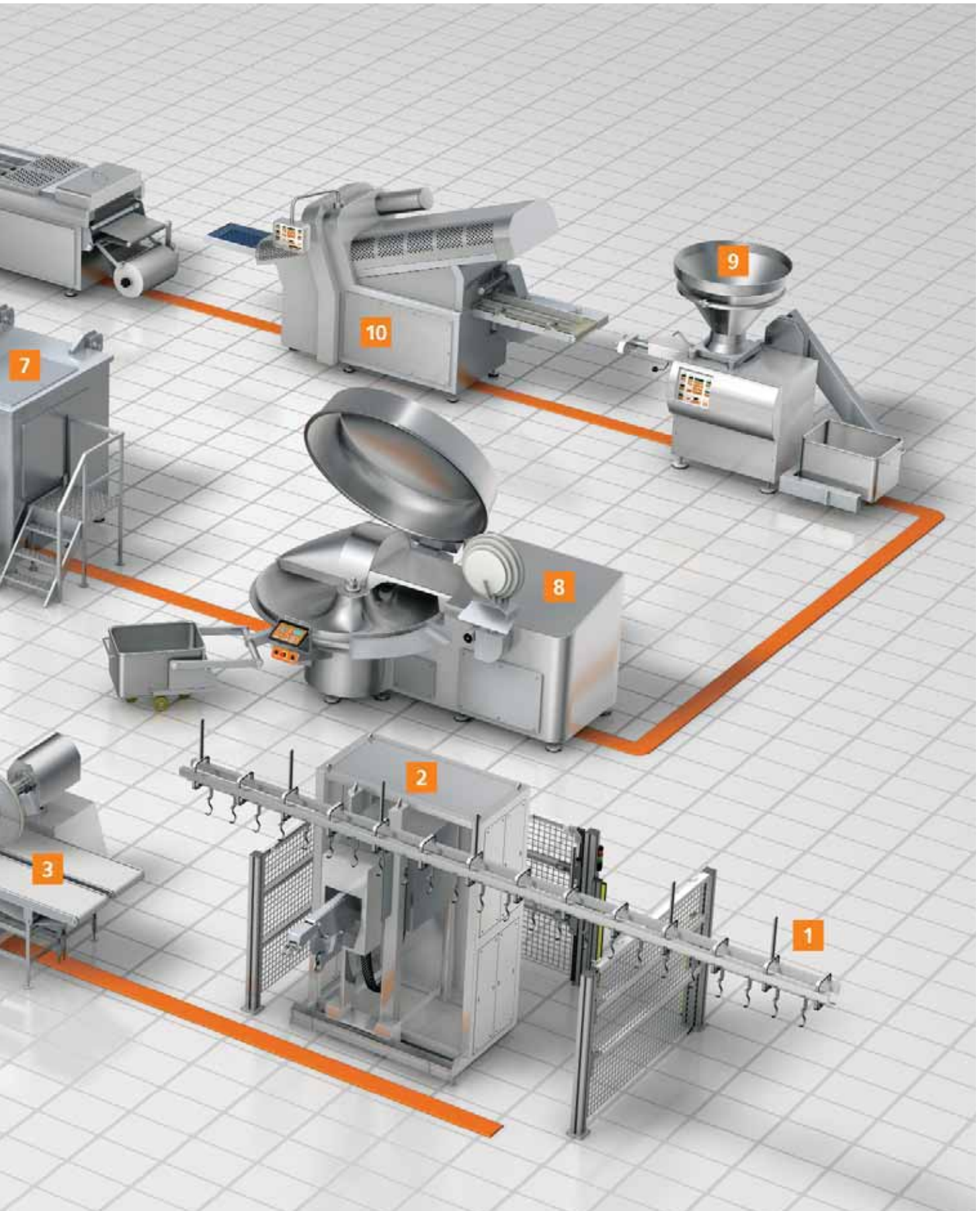
The efector pmd 3d detects not only overfilling or underfilling but also protruding parts during palletising. The time of flight measurement used enables the evaluation of volume, distance or level.

3D vision sensor for monitoring of the palletising process · further products from page 115

Type	Operating principle	Resolution (pixels)	Angle of aperture (horizontal x vertical) [°]	Lighting	Max. sampling rate [Hz]	Ambient temperature [°C]	Order no.
	PMD 3D sensor	64 x 48	30 x 40	Infrared LED	20	-10...50	O3D200









Machine	Application	Product group	From page
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1 Slaughtering plant

	Position detection	Inductive sensors	73
	Optical detection	Photoelectric sensors for general applications	97
	Detection of pneumatic cylinders	Cylinder sensors	95
	Level detection	Level sensors	151
	Traceability	RFID	189
	Compressed air measurement	Flow sensors / flow meters	145
	AS-Interface as control system	AS-Interface controllers / gateways	173


2 Automatic saw slaughtering

	Position detection	Inductive sensors	73
	Optical detection	Photoelectric sensors for general applications	97
	Safety monitoring	Fail-safe inductive sensors	117
	AS-Interface as control system	AS-Interface controllers / gateways	173


3 Automatic saw cutting






	Optical detection	Photoelectric sensors for general applications	97
	Safety monitoring	Fail-safe inductive sensors	117
	AS-Interface as control system	AS-Interface controllers / gateways	173

4 Box washer

	Optical detection	Photoelectric sensors for general applications	97
	Level detection	Level sensors	151
	Level detection	Pressure sensors	135
	Temperature measurement	Temperature sensors	153
	Flow rate measurement	Flow sensors / flow meters	145

5 Cutting line

	Position detection	Inductive sensors	73
	Optical detection	Photoelectric sensors for general applications	97
	Traceability	RFID	189
	AS-Interface as control system	AS-Interface controllers / gateways	173
	Reading of codes	1D/2D code readers	191

Machine	Application	Product group	From page
6 Tumbler			
	Position detection	Inductive sensors	73
	Temperature measurement	Temperature sensors	153
7 Mixer / mincer			
	Optical detection	Photoelectric sensors for general applications	97
	Level detection	Level sensors	151
	Safety monitoring	Fail-safe inductive sensors	117
8 Cutter			
	Temperature measurement	Temperature sensors	153
	Vibration monitoring	Vibration monitoring systems	193
9 Vacuum filling machine			
	Photoelectric level detection	Level sensors	151
	Vacuum measurement	Pressure sensors	135
10 Slicer			
	Position detection	Inductive sensors	73
	Optical detection	Photoelectric sensors for general applications	97
11 Thermoforming machine			
	End position monitoring	Inductive sensors	73
	Optical detection	Photoelectric sensors for general applications	97
	Safety monitoring	Fail-safe inductive sensors	117
	Compressed air measurement	Flow sensors / flow meters	145
	AS-Interface as control system	AS-Interface controllers / gateways	173

Sensors for the meat industry



The hygienic requirements in the meat-processing industry are particularly high. Frequent and intensive cleaning processes are normal.

High-quality housing materials of the sensors, e.g. high-grade stainless steel withstand the aggressive cleaning agents in the complete process. The sensors remain ingress-resistant even in case of steam cleaning thanks to the high protection rating IP 69K. The reliable ifm sensors allow downtime to be kept to a minimum and productivity maximised.

Sensors from ifm electronic comply with required approvals such as EHEDG or 3A. A wide range of adapters enables easy and hygienic integration into the process. Suitable connectors with high-quality housing materials and protection rating IP 69K complete the product range.

Slaughtering plant

**Detection of hooks in conveyor technology**

Full-metal inductive sensors detect the position of the hooks in wet areas. They are resistant to aggressive cleaning agents and temperature shocks.

Inductive sensors for detecting hook · further products from page 73

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
------	--------------------	-----------------------	----------	-----------------------	------------	-----------	---------------------------	-----------



M30 / L = 70

25 nf

high-grade st. steel

10...36

IP 65 / IP 67 / IP 68 /
IP 69K

250

100

IIT231

f = flush / nf = non flush

**Traceability in the slaughtering process**

For traceability in the slaughtering process the RFID system from ifm electronic is used. The Profibus interface allows easy connection to the controller.

RFID system for traceability tasks in the slaughtering process · further products from page 189

Type	Dimensions [mm]	Travel speed read / write [m/s]	Process interface	Order no.
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115 x 46.2 x 85

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Profibus DP

DTE100

Read / write head for the RFID system · further products from page 189

Type	Description	Order no.
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Read/write head · M12 connector · 5 positions of the sensing face selectable · Housing materials: housing: PA / Metal parts: stainless steel

ANT513


Slaughtering plant



Protection of hazardous areas

The ifm safety light curtains with protective tube and IP 69K are used for the protection of e.g. saws or robots. They are both hygienic and robust.

Safety light curtains for securing hazardous areas · further products from page 121


Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
	1680	30	1510	0...7 / 3...15	11	24	OY450S



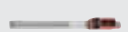
Level monitoring on conveying systems

The LMT level sensor is installed in the upper part of the tank. The hopper is only emptied when it is completely filled. Compressed air consumption is reduced.

Level sensor on pneumatic conveyors · further products from page 151

Type	Process connection	Process pressure max. [bar]	Application	Protection	Order no.
	G ½ A	-1...40	liquid, viscous and powdery media	IP 68 / IP 69K	LMT121

Compressed air meter for measuring compressed air and detecting leakage · further products from page 145

Type	Process connection	Setting range [Nm ³ /h]	Accuracy within measuring range	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
	R1 (DN25)	1.8...225.0	A): ± (3% MW + 0.3% MEW) / B): ± (6% MW + 0.6% MEW) *	16	< 0.1	18...30	SD8000


Cutting line



Water level measurement on a box washer

Flush pressure sensors are used for level measurement. They measure, as opposed to conventional float switches, the water level continuously.

Pressure sensor for measuring the water level on a box washer · further products from page 135


Type	Process connection	Display	Measuring range	P _{overload}	P _{bursting}	U _b DC	Order no.
		LED	[bar]	max. [bar]	min. [bar]	[V]	
	Aseptoflex Vario	Display unit	-0.0124...0.25	10	30	20...32	PI2798




Reading the bar codes on transport boxes

After each cleaning process, new bar code labels are attached to the transport boxes. The multi code reader reads the codes, irrespective of their orientation in respect of the sensor.

Multicode reader for reading the bar codes on transport boxes · further products from page 191

Type	Dimensions	Max. field of view size	Type of light	Motion speed int. / ext. lighting	Process interface	Order no.
	[mm]	[mm]	LED	[m/s]		
	60 x 42 x 53.5	64 x 48	red light	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	O21100

Photoelectric sensor for the detection of transport boxes in a harsh environment · further products from page 97

Type	Operating principle	Range	Type of light	Spot Ø at max. range	Output	Order no.
				[mm]	H = light-on D = dark-on	
	Background suppression	8...200 mm	red	8	H/D PNP	O6H300


Cutting line




AS-i in cutting

A variety of sensors are used in cutting. The AS-Interface bus system connects sensors and actuators with the controller with little wiring complexity.

AS-i AirBox for controlling pneumatic valve actuators · further products from page 183

Type	Inputs / outputs	Description	Order no.
	2 inputs / 2 outputs; AirBox supply via AS-i	AS-i AirBox · 2 x 3/2-way slide valves free from overlapping · Three orientations of the flat cable are possible · AS-i flat cable connection · Addressing socket · AS-i profile S-3.F.F · PA / POM	AC5227

Cylinder sensors for detecting the position of pistons in pneumatic cylinders · further products from page 95


Type	Dimensions [mm]	Material	U _b [V]	f [Hz]	Protection	I _{load} [mA]	T _a [°C]	Order no.
	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67 / IP 69K	100	-25...85	MK5111



AS-i Safety at Work on conveying systems

In the field of conveying systems there are many areas where safety technology is absolutely necessary. This is where AS-i Safety at Work (control category 4) to EN 954-1 (IEC 61508 / SIL 3) is used.

AS-i Safety at Work for detecting safety-related signals · further products from page 187

Type	Description	Order no.
	AS-i safety monitor · Extended functionality and integrated safe slave for triggering a safe AS-i output · 1-channel · Control category 4 to EN954-1, IEC 61508 / SIL 3 and EN ISO 13849 - 1 PL e · Configuration and setup by configuration software ASIMON V3.0 · Screw terminal · Housing materials: polyamide black	AC0315


Tumbler




Temperature measurement on a tumbler

Before further processing, the meat is massaged under vacuum in the tumbler. The TA temperature transmitter is used for measuring the temperature in the tumbler.

Probes for measuring the temperature on a tumbler · further products from page 153

Type	Measuring range [°C]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	-10...150	G½ A	87.5	10...30	1 / 3	TA3431

Inductive sensors for detecting the end position on a tumbler · further products from page 73

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
	M18 / L = 51	12 nf	high-grade st. steel	10...36	IP 68 / IP 69K	300	100	IGT200


f = flush / nf = non flush



Vacuum measurement on a tumbler

Vacuum sensors of type PA have an accuracy of 0.5 %. The ceramic-capacitive measuring cell ensures reliable and long-term stable analogue values.

Vacuum sensor for measuring the vacuum on a tumbler · further products from page 135

Type	Process connection	Display LED	Measuring range [bar]	P _{overload} max. [bar]	P _{bursting} min. [bar]	U _b DC [V]	Order no.
	G¼ I	-	-1...0	10	30	9.6...32	PA3029


Mixer / mincer



Level detection on a mixer / mincer

The meat is chopped in the mincer. The LMT121 is especially suited to detect the level. It can be adjusted to liquid and viscous media as well as bulk materials via IO-Link.

Adjustable level sensor on a mixer / mincer · further products from page 151


Type	Process connection	Process pressure max. [bar]	Application	Protection	Order no.
	G ½ A	-1...40	liquid, viscous and powdery media	IP 68 / IP 69K	LMT121



Detection of trolleys at a mixer / mincer

The diffuse reflection sensors of the OGH series used for position detection of tanks are especially suited for environments where vapour can occur as an interfering factor.

Photoelectric sensor for wet areas to detect trolleys on a mixer / mincer · further products from page 97

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Background suppression	20...200 mm	red	17	H/D PNP	OGH314



Cutter



Bearing monitoring on a cutter

On a cutter, knife and bowl bearings rotate at high rpm. The VSA001 vibration sensor detects bearing damage at an early stage, which allows planning of the downtimes.

Vibration sensor for monitoring the bearing on a cutter · further products from page 193


Type	Description	Order no.
	Vibration sensor · for connection to external diagnostic electronics · Connector · Housing materials: housing: stainless steel 316L / 1.4404	VSA001
	Diagnostic electronics for vibration sensors · 4 sensor inputs 0...10 mA · Ethernet interface · Combicon connection · Housing materials: PA	VSE100



Temperature measurement on a cutter

To measure temperature in the cutter, temperature transmitters of the TAD series are used. The integrated self-monitoring increases process reliability.

Temperature sensor for measuring the temperature on a cutter · further products from page 153

Type	Measuring range [°C]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	-25...160	G½ A	33	18...32	3 / 6	TAD991


Filling machine



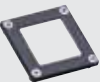
Level detection on a hopper

The O1D photoelectric level sensor can be installed at a safe distance from the goods to be detected. It replaces manual level monitoring by the operators.

Photoelectric level sensor for level detection · further products from page 107

Type	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.
	Optical level sensor	0.2...10 m	1...33	6	18...30	O1D300

Protective cover for the photoelectric level sensor · further products from page 203


Type	Description	Order no.
	Protective cover · O1D · Housing materials: bezel: ZnAl4Cu1 finish black / window: PMMA transparent and colourless / sealing: FPM 75+/-5 Shore A black / screws: stainless steel	E21133



Vacuum measurement on a filling machine

The sausage meat is fed via a hopper and sucked by the vacuum. The vacuum sensors of type PA transfer the measured value to the controller via the analogue output.

Vacuum sensor for measuring the vacuum on a filling machine · further products from page 135

Type	Process connection	Display	Measuring range [bar]	P _{overload} max. [bar]	P _{bursting} min. [bar]	U _b DC [V]	Order no.
	G¼ I	LED	-1...0	10	30	9.6...32	PA3029


Thermoforming machine




Controlling a deep-draw packaging machine

A number of sensors are installed on a packaging machine. The AS-Interface bus system allows fast connection to sensors, actuators and modules.

AS-Interface for controlling a deep-draw machine · further products from page 173

Type	Number of AS-i masters	Description	Order no.
	1	AS-i DP controller E · AS-i PLC with Profibus-DP interface · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	AC1365

AS-i AirBox for controlling pneumatic valve actuators · further products from page 183


Type	Inputs / outputs	Description	Order no.
	2 inputs / 2 outputs; AirBox supply via AS-i	AS-i AirBox · 2 x 3/2-way slide valves free from overlapping · Three orientations of the flat cable are possible · AS-i flat cable connection · Addressing socket · AS-i profile S-3.F.F · PA / POM	AC5227



Pressure measurement on a deep-draw packaging machine

The film is formed to the requested end product by means of vacuum and compressed air. The precise and fast-switching IO-Link pressure sensors are suited for this task.

Pressure sensor to measure the pressure on a thermoforming machine · further products from page 135

Type	Process connection	Display	Measuring range	P _{overload}	P _{bursting}	U _b DC	Order no.
	G¼ I	LED	[bar]	max. [bar]	min. [bar]	[V]	PN2024
		Display unit	-1...10	75	150	18...32	PN2024

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OY064S	CE, CUL, (CCC)	121	PG2793	CE, CUL, EHEDG, FDA	139
OY066S	CE, CUL, (CCC)	121	PG2794	CE, CUL, EHEDG, FDA	139
OY068S	CE, CUL, (CCC)	121	PG2795	CE, CUL, EHEDG, FDA	139
OY074S	CE, CUL, (CCC)	123	PG2796	CE, CUL, EHEDG, FDA	139
OY076S	CE, CUL, (CCC)	123	PG2797	CE, CUL, EHEDG, FDA	139
OY078S	CE, CUL, (CCC)	123	PG2798	CE, CUL, EHEDG, FDA	139
OY084S	CE, CUL, (CCC)	123	PG2799	CE, CUL, EHEDG, FDA	139
OY086S	CE, CUL, (CCC)	123	PG2889	CE, CUL, EHEDG, FDA	141
OY088S	CE, CUL, (CCC)	123	PG2893	CE, CUL, EHEDG, FDA	141
OY094S	CE, CUL, (CCC)	123	PG2894	CE, CUL, EHEDG, FDA	141
OY096S	CE, CUL, (CCC)	123	PG2895	CE, CUL, EHEDG, FDA	141
OY098S	CE, CUL, (CCC)	123	PG2896	CE, CUL, EHEDG, FDA	141
OY104S	CE, CUL, (CCC)	123	PG2897	CE, CUL, EHEDG, FDA	141
OY106S	CE, CUL, (CCC)	123	PG2898	CE, CUL, EHEDG, FDA	141
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OY113S	CE, CUL, (CCC)	127	PI2794	CE, CUL, EHEDG, FDA, CRN	135

Order no.	Approvals	Catalogue page	Order no.	Approvals	Catalogue page
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PI2796	CE, CUL, EHEDG, FDA	135	TD2937	CE, CUL	161
PI2797	CE, CUL, EHEDG, FDA	135	TD2947	CE, CUL	161
PI2798	CE, CUL, EHEDG, FDA	135	TM4501	CUL, EHEDG, FDA	157
PI2799	CE, CUL, EHEDG, FDA	135	TM4511	CUL, EHEDG, FDA	157
PI2889	CE, CUL, EHEDG, FDA	137	TM4531	CUL, EHEDG, FDA	157
PI2893	CE, CUL, EHEDG, FDA	137	TM4541	CUL, EHEDG, FDA	157
PI2894	CE, CUL, EHEDG, FDA	137	TM4591	CUL, EHEDG, FDA	157
PI2895	CE, CUL, EHEDG, FDA	137	TM4801	CUL, FDA	155
PI2896	CE, CUL, EHEDG, FDA	137	TM4811	CUL, FDA	155
PI2897	CE, CUL, EHEDG, FDA	137	TM4831	CUL, FDA	155
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SI6700	CE, CUL, EHEDG, FDA	145	TT2291	CUL, FDA	159
SI6800	CE, CUL, EHEDG, FDA, CRN	145	TT3291	CUL, FDA	159
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TAD091	CE, CUL, EHEDG, FDA	167			
TAD181	CE, CUL, EHEDG, FDA	165			
TAD191	CE, CUL, EHEDG, FDA	167			
TAD981	CE, CUL, EHEDG	165			
TAD991	CE, CUL, EHEDG	167			
TD2507	CE, CUL	161			
TD2517	CE, CUL	161			
TD2537	CE, CUL	161			
TD2547	CE, CUL	161			
TD2807	CE, CUL	161			
TD2817	CE, CUL	161			
TD2837	CE, CUL	161			
TD2847	CE, CUL	161			
TD2907	CE, CUL	161			



More than just sensors: ifm electronic offers a wide range of solutions for the food industry. On the following pages you will find an overview of all the products summarized into categories. In addition to the system descriptions we will also show you the most important features of the units. For more information please visit us online at www.ifm.com

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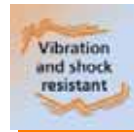


For hygienic
and wet areas

Full-metal inductive sensors 3-wire DC PNP, connector



- Sensing face and stainless-steel housing protect against damage
- Resistant to industrial alkalis and acids
- High temperature range up to 100 °C, temperature shock resistant
- Absolutely ingress-resistant to IP 68 / IP 69K, resists high-pressure and steam cleaning
- Clearly visible switch point indication via LED for quick and safe mounting

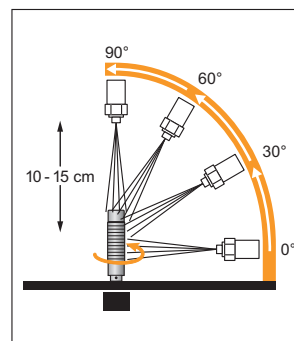


For high temperatures in the food and beverage industry

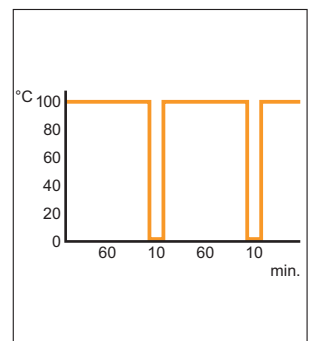
The ifm full metal sensors with sensing face made of stainless steel are made for position detection in extreme environments as in the food and beverage industry. The high-grade stainless steel sensor housing is resistant to industrial cleaning agents. The 100 % ingress-resistant sensor housing with protection rating IP 69K prevents the penetration of liquids during high-pressure and steam cleaning. The high-grade stainless steel housing resists damage caused by impact e.g. in distribution plates.

Tested to extremes

Stainless steel sensors from ifm are subjected to numerous tests to ensure reliable functioning in the application.










High-pressure cleaning test
IP 69K: Spray test with 100 bar
from a distance of 10 to 15 cm.
The hot water at 80 °C is
sprayed in cycles of 30 seconds.





Temperature shock test:
The sensors are subjected to
temperature fluctuations from
0 to 100 °C in short intervals.

Full metal sensors for hygienic and wet areas

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
M12 connector · Output function  · 3-wire · DC PNP								
	M12 / L = 60	3 f	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IFT240
	M12 / L = 70	6 nf	high-grade st. steel	10...36	IP 65 / IP 67 / IP 68 / IP 69K	500	100	IFT245
	M18 / L = 70	5 f	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IGT247
	M18 / L = 70	12 nf	high-grade st. steel	10...36	IP 65 / IP 67 / IP 68 / IP 69K	500	100	IGT249
	M30 / L = 70	10 f	high-grade st. steel	10...36	IP 68 / IP 69K	50	100	IIT228
	M30 / L = 70	25 nf	high-grade st. steel	10...36	IP 65 / IP 67 / IP 68 / IP 69K	250	100	IIT231

f = flush / nf = non flush

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Protection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001

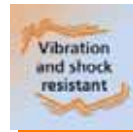


For hygienic
and wet areas

Full-metal inductive sensors 3-wire DC NPN, connector



- Sensing face and stainless-steel housing protect against damage
- Resistant to industrial alkalis and acids
- High temperature range up to 100 °C, temperature shock resistant
- Absolutely ingress-resistant to IP 68 / IP 69K resists high-pressure and steam cleaning
- Clearly visible switch point indication via LED for quick and safe mounting

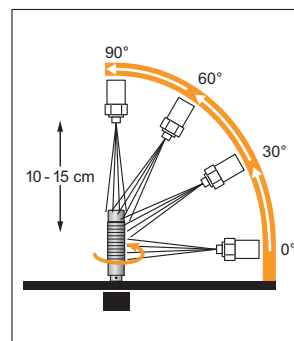


For high temperatures in the food and beverage industry

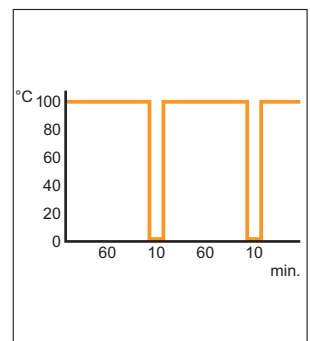
The ifm full metal sensors with sensing face made of stainless steel are made for position detection in extreme environments as in the food and beverage industry. The high-grade stainless steel sensor housing is resistant to industrial cleaning agents. The 100 % ingress-resistant sensor housing with protection rating IP 69K prevents the penetration of liquids during high-pressure and steam cleaning. The high-grade stainless steel housing resists damage caused by impact e.g. in distribution plates.

Tested to extremes

Stainless steel sensors from ifm are subjected to numerous tests to ensure reliable functioning in the application.










High-pressure cleaning test
IP 69K: Spray test with 100 bar
from a distance of 10 to 15 cm.
The hot water at 80 °C is
sprayed in cycles of 30 seconds.





Temperature shock test:
The sensors are subjected to
temperature fluctuations from
0 to 100 °C in short intervals.

Full metal sensors for hygienic and wet areas

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
M12 connector · Output function  · 3-wire · DC NPN								
	M12 / L = 60	3 f	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IFT244
	M12 / L = 70	6 nf	high-grade st. steel	10...36	IP 65 / IP 67 / IP 68 / IP 69K	500	100	IFT246
	M18 / L = 70	5 f	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IGT248
	M18 / L = 70	12 nf	high-grade st. steel	10...36	IP 65 / IP 67 / IP 68 / IP 69K	500	100	IGT250
	M30 / L = 70	10 f	high-grade st. steel	10...36	IP 68 / IP 69K	50	100	IIT230
	M30 / L = 70	25 nf	high-grade st. steel	10...36	IP 65 / IP 67 / IP 68 / IP 69K	250	100	IIT232

f = flush / nf = non flush

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001

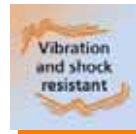


For hygienic
and wet areas

Inductive sensors, M12 3-wire DC PNP / 2-wire DC PNP / NPN, connector



- High-grade stainless steel housing with IP 68 / IP 69K, resists even high-pressure cleaning
- Extended sensing range reduces the risk of mechanical damage
- Food-grade and temperature-resistant housing (PEEK), gold-plated contacts
- Ecolab certified – resistant to cleaning agents and rough environments
- Clearly visible switch point indication via LED for quick and safe mounting

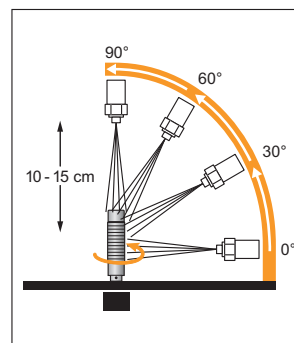


Position detection in the food and beverage industry

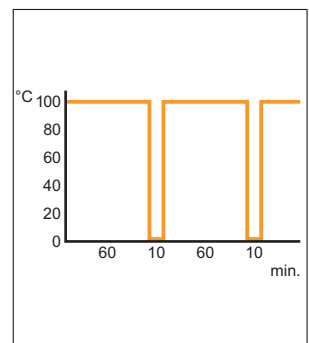
These inductive sensors have been designed for the reliable position detection in the food and beverage industry. Two output functions are available: 3-wire DC PNP and 2-wire DC PNP / NPN. The high-grade stainless steel housing with protection rating IP 69K prevents the penetration of liquids in environments with high-pressure cleaning. The material of the active face made of FDA approved PEEK is resistant to extreme temperature fluctuations from 0 to 100 °C.

Increased sensing range

The sensing range of the inductive ifm sensors is up to twice as long as that of conventional sensors with the same housing length. The distance between the sensors and the object to be detected can be long, which is an additional protection against mechanical damage.



High-pressure cleaning test
IP 69K: Spray test with 100 bar
from a distance of 10 to 15 cm.
The hot water at 80 °C is
sprayed in cycles of 30 seconds.






Temperature shock test:
The sensors are subjected to
temperature fluctuations from
0 to 100 °C in short intervals.



Sensors for hygienic and wet areas with increased sensing range

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
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M12 connector · Output function  · 3-wire · DC PNP

	M12 / L = 45	4 f	high-grade st. steel	10...36	IP 68 / IP 69K	800	100	IFT203
	M12 / L = 50	7 nf	high-grade st. steel	10...36	IP 68 / IP 69K	800	100	IFT200

M12 connector · Output function  · 3-wire · DC PNP

	M12 / L = 45	4 f	high-grade st. steel	10...36	IP 68 / IP 69K	800	100	IFT204
	M12 / L = 50	7 nf	high-grade st. steel	10...36	IP 68 / IP 69K	800	100	IFT201

M12 connector · Output function  · 3-wire · 3-wire DC PNP · 2-wire DC PNP/NPN



	M12 / L = 70	4 f	high-grade st. steel	10...36	IP 68 / IP 69K	500	100	IFT205
	M12 / L = 70	7 nf	high-grade st. steel	10...30	IP 68 / IP 69K	700	100	IFT202

f = flush / nf = non flush

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Protection	LEDs	Order no.
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Socket 12, 5/4-pole, 4-wire

	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001

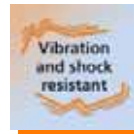


For hygienic
and wet areas

Inductive sensors, M12 3-wire DC PNP, connection cable



- High-grade stainless steel housing with IP 68 / IP 69K, resists even high-pressure cleaning
- Extended sensing range reduces the risk of mechanical damage
- Food-grade and temperature-resistant housing (PEEK), gold-plated contacts
- Ecolab certified – resistant to cleaning agents and rough environments
- Clearly visible LED switch point indication for quick and safe mounting

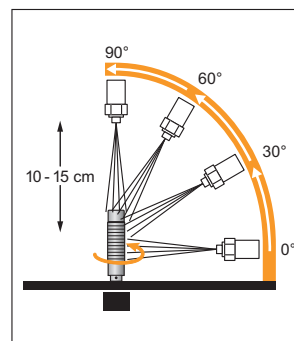


Position detection in the food and beverage industry

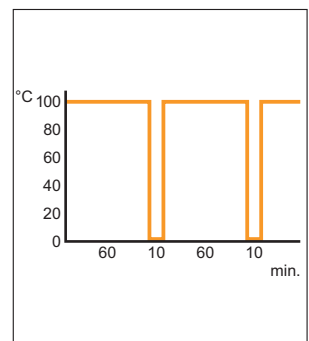
These inductive sensors have been designed for the reliable position detection in the food and beverage industry. A 3-wire DC PNP connection is available for output functions. The high-grade stainless steel housing with protection rating IP 69K prevents the penetration of liquids in environments with high-pressure cleaning. The material of the active face made of FDA approved PEEK is resistant to extreme temperature fluctuations from 0 to 100 °C.

Increased sensing range

The sensing range of the inductive ifm sensors is up to twice as long as that of conventional sensors with the same housing length. The distance between the sensors and the object to be detected can be long, which is an additional protection against mechanical damage.













High-pressure cleaning test
IP 69K: Spray test with 100 bar
from a distance of 10 to 15 cm.
The hot water at 80 °C is
sprayed in cycles of 30 seconds.



Temperature shock test:
The sensors are subjected to
temperature fluctuations from
0 to 100 °C in short intervals.

Sensors for hygienic and wet areas with increased sensing range

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
Cable 6 m · Output function  · 3-wire · DC PNP								
	M12 / L = 50	4 f	high-grade st. steel	10...36	IP 68 / IP 69K	800	100	IFT206
	M12 / L = 61	7 nf	high-grade st. steel	10...36	IP 68 / IP 69K	800	100	IFT208
Cable 6 m · Output function  · 3-wire · 3-wire DC PNP · 2-wire DC PNP/NPN								
	M12 / L = 79	7 nf	high-grade st. steel	10...30	IP 68 / IP 69K	700	100	IFT213
Cable 10 m · Output function  · 3-wire · DC PNP								
	M12 / L = 50	4 f	high-grade st. steel	10...36	IP 68 / IP 69K	800	100	IFT207
	M12 / L = 61	7 nf	high-grade st. steel	10...36	IP 68 / IP 69K	800	100	IFT209
Cable 20 m · Output function  · 3-wire · DC PNP								
	M12 / L = 61	7 nf	high-grade st. steel	10...36	IP 68 / IP 69K	800	100	IFT212

f = flush / nf = non flush



For hygienic
and wet areas

Inductive sensors, M18 3-wire DC PNP / 2-wire DC PNP / NPN, connector



- High-grade stainless steel housing with IP 68 / IP 69K, resists even high-pressure cleaning
- Extended sensing range reduces the risk of mechanical damage
- Food-grade and temperature-resistant housing (PEEK), gold-plated contacts
- Ecolab certified – resistant to cleaning agents and rough environments
- Clearly visible LED switch point indication for quick and safe mounting

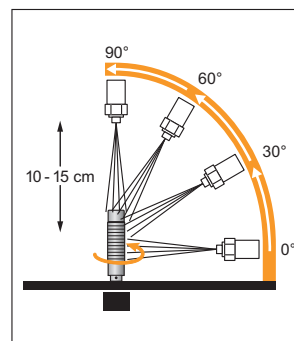


Position detection in the food and beverage industry

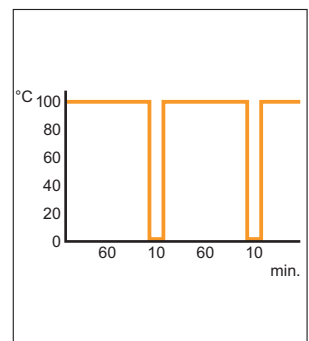
These inductive sensors have been designed for the reliable position detection in the food and beverage industry. Two output functions are available: 3-wire DC PNP and 2-wire DC PNP / NPN. The high-grade stainless steel housing with protection rating IP 69K prevents the penetration of liquids in environments with high-pressure cleaning. The material of the active face made of FDA approved PEEK is resistant to extreme temperature fluctuations from 0 to 100 °C.

Increased sensing range

The sensing range of the inductive ifm sensors is up to twice as long as that of conventional sensors with the same housing length. The distance between the sensors and the object to be detected can be long, which is an additional protection against mechanical damage.




High-pressure cleaning test
IP 69K: Spray test with 100 bar
from a distance of 10 to 15 cm.
The hot water at 80 °C is
sprayed in cycles of 30 seconds.




Temperature shock test:
The sensors are subjected to
temperature fluctuations from
0 to 100 °C in short intervals.



Sensors for hygienic and wet areas with increased sensing range


Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
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M12 connector · Output function  · 3-wire · DC PNP

	M18 / L = 46	8 f	high-grade st. steel	10...36	IP 68 / IP 69K	600	100	IGT203
	M18 / L = 51	12 nf	high-grade st. steel	10...36	IP 68 / IP 69K	300	100	IGT200
	M18 / L = 70	8 f	high-grade st. steel	10...36	IP 68 / IP 69K	400	100	IGT219
	M18 / L = 70	12 nf	high-grade st. steel	10...36	IP 68 / IP 69K	300	100	IGT220

M12 connector · Output function  · 3-wire · DC PNP

	M18 / L = 46	8 f	high-grade st. steel	10...36	IP 68 / IP 69K	600	100	IGT204
	M18 / L = 51	12 nf	high-grade st. steel	10...36	IP 68 / IP 69K	300	100	IGT201

M12 connector · Output function  · 3-wire · 3-wire DC PNP · 2-wire DC PNP/NPN



	M18 / L = 70	8 f	high-grade st. steel	10...36	IP 68 / IP 69K	400	100	IGT205
	M18 / L = 70	12 nf	high-grade st. steel	10...30	IP 68 / IP 69K	300	100	IGT202

f = flush / nf = non flush

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Protection	LEDs	Order no.
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Socket 12, 5/4-pole, 4-wire

	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001

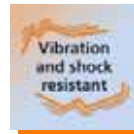


For hygienic
and wet areas

Inductive sensors, M18 3-wire DC PNP, connection cable



- High-grade stainless steel housing with IP 68 / IP 69K, resists even high-pressure cleaning
- Extended sensing range reduces the risk of mechanical damage
- Food-grade and temperature-resistant housing (PEEK), gold-plated contacts
- Ecolab certified – resistant to cleaning agents and rough environments
- Clearly visible LED switch point indication for quick and safe mounting

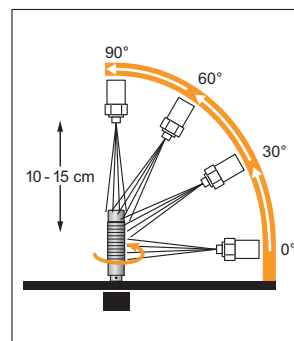


Position detection in the food and beverage industry

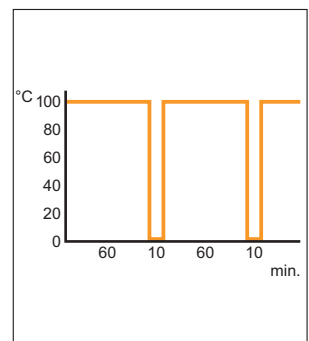
These inductive sensors have been designed for the reliable position detection in the food and beverage industry. A 3-wire DC PNP connection is available for output functions. The high-grade stainless steel housing with protection rating IP 69K prevents the penetration of liquids in environments with high-pressure cleaning. The material of the active face made of FDA approved PEEK is resistant to extreme temperature fluctuations from 0 to 100 °C.

Increased sensing range

The sensing range of the inductive ifm sensors is up to twice as long as that of conventional sensors with the same housing length. The distance between the sensors and the object to be detected can be long, which is an additional protection against mechanical damage.



High-pressure cleaning test
IP 69K: Spray test with 100 bar
from a distance of 10 to 15 cm.
The hot water at 80 °C is
sprayed in cycles of 30 seconds.



Temperature shock test:
The sensors are subjected to
temperature fluctuations from
0 to 100 °C in short intervals.

Sensors for hygienic and wet areas with increased sensing range

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
Cable 6 m · Output function  · 3-wire · DC PNP								
	M18 / L = 57	8 f	high-grade st. steel	10...36	IP 68 / IP 69K	600	100	IGT206
	M18 / L = 62	12 nf	high-grade st. steel	10...36	IP 68 / IP 69K	300	100	IGT208
Cable 10 m · Output function  · 3-wire · DC PNP								
	M18 / L = 57	8 f	high-grade st. steel	10...36	IP 68 / IP 69K	600	100	IGT207
	M18 / L = 62	12 nf	high-grade st. steel	10...36	IP 68 / IP 69K	300	100	IGT209
Cable 10 m · Output function  · 3-wire · 3-wire DC PNP · 2-wire DC PNP/NPN								
	M18 / L = 81	12 nf	high-grade st. steel	10...30	IP 68 / IP 69K	300	100	IGT213
M12 connector · Output function  · 3-wire · 3-wire DC PNP · 2-wire DC PNP/NPN								
	M18 / L = 70	5 f	high-grade st. steel	10...30	IP 68 / IP 69K	400	100	IGT214
Cable 25 m · Output function  · 3-wire · DC PNP								
	M18 / L = 62	12 nf	high-grade st. steel	10...36	IP 68 / IP 69K	300	100	IGT215

f = flush / nf = non flush

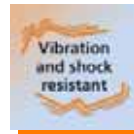


For hygienic
and wet areas

Inductive sensors, M30 3-wire DC PNP / 2-wire DC PNP / NPN, connector



- High-grade stainless steel housing with IP 68 / IP 69K, resists even high-pressure cleaning
- Extended sensing range reduces the risk of mechanical damage
- Food-grade and temperature-resistant housing (PEEK), gold-plated contacts
- Ecolab certified – resistant to cleaning agents and rough environments
- Clearly visible LED switch point indication for quick and safe mounting

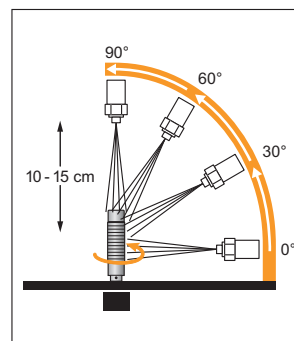


Position detection in the food and beverage industry

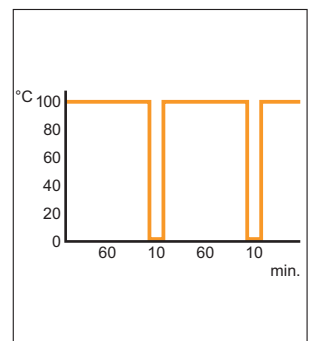
These inductive sensors have been designed for the reliable position detection in the food and beverage industry. Two output functions are available: 3-wire DC PNP and 2-wire DC PNP / NPN. The high-grade stainless steel housing with protection rating IP 69K prevents the penetration of liquids in environments with high-pressure cleaning. The material of the active face made of FDA approved PEEK is resistant to extreme temperature fluctuations from 0 to 100 °C.

Increased sensing range

The sensing range of the inductive ifm sensors is up to twice as long as that of conventional sensors with the same housing length. The distance between the sensors and the object to be detected can be long, which is an additional protection against mechanical damage.



High-pressure cleaning test
IP 69K: Spray test with 100 bar
from a distance of 10 to 15 cm.
The hot water at 80 °C is
sprayed in cycles of 30 seconds.








Temperature shock test:
The sensors are subjected to
temperature fluctuations from
0 to 100 °C in short intervals.



Sensors for hygienic and wet areas with increased sensing range

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
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M12 connector · Output function  · 3-wire · DC PNP

	M30 / L = 50	14 f	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IIT205
	M30 / L = 50	22 nf	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IIT200
	M30 / L = 70	15 f	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IIT212
	M30 / L = 70	22 nf	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IIT213

M12 connector · Output function  · 3-wire · 3-wire DC PNP · 2-wire DC PNP/NPN



	M30 / L = 70	14 f	high-grade st. steel	10...36	IP 68 / IP 69K	50	100	IIT204
	M30 / L = 70	22 nf	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IIT202

f = flush / nf = non flush

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Protection	LEDs	Order no.
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Socket 12, 5/4-pole, 4-wire

	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001

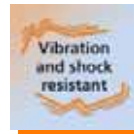


For hygienic
and wet areas

Inductive sensors, M30 3-wire DC PNP / 2-wire DC PNP / NPN, connection cable



- High-grade stainless steel housing with IP 68 / IP 69K, resists even high-pressure cleaning
- Extended sensing range reduces the risk of mechanical damage
- Food-grade and temperature-resistant housing (PEEK), gold-plated contacts
- Ecolab certified – resistant to cleaning agents and rough environments
- Clearly visible LED switch point indication for quick and safe mounting

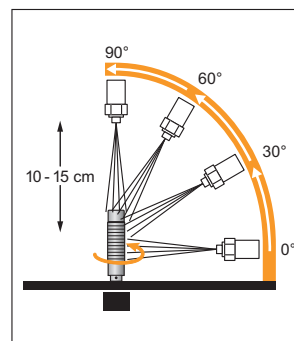


Position detection in the food and beverage industry

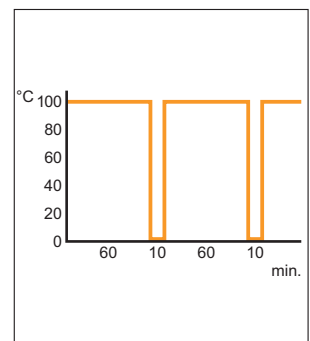
These inductive sensors have been designed for the reliable position detection in the food and beverage industry. Two output functions are available: 3-wire DC PNP and 2-wire DC PNP / NPN. The high-grade stainless steel housing with protection rating IP 69K prevents the penetration of liquids in environments with high-pressure cleaning. The material of the active face made of FDA approved PEEK is resistant to extreme temperature fluctuations from 0 to 100 °C.

Increased sensing range

The sensing range of the inductive ifm sensors is up to twice as long as that of conventional sensors with the same housing length. The distance between the sensors and the object to be detected can be long, which is an additional protection against mechanical damage.






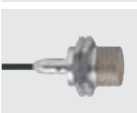




High-pressure cleaning test
IP 69K: Spray test with 100 bar
from a distance of 10 to 15 cm.
The hot water at 80 °C is
sprayed in cycles of 30 seconds.



Temperature shock test:
The sensors are subjected to
temperature fluctuations from
0 to 100 °C in short intervals.

Sensors for hygienic and wet areas with increased sensing range

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
Cable 6 m · Output function  · 3-wire · DC PNP								
	M30 / L = 59	22 nf	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IIT207
	M30 / L = 59	14 f	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IIT209
Cable 10 m · Output function  · 3-wire · DC PNP								
	M30 / L = 59	14 f	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IIT206
	M30 / L = 59	22 nf	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IIT208
Cable 10 m · Output function  · 3-wire · 3-wire DC PNP · 2-wire DC PNP/NPN								
	M30 / L = 81	14 f	high-grade st. steel	10...36	IP 68 / IP 69K	100	100	IIT210

f = flush / nf = non flush



For hygienic
and wet areas

Inductive sensors 2-wire AC/DC, connector



- High-grade stainless steel housing with IP 68 / IP 69K, resists even high-pressure cleaning
- Extended sensing range reduces the risk of mechanical damage
- Food-grade and temperature-resistant housing (PEEK), gold-plated contacts
- Ecolab certified – resistant to cleaning agents and rough environments
- Clearly visible LED switch point indication for quick and safe mounting

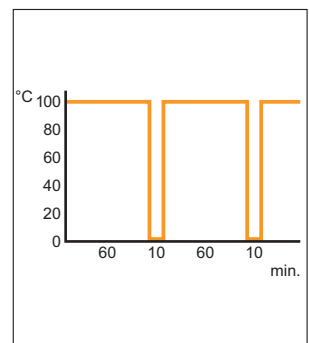
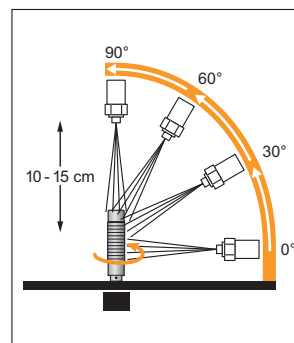


Inductive AC/DC sensors for the food and beverage industry

These inductive sensors have been designed for the reliable position detection in the food and beverage industry. The high-grade stainless steel housing with protection rating IP 69K prevents the penetration of liquids in environments with high-pressure cleaning. The material of the active face made of FDA approved PEEK is resistant to extreme temperature fluctuations from 0 to 100 °C.

Increased sensing range






The sensing range of the inductive ifm sensors is up to twice as long as that of conventional sensors with the same housing length. The distance between the sensors and the object to be detected can be long, which is an additional protection against mechanical damage.



High-pressure cleaning test
IP 69K: Spray test with 100 bar
from a distance of 10 to 15 cm.
The hot water at 80 °C is
sprayed in cycles of 30 seconds.



Temperature shock test:
The sensors are subjected to
temperature fluctuations from
0 to 100 °C in short intervals.

Sensors for hygienic and wet areas with increased sensing range

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
1/2" UNF-Connector · Output function  · 2-wire · AC/DC								
	M18 / L = 70	5 f	high-grade st. steel	20...140	IP 68 / IP 69K	25 / 400	200	IGT002
	M18 / L = 70	12 nf	high-grade st. steel	20...140	IP 68 / IP 69K	25 / 300	200	IGT001
	M30 / L = 70	14 f	high-grade st. steel	20...140	IP 68 / IP 69K	25 / 100	200	IIT001
	M30 / L = 70	22 nf	high-grade st. steel	20...140	IP 68 / IP 69K	25 / 100	200	IIT002

f = flush / nf = non flush

1/2" sockets for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro- tection	LEDs	Order no.
1/2" connector 5 m · 3-wire · AC/DC								
	–	–	TPU	250	IP 67	–	–	E10200
	–	–	TPU	250	IP 67	–	–	E10191



For hygienic
and wet areas

Capacitive sensors



- High noise immunity guarantees high operational reliability
- Sensing range adjustable by means of a potentiometer or pushbuttons
- Plastic or metal housing for different applications
- Capacitive sensors for position and level detection
- Different mounting accessories for tank and sight glass (bypass)



Capacitive sensors

Capacitive sensors are used for the non-contact detection of any objects as well as for level monitoring. In contrast to inductive sensors, which only detect metallic objects, capacitive sensors can also detect non-metallic materials.

Typical applications are in the wood, paper, glass, plastic, food and chemical industries. In packaging systems, capacitive sensors might check the presence of cardboard boxes, or monitor the medium level in a carton (e.g. full / empty check in milk cartons). Another application is the detection of sheets of glass or wood panels on a roller conveyor.



Sensors for industrial applications



Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f AC / DC [Hz]	I _{load} AC / DC [mA]	Order no.
Cable 2 m · Output function  · AC/DC								
	M30 / L = 81	15 nf	PBT	20...250	IP 65	25 / 40	250	KI0016*
Cable 2 m · Output function  · DC PNP								
	M30 / L = 81	15 nf	PBT	10...36	IP 65	40	250	KI5002
M12 connector · Output function  /  · DC PNP								
	M30 / L = 90	15 nf	high-grade st. steel	10...36	IP 65 / IP 67	10	100	KI5087
M12 connector · Output function  · DC PNP								
	M18 / L = 93.8	8 nf	PBT	10...36	IP 67	50	250	KG5057
1/2" UNF-Connector · Output function  /  · AC/DC								
	M18 / L = 87	12 nf	PBT	20...250	IP 65 / IP 67	10	150	KG0016*
Cable with connector 0.1 m · Output function  /  · 1x open collector DC PNP								
	20 x 14 x 48	12 nf	PBT	10...36	IP 65 / IP 67	10	100	KQ6005

f = flush / nf = non flush

*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001

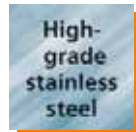


For hygienic
and wet areas

Magnetic sensors



- Absolutely ingress-resistant to IP 68 / IP 69K, resists high-pressure and steam cleaning
- Small housings with extended sensing ranges up to 100 mm
- Stainless steel sensing face and housing protect against damage
- High temperature range up to 100 °C, temperature shock resistant



Detection through covers

Magnetic sensors allow non-contact position detection even at high switching frequencies. They can detect a magnet through materials such as stainless steel, non-ferrous metal, aluminium, plastic or wood.

Long sensing range and high switching frequency

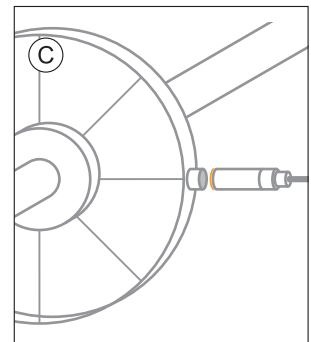
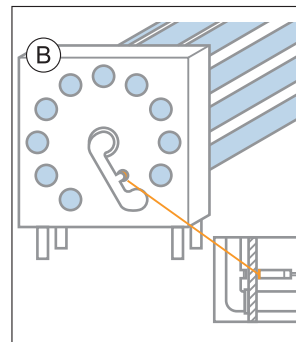
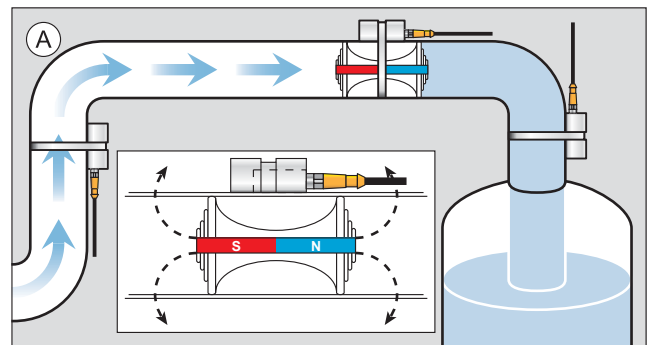
Thanks to the GMR technology (giant magneto resistive) the magnetic sensors have very long sensing ranges compared to inductive sensors. They detect magnets up to a distance of 100 mm. The maximum switching frequency of 5,000 Hz applies over the complete temperature range.

Examples:





(A) Detection of a pig during the cleaning of pipes.

(B) Magnetic sensors detect the U-tube position on a distribution plate by sensing a magnet through a stainless steel plate.

(C) Reliable detection: The magnetic sensor from ifm is used for pulse evaluation at high speed.





Full metal sensors for hygienic and wet areas

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
M12 connector · Output function  · DC PNP								
	M12 / L = 60	60	high-grade st. steel	10...30	IP 65 / IP 68 / IP 69K	5000	100	MFT202
	M18 / L = 60	70	high-grade st. steel	10...30	IP 65 / IP 68 / IP 69K	5000	100	MGT203
	M18 / L = 60	100	high-grade st. steel	10...30	IP 68 / IP 69K	–	200	MGT201

Accessories damping magnets

Type	Description	Order no.
	Damping magnet · M 3.1 · Housing materials: Barium ferrite / stainless steel	E12291
	Damping magnet · M 4.1 · Housing materials: Barium ferrite / stainless steel	E11803

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro- tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001



For hygienic
and wet areas

T-slot cylinder sensors



- Wear-free, without mechanical components (in contrast to reed switches)
- Simple installation on round cylinder by means of protective bracket and a jubilee clip
- High switching frequencies and travel speed possible
- Mounting accessories and adapters for different cylinder types



Compact housing and simple mounting for washdown environments

The small cylinder sensors can be easily mounted on clean line cylinders, even if space is at a premium. A protective bracket available as accessory protects the sensor in the application.

Advantages compared to reed switches

In contrast to reed switches the cylinder sensors work without mechanical components and thus without wear. This guarantees an unlimited number of switching cycles.


Mechanical wear of reed switches can lead to switch point drift.


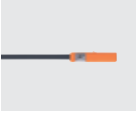
The cylinder sensors from ifm however have a very good repeatability permanently. ifm sensors also function in case of weak magnetic fields. Reed switches require a higher field intensity. The cylinder sensors are also characterised by a fast response time.






T-slot sensors for hygienic and wet areas


Type	Dimensions [mm]	Material	U _b [V]	f [Hz]	Protection	I _{load} [mA]	T _a [°C]	Order no.
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Cable 2 m · Output function  · DC PNP

	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67 / IP 69K	100	-25...85	MK5110
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67 / IP 69K	100	-25...85	MK5158



Cable with connector 0.3 m · Output function  · DC PNP

	25 x 5 x 6.5	PA (polyamide)	10...30	10000	IP 65 / IP 67 / IP 69K	100	-25...85	MK5111
	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67 / IP 69K	100	-25...85	MK5157



Cable with connector 0.3 m · Output function  · DC NPN

	25 x 5 x 6.5	PA (polyamide)	10...30	6000	IP 65 / IP 67 / IP 69K	100	-25...85	MK5186
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Fixing straps for clean line cylinders

Type	Description	Order no.
	Fixing strap for clean-line cylinders · Piston diameter 20...25 mm · for type MKT · Housing materials: adapter: stainless steel / Fixing strap: stainless steel	E11976
	Fixing strap for clean-line cylinders · Piston diameter 50 mm · for type MKT · Housing materials: adapter: stainless steel / Fixing strap: stainless steel	E11979

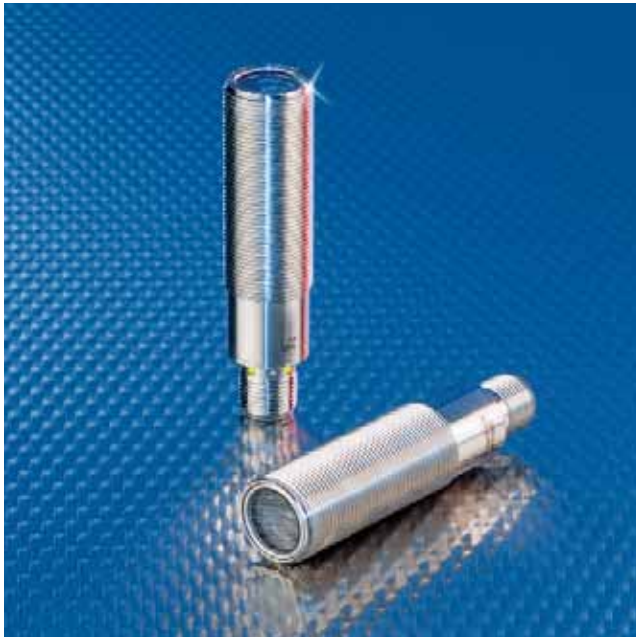
Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Protection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001

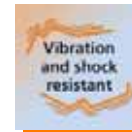
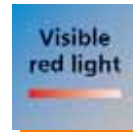


For hygienic
and wet areas

Photoelectric sensors M18 design, connector



- Industrially compatible high-grade stainless steel M18 housing
- Ecolab certified – resistant to cleaning agents and harsh environments
- Visible red light simplifies alignment and maintenance
- Plastic lens, avoids glass splinters in case of damage
- Mounting accessories in stainless steel



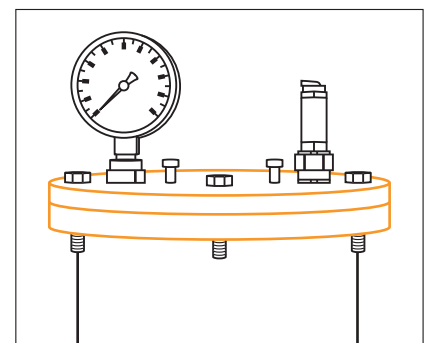
For washdown applications

The OG series photoelectric sensors have been designed and tested for reliable detection even in extreme washdown conditions. The industrially compatible M18 housing is made of high-grade stainless steel. It is perfectly suited for food and beverage applications.

The visible red light simplifies alignment and maintenance. Extensive accessories made of stainless steel ensure fast and safe installation.

Ecolab-certified for food and beverage

The Ecolab-certified sensors are resistant to chemical solutions used in cleaning. Even in case of high-pressure cleaning the sensor remains absolutely ingress-resistant to IP 69K.




Tested to extremes: To simulate the aging process, the sensors are alternately put into hot water at 80 °C and into ice water several times.


Cylindrical housing OG (M18) WetLine for hygienic and wet areas

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
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Diffuse reflection sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 / IP68 / IP69K

	Background suppression	100 mm	red	9	H PNP	OGH300
	Background suppression	100 mm	red	9	D PNP	OGH301
	Background suppression	200 mm	red	17	H PNP	OGH302
	Background suppression	200 mm	red	17	D PNP	OGH303
	Background suppression	300 mm	red	25	H PNP	OGH304
	Background suppression	300 mm	red	25	D PNP	OGH305


Through-beam sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 / IP68 / IP69K

	Transmitter	20 m	red	800	–	OGS300
	Receiver	20 m	red	–	D PNP	OGE300
	Receiver	20 m	red	–	H PNP	OGE301

Retro-reflective sensor · M12 connector · 10...36 DC · high-grade stainless steel · IP67 / IP68 / IP69K

	Polarisation filter	0.03...4 m	red	160	D PNP	OGP300
	Polarisation filter	0.03...4 m	red	160	H PNP	OGP301



System components

Type	Description	Order no.
	Prismatic reflector · Ø 80 mm · round · for red light and infrared light retro-reflective sensors · Housing materials: plastics	E20005

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
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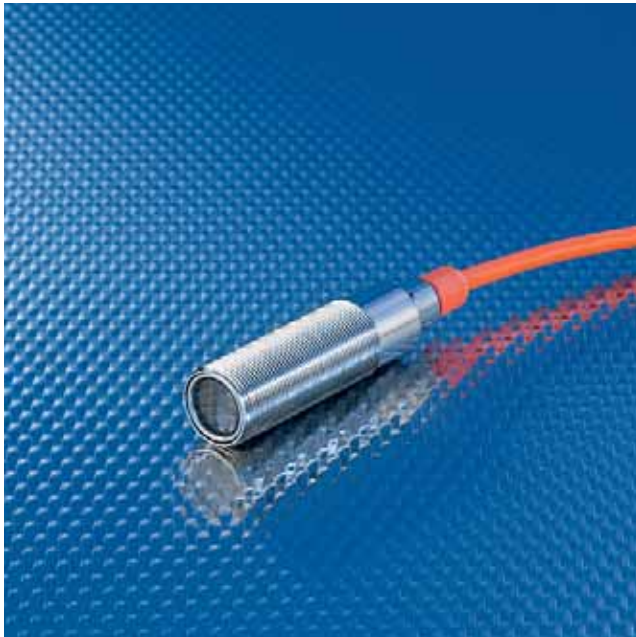
Socket 12, 5/4-pole, 4-wire

	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001

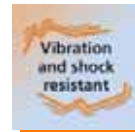
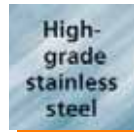


For hygienic
and wet areas

Photoelectric sensors M18 housing, connection cable



- Industrially compatible high-grade stainless steel M18 housing
- Ecolab certified – resistant to cleaning agents and rough environments
- Visible red light simplifies alignment and maintenance
- Plastic lens, avoids glass splinters in case of damage
- Mounting accessories in stainless steel



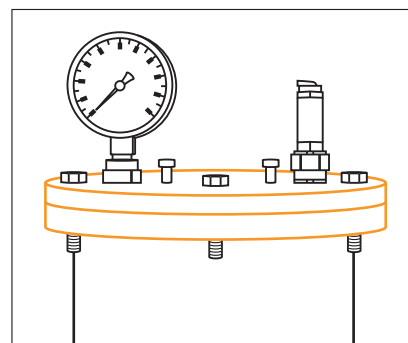
For washdown applications

The OG series photoelectric sensors have been designed and tested for reliable detection even in extreme washdown conditions. The industrially compatible M18 housing is made of high-grade stainless steel. It is perfectly suited for food and beverage applications.

The visible red light simplifies alignment and maintenance. Extensive accessories made of stainless steel ensure fast and safe installation.

Ecolab-certified for food and beverage

The Ecolab-certified sensors are resistant to chemical solutions used in cleaning. Even in case of high-pressure cleaning the sensor remains absolutely ingress-resistant to IP 69K.

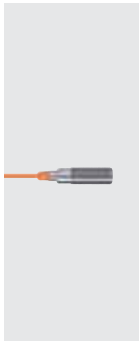


Tested to extremes: To simulate the aging process, the sensors are alternately put into hot water at 80 °C and into ice water several times.

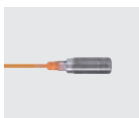
Cylindrical housing OG (M18) WetLine for hygienic and wet areas

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
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Diffuse reflection sensor · Cable 6 m · 10...36 DC · high-grade stainless steel · IP67 / IP68 / IP69K

	Background suppression	100 mm	red	9	H PNP	OGH306
	Background suppression	100 mm	red	9	D PNP	OGH307
	Background suppression	200 mm	red	17	H PNP	OGH308
	Background suppression	200 mm	red	17	D PNP	OGH309
	Background suppression	300 mm	red	25	H PNP	OGH310
	Background suppression	300 mm	red	25	D PNP	OGH311


Retro-reflective sensor · Cable 6 m · 10...36 DC · high-grade stainless steel · IP67 / IP68 / IP69K

	Polarisation filter	0.03...4 m	red	160	D PNP	OGP302
	Polarisation filter	0.03...4 m	red	160	H PNP	OGP303

Through-beam sensor · Cable 6 m · 10...36 DC · high-grade stainless steel · IP67 / IP68 / IP69K

	Transmitter	20 m	red	800	–	OGS301
	Receiver	20 m	red	–	D PNP	OGE302
	Receiver	20 m	red	–	H PNP	OGE303

System components

Type	Description	Order no.
	Prismatic reflector · Ø 80 mm · round · for red light and infrared light retro-reflective sensors · Housing materials: plastics	E20005



For hygienic
and wet areas

Photoelectric sensors with rectangular housing.



- Selected materials, suited for food applications.
- Consistent implementation of ifm's application know-how.
- Ideal sealing concept, IP 67, IP 68 and IP 69K.
- Fixed ranges – easy set-up (plug & play).

IP 67
IP 68
IP 69 K

High-grade
stainless
steel



Photoelectric sensors for washdown

The OG series photoelectric sensors have been designed and tested for reliable detection of positions even in extreme washdown conditions. The industrially compatible housing is made of high-grade stainless steel and is perfectly suited for applications in the food industry, e.g. cheese plants, breweries or the meat industry. A visible red light source simplifies installation and maintenance. Stainless steel accessories are available for quick installation.

The 100 % ingress-resistant sensor design prevents the penetration of moisture during high-pressure cleaning.

The sensor has a plastic lens to prevent glass splinters from getting into the process in case of damage to the sensor. This is a special requirement in the food and beverage industry.




The photoelectric sensors are also 100 % ingress-resistant in case of steam cleaning.


OG series (M18) WetLine with rectangular housing for hygienic and wet areas

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
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Diffuse reflection sensor · M12 connector · 10...30 DC · high-grade stainless steel · IP67 / IP68 / IP69K

	Background suppression	100 mm	red	7	H PNP	OGH380
	Background suppression	200 mm	red	13	H PNP	OGH381
	Background suppression	100 mm	red	7	H NPN	OGH382
	Background suppression	200 mm	red	13	H NPN	OGH383



Through-beam sensor · M12 connector · 10...30 DC · high-grade stainless steel · IP67 / IP68 / IP69K

	Transmitter	15 m	red	800	–	OGS380
	Receiver	15 m	red	–	D PNP	OGE380
	Receiver	15 m	red	–	H PNP	OGE381
	Receiver	15 m	red	–	D NPN	OGE382

System components

Type	Description	Order no.
	Prismatic reflector · Ø 80 mm · round · for red light and infrared light retro-reflective sensors · Housing materials: plastics	E20005

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Protection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001



For hygienic
and wet areas

Photoelectric sensors O6 WetLine series, PNP, connector



- Stainless steel housing with protection rating IP 65 / IP 67 / IP 68 / IP 69K
- Easy adjustment by potentiometer
- Diffuse reflection sensors with reliable background suppression
- Colour of the object has no influence on the range
- Also available as through-beam or retro-reflective system



Best optical performance

The optimised diffuse reflection sensors suppress background interference effectively. Even highly reflective backgrounds like stainless steel have no influence on the background suppression. The sensing range is independent of the characteristics and colour of the object to be detected. A special feature is the automatic sensitivity compensation that guarantees reliable operation even in steam, smoke or highly reflective environments. The clean round light spot in the operating area ensures a consistent light distribution in the light cone. Scattered light around the light spot potentially disturbing other sensors due to reflections is avoided. This provides additional safety.

Perfectly sealed

The compact O6 offers maximum ingress protection. A double seal protects the two setting potentiometers. The front pane and the potentiometers are embedded flush to allow residue-free cleaning. The stainless steel housing has the high protection ratings IP 68 / IP 69 K. A transparent black housing cover provides a good contrast to the integrated LEDs (operating status, switch point) for optimum visibility from any angle even in bright lighting conditions. The coated front pane is made of resistant, shatterproof plastic.



O6 series WetLine with rectangular housing for hygienic and wet areas

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
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Cable with M12 connector 0,3 m · 10...30 DC · IP 65 / IP 67 / IP 68 / IP 69K

	Diffuse reflection sensor	5...500 mm	red	15	H/D PNP	O6T301
	Background suppression	8...200 mm	red	8	H/D PNP	O6H301
	Transmitter	10 m	red	300	–	O6S301
	Receiver	10 m	red	–	H/D PNP	O6E301
	Polarisation filter	0,005...5 m	red	150	H/D PNP	O6P301

Cable 2 m · 10...30 DC · IP 65 / IP 67 / IP 68 / IP 69K

	Diffuse reflection sensor	5...500 mm	red	15	H/D PNP	O6T300
	Background suppression	8...200 mm	red	8	H/D PNP	O6H300
	Transmitter	10 m	red	300	–	O6S300
	Receiver	10 m	red	–	H/D PNP	O6E300
	Polarisation filter	0,005...5 m	red	150	H/D PNP	O6P300


System components

Type	Description	Order no.
	Prismatic reflector · 56 x 38 mm · rectangular · Housing materials: plastics Solidchem · up to 140 °C	E21268
	Prismatic reflector · 48 x 48 mm · rectangular · Housing materials: plastics Solidchem · up to 140 °C	E21269

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
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Socket 12, 5/4-pole, 4-wire

	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001
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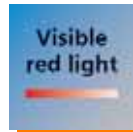


For hygienic
and wet areas

Photoelectric sensors O6 WetLine series, NPN, connector



- Stainless steel housing with protection rating IP 65 / IP 67 / IP 68 / IP 69K
- Easy adjustment by potentiometer
- Diffuse reflection sensors with reliable background suppression
- Colour of the object has no influence on the range
- Also available as through-beam or retro-reflective system



Best optical performance

The optimised diffuse reflection sensors suppress background interference effectively. Even highly reflective backgrounds like stainless steel have no influence on the background suppression. The sensing range is independent of the characteristics and colour of the object to be detected. A special feature is the automatic sensitivity compensation that guarantees reliable operation even in steam, smoke or highly reflective environments. The clean round light spot in the operating area ensures a consistent light distribution in the light cone. Scattered light around the light spot potentially disturbing other sensors due to reflections is avoided. This provides additional safety.

Perfectly sealed

The compact O6 offers maximum ingress protection. A double seal protects the two setting potentiometers. The front pane and the potentiometers are embedded flush to allow residue-free cleaning. The stainless steel housing has the high protection ratings IP 68 / IP 69 K. A transparent black housing cover provides a good contrast to the integrated LEDs (operating status, switch point) for optimum visibility from any angle even in bright lighting conditions. The coated front pane is made of resistant, shatterproof plastic.



O6 series WetLine with rectangular housing for hygienic and wet areas

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
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Cable with M12 connector 0,3 m · 10...30 DC · IP 65 / IP 67 / IP 68 / IP 69K

	Diffuse reflection sensor	5...500 mm	red	15	H/D NPN	O6T305
	Background suppression	8...200 mm	red	8	H/D NPN	O6H305
	Transmitter	10 m	red	300	–	O6S301
	Receiver	10 m	red	–	H/D NPN	O6E305
	Polarisation filter	0,005...5 m	red	150	H/D NPN	O6P305

Cable 2 m · 10...30 DC · IP 65 / IP 67 / IP 68 / IP 69K

	Diffuse reflection sensor	5...500 mm	red	15	H/D NPN	O6T304
	Background suppression	8...200 mm	red	8	H/D NPN	O6H304
	Transmitter	10 m	red	300	–	O6S300
	Receiver	10 m	red	–	H/D NPN	O6E304
	Polarisation filter	0,005...5 m	red	150	H/D NPN	O6P304

System components

Type	Description	Order no.
	Prismatic reflector · 56 x 38 mm · rectangular · Housing materials: plastics Solidchem · up to 140 °C	E21268
	Prismatic reflector · 48 x 48 mm · rectangular · Housing materials: plastics Solidchem · up to 140 °C	E21269

Connectors

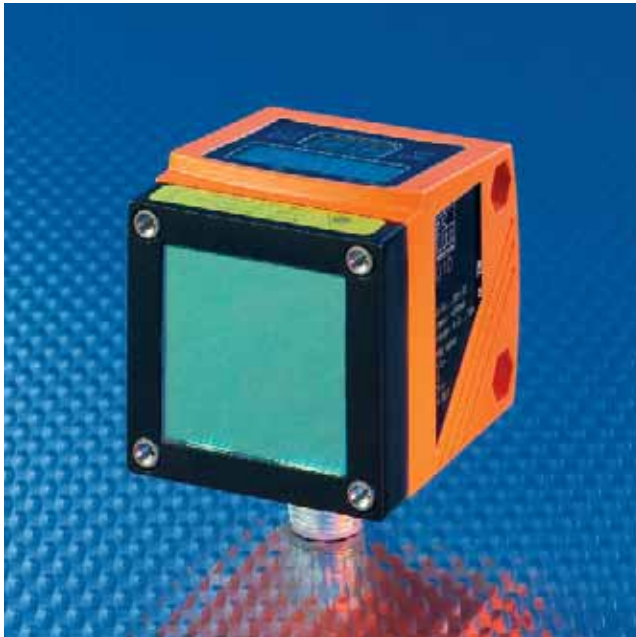
Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Protection	LEDs	Order no.
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Socket 12, 5/4-pole, 4-wire

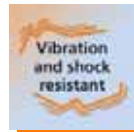
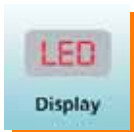
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001
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Laser distance and level sensors



- Compact distance sensor with extremely good price / performance ratio
- Ideal for applications with long ranges and background suppression
- Level detection with the O1D300, e.g. non-transparent liquids
- Teach mode for fast set-up
- Big 4-digit alphanumeric display for measured values



Detection of objects with long ranges

The O1D laser sensor provides non-contact distance measurement up to 10 metres. The O1D106 measures long distances of up to 75 m using a reflector.

Non-contact level measurement

O1D300 has been designed especially to measure the level in food processing. The range is 10 m.

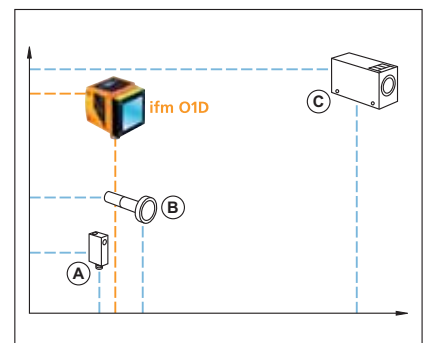
Compact and flexible

The sensors in a compact robust metal housing of only 42 x 42 mm are suited for use in the food and beverage industry. They can be mounted easily in applications where space is at a premium.

The outputs can be programmed for two switch points or one switch point and one analogue output. The display can also provide the measured values in inches, millimetres or metres.

Combined advantages

Photoelectric systems with background suppression (A, see graph to the right) and ultrasonic sensors (B) are inexpensive alternatives for distance measurement, however their ranges are shorter. Traditional time-of-flight systems (C) offer an improved level of performance but are much higher in cost. The O1D combines the advantages of these systems at an attractive price.



Price / performance comparison: The O1D combines the advantages of background suppression (A), ultrasonic sensors (B) and traditional time-of-flight systems (C).

Rectangular O1 housing for optical distance measurement, laser class 1

Type	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.
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Output function OUT1: normally open / closed programmable OUT2: normally open / closed programmable or analogue (4...20 mA / 0...10 V, scalable)

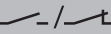
	Optical distance sensor	0.3...6 m	1...33	6	18...30	O1D155
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Rectangular O1 housing for optical distance measurement, laser class 2

Type	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.
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Output function OUT1: normally open / closed programmable OUT2: normally open / closed programmable or analogue (4...20 mA / 0...10 V, scalable)



	Optical distance sensor	1...75 m	1...33	150	18...30	O1D106
	Optical distance sensor	0.2...10 m	1...50	6	18...30	O1D100
	Optical distance sensor	0.2...10 m	1...50	6	18...30	O1D103
	Optical level sensor	0.2...10 m	1...33	6	18...30	O1D300

Output function 

	Background suppression	0.2...10 m	5	6	10...30	O1D101
	Background suppression	0.2...10 m	5	6	10...30	O1D104

Accessories O1 housing



Type	Description	Order no.
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	Mounting adapter · O1D · for optical distance sensors · Process connection · G1A · for type O1D · Housing materials: flange: stainless steel 316L / 1.4404 / sealing: Viton / Protective cover: PMMA transparent / screws: high-grade stainless steel	E21224
	Protective cover · O1D · Housing materials: bezel: ZnAl4Cu1 finish black / window: PMMA transparent and colourless / sealing: FPM 75+/-5 Shore A black / screws: stainless steel	E21133

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
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Socket 12, 5/4-pole, 4-wire

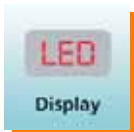
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001



Colour, contrast sensor and sensor for transparent objects



- The colour sensor detects even tiny colour nuances, 5 tolerance steps can be selected
- Contrast sensor with teach function for automatic transmitted light colour
- The sensor for transparent objects detects among others glass, films and PET bottles
- High switching frequencies for fast moving applications
- Auto-Detect for PNP / NPN configuration, time-saving teach functions



Colour sensor for production control

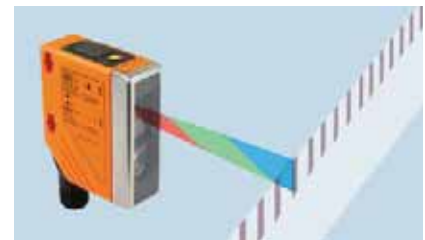
The colour sensor detects objects based on their colour and is particularly suited for applications in the food and beverage industry. With five selectable tolerance steps the user defines the permissible colour differences. An adjustment to the application is made via pushbuttons. The high switching frequency of 2,000 Hz allows precise colour detection even for very fast applications.

Contrast sensor for object detection

The powerful type O5K contrast sensor can be used in many applications in the packaging, assembly, material handling and printing industries. It detects registration marks or printed colour bars by determining the difference between the target and the background. The high colour contrast sensitivity and resolution guarantee reliable detection.

Detection of transparent objects

The O5G series sensors are suited for one of the most difficult photoelectric applications: the detection of transparent objects such as film, glass, PET / plastic bottles or transparent packagings. Normal photoelectric sensors are not suited for this. Their excess gain is too high and they look through the transparent material without detecting it.



Sensors for colour detection

Type	Operating principle	Measuring range	Light spot diameter [mm]	U _b [V]	Current consumption [mA]	Sampling rate / switching frequency [Hz]	Order no.
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M12 connector · Output function light-on / dark-on programmable · DC PNP/NPN

	Colour sensor	15...19 mm	2.5 x 6	10...36	50	2000	O5C500
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Contrast sensors


Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
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M12 connector · 10...36 DC · plastics · IP67

	Diffuse contrast sensor	18...22 mm	RGB	1.5 x 5	H/D PNP/NPN	O5K500
	Polarisation filter	0...1.5 m	red	40 / 80	H/D PNP/NPN	O5G500

Prismatic reflector



Type	Description	Order no.
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	Prismatic reflector · 50 x 50 mm · rectangular · for retro-reflective laser sensors and glass and film detection · Housing materials: plastics	E20722
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Connectors

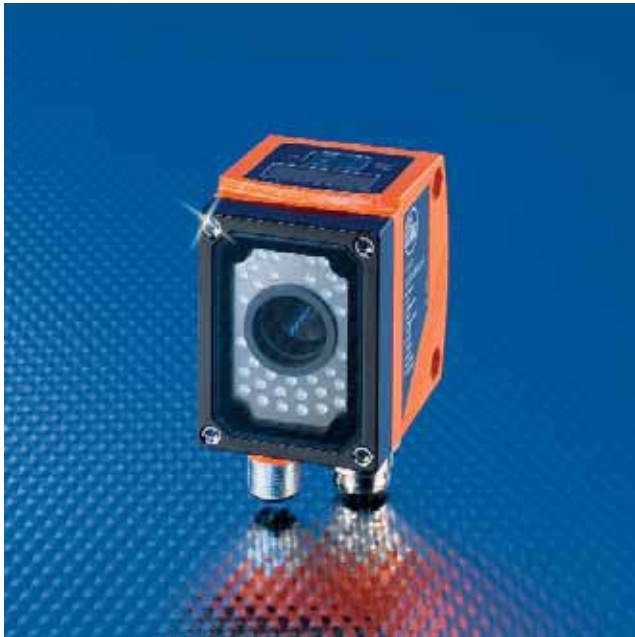
Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
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Socket 12, 5/4-pole, 4-wire

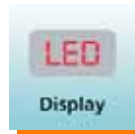
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001



Contour sensor efector dualis






- Object inspection by means of defined shapes and contours
- For applications in production and quality control
- Robust housing for harsh industrial environments
- Wizard for easy parameter setting






Orientation-independent detection of contours

The contour sensor efector dualis detects shape and object on the basis of their contour. It is ideal in applications where the object's shape is repeatable and defined. Quality control is a typical application. Adjustment with a reference model allows to detect faulty parts or object features and provides one signal per switching output. Fast image capture and evaluation allow precise evaluation even for fast processes or moving parts.




Sensors for object recognition with PNP output function

Type	Operating principle	Max. field of view size [mm]	Resolution [mm]	Detection rate [Hz]	Type of light	Ambient temperature [°C]	Order no.
Type O2D2 · M12 plug, 8 poles · M12 socket, 4 poles · metal · DC · PNP							
	CMOS image sensor B/W, VGA resolution 640 x 480	400 x 300	0.08	10	infrared	-10...60	O2D224
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	0.1	10	infrared	-10...60	O2D220
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	0.3	10	infrared	-10...60	O2D222


Sensors for object recognition with NPN output function

Type	Operating principle	Max. field of view size [mm]	Resolution [mm]	Detection rate [Hz]	Type of light	Ambient temperature [°C]	Order no.
Type O2D2 · M12 plug, 8 poles · M12 socket, 4 poles · metal · DC · NPN							
	CMOS image sensor B/W, VGA resolution 640 x 480	400 x 300	0.08	10	infrared	-10...60	O2D225
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	0.1	10	infrared	-10...60	O2D227
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	0.3	10	infrared	-10...60	O2D229

Connection cables for 2D and 3D sensors

Type	Description	Order no.
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 2 m · Housing materials: PUR / PC	E11898
	Socket · angled · Free from silicone · Free from halogen · gold-plated contacts · M12 connector · 2 m · Housing materials: PUR	E11231
	Socket · straight · Free from halogen · M12 connector · 2 m · Housing materials: PUR	E11950

Software

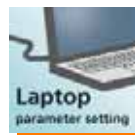
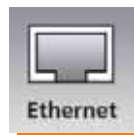
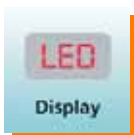
Type	Description	Order no.
	Operating software · O2D	E2D200



Pixel counter efector dualis



- Object inspection based on variable features
- For applications in production and quality control
- CMOS image element and powerful digital signal processor
- Robust housing for harsh industrial environments
- Wizard for easy parameter setting



Detection based on variable features

Whereas conventional vision sensors verify components based on defined contours, such as the efector dualis O2D contour sensor, the O2V pixel counter uses variable features for comparison.

Instead of a defined contour the user determines relative features used by the sensor to assess an object or a scene. Within freely selectable tolerances the sensor determines features such as area, size, roundness or compactness of an object.

Grey-scale values can also be used for assessment.

Compact and robust

The pixel counter can solve a variety of error-proofing and inspection applications throughout the complete manufacturing process. It includes evaluation electronics and integrated lighting in a robust die-cast metal housing that withstands harsh environments.





(A) A packing crate is filled in several layers, in this case with packs of chewing gum.





(B) The pixel counter detects if one layer is missing by means of the visible area at the inside of the cardboard box.




Sensors for optical object inspection with PNP switching outputs

Type	Operating principle	Max. field of view size [mm]	Resolution [mm]	Detection rate [Hz]	Type of light	Ambient temperature [°C]	Order no.
Type O2V · M12 plug, 8 poles · M12 socket, 4 poles · metal · DC · PNP							
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	0.1	10	White light	-10...60	O2V100
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	0.3	10	White light	-10...60	O2V102
	CMOS image sensor B/W, VGA resolution 640 x 480	400 x 300	0.08	10	White light	-10...60	O2V104


Sensors for optical object inspection with NPN switching outputs

Type	Operating principle	Max. field of view size [mm]	Resolution [mm]	Detection rate [Hz]	Type of light	Ambient temperature [°C]	Order no.
Type O2V · M12 plug, 8 poles · M12 socket, 4 poles · metal · DC · NPN							
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	0.1	10	White light	-10...60	O2V101
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	0.3	10	White light	-10...60	O2V103
	CMOS image sensor B/W, VGA resolution 640 x 480	400 x 300	0.08	10	White light	-10...60	O2V105

Connection cables for 2D and 3D sensors

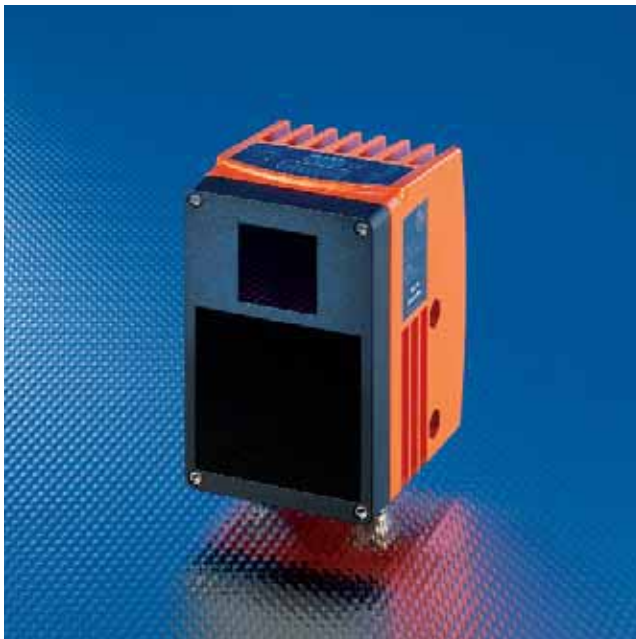
Type	Description	Order no.
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 2 m · Housing materials: PUR / PC	E11898
	Socket · angled · Free from silicone · Free from halogen · gold-plated contacts · M12 connector · 2 m · Housing materials: PUR	E11231
	Socket · straight · Free from halogen · M12 connector · 2 m · Housing materials: PUR	E11950

Software

Type	Description	Order no.
	Operating software · O2V	E2V100



3D sensor



- First industrially compatible 3D sensor
- Photoelectric level detection in silos or on vibratory conveyors
- Alternative for point level sensors that only monitor one reference point
- Operating principle: Time of flight measurement with 64 x 48 pixels (PMD technology)



Volume detection

Irrespective of the distance between the sensor and the object the efector pmd3d determines the volume of any object in applications.

Level detection

The sensor determines the level above the previously defined background in the search zone. The shape of the bulk material does not matter.

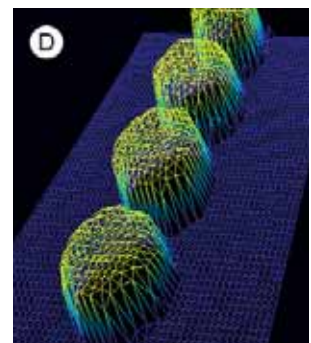
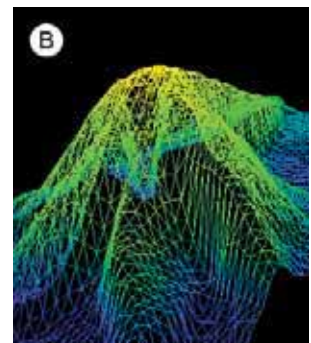
Examples:

(A) Level with an irregular surface: Level measurement of any bulk materials such as granulates, cereals or vegetables in silos.


(B) The level monitored irrespective of shape, colour or material as shown here for the processing of deep-frozen vegetables.

(C), (D) Checked for completeness: By means of volume measurement the filling status of conveyor belts or pallets is detected.



It is also possible to monitor whether vessels are completely empty.




Sensors for 3D object recognition

Type	Operating principle	Resolution (pixels)	Angle of aperture (horizontal x vertical) [°]	Lighting	Max. sampling rate [Hz]	Ambient temperature [°C]	Order no.
PMD 3D sensor · Type O3D · M12 connector · metal · DC							
	PMD 3D sensor	64 x 48	30 x 40	Infrared LED	20	-10...50	O3D200

Connection cables for 2D and 3D sensors

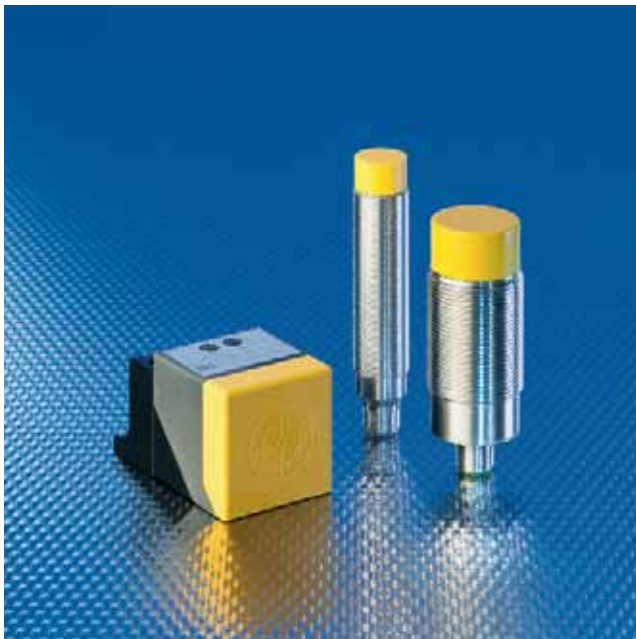
Type	Description	Order no.
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 2 m · Housing materials: PUR / PC	E11898
	Socket · angled · Free from silicone · Free from halogen · gold-plated contacts · M12 connector · 2 m · Housing materials: PUR	E11231
	Socket · straight · Free from halogen · M12 connector · 2 m · Housing materials: PUR	E11950

Software

Type	Description	Order no.
	Operating software for PMD 3D sensor · O3D	E3D200



Fail-safe inductive sensors



- No special key or coded magnet is required as target
- High tolerance to misalignment and nuisance tripping
- Self-monitoring sensor function
- Rated up to SIL 2 or SIL 3 according to IEC 61508



Safe and sound.

The non-contact fail-safe inductive sensors detect standard targets made of metal such as stainless steel or mild steel. Coded magnets or special mechanical keys are not required as targets. This reduces the installation time considerably and avoids misalignment issues and nuisance tripping. The sensors continuously monitor the sensing window for target position and dwell time. They can be used with all standard safety relays, PLCs and bus systems.






Critical applications

The sensor can be used to monitor safety applications including high-speed door monitoring, open and closed valve position, part presence, lift positions or the travel range of robots and robotic arms.





The ifm fail-safe sensors are installed quickly, no coded target is required. This saves time and money.

Inductive sensors for safety-related applications, 2 x OSSD, SIL 2, PL d

Type	Length [mm]	Enable zone [mm]	Housing material	U _b DC [V]	Protection	Response time in case of a safety request / enable time [ms]	Order no.
M12 connector · Output function 2 x OSSD (A1 and A2) · 4-wire · DC PNP							
	45	0.5...4 nf	high-grade st. steel	24	IP 65 / IP 67	≤ 1 / ≤ 1	GF711S
	35	1...8 nf	high-grade st. steel	24	IP 65 / IP 67	≤ 1 / ≤ 1	GG711S
	44.5	1...5 f	brass	24	IP 65 / IP 67	≤ 1 / ≤ 1	GG712S
	30	1...15 nf	high-grade st. steel	24	IP 65 / IP 67	≤ 10 / ≤ 1	GI711S
	45	1...10 f	high-grade st. steel	24	IP 65 / IP 67	≤ 10 / ≤ 1	GI712S



f = flush / nf = non flush

Inductive sensors for safety-related applications, 2 x OSSD, SIL 3, PL e

Type	Length [mm]	Enable zone [mm]	Housing material	U _b DC [V]	Protection	Response time in case of a safety request / enable time [ms]	Order no.
M12 connector · Output function 2 x OSSD (A1 and A2) · 4-wire · DC PNP							
	39	6...12 nf	high-grade st. steel	24	IP 68 / IP 69K	≤ 50 / ≤ 200	GI701S
	66	10...15 nf	PPE	24	IP 65 / IP 67	≤ 50 / ≤ 200	GM701S
	66	4...20 nf	PPE	24	IP 65 / IP 67	≤ 50 / ≤ 200	GM705S

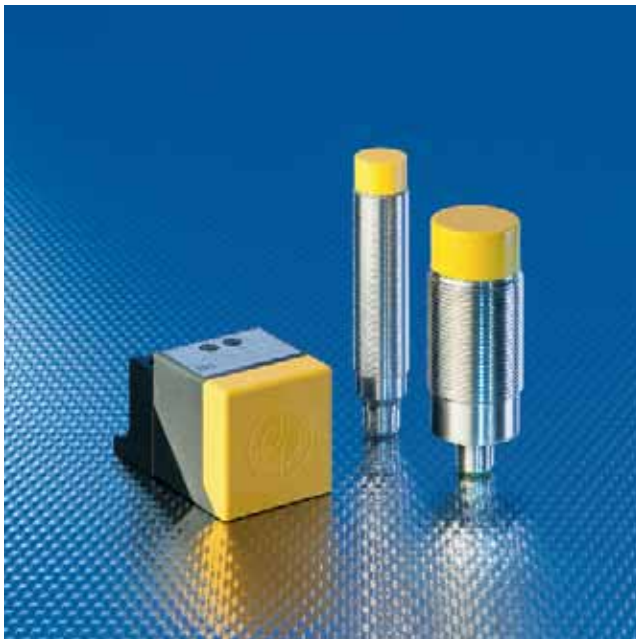
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Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001



Fail-safe inductive sensors



- No special key or coded magnet is required as target
- High tolerance to misalignment and nuisance tripping
- Self-monitoring sensor function
- Rated up to SIL 2 or SIL 3 according to IEC 61508



Safe and sound.

The non-contact fail-safe inductive sensors detect standard targets made of metal such as stainless steel or mild steel. Coded magnets or special mechanical keys are not required as targets. This reduces the installation time considerably and avoids misalignment issues and nuisance tripping. The sensors continuously monitor the sensing window for target position and dwell time. They can be used with all standard safety relays, PLCs and bus systems.





Critical applications

The sensor can be used to monitor safety applications including high-speed door monitoring, open and closed valve positions, part presence, escalators and lift position, and the travel range of robots and robotic arms.




The clocked fail-safe sensors can be connected in series with up to 10 sensors – even in combination with mechanical safety switches.

Fail-safe inductive sensors to IEC 61508 SIL 3, IEC 62061 SILcl 3 and ISO 13849-1 PL e with the possibility of connection in series


Type	Length [mm]	Enable zone [mm]	Housing material	U _b DC [V]	Protection	Response time in case of a safety request / enable time [ms]	Order no.
M12 connector · Output function Clock signal · 4-wire · DC							
	55	3...6 nf	high-grade st. steel	24	IP 68 / IP 69K	≤ 20 / ≤ 200	GG5055
	65	1...4 f	brass	24	IP 68 / IP 69K	≤ 20 / ≤ 200	GG5075
	39	6...12 nf	high-grade st. steel	24	IP 68 / IP 69K	≤ 20 / ≤ 200	GI5055
	66	10...15 nf	PPE	24	IP 65 / IP 67	≤ 20 / ≤ 200	GM5045
	66	10...20 nf	PPE	24	IP 65 / IP 67	≤ 20 / ≤ 200	GM5055

f = flush / nf = non flush



Safety at Work

Type	Description	Order no.
	Safe active AS-i ClassicLine module · AS-i version 2.1 · IR addressing possible · Control category 4 according to EN954-1 · For the connection of fail-safe inductive sensors of the control category 4 · Sockets M12 x 1 · Housing materials: PBT · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	AC0165

Accessories

Type	Description	Order no.
	Safety T-splitter · M12 socket - 1 M12 connector / 1 M12 socket · T-piece for the pseudo-serial connection of fail-safe sensors · Housing materials: PUR	E11569

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Protection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001



Safety light curtains Hand protection



- Safety light curtains type 2 and type 4 to IEC 61496
- With SIL to IEC 61508 and PL to ISO 13849
- Compact housing dimensions (28 x 30 mm), can be installed in L shape without dead band
- Up to 12 metre protected area width
- Light curtains for hand protection offer protected area heights of 610 mm to 1210 mm



Protection for the plant personnel

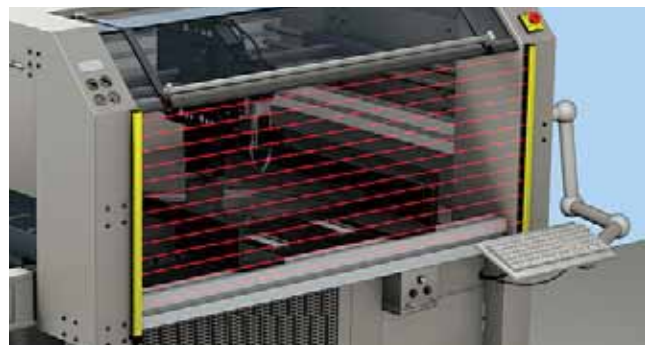
Safety light curtains prevent unsafe access to or reaching inside dangerous machinery and work areas.

They consist of a transmitter and receiver pair that create a multi-beam barrier of infrared light in front of, or around, a hazardous area. When any of the beams are broken by intrusion in the sensing field, the light curtain sends a signal to stop the machine.


Point-of-operation guarding

Light curtains can protect an operator from the hazards associated with material positioning, such as on mechanical and hydraulic power presses, moulding presses, stamping, forming and assembly machines.


See www.ifm.com for safety light curtains with additional protected heights and widths.





Safety light curtains type 2, SIL 2, PL d, protected area width up to 12 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
M12 connector							
	663	30	610	0...4 / 3...12	9.5	24	OY034S
	963	30	910	0...4 / 3...12	12.5	24	OY036S
	1263	30	1210	0...4 / 3...12	16	24	OY038S
	663	40	610	0...4 / 3...12	7	24	OY054S
	963	40	910	0...4 / 3...12	9.5	24	OY056S
	1263	40	1210	0...4 / 3...12	11.5	24	OY058S

Safety light curtains type 4, SIL 3, PL e, protected area width up to 12 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
M12 connector							
	663	30	610	0...4 / 3...12	8.5	24	OY044S
	963	30	910	0...4 / 3...12	12	24	OY046S
	1263	30	1210	0...4 / 3...12	15.5	24	OY048S
	663	40	610	0...4 / 3...12	6.5	24	OY064S
	963	40	910	0...4 / 3...12	9	24	OY066S
	1263	40	1210	0...4 / 3...12	11	24	OY068S

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro- tection	LEDs	Order no.
Socket 12, 5-pole, 5-wire								
	5 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT010
Socket 12, 8/7-pole, 8-wire								
	5 m black PUR cable	8 x 0.25 mm ²	TPU / brass	30 AC 36 DC	-40...80	IP 67	–	E12166



Safety light curtains Body protection



- Safety light curtains type 2 and type 4 to IEC 61496
- With SIL to IEC 61508 and PL to ISO 13849
- Compact housing dimensions (28 x 30 mm), can be installed in L shape without dead band
- Up to 12 metre protected area width
- Light curtains for body protection offer protected heights of 610 mm to 1210 mm



Protection for the plant personnel

Safety light curtains prevent unsafe access to or reaching inside dangerous machinery and work areas.

They consist of a transmitter and receiver pair that create a multi-beam barrier of infrared light in front of, or around, a hazardous area. When any of the beams are broken by intrusion in the sensing field, the light curtain sends a signal to stop the machine.


Perimeter guarding

To safeguard a larger area in a plant, light curtains can be placed horizontally along the floor to detect foot traffic of plant personnel.


See www.ifm.com for safety light curtains with additional protected heights and widths.





Safety light curtains type 2, SIL 2, PL d, protected area width up to 12 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
M12 connector							
	663	50	610	0...4 / 3...12	6	24	OY074S
	963	50	910	0...4 / 3...12	8	24	OY076S
	1263	50	1210	0...4 / 3...12	10	24	OY078S
	663	90	610	0...4 / 3...12	4	24	OY094S
	963	90	910	0...4 / 3...12	5	24	OY096S
	1263	90	1210	0...4 / 3...12	6	24	OY098S

Safety light curtains type 4, SIL 3, PL e, protected area width up to 12 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
M12 connector							
	663	50	610	0...4 / 3...12	5.5	24	OY084S
	963	50	910	0...4 / 3...12	7.5	24	OY086S
	1263	50	1210	0...4 / 3...12	9	24	OY088S
	663	90	610	0...4 / 3...12	4	24	OY104S
	963	90	910	0...4 / 3...12	5	24	OY106S
	1263	90	1210	0...4 / 3...12	5.5	24	OY108S

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro- tection	LEDs	Order no.
Socket 12, 5-pole, 5-wire								
	5 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT010
Socket 12, 8/7-pole, 8-wire								
	5 m black PUR cable	8 x 0.25 mm ²	TPU / brass	30 AC 36 DC	-40...80	IP 67	–	E12166

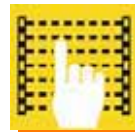
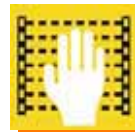


For hygienic
and wet areas

Safety light curtains for washdown, IP 69K



- Safety light curtains with protection IP 69K
- Resistant to steam and high-pressure cleaning
- With SIL to IEC 61508 and PL to ISO 13849
- Both type 2 / SIL 2 and type 4 / SIL 3 versions available
- Up to 15 metre protected area width



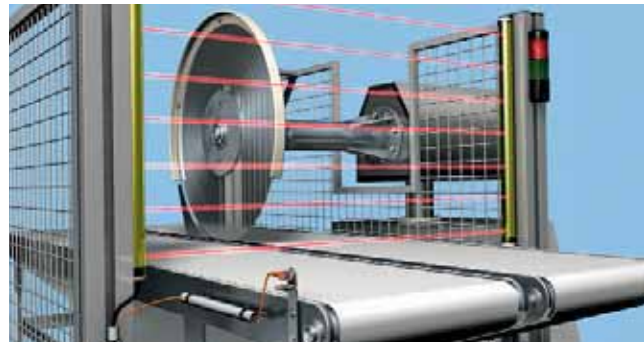
Hygienic design

The new safety light curtains with protective tube and protection rating IP 69K are designed without corners and edges. They can be used for perimeter guarding, access prevention and point-of-operation guarding. The safety light curtains are housed in a hygienic PMMA transparent tubing with IP 69K protection rating. They are thus resistant to high-pressure and steam cleaning.

Features:

- A heater element coupled with sealing O-rings prevents moisture build-up inside the tubing
- Highly-visible LEDs provide status, setup and troubleshooting indication
- Easy installation using integrated slots
- Delivered fully assembled – this reduces the installation costs

See www.ifm.com for safety light curtains with additional protected heights and widths.



Safety light curtains type 4, SIL 3, PL e, protected area width up to 5 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
Cable 15 m							
	630	14	460	0...2 / 1...5	7.5	24	OY403S
	930	14	760	0...2 / 1...5	11	24	OY405S
	1230	14	1060	0...2 / 1...5	14.5	24	OY407S

Safety light curtains type 2, SIL 2, PL d, protected area width up to 10 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
Cable 15 m							
	630	30	460	0...3 / 2...10	8	24	OY433S
	780	30	610	0...3 / 2...10	9.5	24	OY434S
	930	30	760	0...3 / 2...10	11	24	OY435S
	1080	30	910	0...3 / 2...10	12.5	24	OY436S
	1230	30	1060	0...3 / 2...10	14.5	24	OY437S
	1380	30	1210	0...3 / 2...10	16	24	OY438S
	1530	30	1360	0...3 / 2...10	17.5	24	OY439S
	1680	30	1510	0...3 / 2...10	19.5	24	OY440S

Safety light curtains type 4, SIL 3, PL e, protected area width up to 15 m

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
Cable 15 m							
	630	30	460	0...7 / 3...15	5	24	OY443S
	780	30	610	0...7 / 3...15	6	24	OY444S
	930	30	760	0...7 / 3...15	6.5	24	OY445S
	1080	30	910	0...7 / 3...15	7.5	24	OY446S
	1230	30	1060	0...7 / 3...15	8.5	24	OY447S
	1380	30	1210	0...7 / 3...15	9.5	24	OY448S
	1530	30	1360	0...7 / 3...15	10	24	OY449S
	1680	30	1510	0...7 / 3...15	11	24	OY450S



Safety light grid Body protection



- Type 2 and type 4 safety light curtains to IEC 61496
- With SIL to IEC 61508 and PL to ISO 13849
- Compact housing dimensions (28 x 30 mm), can be installed in L shape without dead band
- Up to 12 metre protected area width
- 2-, 3- or 4-beam versions available



Protection for the plant personnel

Safety light grids prevent unsafe access to or reaching inside dangerous machinery and work areas.

They consist of a transmitter and receiver pair that create a multi-beam barrier of infrared light in front of, or around, a hazardous area. When any of the beams are broken by intrusion in the sensing field, the light grid sends a signal to stop the machine.

If the area is to be protected from several sides, corner mirrors can be used.


See www.ifm.com for safety light grids with additional protected heights and widths.







Safety light grids type 2, SIL 2, PL d, 2, 3, 4 beams, protected area width up to 12 m

Type	Dimensions [mm]	Number of beams	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
M12 connector							
	L x 28 x 30	2	510	0...4 / 3...12	3	24	OY1115
	L x 28 x 30	3	810	0...4 / 3...12	3.5	24	OY1125
	L x 28 x 30	4	910	0...4 / 3...12	3.5	24	OY1135

Safety light grids type 4, SIL 3, PL e, 2, 3, 4 beams, protected area width up to 12 m

Type	Dimensions [mm]	Number of beams	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
M12 connector							
	L x 28 x 30	2	510	0...4 / 3...12	2.5	24	OY1145
	L x 28 x 30	3	810	0...4 / 3...12	3	24	OY1155
	L x 28 x 30	4	910	0...4 / 3...12	3	24	OY1165

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro- tection	LEDs	Order no.
Socket 12, 5-pole, 5-wire								
	5 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT010
	5 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT013
Socket 12, 8/7-pole, 8-wire								
	5 m black PUR cable	8 x 0.25 mm ²	TPU / brass	30 AC 36 DC	-40...80	IP 68	–	E12168
	5 m black PUR cable	8 x 0.25 mm ²	TPU / brass	30 AC 36 DC	-40...80	IP 67	–	E12166



Safety light grids with active / passive system Body protection



- Safety light grid type 4 to IEC 61496
- Transmitter and receiver are integrated into one housing making wiring simple
- Up to 6 metre protected area width
- 2-, 3- or 4-beam versions available



Protection for the plant personnel

Safety light grids are used for perimeter guarding to prevent access to work areas containing dangerous machinery. When any of the light beams are broken by an intrusion in the sensing field, the safety light grid sends a signal to stop the machine. The light grids are available in 2-, 3- or 4-beam version.

ifm's active / passive light grids lower installation costs by reducing the amount of wiring required. The transmitter and receiver are contained in one housing (active element) and are used with a reflecting mirror (passive element). All electrical connections are made to the active element. This is very useful for applications where it is difficult to wire both sides of a safety light grid such as conveyors.

See www.ifm.com for safety light grids with additional protected heights and widths.




Safety light grids with active / passive system type 4, SIL 3, PL e, 2, 3, 4 beams, protected area width up to 6 m

Type	Dimensions [mm]	Number of beams	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
M12 connector							
	L x 50 x 60	2	510	0...6 / 0...6	10	24	OY9015
	L x 50 x 60	3	810	0...6 / 0...6	10.5	24	OY9025
	L x 50 x 60	4	910	0...6 / 0...6	10.5	24	OY9035



Accessories

Type	Description	Order no.
	Corner mirror · Length: 715 mm · for safety light curtains · Protected area height · 610 mm · for safety light grids · 2 beams · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	EY1004
	Corner mirror · Length: 1060 mm · for safety light curtains · Protected area height · 910 mm · for safety light grids · 3 beams · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	EY1006
	Corner mirror · Length: 1230 mm · for safety light curtains · Protected area height · 1060 mm · for safety light grids · 4 beams · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	EY1007

Corner mirror with base

Type	Description	Order no.
	Corner mirror with base · Length: 1010 mm · for safety light grids · 2 beams · for safety light curtains · ≤ 760 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	EY1011
	Corner mirror with base · Length: 1340 mm · for safety light grids · 3 beams · 4 beams · for safety light curtains · ≤ 1060 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	EY1013

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5-pole, 5-wire								
	5 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT010
Socket 12, 8/7-pole, 8-wire								
	5 m black PUR cable	8 x 0.25 mm ²	TPU / brass	30 AC 36 DC	-40...80	IP 67	–	E12166



For hygienic
and wet areas

Safety light grid for washdown, IP 69K



- Safety light grid with IP 69K protection rating
- Resistant to steam and high-pressure cleaning
- SIL to IEC 61508 and PL to ISO 13849
- Both type 2 / SIL 2 and type 4 / SIL 3 versions available
- Up to 15 metre protected area width



Hygienic design

The new safety light grids with protective tube and IP 69K protection rating are designed without corners and edges. They can be used for perimeter guarding, access prevention and point-of-operation guarding. The safety light grids are housed in a hygienic PMMA transparent tubing with IP 69K protection rating. They are thus resistant to high-pressure and steam cleaning.

Features:

- A heater element coupled with sealing O-rings prevents moisture build-up inside the tubing
- Highly-visible LEDs provide status, setup and troubleshooting indication
- Easy installation using integrated slots
- Delivered fully assembled – this reduces the installation costs

See www.ifm.com for safety light grids with additional protected heights and widths.



Safety light grids type 2, SIL 2, PL d, 2, 3, 4 beams, protected area width up to 10 m

Type	Dimensions [mm]	Number of beams	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
Cable 15 m							
	L x 70 x 50	2	510	0...3 / 2...10	3	24	OY411S
	L x 70 x 50	3	810	0...3 / 2...10	3.5	24	OY412S
	L x 70 x 50	4	910	0...3 / 2...10	3.5	24	OY413S

Safety light grids type 4, SIL 3, PL e, 2, 3, 4 beams, protected area width up to 15 m

Type	Dimensions [mm]	Number of beams	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
Cable 15 m							
	L x 70 x 50	2	510	0...7 / 3...15	2.5	24	OY421S
	L x 70 x 50	3	810	0...7 / 3...15	2.5	24	OY422S
	L x 70 x 50	4	910	0...7 / 3...15	2.5	24	OY423S



Safety relays



- Multifunctionality reduces the number of versions and thus stock levels
- Combines cross-fault monitoring and simultaneous monitoring
- Connects two-hand controls, light curtains and protective guards
- Two normally-open safety contacts are rated for up to 6 A load current
- Auxiliary output for feedback to the PLC



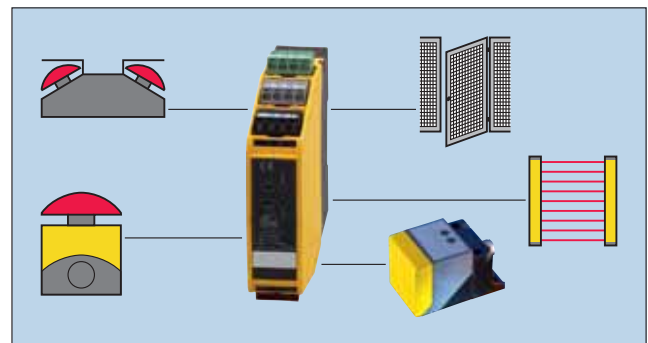
Multifunctionality reduces stock levels

The multifunction relays are compatible with the standard safety relays for the industry. They connect single or dual channel emergency stops, mechanical safety switches, transistor-based safety devices, light curtains, two-hand controls and fail-safe inductive sensors.

All this protective equipment can be monitored with only one safety relay. The benefit is a large reduction in stock levels that eliminates the need for different types of safety relays for various applications.



The G1501S features a selectable "monitor" or "automatic" reset. Two normally-open safety contacts are rated for up to 6 A. A solid state auxiliary non-safety output is designed to provide the status of the safety contacts. Dual channel ESPE's can be configured to monitor simultaneous logic and cross-fault detection across the inputs.

ifm's safety relay is certified to IEC 61508, EN 954-1, EN 574 type III C.




Different ESPE's can be connected to the safety relay.


Safety relays with relay outputs for fail-safe sensors

Type	Description	Order no.
	Safety relay · Terminal block Phoenix Contact MSTBO · For the connection of electronic and mechanical fail-safe sensors/switches and for use as two-hand control · Housing materials: PA · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3 · EN 574: type IIIC	G1501S
	Safety relay · Terminal block Phoenix Contact MSTBO · For the connection of electronic and mechanical fail-safe sensors/switches and for use as two-hand control · Housing materials: PA · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3 · EN 574: type IIIC	G1502S

Safety relays with solid state outputs for fail-safe sensors

Type	Description	Order no.
	Safety relay · Terminal block Phoenix Contact MSTBO · For the connection of electronic and mechanical fail-safe sensors/switches and for use as two-hand control · Housing materials: PA · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3 · EN 574: type IIIC	G1503S

Safety relays for safety light curtains / safety lights grids

Type	Description	Order no.
	Safety relay · Muting relay · Housing for DIN rail mounting · For the connection of safety light curtains / safety light grids with OSSD · Safety category type 4 to IEC 61496 · for industrial applications · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	G2001S

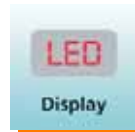
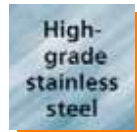


For hygienic
and wet areas

2-wire pressure sensor with display, stainless steel, Aseptoflex Vario process connection



- High-grade stainless steel housing for hygienic applications, level and pressure measurement
- 2-wire transmitter for simplified wiring and retrofitting
- Big 4-digit alphanumeric display for measured values.
- High overall accuracy (0.2 %) and electronic temperature compensation
- High temperature resistance, therefore suitable for SIP and CIP processes



100 % stainless steel housing – ingress-resistant and robust


The new PI27 series pressure transmitters are 2-wire units with a clearly readable 4-digit LED display constantly showing the measured value. The robust high-grade stainless steel housing has been optimised for hygienic applications, e.g. for monitoring levels in tanks or for pressure measurement in pipe systems.

The completely-welded housing with protection rating IP 69K prevents seepage from aggressive cleaning agents and withstands harsh washdown conditions. The sensor vent contains a Gore-Tex® membrane which itself resists high-pressure cleaning and is resistant to aggressive cleaning agents.




A variety of process adapters allows easy integration into the application. The Aseptoflex adapters feature PEEK and Viton sealing for food and beverage applications. These materials provide long-term sealing and are particularly resistant to swelling and aggressive chemicals.





Flush pressure sensors with switching and analogue output, IO-Link

Type	Process connection	Display LED	Measuring range [bar]	Poverload max. [bar]	Pbursting min. [bar]	U _b DC [V]	Order no.
M12 connector · Output function 1 x normally open / normally closed programmable + 1 x normally open / normally closed programmable or 1 x analogue (4...20 / 20...4 mA, scalable)							
	Aseptoflex Vario	Display unit	-0.005...0.1	4	30	20...32	PI2789
	Aseptoflex Vario	Display unit	-0.0124...0.25	10	30	20...32	PI2798
	Aseptoflex Vario	Display unit	-0.05...1	10	30	20...32	PI2797
	Aseptoflex Vario	Display unit	-0.124...2.5	20	50	20...32	PI2796
	Aseptoflex Vario	Display unit	-1...25	100	350	20...32	PI2793
	Aseptoflex Vario	Display unit	-1...10	50	150	20...32	PI2794
	Aseptoflex Vario	Display unit	-1...4	30	100	20...32	PI2795
	Aseptoflex Vario	Display unit	-1...1	10	30	20...32	PI2799

Adapters

Type	Description	Order no.
	Clamp adapter · Clamp · with leakage port · Clamp · 1-1.5" · with sealing ring · ISO 2852 · for units with Aseptoflex Vario adapter · Housing materials: stainless steel 316L / 1.4435	E33208
	Clamp adapter · Clamp · with leakage port · Clamp · 2" · with sealing ring · ISO 2852 · for units with Aseptoflex Vario adapter · Housing materials: stainless steel 316L / 1.4435	E33209
	Welding adapter · Ø 50 mm · Welding adapter · with leakage port · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E30130

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001

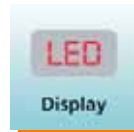


For hygienic
and wet areas

2-wire pressure sensor with display, stainless steel, G1A process connection



- High-grade stainless steel housing for hygienic applications, level and pressure measurement
- 2-wire transmitter for simplified wiring and retrofitting
- Big 4-digit alphanumeric display for measured values.
- High overall accuracy (0.2 %) and electronic temperature compensation
- High temperature resistance, therefore suitable for SIP and CIP processes



100 % stainless steel housing – ingress-resistant and robust


The new PI28 series pressure transmitters are 2-wire units with a clearly readable 4-digit LED display constantly showing the measured value. The robust high-grade stainless steel housing has been optimised for hygienic applications, e.g. for monitoring levels in tanks or for pressure measurement in pipe systems.

The completely-welded housing with protection rating IP 69K prevents seepage from aggressive cleaning agents and withstands harsh washdown conditions. The sensor vent contains a Gore-Tex® membrane which itself resists high-pressure cleaning and is resistant to aggressive cleaning agents.

A variety of G1 process adapters allows easy integration into the application.







Flush pressure sensors with switching and analogue output, IO-Link



Type	Process connection	Display LED	Measuring range [bar]	Poverload max. [bar]	Pbursting min. [bar]	U _b DC [V]	Order no.
M12 connector · Output function 1 x normally open / normally closed programmable + 1 x normally open / normally closed programmable or 1 x analogue (4...20 / 20...4 mA, scalable)							
	G1 A sealing cone	Display unit	-1...25	100	350	20...32	PI2893*
	G1 A sealing cone	Display unit	-1...10	50	150	20...32	PI2894*
	G1 A sealing cone	Display unit	-1...4	30	100	20...32	PI2895*
	G1 A sealing cone	Display unit	-0.124...2.5	20	50	20...32	PI2896*
	G1 A sealing cone	Display unit	-0.05...1	10	30	20...32	PI2897*
	G1 A sealing cone	Display unit	-0.0124...0.25	10	30	20...32	PI2898*
	G1 A sealing cone	Display unit	-1...1	10	30	20...32	PI2899*
	G1 A sealing cone	Display unit	-0.005...0.1	4	30	20...32	PI2889*

Attention: The unit must only be installed in a process connection for G1 sealing cone! The G1A sealing cone of the unit is only suited for adapters with metal end stop!

Adapters

Type	Description	Order no.
	Clamp adapter · Clamp · Clamp · 1-1.5" · ISO 2852 · for units with G 1 adaptation · Housing materials: stainless steel 316L / 1.4435	E33601
	pipe fitting · pipe fitting · pipe fitting · DN40 (1.5") · DIN 11851 · for units with G 1 adaptation · Housing materials: stainless steel 316L / 1.4435	E33612
	Clamp adapter · Varivent type N · Varivent type N · DN40 (1.5"), D = 68 · for units with G 1 adaptation · Housing materials: stainless steel 316L / 1.4435	E33622
	Welding adapter · G 1 - Ø 50 mm · Welding adapter · Housing materials: stainless steel 316L / 1.4404	E30013

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001

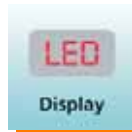
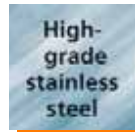


For hygienic
and wet areas

Fully electronic contact manometer Aseptoflex Vario process connection



- 3-in-1: Transmitter, switch and manometer
- Optimum readability by pointer and digital measured value display
- Rotatable display with LED bar graph and switch point indication
- The pointer is driven by a stepper motor and does not require any damping liquid
- Easy mounting and parameter setting by means of optical touch buttons



Pressure transmitter, pressure switch and convenient manometer display in one housing.

The PG series electronic “contact manometer” combines the high visibility of a manometer display with the advantages of an electronic pressure sensor. Compared to mechanical contact manometers it features more varied options. The manometer display is enhanced with a ring of LEDs that can either indicate the position of the set point and the reset point or follow the position of the pointer needle (trend display). An LED display helps with the setting and also serves as digital display of measured values.



Setting is made via two optical touch fields behind the front glass. Advantage: Cavities such as those found on mechanical switches are avoided, and thus liquid ingress is prevented.

The pointer is driven by a stepper motor. This avoids the typical oscillation that occurs with mechanical pointers.




The permissible medium temperature range is from -25...125 °C (145 °C for max. 1 hour). The high accuracy is 0.2 %. The fully electronic contact manometer provides high overload resistance as well as an integrated temperature compensation.





Electronic contact manometers with switching output and analogue output

Type	Process connection	Display LED	Measuring range [bar]	Poverload max. [bar]	Pbursting min. [bar]	U _b DC [V]	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (4...20 / 20...4 mA, scalable) · DC PNP/NPN							
	Aseptoflex Vario	Display unit	-0.005...0.1	4	30	18...32	PG2789
	Aseptoflex Vario	Display unit	-0.0124...0.25	10	30	18...32	PG2798
	Aseptoflex Vario	Display unit	-0.05...1	10	30	18...32	PG2797
	Aseptoflex Vario	Display unit	-0.124...2.5	20	50	18...32	PG2796
	Aseptoflex Vario	Display unit	-1...25	100	350	18...32	PG2793
	Aseptoflex Vario	Display unit	-1...10	50	150	18...32	PG2794
	Aseptoflex Vario	Display unit	-1...4	30	100	18...32	PG2795
	Aseptoflex Vario	Display unit	-1...1	10	30	18...32	PG2799

Adapters

Type	Description	Order no.
	Clamp adapter · Clamp · with leakage port · Clamp · 1-1.5" · with sealing ring · ISO 2852 · for units with Aseptoflex Vario adapter · Housing materials: stainless steel 316L / 1.4435	E33208
	Clamp adapter · Clamp · with leakage port · Clamp · 2" · with sealing ring · ISO 2852 · for units with Aseptoflex Vario adapter · Housing materials: stainless steel 316L / 1.4435	E33209
	Welding adapter · Ø 50 mm · Welding adapter · with leakage port · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E30130

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001

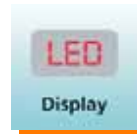


For hygienic
and wet areas

Fully electronic contact manometer G1A connection



- 3-in-1: Transmitter, switch and manometer
- Optimum readability by pointer and digital measured value display
- Rotatable display with LED bar graph and switch point indication
- The pointer is driven by a stepper motor and does not require any damping liquid
- Easy mounting and parameter setting by means of optical touch buttons



Pressure transmitter, pressure switch and convenient manometer display in one housing.

The fully electronic contact manometer is integrated in pipes and serves as clearly visible display of the process conditions. The manometer display is enhanced with a ring of LEDs that can either indicate the position of the set point and the reset point or follow the position of the pointer needle (trend display). An LED display helps with the setting and also serves as digital display of measured values.


Setting is made via two optical touch fields behind the front glass. Advantage: Cavities such as those found on mechanical switches are avoided, and thus liquid ingress is prevented.

The pointer is driven by a stepper motor. This avoids the typical oscillation that occurs with mechanical pointers.

The permissible medium temperature range is from -25...125 °C (145 °C for max. 1 hour). The high accuracy is 0.2 %. The fully electronic contact manometer provides high overload resistance as well as an integrated temperature compensation.







Electronic contact manometers with switching output and analogue output



Type	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.
		LED	[bar]	max. [bar]	min. [bar]	[V]	
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (4...20 / 20...4 mA, scalable)							
	G1 A sealing cone	Display unit	-1...25	100	350	18...32	PG2893*
	G1 A sealing cone	Display unit	-1...10	50	150	18...32	PG2894*
	G1 A sealing cone	Display unit	-1...4	30	100	18...32	PG2895*
	G1 A sealing cone	Display unit	-0.124...2.5	20	50	18...32	PG2896*
	G1 A sealing cone	Display unit	-0.05...1	10	30	18...32	PG2897*
	G1 A sealing cone	Display unit	-0.0124...0.25	10	30	18...32	PG2898*
	G1 A sealing cone	Display unit	-1...1	10	30	18...32	PG2899*
	G1 A sealing cone	Display unit	-0.005...0.1	4	30	18...32	PG2889*

Attention: The unit must only be installed in a process connection for G1 sealing cone! The G1A sealing cone of the unit is only suited for adapters with metal end stop!

Adapters

Type	Description	Order no.
	Clamp adapter · Clamp · Clamp · 1-1.5" · ISO 2852 · for units with G 1 adaptation · Housing materials: stainless steel 316L / 1.4435	E33601
	Pipe fitting · pipe fitting · pipe fitting · DN40 (1.5") · DIN 11851 · for units with G 1 adaptation · Housing materials: stainless steel 316L / 1.4435	E33612
	Clamp adapter · Varivent type N · Varivent type N · DN40 (1.5"), D = 68 · for units with G 1 adaptation · Housing materials: stainless steel 316L / 1.4435	E33622
	Welding adapter · G 1 - Ø 50 mm · Welding adapter · Housing materials: stainless steel 316L / 1.4404	E30013

Connectors

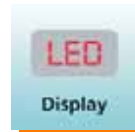
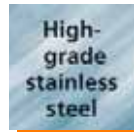
Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001



Pressure sensors especially for homogenisers



- Optimised for the monitoring of homogeniser processes
- Easy parameter setting via pushbuttons
- Flexible thanks to configurable switching and analogue outputs
- The integrated display does not require any reference display
- Long-term stability thanks to ceramic measuring cell



Precise monitoring of homogeniser processes

Homogenisers are used to emulsify two liquids or to spread solids evenly in a liquid. This improves stability and other characteristics of the product.



In the dairy industry, the product is pumped into a homogeniser and, under very high pressure, pushed through small screens. This breaks up the fat globules in the milk and creates a consistent homogeneous mixture.

For reproducible process results the pressure during homogenising must be monitored and controlled with precision. These pressure sensors have been designed especially for this purpose.



PY9970 is fitted with a mounting block and a diaphragm seal filled with an FDA-approved fluid. The PY9000 however can be mounted via a connection already existing on the homogeniser.



Pressure sensors for homogenisers

Type	Process connection	Display LED	Measuring range [bar]	Poverload max. [bar]	Pbursting min. [bar]	U _b DC [V]	Order no.
M12 connector - Output function 2 x normally open / closed programmable or 1 x normally open / closed programmable + 1 x analogue (4...20 mA / 0...10 V; scaleable 1:4)							
	-	Display unit	0...400	600	1000	20...32	PY9970
	Clamp fitting	Display unit	0...600	800	1200	20...30	PY9000

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001



For hygienic
and wet areas

Flow sensors for hygienic applications



- Wear-free due to calorimetric measuring principle.
- Extensive range of process adapters available
- LED bar graph display for flow and set point
- Easy parameter setting via pushbuttons, flexible mounting options
- Three different probe lengths for optimum insertion depth



Without wear

The flow sensors of the SI series are electronic alternatives for mechanical flow switches. They are used to detect the flow velocity in liquids and gases. Since flow sensors have no moving parts to jam or break, they are free from wear and maintenance.

Switching output, installation in process

Evaluation, LED status display and stainless steel probe are integrated in one compact housing. The probe is inserted directly into the medium. The user can set the application parameters via two buttons. The sensor switches if the flow velocity is below or above the set flow value




Multiple hygienic mounting options

The sensors allow the connection of industrially compatible adapters and connections. This flexibility allows the sensor to be easily installed in many different applications that have various mounting requirements.




The SI series flow sensors for hygienic applications verify for example the return flow in CIP systems. The stainless steel sensing probe is resistant to damage from solids and harsh chemicals in the fluid stream.





Compact flow sensors

Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	Probe length [mm]	Order no.
M12 connector							
	3...300 / 200...3000	3...100 / 200...800	-25...95	30	1...10	36.8	SI6600
	3...300 / 200...3000	3...100 / 200...800	-25...95	30	1...10	54.8	SI6700
	3...300 / 200...3000	3...100 / 200...800	-25...95	30	1...10	71.8	SI6800

Adapters

Type	Description	Order no.
	Clamp adapter · Clamp · with leakage port · Clamp · 1-1.5" · with sealing ring · ISO 2852 · for units with Aseptoflex Vario adapter · Housing materials: stainless steel 316L / 1.4435	E33208
	Clamp adapter · Clamp · with leakage port · Clamp · 2" · with sealing ring · ISO 2852 · for units with Aseptoflex Vario adapter · Housing materials: stainless steel 316L / 1.4435	E33209
	Welding adapter · Ø 50 mm · Welding adapter · with leakage port · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E30130

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001



Flow sensors for utilities and industrial applications



- Wear-free due to calorimetric measuring principle
- Extensive range of process adapters available
- Wide measuring range to cover many applications
- LED bar graph display for flow and set point
- Easy parameter setting via pushbuttons, flexible mounting options



Without wear

The SI and SM series flow sensors are electronic alternatives for mechanical flow switches.

The sensors of the SI series monitor flow in liquids and gases.

The magnetic-inductive flow sensor SM measures the flow of conductive liquids and their temperature.

Since the flow sensors have no moving parts, they are free from wear and maintenance.

Switching output, installation in process

Evaluation, LED status display and sensor elements are integrated in one compact housing. The user can set the application parameters via two buttons.

The sensor of type SI switches if the flow velocity is below or above the set flow value.


The output of the magnetic-inductive sensor (type SM) can also be configured as quantity meter or preset counter (respectively as pulse output). A second output (switching output or analogue) is used for temperature monitoring.



Compact flow sensors

Type	Setting range liquids / gases [cm/s]	Material sensor tip	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
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1/2" UNF-Connector

	3...300 / 200...3000	stainless steel 316L / 1.4404	-25...80	300	1...10	85...265	SI5006*
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M12 connector

	3...300 / 200...3000	stainless steel 316L / 1.4404	-25...80	300	1...2 / 1...10	19...36	SI5010
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*** Note for AC and AC/DC units**

Miniature fuse to IEC60127-2 sheet 1, ≤ 5 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.

Magnetic-inductive flow meters with integrated temperature measurement


Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
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M12 connector

	G½	0.25...25.00	-10...70	16	< 0.150	19...30	SM6100
	G¾	0.5...50.0	-10...70	16	< 0.150	19...30	SM7100
	G1	0.7...100.0	-10...70	16	< 0.150	19...30	SM8100
	G2 flat seal	6.5...300	-10...70	16	< 0.25	18...32	SM9100
	G2 flat seal	8...600	-10...70	16	< 0.25	18...32	SM2100

Accessories for flow sensors

Type	Description	Order no.
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	Welding adapter · M18 x 1.5 - Ø 24 mm · Insertion depth of the probe of SID, SFD, TN: · 15 mm · Housing materials: stainless steel 316L / 1.4404	E40124
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Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
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Socket 12, 5/4-pole, 4-wire

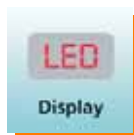
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
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Compressed air meter with display



- Inline flow meter for compressed air and special gases (AR, CO₂, N₂)
- The detection of minute leakage helps to improve the energy efficiency
- Makes consumption transparent and thus helps to reduce costs
- Totaliser function to determine the total consumption
- Integrated pipe length ensures easy mounting and installation



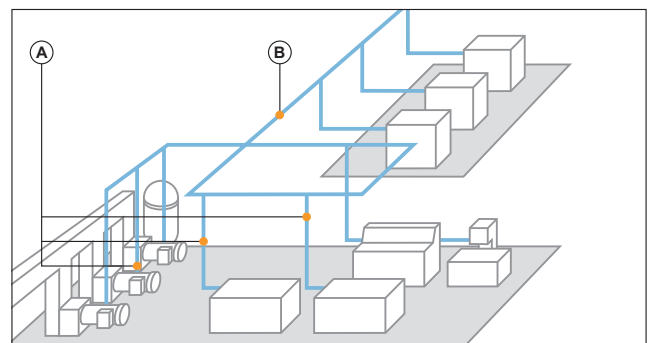
Compressed air and special gas at a glance

efector metris monitors compressed air and specialty gases such as argon (Ar), carbon dioxide (CO₂), and nitrogen (N₂) to detect leakage and improve energy efficiencies.

Compressed air is one of the most expensive energy carriers in a plant. With the detection of leakage, efector metris helps to optimise compressed air consumption, to improve the system performance and to reduce energy costs.






The compact sensor features a fixed pipe with integrated measuring range. This facilitates mounting. It functions according to the calorimetric measuring principle, that is without mechanical parts and free from wear.

A 4-digit display indicates compressed air or gas consumption. It also helps during parameter setting of the unit. Three display options are available: cubic metre a minute, cubic metre an hour and total consumption in cubic metre. The 24 V DC unit provides switching, analogue and pulse outputs.





- (A) Installation in a supply pipe to monitor a machine.
(B) Installation in one main line to monitor several machines.



Compressed air meters with display

Type	Process connection	Setting range [Nm ³ /h]	Accuracy within measuring range	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
Output function OUT1: normally open / closed programmable or pulse OUT2: normally open / closed programmable or analogue (4...20 mA scaleable)							
	G¼ (DN8)	0.12...15.00	A): ± (3% MW + 0.3% MEW) / B): ± (6% MW + 0.6% MEW) *	16	< 0.1	18...30	SD5000
	R½ (DN15)	0.6...75.0	A): ± (3% MW + 0.3% MEW) / B): ± (6% MW + 0.6% MEW) *	16	< 0.1	18...30	SD6000
	G½ (DN15)	0.6...75	± (15% MW + 1.5% MEW) *	16	< 0.1	18...30	SD6050
	R1 (DN25)	1.8...225.0	A): ± (3% MW + 0.3% MEW) / B): ± (6% MW + 0.6% MEW) *	16	< 0.1	18...30	SD8000
	R1½ (DN40)	3.5...410.0	A): ± (3% MW + 0.3% MEW) / B): ± (6% MW + 0.6% MEW) *	16	< 0.1	18...30	SD9000

Compressed air meter for special gases

Type	Process connection	Setting range [Nm ³ /h]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
Output function OUT1: normally open / closed programmable or pulse OUT2: normally open / closed programmable or analogue (4...20 mA scaleable)							
	G¼ (DN8)	Ar: 0.08...24.54 / CO ₂ : 0.047 (0.04)...14.38 / N ₂ : 0.05 (0.06)...14.94	0...60	16	< 0.1	19...30	SD5100
	R½ (DN15)	Ar: 0.39 (0.4)...118.2 / CO ₂ : 0.24 (0.2)...71.7 / N ₂ : 0.24 (0.2)...73.0	0...60	16	< 0.1	19...30	SD6100

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001



For hygienic
and wet areas

The LMT point-level sensor ignores foam and deposit build-up



- Adjustment to the medium (LMT100 / 110) preset or via IO-Link (LMT121)
- Hygienic design with maintenance-free sealing concept
- Robust stainless steel housing with laser type label for durable legibility
- Resistant to foam and deposits
- Easy mounting using orientation-independent installation



Reliable even if covered in residues

LMT series point level sensors have been designed for the monitoring of the levels of liquids, viscous media and powders in food applications. The sensor uses high-frequency capacitance spectrum profiling technology to effectively eliminate challenges with deposits, residue and foam build-up that commonly cause traditional point-level sensors to output false results.

Suited for food and hygienic applications

The sensor's 316 stainless steel body and smooth food-grade PEEK sensing tip ensure chemical compatibility even with the harshest cleaning agents. The high protection rating of IP 68 / IP 69K prevents liquid ingress.

Media adjustment

For LMT100 and LMT110 no media adjustment is required since they are preset to the respective medium in the factory. The LMT121 can be set to almost any liquid or viscous medium and bulk materials via IO-Link. Each of the two switching outputs can be set independently of each other so it is also possible to differentiate between two different media.




(A) The LMT sensor monitors the level of mayonnaise using the high-frequency capacitance spectrum profiling technology.
(B) Despite deposits on the sensor the empty tank is detected reliably.


Point level sensors

Type	Process connection	Probe length	Process pressure max. [bar]	Application	Protection	Order no.
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M12 connector · Output function normally open / closed complementary · DC PNP



	G ½ A	–	-1...16	water, water-based medium	IP 68 / IP 69K	LMT100
	G ½ A	–	-1...16	oils, grease	IP 68 / IP 69K	LMT110

M12 connector · Output function 2 x normally open / closed programmable · DC PNP/NPN · IO-Link

	G ½ A	–	-1...40	liquid, viscous and powdery media	IP 68 / IP 69K	LMT121
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Adapters


Type	Description	Order no.
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	Welding adapter · G ½ - Ø 29 mm · Welding adapter · for pipes · Housing materials: stainless steel 316L / 1.4435	E43301
	Welding adapter · G ½ - Ø 30 mm · Welding adapter · for tanks · Housing materials: stainless steel 316L / 1.4435	E43300
	Clamp adapter · Clamp · Clamp · 1-1.5" · ISO 2852 / DIN 32676 · for units with G ½ adaptation · Housing materials: stainless steel 316L / 1.4404	E33401

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Protection	LEDs	Order no.
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Socket 12, 5/4-pole, 4-wire

	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
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Temperature plug and temperature probes with integrated 2" Tri-Clamp® connection



- Using the temperature plug, the probe sensor functions as programmable transmitter
- Versions for different temperature ranges
- Compact housing with ecolink M12 connection technology
- One-piece probes for hygienic temperature measurements
- Excellent response times and high accuracy thanks to PT100 element, class A



Transmitter for probe sensors

The innovative and extremely compact temperature plug is simply connected to a temperature probe sensor via M12 connection and allows its use as programmable transmitter. Error sources from screw terminals, wiring mistakes, and fluid ingress are eliminated. An integrated LED shows the operating status on site.

Integrated Tri-clamp® process connections

The temperature probes of the TM49 series require no separate hygienic process adapter. The one-piece probe with integrated Tri-clamp® connection eliminates potential contamination ingress points. The 6 mm thin sensor tip guarantees an excellent response time of T05 = 1 s and T09 = 3 s while ensuring high stability.




Left: Traditional head transmitters are large, expensive and subject to moisture ingress.
Middle: Temperature plug for direct installation.
Right: Temperature plug for external installation.

Modular temperature transmitters, IO-Link

Type	Measuring range [°C]	Process connection	U _b [V]	Ambient temperature [°C]	Measuring element	Order no.
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M12 connector · Output function 4...20 mA analogue · DC

	-50...300	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	TP3232
	-50...300	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	TP3237
	-50...300	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	TP3231
	-50...300	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	TP3233


M12 connector · Output function 0...10 V analogue · DC

	-50...300	M12	18...32	-25...70	for Pt100 and Pt1000 measuring elements	TP9237
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Temperature probe sensors with Tri-Clamp process connection
(also suited for connection to the TR evaluation unit)

Type	Measuring range [°C]	Process connection	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Order no.
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M12 connector · high-grade stainless steel

	-40...150	Clamp 2"	30	1 x Pt 100	1 / 3	TM4901
	-40...150	Clamp 2"	50	1 x Pt 100	1 / 3	TM4911
	-40...150	Clamp 2"	100	1 x Pt 100	1 / 3	TM4931
	-40...150	Clamp 2"	150	1 x Pt 100	1 / 3	TM4941

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
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Socket 12, 5/4-pole, 4-wire

	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001

Jumper 12, 4/5-pole, 4-wire

	2 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT043
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Temperature plug and temperature probes with integrated 1-1.5" Tri-Clamp® connection



- Using the temperature plug the probe sensor functions as programmable transmitter
- Versions for different temperature ranges
- Compact housing with ecolink M12 connection technology
- One-piece probes for hygienic temperature measurements
- Excellent response times and high accuracy thanks to PT100 element, class A



Transmitter for probes

The innovative and extremely compact temperature plug is simply connected to a temperature probe sensor via M12 connection and allows its use as programmable transmitter. Error sources from screw terminals, wiring mistakes, and fluid ingress are eliminated. An integrated LED shows the operating status on site.

Integrated Tri-clamp® process connections

The TM48 series temperature probes require no separate hygienic process adapter. The one-piece probe with integrated Tri-Clamp® connection eliminates potential contamination ingress points. The 6 mm thin sensor tip guarantees an excellent response time of T05 = 1 s and T09 = 3 s while ensuring high stability.




Left: Traditional head transmitters are large, expensive and subject to moisture ingress.
Middle: Temperature plug for direct installation.
Right: Temperature plug for external installation.


Modular temperature transmitters, IO-Link

Type	Measuring range [°C]	Process connection	U _b [V]	Ambient temperature [°C]	Measuring element	Order no.
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M12 connector · Output function 4...20 mA analogue · DC

	-50...300	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	TP3232
	-50...300	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	TP3237
	-50...300	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	TP3231
	-50...300	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	TP3233


M12 connector · Output function 0...10 V analogue · DC

	-50...300	M12	18...32	-25...70	for Pt100 and Pt1000 measuring elements	TP9237
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Temperature probe sensors with Tri-Clamp process connection
(also suited for connection to the TR evaluation unit)

Type	Measuring range [°C]	Process connection	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Order no.
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M12 connector · high-grade stainless steel

	-40...150	Clamp 1-1.5" ISO 2852	30	1 x Pt 100	1 / 3	TM4801
	-40...150	Clamp 1-1.5" ISO 2852	50	1 x Pt 100	1 / 3	TM4811
	-40...150	Clamp 1-1.5" ISO 2852	100	1 x Pt 100	1 / 3	TM4831
	-40...150	Clamp 1-1.5" ISO 2852	150	1 x Pt 100	1 / 3	TM4841


Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
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Socket 12, 5/4-pole, 4-wire

	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001

Jumper 12, 4/5-pole, 4-wire

	2 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT043
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Temperature plug and temperature probes with G 1/2 process connection



- Using the temperature the probe sensor functions as programmable transmitter
- Versions for different temperature ranges
- Compact housing with ecolink M12 connection technology
- One-piece probes for hygienic temperature measurements
- Excellent response times and high accuracy thanks to Pt100 element, class A



Transmitter for probes

The innovative and extremely compact temperature plug is simply connected to a temperature probe sensor via M12 connection and allows its use as programmable transmitter. Error sources from screw terminals, wiring mistakes, and fluid ingress are eliminated. An integrated LED shows the operating status on site.

Integrated G 1/2 process connections

The TM45 series temperature probes require no separate hygienic process adapter. The one-piece probe with integrated G 1/2 connection eliminates potential septic ingress points. The 6 mm thin sensor tip guarantees an excellent response time of $T_{05} = 1 \text{ s}$ and $T_{09} = 3 \text{ s}$ while ensuring high stability.




Left: Traditional head transmitters are large, expensive and subject to moisture ingress.
Middle: Temperature plug for direct installation.
Right: Temperature plug for external installation.


Modular temperature transmitters, IO-Link

Type	Measuring range [°C]	Process connection	U _b [V]	Ambient temperature [°C]	Measuring element	Order no.
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M12 connector · Output function 4...20 mA analogue · DC

	-50...300	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	TP3232
	-50...300	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	TP3237
	-50...300	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	TP3231
	-50...300	M12	20...32	-25...70	for Pt100 and Pt1000 measuring elements	TP3233


M12 connector · Output function 0...10 V analogue · DC

	-50...300	M12	18...32	-25...70	for Pt100 and Pt1000 measuring elements	TP9237
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Sensors with process connection for hygienic and wet areas

Type	Measuring range [°C]	Process connection	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Order no.
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M12 connector · high-grade stainless steel

	-40...150	G½ with sealing cone	20	1 x Pt 100	1 / 3	TM4591
	-40...150	G½ with sealing cone	30	1 x Pt 100	1 / 3	TM4501
	-40...150	G½ with sealing cone	50	1 x Pt 100	1 / 3	TM4511
	-40...150	G½ with sealing cone	100	1 x Pt 100	1 / 3	TM4531
	-40...150	G½ with sealing cone	150	1 x Pt 100	1 / 3	TM4541


Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
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Socket 12, 5/4-pole, 4-wire

	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001

Jumper 12, 4/5-pole, 4-wire

	2 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT043
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For hygienic
and wet areas

Evaluation unit and temperature probe sensors



- Modular system with display and switching / analogue output
- Different probe lengths, for small pipes up to large tanks
- High temperature ranges for the food industry and pasteurisation
- Variety of hygienic fittings and adapters available
- Eliminates field wiring with integrated M12 connector



Modular temperature sensor

The TR series evaluation units in combination with temperature probes are used for highly precise temperature measurement of liquids. The clearly readable display indicates the measured value on site. The robust, stainless steel housing withstands harsh conditions.

The evaluation units provide a temperature range of -40...300 °C and an interface for 2-, 3-, 4-wire probes (Pt100 or Pt1000).

The 4-digit LED display indicates temperatures with a resolution of 0.1 °C.


The 6 mm thin sensor tip guarantees an excellent response time of $T_{05} = 1 \text{ s}$ and $T_{09} = 3 \text{ s}$ while ensuring high stability.




Installation example:
The evaluation electronics is directly mounted on the temperature sensor.

Control monitors for temperature sensors, IO-Link

Type	Measuring range [°C]	Process connection	Display	U _b [V]	Current consump. [mA]	I _{load} [mA]	Order no.
M12 connector · Output function 1 x normally open / closed programmable + 1 x analogue (4...20 mA / 0...10 V, scalable) · DC PNP/NPN							

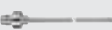
	-40...300	G½ A	Display unit	18...32	50	250	TR2432
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M12 connector · Output function 2 x normally open / closed programmable · DC PNP/NPN



	-40...300	G½ A	Display unit	18...32	50	250	TR7432
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Temperature probe sensors (also suited for connection to the TP evaluation unit)

Type	Measuring range [°C]	Diameter [mm]	Installation length [mm]	Sensor element	Dynamic response T05 / T09 [s]	Order no.
M12 connector · high-grade stainless steel						


	-40...150	6	50	1 x Pt 100	1 / 3	TT9291
	-40...150	6	100	1 x Pt 100	1 / 3	TT0291
	-40...150	6	150	1 x Pt 100	1 / 3	TT1291
	-40...150	6	250	1 x Pt 100	1 / 3	TT2291
	-40...150	6	350	1 x Pt 100	1 / 3	TT3291

Adapters

Type	Description	Order no.
	Mounting set · for direct connection of temperature sensors TT to control monitors TR · Housing materials: stainless steel	E30017
	Clamp fitting · Ø 6/8/10 mm · G ½ · for temperature sensors TS / TT · Housing materials: stainless steel / FPM	E30018

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								

	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
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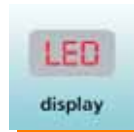


For hygienic
and wet areas

Temperature transmitter with display and IO-Link



- Bright 4-digit LED display for optimum readability
- Fast response time T05/09 = 1/3s
- Pre-scaled measuring ranges, IO-Link 1.1 programmable
- Available in various probe lengths from 30...150 mm
- Hygienic and robust design: high-grade stainless steel (1.4404 / 316L) and IP 69K



TD temperature transmitters

The TD series temperature transmitters are distinguished by a compact, hygienic design with integrated adapters and a display for local indication of the temperature.

Easy installation and set-up




The integrated Tri-clamp and G1/2" process adapters allow quick and easy installation. No complex set-up is required because the transmitters are supplied with a pre-scaled measuring range. For special applications the temperature range can be scaled via IO-Link.

Robust and durable


Protected to IP 69K standards and featuring a stainless steel housing, the transmitters are designed to operate in harsh applications.




Compact temperature sensors with display, IO-Link

Type	Measuring range [°C]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
M12 connector · Output function 1 x analogue (4...20 mA scalable) · DC						
	-50...150	1,5" Tri-Clamp	30	18...32	1/3	TD2807
	-50...150	1,5" Tri-Clamp	50	18...32	1/3	TD2817
	-50...150	1,5" Tri-Clamp	100	18...32	1/3	TD2837
	-50...150	1,5" Tri-Clamp	150	18...32	1/3	TD2847
	-50...150	2" Tri-Clamp	30	18...32	1/3	TD2907
	-50...150	2" Tri-Clamp	50	18...32	1/3	TD2917
	-50...150	2" Tri-Clamp	100	18...32	1/3	TD2937
	-50...150	2" Tri-Clamp	150	18...32	1/3	TD2947
	-50...150	G ½	30	18...32	1/3	TD2507
	-50...150	G ½	50	18...32	1/3	TD2517
	-50...150	G ½	100	18...32	1/3	TD2537
	-50...150	G ½	150	18...32	1/3	TD2547

Hygienic adapters

Type	Description	Order no.
	Welding adapter · G ½ - Ø 29 mm · Welding adapter · for pipes · Housing materials: stainless steel 316L / 1.4435	E43301
	Welding adapter · G ½ - Ø 30 mm · Welding adapter · for tanks · Housing materials: stainless steel 316L / 1.4435	E43300

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004

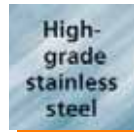


For hygienic
and wet areas

Temperature transmitters



- 2-wire analogue output (4...20 mA)
- Fully enclosed and sealed
316 stainless steel construction
- Pt1000 sensor element for high accuracy
- Wide temperature range with quick response time
- Flexible mounting with standard Tri-clamp® fittings



Very short response time


The TA series temperature transmitter offers a compact measuring system that can be easily installed with standard Tri-clamp® and weldable fittings.

They have a fixed analogue output (4...20 mA) and measuring ranges of -10...150 °C, 0...100 °C or 0...140 °C. A high level of accuracy is achieved using a class A accuracy Pt sensor and factory calibration.






With their excellent response time of $T_{05} = 1$ s and $T_{09} = 3$ s the TA temperature transmitters are the ideal solution for temperature monitoring in critical applications.





Temperature transmitters for hygienic and wet areas

Type	Measuring range [°C]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
M12 connector · high-grade stainless steel · DC						
	0...100	G½ A	87.5	10...30	1 / 3	TA3437
	0...140	G½ A	87.5	10...30	1 / 3	TA3430
	-10...150	G½ A	87.5	10...30	1 / 3	TA3431

Hygienic adapters

Type	Description	Order no.
	Clamp adapter · Clamp · Clamp · 1-1.5,, · ISO 2852 / DIN 32676 · for units with G ½ adaptation · Housing materials: stainless steel 316L / 1.4404	E33401
	Clamp adapter · Clamp · Clamp · 2,, · ISO 2852 / DIN 32676 · for units with G ½ adaptation · Housing materials: stainless steel 316L / 1.4404	E33402
	Clamp adapter · G ½ · Clamp · with leakage port · Clamp · 1-1.5,, · ISO 2852 / DIN 32676 · with leakage port · Housing materials: stainless steel 316L / 1.4435	E43311
	Clamp adapter · G ½ · Clamp · with leakage port · Clamp · 2,, · ISO 2852 / DIN 32676 · with leakage port · Housing materials: stainless steel 316L / 1.4435	E43312
	Welding adapter · G ½ - Ø 35 mm · Welding adapter ball · Housing materials: stainless steel 316L / 1.4404	E30055

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001



For hygienic
and wet areas

Temperature transmitter with diagnostic output Aseptoflex Vario process connection



- 2-wire technology allows easy installation
- Analogue and diagnostic outputs for process temperature and drift warning / alarm
- Variety of hygienic fittings and adapters available
- The dual sensor design allows a self-monitoring drift detection
- Cost savings possible through reduced calibration intervals

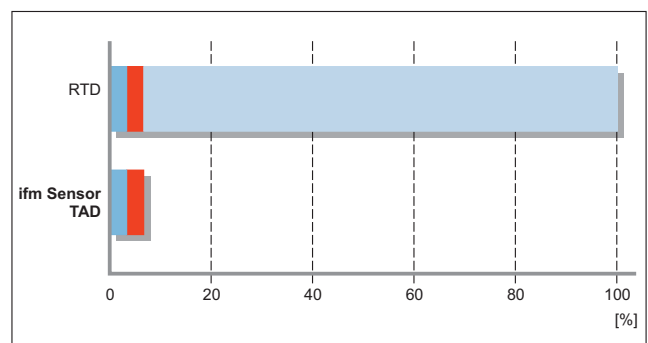
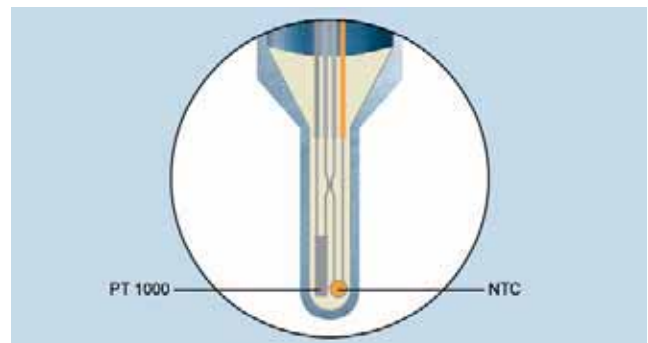


Increased process safety due to self-monitoring

The TAD temperature transmitter features two high-precision sensor elements that monitor the process and each other. This guarantees that any developing drift of the sensor elements is detected and reliably diagnosed.




If one element fails, the process continues with the second measuring element (back-up function). With this technology, the TAD provides long-term, highly accurate temperature measurements in hygienic applications in food, beverage and pasteurization processes.

Drift thresholds and parameters are easy to set via software, e.g. IO-Link. After the switch points are set, the TAD continuously and independently monitors temperature drift. By providing immediate temperature drift detection, cyclical monitoring of the calibration is no longer necessary.






Cost comparison: In contrast to the TAD sensor, conventional sensors have to be calibrated twice a year.
Dark blue: Sensor cost
Red: Installation cost
Light blue: Calibration cost



Temperature transmitters with diagnostic output, IO-Link

Type	Measuring range [°C]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
M12 connector · Output function normally open / normally closed / heartbeat programmable, 4...20 mA analogue · DC PNP/NPN						
	-25...160	Aseptoflex Vario	87.5	18...32	3 / 6	TAD181
	-25...160	Aseptoflex Vario	33	18...32	3 / 6	TAD981
	-25...160	Aseptoflex Vario	50	18...32	3 / 6	TAD081

Adapters

Type	Description	Order no.
	Clamp adapter · Clamp · with leakage port · Clamp · 1-1.5,, · with sealing ring · ISO 2852 · for units with Aseptoflex Vario adapter · Housing materials: stainless steel 316L / 1.4435	E33208
	Clamp adapter · Clamp · with leakage port · Clamp · 2,, · with sealing ring · ISO 2852 · for units with Aseptoflex Vario adapter · Housing materials: stainless steel 316L / 1.4435	E33209
	Welding adapter · Ø 50 mm · Welding adapter · with leakage port · for units with Aseptoflex Vario adapter · Sealing by sealing ring · Housing materials: stainless steel 316L / 1.4435	E30130

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001



For hygienic
and wet areas

Temperature transmitter with diagnostic output G1/2 process connection



- 2-wire technology allows easy installation
- Analogue and diagnostic outputs for process temperature and drift warning / alarm
- Variety of hygienic fittings and adapters available
- The dual sensor design allows a self-monitoring drift detection
- Cost savings possible through reduced calibration intervals

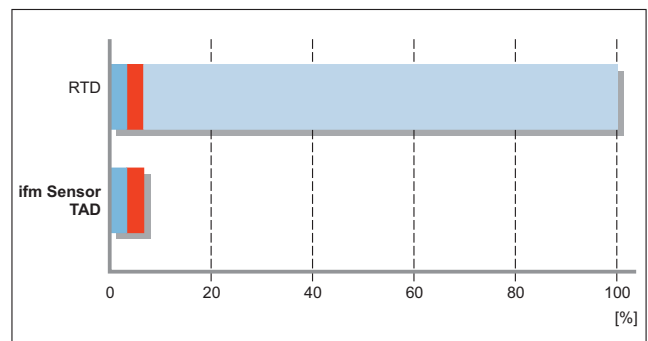
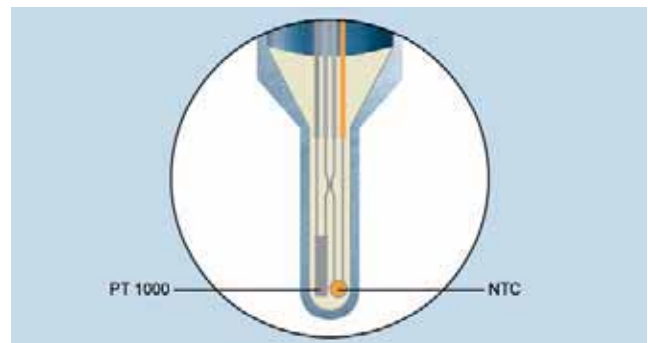


Increased process safety due to self-monitoring

The TAD temperature transmitter has two highly precise sensor elements that monitor the process and each other. This guarantees that any developing drift of the sensor elements is detected and reliably diagnosed.




If one element fails, the process continues with the second measuring element (back-up function). With this technology, the TAD provides long-term, highly accurate temperature measurements in hygienic applications in food, beverage and pasteurization processes.

Drift thresholds and parameters are easy to set via software, e.g. IO-Link. After the switch points are set, the TAD continuously and independently monitors temperature drift. By providing immediate temperature drift detection, cyclical monitoring of the calibration is no longer necessary.








Cost comparison: In contrast to the TAD sensor, conventional sensors have to be calibrated twice a year.
Dark blue: Sensor cost
Red: Installation cost
Light blue: Calibration cost



Temperature transmitters with diagnostic output, IO-Link

Type	Measuring range [°C]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
M12 connector · Output function normally open / normally closed / heartbeat programmable, 4...20 mA analogue · DC PNP/NPN						
	-25...160	G½ A	87.5	18...32	3 / 6	TAD191
	-25...160	G½ A	33	18...32	3 / 6	TAD991
	-25...160	G½ A	50	18...32	3 / 6	TAD091

Adapters

Type	Description	Order no.
	Clamp adapter · Clamp · Clamp · 1-1.5" · ISO 2852 / DIN 32676 · for units with G ½ adaptation · Housing materials: stainless steel 316L / 1.4404	E33401
	Clamp adapter · Clamp · Clamp · 2" · ISO 2852 / DIN 32676 · for units with G ½ adaptation · Housing materials: stainless steel 316L / 1.4404	E33402
	Clamp adapter · G ½ · Clamp · with leakage port · Clamp · 1-1.5" · ISO 2852 / DIN 32676 · with leakage port · Housing materials: stainless steel 316L / 1.4435	E43311
	Clamp adapter · G ½ · Clamp · with leakage port · Clamp · 2" · ISO 2852 / DIN 32676 · with leakage port · Housing materials: stainless steel 316L / 1.4435	E43312
	Welding adapter · G ½ - Ø 35 mm · Welding adapter ball · Housing materials: stainless steel 316L / 1.4404	E30055

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001



Valve sensors for quarter-turn actuators



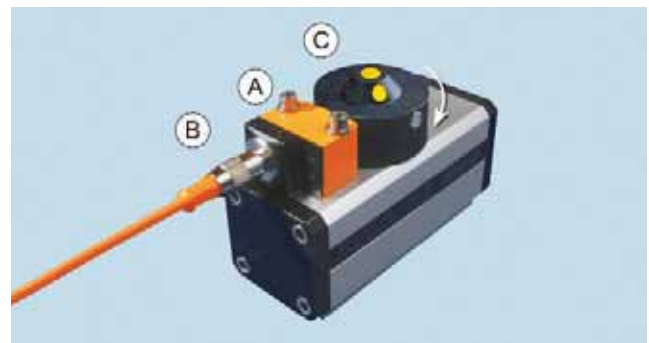
- Non-contact detection of valve positions of quarter-turn actuators
- Compact design, considerably smaller than traditional switchboxes
- Clearly visible LED shows valve position (open / closed)
- No open cavities, completely sealed against the penetration of liquids
- Quick and easy to fit



Feedback of valve positions

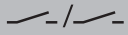

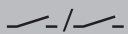



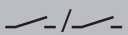

Precise detection of the valve position is important for process control. Switchboxes are often used for position feedback. However, switchboxes are large, difficult to mount and the mechanics is susceptible to interference. ifm offers a low-profile, non-contact solution that accurately detects if a valve is open or closed.

The valve sensors function according to the inductive principle for non-contact detection of metal targets. The rotating puck, which is mounted on the valve axis, contains two metal screws positioned on the side of the puck, 90° apart, at different heights. When the valve opens, the puck rotates, moving a target in front of the sensor providing a valve position signal. As the valve closes, the puck rotates and moves the other target in front of sensor. This is detected by the sensor that provides a switching signal as position feedback.



The ifm valve position feedback solution includes a sensor (A), cable (B) and a rotating target puck (C).

Sensors for industrial applications




Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f AC / DC [Hz]	I _{load} AC / DC [mA]	Order no.
M12 connector · Output function  · DC PNP/NPN								
	40 x 26 x 26	4 nf	PBT	10...36	IP 67	1300	250	IN5224
M12 connector · Output function  · DC PNP								
	40 x 26 x 47	4 nf	PBT	10...36	IP 67	1300	250	IN5327
Terminals · Output function  · DC PNP								
	33 x 60 x 92	4 nf	PA (polyamide)	10...30	IP 67	500	100	IN5409
7/8" connector · Output function  · AC/DC								
	–	4 nf	stainless steel (303S22)	20...140	IP 67	25	200	IN0117*

f = flush / nf = non flush

* Note for AC and AC/DC units

Miniature fuse to IEC60127-2 sheet 1, ≤ 2 A (fast acting). Place the fuse outside the hazardous area. Recommendation: check the unit for reliable function after a short circuit.

Switching cams for sensors with quarter-turn actuators

Type	Description	Order no.
	Target puck · Ø 53 mm · 3 possible switching flag positions · Housing materials: Target puck: PA 6 black / screws: V2A	E17320
	Target puck · Ø 65 mm · Housing materials: Target puck: PA 6 / screws: V2A	E17327
	Target puck · Ø 102 mm · Housing materials: Target puck: PA 6 / screws: V2A	E17328



Valve sensors for rising stem valves



- Continuous position feedback for rising stem valves up to 80 mm
- Three switching outputs: "open", "closed" and "seat lift", optional AS-i.
- Resolution of 0.2 mm across the entire measuring range
- Simple pushbutton setup and LED feedback
- Permanent valve monitoring for condition-based maintenance



Continuous position feedback on rising stem valves

The efector valvis rising stem valve position sensor is an innovative solution for position feedback of linear valves. The sensor continuously detects the position of rising stem valves with a stroke of up to 80 mm.

It is placed on top of the the valve stem with an adapter. The valve positions "open" and "closed" are set via teach button. The sensor indicates three key positions of the valve: "valve open", "valve closed" and any intermediate position, e.g. seat lift. efector valvis transmits this information to a controller via switching outputs.

The sensor detects the position of the piston rod with a resolution of 0.2 mm. This eliminates mechanical adjustment and significantly reduces the setup time of a valve.

Single and double seat valves


For double seat valves, efector valvis detects the "open", "closed" and "seat lift" positions. For single seat valves, the sensor detects the "open" and "closed" positions and provides an additional output for seal contact wear.



Sensors for rising stem valves

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f AC / DC [Hz]	I _{load} AC / DC [mA]	Order no.
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Cable with connector 0.3 m · Output function 3 x normally open · DC PNP

	65 x 52 x 110	–	PA	18...36	IP 65 / IP 67	–	100	IX5010
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Sensors for rising stem valves, AS-i system

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f AC / DC [Hz]	I _{load} AC / DC [mA]	Order no.
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Cable with connector 0.3 m · AS-i

	65 x 52 x 110	–	PA	26.5...31.6	IP 65 / IP 67	–	–	IX5030
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Accessories for rising stem valve sensors

Type	Description	Order no.
	Mounting adapter · for Kieselmann seat valves · accessory for IX5010, IX5030 · Housing materials: adapter: PA / Target: stainless steel 316L / 1.4404	E12123
	Mounting adapter · for Alfa Laval valves · accessory for IX5010, IX5030 · Housing materials: adapter: PA / Target: stainless steel 316L / 1.4404	E11900
	Mounting adapter · for Südmo valves · accessory for IX5010, IX5030 · Housing materials: adapter: PA / Target: stainless steel 316L / 1.4404	E11989
	Mounting adapter · for Bardiani valves · accessory for IX5010, IX5030 · Housing materials: adapter: PA / Target: stainless steel 316L / 1.4404	E12170

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro- tection	LEDs	Order no.
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Socket 12, 5-pole, 5-wire

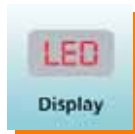
	5 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT013
	5 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT010



AS-i controller and gateways



- AS-i controller and gateways for Device-Net, Ethernet/IP und ProfiNet
- User-friendly graphic display for setup and diagnostics
- Single and dual master
- CoDeSys programmable PLC to IEC 61131-3
- Extensive range of system components for AS-i available

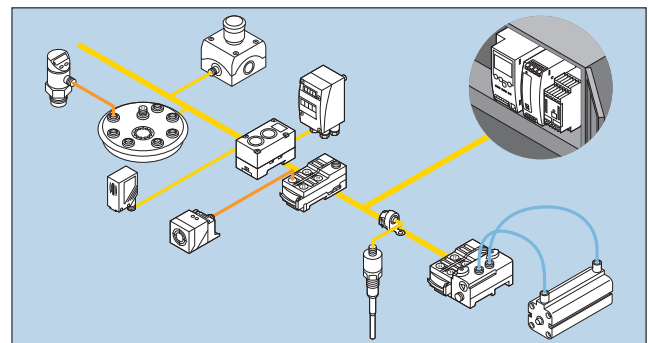


AS-i controller



The controller assumes the most important function in each AS-Interface network and is responsible for the control of the complete communication. The controller, often also called master, controls the cyclic data exchange with the connected slaves, monitors the replies and transmits data to the higher-level controller.

Gateways


AS-i gateways make a connection from AS-Interface to a higher-level bus system. Thus the advantages of both systems can be combined. The advantages of AS-i as the bus of the first automation level are its easy handling, fast data transmission, low costs and quick mounting technology. Several AS-i installation islands can be connected with a control room over long distances via fieldbus gateways. As the fieldbus is most of the time considerably slower, decentralised data preprocessing in the gateway is often required. Here ifm electronic offers the AS-i controller family as gateways with integrated plc.



Controllers / Gateways

Type	Number of AS-i masters	Description	Order no.
	1	SmartLink DP · AS-i gateway / Profibus DP · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	AC1375
	2	AS-i DP gateway · Full master functions · Graphic display · Profibus DP interface · Housing materials: aluminium / steel sheet galvanised	AC1376
	1	AS-i Ethernet / IP Controller E · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	AC1327
	2	AS-i Ethernet / IP Controller E · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	AC1337
	1	AS-i DeviceNet controller E · AS-i controller with DeviceNet interface · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	AC1318
	2	AS-i DeviceNet controller E · AS-i controller with DeviceNet interface · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	AC1324
	1	AS-i Profinet gateway · AS-i master · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · Profinet RT device class B · LCD colour display · Device supply either via 24 V or AS-i (AS-i bus 1) · Housing materials: aluminium powder coated / steel sheet galvanised / Makrolon	AC1401
	2	AS-i Profinet gateway · AS-i master · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · Profinet RT device class B · LCD colour display · Device supply either via 24 V or AS-i (AS-i bus 1) · Housing materials: aluminium powder coated / steel sheet galvanised / Makrolon	AC1402

AS-i flat cable

Type	Description	Order no.
	AS-i flat cable · reverse polarity protection due to special shape · for use in isolation displacement connector technology for FC lower parts and compact modules · 100 m	E74000
	AS-i flat cable · reverse polarity protection due to special shape · for use in isolation displacement connector technology for FC lower parts and compact modules · 100 m	E74010
	AS-i flat cable · reverse polarity protection due to special shape · for the food industry · for use in isolation displacement connector technology for FC lower parts and compact modules · 100 m	E74300
	AS-i flat cable · reverse polarity protection due to special shape · for the food industry · for use in isolation displacement connector technology for FC lower parts and compact modules · 100 m	E74310



AS-i power supplies



- Primary switched-mode power supplies with wide-range input, 100...240 V AC
- Couples and de-couples signals for transmission over the network
- Compact housing for DIN rail installation
- Efficient design generates less heat, external cooling is not required
- Short-circuit proof and overload protected



Power for the yellow AS-i cable


AS-i switched-mode power supplies generate a regulated DC output voltage between 29.5 V and 31.6 V according to the AS-i specification.

The integrated data decoupling in the AS-i power supply means that data as well as the required supply voltage of the sensors can be transmitted via one two-wire cable. The AS-i power supply assumes the function of energy provision, data decoupling and balancing of both output wires (AS-i "+" and AS-i "-") with respect to the machine ground (shielded connection).


It is always designed as primary switched-mode power supply. Advantage: Compared to the transformer power supplies it is significantly smaller, has a better control and is electronically protected against overload. The efficiency of a switched-mode power supply is higher, too, so that the development of heat and power loss are considerably reduced. Efficiencies of up to 92 are in fact common. All AS-i power supplies are protected against no load, overload and permanent short-circuit on the output.




AS-i switched-mode power supplies, single phase, new BasicLine design in a compact plastic housing

Type	Current [A]	Output voltage [V]	Nominal voltage [V]	Mains buffering time [ms]	Efficiency typ. [%]	Order no.
	0.95	29.5...31.6 DC	100...240 AC	–	86	AC1220
	1.9	29.5...31.6 DC	100...240 AC	–	88	AC1221


AS-i switched-mode power supplies, single phase, new ClassicLine design in a robust metal housing

Type	Current [A]	Output voltage [V]	Nominal voltage [V]	Mains buffering time [ms]	Efficiency typ. [%]	Order no.
	2.8	29.5...31.6 DC	100...240 AC	–	88	AC1236
	4	29.5...31.6 DC	100...240 AC	–	88	AC1244


AS-i switched-mode power supplies, single phase, SilverLine

Type	Current [A]	Output voltage [V]	Nominal voltage [V]	Mains buffering time [ms]	Efficiency typ. [%]	Order no.
	8	29.5...31.6 DC	115 / 230 AC	–	92	AC1218


AS-i dual switched-mode power supplies, single phase, SilverLine

Type	Current [A]	Output voltage [V]	Nominal voltage [V]	Mains buffering time [ms]	Efficiency typ. [%]	Order no.
	2 x 4	2 x 29.5...31.6 DC	115 / 230 AC	–	89	AC1212

Insulation monitors

Type	Description	Order no.
	AS-i insulation monitor · Detection of asymmetric insulation faults · Screw terminal	AC2211

AS-i repeaters

Type	Description	Order no.
	AS-i repeater · Extension of the AS-i network by another 100 m · One additional AS-i power supply necessary · Combicon connection · Housing materials: PA 6.6	AC2225



I/O modules for control cabinets



- For use in control cabinet or splitter box applications
- Removable Combicon connectors simplify connection
- Low profile versions available for small enclosures
- Integrated addressing socket
- Robust and quick DIN rail mounting





Space-saving modules for DIN rail mounting

Active AS-i modules are mounted on a DIN rail. They have been designed for control cabinet and splitter box applications. The 25 mm wide housing can contain up to 4 inputs and 4 outputs. Active AS-i modules include digital or analogue inputs / outputs. They can be used in control cabinets or local splitter boxes. The robust rail mounting ensures a secure mounting. For a fast exchange of the modules all connections are pluggable. All status LEDs can be clearly seen on the front panel.



Via the addressing socket on the front panel the module can be addressed before and after the installation. The supply voltage and the peripheral signals are connected at the top and at the bottom by means of plug-in Combicon connectors. These can be equipped either with screw terminals or cage clamps.



I/O modules for control cabinets

Type	Inputs / outputs	Description	Order no.
	4 inputs	Active AS-i module · String mounting possible · Addressing socket · Version 2.1 with extended addressing mode · Digital inputs · Combicon connection · PA	AC2250
	4 inputs / 3 outputs	Active AS-i module · String mounting possible · Addressing socket · Version 2.1 with extended addressing mode · Digital inputs and outputs · Combicon connection · PA	AC2264
	4 inputs / 4 outputs	Active AS-i module · String mounting possible · Addressing socket · Version 2.1 · Digital inputs and outputs · Combicon connection · PA	AC2251
	4 inputs 4...20 mA	Active AS-i module · AS-i profile S-7.3 · 4 analogue inputs 4...20 mA · Supply either from AS-i or an external 24 V source · For the connection of 2-wire, 3-wire or 4-wire sensors · Combicon connector for sensor connection · PA 6.6	AC2216
	4 inputs / 2 outputs	Active AS-i module · String mounting possible · Addressing socket · Input supply from external PELV voltage source · Version 2.1 with extended addressing mode · Digital inputs and outputs · Combicon connection · PA	AC2255
	4 inputs / 4 outputs; bidirectional	Active AS-i module · String mounting possible · Addressing socket · External sensor supply PELV · Version 2.1 · Digital inputs and outputs · Combicon connection · PA	AC2257
	4 outputs 0...20 mA	Active AS-i module · AS-i profile S-7.3 · 4 analogue outputs 0...20 mA · For the connection of 2-wire actuators or 4-wire actuators with separate 24 V supply · Combicon connector for actuator connection · PA 6.6	AC2218
	4 inputs Pt100	Active AS-i module · 4 analogue inputs temperature Pt100 · AS-i profile S-7.3 · Combicon connection · PBT	AC2220
	4 inputs / 4 outputs	Active AS-i module · String mounting possible · Addressing socket · Version 2.1 · Combicon connection · PA 6.6	AC2258

Accessories

Type	Description	Order no.
	AS-i addressing unit · AS-i version 3.0 with extended addressing mode	AC1154
	Addressing cable · for AS-i slaves · 1.6 m	E70213



Input / output field modules from stainless steel



- ProcessLine AS-i stainless steel modules for use in hygienic applications
- Resistant to standard cleaning agents (Ecolab tested)
- AS-i and 24 V supply via common M12 connector
- For direct use in wet areas (protection rating IP 68 / IP 69K)
- Connection via high-grade stainless steel splitters




For extreme environments


The ProcessLine I/O module housing consists of high-grade stainless steel and can withstand both chemical and mechanical abuse. Its round housing does not have seams or edges, which reduces deposit build-up. It is corrosion resistant against most chemicals and is rated IP 69K to withstand high-pressure water sprays.



Field modules IP 69K

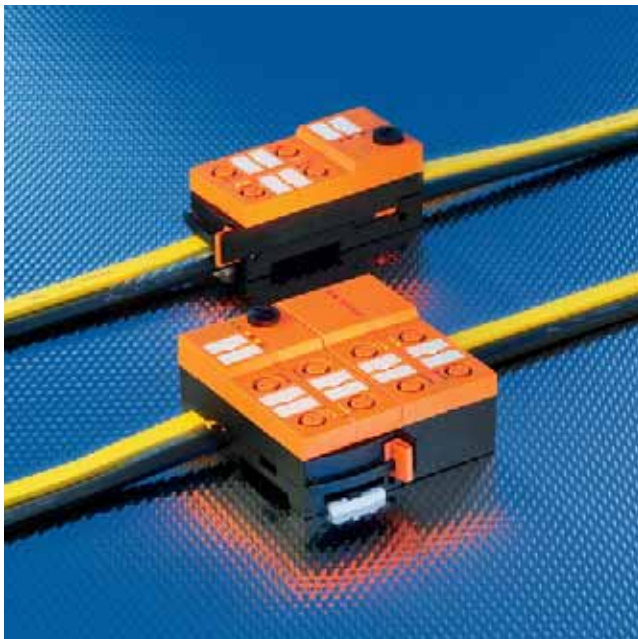
Type	Inputs / outputs	Description	Order no.
	4 inputs / 3 outputs	Active ProcessLine module · Version 2.1 with extended addressing mode · Protection rating IP 69K · high-grade stainless steel · Digital inputs and outputs · Sockets M12 x 1 · high-grade stainless steel / Makrolon / O-ring: EPDM	AC2904
	8 digital inputs (2 slaves)	Active ProcessLine module · Version 2.1 with extended addressing mode · Protection rating IP 69K · high-grade stainless steel · Digital inputs · Sockets M12 x 1 · high-grade stainless steel / Makrolon / O-ring: EPDM	AC2910
	8-way splitter box	Passive splitter box AS-i ProcessLine · Protection rating IP 69K · high-grade stainless steel · AS-i and AUX splitter box for the connection of intelligent sensors/actuators · Sockets M12 x 1 · high-grade stainless steel / Makrolon	AC2900
	4 inputs 4...20 mA	Active AS-i module · 4 analogue inputs 4...20 mA · For the connection of 2-wire and 3-wire sensors · Threaded bush: stainless steel 316L / 1.4404 / Makrolon / O-ring: EPDM	AC2916

Accessories

Type	Description	Order no.
	FC splitter · AS-i voltage and external auxiliary voltage via the M12 socket · Housing materials: Metal parts: stainless steel 316L / 1.4404 / Blanks: FPM / O-ring: EPDM	E70354
	FC splitter · AS-i voltage via M12 socket · Housing materials: Metal parts: stainless steel 316L / 1.4404 / O-ring: EPDM / socket: PP GF30 / blade seal: TPE	E70454
	FC splitter · Housing materials: Metal parts: stainless steel 316L / 1.4404 / Blanks: FPM / O-ring: EPDM	E70377
	Protective cap · M12 · for M12 socket to cover the unused inputs and outputs on the module; for unused inputs of splitter boxes · for ProcessLine modules · Housing materials: PVC	E70297



ClassicLine modules and AirBoxes



- Field modules with digital and analogue inputs / outputs, optional with IO-Link
- AirBoxes: AS-i pneumatic valves with quick mounting technology
- Flexible orientation of the flat cable in three directions.
- Innovative insulation displacement technology means no tools needed for connection
- Integrated addressing socket allows setup while connected

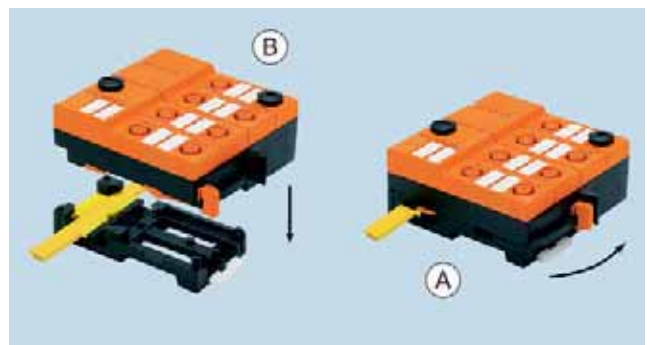


Easy connection due to toolless mounting.

ClassicLine modules can be connected to the yellow AS-i flat cable without tools using insulation displacement technology. The integrated DIN rail mounting allows easy installation in the control cabinet.





The ClassicLine module can accept an AS-i flat cable in three different directions to provide flexible cable routing. The integrated addressing socket allows addressing while connected to the system. All connections are located on the front display. LEDs indicate signal status, operating voltage and possible periphery faults.

ClassicLine modules include the so-called "AirBoxes". These are pneumatic valves triggered via AS-i. In addition to pneumatic connections they also feature digital inputs and outputs for the connection of sensors and actuators.




Quick mounting thanks to insulation displacement technology: A sliding mechanism (A) quickly connects the module's upper and lower parts (B).



ClassicLine modules and AS-i air boxes

Type	Inputs / outputs	Description	Order no.
	4 inputs	Active ClassicLine module · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · Three orientations of the flat cable are possible · Digital inputs · Sockets M12 x 1 · PA	AC5215
	2 outputs / 2 inputs	Active ClassicLine module · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · Three orientations of the flat cable are possible · Digital outputs and inputs · Sockets M12 x 1 · PA	AC5214
	4 inputs / 3 outputs; bidirectional	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · Version 2.11 and 3.0 with extended addressing mode · Digital inputs and outputs · Sockets M12 x 1 · PA	AC5204
	4 inputs / 4 outputs; bidirectional	Active ClassicLine module · Only for operation with AS-i masters with the profile M4 · Addressing socket · Three orientations of the flat cable are possible · Version 3.0 with extended addressing mode · Digital inputs and outputs · Sockets M12 x 1 · PA	AC5235
	2 inputs 4...20 mA	Active ClassicLine module · 2 analogue inputs 4...20 mA · For the connection of 2-wire and 3-wire sensors · Addressing socket · Three orientations of the flat cable are possible · PA	AC5222
	2 IO-Link ports	Active ClassicLine module · 2 IO-Link ports · For the connection of IO-Link sensors and actuators, binary sensors and binary actuators · Addressing socket · Three orientations of the flat cable are possible · Only for operation with AS-i masters with the profile M4 · PA	AC5225
	4 inputs / 1 output ; AirBox supply via AS-i	AS-i AirBox · 5/2-way slide valve free from overlapping · Three orientations of the flat cable are possible · AS-i flat cable connection · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · PA / POM	AC5246
	4 inputs / 2 outputs; AirBox supply via AS-i	AS-i AirBox · 2 x 3/2-way slide valves free from overlapping · Three orientations of the flat cable are possible · AS-i flat cable connection · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · PA / POM	AC5228
	4 inputs / 2 outputs; AirBox supply via AS-i	AS-i AirBox · 5/3-way slide valve free from overlapping · Three orientations of the flat cable are possible · AS-i flat cable connection · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · PA / POM	AC5270

Accessories pneumatic components

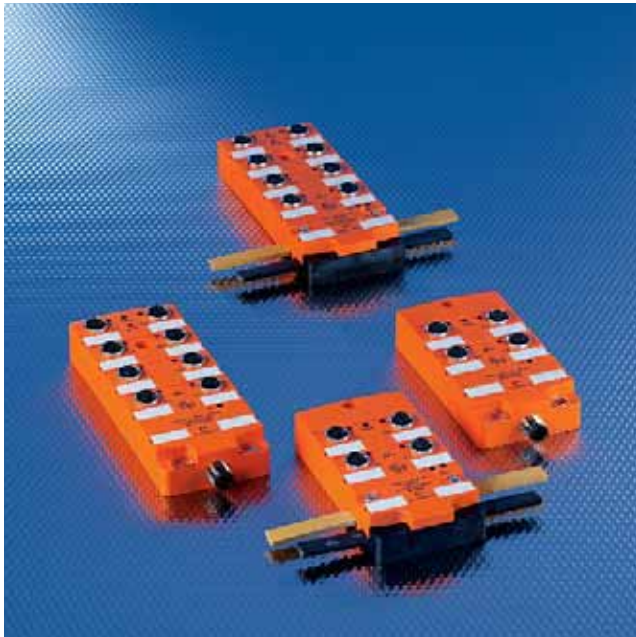
Type	Description	Order no.
	Silencer · Housing materials: connection piece: PP / filter: PE	E75232

Accessories

Type	Description	Order no.
	Viton compound / highgrade steel kit for ClassicLine Module · Housing materials: O-ring: Viton / screw: high-grade st. steel / Gasket: Viton	E70355
	Addressing cable · for the addressing of active AS-i compact modules	E70423



CompactLine module



- **Module and connection technology: especially shock and vibration-resistant**
- **Full potting for use in harsh environments, protection IP 67**
- **ecolink technology in each port ensures secure connection**
- **Bus connection of the module via AS-i flat cable**
- **Up to 2 A current rating on the output (AC2452)**



For limited space

CompactLine modules feature particularly high ingress protection, shock and vibration resistance. This is achieved by fully potting the unit.




The flat compact design is particularly suited where space is at a premium. The M12 sockets are made of stainless steel.

Addressing is done either via the AS-i interface or infrared adapter. The yellow AS-i communication cable and the black 24 V flat cable (for auxiliary energy) are simply inserted in the supplied lower part. Insulation displacement technology ensures safe contacting.



Bore holes on the top and on the side allow horizontal or vertical mounting of the module.



CompactLine modules

Type	Inputs / outputs	Description	Order no.
	4 inputs / 4 outputs; bidirectional	Active CompactLine module · IR addressing possible · Digital inputs and outputs · Sockets M12 x 1 · PA / socket: stainless steel 316L / 1.4404 / threaded inserts in the lower part: stainless steel 316L / 1.4404 / screws in the lower part: stainless steel	AC2452
	4 inputs	Active CompactLine module · IR addressing possible · high-grade stainless steel · Digital inputs · Sockets M12 x 1 · PA / socket: stainless steel 316L / 1.4404 / threaded inserts in the lower part: stainless steel 316L / 1.4404 / screws in the lower part: stainless steel	AC2451
	2 inputs 4...20 mA	Active CompactLine module · 2 analogue inputs 4...20 mA · For the connection of 2-wire and 3-wire sensors · IR addressing possible · high-grade stainless steel · Sockets M12 x 1 · PA / socket: stainless steel 316L / 1.4404 / threaded inserts in the lower part: stainless steel 316L / 1.4404 / screws in the lower part: stainless steel	AC2402
	2 inputs 4...20 mA	Active CompactLine module · 2 analogue inputs 4...20 mA · For the connection of 2-wire and 4-wire sensors · Electrical isolation · IR addressing possible · high-grade stainless steel · Sockets M12 x 1 · PA / socket: stainless steel 316L / 1.4404 / threaded inserts in the lower part: stainless steel 316L / 1.4404 / screws in the lower part: stainless steel	AC2403

Accessories

Type	Description	Order no.
	AS-i addressing unit · AS-i version 3.0 with extended addressing mode	AC1154
	Addressing cable · for AS-i slaves · 1.6 m	E70213



Dual sensors for quarter-turn actuators with AS-i connection



- Non-contact detection of valve positions of quarter-turn actuators
- Up to 62 actuators can be connected to an AS-i master / controller
- 50 % cost reduction compared to parallel wiring
- Quick and safe installation due to "plug & play"
- Monitoring of the solenoid valve for wire break / short circuit



Integrated AS-i connection for pneumatic valves.

Precise detection of the valve position is important for process control. One typical application is a large tank farm. Here, ifm offers a low-profile, non-contact solution that accurately detects if a valve is open or closed.

With the growing number of valves being used and minimal plant floor space available, wiring has become time-consuming and difficult to troubleshoot. To reduce wiring, the AS-i system is a simple and cost-saving solution for valve position monitoring.

AS-i connects a complete valve system with only one 2-wire cable. Wire bundles are eliminated. Valve position sensors with AS-i connectivity provide an integrated connection for the solenoid valve. The control unit is connected via the 2-wire AS-i cable.

This solution provides remote indication of valve status and can connect to higher level bus systems via DeviceNet, Profibus, and Ethernet.




Dual sensors for quarter-turn actuators

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f AC / DC [Hz]	I _{load} AC / DC [mA]	Order no.
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M12 connector · 1 x 2 inputs



	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 67	–	–	AC2315
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M12 connector · Output function transistor PNP · 2 inputs / 1 output

	55 x 60 x 35	4 nf	PBT (Pocan)	26.5...31.6	IP 67	–	–	AC2316
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f = flush / nf = non flush


Target pucks for dual sensors

Type	Description	Order no.
	Target puck · Ø 53 mm · 3 possible switching flag positions · Housing materials: Target puck: PA 6 black / screws: V2A	E17320
	Target puck · Ø 65 mm · Housing materials: Target puck: PA 6 / screws: V2A	E17327
	Target puck · Ø 102 mm · Housing materials: Target puck: PA 6 / screws: V2A	E17328


Valve - plug jumpers for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro- tection	LEDs	Order no.
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Jumper M12 plug / valve plug type A (according to DIN EN 175301-803), 3/4-pole, 3-wire, LED

	0.3 m black PUR cable	3 x 0.5 mm ² , Ø 5 mm	PUR / brass	24 AC/DC	-25...80	IP 67	yellow	E11416
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Jumper M12 plug / valve plug type B (according to DIN EN 175301-803), 3-pole, 3-wire, LED

	0.3 m black PUR cable	3 x 0.5 mm ² , Ø 5 mm	PUR / brass	24 AC/DC	-25...80	IP 67	yellow	E11421
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Jumper M12 plug / valve plug type C (according to DIN EN 175301-803), 3/4-pole, 3-wire, LED

	0.3 m black PUR cable	3 x 0.5 mm ² , Ø 5 mm	PUR / brass	24 AC/DC	-25...80	IP 65	yellow	E11426
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Safety at Work



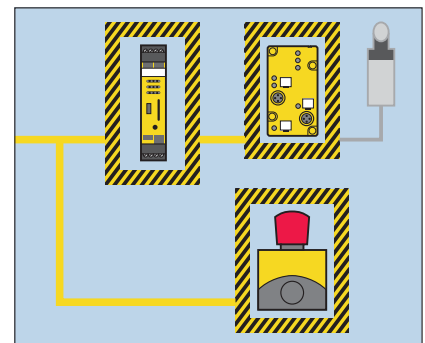
- AS-i safety monitor, 1 or 2 channels
- Safety function freely configurable
- Positively driven relay contacts for the enabling of drives, etc.
- Replaces traditional safety relays
- Toolless DIN rail mounting



Safety on the AS-i bus

The AS-i safety monitor functions according to the Safety at Work specification. It monitors the data exchange between safe modules and the AS-i controllers. Should data transmission be disrupted, the module fail or a wire break occur, the monitor ensures the safe state. The same happens when the safety system is activated. The safety monitor receives a module address to enable direct diagnosis via the AS-i master. It can be mounted anywhere on the network.

The safety monitor features one or two independent OSSDs which can be configured via PC software. The parameter setting includes functions like emergency stop, start button, stop category 0 or 1, two-hand operation and muting. It can thus replace many different units. In addition, ifm offers a variety of safety AS-i modules, illuminated e-stop buttons and wiring solutions.



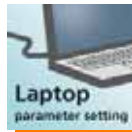
Safety at Work		
Type	Description	Order no.
	AS-i safety monitor · Extended functionality · 1-channel · Control category 4 to EN954-1, IEC 61508 / SIL 3 and EN ISO 13849 - 1 PL e · Configuration and setup by configuration software ASIMON · Screw terminal	AC003S
	AS-i safety monitor · Extended functionality · 2-channel · Control category 4 to EN954-1, IEC 61508 / SIL 3 and EN ISO 13849 - 1 PL e · Configuration and setup by configuration software ASIMON · Screw terminal	AC004S
	Safe active AS-i module · Connection via M12x1 sockets or cage clamps · Control category 4 according to EN954-1 and IEC 61508 / SIL 3 · For connection of an electro-sensitive protective equipment (ESPE) type 4 to EN 61496-1 · Housing materials: PA 6 · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	AC007S
	AS-i safety monitor · 2 safe semi-conductor outputs · SIL 3 to EN 62061, IEC 61508 / SIL 3 and EN ISO 13849 - 1 / PL e · Chip card to save the configuration data · Configuration and setup by configuration software ASIMON V3 G2 · USB 2.0 interface · Chip card and Combicon screw terminals supplied with the device · Screw terminal	AC041S
	Safe AS-i input module · IR addressing possible · AS-i version 2.1 · Performance Level e to EN ISO 13849-1 for the connection of mechanical contacts · Sockets M12 x 1 · Housing materials: PBT · Complies with the requirements: ISO 13849-1: category 3 / 4 · ISO 13849-1: PL d / e	AC005S
	Safe active AS-i ClassicLine module · IR addressing possible · Performance Level e to EN ISO 13849-1 for the connection of mechanical contacts · Sockets M12 x 1 · Housing materials: PBT · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	AC006S
	Illuminated E-STOP · front mounting · reset by turning · 2 NC contacts / 1 red LED · fool-proof E-STOP to EN ISO 13850	E7007S
	Safe active AS-i module · Performance Level e to EN ISO 13849-1 et IEC 61508 / SIL 3 for the connection of mechanical contacts · Combicon connection · Housing materials: PA · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	AC009S
	Safe active AS-i output module · SIL 3 to EN 62061, IEC 61508 / SIL 3 and EN ISO 13849 - 1 / PL e · for the safe triggering of actuators · Combicon connection	AC030S
	Illuminated E-STOP with integrated AS-i connection · fool-proof E-STOP to EN ISO 13850 · Pull to reset · AS-i interface via AS-i flat cable IP 67 · Housing materials: PC GF20 · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	AC010S
	AS-i safety PCB · Connection of mechanical contact and LED components · Certification according to EN 954-1 / category 4 and IEC 61508 / SIL 3 · Complies with the requirements: · IEC 61508: SIL 3	AC015S



RFID with Profibus-DP for production and conveying



- RFID evaluation unit with Profibus-DP and web server
- Evaluation unit with 4 antenna connections or digital I/Os
- Read / write antennas in industrially compatible housing
- Transponder with memory sizes from a few bits up to several Kbytes
- Protection rating IP 67 meets the requirements for harsh environments



Flexible RFID system with evaluation unit, antennas and transponders.


The DTE100 RFID system was designed especially for identification tasks in production and conveying. It is often used for quality assurance and serves as "electronic route card".

The robust evaluation unit is equipped with an integrated Profibus DP interface and a web server. Parameters can be easily set via a laptop. Due to the high protection rating IP 67 and a large temperature range, the unit also meets the requirements of harsh industrial environments.


The new evaluation unit features four antenna connections or digital I/Os. The antenna concept guarantees easy and quick connection of the LF and HF RFID antennas to the evaluation unit by means of M12 connectors. Besides the LF transponder with a memory size of up to 2 Kbits, the product portfolio from ifm electronic also offers HF transponders with 16 Kbits as a FRAM variant which can be rewritten an unlimited number of times.



RFID system 13.56 MHz

Type	Dimensions [mm]	Travel speed read / write [m/s]	Process interface	Order no.
M12 connector				
	115 x 46.2 x 85	–	Profibus DP	DTE100


RFID antennas 125 kHz / 13.56 MHz

Type	Description	Order no.
M12 connector		
	Read/write head · M12 connector · 5 positions of the sensing face selectable · Housing materials: housing: PA / Metal parts: stainless steel	ANT512
	Read/write head · M12 connector · 5 positions of the sensing face selectable · Housing materials: housing: PA / Metal parts: stainless steel	ANT513

RFID tags 125 kHz / 13.56 MHz

Type	Description	Order no.
	ID tag · ID-TAG/30X2.5/05 - 256 bit · Ø 30 x 2.5 mm · Housing materials: PA 6 black	E80360
	ID tag · ID-TAG/30X2.5/05 - 2048 bit · Ø 30 x 2.5 mm · Housing materials: PA 6 black	E80361
	ID tag · ID-TAG/30X2.8/03 - 16 Kbit · Ø 30 x 2.8 mm · Housing materials: PA 6 black	E80370
	ID tag · ID-TAG/30X2.5/06 - 896 bit · Ø 30 x 2.5 mm · Housing materials: PA 6 black	E80371

Jumpers for hygienic and wet areas

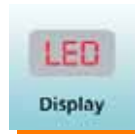
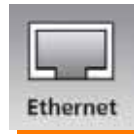
Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro- tection	LEDs	Order no.
Jumper 12, 5-pole, 5-wire								
	5 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT062
	10 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT063



Multicode reader



- Orientation-independent reading of data matrix codes and other 1D/2D codes
- Illumination, optics, evaluation and interfaces in an industrially compatible housing
- Code comparator system in the sensor
- Setting aid due to laser pointer
- Integrated Ethernet TCP/IP and Ethernet/IP interface

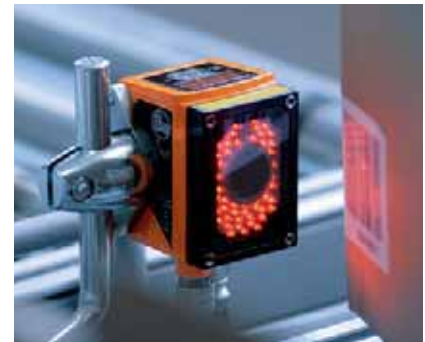


Reliable identification of data matrix and 1D codes





The multicode reader is designed to read 2D data matrix codes and 1D bar-codes in high speed industrial automation applications. The object speed can be up to 7 m/s. It reads most marking methods including dot-peened, laser-etched and printed data matrix codes as well as printed barcodes – and that even independent of its orientation.

Complex application programming is no longer necessary due to adjustable, selective identification and code comparison in the sensor. This allows a defined number of characters within a code to be checked and signalled via the switching output if they match.




The sensor can even reliably read codes which are difficult to read, e.g. on glass. Printed codes on plastic parts can wear or disintegrate over time. Here the multicode reader also allows reliable detection even if up to 28 % of the information is damaged.




Multicode reader

Type	Dimensions [mm]	Max. field of view size [mm]	Type of light LED	Motion speed int. / ext. lighting [m/s]	Process interface	Order no.
Multicode Reader, M12 plug, 8 poles M12 socket, 4 poles						
	60 x 42 x 53.5	64 x 48	red light	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I100
	60 x 42 x 53.5	132 x 94	red light	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I102
	60 x 42 x 59	400 x 300	red light	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I104
	60 x 42 x 53.5	64 x 48	infrared	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I101
	60 x 42 x 53.5	132 x 94	infrared	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I103
	60 x 42 x 59	400 x 300	infrared	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I105

Jumpers for the multi-code reader

Type	Description	Order no.
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 2 m · Housing materials: PUR / PC	E11898
	Socket · angled · Free from silicone · Free from halogen · gold-plated contacts · M12 connector · 2 m · Housing materials: PUR	E11231
	Socket · straight · Free from halogen · M12 connector · 2 m · Housing materials: PUR	E11950

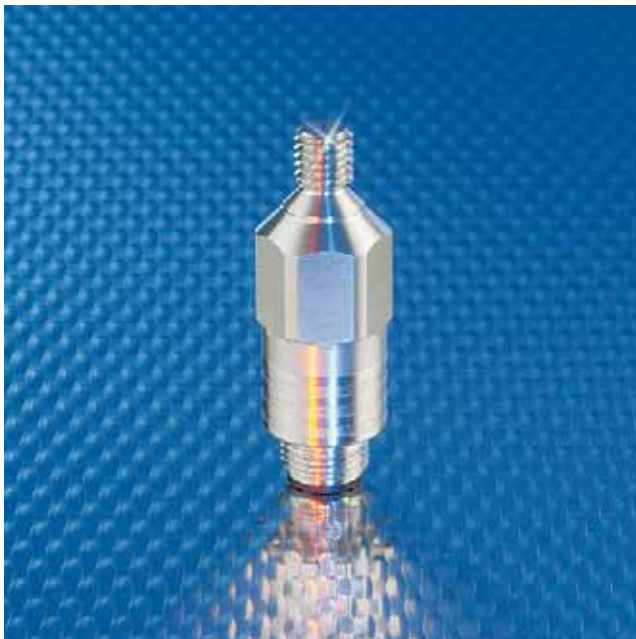
Software

Type	Description	Order no.
	Operating software · O2I · for multicode reader · Create and manage application-specific configurations Monitor mode for set-up and service Service reports for statistical evaluations	E2I200

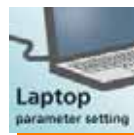


For hygienic
and wet areas

Vibration monitoring systems



- Continuous vibration diagnosis for rotating plant parts
- Higher plant uptime thanks to condition-based maintenance
- Up to four vibration sensors can be connected to one evaluation unit
- Integrated history memory for trend analysis and documentation
- Ethernet interface for integration into operational data logging systems



Predictive maintenance solutions

Vibration diagnostic systems from ifm allow continuous vibration monitoring on machines and machine parts in food processing such as the detection of unbalance on rolling element bearings and gears.



The diagnostic electronics analyses the vibration characteristics of the machine and compares this to the permissible limit values. If these values are exceeded, the system automatically sets alarm outputs and transfers these data to the controller or the control system via Ethernet.

Innovative software


The analysis software allows the user to evaluate the state of the machine remotely. A bar graph display provides a quick overview of all operating states of the machine and the trend history shows machine condition changes over the time. All this allows condition-based maintenance of the machines. This increases plant uptime and at the same time reduces the operating costs.





Diagnostic electronics – control cabinet modules for vibration diagnosis type VSE

Type	Description	Order no.
	Diagnostic electronics for vibration sensors, dynamic inputs: 4 x 0...10 mA static inputs: 2 x 0/4...20 mA or pulse, 2 digital alarm outputs (PNP 100 mA) or 1 digital output and 1 analogue output 0/4...20/22 mA, Analogue input, 250, Measuring range, Frequency, History memory yes, Data interface Ethernet TCP/IP, Display, Combicon connection	VSE002
	Diagnostic electronics for vibration sensors, 4 sensor inputs 0...10 mA, 4x sensor inputs 0...10 mA 2x speed inputs 0/4...20 mA or 0...10 V or pulse 24 V 8x digital outputs/inputs (freely configurable) (PNP 100 mA), 2x digital alarm outputs (PNP 100 mA) or 1x digital alarm output + 1x analogue output 0/4...20/22 mA / 0...10 V 8x digital outputs/inputs (freely configurable) (PNP 100 mA), Analogue input, 250, Measuring range, Frequency, History memory yes, Data interface Ethernet TCP/IP, Display, Combicon connection	VSE100


Vibration sensors for connection to external diagnostic electronics VSE – type VSA

Type	Description	Order no.
	Vibration sensor · for connection to external diagnostic electronics · Connector · Housing materials: housing: stainless steel 316L / 1.4404	VSA001


Accessories VSE

Type	Description	Number of connections	Order no.
	Parameter setting software for VSExxx	–	VES003
	octavis OPC server · Software · German/English	25	VOS001

Connection cables VSE

Type	Description	Order no.
	Jumper · straight / straight · Ethernet · Cross-over patch cable · 2 m · Housing materials: PUR	EC2080

Connectors

Type	Description	Order no.
	Socket · straight · Free from silicone · Free from halogen · gold-plated contacts · M12 connector · 10 m · Housing materials: TPU	E12079
	Socket · straight · Free from silicone · Free from halogen · gold-plated contacts · M12 connector · 30 m · Housing materials: TPU	E12008



Vibration sensors and transmitters



- Easy-to-use vibration monitoring for rotating machine parts
- Condition-based maintenance results in higher plant uptime
- Analogue output signal for trend recording of vibration values
- VK sensors combine both switching function and transmitter in one unit
- VT transmitter with stainless steel housing (316) and protection rating IP 69K



Avoid machine damage

Each rotating machine has its own vibration characteristics. Changes can point to wear, machine damage or imminent failure.

The vibration sensors of the VK and VT series are designed for fixed mounting on a machine. They monitor the vibration level continuously and indicate changes so that the maintenance personnel can take measures in time to avoid machine failure and further secondary damage.


Typical applications for vibration sensors and transmitters are motors, pumps, compressors, fans, centrifuges and vibrating conveyor systems.




(A) Vibration monitoring on a drive motor
(B) VK vibration monitor: Easy adjustment by means of setting rings

(C) VT vibration transmitter transmits machine conditions via analogue output



Vibration monitors for vibration monitoring of machines and plants to ISO 10816 type VK

Type	Description	Order no.
	Vibration monitor · Connection via M12 connector · Vibration monitor to DIN ISO 10816 · Measuring range RMS: 0...25 mm/s · Switching outputs: normally closed and analogue 4...20 mA · Housing materials: PBT / PC / FPM / stainless steel 316L / 1.4404	VKV021
	Vibration sensor · Connection via M12 connector · Vibration monitor to DIN ISO 10816 · Measuring range RMS: 0...50 mm/s · Switching outputs: normally closed and analogue 4...20 mA · Housing materials: PBT / PC / FPM / stainless steel 316L / 1.4404	VKV022

Vibration transmitters for vibration monitoring of machines and plants to ISO 10816 type VT

Type	Description	Order no.
	Vibration transmitter · Connection via M12 connector · Vibration transmitter to ISO 10816 · Measuring range RMS: 0...25 mm/s · Analogue output 4...20 mA · Housing materials: stainless steel 316L / 1.4404	VTV122

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT001



For hygienic
and wet areas

M12 and M8 connectors for hygienic and wet areas



- Connection technology meets the M12 standard (EN 61076)
- Optimum sealing even when fastened by hand
- The mechanical end stop prevents the O-ring from being destroyed
- Nut secured against shock and vibration due to saw tooth vibration protection
- LEDs clearly visible even under bright lighting



IP 67
IP 68
IP 69 K

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 integrated end stop protects the O-ring against destruction caused by over-tightening the nut. No tools needed for installation and removal.


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

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




ecolink M8:
For the first time the innovative profiled sealing ring also provides the high protection ratings IP 67 / IP 68 / IP 69K for M8 connectors.


Jumper cables

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Protection	LEDs	Order no.
Jumper 12, 4/5-pole, 4-wire								
	0.3 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT040
	0.6 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT041
	1 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT042
	2 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT043
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT044

Jumper 12, 5-pole, 5-wire

	0.3 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT058
	0.6 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT059
	1 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT060
	2 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT061
	5 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT062





Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Protection	LEDs	Order no.
Socket 8, 3-pole, 3-wire								
	5 m orange PVC cable	3 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 67 / IP 68 / IP 69K	–	EVT123
	10 m orange PVC cable	3 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 67 / IP 68 / IP 69K	–	EVT124
	25 m orange PVC cable	3 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 67 / IP 68 / IP 69K	–	EVT125



**For hygienic
and wet areas**

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 8, 3-pole, 3-wire								
	5 m orange PVC cable	3 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 67 / IP 68 / IP 69K	-	EVT127
	10 m orange PVC cable	3 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 67 / IP 68 / IP 69K	-	EVT128
	25 m orange PVC cable	3 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 67 / IP 68 / IP 69K	-	EVT129
Socket 8, 3-pole, 3-wire, LED, PNP								
	5 m orange PVC cable	3 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 67 / IP 68 / IP 69K	green / yellow	EVT131
	10 m orange PVC cable	3 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 67 / IP 68 / IP 69K	green / yellow	EVT132
	25 m orange PVC cable	3 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...80	IP 67 / IP 68 / IP 69K	green / yellow	EVT133
Socket 8, 4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 67 / IP 68 / IP 69K	-	EVT135
	10 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 67 / IP 68 / IP 69K	-	EVT136
	25 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 67 / IP 68 / IP 69K	-	EVT137
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 67 / IP 68 / IP 69K	-	EVT139
	10 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 67 / IP 68 / IP 69K	-	EVT140
	25 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	50 AC 60 DC	-25...80	IP 67 / IP 68 / IP 69K	-	EVT141
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT001
	10 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT002
	25 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	-	EVT003

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro-tection	LEDs	Order no.
Socket 12, 5/4-pole, 4-wire								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT004
	10 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT005
	25 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	250 AC 300 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT006
Socket 12, 5/4-pole, 4-wire, LED, PNP								
	5 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 67 / IP 68 / IP 69K	green / 2 x yellow	EVT007
	10 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 67 / IP 68 / IP 69K	green / 2 x yellow	EVT008
	25 m orange PVC cable	4 x 0.34 mm ² , Ø 4.9 mm	PVC / stainless steel 316L / 1.4404	10...36 DC	-25...100	IP 67 / IP 68 / IP 69K	green / 2 x yellow	EVT009
Socket 12, 5-pole, 5-wire								
	5 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT010
	10 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT011
	25 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT012
	5 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT013
	10 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT014
	25 m orange PVC cable	5 x 0.34 mm ² , Ø 5.1 mm	PVC / stainless steel 316L / 1.4404	30 AC 36 DC	-25...100	IP 67 / IP 68 / IP 69K	–	EVT015



M12 connectors for industrial applications



- 8-pole versions
- Withstands harsh conditions and oils and coolants
- Wide temperature range
- High-flex TPU and PUR jacket rated for over 5 million flex cycles



Robust standard connection technology

The 8-pole M12 sockets are designed for use under harsh conditions in industrial automation as well as oil and coolant applications. They meet the requirements of the cRLus approval as well as the RoHS standards. They are also free from silicone and halogen. The high-flex TPU and PUR jacketed cables are rated for over 5 million flex cycles.



M12 sockets for industrial applications

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Protection	LEDs	Order no.
Socket 12, 8/7-pole, 8-wire								
	5 m black PUR cable	8 x 0.25 mm ²	TPU / brass	30 AC 36 DC	-40...80	IP 68	–	E12168
	10 m black PUR cable	8 x 0.25 mm ²	TPU / brass	30 AC 36 DC	-40...80	IP 68	–	E12169
	5 m black PUR cable	8 x 0.25 mm ²	TPU / brass	30 AC 36 DC	-40...80	IP 67	–	E12166
	10 m black PUR cable	8 x 0.25 mm ²	TPU / brass	30 AC 36 DC	-40...80	IP 67	–	E12167
socket M12, 8-pole, 8-wire, for temperature sensors TR 8...								
	2 m black PUR cable	8 x 0.25 mm ² , Ø 6.2 mm	PUR / brass	30 AC 36 DC	-25...80	IP 68	–	E11950
	5 m black PUR cable	8 x 0.25 mm ² , Ø 6.2 mm	PUR / brass	30 AC 36 DC	-25...80	IP 68	–	E11807
	10 m black PUR cable	8 x 0.25 mm ² , Ø 6.2 mm	PUR / brass	30 AC 36 DC	-25...80	IP 68	–	E11311
	2 m black PUR cable	8 x 0.25 mm ² , Ø 6.2 mm	PUR / brass	30 AC 36 DC	-25...80	IP 67	–	E11231
	5 m black PUR cable	8 x 0.25 mm ² , Ø 6.2 mm	PUR / brass	30 AC 36 DC	-25...80	IP 67	–	E11232
	10 m black PUR cable	8 x 0.25 mm ² , Ø 6.2 mm	PUR / brass	30 AC 36 DC	-25...80	IP 67	–	E11806



For hygienic
and wet areas

Accessories for ifm sensors



- Mounting bracket
- Mounting clamps
- Prismatic reflectors for retro-reflective sensors
- IO link accessories
- Installation and process adapter

High-
grade
stainless
steel

Hygienic mounting accessories

One-piece angle brackets in stainless steel are used to mount cylindrical inductive, capacitive and photoelectric M12, M18 and M30 sensors.



Moreover, ifm also provides adjustable installation systems allowing easy and flexible orientation. Once put into position, it is sufficient to tighten a screw to keep the sensor in position permanently and safely. These mounting systems are available in various configurations and are also suitable for mounting prismatic reflectors.

Round prismatic reflectors are available in 50 and 80 mm diameters for retro-reflective sensor applications.



ifm also offers accessories for process sensors, camera systems and valve sensors and their mounting on quarter-turn actuators.




Accessories for inductive and photoelectric sensors

Type	Description	Order no.
	Angle bracket · for type M12 · Housing materials: stainless steel	E10735
	Mounting clip · O-shaped · for type M12 · Housing materials: stainless steel	E11533
	Angle bracket · for type M18 · Housing materials: stainless steel	E10736
	Mounting clip · O-shaped · for type M18 · Housing materials: stainless steel	E11534
	Angle bracket · for type M30 · Housing materials: stainless steel	E10737

System components

Type	Description	Order no.
	Mounting set · Ø 18.5 mm · Clamp mounting · free-standing M10 · for type OG, IG, KG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	E20869
	Mounting set · Ø 18.5 mm · Clamp mounting · free-standing M10 · for type OG, IG, KG · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	E20870




Prismatic reflector

Type	Description	Order no.
	Prismatic reflector · Ø 50 mm · round · fixing by screw · for red light and infrared light retro-reflective sensors · Housing materials: plastics	E20956
	Prismatic reflector · Ø 80 mm · round · for red light and infrared light retro-reflective sensors · Housing materials: plastics	E20005
	Prismatic reflector · 18 x 18 mm · rectangular · Housing materials: plastics Solidchem · up to 140 °C	E21267
	Prismatic reflector · 96 x 96 mm · rectangular · Housing materials: plastics Solidchem · up to 140 °C	E21270




**For hygienic
and wet areas**



Accessories for quarter-turn actuator sensors

Type	Description	Order no.
	Cable gland · M20 x 1.5 · Housing materials: PA 6.6	E12208
	Protective cap · M20 x 1.5 · Housing materials: PA 6.6	E12209
	Plug for covering the oblong holes · Housing materials: EPDM	E12212


M18 sockets for industrial applications

Type	Description	Order no.
	Wirable socket · straight · wirable · M18 connector · Housing materials: PA	E10137


Accessories

Type	Description	Order no.
	Memory plug · Parameter memory for IO-Link sensors · Storage capacity: 2 Kbytes · Housing materials: PA PACM 12 / PET / sealing: FPM / nut: stainless steel 316L / 1.4404 / connector: TPU	E30398
	IO-Link interface · for parameter setting and analysis of units with DTM specification · Supported communication protocols: IO-Link (4800 and 38400 bits/s) EPS protocol (19200 bits/s) · contains ifm Container software (E30110)	E30396


Accessories O5 housing

Type	Description	Order no.
	Angle bracket · for type O5 · Housing materials: stainless steel 316Ti / 1.4571	E21087


Fixing components for 2D sensors

Type	Description	Order no.
	Mounting set · O2D, O2M, O2I, O2V · Clamp mounting · rod mounting Ø 12 mm · Housing materials: fixture: stainless steel / clamp: stainless steel	E2D110


Fixing components for 3D sensors

Type	Description	Order no.
	Mounting set · O3D · Clamp mounting · rod mounting Ø 14 mm · Housing materials: fixture: stainless steel / clamp: stainless steel	E3D103


Reflective tapes, diffusers and protective panes for 2D sensors

Type	Description	Order no.
	Plastic protective pane for the food industry · O2D / O2I · Housing materials: housing: diecast zinc black / lens: PMMA	E21166


Bases for safety light curtains / safety light grids

Type	Description	Order no.
	Base · Length: 1010 mm · for safety light grids · 2 beams · for safety light curtains · ≤ 760 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	EY2001
	Base · Length: 1340 mm · for safety light grids · 3 beams · 4 beams · for safety light curtains · ≤ 1060 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	EY2002
	Base · Length: 1680 mm · for safety light curtains · ≤ 1360 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	EY2003
	Base · Length: 1980 mm · for safety light curtains · ≤ 1510 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics	EY2004

Accessories necessary for bases

Type	Description	Order no.
	Mounting base · for type OY	EY2005






Accessories for safety light curtains

Type	Description	Order no.
	Adjustable brackets · axial ± 7° · for type OY · Housing materials: metal galvanised	EY3004



For hygienic
and wet areas

Accessories for flow meters

Type	Description	Order no.
	Adapter · G ½ - R ½ · R ½ · for flow monitor type SM6 · flat seal · Housing materials: stainless steel 316Ti / 1.4571	E40199
	Adapter · G ½ - ½,, NPT · ½,, NPT · for flow monitor type SM6 · flat seal · Housing materials: stainless steel 316Ti / 1.4571	E40200
	Adapter · G ¾ - R ½ · for flow monitor type SM7 / SU7 · Housing materials: stainless steel 316L / 1.4404	E40178
	Adapter · G ¾ - ½" NPT · for flow monitor type SM7 / SU7 · Housing materials: stainless steel 316L / 1.4404	E40191
	Adapter · G 1 - ¾" NPT · for flow monitor type SM8 / SU8 · Housing materials: stainless steel 316L / 1.4404	E40193





Aseptoflex Vario O-ring / PEEK ring

The following Aseptoflex Vario adapters seal by means of an O-ring or a PEEK sealing ring.

ifm electronic offers water and cleaning-agent resistant EPDM and oil-resistant FKM (FPM) as O-ring materials. As an alternative, the maintenance and wear-free PEEK ring can be integrated. The EPDM sealing is supplied with the adapter; the FKM (FPM) and PEEK ring have to be ordered optionally.



Type	Description	Order no.
Clamp adapter		
	Clamp 1-1.5" · ISO 2852 · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33201
	Clamp 2" · ISO 2852 · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33202
	Clamp 1-1.5" · ISO 2852 · with leakage port · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33208
	Clamp 2" · ISO 2852 · with leakage port · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33209
	Varivent type F D50 · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33221
	Varivent type N D68 · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33222
	Varivent type F D50 · with leakage port · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33228
	Varivent type N D68 · with leakage port · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33229
Welding adapter		
	Welding adapter D50 · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E30122
	Welding adapter D50 · with leakage port · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E30130








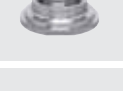

Type	Description	Order no.
pipe fitting		
	pipe fitting DN32 · DIN 11851 · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33211
	pipe fitting DN40 · DIN 11851 · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33212
	pipe fitting DN50 · DIN 11851 · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33213
	pipe fitting DN/OD33.7 · DIN 11864 · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33304
Flange adapter		
	DRD D65 · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33242
pipe fitting		
	Universal process adapter Rd52 · with sealing ring · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33340
sealing plug		
	Aseptoflex Vario · with sealing ring · adapter: stainless steel 316L / 1.4435 / sealing ring: FKM	E30128
O-ring		
	FKM FDA compliant	E30123
Sealing ring		
	for Aseptoflex Vario adapter · PEEK FDA compliant	E30124




Aseptoflex Vario metal / metal

The following Aseptoflex Vario adapters form the seal via a maintenance-free, metal edge.



Type	Description	Order no.
Clamp adapter		
	Clamp 1-1.5" · ISO 2852 · Metal to metal seal · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33701
	Clamp 2" · ISO 2852 · Metal to metal seal · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33702
	Varivent type F D50 · Metal to metal seal · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33721
	Varivent type N D68 · Metal to metal seal · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33722
pipe fitting		
	pipe fitting DN32 · DIN 11851 · Metal to metal seal · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33711
	pipe fitting DN40 · DIN 11851 · Metal to metal seal · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33712
	pipe fitting DN50 · DIN 11851 · Metal to metal seal · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33713
	SMS pipe fitting DN40 · Metal to metal seal · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33731
	SMS pipe fitting DN50 · Metal to metal seal · for units with process connection Aseptoflex Vario · stainless steel 316L / 1.4435	E33732

Type	Description	Order no.
sealing plug		
	Aseptoflex Vario · with sealing ring · adapter: stainless steel 316L / 1.4435 / sealing ring: FKM	E30128








G $\frac{1}{2}$

The following adapters are suited for G $\frac{1}{2}$ process connections with conical sealing edge.

The metal / metal - or for the LMT level sensor the PEEK / metal - edge form the sealing.



Type	Description	Order no.
Clamp adapter		
	Clamp 1-1.5" · DIN 32676 · for units with process connection G $\frac{1}{2}$ · stainless steel 316L / 1.4404	E33401
	Clamp 2" · DIN 32676 · for units with process connection G $\frac{1}{2}$ · stainless steel 316L / 1.4404	E33402
	Clamp 1-1.5" · ISO 2852 / DIN 32676 · with leakage port · for units with process connection G $\frac{1}{2}$ · stainless steel 316L / 1.4435	E43311
	Clamp 2" · ISO 2852 / DIN 32676 · with leakage port · for units with process connection G $\frac{1}{2}$ · stainless steel 316L / 1.4435	E43312
	Varivent type F D50 · for units with process connection G $\frac{1}{2}$ · stainless steel 316L / 1.4435	E43306
	Varivent type N D68 · for units with process connection G $\frac{1}{2}$ · stainless steel 316L / 1.4435	E43307
Welding adapter		
	Welding adapter ball D35 · for units with process connection G $\frac{1}{2}$ · stainless steel 316L / 1.4404	E30055
	Welding adapter collar D45 · for units with process connection G $\frac{1}{2}$ · stainless steel 316L / 1.4404	E30056
	Welding adapter D30 · for tanks · for units with process connection G $\frac{1}{2}$ · stainless steel 316L / 1.4435	E43300
	Welding adapter D29 · for pipes · for units with process connection G $\frac{1}{2}$ · stainless steel 316L / 1.4435	E43301







Type	Description	Order no.
Welding adapter		
	Welding adapter D30 · for tanks · with leakage port · for units with process connection G½ · stainless steel 316L / 1.4435	E43309
	Welding adapter D29 · for pipes · with leakage port · for units with process connection G½ · stainless steel 316L / 1.4435	E43310
pipe fitting		
	pipe fitting DN25 · DIN 11851 · for units with process connection G½ · stainless steel 316L / 1.4435	E43304
	pipe fitting DN40 · DIN 11851 · for units with process connection G½ · stainless steel 316L / 1.4435	E43305
	SMS pipe fitting DN25 · for units with process connection G½ · stainless steel 316L / 1.4404	E33430
sealing plug		
	G½ · stainless steel 316L / 1.4435	E43308



G1

The following adapters are suited for metal sealing of a G1 process connection with conical edge.








Type	Description	Order no.
Clamp adapter		
	Clamp 1-1.5" · ISO 2852 · Metal to metal seal · for units with process connection G1 · stainless steel 316L / 1.4435	E33601
	Varivent type N D68 · Metal to metal seal · for units with process connection G1 · stainless steel 316L / 1.4435	E33622
Welding adapter		
	Welding adapter D50 · Metal to metal seal · for units with process connection G1 · stainless steel 316L / 1.4404	E30013
	Welding adapter D50 · with sealing ring · for units with process connection G1 · stainless steel 316L / 1.4404 / O-ring: Viton / O-ring: EPDM	E30072
pipe fitting		
	pipe fitting DN40 · DIN 11851 · Metal to metal seal · for units with process connection G1 · stainless steel 316L / 1.4435	E33612
sealing plug		
	G1 · high-grade stainless steel	E30070



G^{3/4}

The water and cleaning-agent resistant EPDM or oil-resistant FKM sealing rings (FPM) form the sealing between the G^{3/4} process connections and the following adapters. Both sealing rings are supplied with the adapter.



Type	Description	Order no.
Clamp adapter		
	Clamp 1-1.5" · ISO 2852 · for units with process connection G ^{3/4} · stainless steel 316L / 1.4435	E33901
	Clamp 2" · ISO 2852 · for units with process connection G ^{3/4} · stainless steel 316L / 1.4435	E33902
Welding adapter		
	Welding adapter D50 · for units with process connection G ^{3/4} · stainless steel 316L / 1.4404	E30009
pipe fitting		
	Pipe fitting DN25 · DIN 11851 · for units with process connection G ^{3/4} · stainless steel 316L / 1.4435	E33910
sealing plug		
	G ^{3/4} · high-grade stainless steel	E30071

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