



Processes in the Food Industry



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 – in over 70 countries worldwide.

ifm – close to you!



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ifm – the company matching your requirements

close to you:

Our worldwide sales and service team is here to help you at any time.

Engineering “Made in Germany”:

German engineering available worldwide.

Flexible:

Not only our service but our broad product portfolio perfectly suit the most varying requirements.

Innovative:

More than 830 patents and in 2017 about 65 patent applications.

Reliable:

5-year warranty on ifm products.



System instead of just components
ifm provides you with a broad portfolio for flexible automation of your production.
Our range of more than 7,800 articles guarantees flexibility and compatibility.



Quality as part of our philosophy
Quality is an inherent part of our philosophy.
We use our customers' feedback to continuously improve the quality of our products.
Our sensors are tested with values far beyond the indicated limits using special procedures.



We are there for you

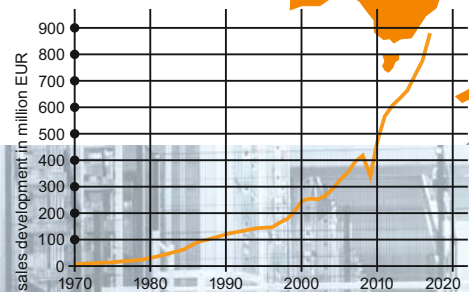
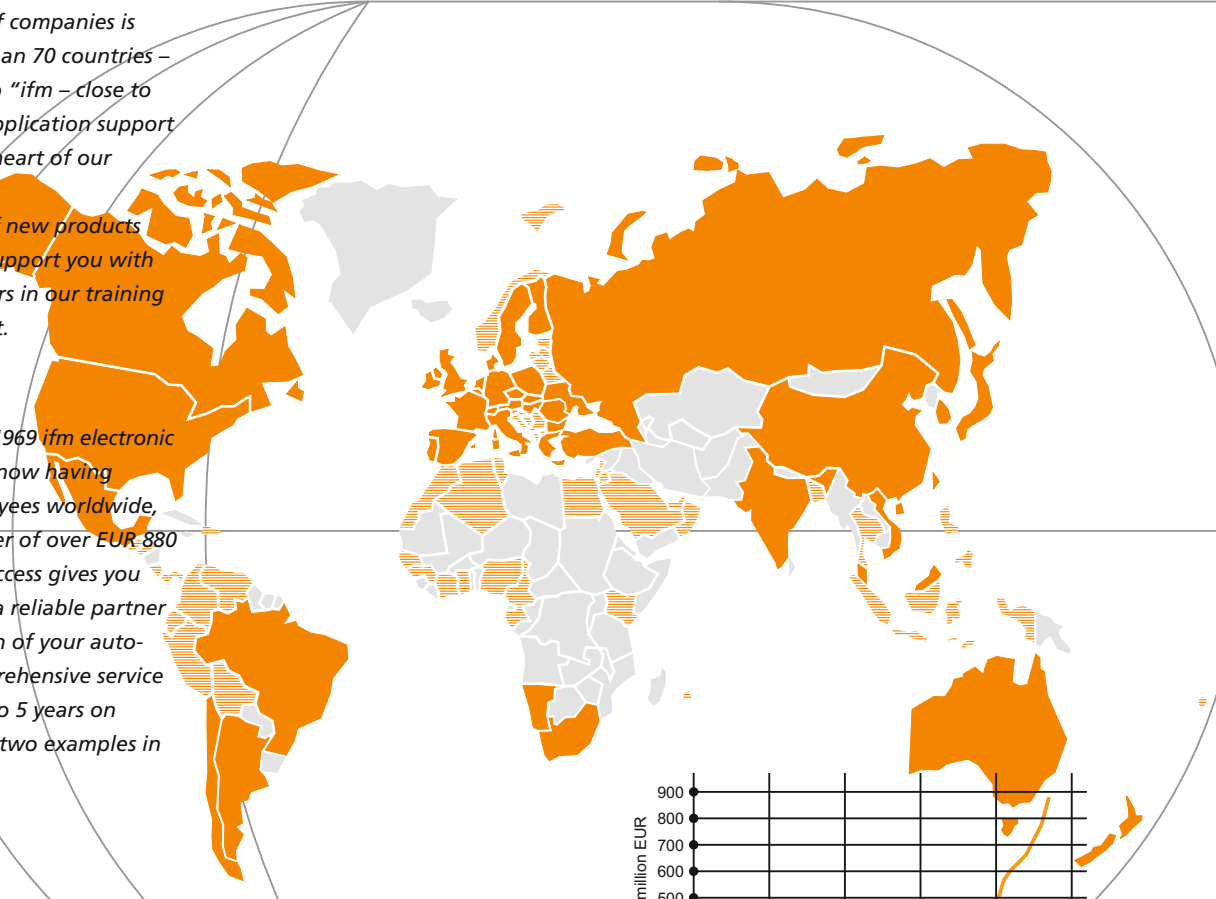
Close contact with our customers is part of our success. We have consistently developed our sales network right from the start.

Today the ifm group of companies is represented in more than 70 countries – according to the motto “ifm – close to you!” Your personal application support and service are 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 6700 employees worldwide, and achieved a turnover of over EUR 880 million in 2017. 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 in this context.



Product availability

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.

See the current ifm company film to get to know us better:
www.ifm.com/gb/close-to-you



The ifm sales platform



Overview:

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

Selectors:

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

Compare:

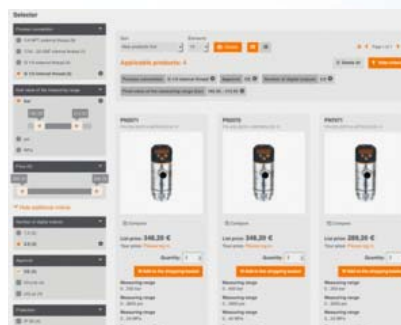
You can compare the technical data of up to 3 products. Differences are marked in colour.

Search and find:

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

Order:

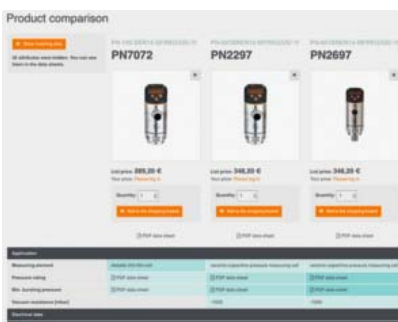
We provide a quick-order and csv import function for the shopping basket on the product pages.



More clarity

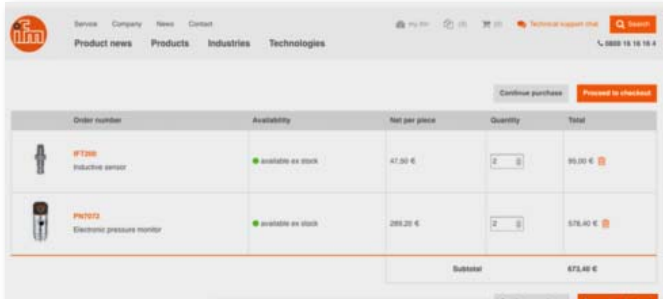
For each product group you can make a first selection via the platforms.

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



Compare products with each other

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

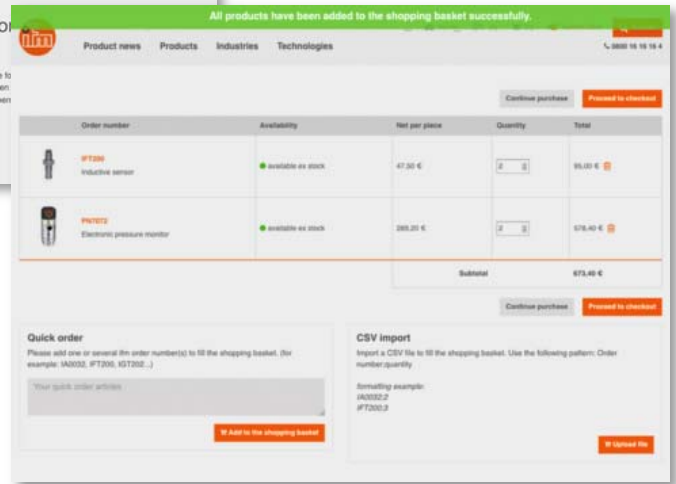
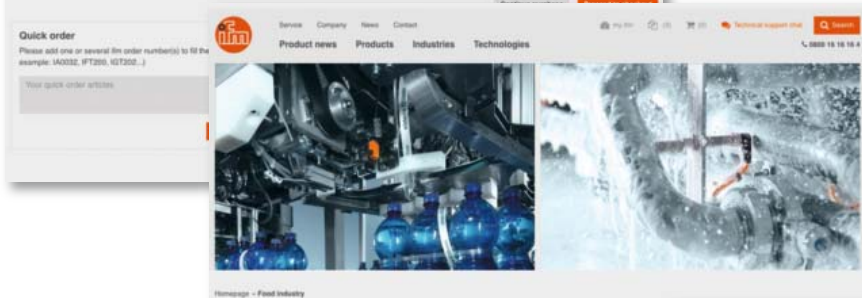


Easy purchasing

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

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

Navigation in the menu structure is no longer necessary.



For all types of display

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

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



Your start into the industrial revolution. IO-Link solutions from ifm.



Simple:

The sensor parameters can be set from the controller or the master. No crawling or climbing required to set the sensor.

Transparent:

Many sensors supply measured values to the switching signals via IO-Link. The goal is a constant product quality with less energy and raw material consumption.

Reliable:

Transmission that is prone to errors and conversion of analogue signals is replaced with digital measured value transmission.

Low-cost:

Process information, switching status, diagnostic functions are transmitted without loss via a single port to the controller. Expensive analogue signal processing is no longer needed.

Fascination IO-Link

In the past binary switches usually provided simple switching signals or analogue values. Today the data from intelligent sensors is the basis for the next industrial revolution.

Sensors that extract all the information from your machines and equipment using the key technology IO-Link.

Leading manufacturers from the fields of sensors, actuators and control technology have developed IO-Link.

Together they developed a standardised and field-bus independent interface for automation providing the user with a point-to-point connection without complex addressing.

Benefit from the appeal of IO-Link, talk to us and stay as productive and competitive for your manufacturing processes of tomorrow.



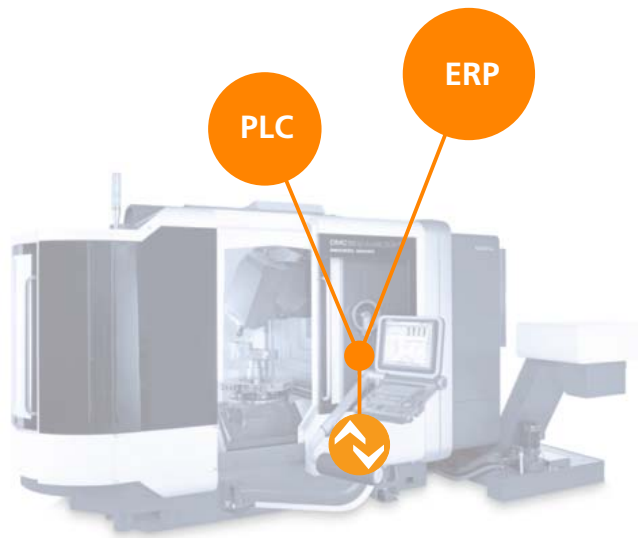


Head start with IO-Link

Use the advantages! Today IO-Link sensors from ifm give the user completely new options.

Additional sensor data, for example, is generated to achieve maximum efficiency and cost saving.

This allows process transparency from the machine to ERP to optimise your existing automation. Furthermore IO-Link has a lot more to offer:



No external influence of the signal

Data transfer is based on a 24 V signal. Screened cables and associated grounding are no longer necessary.



Tamper free

No wrong settings by operators.



No measured value losses

The entire measured value transmission is digital. Transmission that is prone to errors and conversion of analogue signals is replaced.



Identification

Only like for like replacement. No wrong sensors accepted.



Easy sensor replacement

All sensor parameters are stored in the master and transferred to the replaced unit.



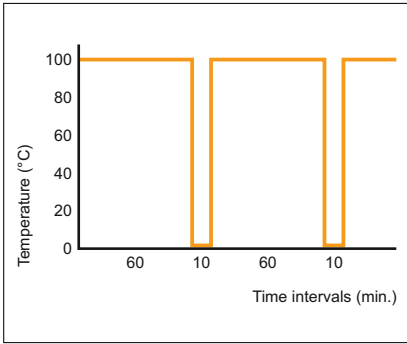
Wire-break detection / diagnostics

Wire-break or short-circuit is immediately detected.



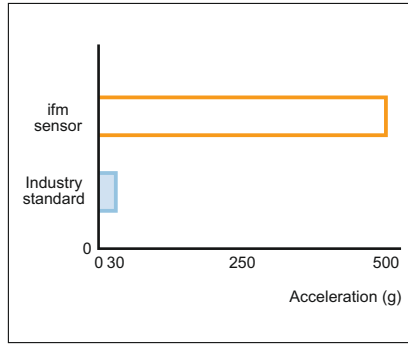
Point-to-point communication:
more details in our IO-Link video:
www.io-link.ifm





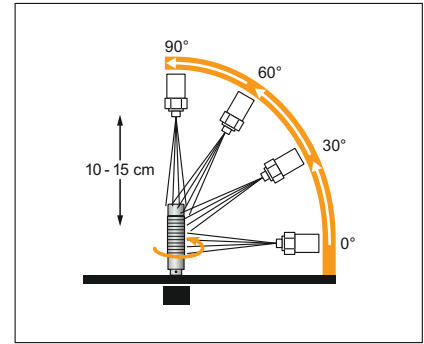
Thermal shock test

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

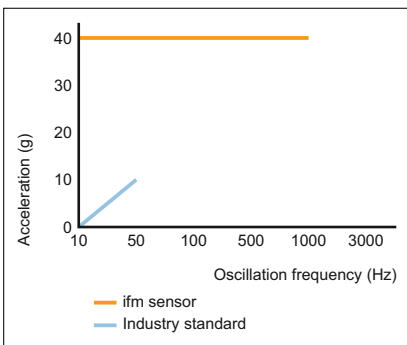
Sensors can be exposed to high levels of shock in industrial environments. This is why ifm sensors are tested at a shock level of 500 g. This test standard sets a new benchmark for inductive sensor product development.



IP 69K high-pressure cleaning test

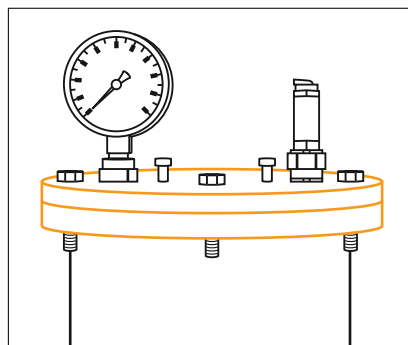
ifm inductive proximity sensors are tested in accordance with the IP 69K standard. The goal is to duplicate pressure cleaning conditions on a plant floor.

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

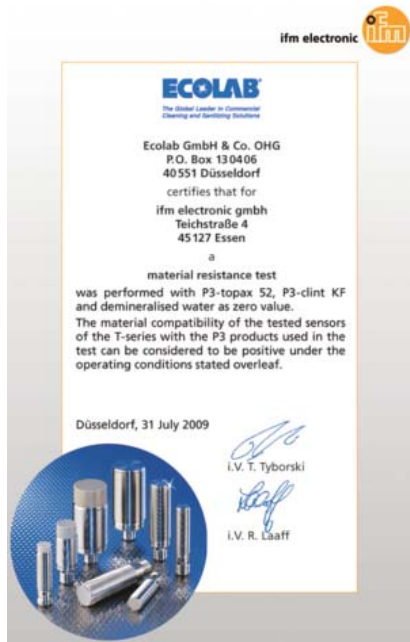
A vibration test is performed on the sensors at a level of 40 g with the oscillation frequency spanned between 0 and 2,000 Hz. This test checks the integrity of the electronic circuit and the surface-mounted components. The vibration test is designed to far exceed manufacturing plant conditions on industrial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

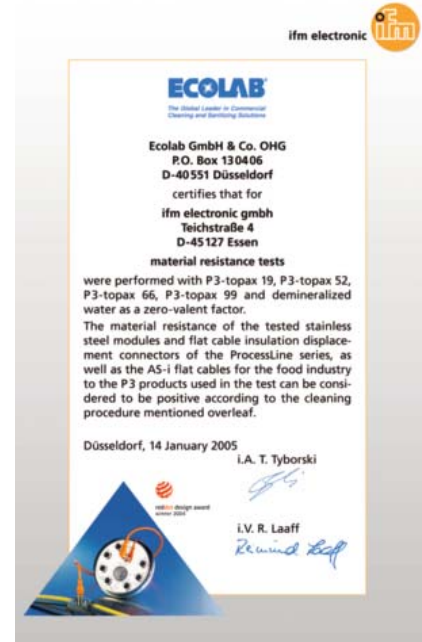
Many ifm sensors are Ecolab certified



Inductive proximity sensors



Photoelectric sensors of the OG 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. 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 of 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 of 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 of 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 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 process sensors from ifm 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

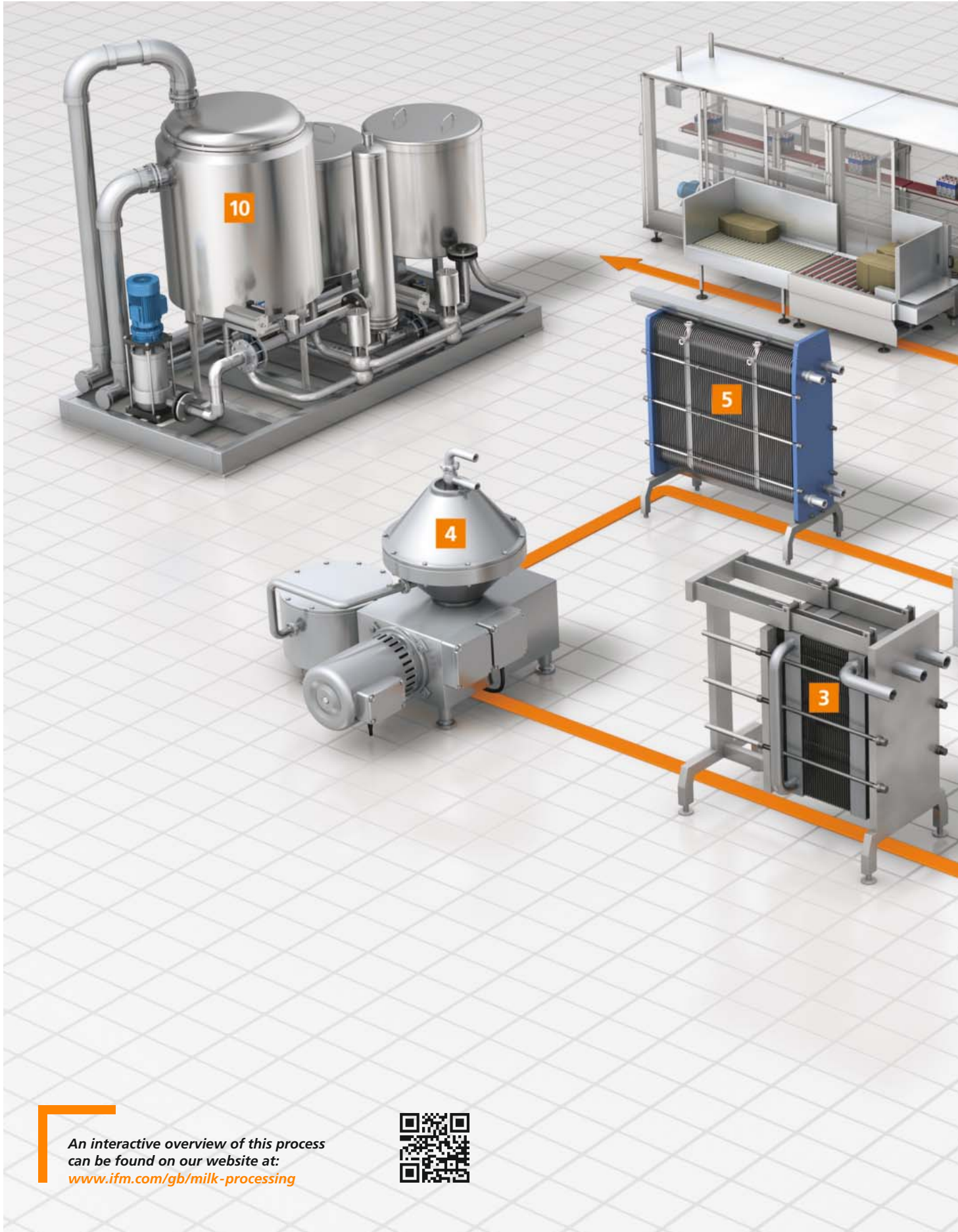


Technischer Überwachungs Verein (technical inspection association). The German TÜV is a private-sector body carrying out technical safety tests that are stipulated by government laws or instructions.

UL



Underwriters Laboratories. An organisation founded in the USA for testing and certifying products and their safety.



An interactive overview of this process
can be found on our website at:
www.ifm.com/gb/milk-processing







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

Machine	Application	Product group
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8 Filling / conveying technology

	End position monitoring	Inductive sensors
	Optical detection	Photoelectric sensors for general applications
	Pressure measurement	Pressure sensors
	Level detection	Level sensors
	Temperature measurement	Temperature sensors

9 Cartoner

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

10 CIP installation

	Pressure measurement	Pressure sensors
	Level detection	Level sensors
	Temperature measurement	Temperature sensors
	AS-Interface as control system	AS-Interface controllers / gateways

Demanding requirements in milk processing

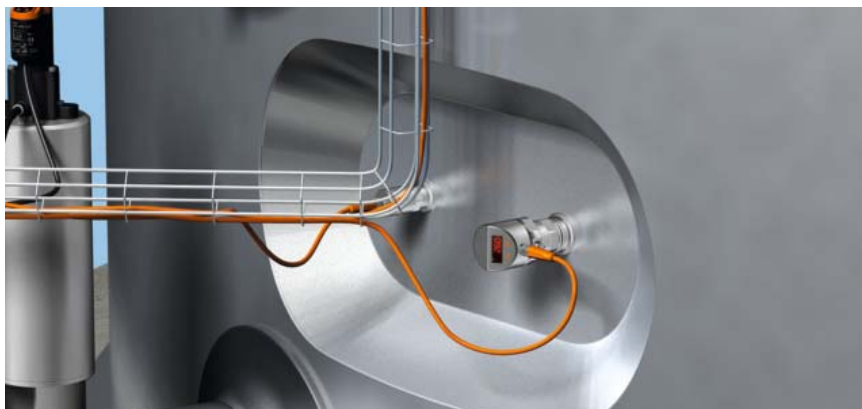


Milk is one of the most important staple foods. It can be processed into many different products such as cheese, yoghurt, ice cream or milk powder.

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 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

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	-0.05...1	10	30	20...32	PI2797

Sensors for point level detection

Type	Process connection	Process pressure max. [bar]	Application	Protection	Order no.
	G ½ male	-1...40	liquids, viscous media and powders	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

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	18...36	IP 65 / IP 67	–	100	IX5010


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

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

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 / qf = quasi-flush

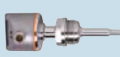
Pump system



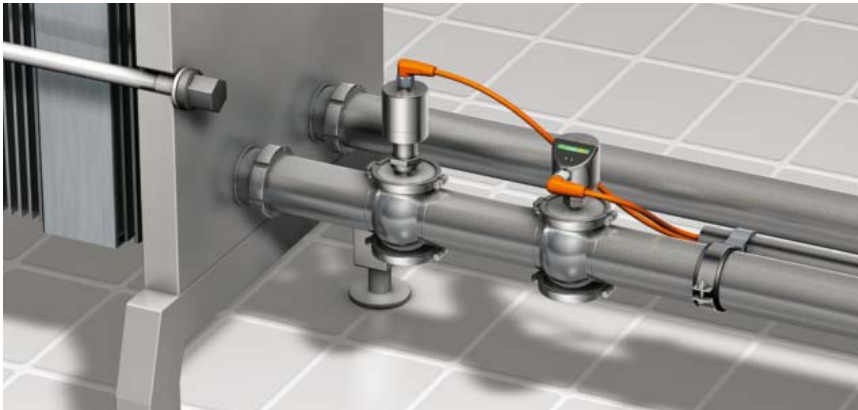
Pump run-dry protection

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

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	–	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

Type	Factory setting [°C / °F]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	0...150 / 32...302	Aseptoflex Vario	33	18...32	3 / 6	TAD981


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.

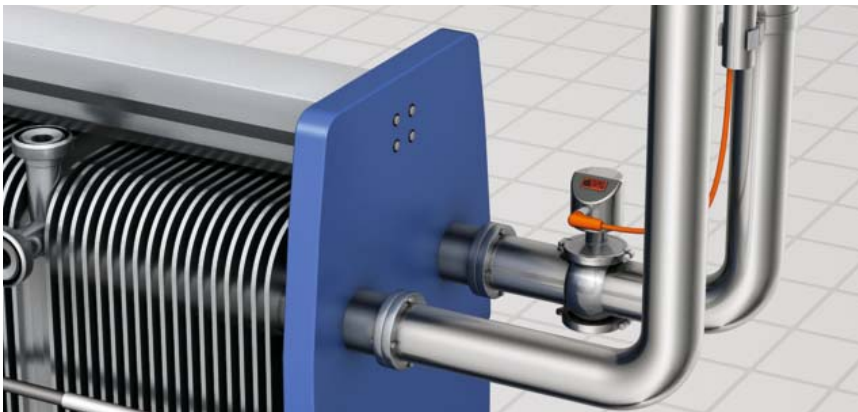
Vibration monitoring units for bearing monitoring

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

Pressure monitoring on a separator

Type	Process connection	Display	Measuring range [bar]	Poverload max. [bar]	Pbursting min. [bar]	U _b DC [V]	Order no.
	Aseptoflex Vario	Display unit	-1...25	100	350	18...32	PG2793


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

Type	Factory setting [°C / °F]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	-10...150 / -	2" clamp (ISO 2852)	50	18...32	1 / 3	TD2911


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

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

Type	Description	Order no.
	Accelerometer · for connection to external diagnostic electronics type VSE · M8 x 1.25 · Connector · Housing materials: housing: stainless steel 316L / 1.4404	VSA001

Distribution plate



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

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 / qf = quasi-flush

Filling / conveying technology



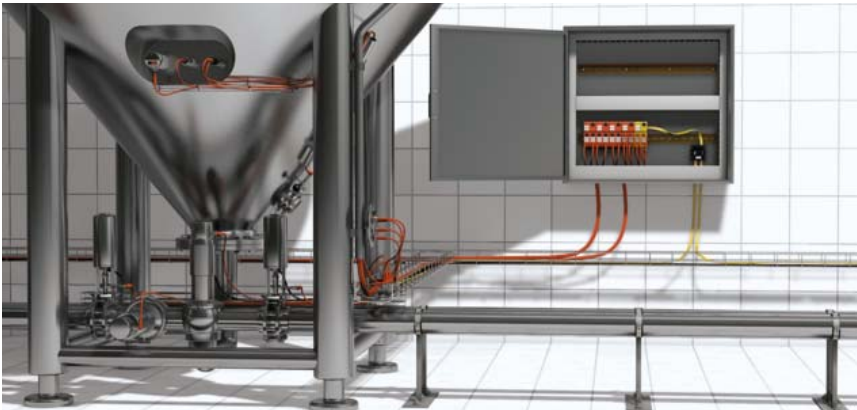
Photoelectric detection of packages on a conveyor

The sensing range of the photoelectric sensor O6 WetLine does not depend on the type and colour of the object to be detected.

Photoelectric sensors for the detection of milk cartons

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Transmitter	10 m	Red	300	–	O6S301
	Receiver	10 m	Red	–	H/D PNP	O6E301


Sterile storage tank



IO-Link for the transmission of measured values in process areas

Via IO-Link modules, process sensors communicate with higher-level bus systems, for example for parameter setting or diagnostics. Measured values, too, are digitally transmitted without loss via unscreened standard cables.

IO-Link modules for the connection of IO-Link sensors


Type	Inputs / outputs	Description	Order no.
	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 / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5225




Hygienic pressure sensor for differential pressure measurement

Two hygienic pressure sensors detect the differential pressure on a sterile storage tank. Via IO-Link, the measured values are transmitted without loss and plant states are quickly diagnosed.

Pressure sensors with IO-Link for the detection of differential pressure

Type	Process connection	Display	Measuring range [bar]	Poverload max. [bar]	Pbursting min. [bar]	U _b DC [V]	Order no.
	Aseptoflex Vario	Display unit	-0.124...2.5	20	50	20...32	PI2796

Level sensors with IO-Link for point level detection

Type	Process connection	Process pressure max. [bar]	Application	Protection	Order no.
	G ½ male	-1...40	liquids, viscous media and powders	IP 68 / IP 69K	LMT102


Ice cream production



Photoelectric distance sensor monitors ice-cream production

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

Photoelectric distance sensors for detection from a safe distance


Type	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.
	Background suppression	0.2...10 m	1...50	< 15 x 15	18...30	O1D100




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.

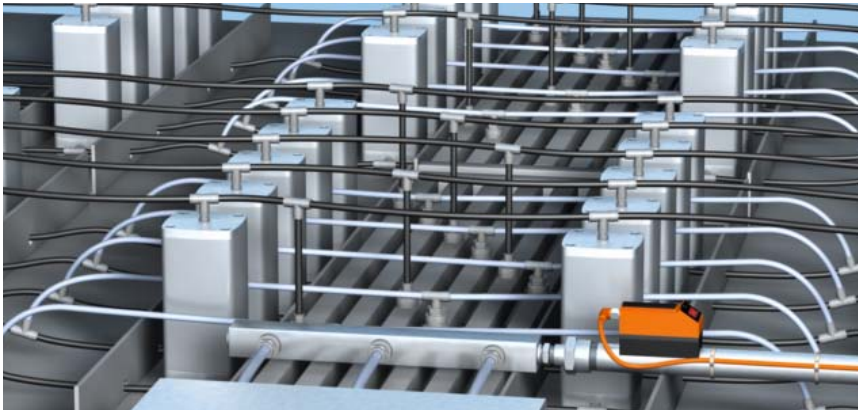
Cylinder sensors for position feedback

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

Speed monitor for rotational speed monitoring on a conveyor

Type	U _b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analogue	Out-puts relays	Out-puts transist.	Order no.
	110...240 AC / 27 (24) DC	1	PNP	0.1...10 / 10...1000	-	-	1	-	DD0203


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 effector metris compressed air meter (SD series).

Compressed air meter for the measurement of compressed air consumption

Type	Process connection	Setting range [Nm ³ /h]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
	R½ (DN15)	0.6...75.0	16	< 0.1	18...30	SD6000

Compressed air measurement on a cheese press

Type	Process connection	Display	Measuring range [bar]	Poverload max. [bar]	Pbursting min. [bar]	U _b DC [V]	Order no.
	G ½ male	Display unit	-1...10	50	150	18...32	PG2454


CIP / SIP system



Pressure monitoring

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

Pressure sensors for measuring system pressure

Type	Process connection	Display	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


Conveyor technology




Photoelectric detection of yoghurt pots

Shiny, matt, dark or light surfaces of any colour: the photoelectric sensors of the PMDLine even reliably detect difficult objects, such as yoghurt pots.

Photoelectric distance sensors for detection from a safe distance

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Background suppression	0.03...2 m	Red	< 5	2 switching outputs normally open / closed complementary PNP	OID200

IO-Link modules for the connection of IO-Link sensors

Type	Inputs / outputs	Description	Order no.
	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 / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5225


Chiller unit

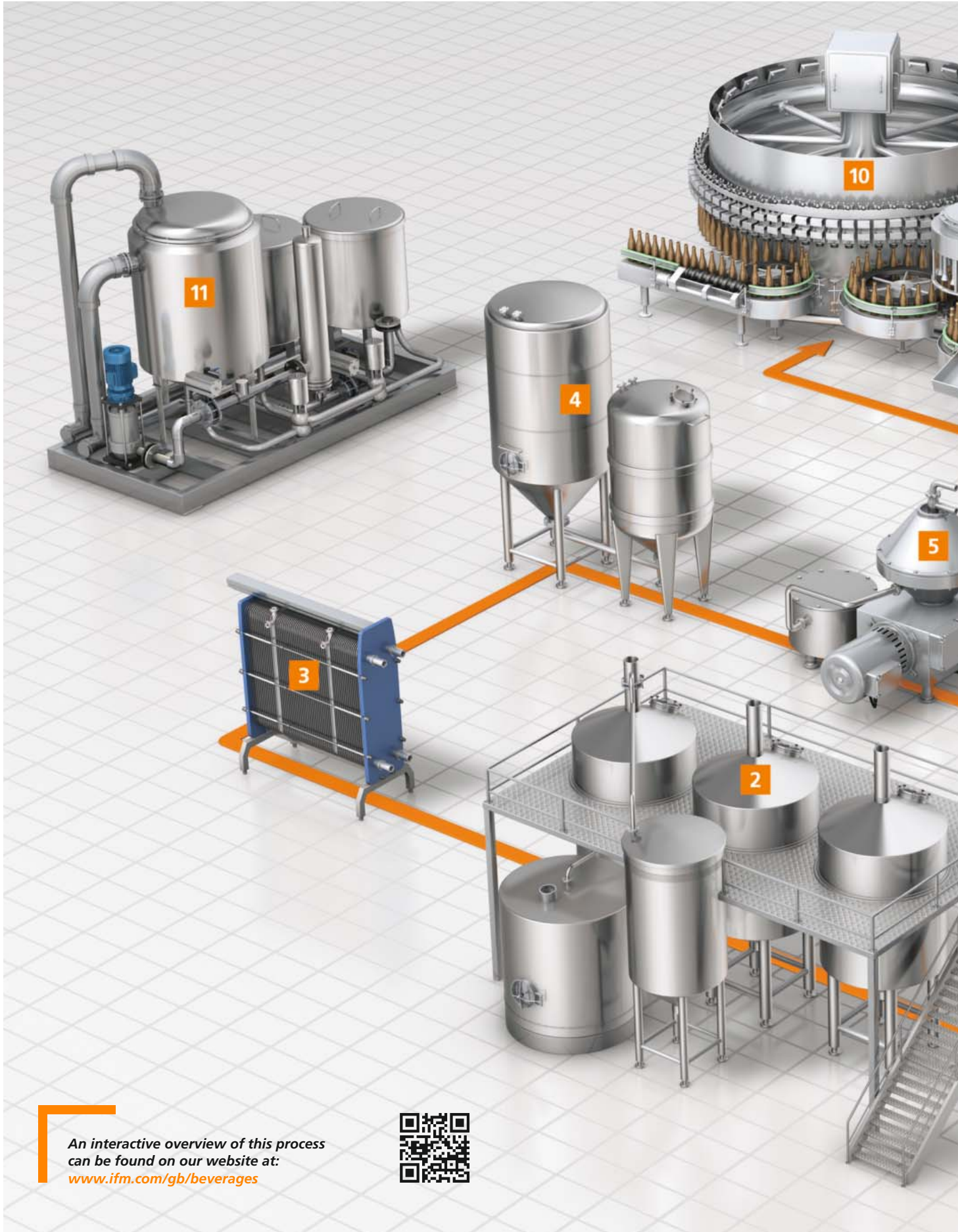


Vibration transmitter for the monitoring of fans

Increased lifetime due to vibration monitoring by means of efector octavis (conforming to the ISO 10816 standard). Secured process by means of predictive maintenance.

Vibration monitoring units for bearing monitoring

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 · 2-wire connection technology · stainless steel 316L / 1.4404	VTV122




An interactive overview of this process
can be found on our website at:
www.ifm.com/gb/beverages






Machine	Application	Product group
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1 Malt mill

	Position detection	Inductive sensors
	Level detection	Capacitive sensors
	Level detection	Level sensors
	Vibration monitoring	Vibration monitoring systems


2 Brewhouse tank

	Detection of rising stem valves	Feedback systems for valves and valve actuators
	Level detection	Level sensors
	Level detection	Pressure sensors
	Temperature measurement	Temperature sensors
	Manway monitoring	Inductive sensors
	Position feedback	Inductive sensors


3 Wort cooler

	Pressure measurement	Pressure sensors
	Temperature measurement	Temperature sensors
	Flow monitoring	Flow sensors / flow meters


4 Fermentation / storage tanks

	Level detection	Level sensors
	Level detection	Pressure sensors
	Temperature measurement	Temperature sensors
	Manway monitoring	Fail-safe inductive sensors

5 Separator

	Pressure measurement	Pressure sensors
	Vibration monitoring	Vibration monitoring systems

6 Diatomaceous earth filter

	Pressure / differential pressure measurement	Pressure sensors
	Level detection	Level sensors
	Flow monitoring	Flow sensors / flow meters

Machine	Application	Product group
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7 Flash pasteuriser



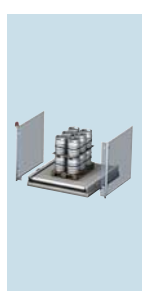
Pressure measurement	Pressure sensors
Temperature measurement	Temperature sensors
Flow monitoring	Flow sensors / flow meters

8 Keg cleaning system



Optical detection	Photoelectric sensors for general applications
Level detection	Level sensors
Pressure measurement	Pressure sensors
Temperature measurement	Temperature sensors
Flow monitoring	Flow sensors / flow meters

9 Palletiser



Position detection	Inductive sensors
Optical detection	Photoelectric sensors for general applications
Safety monitoring	Safety light grids
Monitoring of completeness	3D sensors
AS-Interface as control system	AS-Interface controllers / gateways

10 Filling / conveying technology



End position monitoring	Inductive sensors
Optical detection	Photoelectric sensors for general applications
Safety monitoring	Fail-safe inductive sensors
Monitoring of completeness	3D sensors
Pressure measurement	Pressure sensors
Level detection	Level sensors
Vibration monitoring	Vibration monitoring systems

11 CIP installation



Pressure measurement	Pressure sensors
Temperature measurement	Temperature sensors
Level detection	Level sensors
AS-Interface as control system	AS-Interface controllers / gateways

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 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 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 efector 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

Type	Description	Order no.
	Accelerometer · for connection to external diagnostic electronics type VSE · 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

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	-0.05...1	10	30	18...32	PG2797

Temperature transmitter with diagnostic output for temperature measurement

Type	Factory setting [°C / °F]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	0...150 / 32...302	G ½ male	33	18...32	3 / 6	TAD991


Brewhouse tank



Manway monitoring on the brewhouse tank

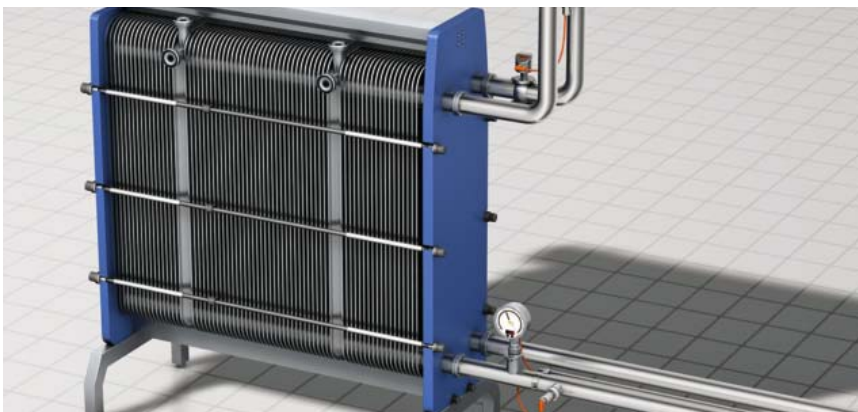
If manways are open agitator drives and valves must be shut off. Here, fail-safe inductive sensors without magnetic target or coded actuator monitor the manway.

Fail-safe inductive sensor for monitoring manways

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	GM504S

f = flush / nf = non flush / qf = quasi-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/TD series are used to monitor the fermentation temperature before and after the wort cooler.

Temperature sensors for temperature monitoring

Type	Factory setting [°C / °F]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	-10...150 / -	2" clamp (ISO 2852)	50	18...32	1 / 3	TD2911

Pressure sensor for monitoring the system pressure


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...10	50	150	18...32	PG2794

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

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


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 / qf = quasi-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

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	–	100	AC2316

f = flush / nf = non flush / qf = quasi-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

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	-0.124...2.5	20	50	20...32	PI2796

Electronic level sensor for limit value monitoring


Type	Process connection	Process pressure max. [bar]	Application	Protection	Order no.
	G ½ male	-1...40	liquids, viscous media and powders	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

Type	Factory setting [°C / °F]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	0...150 / 32...302	Aseptoflex Vario	87.5	18...32	3 / 6	TAD181


Fermentation / storage tanks



Monitoring manways on fermentation / storage tanks

Fail-safe inductive sensors to category 3 and SIL 2 detect the stainless steel lid of the tank without contact and without any specific counterpart.

Fail-safe inductive sensor for monitoring manways

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 / qf = quasi-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

Type	Process connection	Display	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

Valve sensors for feedback of the valve positions

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	18...36	IP 65 / IP 67	–	100	IX5010


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

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

Flow monitor as run-dry protection

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	54.8	SI6700


Flash pasteuriser



Temperature monitoring on a flash pasteuriser

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

Temperature sensors for temperature monitoring

Type	Factory setting [°C / °F]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	0...100 / -	2" clamp (ISO 2852)	30	18...32	1 / 3	TD2907


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

Type	Measuring range [°C]	Process connection	Display	U _b [V]	Current consumption [mA]	I _{load} [mA]	Order no.
	-40...300	G ½ male	Display unit	18...32	50	250	TR2439

Hygienic temperature sensor with G1/2 process connection

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



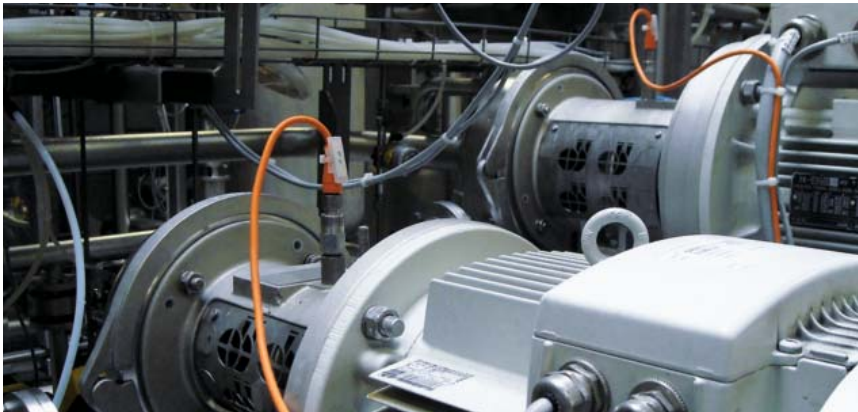
Flow rate measurement for water

In the filling process, water is used for example on bottle washing systems and tunnel pasteurisers. The efector 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

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	18...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

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

Pressure sensor for measuring the system pressure


Type	Process connection	Display	Measuring range [bar]	Poverload max. [bar]	Pbursting min. [bar]	U _b DC [V]	Order no.
	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

Type	Operating principle	Resolution (pixels)	Angle of aperture (horizontal x vertical) [°]	Lighting	Max. sampling rate [Hz]	Ambient temperature [°C]	Order no.
	3D sensor	64 x 48	40 x 30	Infrared LED	25	-10...50	O3D310


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

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...3 m	Red	80	H/D PNP/NPN	O5G500

ProcessLine module for use in wet areas

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.

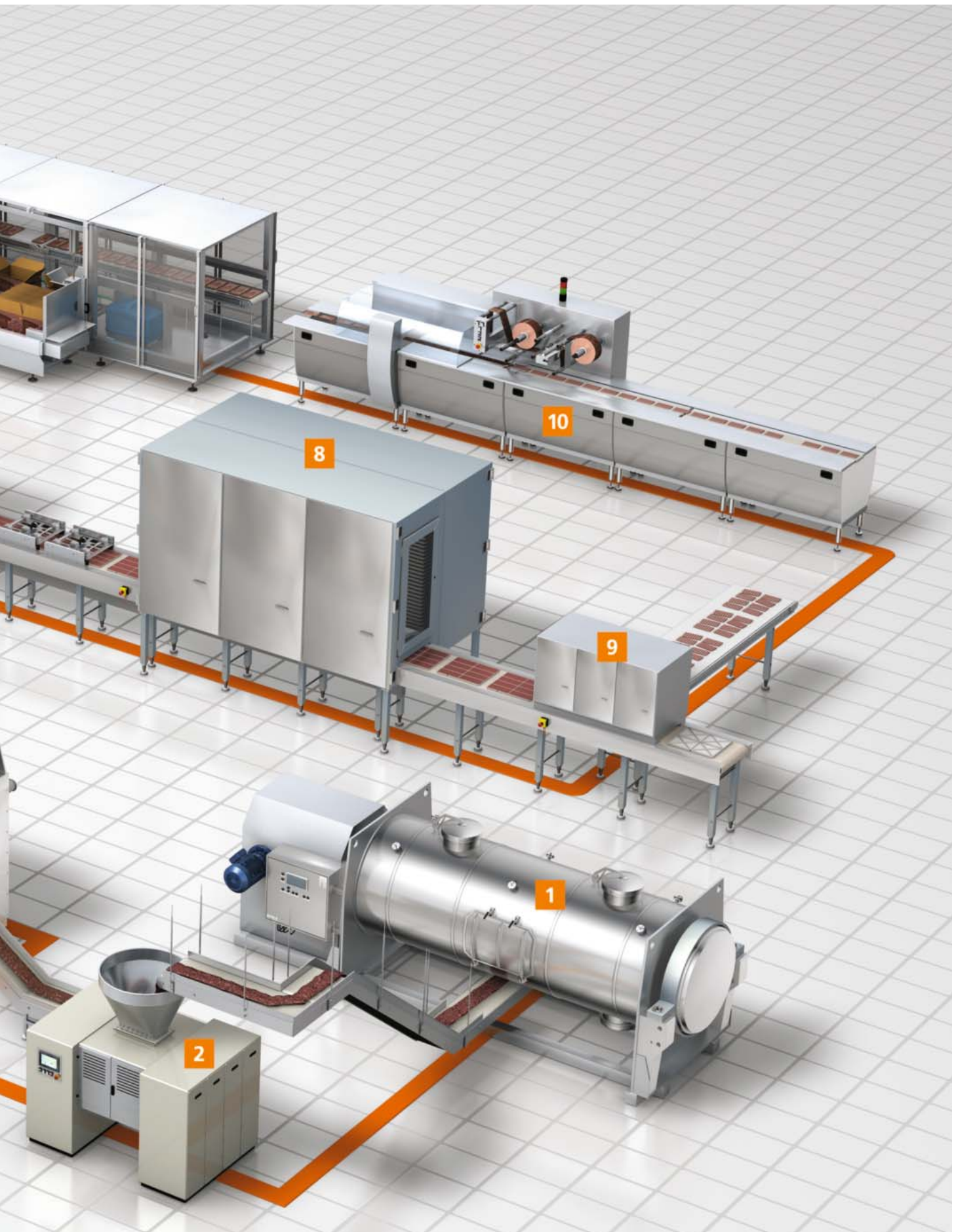
Safety light curtains for access prevention

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



An interactive overview of this process
can be found on our website at:
www.ifm.com/gb/sweets





Machine	Application	Product group
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1 Mixer



Position detection	Inductive sensors
Safety monitoring	Fail-safe inductive sensors
Optical detection	Photoelectric sensors for general applications
Level detection	Level sensors
Vibration monitoring	Vibration monitoring systems

2 Refiner



Level detection	Level sensors
Detection of pneumatic cylinders	Cylinder sensors
Safety monitoring	Fail-safe inductive sensors
Vibration monitoring	Vibration monitoring systems

3 Conche



Position detection	Inductive sensors
Conveying pressure measurement	Pressure sensors
Level monitoring	Pressure sensors
Temperature measurement	Temperature sensors
Vibration monitoring	Vibration monitoring systems

4 Tank



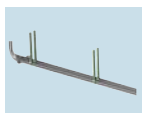
Photoelectric level detection	Level sensors
Level detection	Level sensors
Level detection	Pressure sensors
Temperature measurement	Temperature sensors
Vibration monitoring	Vibration monitoring systems

5 Tempering system



Pressure measurement	Pressure sensors
Temperature measurement	Temperature sensors

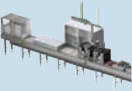
6 Pipes




Magnetic detection	Magnetic sensors
Temperature measurement	Temperature sensors

Machine	Application	Product group
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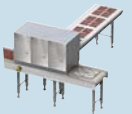
7 Moulding system

	Optical detection	Photoelectric sensors for general applications
	Photoelectric level detection	Photoelectric sensors for general applications
	Mould identification / detection	RFID
	Mould testing	Vision sensors
	AS-Interface as control system	AS-Interface controllers / gateways


8 Cooling tunnel

	Position detection	Inductive sensors
	Temperature measurement	Temperature sensors
	Optical detection	Photoelectric sensors for general applications
	Mould identification / detection	RFID


9 Demoulding system

	Optical detection	Photoelectric sensors for general applications
	Mould identification / detection	RFID
	Assessment of damage	Vision sensors

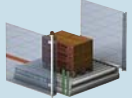
10 Packaging machine

	End position monitoring	Inductive sensors
	Optical detection	Photoelectric sensors for general applications
	AS-Interface as control system	AS-Interface controllers / gateways

11 Cartoner

	Optical detection	Photoelectric sensors for general applications
	Monitoring of completeness	3D sensors
	Reading of codes	1D/2D code readers
	AS-Interface as control system	AS-Interface controllers / gateways

12 Palletiser

	End position monitoring	Inductive sensors
	Optical detection	Photoelectric sensors for general applications
	Monitoring of completeness	3D sensors
	AS-Interface as control system	AS-Interface controllers / gateways

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 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 3 / SIL 2 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

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 / qf = quasi-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


Type	Description	Order no.
	Accelerometer · for connection to external diagnostic electronics type VSE · M8 x 1.25 · Connector · Housing materials: housing: stainless steel 316L / 1.4404	VSA001
	Diagnostic electronics for vibration sensors · Integrated history memory with real-time clock · Counter function · TCP/IP Ethernet interface · Active wire break detection and self-test (only MEMS) of the connected acceleration sensors · Parameter setting via PC software VES004 · Mounting on DIN rail · Combi-con 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


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	18...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.

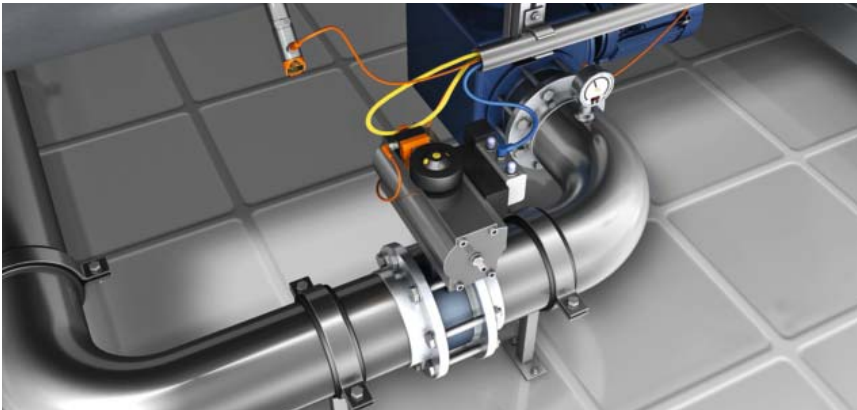
Pressure sensor for measuring the conveying pressure

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

Front-flush temperature sensor for measuring the temperature in pipes


Type	Measuring range [°C / °F]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	0...100 / -	G½ with sealing cone	-	18...32	10 / 40	TA3597

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

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	–	100	AC2316


f = flush / nf = non flush / qf = quasi-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

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	< 15 x 15	18...30	O1D300

Adjustable level sensor on a storage tank

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


Tempering system



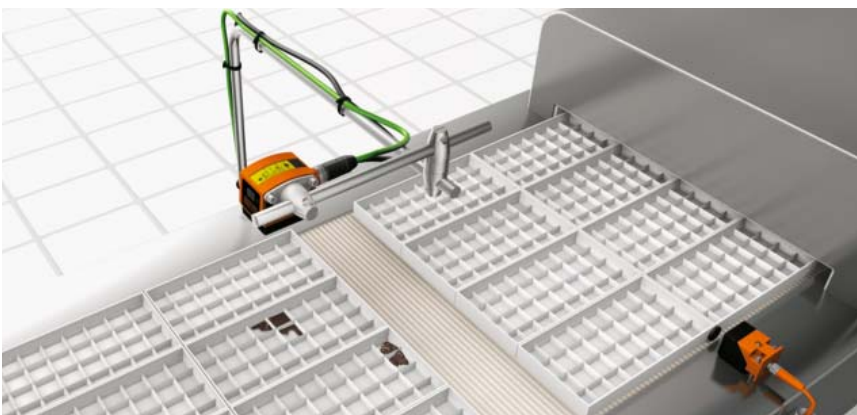
Pressure monitoring on a tempering machine

Hygienic pressure sensors with IO-Link measure the conveying pressure. IO-Link can be used to automatically parameterise sensors, diagnose plant states and transmit measured values without loss.

Pressure sensor for measuring the conveying pressure

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...10	50	150	20...32	PI2794


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

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	1.0	10	White light	-10...60	O2V100


Moulding plant




Traceability of chocolate moulds

Traceability is of great importance in the food industry. The RFID system from ifm 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

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


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



Limit detection on a dosing station

Capacitive sensors detect the levels of bulk material. Parameter setting is made via pushbuttons or IO-Link. Also, versatile further processing of the measured values is possible via IO-Link.

Capacitive sensors for level detection for bulk materials

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f AC / DC [Hz]	I _{load} AC / DC [mA]	Order no.
	M30 / L = 90	8 f	High-grade st. steel	10...30	IP 65 / IP 67	10	100	KI5085

f = flush / nf = non flush / qf = quasi-flush

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

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

Type	Measuring range [°C]	Process connection	Display	U _b [V]	Current consumption [mA]	I _{load} [mA]	Order no.
	-40...300	G ½ male	Display unit	18...32	50	250	TR2439

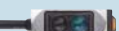
Packaging machine



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

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Background suppression	2...200 mm	Red	8	H/D PNP	O6H300


Conveyor technology



Photoelectric detection of cardboard packages of different colours

Shiny, matt, dark or light objects of any colour: the photoelectric sensors of the PMDLine reliably detect all objects, irrespective of the angle of incidence. This allows flexible installation positions.

PMDLine photoelectric sensors with time of flight measurement

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Background suppression	0.03...2 m	Red	< 5	2 switching outputs normally open / closed complementary PNP	O5D100


Palletiser




Detection of the filling status of pallets

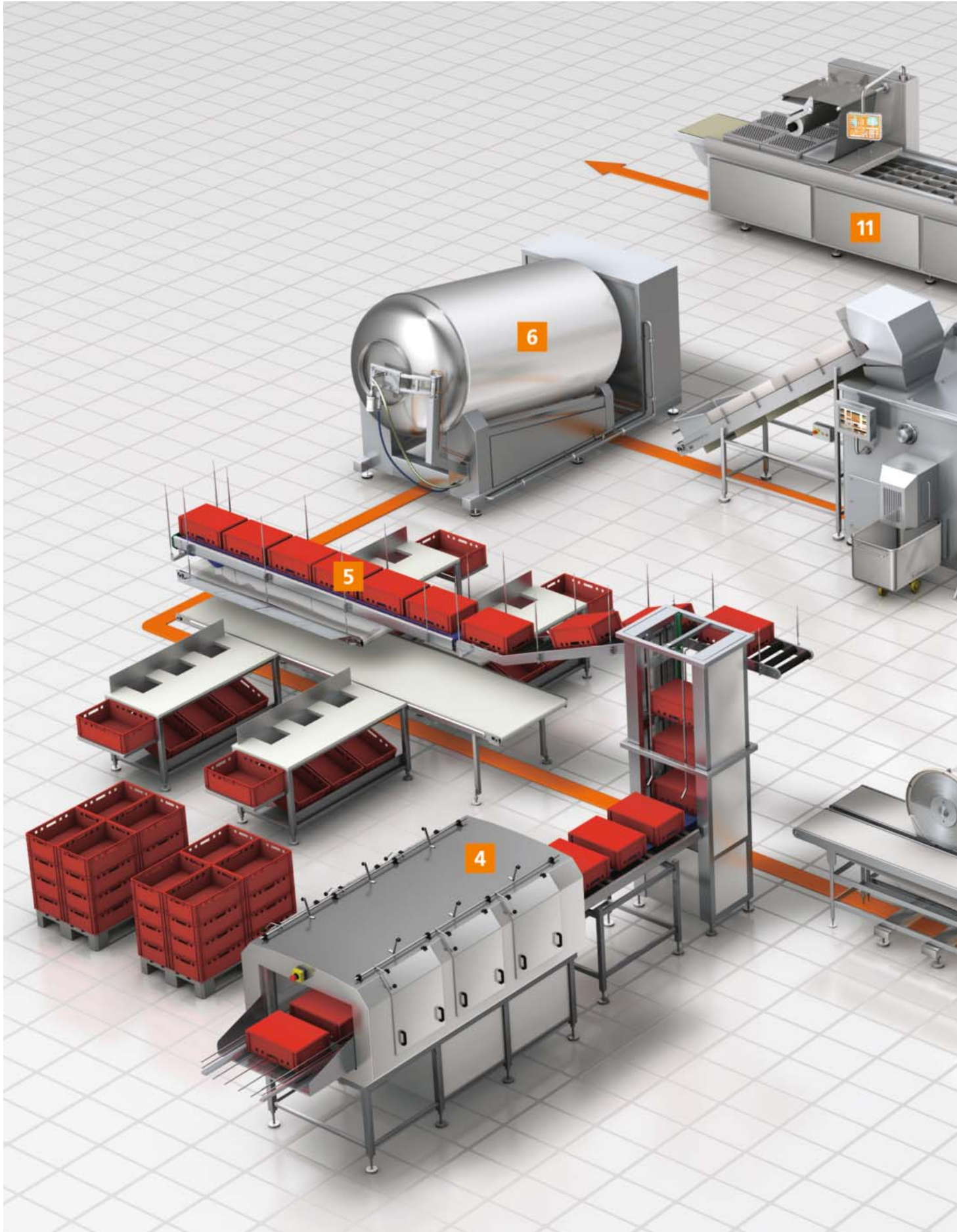
The effector pmd 3d detects not only overfilling or underfilling but also protruding parts during palletising. The time of flight measurement used enables the evaluation of volume, distance or level.

3D vision sensor for monitoring of the palletising process

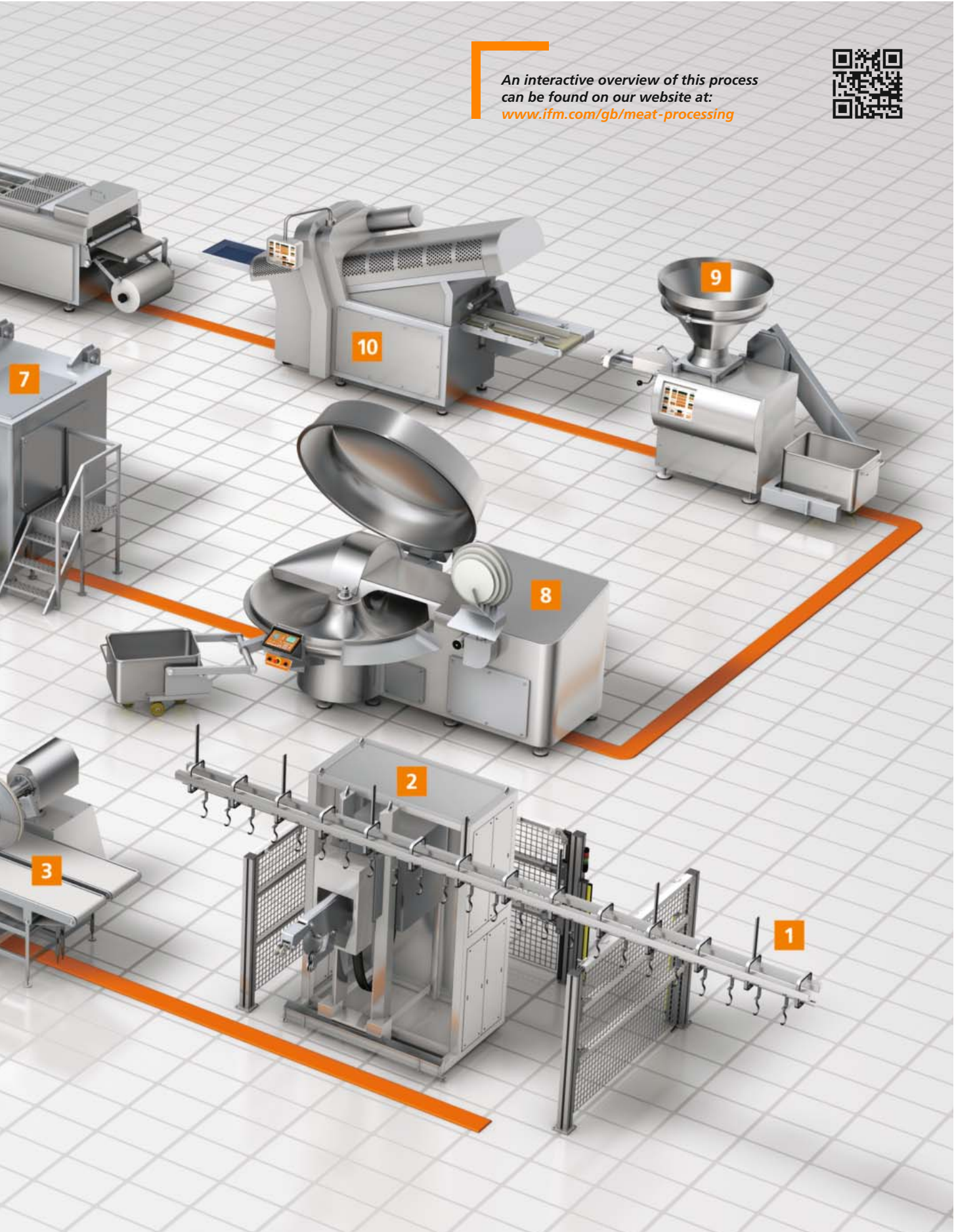
Type	Operating principle	Resolution (pixels)	Angle of aperture (horizontal x vertical) [°]	Lighting	Max. sampling rate [Hz]	Ambient temperature [°C]	Order no.
	3D sensor	64 x 48	40 x 30	Infrared LED	25	-10...50	O3D310

Safety light curtains for access prevention

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




An interactive overview of this process
can be found on our website at:
www.ifm.com/gb/meat-processing




Machine	Application	Product group
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1 Slaughtering plant

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


2 Automatic saw slaughtering

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


3 Automatic saw butchering







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

4 Box washer

	Optical detection	Photoelectric sensors for general applications
	Level detection	Level sensors
	Level detection	Pressure sensors
	Temperature measurement	Temperature sensors
	Flow rate measurement	Flow sensors / flow meters

5 Cutting line

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

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

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 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

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
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M30 / L = 70

25 nf

High-grade st. steel

10...36

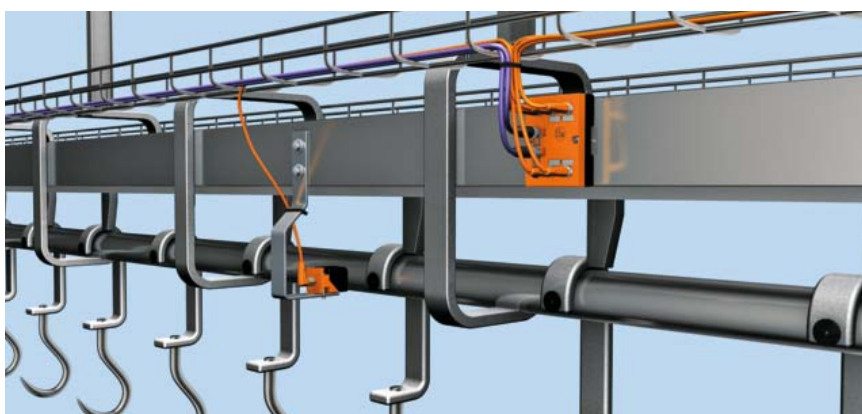
IP 65 / IP 67 /
IP 68 / IP 69K

250

100

IIT231

f = flush / nf = non flush / qf = quasi-flush



Traceability in the slaughtering process

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

RFID system for traceability tasks in the slaughtering process

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

-

Profibus-DP

DTE100

Read / write head for the RFID system

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


Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
	1687	30	1510	0...7 / 3...15	11	24	OY4505




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.

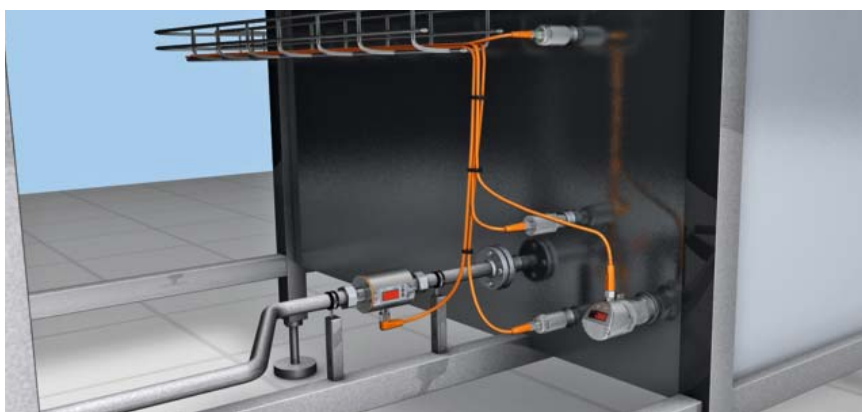
Level sensor on pneumatic conveyors

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

Compressed air meter for measuring compressed air and detecting leakage

Type	Process connection	Setting range [Nm ³ /h]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
	R1 (DN25)	1.8...225.0	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


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	-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.

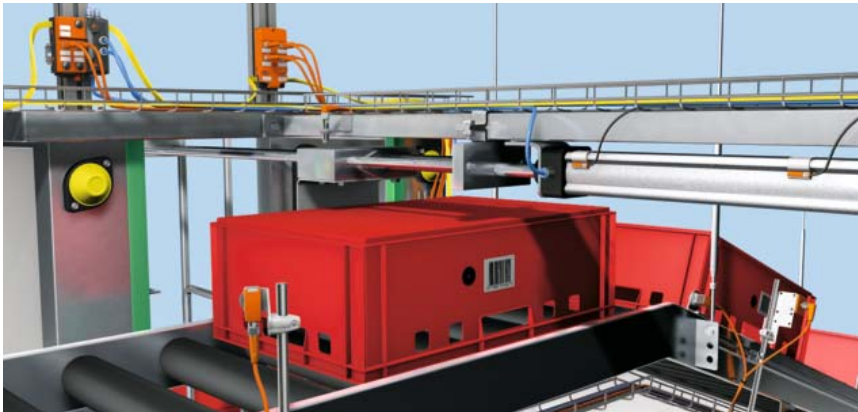
Multicode reader for reading the bar codes on transport boxes

Type	Dimensions [mm]	Max. field of view size [mm]	Type of light LED	Motion speed int. / ext. lighting [m/s]	Process interface	Order no.
	60 x 42 x 53.5	64 x 48	red light	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I300

Photoelectric sensor for the detection of transport boxes in a harsh environment

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Background suppression	2...200 mm	Red	8	H/D PNP	O6H300


Cutting line




AS-i in butchering

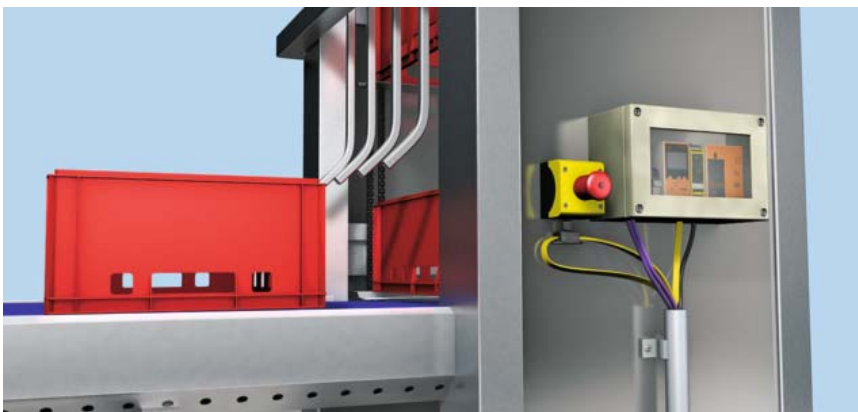
A variety of sensors are used in butchering. The AS-Interface bus system connects sensors and actuators with the controller with little wiring complexity.

AS-i AirBox for controlling pneumatic valve actuators

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 · monostable · Three orientations of the flat cable are possible · AS-i flat cable connection · Addressing socket · AS-i profile S-3.F.F · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5227

Cylinder sensors for detecting the position of pistons in pneumatic cylinders


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


Type	Description	Order no.
	AS-i safety monitor · Extended functionality · 1-channel · Configuration and setup by configuration software ASIMON · Screw terminal · Housing materials: polyamide black · Complies with the requirements: · ISO 13849-1: PL e · IEC 61508: SIL 3	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

Type	Measuring range [°C / °F]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	-50...200 / -	G½ with sealing cone	50	18...32	< 0.5 / < 2	TA2512

Inductive sensors for detecting the end position on a tumbler


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 / qf = quasi-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

Type	Process connection	Display	Measuring range [bar]	P _{overload} max. [bar]	P _{bursting} min. [bar]	U _b DC [V]	Order no.
	G ¼ female	-	-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


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




Photoelectric detection on a mixer / mincer

When filling the mixer via a conveyor, photoelectric sensors are used for the deactivation of the belt. These have to withstand the harsh operating conditions.

Photoelectric sensors for conveyor control

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Background suppression	100 mm	Red	7	H PNP	OGH380

Vibration monitoring in idle run or under reference conditions

Type	Description	Order no.
	Accelerometer · for connection to external diagnostic electronics type VSE · M8 x 1.25 · Connector · Housing materials: housing: stainless steel 316L / 1.4404	VSA001


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

Type	Description	Order no.
	Accelerometer · for connection to external diagnostic electronics type VSE · M8 x 1.25 · Connector · Housing materials: housing: stainless steel 316L / 1.4404	VSA001

Safe standstill monitoring on a cutter

Type	U _b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analogue	Out-puts relays	Out-puts transist.	Order no.
	24 DC	1	PNP	–	0.2 / 0.5 / 1.0 / 2.0	–	2	1	DA102S


Cleaning system



Pressure measurement in a cleaning system

Electronic pressure sensors monitor the pressure in the cleaning system.

Pressure sensor for monitoring the system pressure

Type	Process connection	Display	Measuring range [bar]	P _{overload} max. [bar]	P _{bursting} min. [bar]	U _b DC [V]	Order no.
	G ¼ male / M5 female	Operation	0...25	60	500	9.6...32	PK6523


Filling machine



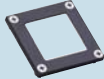
Level detection on a hopper

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

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	< 15 x 15	18...30	O1D300

Protective cover for the photoelectric level sensor


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

Type	Process connection	Display	Measuring range [bar]	P _{overload} max. [bar]	P _{bursting} min. [bar]	U _b DC [V]	Order no.
	G ¼ female	–	-1...0	10	30	9.6...32	PA3029


Thermoforming machine




Controlling a thermoforming machine

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

AS-Interface for controlling a thermoforming machine

Type	Number of AS-i masters	Description	Order no.
	1	AS-i Profibus gateway · AS-i master · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · Profibus DP (DPV0 + DPV1) · 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	AC1411

AS-i AirBox for controlling pneumatic valve actuators


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 · monostable · Three orientations of the flat cable are possible · AS-i flat cable connection · Addressing socket · AS-i profile S-3.F.F · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5227



Pressure measurement on a thermoforming 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

Type	Process connection	Display	Measuring range [bar]	Poverload max. [bar]	Pbursting min. [bar]	U _b DC [V]	Order no.
	G ¼ female	Display unit	-1...10	75	150	18...30	PN7094

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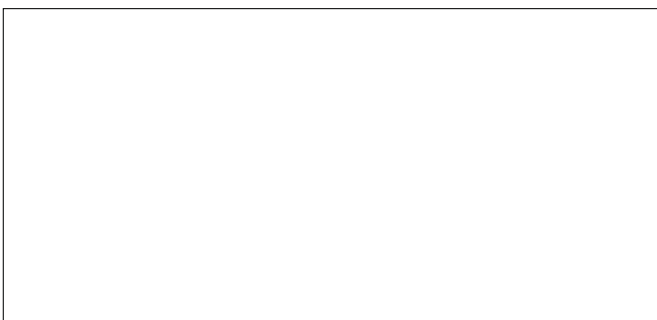
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