

INALI



Automation Technology for the Automotive Industry *Catalogue 2019/2020*



ifm.com/gb/automotive

Reliable solutions for your applications



The automotive industry is one of the world's most innovative industries.

It has always been an important driving force of the economy. With a view to ensuring quality, reliability and economic efficiency, the manufacture of vehicles and automotive components such as engines and gearboxes is only possible in automated manufacturing facilities.

A central objective of the ifm group of companies is to increase the reliability and operational availability of manufacturing equipment. In addition to the proven sensor technology, new areas of application such as condition-based maintenance or monitoring of consumables in plants are constantly opened up.

In the future, too, ifm will remain a reliable and innovative partner for the automotive industry.

ifm - close to you!



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ifm – the company matching your requirements





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.



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 880 patents and in 2018 about 100 patent applications.

Reliable:

5-year warranty on ifm products.

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 7000 employees worldwide, and achieved a turnover of over EUR-975 million in 2018. 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: ifm.com/gb/close-to-you

197

1990

1980

2000

2010



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.

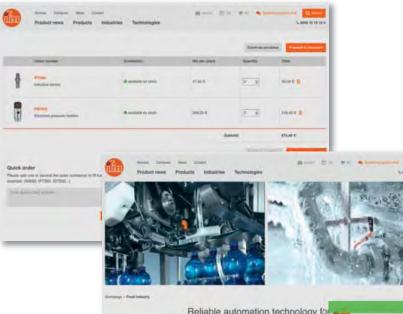
A clear visual language and explanatory texts give you a first impression of the products.



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.



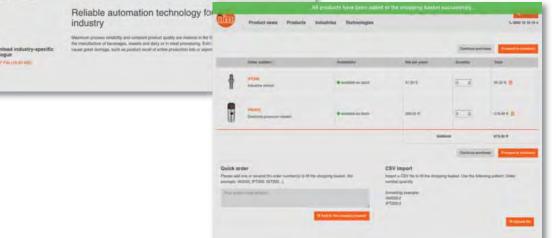


Easy purchasing

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.





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



Fascination **O**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.

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.





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.



No measured value losses

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



Easy sensor replacement

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



Tamper free No wrong settings by operators.

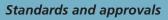


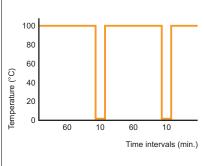
Identification Only like for like replacement. No wrong sensors accepted.



Wire-break detection / diagnostics Wire-break or short-circuit is immediately detected.







ifm sensor Industry standard 250 500 0 30 Acceleration (a)

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.

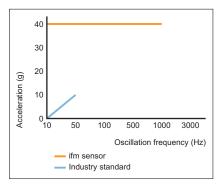
IP 69K high-pressure cleaning test

10 - 15 cm

60

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

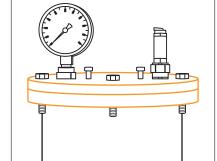
A vibration test is performed on the sensors at a level of 40 g with the oscillation frequency spanned between 0 and 2,000 Hz. This test checks the integrity of the electronic circuit and the surface-mounted components. The vibration test is designed to far exceed manufacturing plant conditions on industrial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



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

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.

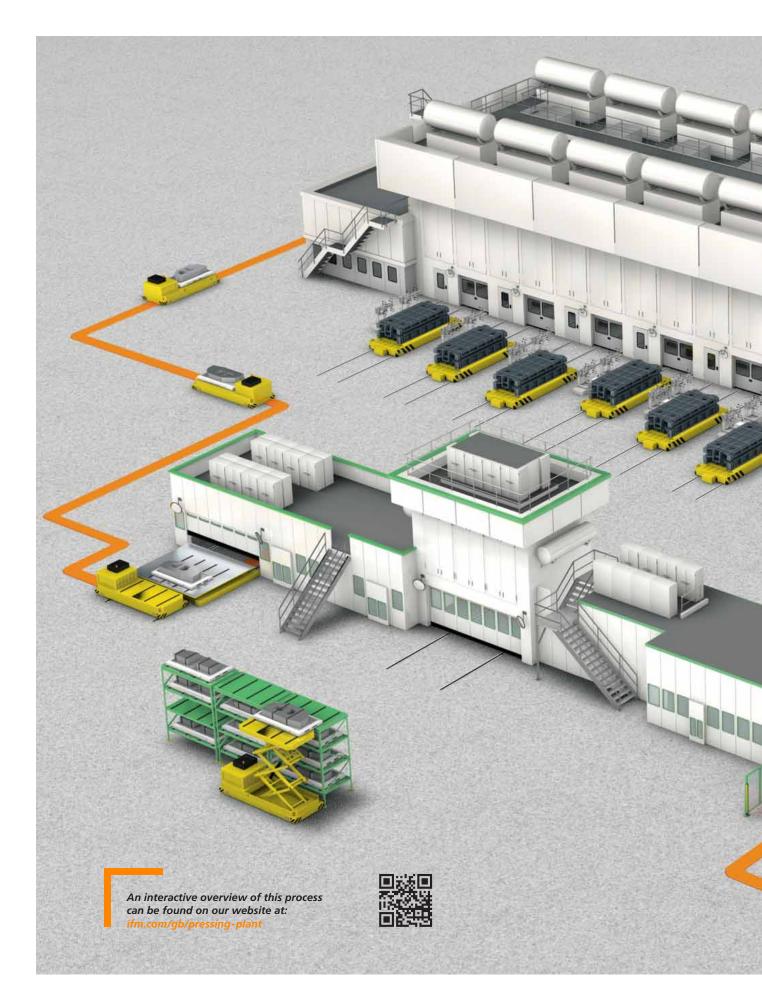


Many ifm sensors are specified by car manufacturers and their suppliers

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	Identification systems.	KLH Approprie Disktrik Freigsbilliste Senseck anne Deterchlatter_English	1.3 English	91.07.2012	(8) - HDH	.778 kb		
	Condition monitoring systems	Aggregatzfertigung Hechanik / Aggregatz Hanufacturing I	Hechanics					
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Approvals from the automotive industry

In many cases, production equipment and project requirements specify the use of products and technologies in the automotive industry. The devices and applications shown in this catalogue are suggested as solutions. A great number of products from ifm are listed with the renowned manufacturers. A list of globally valid specifications in the download area provides guidance for project engineering.





Modern pressing plants are impressive, thanks to the highly automated processes used



First of all, the blanks are cut from steel coils on a coiling unit. Depending on requirements, these base sheets are edged and may be partially pre-punched.

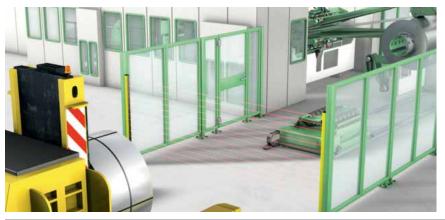
At several points in the process, oils and greases are used to lubricate the sheet metal for punching and pressing operations.

Cracks in the sheet metal result if the elastic limit of the material concerned is exceeded. This is avoided using multi-stage forming. Individual presses are linked together. This chain of presses is known as the press line.

Important components of a pressing plant are the hydraulics, as well as the lubrication and compressed air supply to the presses and grippers. The waste generated by the pressing and punching operation is processed in a scrap press for recycling in electric melting furnaces.

Pressing plants must work reliably, with very high availability of the plant components. Here the user is supported by sensors from ifm, with their high standards of reliability and robustness.

Coil transfer



Access restriction to coil transfer station

For operator protection, OY series safety light curtains restrict unauthorised access to accessible areas such as the coil transfer station. Depending on the design, the safety light curtains correspond to Type 2 or 4, in accordance with EN 61496.

Safety light curtains for access prevention \cdot further products from page 249											
Туре	Sensor length	Resolution / detection capacity	Protected area height	Protected area width	Response time	Ub	Order no.				
	[mm]	[mm]	[mm]	[m]	[ms]	[V]					
	1563	30	1510	04/312	18.5	24	OY0505				

Multi-code reader for identifying coils · further products from page 371

Туре	Dimensions [mm]	Max. field of view size [mm]	Type of light LED	Motion speed [m/s]	Process interface	Order no.
	60 x 42 x 53.5	132 x 94	red light	≤ 7	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I302

Coil storage trolley



Level detection in the mobile hydraulics of heavy load lifters

Here, a hydraulic drive is used instead of electric motors. A KQ series level sensor detects the level in the tank.

Capacitive se	Capacitive sensors for level detection · further products from page 159										
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.			
	[mm]	[mm]		[V]		[Hz]	[mA]				
	20 x 14 x 48	12 nf	PBT	1030	IP 65 / IP 67	10	100	KQ6005			

Strip flow



Strip flow in blank cutting plant and coil unwinder

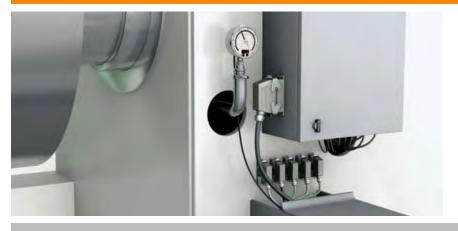
The O1D PMD sensors monitor the correct running of the steel strip and coil unwinding. Once a defined circumference has been reached, the coil changeover starts automatically.

PMD distance	PMD distance sensors with time of flight measurement · further products from page 209										
Туре	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.					
	Background suppression	0.210 m	150	< 15 x 15	1830	O1D100					

Inductive cylinder sensors · further products from page 175

Туре	Dimensions [mm]	Material	U _b [V]	f [Hz]	Protection	l _{load} [mA]	T _a [°C]	Order no.
	25.3 x 5 x 6.5	PA (polyamide)	1030	6000	IP 65 / IP 67	100	-2585	MK5159

Unwinding the coil



System pressure always in view

The PG electronic contact manometer combines an easy-to-read manometer display with the advantages of an electronic pressure sensor. The operator can always see the correct pressure from the control console.

Pressure sensors for monitoring the sys	stem pressure · further	products from page 259
		predates non page 100

Туре	Process connection	Display	Measuring range [bar]	P _{overload} max. [bar]	P _{bursting} min. [bar]	Ub DC [V]	Order no.
Q	G ½ male	Display unit	-125	100	300	1832	PG2453

Strip washing plant



The steel strip is washed with high-viscosity oil Here, the flow monitor detects

the flow of the special oil.

Flow sensors	· further product	s from page 287		
Туро	Brocoss	Measuring	Madium	

Туре	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.	
	M18 x 1.5	0.043	-2090	100	0.5	1830	SA5000	

Compact temperature sensors · further products from page 317

Туре	Measuring range [°C / °F]	Process connection	Display	U _b [V]	Current consumption [mA]	l _{load} [mA]	Order no.
	-50150 / -58302	M18 x 1.5	Display unit	1832	50	250	TN2511

Lubrication unit



Eccentricity monitoring on contact lubricators

This inductive sensor, with a full-metal design, is ideal for application in rough environments.

Inductive full	Inductive full-metal sensors · further products from page 121											
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.				
	[mm]	[mm]		[V]		[Hz]	[mA]					
6200)ee	M12 / L = 60	3 f	High-grade st. steel	1036	IP 67 / IP 68	100	100	IFC258				

Loop pit



Sag control with P MD time of flight sensors

The O1D distance sensors continually measure the sag of the coil loop.

PMD distance sensors with time of flight measurement · further products from page 209											
Туре	Operating principle	Range	Sampling rate	Spot Ø at max.	Ub	Order no.					
			[Hz]	range [mm]	[V]						
	Background suppression	0.210 m	150	< 15 x 15	1830	O1D120					

Straightener



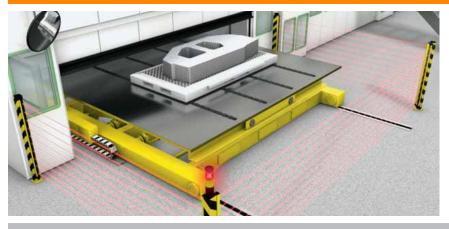
Analogue pressure sensors for controlling the straightening rollers

The strip runs through multiple straightening rollers to eliminate the bending stress. The control system receives feedback for further processing via the analogue values.

Pressure sensors · further products from page 259										
Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.			
			[bar]	max. [bar]	min. [bar]	[V]				
	G ¼ female	Display unit	-125	150	350	1830	PN2093			

Photoelectric distance sensors for detecting the strip · further products from page 209											
Туре	Operating principle	Range	Sampling rate	Spot Ø at max. range	Ub	Order no.					
			[Hz]	[mm]	[V]						
	Background suppression	0.210 m	150	< 15 x 15	1830	O1D100					

Blank removal



Access restriction Blank removal

For operator protection, OY series safety light curtains restrict unauthorised access to accessible areas such as the blank removal station. Depending on the design, the safety light curtains correspond to Type 2 or 4, in accordance with EN 61496.

Safety light curtains for access prevention · further products from page 249										
Туре	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.			
	1413	50	1360	04/312	10	24	OY0895			

Monitoring of high-speed doors



Door monitoring

Fail-safe inductive sensors suitable for safety functions up to PL e / SIL 3, detect the end stop of the high-speed door without contact and without any specific counterpart.

Туре	Length [mm]	Enable zone [mm]	Housing material	Ub DC [V]	Protection	Response time in case of a safety request / enable time [ms]	Order no.
	66	1015 nf	PPE	24	IP 65 / IP 67	≤ 50 / ≤ 200	GM701S

Load carrier



Position control of load carriers

Contactless fail-safe inductive sensors suitable for safety functions up to PL e / SIL 3 directly detect the safe position of load carriers – without requiring a special counterpart.

Fail-safe inductive sensors · further products from page 247

Туре	Length [mm]	Enable zone [mm]	Housing material	Ub DC [V]	Protection	Response time in case of a safety request / enable time [ms]	Order no.
	66	1015 nf	PPE	24	IP 65 / IP 67	≤ 50 / ≤ 200	GM701S

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

Belt conveyors



Part detection on belt conveyors

"R" series full-metal inductive sensors are designed for heavy-duty work in the press shop. Here a sensor detects whether a blank has been placed on the conveyor belt.

Inductive sen	Inductive sensors · further products from page 121											
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	I _{load}	Order no.				
	[mm]	[mm]		[V]		[Hz]	[mA]					
	M30 / L = 70	12 f	High-grade st. steel	1036	IP 67	2	100	IIR200				
	M30 / L = 40	12 f	High-grade st. steel	1036	IP 67	25	100	IIR203				

Tool exchange carrier



Inductive sensors detect the position of interchangeable tools

The rectangular design IDC inductive sensors can be installed overflush. This enables the position of the tool on the positioning table to be determined for automatic locking.

Inductive sensors · further products from page 121



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

Positioning carriage for exchangeable gripper



Inductive sensors detect the position of the positioning carriage

The rectangular design IDC inductive sensors can be installed overflush. In this way, the position of the positioning carriage can be determined for automatic locking.

Inductive sen	Inductive sensors · further products from page 121											
Туре	Dimensions	Sensing range	Material	U _b	Protection	f	I _{load}	Order no.				
	[mm]	[mm]		[V]		[Hz]	[mA]					
	92 x 80 x 40	50 f	PPE	1036	IP 67	70	250	ID5055				

Measurement of compressed air consumption



Compressed air consumption sensor for recording energy consumption

The SD series compressed air meter continuously records the compressed air consumption of the suction grippers.

Compressed air meter for the measurement of com	pressed air consumption · f	urther products from page 287

Туре	Process connection	Setting range	Pressure rating	Response time	Ub	Order no.
		[Nm³/h]	[bar]	[s]	[V]	
	R1 (DN25)	1.8225.0	16	< 0.1	1830	SD8000
	R2 (DN50)	5700	16	< 0.1	1830	SD2000

Vacuum monitoring



Vacuum sensors monitor the suction grippers

PN7 series vacuum sensors detect the required vacuum for operating the suction grippers.

Туре	Process connection	Display	Measuring range [bar]	P _{overload} max. [bar]	P _{bursting} min. [bar]	Ub DC [V]	Order no.
	G ¼ female	Display unit	-11	10	30	1830	PN7099

Hydraulics



Monitoring of power packs

LK and TR series sensors detect the level and the temperature in hydraulic power packs.

LK level sensors · further products from page 303									
Туре	Probe length [mm]	Active zone [mm]	U _b [V]	Medium temperature water [°C]	Medium temperature oil [°C]	l _{load} [mA]	Order no.		
	472	390	1830	035 / 3560	070	200	LK1023		

Temperature sensors · further products from page 317

Ty	уре	Measuring range [°C / °F]	Process connection	Display	Display U _b [V]		l _{load} [mA]	Order no.
-2		-100600 / -1481112	G ½ male	Display unit	1832	50	250	TR7439

Lubrication



System pressure always in view

The PG electronic contact manometer combines an easy-to-read manometer display with the advantages of an electronic pressure sensor. The plant service personnel always have the correct pressure in view.

Pressure sensors in the circulating oil lubrication · further products from page 259

Туре	Process connection	Display	Measuring range [bar]	P _{overload} max. [bar]	P _{bursting} min. [bar]	U _b DC [V]	Order no.
Q	G ½ male	Display unit	-125	100	300	1832	PG2453

Monitoring of drives



Condition monitoring of drives

VSA series sensors record the vibration levels of the drives, enabling conditionoriented maintenance.

Vibration monitoring systems · further products from page 373 Type Description Operation Accelerometer · for connection to external diagnostic electronics type VSE · Connector · housing: stainless steel 316L / 1.4404

VSA001

Order no.



Diagnostic electronics for vibration sensors · Parameter setting via PC software VES004 · TCP/IP Ethernet interface · Profinet IO data interface · PA

VSE150

Transferring signals and data



Controllers and gateways

The controller controls the communication in AS-i networks. Gateways provide a connection from the AS-i to the higher-level bus system.

Controllers, gateways \cdot further products from page 337

Туре	Number of AS-i masters	Description	Order no.
	2	AS-i EtherNet/IP gateway · AS-i master · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · 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	AC1422
	2	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: a luminium powder-coated / steel sheet galvanised / Makrolon	AC1412

Part detection on conveyor belts



Part detection with through-beam sensors

The O5E / O5S type photoelectric sensors reliably detect the sheet metal parts placed on the conveyor.

Infrared / red light sensors for part recognition · further products from page 189										
Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.				
	Receiver	25 m	Red	-	H/D PNP	O5E500				
	Transmitter	25 m	Red	625	-	O5S500				

De-stacking sheet metal parts in racks



Access restriction De-stacking sheet metal parts

For operator protection, OY series safety light curtains restrict unauthorised access to accessible areas such as the sheet metal parts de-stacking station. Depending on the design, the safety light curtains correspond to Type 2 or 4, in accordance with EN 61496.

Safety light curtains for access prevention · further products from page 249									
Туре	Sensor length	Resolution / detection capacity	Protected area height width [mm] [m]		Response time	Ub	Order no.		
	[mm]	[mm]			[ms]	[V]			
	1563	30	1510	04/312	18.5	24	OY050S		

Scrap press



Loose parts become bales of scrap The blank offcuts are compressed into bales of scrap in a high-pressure press.

PN7 series pressure sensors up to 600 bar · further products from page 259									
Туре	Process connection	Display	Measuring P _{overload} range		Pbursting	U _b DC	Order no.		
			[bar]	max. [bar]	min. [bar]	[V]			

Scrap conveyor - strip flow monitoring



Removal of scrap bales

The compact DIA speed monitor detects the pulses of the conveyor driveshaft.

Compact speed monitors for checking the conveyor · further products from page 229										
Туре	Dimensions	Sensing range	Electrical design	Ub	Setting range	Start-up delay	Order no.			
	[mm]	[mm]		[V]	[puls. / min.]	[s]				
	M30 / L = 92.3	10 f	DC PNP/NPN	1036 DC	53600	030	DI5024			

Material transport / storage



Traceability of sheet metal components

Traceability plays an important role in the automotive industry. ifm's RFID system is used to identify press parts.

RFID systems for reading codes on metal



RFID UHF antenna

Туре	Description	Order no.
	RFID UHF antenna · Housing materials: housing: aluminium / Protective cover: plastics / TNC socket: brass / PTFE · Operating frequency 865870 MHz	ANT830

Locking of transport frames

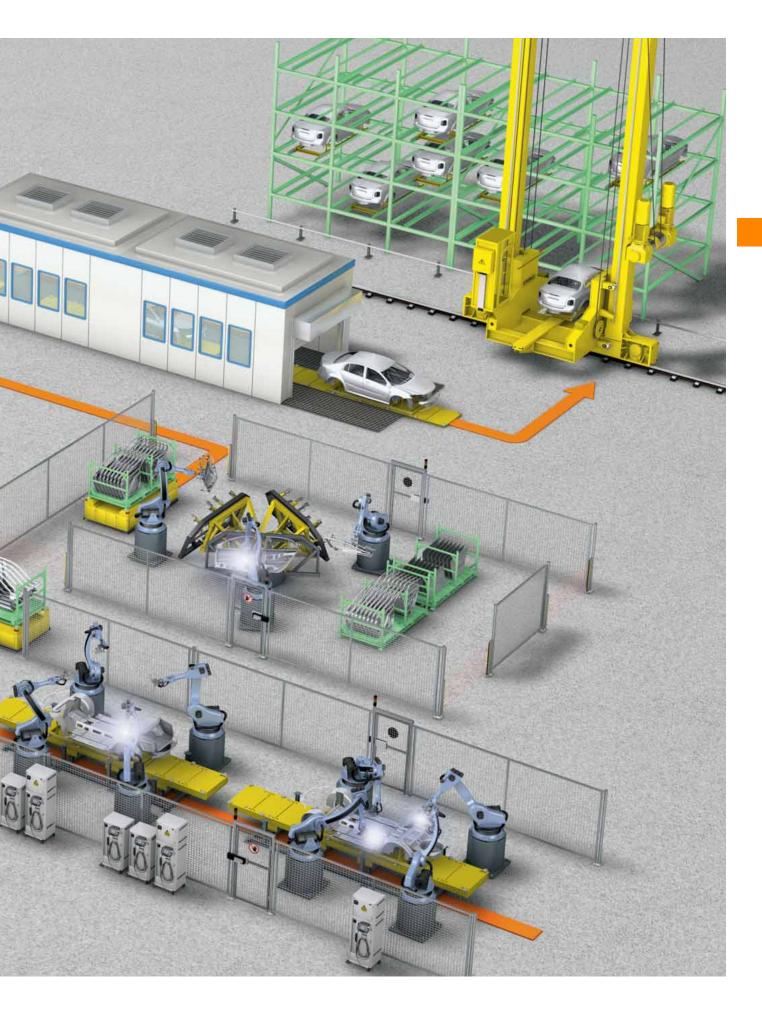


Monitoring the locking of transport frames

MK series magnetic cylinder sensors detect the travel on a locking cylinder.

Inductive cylinder sensors · further products from page 175									
Туре	Dimensions	Material	Ub	f	Protection	l _{load}	Ta	Order no.	
	[mm]		[V]	[Hz]		[mA]	[°C]		
	25.3 x 5 x 6.5	PA (polyamide)	1030	10000	IP 65 / IP 67	200	-2585	MK5108	





The reliability of the sensors increases the availability of the plant



In the body-in-white, up to 200 individual parts and assemblies are put together to form a self-supporting body.

As well as the well-established resistance welding, also known as "spot welding", depending on the mix of materials a variety of joining processes are used.

For lightweight materials such as aluminium and magnesium, joining processes such as laser welding, flanging or clinching are more appropriate.

Suitable adhesives are also available nowadays. These adhesives also contribute in part to damping noise as well as sealing seams and joints.

The requirements for the reliability and availability of the plant are very high in body-in-white manufacture, since the material flow must not stall in the subsequent painting process.

Here, sensors from ifm, with their high standards of reliability and robustness, help to achieve these goals sustainably.

Monitoring the skid position



Monitoring the skid position

The IDC-type inductive sensors reliably detect the positions of the skids.

Inductive sensors · further products from page 121

Туре	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	l _{load} [mA]	Order no.
	92 x 80 x 40	50 f	PPE	1036	IP 67	70	250	ID5059

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

Monitoring the body position



Detecting the body position

Using time of flight measurement, photoelectric sensors reliably detect the position of the body on the skid, for controlling the subsequent welding processes.

PMDLine photoelectric sensors with time of flight measurement · further products from page 209									
Туре	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.			
	Background suppression	0.032 m	33	< 5	1030	O5D100			

Securing the manufacturing cell area



Access restriction Removal of sheet metal parts

For operator protection, OY series safety light curtains restrict unauthorised access to accessible areas such as the sheet metal parts removal station. Depending on the design, the safety light curtains correspond to Type 2 or 4, in accordance with EN 61496.

Closed check on transfer stations Fail-safe inductive sensors suitable for safety functions up to PL e / SIL 3 directly detect the safe position of high-speed doors without contact and without any specific counterpart.

Safety light curtains for access prevention · further products from page 249									
Туре	Sensor length	Resolution / detection capacity	Protected area height	Protected area width	Response time	U _b	Order no.		
	[mm]	[mm]	[mm]	[m]	[ms]	[V]			
	1563	90	1510	04/312	6.5	24	OY1105		

Door protection in transfer areas



Fail-safe inductive sensors · further products from page 247

U_b DC Order Enable Туре Length Housing Protection Response time in case of a safety request / enable time zone material no. [mm] [mm] [V] [ms] 66 10...15 nf PPE 24 IP 65 / IP 67 ≤ 50 / ≤ 200 GM701S 66 4...20 nf GM705S PPE 24 IP 65 / IP 67 ≤ 50 / ≤ 200

Axis range scanning with reference circles



Range scanning Axis 1 for robots

Fail-safe inductive sensors suitable for safety functions up to PL d / SIL 2 detect the safe operating area of robots without contact and without any special counterpart.

Fail-safe inductive sensors · further products from page 247

Туре	Length [mm]	Enable zone [mm]	Housing material	Ub DC [V]	Protection	Response time in case of a safety request / enable time [ms]	Order no.
	70.5	18 nf	High-grade st. steel	24	IP 65 / IP 67	≤ 1 / ≤ 1	GG711S

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

Axis range scanning with limit fields



Range scanning Axis 1 for robots

Category SIL 2 fail-safe inductive sensors detect the presence of metals without contact and without requiring a special counter piece. This minimises the mechanical effort involved.

Fail-safe inductive sensors for the reliable detection of metals · further products from page 247										
Туре	Length	Enable zone	Housing material	U _b DC	Protection	Response time in case of a safety request /	Order no.			
	[mm]	[mm]		[V]		enable time [ms]				
	86.5	> 10 f	Brass	24	IP 65 / IP 67	≤ 5 / ≤ 5	GG851S			

Loading check on turntables



Photoelectric sensors detect the side part in a turntable

All parts must be placed correctly in the clamping frame. Here, the OGH500 photoelectric sensors ensure reliable detection.

Photoelectric sensors · further products from page 189

Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Background suppression	15300 mm	Red	25	H/D PNP	OGH500

Parts check in welding tools



Inductive sensors detect components in welding equipment without disruption

The magnetic field resistant sensors for detecting parts can be directly assembled in the welding tools. Furthermore, the coating helps prevent welding sputter (or 'slag') from sticking.

Electromagne	Electromagnetic field immune sensors with correction factor $K = 1 \cdot further products from page 121$									
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.		
	[mm]	[mm]		[V]		[Hz]	[mA]			
	M12 / L = 65	4 f	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IFW204		
e-mijano	M12 / L = 65	8 nf	Brass	1030	IP 67	2000	100	IFW201		

Removal of parts from material carriers



"Empty" detection of material carriers

The O1D photoelectric distance sensor uses the analogue output to detect how full the material carrier is.

PMD distance sensors with time of flight measurement for detecting the loading condition · further products from page 209

Туре	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.
	Photoelectric distance sensor	0.210 m	133	< 15 x 15	1830	O1D105

Pressure monitoring on suction grippers



Pressure measurement on suction grippers

The vacuum sensors detect whether there is sufficient vacuum present for a safe gripping operation.

Vacuum sensors · further products from page 259									
Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.		
			[bar]	max. [bar]	min. [bar]	[V]			
	G ¼ female	Display unit	-11	10	30	1830	PN2099		

Clamping fixtures



Robust full-metal sensors are close by

"R" series full-metal inductive sensors are designed for heavy-duty work in welding equipment. A non-stick coating ensures a long holding time in the tools.

Full metal ser	Full metal sensors with non-stick coating against weld spatter \cdot further products from page 121									
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.		
	[mm]	[mm]		[V]		[Hz]	[mA]			

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

Connection technology for clamping fixtures and sensors



It all depends on the cable

Signals from clamping fixtures and sensors must be transmitted to the controller without disruption. Here, ifm offers a wide range of cables made from PUR (not crosslinked by irradiation) with grey or orange sheath colour.

Connectors weld slag resistant · further products from page 383								
Туре	Description	Order no.						
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 2 m · Housing materials: housing: TPU black transparent / sealing: FKM	EVW007						

Jumpers weld slag resistant · further products from page 383

Туре	Description	Order no.
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVW024

Cooling water monitoring on welding guns



Monitoring of cooling circuits in welding robots

The SM magnetic-inductive volumetric flow sensor detects the amount of cooling water in the system. The pressure sensor PK recognises the sudden drop in pressure in the circuit, e.g. when changing the caps.

Magnetic-inductive volumetric flow sensors · further products from page 287										
Туре	Process connection	Setting range	Pressure rating	Response time	Ub	Order no.				
		[Nm³/h]	[bar]	[5]	[V]					
-	G1⁄2	0.2525.00	16	< 0.150	1830	SM6000				

Pressure sensors in the cooling circuit with the PK pressure sensor \cdot further products from page 259

Туре	Process connection	Display	Measuring range [bar]	P _{overload} max. [bar]	Pbursting min. [bar]	Ub DC [V]	Order no.
	G ¼ male / M5 female	Operation	010	25	300	9.632	PK6524

Cooling water monitoring in welding stations



Cooling water monitoring in welding stations

The mechatronic flow sensor switches very quickly when the level falls below the minimum, thus protecting the system.

Mechatronic	Mechatronic flow sensors · further products from page 287									
Туре	Process connection	Measuring range	Medium temperature	Pressure rating	Response time	Ub	Order no.			
		[l/min]	[°C]	[bar]	[s]	[V]				
-	G ½	0.315	-10100	40	0.01	1830	SBG232			

Measurement of compressed air consumption



Compressed air monitoring in plant and robot installation boards

Here, SD8000 compressed air meters detect both the consumptions at normal pressure (6 bar) as well as in the highpressure system (12 bar). Consumptions are recorded and leaks detected.

Compressed air meters for consum	ntion moscuroment and lo	akage detection further	products from page 297
Compressed an meters for consum	DUOII IIIeasureilleill allu lea		DIOUULUS IIOIII DAUE 20/

Туре	Process	Setting range	Pressure rating	Response time	U _b	Order
	connection	[Nm³/h]	[bar]	[s]	[V]	no.
	R1 (DN25)	1.8225.0	16	< 0.1	1830	SD8000

Shielding gas monitoring in welding equipment



Shielding gas monitoring in welding processes

The SD compressed air meter reliably detects the presence and consumption of argon, carbon dioxide or nitrogen.

Compressed	Compressed air meters · further products from page 287								
Туре	Process connection	Setting range	Medium temperature	Pressure rating	Response time	Ub	Order no.		
		[Nm³/h]	[°C]	[bar]	[s]	[V]			
	G ¼ (DN8)	N ₂ : 0.0415.00 Ar: 0.0824.04 CO ₂ : 0.0414.36	060	16	< 0.1	1830	SD5100		
	R½ (DN15)	N ₂ : 0.275.0 Ar: 0.4122.0 CO ₂ : 0.274.7	060	16	< 0.1	1830	SD6100		
	R1 (DN25)	N ₂ : 0.8225.0 Ar: 1.2366.6 CO ₂ : 0.8223.6	060	16	< 0.1	1830	SD8100		

Gluing body components



Temperature monitoring of mixing head

The temperature of the adhesive components must not fall below predefined values. The TN temperature sensor passes the analogue signals on to the pump controller.

Compact tompo	aratura concorc	further	producto	from no	ao 217
Compact tempe	erature sensors	· Iurther	products	from pa	ge ST/

Туре	Measuring range [°C / °F]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	-50150 / -58302	M18 x 1.5	45	1832	1/3	TN2511

Sealing of seams



Application of liquid PVC

To improve the vehicle acoustics and corrosion protection, liquid PVC is applied to the folded and flanged edges.

The temperature sensor TR detects the correct temperature and reports faults immediately.

The correct pump pressure is controlled using an analogue pressure sensor.

Temperature sensors · further products from page 317										
Туре	Measuring range	Process connection	Display	Ub	Current consumption	I _{load}	Order no.			
	[°C / °F]			[V]	[mA]	[mA]				
e d	-100600 / -1481112	G ½ male	Display unit	1832	50	250	TR2439			

Pressure sensors with analogue output for pump control · further products from page 259										
Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.			
			[bar]	max. [bar]	min. [bar]	[V]				
			[non1]							

Type identification of car bodies and components



Detection of structural parts

The complexity and diversity of the components places a great demand on the logistics and manufacturing processes.

Here, the O2D series vision sensors help to keep an overview and ensure quality.

Vision sensors · further products from page 237

Туре	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	400 x 300	0.633	10	Infrared	-1060	O2D224

Detection of adhesive pads for noise damping



Adhesive pads for noise damping

Increasingly, adhesive pads are applied between the welded structural parts to dampen noise. Here, O2V series vision sensors detect

the presence of these pads, thus ensuring process quality.

Vision sensors	Vision sensors · further products from page 237									
Туре	Operating principle	Max. field of view size	Resolution	Detection rate	Type of light	Ambient temperature	Order no.			
		[mm]	[mm]	[Hz]		[°C]				
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	2.0	10	White light	-1060	O2V102			

Manipulators for the assembly of add-on parts



Manipulators support the operators in the assembly shop

Heavy loads and complex components are lifted and assembled using manipulators.

Here, a PK-type pressure sensor monitors the correct working pressure in the compressed air supply.

Pressure sensors · further products from page 259

Туре	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	010	25	300	9.632	PK6524

Valve connection via AS-i AirBoxes



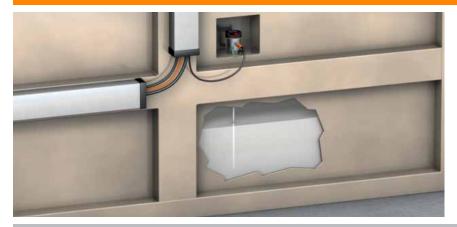
AS-i AirBoxes minimise the connection complexity

The cylinder movements must be scanned. At the same time, the compressed air is required by the cylinders.

Here, ifm's AS-i AirBoxes link compact valves with digital feedback inputs.

AS-i AirBoxes · further products from page 347								
Туре	Description	Order no.						
	AS-i AirBox · 5/2-way bistable 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 / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5253						

Monitoring the fill level of cleaning agents



Detecting limit levels with fill level sensors

A special cleaning solution for degreasing is required for an optimum washing process. Here, the LK81 series sensor monitors the automatic filling of the storage container.

Level sensors · further products from page 303

Туре	Probe length [mm]	Active zone [mm]	U _b [V]	Medium temperature water [°C]	Medium temperature oil [°C]	l _{load} [mA]	Order no.
	728	585	1830	035 / 3555	070	200	LK8124

Pressure monitoring in the washing plant



Pressure measurement in the car body washing plant

The pressure is generated using a highpressure pump. A PK series pressure sensor controls the optimum working pressure in the washing plant.

Pressure sens	ors · further produc	cts from page 259					
Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.
			[bar]	max. [bar]	min. [bar]	[V]	
	G ¼ male / M5 female	Operation	0400	600	1600	9.632	PK6520

Monitoring of drives in lifts



Condition monitoring of drives

The VSA vibration sensor monitors the condition of the drive motor. This enables faults to be detected more easily.

Vibration monitoring systems · further products from page 373							
Туре	Description	Order no.					
A STATE	Accelerometer \cdot for connection to external diagnostic electronics type VSE \cdot Connector \cdot 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 · Combicon connection · PA	VSE002					
Cable pos	ition detection for deflector pulleys						



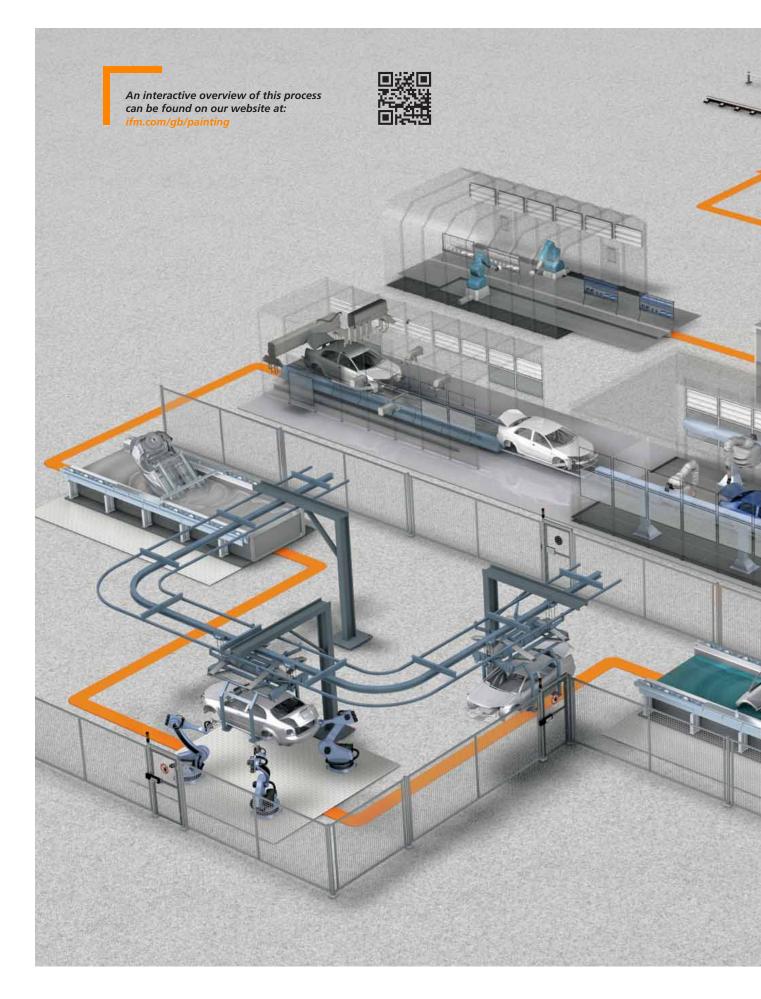
Cable position detection for deflector pulleys

Category SIL 2 and PL d inductive safety sensors detect the cable position on deflector pulleys in lifts.

Fail-safe inductive sensors · further products from page 247

	Туре	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.
e		70.5	18 nf	High-grade st. steel	24	IP 65 / IP 67	≤ 1 / ≤ 1	GG711S

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





Position sensors and fluid sensors improve the process quality



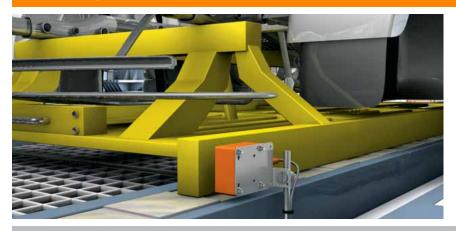
Now it's time for some colour.

First the car bodies must be degreased and other dirt removed. As part of the pretreatment, aluminium parts are lightly sandpapered, in order to enable a perfect coating. The bodies receive their first corrosion protection in an EPD bath (electro-phoretic deposition – cathodic dip coating). Then the base coat is applied. This filler smooths out any unevenness. After the base coat and the topcoat, the clear coat is applied to give the bodies their shine.

A paint shop incorporates conveyor technology, various dip tanks as well as numerous robots for applying the individual paintwork. In between, there are evaporation zones and drying chambers. Heat generation, water treatment, paint tank maintenance, exhaust air and fresh air supply are absolutely vital for reliable operation.

Here sensors from ifm, with their high standards of repeatability and switch point stability, help the operator to ensure the high quality of the painting process in series production.

Floor conveyors



Monitoring the skid position

ID series inductive sensors reliably detect the positions of the skids on the floor conveyors.

Inductive sensors · further products from page 121

Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
	92 x 80 x 40	50 f	PPE	1036	IP 67	70	250	ID5058
	105 x 80 x 40	60 nf	PPE	1036	IP 65	100	250	ID5005

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

Roller conveyor systems



Monitoring the skid position

The IMC series inductive sensors reliably detect the positions of the skids in roller conveyors.

Inductive sensors · further products from page 121

Туре	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	l _{load} [mA]	Order no.
	40 x 40 x 54	40 nf	PA (polyamide)	1036	IP 67	60	200	IM5117
	40 x 40 x 54	40 nf	PA (polyamide)	1036	IP 67	60	200	IM5136

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

Conveyor technology



Detecting the body position

Photoelectric sensors reliably detect the position of the body on the skid to control the subsequent processes.

Photoelectric sensors for determining position · further products from page 189								
Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.		
	Background suppression	501800 mm	Red	50	H/D PNP	O5H500		

PMDLine pho	PMDLine photoelectric sensors with time of flight measurement \cdot further products from page 209								
Туре	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	Ub [V]	Order no.			
	Background suppression	0.032 m	33	< 5	1030	O5D100			
	Background suppression	0.032 m	33	< 5	1030	O5D150			
	aunting systems further								

Adjustable mounting systems \cdot further products from page 409

Туре	Description	Order no.
Ţ.	Mounting set · Clamp mounting · Free-standing M10 · for type O5 · Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21083
4	Mounting set \cdot Clamp mounting \cdot With protective cover \cdot rod mounting Ø 12 mm \cdot for type O5 \cdot Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21210
Protective br	acket · further products from page 409	

Туре	Description	Order no.
Ţ.	Mounting set \cdot Clamp mounting \cdot With protective cover \cdot Free-standing M10 \cdot for type O5 \cdot Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21084

Cleaning of the body



Pressure measurement in the car body washing plant

The pressure is generated using a highpressure pump. Here, the PG series pressure sensor, with an analogue output, controls the optimum working pressure of the pump.

Pressure mor	Pressure monitoring in a high-speed pump · further products from page 259										
Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.				
			[bar]	max. [bar]	min. [bar]	[V]					

Magnetic-inductive volumetric flow sensors for freshwater inflow monitoring · further products from page 287

Туре	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
-	G½	0.2525.00	-1070	16	< 0.150	1830	SM6000

Monitoring the fill level of cleaning agents



Level sensors detect the optimum filling level in the tank

A special cleaning solution for degreasing is required for an optimum washing process.

Here, the LK31 series sensors with an analogue output monitor the optimum fill level in the storage tank.

Level sensors	evel sensors · further products from page 303									
Туре	Probe length [mm]	Active zone [mm]	U _b [V]	Medium temperature water [°C]	Medium temperature oil [°C]	l _{load} [mA]	Order no.			
	728	585	1830	035 / 3555	070	200	LK3124			

EPD bath (electrophoretic deposition – cathodic dip coating)



Detecting the state of doors and flaps

The bodies receive their first corrosion protection in an EPD bath. Here, the O2D series vision sensors detect whether plastic spacing sleeves are keeping the doors and flaps slightly open.

Vision sensor	ision sensors for position detection · further products from page 237							
Туре	Operating principle	Max. field of view size	Resolution	Detection rate	Type of light	Ambient temperature	Order no.	
		[mm]	[mm]	[Hz]		[°C]		
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	2.0	10	Infrared	-1060	O2D222	

Rinsing



Detecting rinsing water in the tank

A temperate rinsing solution is required for an ideal process in the pretreatment. The PG series pressure sensor monitors the pressure in the tank. The TK series temperature sensor activates when the temperature falls below a minimum level.

Pressure sens	sors · further produ	cts from page 259					
Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.
			[bar]	max. [bar]	min. [bar]	[V]	
	Sealing cone G1 male	Display unit	-110	50	150	1832	PG2894*

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

Cavity sealing



Sealing cavities with liquid wax

To improve corrosion protection, liquid wax is applied in the cavities. Here, the temperature sensor TR detects the correct temperature and reports faults immediately. The pump pressure is controlled using an analogue pressure sensor.

Temperature	sensors · further pro	oducts from page 3	17				
Туре	Measuring range	Process connection	Display	Ub	Current consumption	l _{load}	Order no.
	[°C / °F]			[V]	[mA]	[mA]	
	-100600 / -1481112	G ½ male	Display unit	1832	50	250	TR2439

Pressure sensors with analogue output for pump control \cdot further products from page 259

Туре	Process connection	Display	Measuring range [bar]	P _{overload} max. [bar]	Pbursting min. [bar]	U₀ DC [V]	Order no.
	G ¼ female	Display unit	0250	500	1200	1830	PN3071

Sealing



Temperature monitoring on the dispensing head

The temperature of the sealant may not fall below defined values. The TN temperature sensor passes the analogue signals on to the pump controller.

Compact temperature sensors for temperature monitoring · further products from page 317

Туре	Measuring range [°C / °F]	Process connection	Installation length [mm]	U _b [V]	Dynamic response T05 / T09 [s]	Order no.
	-50150 / -58302	M18 x 1.5	45	1832	1/3	TN2511

Freshwater supply



Monitoring the freshwater feed

Treated water is required for all the different rinsing zones. The SI flow sensor continuously monitors the inflow of water.

Flow sensors · further products from page 287

Туре	Setting range liquids / gases [cm/s]	Material sensor tip	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
	3300 / 2003000	3100 / 200800	-2580	30	110	1936	SI5000

Control of the pneumatic valve actuators



Position feedback on valve actuators

The IN series dual sensor contains two inductive sensors for "Open / Closed" detection of the valve position using control cams. The digital output controls the solenoid valve of the pneumatic valve actuator.

Inductive dua	Inductive dual sensors for position feedback on pneumatic valve actuators · further products from page 121									
Туре	Dimensions	Sensing range	Material	Ub	Protection	f AC / DC	l _{load} AC / DC	Order no.		
	[mm]	[mm]		[V]		[Hz]	[mA]			
-	40 x 26 x 26	4 nf	PBT	1036	IP 67	1300	250	IN5225		

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

Fresh air supply



Air consumption measurement

The SD compressed air meter continuously measures the air flow. The measured values are used as a basis to determine the actual consumption.

Compressed air meters determine the actual consumption \cdot further products from page 287

Туре	Process	Setting range	Pressure rating	Response time	U _b	Order
	connection	[Nm³/h]	[bar]	[s]	[V]	no.
	R1½ (DN40)	3.5410.0	16	< 0.1	1830	SD9000

Exhaust



Speed detection on fans

The exhaust air from the painting cabins is extracted and delivered to the thermal post-combustion.

The speed sensor monitors the fans for underspeed and blockages.

Speed detection · further products from page 229										
Туре	Dimensions	Sensing range	Electrical design	Ub	Setting range	Start-up delay	Order no.			
	[mm]	[mm]		[V]	[puls. / min.]	[s]				
-	M30 / L = 82	10 f	DC PNP	1036 DC	5300	15	DI5009			

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

Vibration sensors for bearing monitoring in drives · further products from page 373					
Туре	Description	Order no.			



Bath maintenance



Ultrafiltration

A proportion of the paint is continuously removed from the dip-bath and fed through the ultrafiltration unit. The residual solid content is mixed back into the bath. The clean filtrate is used as a rinsing solution. Here the temperature sensor monitors the correct temperature.

Temperature sensors · further products from page 317

	Туре	Measuring range [°C / °F]	Process connection	Display	U _b [V]	Current consumption [mA]	l _{load} [mA]	Order no.
e		-100600 / -1481112	G ½ male	Display unit	1832	50	250	TR2439

Paint recycling



Detecting the fill level in the tanks

The paint spray, precipitated by the water, is captured and filtered. The paint acquired in this way can be reintroduced to the mixture. The LMT level sensor detects whether the level in the tank falls below a minimum value.

Point level sensors · further products from page 303						
Туре	Process connection	Process pressure max. [bar]	Application	Protection	Order no.	
1 921	G ½ male	-140	liquids, viscous media and powders	IP 68 / IP 69K	LMT110	

Monitoring the painting robot nozzles



Flow measurement on painting robots

The paint application demands a high degree of availability from the systems. Here, the SU volumetric flow sensor detects any blockages of the nozzles.

Flow meters · further products from page 287

Туре	Process connection	Measuring range	Medium temperature	Pressure rating	Response time	Ub	Order no.
		[l/min]	[°C]	[bar]	[5]	[V]	
Ĩ	G¾	0.150.0	-1080	16	< 0.250	1930	SU7000
N	G1	0.2100.0	-1080	16	< 0.250	1930	SU8000

Control of the painting robots



Detect start position for the painting process

Water-soluble clear coats give the painted car bodies their shimmering shine. The O1D102 photoelectric distance sensor detects the start position for the paint process.

PMD distance sensors with time of flight measurement · further products from page 209

Туре	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.
	Photoelectric distance sensor	0.23.5 m	150	< 6 x 6	1830	O1D102

Paint supply



Pump monitoring

The paint supply demands a high degree of availability from the pumps. The VSA vibration sensor monitors the function of the pump motor.

Accelerometer · for connection to external diagnostic electronics type VSE · Connector · housing: stainless steel 316L / 1.4404 VSA0	Vibration monitoring systems · further products from page 373						
	Туре	Description	Order no.				
Diagnostic electronics for vibration sensors - Integrated history memory with real-time clock - Counter function -	-	Accelerometer \cdot for connection to external diagnostic electronics type VSE \cdot Connector \cdot housing: stainless steel 316L / 1.4404	VSA001				
	J		VSE002				

Fan monitoring



Belt breakage check on fans

The spray booths are maintained at a slight positive pressure to keep impurities from the air at bay. If the fan breaks down, quality problems result. The photoelectric sensor scans the fan belt for breakages.

Photoelectric sensors · further products from page 189

Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Background suppression	501800 mm	Red	50	H/D PNP	O5H500

Heat production



Temperature measurement in heating channels

Heated air must be provided for the evaporation zones. The temperature evaluation unit continually measures the temperature of the air. If the temperature falls below a minimum level, it gives an alarm signal.

Evaluation sy	ystems for temperature sensors · further products from page 317						
Туре	Measuring range	Process connection	Display	Ub	Current consumption	l _{load}	Order no.
	[°C / °F]			[V]	[mA]	[mA]	
G	-100600 / -1481112	G ½ male	Display unit	1832	50	250	TR2439

Temperature sensors · further products from page 317 Installation Sensor element Dynamic response T05 / T09 Measuring Diameter Order Туре range length no. [°C] [mm] [mm] [s] -40...150 10 1 x Pt 1000 1/3 TT1050 160

Monitoring of high-speed doors



Door monitoring

Fail-safe inductive sensors suitable for safety functions up to PL e / SIL 3, detect the end stop of the high-speed door without contact and without any specific counterpart.

Fail-safe indu	Fail-safe inductive sensors · further products from page 247							
Туре	Length	Enable zone	Housing material	U _b DC	Protection	Response time in case of a safety request /	Order no.	
	[mm]	[mm]		[V]		enable time [ms]		
	66	1015 nf	PPE	24	IP 65 / IP 67	≤ 50 / ≤ 200	GM7015	

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

Identification of add-on parts



Identifying appropriate add-on parts

The painted add-on parts must be assigned to the corresponding body. The multi-code reader detects the codes on the build-tickets. This prevents incorrect assembly of add-on parts.

Multicode reader · further products from page 371

Туре	Dimensions [mm]	Max. field of view size [mm]	Type of light LED	Motion speed [m/s]	Process interface	Order no.
	60 x 42 x 59	400 x 300	red light	≤ 7	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I304

Skid identification



Determining the whereabouts of skids

The painted car bodies travel through the final inspection on skids, to the high stack storage. At any time, the RFID system can determine the whereabouts of the skids in each of the zones.

RFID systems	for reading codes on metal	
Туре	Description	Order no.
	RFID UHF antenna · Housing materials: housing: aluminium / cover: plastics / TNC socket: brass / PTFE · Operating frequency 902928 (FCC) MHz	ANT930
ID tag		
Туре	Description	Order no.

ID tag · ID-TAG/D55x13/04 · Ø 55 x 13 mm · Housing materials: PA 6

E80351

Occupation of storage location



Optically detecting whether a compartment is occupied

After the paint process, the bodies are stored temporarily.

Using the prismatic reflector, the retroreflective sensor with polarisation filter on the transport lift can detect whether a compartment is occupied or not.

Photoelectric sensors · further products from page 189

Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Polarisation filter	0.07510 m	Red	250	h/d pnp	O5P500

Accessories · further products from page 409

Туре	Description	Order no.
	Prismatic reflector \cdot Ø 80 mm \cdot round \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics	E20005

Position feedback



Detecting travel lengths and positions of the storage and retrieval machine

The car body lift moves parallel to the high-stack storage.

The IMC series inductive sensors detect the cam switches for the positioning and braking of the stacker crane.

Inductive sensors · further products from page 121

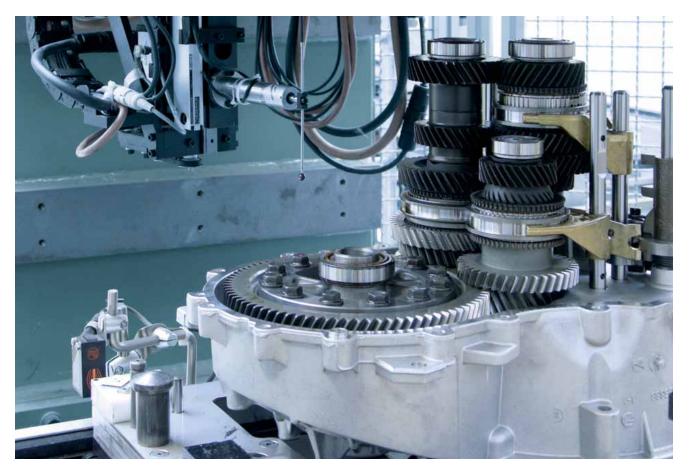
Туре	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	l _{load} [mA]	Order no.
	40 x 40 x 54	20 f	PA (polyamide)	1036	IP 67	100	200	IM5123

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





Manufacturing precision increases customer satisfaction



The combination of engine and gearbox, also called the powertrain, forms the heart of the drive unit.

The basic components such as crankcase, cylinder head or gearbox housing are made in the foundry. These components are then finished by mechanical processing. In many work steps, gear wheels and shafts are processed and then assembled into gearboxes. In engine production, powerful petrol, diesel or hybrid drives are created out of the mosaic of crankshaft, camshafts, connecting rods and many other parts and sub-assemblies.

Here, sensors from ifm – with their high standards of repeatability and switch point stability – help the operator ensure the consistently high quality standards in series production.

Foundry - coolant monitoring



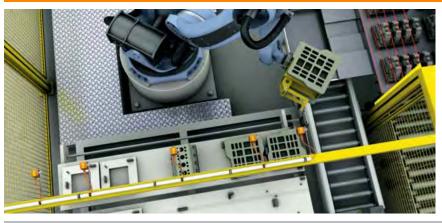
Drawing water from deep wells

Melt furnaces and casting moulds must be cooled. Water is drawn from deep wells for this purpose. The SM2000 volumetric flow sensor detects whether air is sucked up with it, thus helping to avoid damage to the equipment.

Flow rate measurement · further products from page 287

Туре	Process	Response	Ub	Order			
	connection	range [l/min]	temperature [°C]	rating [bar]	time [s]	[V]	no.
	G2 flat seal	8600	-1070	16	< 0.35	1832	SM2000

Foundry - casting moulds



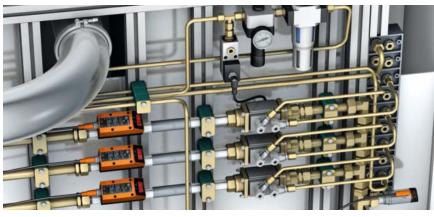
Preparation of casting moulds

The casting moulds are united automatically. O1D photoelectric sensors detect the casting moulds for the control system.

PMD distance sensors with time of flight measurement · further products from page 209									
Туре	Operating principle	Range	Sampling rate	Spot Ø at max.	Ub	Order no.			
			[Hz]	range [mm]	[V]				
	Background suppression	0.210 m	150	< 15 x 15	1830	O1D100			

Safety light grids · further products from page 255									
Туре	Sensor length	Resolution / detection capacity	Protected area height	Protected area width	Response time	U _b	Order no.		
	[mm]	[mm]	[mm]	[m]	[ms]	[V]			

Dry processing for chip removal machining



Blowing out drill holes

SD series compressed air meters detect a defined air volume for blowing out drill holes.

The PN pressure sensor monitors the required minimum pressure.

Compressed air meters determine the actual consumption · further products from page 287									
Туре	Process connection	Setting range	Pressure rating	Response time	U _b	Order no.			
		[Nm³/h]	[bar]	[5]	[V]				

Pressure sensors · further products from page 259

Туре	Process connection	Display	Measuring range [bar]	Poverload max. [bar]	Pbursting min. [bar]	U⊾ DC [V]	Order no.
	G ¼ female	Display unit	-110	75	150	1830	PN7094

System solution: Part seat monitoring of workpieces



Part seat monitoring

The workpieces to be processed must lie flat on the workpiece carrier to ensure dimensional accuracy. The PS7 control unit detects any contamination due to swarf or abrasion.

Control unit	Control unit for part seat monitoring · further products from page 259						
Туре	Description	Order no.					
	Control unit for part seat monitoring \cdot Setting by adjustment of the pneumatic bridge \cdot Integrated pressure sensor with 2 switching outputs \cdot and 4-digit alphanumerical display for trend display or display of current pressure \cdot Cable	PS7570					

Position and part detection in machine tools



Full-metal sensors for application in oils and coolants

Modern engines and gearboxes are, to a large extent, manufactured from aluminium alloys. Full-metal inductive sensors with correction factor K = 0 are unaffected by aluminium swarf.

Full-metal inductive sensors with correction factor K = 0 · further products from page 121									
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.	
	[mm]	[mm]		[V]		[Hz]	[mA]		
	M18 / L = 70	4.5 f	High-grade st. steel	1036	IP 68	100	100	IGC249	

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

Connectors	· further products from page 383	
Туре	Description	Order no.
	Codet and Star from Stars Free from belows Cold also descents Free values and instance 1412 and the Free	

Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM

Flow check for internal cooling of drill



Extending the holding times

Continuous cooling of the drill is essential if not much coolant is being used or if the drill holes are long. The mechatronic flow sensor is able to detect extremely quickly if the amount of coolant is no longer sufficient.

Flow transmitters with integrated	backflow provention	further preduct	from page 207
Flow transmitters with integrated	i backnow prevention	• Iurther product	S ITOIII Daue Zo/

Туре	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
	G 1⁄2	0.325	060	200	< 0.01	24	SBU623
	G 1⁄2	0.350	060	200	< 0.01	24	SBU624

Hydraulic aggregates



Monitoring of power packs

LR and TR series sensors detect the level and temperature in the hydraulic units.

Temperatur	e sensors · further pr	oducts from page 31	17				
Туре	Measuring range	Process connection	Display	Ub	Current consumption	l _{load}	Order no.
	[°C / °F]			[V]	[mA]	[mA]	
(I	-100600 / -1481112	G ½ male	Display unit	1832	50	250	TR7439

Level sensors with guided wave radar \cdot further products from page 303

Туре	Process connection	Probe length [mm]	Active zone [mm]	Ub [V]	Medium temperature [°C]	l _{load} [mA]	Order no.
	G ¾ male	-	L-40 (L-60)	1830	080	200	LR7000

Filter monitoring



Differential pressure monitoring

PNI-type electronic pressure sensors with an analogue input evaluate the pressure difference in filter elements in combination with PA-type transmitters.

Туре	Process connection	Display	Measuring range [bar]	P _{overload} max. [bar]	Pbursting min. [bar]	Ub DC [V]	Order no.
	G ¼ female	Display unit	025	100	350	1830	PNI023

Camshaft manufacture



Grinding camshafts

The surface quality produced here is extremely important for the quality of the shafts. To ensure the quality, the grinding

emulsion must be applied constantly.

Flow sensors · further products from page 287

Туре	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
ant-	M18 x 1.5	0.043	-2090	100	0.5	1830	SA5000

Crankshaft manufacture



Identifying crankshafts

To ensure traceability, the crankshafts are coded with data such as production date and batch information. This information is then read and verified by the O2I code reader.

Multi-code re	ader for identifying	codes · further pro	oducts from page 371			
Туре	Dimensions	Max. field of view size	Type of light	Motion speed	Process interface	Order no.
	[mm]	[mm]	LED	[m/s]		
I	60 x 42 x 53.5	132 x 94	red light	≤7	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I302

Connectors · further products from page 383

Туре	Description	Order no.
CHILD IN	Jumper \cdot straight / straight \cdot Ethernet \cdot Cross-over patch cable \cdot 2 m \cdot Housing materials: PUR / PC	E11898

Lubricant preparation



Leakage detection to section 19 of the German Federal Water Act

The LI binary level sensor reliably monitors whether coolant is leaking from any pipes and tanks and collecting in the gutter. In this case, an alarm is triggered immediately.

Level sensors (to section 19 of the German Federal Water Act WHG) · further products from page 303

Туре	Probe length [mm]	Output	U _b [V]	Medium temperature water [°C]	Medium temperature oil [°C]	l _{load} [mA]	Order no.
	132	Normally closed	1036	035	065	200	LI2241

Swarf disposal



"Full" detection for swarf hoppers

The O1D photoelectric sensor uses the analogue output to the controller to detect the level in the swarf hopper. Both long swarf and short-chipping swarf are detected.

PMD photoelectric sensors for detecting the loading condition · further products from page 209 Order Туре **Operating principle** Range Sampling Spot Ø at Ub rate max. no. range [Hz] [mm] [V] Photoelectric 0.2...10 m O1D105 1...33 < 15 x 15 18...30 distance sensor Photoelectric 0.3...6 m 1...33 < 8 x 8 18...30 O1D155 distance sensor

Cleaning parts



Full-metal inductive sensors with extended temperature range

Components and assemblies must be cleaned after various manufacturing operations. The ifm sensors can with-stand ambient temperatures of up to 100 °C.

		Full-metal inductive sensors for wet areas · further products from page 121							
Type Dimensions Sensing Material U _b Protection range	f	l _{load}	Order no.						
[mm] [mm] [V]	[Hz]	[mA]							
M18 / L = 70 5 f High-grade st. steel 1036 IP 68 / IP 69K	100	100	IGT247						
M18 / L = 70 12 nf High-grade st. steel 1036 IP 65 / IP 67 / IP 68 / IP 69K	500	100	IGT249						

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

Industrial cleaning equipment



Determining limit levels

The LMT limit level sensor has many applications in industrial cleaning systems.

Applications such as detecting levels in flood tanks, oil separators, working tanks and use as a probe to warn of leakages.

Sensors for point level detection · further products from page 303

Туре	Process connection	Process pressure max. [bar]	Application	Protection	Order no.
	G ½ male	-140	liquids, viscous media and powders	IP 68 / IP 69K	LMT110

Leak test



Leak test on components and assemblies

In automated test stations, the test pieces are placed under pressure using compressed air.

Depending on the rate of leakage, the pressure loss must not exceed the tight tolerances.

Inductive sen	Inductive sensors for position control · further products from page 121									
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.		
	[mama]	[]		D.d.		F11-1	[
	[mm]	[mm]		[V]		[Hz]	[mA]			

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

Pressure sens	sors · further produ	cts from page 259					
Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.
			[bar]	max. [bar]	min. [bar]	[V]	

Leakage test station



Leak test on components and assemblies

Object detection sensors tell the automated test stations whether the system has been set up correctly for the item being tested.

Vision sensors · further products from page 237								
Туре	Operating principle	Max. field of view size	Resolution	Detection rate	Type of light	Ambient temperature	Order no.	
		[mm]	[mm]	[Hz]		[°C]		
	CMOS image sensor B/W, VGA resolution 640 x 480	400 x 300	0.633	10	Infrared	-1060	O2D224	

(fee

Pneumatic maintenance unit



Flow meters for compressed air

The SD volumetric flow sensor continuously monitors the compressed air consumption of the consumers connected to the maintenance unit. The impulse signals per volume unit are forwarded via the AS-i CompactLine module to the control system.

Compressed air meter for the measurement of compressed air consumption \cdot further products from page 287								
Туре	Process connection	Setting range	Pressure rating	Response time	Ub	Order no.		
		[Nm³/h]	[bar]	[s]	[V]			

CompactLine: AS-i modules for field applications · further products from page 341

Туре	Description	Order no.
	Active CompactLine module · IR addressing possible · Version 2.11 and 3.0 with extended addressing mode · Digital inputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	AC2457

Screw stations



Photoelectric fork sensors in feed equipment

The vibration conveyors are used, for example, to deliver screws to the assembly stations. The OPU photoelectric fork sensor

checks the presence of the screws.

Photoelectric sensors · further products from page 207								
Туре	Fork width (w) [mm]	Fork depth (d) [mm]	Smallest detectable object Ø [mm]	Switching frequency [Hz]	Output H = light-on D = dark-on	U _b [V]	Order no.	
Г	50	55	0.5	4000	H/D PNP	1035	OPU203	

Fuel supply in engine test rigs



Pressure sensors resist extreme pressure peaks

On the engine test rigs, extreme operating conditions are simulated in the "Hot test". During the test, extreme pressure peaks in the fuel supply are a frequent occurrence.

Pressure transmitter with analogue output · further products from page 259							
Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.
			[bar]	max. [bar]	min. [bar]	[V]	
	G ¼ female	_	0100	300	650	1632	PA9022

Vibration monitoring in engine test rigs



Protecting the braking motor

Due to the engine being tested, the induction motor is sometimes exposed to extreme vibration loading. If the values are too extreme, the load is reduced.

Vibration monitoring systems · further products from page 373						
Туре	Description	Order no.				
-	Accelerometer \cdot for connection to external diagnostic electronics type VSE \cdot Connector \cdot 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 · Combicon connection · PA	VSE002				

Quality assurance in driveshaft manufacture



Checking the assembly

In the manufacture of drive shafts, the object detection sensor checks whether a needle bearing has been assembled, whether it is the correct bearing and whether it has been correctly assembled.

Sensors for object recognition · further products from page 237								
Туре	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	1320 x 945	2.0	10	Infrared	-1060	O2D222	

Illumination · further products from page 245

Туре	Operating principle	Max. field of view size [mm]	Resolution [mm]	Detection rate [Hz]	Type of light	Ambient temperature [°C]	Order no.
	-	100 x 100	_	10	Infrared	050	O2D905

RFID in the gearbox assembly shop



Identifying the part carriers

Thanks to RFID technology, the current work step of the gearbox is always known.

RFID systems with AS interface · further products from page 365								
Туре	Description	Order no.						
-	Read/write head · With integrated AS-i slave profile 7.4 · M12 connector · Housing materials: housing: PPE / Metal parts: diecast zinc / brass nickel-plated	DTA300						

Automated loading of gearbox test rig



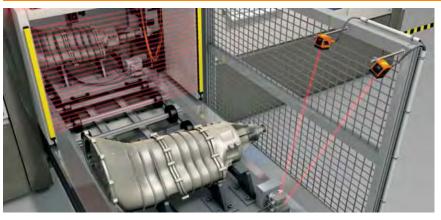
Test rig access restriction

For operator protection, OY series safety light curtains restrict unauthorised access to accessible areas such as the loading zones.

The safety light curtains correspond to Type 4, in accordance with EN 61496.

Safety ligh	Safety light curtains for access prevention · further products from page 249									
Туре	Sensor length	Resolution / detection capacity	Protected area height	Protected area width	Response time	Ub	Order no.			
	[mm]	[mm]	[mm]	[m]	[ms]	[V]				
	1263	14	1210	03 / 16	16.5	24	OY0085			

Workpiece carriers in the gearbox test rig



Locking the workpiece carrier and detecting connectors

On the workpiece carriers, it must be detected whether the connectors have been connected in the correct positions. During the test run, the gearbox is held in place using locking bolts.

PMD distance sensors with time of flight measurement \cdot further products from page 209										
Туре	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.				
	Background suppression	0.210 m	150	< 15 x 15	1830	O1D100				

Inductive cyli	Inductive cylinder sensors for stroke detection on locking cylinders · further products from page 175										
Туре	Dimensions	Material	Ub	f	Protection	l _{load}	Ta	Order no.			
	[mm]		[V]	[Hz]		[mA]	[°C]				
	25.3 x 5 x 6.5	PA (polyamide)	1030	10000	IP 65 / IP 67	100	-2585	MK5107			

Provision of engine and transmission



Identification of engine and transmission

Engine and gearbox variants must also be safely assigned for further use, in consideration of country-specific versions.

Multi-code reader for identifying codes · further products from page 371											
Туре	Dimensions Max. field of view size [mm] [mm]	field of	Type of light	Motion speed	Process interface	Order no.					
			LED	[m/s]							
IJ	60 x 42 x 53.5	64 x 48	red light	≤7	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I300					

Shipping of engine and transmission



Vision sensors for checking tasks · further products from page 237

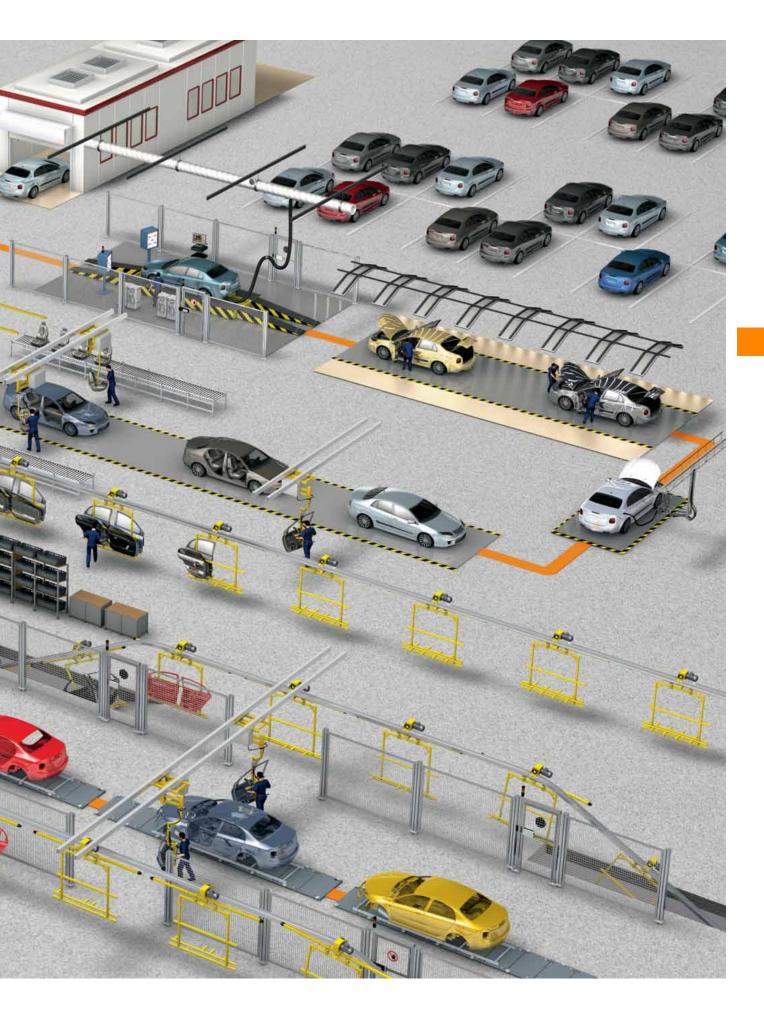
Engine and transmission completeness check

Engine and gearbox variants differ from each other in many ways for countryspecific versions.

Before shipping to the assembly plant, the presence of, for example, stoppers, ID marks and similar are checked.

Туре	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	Infrared	-1060	O2D220





The jigsaw becomes a car



Piece by piece, the complete vehicle is formed from many individual components. Countless bolts fix the assemblies in their places. Clips hold carpets and the interior trim in place. Kilometres of cables and wiring form the vehicle's nervous system.

The tyres and wheel rims are often used to further individualise the wheels.

Customer-specific equipment options make the car more interesting but represent huge logistical challenges. Here it is absolutely essential to assign the parts and components according to the equipment options desired by the customer.

In the end, it is the assembly which determines the success of the transformation of jigsaw pieces into high-quality product.

Here, ifm is able to provide well-proven sensors for the diverse requirements of assembly processes. Our many years of experience also enable us to develop sensors and systems for the assembly tasks of the future, and provide them to the user.

Disassembling the doors



Identifying the appropriate doors

The doors are removed from the car body and forwarded to the door module assembly area. The O2I multi-code reader checks the codes on the doors and / or the build-tickets. This avoids incorrect assignment to the vehicles later on.

Multi-code reader for identifying doors · further products from page 371

Туре	Dimensions [mm]	Max. field of view size [mm]	Type of light LED	Motion speed [m/s]	Process interface	Order no.
	60 x 42 x 53.5	64 x 48	red light	≤ 7	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I300

Transport to door module assembly



Travelling doors

The doors are transported for further processing via the overhead electric monorail conveyor. IMC series inductive sensors detect the position of the hangers. Photoelectric distance sensors are responsible for preventing collisions.

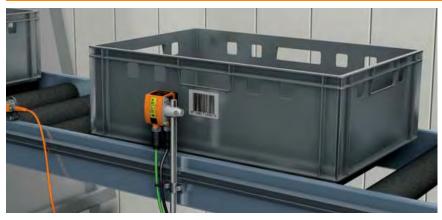
Inductive sen	Inductive sensors for determining position · further products from page 121										
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.			
				D.C.			r 1				
	[mm]	[mm]		[V]		[Hz]	[mA]				

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

11

Photoelectric	Photoelectric sensors for approach check · further products from page 209										
Туре	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.					
	Photoelectric distance sensor	0.36 m	133	< 8 x 8	1830	O1D155					

Detecting add-on parts for door modules

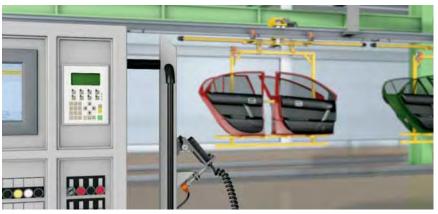


Identifying appropriate add-on parts

The painted components, e.g. wing mirrors, must be assigned to the appropriate car body. The multi-code reader detects the codes on the build-tickets. This prevents incorrect assembly of add-on parts.

Multi-code reader identification of add-on parts · further products from page 371										
Туре	Dimensions	Max. field of view size	Type of light	Motion speed	Process interface	Order no.				
	[mm]	[mm]	LED	[m/s]						
IJ	60 x 42 x 53.5	64 x 48	red light	≤7	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I300				

Function check of electrical equipment



Check connector position for diagnostics

After the assembly of mirrors, locks and window lifts, the electrical function is checked using a diagnostics connector device. The KF5002 capacitive sensor detects whether the diagnostics connector device is still connected after the test and releases the next production step.

Capacitative	Capacitative sensors for determining position · further products from page 159										
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.			
	[mm]	[mm]		[V]		[Hz]	[mA]				



Dashboard removal



Removing instrument panels without collisions

During the gripping operation, the distance sensors measure the distance to the instrument panel. If the distance falls below the value previously stored in the robot's program, the gripping robot reduces its speed to avoid a collision.

Collision mor	intoring with time of high	t sensors · Turther produ	icts from page 209			
Туре	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.
	Photoelectric distance sensor	0.23.5 m	150	< 6 x 6	1830	O1D102

Dashboard installation



Positioning the instrument panels

The O2V object detection sensors recognise a characteristic form in the car body. The sensors detect the position during the approach, and give correction data to the robot control if necessary.

Vision sensor	Vision sensors for controlling installation · further products from page 237									
Туре	Operating principle	Max. field of view size	Resolution	Detection rate	Type of light	Ambient temperature	Order no.			
		[mm]	[mm]	[Hz]		[°C]				
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	2.0	10	White light	-1060	O2V102			

Door protection in transfer areas



Closed check on transfer stations

Fail-safe inductive sensors suitable for safety functions up to PL e / SIL 3 directly detect the safe position of high-speed doors without contact and without any specific counterpart.

Inductive safety sensor for monitoring high-speed doors · further products from page 247									
Туре	Length	Enable zone	Housing material	U _b DC	Protection	Response time in case of a safety request /	Order no.		
	[mm]	[mm]		[V]		enable time [ms]			
	66	1015 nf	PPE	24	IP 65 / IP 67	≤ 50 / ≤ 200	GM7015		
	66	420 nf	PPE	24	IP 65 / IP 67	≤ 50 / ≤ 200	GM705S		

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

Pressure monitoring on suction grippers for windscreen assembly



Pressure measurement on suction grippers

The vacuum sensors detect whether there is sufficient vacuum present for a safe gripping operation.

Va	Vacuum pressure sensor for measuring the vacuum on a suction gripper \cdot further products from page 259									
	Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.		
				[bar]	max. [bar]	min. [bar]	[V]			
	i	G 1/8 female / M5 female	Display unit	-11	20	30	1832	PQ3809		

Positioning the car body



Fine positioning of the car body

The IDC inductive sensor detects the presence of the car body before the defined position. The motion slows down until the OPU photoelectric fork sensor signals that the exact position has been reached.

IDC series inductive sensors for position detection · further products from page 121									
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.	
	[mm]	[mm]		[V]		[Hz]	[mA]		

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

Photoelectric	Photoelectric fork sensors for determining the exact position · further products from page 207									
Туре	Fork width (w) [mm]	Fork depth (d) [mm]	Smallest detectable object Ø [mm]	Switching frequency [Hz]	Output H = light-on D = dark-on	U _b [V]	Order no.			
L	120	60	0.8	2000	H/D PNP	1035	OPU205			

Robot guidance for windscreen assembly

Pl



Light scanner for positioning the grippers

The windscreens are removed by grippers. Four O5H series reflection light scanners are used to precisely position the gripper. The windscreen is held in place precisely and without stress.

Photoelectric	hotoelectric sensors for gripper positioning · further products from page 189									
Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.				
	Background suppression	501800 mm	Red	50	H/D PNP	O5H500				

Quality assurance in the suspension assembly



Position check of brake discs

The ifm vision sensors monitor the exact position of the brake discs. The next assembly step will only be released if their position is correct. This saves subsequent costs, which used

to be incurred due to the rectification work required for incorrectly assembled brake discs.

Vision sensors for position detection · further products from page 237									
Туре	Operating principle	Max. field of view size	Resolution	Detection rate	Type of light	Ambient temperature	Order no.		
		[mm]	[mm]	[Hz]		[°C]			
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	2.0	10	Infrared	-1060	O2D222		

Touch sensor · further products from page 159

	•	1.5				
Туре	Ub	l _{load}	Current consumption	Ambient temperature	Protection	Order no.
	[V]	[mA]	[mA]	[°C]		
-0	24	200	30	-4085	IP 67 / IP 69K	КТ5002

Manufacture of exhaust systems



Cutting pipes for exhaust systems to length

In an automatic saw, the pipes are cut to the appropriate length corresponding to that stored in the program. The OJ reflection light scanner is used to determine the start position for the length measurement, using an absolute shaft encoder.

Laser reflection light scanner for determining the start position · further products from page 209									
Туре	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.			
1	Background suppression	15200 mm	-	2 x 1	1030	OJ5152			

Collision protection in the assembly area



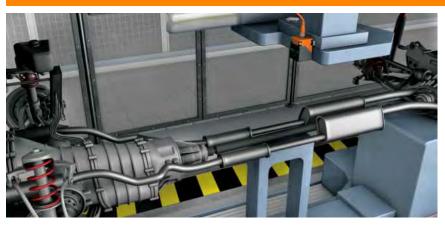
Detecting when the assembly platform is free

Here, the O1D distance sensor detects whether the assembly platform is free. Only when no car body is present will the hangar be lowered and the car body positioned.

Photoelectric detection of car bodies · further products from page 209

Туре	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.
	Photoelectric distance sensor	0.210 m	133	< 15 x 15	1830	O1D105

Marriage



Uniting the car body with the drivetrain

The IMC inductive sensor controls the lowering of the car body onto the assembly platform.

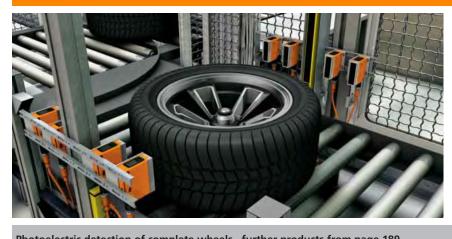
The O1D distance sensors detect whether other driverless transport systems are approaching the assembly platform.

Inductive ser	Inductive sensors for determining position · further products from page 121										
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	I _{load}	Order no.			
	[]			D.C.							
	[mm]	[mm]		[V]		[Hz]	[mA]				

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

Photoelectric	sensors for approach chec	k · further products fro	om page 209			
Туре	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.
	Photoelectric distance sensor	0.36 m	133	< 8 x 8	1830	O1D155

Wheel transport



Transporting the wheels to the assembly station

The O5S (transmitter) / O5E (receiver) through-beam sensors detect the complete wheels on the roller conveyor. This ensures there are no interruptions in the transport to the assembly stations.

Filotoelectric	detection of complete whee		nom page 189			
Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Transmitter	25 m	Red	625	-	O5S500
	Receiver	25 m	Red	-	H/D PNP	O5E500

Wheel assembly

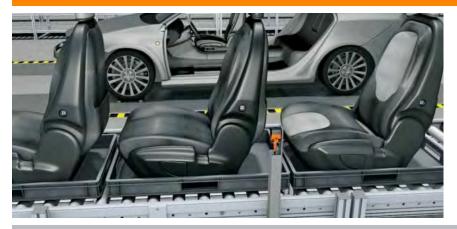


Assembling the wheels

The O2V vision sensors detect preprogrammed bolt hole patterns in the wheel rims. The robots can grip the wheels in a defined way and approach the bolting position with extreme precision.

Detecting t	Detecting the pattern of bolt holes · further products from page 237						
Туре	Operating principle	Max. field of view size	Resolution	Detection rate	Type of light	Ambient temperature	Order no.
		[mm]	[mm]	[Hz]		[°C]	
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	1.0	10	White light	-1060	O2V100

Detection of seats



Identifying the seat assemblies

Each seat is clearly identifiable via an integrated RFID tag and so can be assigned to the correct vehicle.

RFID 13.56 MHz antenna · further products from page 367



Pressure monitoring of suction grippers for seat assembly



Pressure measurement on suction grippers

The vacuum sensors detect whether there is sufficient vacuum present for a safe gripping operation.

Vacuum pres	/acuum pressure sensor for measuring the vacuum on a suction gripper · further products from page 259										
Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.				
			[bar]	max. [bar]	min. [bar]	[V]					
a	G 1/8 female	Display unit	-11	20	30	1832	PQ7809				

Reassembling the doors



Installation of the door modules

The labels on the doors are read before assembly. This ensures that the completed doors are assigned to the correct vehicle.

Multi-code r	le reader identification of add-on parts · further products from page 371								
Туре	Dimensions	Max. field of view size	Type of light	Motion speed	Process interface	Order no.			
	[mm]	[mm]	LED	[m/s]					
	60 x 42 x 59	400 x 300	red light	≤7	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I304			

Transport to the door assembly area



On the way to visual inspection

The assembled vehicle is placed on a conveyor by a lift. The O5P500 retroreflective sensor with polarisation filter detects whether the transfer station is free. IM5115 series inductive sensors monitor the conveyor motion.

Photoelectric	Photoelectric detection of car bodies · further products from page 189									
Туре	Operating principle	Range	Type of light	SpotØat max. range [mm]	Output H = light-on D = dark-on	Order no.				
	Polarisation filter	0.07510 m	Red	250	H/D PNP	O5P500				

Inductive sensors for determining position · further products from page 121										
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.		
	[mm]	[mm]		[V]		[Hz]	[mA]			
-	40 x 40 x 54	20 f	PA (polyamide)	1036	IP 67	100	200	IM5115		

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

State recognition



Detecting the bonnet condition "open"

If the car body travels to a defined position with an open bonnet, the light beam to the assembly shop floor will be broken and clearance to proceed will be given.

A closed bonnet is also recognised and the automatic docking to the filling station prevented.

Photoelectric detection of car bodies · further products from page 209

Туре	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.
	Photoelectric distance sensor	0.23.5 m	150	< 6 x 6	1830	O1D102

Filling with various fluids



Filling tanks and auxiliary units

Before the function test, the car needs to be filled up with various fluids such as windscreen washer, brake fluid and a minimum amount of fuel. The level sensors detect the preselected amounts on extraction from the appropriate filling station.

Detection of levels of different media · further products from page 303									
Туре	Probe length	Active zone	Ub	Medium temperature water	Medium temperature oil	l _{load} [mA]	Order no.		
	[mm]	[mm]	[V]	[°C]	[°C]				
	472	390	1830	035 / 3560	070	200	LK1023		

Function test - roller dynamometer



Checking the vehicle properties

The roller dynamometer is used for testing, for example, acceleration and deceleration. Adhering to tailpipe emission values is also an important test criterion. The exhaust gases must be extracted under controlled conditions.

Flow monitoring in a suction system · further products from page 287										
Туре	Setting range liquids / gases [cm/s]	liquids / gases sensitivity		Response time [s]	Max. T ₀ gradient [K/min]	Pressure rating [bar]	Order no.			
	3300 / 2003000	360 / 200800	-2580	110	300	300	SF5200			

Control monitor for flow sensors · further products from page 331

Туре	U _b / Tolerance [V] / [%]	Current consumpt. [mA]	Power consumpt. [VA]	Power-on delay time [s]	Output when flow is present	Output when temperature is exceeded	Output in case of wire break	Order no.
	24 DC / +10 / - 20	90	-	1080	relay energised	relay energised	relay de-energised	SR0150*

* Note on use of miniature fuses for electrical connection

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

Rain test



Leakage test in the washing plant

In the "Rain test", the finished vehicles are tested for leaks. The SM6000 volumetric flow sensor measures the water flow rate. The PG2450 pressure sensor with analogue output controls the ideal working pressure of the pump.

Water flow rate monitoring with volumetric flow sensors · further products from page 287								
Туре	Process connection	Measuring range	Medium temperature	Pressure rating	Response time	Ub	Order no.	
		[l/min]	[°C]	[bar]	[s]	[V]		
	G1⁄2	0.2525.00	-1070	16	< 0.150	1830	SM6000	

Pressure monitoring in a high-speed pump \cdot further products from page 259							
Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.
			[bar]	max. [bar]	min. [bar]	[V]	
\bigcirc	G ½ male	Display unit	0400	800	1200	1832	PG2450

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AC004S	CE, CUL	349	AC5205	CE, CUL, EAC	345
AC0075	CE, CUL	349	AC5208	CE, CUL, EAC	345
AC0095	CE, CRUUS	349	AC5209	CE, CUL, EAC	345
AC0105	CE, CUL	349	AC5210	CE, CUL, EAC	345
AC0305	CE, CUL	349	AC5214	CE, CUL, EAC	345
AC0340		337	AC5215	CE, CUL, EAC	345
AC0415	CE, CUL, TÜV Nord	349	AC5222	CE, CUL, EAC	345
AC1154	CE	341, 345	AC5225	CE, CUL, EAC	345
AC1250	CE, CRUUS, EAC	351	AC5227	CE, CUL, EAC	347
AC1253	CE, CRUUS, CUL	339	AC5228	CE, CUL, EAC	347
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AC1411	CE, CUL, EAC, PI	337	AC5253	CE, CUL, EAC	347
AC1412	CE, CUL, EAC, PI	337	AC5270	CE, CUL, EAC	347
AC1421	CE, CUL, EAC	337	AC5285	CE, CUL, EAC	347
AC1422	CE, CUL, EAC	337	AL1100	CE, CUL, Profinet	161, 211
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AC2452	CE, CUL	343	AL1222	CE, CUL	357
AC2455	CE, CUL	343	AL1300	CE, Profinet	355
AC2457	CE, CUL	343	AL1302	CE, Profinet	355
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DI5030	CE, CUL	231	E10077		410
DI5031	CE, CUL	231	E10154		410
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Flow sensors at a glance

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100 m 0 m	Mechatronic	Flow meter system
	Ultrasonic	Flow meter system
	Thermal	Compressed air meters
	Thermal	Flow sensors
	Thermal	Flow sensors
	Software and accessories	IO-Link interface



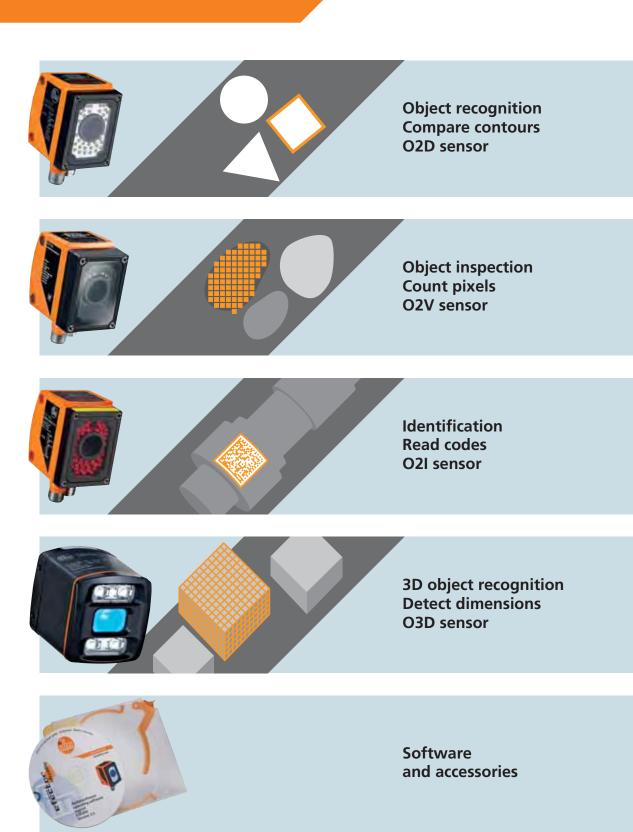


Suitable for media											
		Sensor Av	type solute measure people and the people of	urement elaive meas Air, indust	urement A.	NN: CO1	Oil Deionised	Cooling V Cooling V	water ² nixture ² /1 (nitration) of tow of town of to		
SM SMxx50	\checkmark		-	_	_	\checkmark	\checkmark	\checkmark	Technology IEO Display IP 67 OC-Link		
SV SVxx50	\checkmark		_	_	\checkmark	\checkmark	\checkmark	\checkmark	High- grade stainless steel connection IP 65. IP 65. IP 67. IO-Link		
SBY / SBG SBT SBU	\checkmark			\checkmark	- - -	✓ ✓ -	\checkmark	_	Generating Interpretative sig to 100°C Display		
SU	\checkmark		_	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	Ultrasound Steel Display		
SD	\checkmark		\checkmark	-	-	-	-	-	High- grade stainless steel Display IP 65 IO-Link		
SI5xxx SR / SN		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	High- grade stainless steel TEACH-IN IP 65, IP 67 IP 67 IO-Link		
SA		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	High- grade stainless steel Display		

 $^{1)}$ < 20 $\mu\text{S/cm}^{-2)}$ > 20 $\mu\text{S/cm}^{-2)}$

✓ good suitability

Vision sensors at a glance







			no colourad	ntrast di solution of the state of the solution of the solutio	variable of	estrates objects of Dodeston noined position and position entation and position and position variable incorrection and position
For objects with defined geometry. For assessment of presence and completeness, for position detection and for sorting tasks. Use for quality assurance in assembly automation and on machine tools.	-	\checkmark	_	~	-	Contour verification Ethernet
For objects and scenes with variable features. For optical level monitoring, for full / empty monitoring and fault and hole recognition. Use for quality assurance in assembly automation and on packaging machines.	-	\checkmark	\checkmark	\checkmark	_	Count pixels Ethernet
For 1D and 2D codes as well as text. For monitoring processes in industrial automation. Use in product tracking, control and identification.	-	\checkmark	_	-	~	Data Matrix Ethernet
For the three-dimensional detection of objects and scenes using the time of flight measurement. For assessment of level and completeness as well as for object dimensioning. Use e.g. in packaging and conveying technology.	~	-	~	\checkmark	_	Ethernet

Identification systems at a glance







	535 ^{en type} Optical cole reader PFID 55 ^{tents} Ranse Fieldbus								
Identification of e.g. bar codes, QR or Data Matrix codes and text for the monitoring of process operations.	021	\checkmark		up to 2m	RS232 Ethernet TCP/IP EtherNet/IP	ZD Date Matrix Ethernet			
Identification in routing conveyors.	DTA3xx		\checkmark	up to 100 mm	AS-i	N B 67 -			
Identification in conveyors. Large data volumes, high speed.	DTE10x ANT4xx ANT5xx ANT600		\checkmark	up to 200 mm	SAP/ERP Profibus-DP Profinet EtherNet/IP TCP/IP Ethercat	COOLER Ether/st/IP			
Identification in production plants.	DTI		\checkmark	100 mm	IO-Link	P 67 IP 69 K			
Identification in production and logistics. Long ranges, many tags.	DTE810 DTE820 DTE910		~	up to 10m	Ethernet TCP/IP EtherNet/IP	Ether; set/IP 1P 65, 1P 67			

Vibration monitoring systems at a glance



Basic vibration sensors and transmitters Vibration sensors and transmitters for permanent monitoring of the overall vibration condition of machines and plants to ISO 10816.



Intelligent vibration sensors

The compact vibration sensors of type VN monitors the overall vibration condition of machines and plants to ISO 10816.



Diagnostic electronics

6-channel diagnostic system for the evaluation of dynamic signals (e.g. acceleration) and analogue inputs. Flexible, detailed monitoring and analysis.



Acceleration sensors

Acceleration sensors measure the dynamic forces at the machine surface.



Software and accessories

The software VES004 is used for the parameter setting and the online data monitoring of all intelligent vibration sensors and diagnostic electronics.





			type Analogu	Switching	output Fieldhus	Intestate	History History	unction or capabilit signal in	ATCHIP ANTE AS TEMPERATURE Disonostic
VT	~	-	-	-	-	-	-	-	Diagnostics ISO 10816 420 mA
VK	\checkmark	\checkmark	-	-	-	-	-	-	Diagnostice ISO 10816
VN	~	~	-	\checkmark	\checkmark	-	~	_	LED Magnetation USB 0/420 mA
VSE002 VSE100	\checkmark	\checkmark	-	-	\checkmark	\checkmark	\checkmark	\checkmark	
VSE150	· ✓	· ✓	\checkmark	-	\checkmark	\checkmark	✓	 ✓ 	LED Gragensee CLED Gragensee CLED CONSCIENT Cherry Set/IP Cherry Set/IP Cherry Set/IP
VSA VSP	-	-	_	_	_	_	_	_	Diagnostics Ex High- grades steel IP 67 IP 68' steel IP 69 K



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

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Inductive sensors for machine tools



- Resistant to aggressive oils and coolants
- Increased sensing range for higher uptime
- Protection IP 68
- Laser type label for permanent identification of the unit
- High shock and vibration resistance



Absolutely sealed

Long life is achieved due to a special design and additional seals as well as the use of resistant materials such as PBT or ceramics to ensure the protection against oils and coolants. All units of this series (C series) feature the protection rating IP 67 / IP 68 and the protection class II.

Long sensing range

The increased sensing range is ensured over the whole temperature range. This provides better protection against failures due to mechanical damage.

M12 connector

The connection is made via a robust M12 connector with integrated, clearly visible 4-port LED for indication of the switching status.

Future-proof details

ifm sensors have been designed for a service life of many years. This is also reflected by the details. For example the captive laser type label means the units can still be clearly identified after years of use.



Application example: Eccentric monitoring

Sensors fo	or oils and coo	olants wit	h increased sei	nsing range				
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
M12 connecto	or · Output functio	n · 3-w	ire · DC PNP					
	M8 / L = 50	2 f	High-grade st. steel	1036	IP 67	1000	200	IE5381
-	M12 / L = 45	4 f	Brass	1030	IP 68	700	100	IFC204
	M12 / L = 45	4 f	Brass	1036	IP 68	700	100	IFC206
)=-	M12 / L = 50	7 nf	Brass	1030	IP 68	700	100	IFC205
	M18 / L = 45	8 f	Brass	1030	IP 68	400	100	IGC204
	M18 / L = 46	8 f	Brass	1036	IP 68	400	100	IGC206
	M18 / L = 50	12 nf	Brass	1030	IP 68	300	100	IGC205
M12 connecto	or · Output functio	nt. · 3-w	ire · DC PNP					
-	M12 / L = 45	4 f	Brass	1030	IP 68	700	100	IFC207
	M12 / L = 45	4 f	Brass	1036	IP 68	700	100	IFC209
=()=	M12 / L = 50	7 nf	Brass	1030	IP 68	700	100	IFC208
	M18 / L = 45	8 f	Brass	1030	IP 68	400	100	IGC207
	M18 / L = 46	8 f	Brass	1036	IP 68	400	100	IGC209
	M18 / L = 51	12 nf	Brass	1036	IP 68	300	100	IGC208



Inductive sensors in 2-wire technology for machine tools



Absolutely sealed

Long life is achieved due to a special design and additional seals as well as the use of resistant materials such as PBT or ceramics to ensure the protection against oils and coolants. All units of this series (C series) feature the protection rating IP 67 / IP 68 and the protection class II.

Long sensing range

The increased sensing range is ensured over the whole temperature range. This provides better protection against failures due to mechanical damage.

M12 connector

The connection is made via a robust M12 connector with integrated, clearly visible 4-port LED for indication of the switching status.

Future-proof details

ifm sensors have been designed for a service life of many years. This is also reflected by the details. For example the captive laser type label means the units can still be clearly identified after years of use.





Longer uptime due to components adapted to each other.

Туре	Dimensions	Sensing	Material	Ub	Protection	f	I _{load}	Order				
	[mm]	range [mm]		[V]		[Hz]	[mA]	no.				
M12 connecto	or · Output functio	n · 2-wir	e · DC PNP/NPN									
	M12 / L = 45	4 f	Brass	1030	IP 68	700	100	IFC200				
9	M12 / L = 50	7 nf	Brass	1030	IP 68	700	100	IFC201				
	M18 / L = 46	8 f	Brass	1030	IP 68	400	100	IGC200				
-81	M18 / L = 51	12 nf	Brass	1030	IP 68	250	100	IGC201				
M12 connecto	M12 connector · Output function/t_ · 2-wire · DC PNP/NPN											
	M12 / L = 60	4 f	Brass	1036	IP 68	700	100	IFC234				
	M12 / L = 60	7 nf	Brass	1036	IP 68	500	100	IFC235				
-=)=	M18 / L = 70	8 f	Brass	1036	IP 68	400	100	IGC222				
-==	M30 / L = 70	15 f	Brass	1030	IP 68	100	100	IIC208				
-=1	M30 / L = 70	22 nf	Brass	1036	IP 68	100	100	IIC209				
M12 connecto	or · Output functio	n · 3-wir	e DC PNP · 2-wire	DC PNP/NPN								
	M12 / L = 70	4 f	Brass	1030	IP 68	500	100	IFC210				
	M18/L = 70	8 f	Brass	1030	IP 68	400	100	IGC210				



Inductive sensors with 60 mm housing length



- Load current 200 mA and supply voltage 10...36 V DC
- Increased sensing range for higher uptime
- IP 67 / IP 68 as well as resistant to oils and coolants
- Laser type label for permanent identification of the unit
- High vibration and shock resistance



Universal use

The sensors have the load current of 200 mA required by the automotive industry and a connection voltage of 10...36 V DC. With a total length of 60 mm and a thread area of 40 mm the sensors have been designed for universal use.

Absolutely sealed

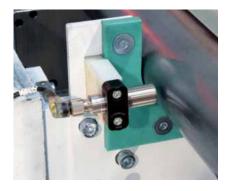
Long life is achieved due to a special design and additional seals as well as the use of a plastic which is resistant to oils, coolants and lubricants. All units of this series (C series) feature the protection rating IP 67 / IP 68 and the protection class II.

Long sensing range

The increased sensing range is ensured over the whole temperature range. This provides better protection against failures due to mechanical damage.

M12 connector

The connection is made via a robust M12 connector with integrated, clearly visible 4-port LED for indication of the switching status.





Standardised housing lengths allow compact installation.

Sensors fo	or oils and coo	olants with	ı increased se	nsing range								
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.				
	[mm]	[mm]		[V]		[Hz]	[mA]					
M12 connector · Output function · 3-wire · DC PNP												
*	M12 / L = 60	4 f	Brass	1030	IP 68	700	200	IFC229				
	M12 / L = 60	7 nf	Brass	1030	IP 68	700	200	IFC230				
-=	M18 / L = 60	12 nf	Brass	1036	IP 68	300	200	IGC220				
	M18 / L = 60	8 f	Brass	1036	IP 68	400	200	IGC221				
-2)=	M30 / L = 60	15 f	Brass	1036	IP 68	100	200	IIC206				
-81	M30 / L = 60	22 nf	Brass	1036	IP 68	100	200	IIC207				

Connecto	rs	
Туре	Description	Order no.
Socket M12,	5/4-pole, 4-wire	
-	Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M12 connector \cdot 5 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC005
87	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC002



Inductive sensors with K = 1 or selective metal detection



- IP 67 / IP 68 as well as resistant to oils and coolants
- Sensors with constant sensing range for all metals (correction factor = 1)
- Extra-high switching frequency up to 2 kHz
- Sensors with "ferrous-only" feature: Only ferrous metals are detected
- Laser type label for permanent unit identification



Absolutely sealed

Long life is achieved due to a special design and additional seals, as well as the use of a special plastic that is resistant to oil, coolants and lubricants.

Correction factor 1

The "K=1" sensors have the same sensing range on all metals, i.e. the correction factor is constantly 1.

Selective "ferrous-only" metal detection

The inductive new "ferrous-only" sensors only detect ferrous metals. Aluminium chips which build up on the active face during the process and lead to incorrect switching of conventional sensors are ignored due to this principle.

Sensing range

The increased sensing range is ensured across the whole temperature range, giving better protection against failure due to mechanical damage.

M12 connector

The connection is made via a robust M12 connector with integrated, clearly visible 4-port LED for indication of the switching status.





Different metals are safely detected.

Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
M8 connecto	• Output function	· 3-wir	e · DC PNP					
	M8 / L = 60	1.5 f	High-grade st. steel	1030	IP 65 / IP 67	1000	100	IE5390
	M8 / L = 60	4 nf	High-grade st. steel	1030	IP 65 / IP 67	1000	100	IE5391
M12 connecto	or · Output function	1 <u></u> L ⋅ 3-w	ire · DC PNP					
	M12 / L = 60	2.5 f	High-grade st. steel	1036	IP 68	100	100	IFC264
M12 connecto	or · Output function	1 · 3-w	ire · DC PNP					
	M12 / L = 65	3 f	stainless steel (316L)	1030	IP 68	2000	100	IFC259
	M18 / L = 65	5 f	High-grade st. steel	1030	IP 68	2000	100	IGC232
-8/8	M30 / L = 65	10 f	High-grade st. steel	1030	IP 68	2000	100	IIC218

Full metal	Full metal sensors for oils and coolants with correction factor K = 0													
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.						
	[mm]	[mm]		[V]		[Hz]	[mA]							
M12 connector · Output function · 3-wire · DC PNP														
	M12 / L = 60	2.5 f	High-grade st. steel	1036	IP 68	100	100	IFC263						
• • ••	M18 / L = 70	4.5 f	High-grade st. steel	1036	IP 68	100	100	IGC249						



Inductive M12 sensors with long sensing ranges



- High shock and vibration resistance
- Different housing length for almost all applications
- Safe and quick mounting due to robust and reinforced housing
- All sensors with robust M8 or M12 connection
- Laser type label for permanent identification of the unit



Long sensing range

The increased sensing range is ensured across the whole temperature range, giving better protection against failure due to mechanical damage. With M12 connection the sensors allow to reach sensing ranges up to 4 or 7 mm. In practice this corresponds to a value which is up to twice as high compared to standard sensors.

Plug-and-socket connection

The connection is made via a robust M8 or M12 connector with integrated, clearly visible 4-port LED for indication of the switching status.

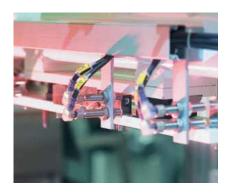
Short length

The housing length of the two short designs is only 46 mm (flush) and 51 mm (non flush). The units can thus also be used where available space is extremely limited.

Future-proof details

ifm sensors have been designed for a service life of many years. This is also reflected by the details.

For example the captive laser type label means the units can still be clearly identified after years of use.



Long sensing ranges allow versatile use.

Туре	Dimensions	Sensing	Material	Ub	Protection	f	l _{load}	Order
	[mm]	range [mm]		[V]		[Hz]	[mA]	no.
M12 connecto	or · Output function	n · 2-wire	e · DC PNP/NPN					
	M12 / L = 45	4 f	Brass	1030	IP 67	700	100	IFS200
_	M12 / L = 50	7 nf	Brass	1030	IP 67	700	100	IFS201
W12 connecto	or · Output function	n · 3-wir	e · DC PNP					
	M12 / L = 45	4 f	Brass	1030	IP 67	700	100	IFS204
=	M12 / L = 50	7 nf	Brass	1030	IP 67	700	100	IFS205
	M12 / L = 70	4 f	Brass	1030	IP 67	700	100	IFS212
(===	M12 / L = 70	7 nf	Brass	1030	IP 67	700	100	IFS213
W12 connecto	or · Output function	n <u>L</u> ·3-wir	e · DC PNP					
	M12 / L = 45	4 f	Brass	1030	IP 67	700	100	IFS206
	M12 / L = 50	7 nf	Brass	1030	IP 67	700	100	IFS207
M8 connector	• Output function	· 3-wire	· DC PNP					
	M12 / L = 46	4 f	Brass	1036	IP 67	700	100	IFS210
W12 connecto	or · Output function	n · 3-wir	e DC PNP · 2-wire	DC PNP/NPN				
	M12 / L = 70	4 f	Brass	1030	IP 67	500	100	IFS208
	M12 / L = 70	7 nf	Brass	1030	IP 67	500	100	IFS209



Inductive M18 sensors with long sensing ranges



- High shock and vibration resistance
- Different housing lengths for almost every application
- Safe and quick mounting due to robust and reinforced housing
- All sensors have corrosion-resistant M12 connectors
- Laser type label for permanent identification of the unit



Long sensing range

The increased sensing range is ensured across the whole temperature range, giving better protection against failure due to mechanical damage. With M18 connection the sensors allow to reach sensing ranges up to 8 or 12 mm. In practice this corresponds to a value which is up to twice as high compared to standard sensors.

Plug-and-socket connection

The connection is made via a robust M12 connector with integrated, clearly visible 4-port LED for indication of the switching status.

Short length

The housing length of the two short designs is only 46 mm (flush) and 51 mm (non flush). The units can thus also be used where available space is extremely limited.

Future-proof details

ifm sensors have been designed for a service life of many years. This is also reflected by the details.

For example the captive laser type label means the units can still be clearly identified after years of use.







Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
W12 connecto	or · Output functio	n · 2-wir	e · DC PNP/NPN					
	M18 / L = 46	8 f	Brass	1030	IP 67	300	100	IGS200
	M18 / L = 51	12 nf	Brass	1030	IP 67	250	100	IGS201
W12 connecto	or · Output functio	n · 3-wir	e · DC PNP					
	M18 / L = 45	8 f	Brass	1030	IP 67	400	100	IGS204
-	M18 / L = 50	12 nf	Brass	1030	IP 67	300	100	IGS205
	M12 / L = 70	8 f	Brass	1030	IP 67	400	100	IGS212
	-	12 nf	Brass	1030	IP 67	300	100	IGS213
W12 connecto	or · Output functio	nt · 3-wir	e · DC PNP					
	M18 / L = 45	8 f	Brass	1030	IP 67	400	100	IGS206
	M18 / L = 50	12 nf	Brass	1030	IP 67	300	100	IGS207
W12 connecto	or · Output functio	n · 3-wir	e DC PNP · 2-wire	DC PNP/NPN				
	M18 / L = 70	8 f	Brass	1030	IP 67	400	100	IGS208
	M18 / L = 70	12 nf	Brass	1030	IP 67	300	100	IGS209

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



Full-metal inductive sensors with extended temperature range



- Sensor housing and front face of stainless steel
- Wide temperature range of 0...100 °C
- Temperature shock resistant even in case of frequent temperature fluctuations
- High ingress protection: IP 67 / IP 68 / IP 69K
- Resistant to high-pressure cleaning and aggressive cleaning agents



Materials

Both the threaded body and the sensing face of the housing are made of stainless steel.

Wide temperature range

The permissible application range of the sensors covers 0 to 100 °C. Furthermore, the units are exceptionally resistant to temperature shocks.

Increased sensing ranges

The increased sensing ranges for non-flush installation give you more safety in case of mechanical tolerances.

Ingress resistance in wet areas

The sensors for use up to 100 °C undergo frequent cleaning operations, temperature shocks and feature high resistance to cleaning agents.

- temperature shock test to EN 60068-2-14 Nc
- artificial ageing in a 1000-hour long-term test to EN 60068-2-14 Nb (temperature cycle test)
- leak check using the steam boiler test







Full-meta	l inductive ser	isors								
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.		
	[mm]	[mm]		[V]		[Hz]	[mA]			
M12 connector · Output function · 3-wire · DC PNP										
	M12 / L = 45	4 f	High-grade st. steel	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	100	100	IFT257		
	M12 / L = 45	4 f	High-grade st. steel	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	100	100	IFC275		
æ	M12 / L = 45	4 f	High-grade st. steel	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2	100	IFR207		
==(==	M12 / L = 60	3 f	High-grade st. steel	1036	IP 68 / IP 69K	100	100	IFT240		
	M18 / L = 45	8 f	High-grade st. steel	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	100	100	IGT258		
	M18 / L = 45	8 f	High-grade st. steel	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	100	100	IGC258		
#	M18 / L = 45	8 f	High-grade st. steel	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2	100	IGR207		
-2)3	M18 / L = 70	5 f	High-grade st. steel	1036	IP 68 / IP 69K	100	100	IGT247		
-=	M30 / L = 50	15 f	High-grade st. steel	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	50	100	IIT243		
-=	M30 / L = 50	15 f	High-grade st. steel	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	50	100	IIC233		
-	M30 / L = 50	15 f	High-grade st. steel	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2	100	IIR207		
	M30 / L = 70	10 f	High-grade st. steel	1036	IP 68 / IP 69K	50	100	IIT228		



Full-metal inductive sensors M8 to M30







Materials

For the one-piece housing the threaded body and the sensing face are made of stainless steel.

Oils and coolants

Oils and coolants heavily impact the installed machine components. The O-ring seal made of FKM combined with the corresponding ecolink connector ensures high protection against malfunctions.

Application tests

A series of tests qualified the sensors for use in harsh environments:

- vibration test
- shock test
- impact test
- coolant test



Robust sensors for use in harsh environments.

Resistant

Full metal sensors for oils and coolants									
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.	
	[mm]	[mm]		[V]		[Hz]	[mA]		
M8 connector · Output function · 3-wire · DC PNP									
	M8 / L = 50	2 f	High-grade st. steel	1036	IP 67	100	100	IEC201	
M12 connecto	or · Output function	n · 3-wi	re · DC PNP						
<u>er)</u> =	M8 / L = 60	2 f	High-grade st. steel	1036	IP 67 / IP 68 / IP 69K	100	100	IEC200	
	M12 / L = 60	3 f	High-grade st. steel	1036	IP 67 / IP 68	100	100	IFC258	
	M18 / L = 70	5 f	High-grade st. steel	1036	IP 67 / IP 68	100	100	IGC248	
-:	M30 / L = 70	10 f	High-grade st. steel	1036	IP 67 / IP 68	50	100	IIC224	

Connecto	ors	
Туре	Description	Order no.
Socket M12,	5/4-pole, 4-wire	
-	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC005
0	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC002



Full-metal inductive sensors for use in welding applications



- Ideal for metalworking applications
- Non-stick coating against weld spatter
- Mechanically resistant to impacts on the sensing face
- Vibration and shock resistant
- Laser type label for permanent identification of the unit



Materials

For the one-piece housing the threaded body and the sensing face are made of stainless steel.

Use in welding applications

The non-stick coating allows weld spatter to roll off the sensor. The high temperature range of up to 85 °C also enables handling of critical applications.

Application tests

A series of tests qualified the sensors for use in harsh environments:

- vibration test
- shock test
- impact test
- coolant test





Longer lifetime in welding applications due to anti-adhesive coating.

Inductive sensors

Full metal	sensors with	non-stick	coating agains	st weld spa	tter			
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
M12 connecto	or · Output function	n · 3-w	ire · DC PNP					
(122) (122)	M8 / L = 60	2 f	High-grade st. steel	1036	IP 67 / IP 68	100	100	IER200
en)m	M12 / L = 60	4 f	High-grade st. steel	1036	IP 67	2	100	IFR200
=:30)80	M18 / L = 70	6 f	High-grade st. steel	1036	IP 67	2	100	IGR200
	M30 / L = 70	12 f	High-grade st. steel	1036	IP 67	2	100	IIR200
Cable 0.3 m · v	with M12 connecto	or · Output fu	Inction · 2-wire	e · DC PNP/NPN				
	M8 / L = 45	2 f	High-grade st. steel	1036	IP 67	150	100	IER203
	M12 / L = 40	4 f	High-grade st. steel	1036	IP 67	75	100	IFR203
	M12 / L = 40	4 f	High-grade st. steel	1036	IP 67	75	100	IFR206
	M18 / L = 40	6 f	High-grade st. steel	1036	IP 67	50	100	IGR203
	M18 / L = 40	6 f	High-grade st. steel	1036	IP 67	50	100	IGR206
	M30 / L = 40	12 f	High-grade st. steel	1036	IP 67	25	100	IIR203
	M30 / L = 40	12 f	High-grade st. steel	1036	IP 67	25	100	IIR206
Cable 5 m · Ou	utput function	· 2-wire · [DC PNP/NPN					
	M8 / L = 45	2 f	High-grade st. steel	1036	IP 67	150	100	IER205
	M12 / L = 40	4 f	High-grade st. steel	1036	IP 67	75	100	IFR205
	M18 / L = 40	6 f	High-grade st. steel	1036	IP 67	50	100	IGR205
	M30 / L = 40	12 f	High-grade st. steel	1036	IP 67	25	100	IIR205



Electromagnetic field immune inductive sensors with K = 1



- Designs: M12, M18, M30
- Electromagnetic field immune: suitable for all AC / DC and medium frequency welding systems.
- Increased sensing range for higher uptime
- Cylindrical types with high switching frequency
- Resistant to weld slag due to Duroplast cover and PTFE coating



Electromagnetic-field immune, resistant to weld slag

Due to the special coil structure the proximity sensors are insensitive to interfering magnetic fields which occur during the welding process. This makes them an optimum choice for use in welding equipment. The sensing face is made of a thermoset and the surface of the metal housing is PTFEcoated so that no weld slag adheres to the housing.

Correction factor = 1

No matter whether steel, aluminium, copper or other non-ferrous metals: The "K=1" sensors have the same sensing range on all metals, i.e. the correction factor is constantly 1.

Increased sensing range

The increased sensing range is ensured over the whole temperature range. This provides better protection against failures due to mechanical damage. In practice it corresponds to a value up to twice as high compared to standard sensors.





The sensors function without problems in welding applications.

Electroma	gnetic field ir	nmune sei	nsors with cor	rection fact	or K = 1			
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
M12 connecto	or · Output function	n · 3-wi	re · DC PNP					
	M12 / L = 65	3 f	Brass	1030	IP 67	2000	100	IFW200
	M12 / L = 65	8 nf	Brass	1030	IP 67	2000	100	IFW201
	M18 / L = 65	5 f	Brass	1030	IP 67	2000	100	IGW200
	M18 / L = 65	12 nf	Brass	1030	IP 67	2000	100	IGW201
-	M30 / L = 65	10 f	Brass	1030	IP 67	2000	100	IIW200
-	M30 / L = 65	22 nf	Brass	1030	IP 67	2000	100	IIW201

Connecto	rs	
Туре	Description	Order no.
Socket M12,	5/4-pole, 4-wire	
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVW001
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVW002
	Socket - angled - Free from silicone - Free from halogen - Gold-plated contacts - For welding applications - M12 connector - 2 m - Housing materials: housing: TPU orange / sealing: FKM	EVW004
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVW005



Electromagnetic field immune inductive sensors with K = 1



- Housing: rectangular, the sensing face can be rotated to 5 different positions
- Electromagnetic field immune: suitable for all AC / DC and medium frequency welding systems
- Increased sensing range for higher uptime
- Resistant to weld slag due to Duroplast cover and PTFE coating



Electromagnetic-field immune, resistant to weld slag

Due to the special coil structure the proximity sensors are insensitive to interfering magnetic fields which occur during the welding process. This makes them an optimum choice for use in welding equipment. The sensing face is made of a thermoset and the surface of the metal housing is PTFEcoated so that no weld slag adheres to the housing.

Correction factor = 1

No matter whether steel, aluminium, copper or other non-ferrous metals: the "K=1" sensors have the same sensing range on all metals, i.e. the correction factor is constantly one.

Increased sensing range

The increased sensing range is ensured over the whole temperature range. This provides better protection against failures due to mechanical damage. Compared to standard sensors it corresponds to a value which in practice is up to twice as high.









Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Orden no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
112 connect	or · Output function	n · 3-wi	re · DC PNP					
-	40 x 40 x 54	20 f	PA (polyamide)	1036	IP 67	200	200	IM512
-	40 x 40 x 54	35 nf	PA (polyamide)	1036	IP 67	200	200	IM513
-	40 x 40 x 54	40 nf	PA (polyamide)	1036	IP 67	200	200	IM513
-	40 x 40 x 54	20 f	PA (polyamide)	1036	IP 67	200	200	IM511
-	40 x 40 x 54	35 nf	PA (polyamide)	1036	IP 67	200	200	IM512
-	40 x 40 x 54	40 nf	PA (polyamide)	1036	IP 67	200	200	IM512
112 connect	or · Output function	n <u>+</u> _t	· 4-wire · DC PNP					
	40 x 40 x 54	20 f	PA (polyamide)	1036	IP 67	200	200	IM513
-	40 x 40 x 54	35 nf	PA (polyamide)	1036	IP 67	200	200	IM513
-	40 x 40 x 54	40 nf	PA (polyamide)	1036	IP 67 / IP 69K	200	200	IM513
-	40 x 40 x 54	20 f	PA (polyamide)	1036	IP 67	200	200	IM512
	40 x 40 x 54	35 nf	PA (polyamide)	1036	IP 67	200	200	IM512
-	40 x 40 x 54	40 nf	PA (polyamide)	1036	IP 67	200	200	IM512



Electromagnetic field immune Kplus sensors for welding areas



IP 69 K

Use in harsh welding applications

ISTER

40...+85°C

The inductive Kplus sensors withstand harsh operating conditions and reliably detect metal objects even in case of soiling.

The sensor housing and the fixing nuts have a non-stick coating to prevent sticking of weld slag. Strong magnetic fields occur in welding processes.

The new sensor technology prevents incorrect switching.

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



Inductive sensors

Electroma	agnetic field in	nmune Kp	lus sensors wi	ith correctio	on factor 1			
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
M8 connecto	r · Output function	· 3-wire	e · DC PNP					
es]a	M8 / L = 40	3 f	High-grade st. steel	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IEW200
):-</th <th>M8 / L = 40</th> <th>6 nf</th> <th>High-grade st. steel</th> <th>1030</th> <th>IP 65 / IP 66 / IP 67 / IP 68 / IP 69K</th> <th>2000</th> <th>100</th> <th>IEW201</th>	M8 / L = 40	6 nf	High-grade st. steel	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IEW201
M12 connect	or · Output function	n · 3-wi	re · DC PNP					
	M12 / L = 65	4 f	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IFW204
B	M18 / L = 65	8 f	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IGW202
E4	M30 / L = 65	15 f	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IIW202

Accessor	ies	
Туре	Description	Order no.
-	Mounting sleeve \cdot M12 x 1 - Ø 8 mm \cdot 28 mm \cdot with end stop \cdot for type M8 \cdot Housing materials: Brass anti-spatter / nut: Brass anti-spatter	E12587
-	Mounting sleeve \cdot M16 x 1 - Ø 12 mm \cdot 33.5 mm \cdot with end stop \cdot for type M12 \cdot Housing materials: Brass anti-spatter / nut: Brass anti-spatter	E12452
-	Mounting sleeve \cdot M22 x 1 - Ø 18 mm \cdot 33.5 mm \cdot with end stop \cdot for type M18 \cdot Housing materials: Brass anti-spatter / nut: Brass anti-spatter	E12453
	Mounting sleeve \cdot M36 x 1.5 - Ø 30 mm \cdot 33.5 mm \cdot with end stop \cdot for type M30 \cdot Housing materials: Brass anti-spatter / nut: Brass anti-spatter	E12454



Kplus sensors: one sensing range for all metals





Constant correction factor

Kplus sensors have the same sensing range for all types of metals.

They are for example perfectly suited for the detection of aluminium, where conventional sensors show a considerably reduced sensing range. The high switching frequencies enable the monitoring of fast changing switching states.

With the new sensor technology, these sensors are insensitive to magnetic fields and can for example be reliably used right next to electrical brakes. The wide temperature range as well as the high protection ratings enable universal use of the new Kplus sensors.



Туре	Dimensions	Sensing range	Material	Ub	Protection	f	I _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	110.
VI8 connector	• • Output function	· 3-wir	e · DC PNP					
-	M8 / L = 40	3 f	High-grade st. steel	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IES200
-+-	M8 / L = 40	6 nf	High-grade st. steel	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IES201
M12 connecto	or · Output function	ח · 3-wi	re · DC PNP					
	M12 / L = 45	4 f	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IFS289
	M12 / L = 45	10 nf	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IFS290
	M12 / L = 60	4 f	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IFS285
	M12 / L = 60	10 nf	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IFS286
	M18 / L = 45	8 f	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IGS279
	M18 / L = 45	15 nf	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IGS280
	M18 / L = 60	8 f	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IGS277
	M18 / L = 60	15 nf	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IGS278
	M30 / L = 45	15 f	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IIS269
	M30 / L = 60	15 f	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IIS267
- 1	M30 / L = 60	30 nf	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	2000	100	IIS268



Inductive sensors for conveying



- Very long sensing ranges up to 60 mm
- Different sizes for demanding applications
- M12 connector easy to mount and maintain
- Versions in 3-wire and 4-wire technology
- Type IM: sensing face in 5 positions freely selectable, clearly visible corner LEDs



Applications

The inductive rectangular sensors are particularly suited for use in conveying.

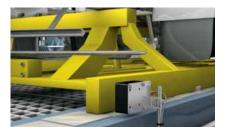
Type IM

The two clearly visible LEDs of the inductive rectangular sensor IM (40 x 40 mm) can be seen even under adverse installation conditions.

By loosening the adjusting screw, the sensing face can be rotated to 5 different positions and thus be optimally adapted to your applications.

Long sensing ranges

The high sensing ranges are guaranteed over the complete temperature range. They provide sufficient protection against mechanical damage ensuring higher machine uptime.







Sensors fo	or industrial a	pplication	s, rectangular	housings				
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
Cable 0.8 m · ·	with M12 connecto	or · Output fu	nction <u></u> L · 2-wir	e · DC PNP/NPN				
	40 x 40 x 54	15 f	PA (polyamide)	1036	IP 67	200	100	IM5137
Cable 0.8 m · ·	with M12 connecto	or · Output fu	nction · 2-wir	e · DC PNP/NPN				
	40 x 40 x 54	15 f	PA (polyamide)	1036	IP 67	200	100	IM5138
M12 connecto	or · Output function	n · 3-wi	re · DC PNP					
-	40 x 40 x 54	20 f	PA (polyamide)	1036	IP 67	100	200	IM5115
-	40 x 40 x 54	35 nf	PA (polyamide)	1036	IP 67	80	200	IM5116
-	40 x 40 x 54	40 nf	PA (polyamide)	1036	IP 67	60	200	IM5117
	92 x 80 x 40	50 f	PPE	1036	IP 67	70	250	ID5055
M12 connecto	or · Output function	n+t_	· 4-wire · DC PNP					
-	40 x 40 x 54	20 f	PA (polyamide)	1036	IP 67	100	200	IM5123
-	40 x 40 x 54	35 nf	PA (polyamide)	1036	IP 67	80	200	IM5134
-	40 x 40 x 54	40 nf	PA (polyamide)	1036	IP 67	60	200	IM5136
	92 x 80 x 40	50 f	PPE	1036	IP 67	70	250	ID5058
	92 x 80 x 40	50 f	PPE	1036	IP 67	70	250	ID5059



Inductive M8 sensors



- Small designs with M8 or M12 connectors or cable connection
- Different housing lengths for almost every application
- Increased sensing range for higher uptime
- High switching frequencies up to 2,000 Hz



Application

M8 inductive sensors with short housing length are perfectly suited for applications where space is at a premium.

Absolutely sealed

Long life is achieved due to a special design as well as the use of resistant materials such as PBT or ceramics to ensure the protection against oils and coolants. The units have protection rating IP 67.

Long sensing range

The sensing range is ensured over the entire temperature range. This provides better protection against failures due to mechanical damage.

Future-proof details

ifm sensors have been designed for a service life of many years. This is also reflected by the details. Due to the captive laser type label the units can for example still be clearly identified after years of use.





M8 inductive sensors are perfectly suited for applications where space is at a premium.

Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
/12 connecto	r · Output function	n · 3-wire	e · DC PNP					
	M8 / L = 53	1 f	Brass	1036	IP 67	750	200	IE5090
	M8 / L = 62	2 f	Brass	1036	IP 67	1000	250	IE5312
	M8 / L = 62	2 f	Brass	1036	IP 67	800	250	IE5318
	M8 / L = 62	2 f	Brass	1036	IP 67	1000	250	IE5257
31=}=	M8 / L = 62	4 nf	Brass	1036	IP 67	300	200	IE5288
18 connector	• Output function	· 3-wire	· DC PNP					
	M8 / L = 50	1 f	Brass	1036	IP 65 / IP 67	2000	200	IE5266
	M8 / L = 50	2 f	Brass	1036	IP 65 / IP 67	1300	200	IE5287
	M8 / L = 50	2 f	Brass	1036	IP 65 / IP 67	1000	250	IE5328
	M8 / L = 52	4 nf	Brass	1036	IP 65 / IP 67	800	200	IE5329
able 2 m · Oເ	utput function —	- · 3-wire · DC	PNP					
@==	M8 / L = 35	1 f	Brass	1036	IP 67	750	200	IE5072
= flush / nf =	non flush / qf = c	juasi-flush						
Connector	'S							
Туре			De	scription				Orde no.



Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M12 connector \cdot 5 m \cdot Housing materials: housing: TPU orange / sealing: FKM

EVC005

EVC145

Socket M8, 3-pole, 3-wire



Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M8 connector \cdot 5 m \cdot Housing materials: housing: TPU orange / sealing: FKM



Extra-short inductive M8 sensors



- Extra-short design perfectly suited for applications where space is at a premium
- 3 connection technologies selectable: M8 connector, cable or pigtail
- M8 connector for especially fast mounting
- Increased sensing range for higher uptime
- Flexible connection as 2 or 3-wire



Long sensing range

The increased sensing range is ensured across the whole temperature range, giving better protection against failure due to mechanical damage. With the M8 sensors sensing ranges of 3 mm (flush) and 5 mm (non flush) can be reached. In practice this corresponds to a value which is up to 3 times higher in comparison to standard sensors.

Short length

M8 inductive sensors with extra-short housing length are perfectly suited for applications where space is at a premium.

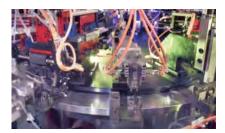
Universal connection possibilities for type M8

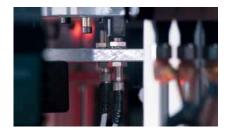
The sensors can either be used as 2-wire or 3-wire units.

Three connections possible

You can select between M8 connections, 2 m PVC cable or 30 cm PVC cable with potted M12 connection.







			s, threaded ho					
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
M8 connecto	r · Output function	· 3-wire	e DC PNP · 2-wire D	C PNP/NPN				
طفه	M8 / L = 40	3 f	Brass	1030	IP 65 / IP 67	800	100	IE5338
	M8 / L = 40	5 nf	High-grade st. steel	1030	IP 65 / IP 67	600	100	IE5340
M8 connecto	r · Output function	Ł · 3-wire	e DC PNP · 2-wire D	C PNP/NPN				
طزعه	M8 / L = 40	3 f	Brass	1030	IP 65 / IP 67	800	100	IE5349
23 }=	M8 / L = 40	5 nf	High-grade st. steel	1030	IP 65 / IP 67	600	100	IE5350
Cable 0.3 m ·	with M8 connector	· (snap-fit) · O	utput function	- · 3-wire DC PN	NP · 2-wire DC PN	P/NPN		
	M8 / L = 37	3 f	Brass	1030	IP 67	1000	100	IE5344
	M8 / L = 37	5 nf	Brass	1030	IP 65 / IP 67	700	100	IE5346
Cable 0.3 m ·	with M12 connecto	or · Output fu	nction · 3-wir	e DC PNP · 2-wii	re DC PNP/NPN			
	M8 / L = 37	3 f	Brass	1030	IP 67	1000	100	IE5351
	M8 / L = 37	5 nf	Brass	1030	IP 67	700	100	IE5352
Cable 2 m · O	utput function	· 3-wire DC	PNP · 2-wire DC PN	IP/NPN				
-	M8 / L = 37	3 f	Brass	1030	IP 67	1000	100	IE5343
	M8 / L = 37	5 nf	Brass	1030	IP 67	700	100	IE5345



Small inductive cylindrical designs



- Ideal for applications where space is restricted
- Three different designs: Ø 3, Ø 4, M5
- Two different connection technologies: M8 connector and cable
- Long sensing range for more plant uptime
- Wide temperature range and high switching frequencies up to 5,000 Hz



Short housing length

Thanks to their short housing length, the inductive sensors are perfectly suited for applications where space is at a premium.

M8 connector

A clearly visible 4-port LED for output status indication is integrated into the M8-connector design.

High switching frequency

The small sensors reach switching frequencies of 5,000 Hz - and this over the whole temperature range.

Increased tightening torque

During mounting the stainless steel housing allows a tightening torque which is up to twice as high as for standard sensors.





Safe position detection even where space is at a premium.

Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
M8 connecto	• Output function	· 3-wire	e · DC PNP					
i Ma ndan	M5 / L = 45	0.8 f	stainless steel	1036	IP 65	2000	100	IY5036
	M5 / L = 41	1.5 nf	stainless steel	1030	IP 67	1800	100	IY5048
Cable 0.1 m ·	with M8 connecto	r (snap-fit) · O	utput function	· 3-wire · DC F	PNP			
	M5 / L = 30	0.8 f	stainless steel	1036	IP 65	2000	100	IY5045
Cable 2 m · O	utput function	· 3-wire · D	C PNP					
_	M5 / L = 23	0.8 f	stainless steel	1030	IP 65	2000	100	IY5051
	M5 / L = 23	1.2 f	stainless steel	1030	IP 65	2000	100	IY5052
-()-	M5 / L = 30	0.8 f	stainless steel	1036	IP 65	2000	100	IY5029
	M5 / L = 27	1.5 nf	stainless steel	1030	IP 67	1800	100	IY5049

Sensors w	vith smooth sl	eeve for ir	ndustrial appl	ications				
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
M8 connecto	r · Output function	· 3-wire	• · DC PNP					
	Ø 4 / L = 45	0.8 f	stainless steel	1036	IP 65	2000	100	IZ5035
Cable 2 m \cdot O	utput function	· 3-wire · D	C PNP					
	Ø 4 / L = 23	0.8 f	stainless steel	1030	IP 65	2000	100	IZ5051
	Ø 4 / L = 23	1.2 f	stainless steel	1030	IP 65	2000	100	IZ5052
	Ø 4 / L = 30	0.8 f	stainless steel	1036	IP 65	2000	100	IZ5026



Small inductive rectangular designs



- Ideal for applications where space is restricted
- Different sizes for special applications
- Two different connection technologies: M8 connector and cable
- M8 connector for fast mounting
- Quick, easy and flexible mounting due to compact designs



Where space is at a premium

The small inductive rectangular sensors are particularly suited for use in applications where space is at a premium, as can typically be found in robotics, assembly and handling technology.

Connection

The user can select between units with connection cables or versions with M8 connection on the unit. This allows particularly fast fitting of the sensor.







Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
/18 connector	• Output function	· 3-wire	· DC PNP					
	40 x 8 x 8	2 f	Brass	1036	IP 65	2000	250	IL5004
2	40 x 8 x 8	2 f	Brass	1036	IP 65	2000	250	IL500!
-	28 x 10 x 16	2 f	PBT	1030	IP 65 / IP 67	800	200	IS503
-	28 x 10 x 16	4 nf	PBT	1030	IP 65 / IP 67	2000	200	IS507 ⁻
	40 x 12 x 26	2 f	PBT	1036	IP 67	1400	250	IN523
	40 x 12 x 26	4 nf	PBT	1036	IP 65	1300	250	IN521
Cable 2 m · O	utput function	· 3-wire · D	C PNP					
-	40 x 12 x 26	2 f	PBT	1036	IP 67	1400	250	IN512
_	40 x 12 x 26	4 nf	PBT	1036	IP 67	1300	250	IN512
	40 x 8 x 8	2 f	Brass	1036	IP 65	2000	250	IL500
- 3000 - 2000	40 x 8 x 8	2 f	Brass	1036	IP 65	2000	250	IL500
	28 x 10 x 16	2 f	PBT	1030	IP 67	800	200	15500
	28 x 10 x 16	4 nf	РВТ	1030	IP 67	2000	200	IS507
fluck / of	n an fluide / af	u oci fluch						

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Connect	ors	
Туре	Description	Order no.
Socket M8,	3-pole, 3-wire	
	Socket - angled - Free from silicone - Free from halogen - Gold-plated contacts - M8 connector - 2 m -	EVC144

Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M8 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM

Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M8 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM

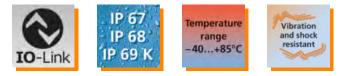
EVC145



Inductive sensors with M12, M18, M30 and 40 x 40 mm housings



- Accurate position monitoring transmission of the distance as linearised process value via IO-Link
- Reduced stock-keeping function and polarity selectable via IO-Link
- Very high repeatability
- Wide temperature range from -40...85 °C for universal use



Much more than a pulse pick-up!

ifm's new inductive sensors with IO-Link incorporate several functions in one unit. They can be used as switching sensors with adjustable switch point or measuring systems with a measured value transmitted via IO-Link. The output signal can be set to NC or NO and PNP or NPN allowing many possible combinations. This allows reduction of the multitude of types, reducing the cost of stock.

Highest precision

The new sensors are so precise that they detect even minute changes. Even the true run of a spindle or the tension of a saw blade is reliably detected. If the target leaves the detection zone or comes too close to the sensing face, a warning may be given. All data acquired can be transmitted and recorded via IO-Link. This new development is unbeatable.



Sensors fo	or industrial a	pplications	5					
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
M12 connecto	or · Output functio	on/t_	· DC PNP/NPN					
	M12 / L = 60	0.3753.75 f	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	600	100	IF6123
	M12 / L = 60	0.77 nf	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	600	100	IF6124
	M18 / L = 60	0.757.5 f	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	300	100	IG6615
	M18 / L = 60	1.313 nf	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	300	100	IG6616
-=(=)	M30 / L = 65	1.313 f	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	100	100	115973
	M30 / L = 65	2.323 nf	Brass	1030	IP 65 / IP 66 / IP 67 / IP 68 / IP 69K	100	100	115974
	40 x 40 x 54	2.121 f	PA (polyamide)	1030	IP 67	100	100	IM5172
-	40 x 40 x 54	2.626 nf	PA (polyamide)	1030	IP 67	100	100	IM5173

Accessories									
Туре	Description	Order no.							
08	Angle bracket \cdot for type M30 \cdot Housing materials: stainless steel	E10737							
	Mounting clamp \cdot Ø 30 mm \cdot with end stop \cdot For sensors with 45° chamfer \cdot for type M30 \cdot Housing materials: PC	E11996							



Capacitive sensors



- Detection of metal and non-metal materials
- Easy setting of the switch point by pressing a pushbutton or turning a potentiometer
- Automatic detection of PNP or NPN output loads
- NO / NC selectable
- Clearly visible indication of the switching status



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.

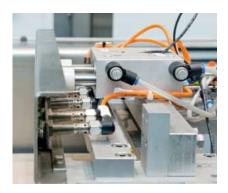
Set-up

The user can set the sensitivity via potentiometer or teach button. For sensors with teach function the output function NO or NC as well as the switch point are set by pressing the two buttons. The automatic detection of a PNP or NPN load, the variable setting of the switching function and the fast connection via connector facilitate the set-up and reduce the number of different versions.

Application

Capacitive sensors which are optimised for media with a dielectric constant below 20 (DK < 20) monitor the levels of dry bulk material and liquids (e.g. oils, plastic granulates) – in pipes and in silos or through sight glasses.





Capacitive sensors guarantee the safe detection of liquids as well as non-metallic materials.

Capacitive sensors

Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.		
	[mm]	[mm]		[V]		[Hz]	[mA]			
M12 connecto	/12 connector · Output function · 3-wire · DC PNP									
645 (1 00	M12 / L = 60	4 f	High-grade st. steel	1036	IP 65	50	100	KF5001		
aar)aa	M12 / L = 61	8 nf	High-grade st. steel	1036	IP 65	50	100	KF5002		
M12 connecto	r · Output function	n/_t_	• 3-wire • DC PNP							
	M30 / L = 90	8 f	High-grade st. steel	1030	IP 65 / IP 67	10	100	KI5085		
-21	M30 / L = 90	15 nf	High-grade st. steel	1030	IP 65 / IP 67	10	100	KI5087		
f = flush / nf =	non flush / qf = c	quasi-flush								
Sensors fo	r the detectio	on of cond	luctive media t	hrough a v	vall, DC					
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	lload	Order no.		
	[mm]	[mm]		[V]		[Hz]	[mA]			
M12 connecto	r · Output function	n/_Ł	· 3-wire · DC PNP							
	M18 / L = 87	8 nf	PBT	1036	IP 65 / IP 67	10	200	KG5071		

Sensors for the detection of granulates for the plastics industry, DC											
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.			
	[mm]	[mm]		[V]		[Hz]	[mA]				
M12 connecte	or · Output function	n <u>~_/ /_t</u>	· 3-wire · DC PNP								
-	M18 / L = 87	12 nf	PBT	1036	IP 65 / IP 67	10	200	KG5066			
-	M30 / L = 90	20 nf	PBT	1036	IP 65 / IP 67	10	200	KI5083			
f = flush / nf = non flush / qf = quasi-flush											

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Capacitive sensors with LED signal display



- Precise evaluation of the application by visualisation of the process value via IO-Link
- One sensor for many applications: PNP / NPN, NC / NO and time function selectable
- Better adjustment to difficult applications thanks to extended settings
- Unique display and operating concept via LED visualisation
- See and compensate switch point movement



Visualised switch point

The capacitive sensors stand out not only because of their excellent technical data but most of all with their new and unique visualisation concept. The LED display makes it much easier for the user to set the optimal switch point, which is in the centre of the display. The green LEDs either side of the switch point indicate the reliability of the switch point. Deposits, material changes etc. are displayed directly on the sensor and the user can readjust the switch point precisely as needed.

Easy diagnostic support

If help is needed with the effects of process changes this is much easier to explain and rectify with the clear switch-point visualisation.

IO-Link highlights:

- Current process value plus binary reading available
- NO or NC function with switch-on and switch-off delay
- Output response: One-point, window function adjustable
- Potentiometer can be activated or deactivated
- Counter for operating hours and switching operations

Capacitive	e sensors									
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.		
	[mm]	[mm]		[V]		[Hz]	[mA]			
M12 connector · Output function/t · DC PNP										
-	M30 / L = 92	25 nf	PBT	1030	IP 65 / IP 67 / IP 69K	40	200	K16000		
0(E)	M18 / L = 92.5	15 nf	PBT	1030	IP 65 / IP 67 / IP 69K	30	200	KG6000		
Cable 2 m · O	utput function	/t · DC	PNP							
-	M30 / L = 92	25 nf	РВТ	1030	IP 65 / IP 67 / IP 69K	40	200	KI6001		
-80 - 8 0	M18 / L = 92.5	15 nf	PBT	1030	IP 65 / IP 67 / IP 69K	30	200	KG6001		

Accessori	es	
Туре	Description	Order no.
	IO-Link master with Profinet interface \cdot I/O modules for use in the control cabinet \cdot Screw terminal \cdot Housing materials: housing: polyamide	AL1900
	IO-Link master with Profinet interface · I/O modules for field applications · M12 connector · Housing materials: housing: polyamide / socket: Brass nickel-plated	AL1100
	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



Capacitive sensors for flush installation



- Easy adjustment by pressing a pushbutton
- Automatic detection of PNP or NPN output loads
- NO/NC selectable
- Clearly visible indication of the switching status
- Easy mounting via fixing straps



Application

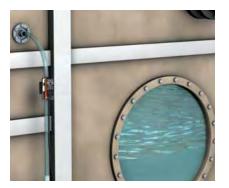
Capacitive sensors detect bulk materials or liquids through non-metallic materials. The capacitive sensors of the KQ series can either be fixed on a flat surface or on tubes using mounting brackets and cable ties.

Using optional accessories the sensors can be integrated into a wide range of applications in a flexible and time-saving way.

Set-up

The new operating concept enables setting and adjustment of the output function by pressing just one pushbutton. The automatic detection of the load simplifies the connection to common controllers.





Easy mounting of the sensors to detect the desired level.

Capacitive sensors

Sensors fo	or the detection	on of cond	uctive media	through a v	vall					
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.		
	[mm]	[mm]		[V]		[Hz]	[mA]			
Cable 2 m · Output function/_t_ · 3-wire · DC PNP/NPN										
-	20 x 14 x 48	12 nf	PBT	1030	IP 65 / IP 67	10	100	KQ6001		
Cable 2 m · Output function/L · 3-wire · DC PNP										
	20 x 14 x 48	12 nf	PBT	1030	IP 65 / IP 67	10	100	KQ6002		
Cable 0.04 m	with M8 connected	or · Output fu	nction/L	· 3-wire · DC PN	Р					
	20 x 14 x 48	12 nf	PBT	1030	IP 65 / IP 67	10	100	KQ6004		
Cable 0.1 m \cdot with M12 connector \cdot Output function $2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 $										
	20 x 14 x 48	12 nf	PBT	1030	IP 65 / IP 67	10	100	KQ6005		
f = flush / nf =	non flush / qf = d	quasi-flush								

Accessor	es mounting components	
Туре	Description	Order no.
0	Mounting adapter for free-standing mounting · for type KQ5, KQ6 · Housing materials: adapter: PBT / inserts: Brass / screw: steel galvanised	E12153
0	Mounting adapter · Pipe and tube installation KQ5 / KQ6 with cable ties · Fixing of the types KQ5 and KQ6 to pipes and tubes · Housing materials: Mounting adapter: PA 12 black	E12163
Connecto	ors	
Туре	Description	Order no.

Socket M12, 5/4-pole, 4-wire



Socket \cdot straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M12 connector \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM

EVC001



Capacitive touch sensors for installation on walls



- Non-contact switching, no pressure necessary, wear and tear-free
- Optical feedback by LEDs in case of switching
- Oil-resistant, protection rating IP 69K, impact and scratch resistant
- Easy wiring thanks to tried-and-tested
 3-wire technology



Reliable operation

The capacitive measuring principle detects an approaching human hand. Dynamic touch sensors suppress interference such as water, layers of ice or foreign

bodies to a large extent. However, a gloved hand will still trigger them.

Static touch sensors detect hands and objects for as long as the sensing face is damped.

Touch sensors also work through glass. Compared to mechanical switches the sensors operate without wear. Since they react to contact, no pressure is required for activation This means considerably increased ease of use.

The green LEDs can be controlled separately and for example be used to indicate the status of plant and machinery.

Mounting options

Three common M4 cylinder head bolts or tapping screws of 3.9 mm diameter are required to mount the sensor on a wall.



Activation of a process as long as the hand touches the sensor.

Capacitive sensors

Туре	Ub	l _{load}	Current	Ambient	Protection	Order
	[V]	[mA]	consumption [mA]	temperature [°C]		no.
able 0.3 m · w			. · 3-wire · DC PNP	1.01		
		output function .				
	24	200	30	-4085	IP 67 / IP 69K	КТ500
able 2 m · Ou	tput function	· 3-wire · DC PNP				
	24	200	30	-4085	IP 67 / IP 69K	КТ500 ⁻
tatic capa	citive touch se	ensors				
Туре	Ub	l _{load}	Current consumption	Ambient temperature	Protection	Order no.
	[V]	[mA]	[mA]	[°C]		
able 0.3 m · w	ith M8 connector ·	Output function .	→_ · 3-wire · DC PNP			
0	24	200	30	-4085	IP 67 / IP 69K	КТ500
able 2 m · Ou	tput function	· 3-wire · DC PNP				
0	24	200	30	-4085	IP 67 / IP 69K	КТ500!
Connectors	;					
Туре			Description			Order no.
ocket M8, 4-p	ole, 4-wire					
	ocket · straight · Free fi lousing materials: hous		n halogen · Gold-plated contac ng: FKM	ts \cdot M8 connector \cdot 2 m \cdot		EVC15
	ocket · straight · Free fi lousing materials: hous		i halogen · Gold-plated contac ig: FKM	ts · M8 connector · 5 m ·		EVC15
	ocket · angled · Free fro lousing materials: hous		halogen · Gold-plated contact: ng: FKM	5 · M8 connector · 2 m ·		EVC15
0						



Illuminated capacitive touch sensor in metal M22 housing



Illuminated touch sensor in metal housing

Capacitive touch sensors can be used, for example, as a start and stop button on machines, as enable switches and for opening and closing gates. Compared to mechanical switches the sensors operate without wear. Dynamic touch sensors detect an approaching human hand and suppress interference such as water, layers of ice or foreign bodies to a large extent. However, a gloved hand will still trigger them. Static touch sensors detect hands and objects even through glass for as long as the sensing face is covered which provides, for example, protection against vandalism.

40...+85°C

Sensors with the latching operating principle can be switched on by touching briefly and switched off again by touching briefly again. The housing with protection rating IP 69K is resistant to oils and also impact and scratch resistant. Powerful LEDs as optical feedback signal that the sensor has been activated. The green LEDs can be controlled separately and, for example, be used to indicate the status of plant and machinery.

The sensor can be installed in all housings with a \emptyset 22.5 mm hole.



Capacitive sensors

Dynamic ca	apacitive tou	ch sensors				
Туре	Ub	l _{load}	Current consumption	Ambient temperature	Protection	Order no.
	[V]	[mA]	[mA]	[°C]		
Cable 2 m · Ou	tput function	⊆ · DC PNP				
00	24	200	30	-4085	IP 65 / IP 67 / IP 69K	КТ5309
Cable with con	nector 0.3 m · Out	tput function	· DC PNP			
00	24	200	30	-4085	IP 65 / IP 67 / IP 69K	KT5311
Static capa	citive touch s	ensors				
Туре	Ub	l _{load}	Current consumption	Ambient temperature	Protection	Order no.
	[V]	[mA]	[mA]	[°C]		
Cable 2 m · Ou	tput function —	- · DC PNP				
00	24	200	30	-4085	IP 65 / IP 67 / IP 69K	KT5310
Cable with con	nector 0.3 m · Out	tput function	· DC PNP			
00	24	200	30	-4085	IP 65 / IP 67 / IP 69K	KT5312
Cable 2 m · Ou	tput function	- · DC PNP				
00	24	200	30	-4085	IP 65 / IP 67 / IP 69K	KT5320
Capacitive	touch sensor	s with latchin	g evaluation princ	iple		
Туре	Ub	l _{load}	Current consumption	Ambient temperature	Protection	Order no.
	[V]	[mA]	[mA]	[°C]		
Cable 2 m · Ou	tput function	L · DC PNP				
00	24	200	30	-4085	IP 65 / IP 67 / IP 69K	KT5350
Cable 0.3 m · C	utput function _	- · DC PNP				
00	24	200	30	-4085	IP 65 / IP 67 / IP 69K	KT5351



Magnetic sensors



- Long sensing ranges also through non-magnetisable metals
- No mutual interference of the sensors
- Temperature-stable and reproducible switch point
- Full-metal housing: Impact, shock and vibration-resistant



Demanding applications

Due to their operating principle, magnetic sensors can detect special targets (permanent magnets) through all non-magnetisable materials and thus be mounted behind covers made of stainless steel, non-ferrous metal, plastics, wood or glass which ensures inexpensive and fast mounting. There is no need for bore holes or flush installation.

Long sensing range

Magnetic sensors have a similar operating principle as inductive sensors. They detect damping magnets without contact. Due to this operating principle an extremely high sensing range can also be achieved with smaller types.

High switching frequency

ifm sensors reach a switching frequency of more than 5,000 Hz. This high switching frequency applies to the whole temperature range.

Mechanically demanding applications

Thanks to the tolerant response behaviour, reliable switch-point detection is also ensured with high mechanical tolerances.





Magnetic sensors provide long sensing ranges.

Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
VI8 connector	r · Output function	· 3-wir	e · DC PNP					
ļ	28 x 10 x 16	60	РВТ	1030	IP 67	5000	200	MS501
Cable 2 m · O	utput function —	· 3-wire · [DC PNP					
-	28 x 10 x 16	60	PBT	1030	IP 67	5000	200	MS501
VI8 connecto	r · Output function	· 3-wir	e · DC PNP					
	M8 / L = 60	60	stainless steel (316L)	1030	IP 67	5000	200	ME501
M12 connecto	or · Output functio	nt · 3-w	ire · DC PNP					
	M12 / L = 60	60	High-grade st. steel	1030	IP 65 / IP 67	5000	200	MFS21
	M18 / L = 60	70	High-grade st. steel	1030	IP 65 / IP 67	5000	200	MGS20
Full metal	sensors for i	ndustrial a	applications					
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
/12 connecto	or · Output functio	n · 3-w	ire · DC PNP					
	M12 / L = 60	60	High-grade st. steel	1030	IP 65 / IP 67	5000	200	MFS21
	M18 / L = 60	70	High-grade st. steel	1030	IP 65 / IP 67	5000	200	MGS2



Magnetically-coded sensors



Non-contact door monitoring

Magnetic sensors allow monitoring of the door status without contact.

Can reach PL e to ISO 13849-1 and SILCL 3 to IEC 62061 when used with suitable evaluation units.

Easy connection

Various connection versions with cable, M8 connector (4-pin) and M12 connector (4-pin) provide a standardised connection.

With the UL and EAC approvals your machine can be operated worldwide without any concerns.

Easy installation

The standard designs in a small and large version ensure various applications even if there is only little space.



Туре	Dimensions	Sensing	Material	Ub	Protection	f	l _{load}	Order
	[mm]	range [mm]		[V]		[Hz]	[mA]	no.
Cable 2 m · Oເ	utput function							
	36 x 13 x 26	5 nf	PA	24	IP 67 / IP 69K	150	50	MN2005
6 6 8 9	88 x 13.1 x 25	8 nf	ΡΑ	24	IP 67 / IP 69K	150	50	MN500S
Cable 6 m · Oເ	utput function	/ · DC						
	36 x 13 x 26	5 nf	ΡΑ	24	IP 67 / IP 69K	150	50	MN201S
6 6 8 9	88 x 13.1 x 25	8 nf	ΡΑ	24	IP 67 / IP 69K	150	50	MN501S
M8 connector	• Output function	<u></u> .	DC					
	36 x 13 x 26	5 nf	ΡΑ	24	IP 67 / IP 69K	150	50	MN2025
	88 x 13.1 x 25	8 nf	ΡΑ	24	IP 67 / IP 69K	150	50	MN502S
Cable with co	nnector 0.1 m · Ou	tput function	• DC					
	36 x 13 x 26	5 nf	ΡΑ	24	IP 67 / IP 69K	150	50	MN203S
	88 x 13.1 x 25	8 nf	ΡΑ	24	IP 67 / IP 69K	150	50	MN503S
Cable 2 m · Օւ	Itput function 2 x	NO, 1 x NC · D	c					
	36 x 13 x 26	5 nf	PA	24	IP 67 / IP 69K	150	50	MN204S
6 8 8 8	88 x 13.1 x 25	8 nf	PA	24	IP 67 / IP 69K	150	50	MN504S



Coded RFID sensors



Preventive maintenance

The sensors can display switch-off operation of the sensors directly using the LED display if the actuator slowly leaves the sensing range. This means that for example the door and the actuator can be ideally paired to each other and higher machine uptime is achieved. They meet the requirements ISO 13849-1 and IEC 62061. Even if 32 sensors are connected in series, the highest safety level is maintained.

Non-contact door monitoring

The non-contact RFID sensors allow reliable monitoring of the door status without any wear.



RFID-code	d safety sens	ors								
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.		
	[mm]	[mm]		[V]		[Hz]	[mA]			
M12 connector · Output function 2 x OSSD, 1 x PNP · DC PNP										
- 0 _{- 0}	72 x 18 x 25	12 nf	ΡΑ	20.426.4	IP 67 / IP 69K	1	50	MN700S		
- 0 • 0	72 x 18 x 25	12 nf	ΡΑ	20.426.4	IP 67 / IP 69K	1	50	MN701S		
- 0	72 x 18 x 25	12 nf	ΡΑ	20.426.4	IP 67 / IP 69K	1	50	MN702S		
Cable 2 m · O	utput function 2 x	OSSD, 1 x PNF	• DC PNP							
C _{mi} C	72 x 18 x 25	12 nf	ΡΑ	20.426.4	IP 67 / IP 69K	1	50	MN7035		
•••	72 x 18 x 25	12 nf	ΡΑ	20.426.4	IP 67 / IP 69K	1	50	MN704S		
C	72 x 18 x 25	12 nf	ΡΑ	20.426.4	IP 67 / IP 69K	1	50	MN7055		
f = flush / nf =	non flush / qf = d	quasi-flush								

Accessori	es	
Туре	Description	Order no.
	Spacer \cdot for magnetic sensor MN2 \cdot for mounting on ferromagnetic metal \cdot Housing materials: PA	E12585
	Magnetically coded target \cdot for magnetic sensor MN2 \cdot Housing materials: PA	E1101S



T-slot cylinder sensors





Quick adjustment and easy mounting

The cylinder sensor can be easily inserted from above into the T-slot where it clicks home due to the innovative clamping mechanism. For easy switch point positioning the sensor can be moved in the slot until it is fixed definitely using the slotted / hexagonal socket screw.

Robust design and good fixing

Since the sensor is completely surrounded by the slot there is no room for mechanical damage. The fixing at the end of the sensor reduces leverage and provides better protection against inadvertent tear-out or switch point change.

Different versions for your application

The sensor is suited for the common T-slot cylinders. Tailormade accessories enable mounting on different cylinder types such us trapezoidal slot, tie-rod, clean-line or integrated profile cylinders.

- Self-locking fixture for quick mounting and easy adjustment
- Convenient: Easy fit 'drop from the top' into a T-slot
- Unit versions available with connection cable and M8 or M12 cable plug
- Moulded cable ensuring very good strain relief
- Ingress protection in all applications due to the high protection rating









T-slot sens	sors for indust	rial applications						
Туре	Dimensions	Material	Ub	f	Protection	l _{load}	Т _а	Order no.
	[mm]		[V]	[Hz]		[mA]	[°C]	
Cable 0.3 m · v	with M12 connecto	r · Output function	· 3-wire · D	C PNP				
	25.3 x 5 x 6.5	PA (polyamide)	1030	10000	IP 65 / IP 67	200	-2585	MK5108
	25.3 x 5 x 6.5	PA (polyamide)	1030	10000	IP 65 / IP 67	100	-2585	MK5107
	25.3 x 5 x 6.5	PA (polyamide)	1030	9	IP 65 / IP 67	100	-2585	MK5214
Cable 0.3 m · v	with M8 connector	• Output function	- · 3-wire · DC	PNP				
	25.3 x 5 x 6.5	PA (polyamide)	1030	10000	IP 65 / IP 67	100	-2585	MK5102
	25.3 x 5 x 6.5	PA (polyamide)	1030	9	IP 65 / IP 67	100	-2585	MK5215
Cable 0.3 m · v	with M8 connector	(snap-fit) · Output fund	ction · 3	-wire · DC PN	IP			
	25.3 x 5 x 6.5	PA (polyamide)	1030	10000	IP 65 / IP 67	200	-2585	MK5106
	25.3 x 5 x 6.5	PA (polyamide)	1030	10000	IP 65 / IP 67	100	-2585	MK5101
Cable 0.5 m · v	with M8 connector	• Output function	- · 3-wire · DC	PNP				
	25.3 x 5 x 6.5	PA (polyamide)	1030	10000	IP 65 / IP 67	100	-2585	MK5121
Cable 1 m · wi	th M12 connector	Output function	· 3-wire · DC	PNP				
	25.3 x 5 x 6.5	PA (polyamide)	1030	10000	IP 65 / IP 67	100	-2585	MK5116
Cable 0.3 m · v	with M12 connecto	r · Output function	· 2-wire · D	C PNP/NPN				
	25.3 x 5 x 6.5	PA (polyamide)	1030	4000	IP 65 / IP 67	100	-2585	MK5109



T-slot cylinder sensors for short-stroke cylinders



- Short travel distance for high-precision position detection
- Exact position detection thanks to a very small hysteresis of ≤ 1 mm
- Reliable detection of weak magnetic fields
- Convenient: Easy fit 'drop from the top' into a slot
- Only 25 mm length sensor for many cylinder sizes



AMR cell for the sensitive touch

The new cylinder sensors use an AMR sensing element. This operates to the magnetoresistive principle. The AMR cell has an extremely sensitive reaction to magnetic fields. So the sensors can be used wherever exact position detection and small hysteresis are important (e.g. short-stroke cylinders).

Robust design and good fixing

The sensor is immediately locked in the slot by its self-locking mechanism. The moulded cable and fixing point additionally provide incomparable strain relief.

Adapter for almost any cylinder profile

Thanks to the wide selection of adapter accessories the T-slot sensor can be fixed to almost every clean-line, tie rod, integrated profile or trapezoidal slot cylinder.







Туре	Dimensions	Material	Ub	f	Protection	I _{load}	Ta	Order
	[mm]		[V]	[Hz]		[mA]	[°C]	no.
Cable 2 m · C	Output function	- · 3-wire · DC PNP						
	25.3 x 5 x 6.5	PA (polyamide)	1030	6000	IP 65 / IP 67	100	-2585	MK5140
Cable 0.3 m ·	with M12 connecto	• Output function	· 3-wire · D	C PNP				
	25.3 x 5 x 6.5	PA (polyamide)	1030	6000	IP 65 / IP 67	100	-2585	MK5139
Cable 0.3 m ·	with M8 connector	Output function	- • 3-wire • DC	PNP				
	25.3 x 5 x 6.5	PA (polyamide)	1030	6000	IP 65 / IP 67	100	-2585	MK5159
Cable 0.3 m ·	with M8 connector	(snap-fit) · Output fund	tion · 3	-wire · DC PI	NP			
	25.3 x 5 x 6.5	PA (polyamide)	1030	6000	IP 65 / IP 67	100	-2585	MK5138
Adapters	for trapezoida	l slot cylinders						
Туре			Descript	ion				Order no.
-		slot cylinders · for types MK inium alloy / set screw: stain		sensors) ·				E11796
		egrated profile cylinders · for inium / screw: stainless steel		ot cylinder senso	rs) · Clamping rang	ge 511 mm ·		E11797
		egrated profile cylinders · for inium / screw: stainless steel		ot cylinder senso	rs) · Clamping rang	ge 915 mm ·		E11799
		e cylinders · Piston diameter oter: PA / Fixing strap: stainle		type MKT ·				E11817
		e cylinders · Piston diameter oter: PA / Fixing strap: stainle		type MKT ·				E11818
		e cylinders · Piston diameter oter: PA / Fixing strap: stainle		MKT ·				E11819



Cylinder sensors for C-slots



Flush in the C-slot

The cylinder sensor can be used for the common C-slot such as for SMC. Its height of only 5 mm allows flush mounting. Especially this cylinder manufacturer requires slot-mounting and, often, 2-wire connection.

Long life

The sensors function without contact and almost without wear. Their life is much longer than that of the common reed contacts.

With the GMR cell (giant magneto resistive), the sensor detects the magnet on the piston through the aluminium wall of the cylinder. This saves expensive repair and downtimes.



Cylinder sensors

Order no.

E12004

DN1031

C-slot sensors for industrial applications								
Туре	Dimensions	Material	Ub	f	Protection	I _{load}	Ta	Order no.
	[mm]		[V]	[Hz]		[mA]	[°C]	
Cable 0.3 m · with M8 connector (snap-fit) · Output function · 2-wire · DC PNP/NPN								
	26.1 x 2.8 x 5.5	PA (polyamide)	1030	4000	IP 65 / IP 67	100	-2585	MK5362
Cable 0.3 m · with M12 connector · Output function · 2-wire · DC PNP/NPN								
	26.1 x 2.8 x 5.5	PA (polyamide)	1030	4000	IP 65 / IP 67	100	-2585	MK5363
Cable 2 m · Output function · 2-wire · DC PNP/NPN								
	26.1 x 2.8 x 5.5	PA (polyamide)	1030	4000	IP 65 / IP 67	100	-2585	MK5365
Accessories for cylinder sensors								

Туре	Description
	C-slot cylinder memorisation block \cdot for types MKC (C-slot cylinder sensors) \cdot Housing materials: PA / stainless steel
	Switched-mode power supply 24 V DC · 60 W power output · Primary switched mode · Output current 2.5 A, regulated · DC ok output · Housing materials: polycarbonate ABS

Connectors		
Туре	Description	Order no.
Socket M12, 5/4-pole, 4-wire		

0	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC001
Socket M8, 3-	pole, 3-wire	
8.	Socket \cdot straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M8 connector \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC141



Extremely short C-slot cylinder sensors



- Self-clamping fixture for easy adjustment and quick mounting
- Convenient: Easy fit 'drop from the top' into a C-slot
- Unit versions available with connection cable and cable plug
- Moulded cable ensuring very good strain relief
- Suitable for the most common C-slots



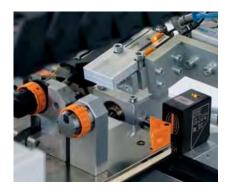
Quick adjustment and easy mounting

The cylinder switch is suited for small parallel grippers and short-stroke cylinders with C-slot. Due to the height of only 5 mm it can be flush-mounted in the most common C-slots from above and is largely protected against damage.

A 17.5 mm short version is available for miniature grippers. The sensor is inserted into the slot where it is held in position by a clamping mechanism. The moulded cable at the end of the cylinder switch provides excellent strain relief.

Long life

Non-contact sensors virtually work without wear and often achieve a longer life than Reed switches. This saves expensive repair and downtimes.



Safe detection of the end positions even for short cylinders.

Туре	Dimensions	Material	Ub	f	Protection	I _{load}	Ta	Order no.
	[mm]		[V]	[Hz]		[mA]	[°C]	110.
able 0.3 m ·	with M8 connector	(snap-fit) · Output fund	ction · 3	-wire · DC PN	IP			
	17.5 x 2.8 x 7.7	PA (polyamide)	1030	10000	IP 65 / IP 67	100	-2585	MK530
Cable 0.3 m ·	with M8 connector	• Output function	_ · 3-wire · DC	PNP				
	17.5 x 2.8 x 7.7	PA (polyamide)	1030	10000	IP 65 / IP 67	100	-2585	MK5302
- Iush C-sl	ot sensors for	industrial applica	ations					
Туре	Dimensions	Material	Ub	f	Protection	l _{load}	Ta	Order no.
	[mm]		[V]	[Hz]		[mA]	[°C]	
Cable 2 m · C	Output function	- · 3-wire · DC PNP						
	26.1 x 2.8 x 5.5	PA (polyamide)	1030	10000	IP 65 / IP 67	100	-2585	MK531
Cable 0.3 m ·	with M8 connector	(snap-fit) · Output fund	ction · 3	-wire · DC PN	IP			
	26.1 x 2.8 x 5.5	PA (polyamide)	1030	10000	IP 65 / IP 67	100	-2585	MK531
able 0.3 m ·	with M8 connector	• Output function	_ · 3-wire · DC	: PNP				
	26.1 x 2.8 x 5.5	PA (polyamide)	1030	10000	IP 65 / IP 67	100	-2585	MK531
	•							
able 0.3 m ·	with M12 connecto	$r \cdot Output function _$	- · 3-wire · D	CPNP				



C-slot cylinder sensors for short-stroke cylinders



- Precise switch point detection because of the very small hysteresis of ≤ 1 mm
- Short travel distance of ≤ 5 mm for high-precision position detection
- Reliable detection of weak magnetic fields
- Convenient: Easy fit 'drop from the top' into a slot
- Available as 25.8 mm flat, flush or 17.5 mm short housing



AMR cell for the sensitive touch

The new C-slot cylinder sensors use now an AMR sensing element. This operates to the magnetoresistive principle. The AMR element reacts extremely sensitively to changes of magnetic fields. This results in accurate switch point detection, which is in particular important for short-stroke cylinders.

Robust design and good fixing

The sensor is immediately locked in the C-slot by its self-locking mechanism. The moulded cable and fixing point additionally provide incomparable strain relief.

Two tried-and-tested housings

The user can choose between a 17.5 mm short, non flush housing and a 25.8 mm flat, flush housing.





Exact switch point detection on short-stroke cylinders

C-slot sen	sors for short-	stroke cylinders						
Туре	Dimensions	Material	Ub	f	Protection	l _{load}	Ta	Order no.
	[mm]		[V]	[Hz]		[mA]	[°C]	
Cable 0.3 m ·	with M8 connector	(snap-fit) · Output fund	tion $- \cdot 3$	-wire · DC PN	IP			
	17.5 x 2.8 x 7.7	PA (polyamide)	1030	5000	IP 65 / IP 67	100	-2585	MK5330
Cable 0.3 m ·	with M8 connector	• Output function	- · 3-wire · DO	PNP				
	17.5 x 2.8 x 7.7	PA (polyamide)	1030	5000	IP 65 / IP 67	100	-2585	MK5331
Cable 0.3 m ·	with M8 connector	(snap-fit) · Output fund	ction · 3	-wire · DC PN	IP			
-	26.1 x 2.8 x 5.5	PA (polyamide)	1030	5000	IP 65 / IP 67	100	-2585	MK5326
Cable 0.3 m ·	with M8 connector	• Output function	- · 3-wire · DC	PNP				
	25.8 x 2.8 x 5	PA (polyamide)	1030	5000	IP 65 / IP 67	100	-2585	MK5328
Adapters								
Туре			Descript	ion				Order no.
		t sensor · for types MKC (C-s ast zinc / fixing element: stail		or) for installation	n in T-slot cylinders	: · (height 7.7 n	nm) ·	E11914
No. of Concession, Name		t sensor · for types MKC (C-s ast zinc / fixing element: stai		or) for installation	n in T-slot cylinders	: · (height 5 mn	n) ·	E11928
Connecto	rs							
Туре			Descript	ion				Order no.
splitter box N	M8, 3-pole, LED							
	Splitter box · 8 way · Go	old-plated contacts \cdot Cable \cdot	2 m · Housing m	aterials: PBT-GF	20 / Brass nickel-pl	ated		EBC070
	Splitter box · 8 way · Go	old-plated contacts \cdot Cable \cdot	5 m · Housing m	aterials: PBT-GF	20 / Brass nickel-pl	ated		EBC054



Robust position sensors with active metal face



- Extremely pressure resistant with over 10 million pressure cycles
- Best value performer
- Complementary output provides higher operational reliability
- Standard M12 housing with ingress-resistant cable entry
- Short housing (40 mm) for extremely low-profile cylinders



Function principle

The new MFH series sensor is suited for flush mounting in various steels. With its 1.8 mm sensing range it shows reliable switching characteristics. The new operating principle of this unit is based on a magnetic-inductive technology that detects only ferromagnetic metals (e.g. steel). It is sealed by means of an O-ring and a supporting ring towards the pressure area.

Applications

Besides use in hydraulic cylinders, the sensor is also ideal for other hydraulic components such as valves or pumps. MFH operates reliably for the lifetime of the cylinder. Furthermore, it is used in mechanical engineering processes, e.g. in plastic injection-moulding or process industry applications.

Its attractive price means the sensor can also be considered for simple components where this option used to be too expensive.



Full-metal	sensors for h	igh-pressu	ure resistant a	pplications	on hydraulic	cylinder	s and va	alves
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
M12 connecto	or · Output function	n · DC P	NP					
r adja r	M12 / L = 93	1.8 f	High-grade st. steel	1036	IP 65 / IP 68 / IP 69K	1000	200	MFH200
	M12 / L = 60	1.8 f	High-grade st. steel	1036	IP 65 / IP 68 / IP 69K	1000	200	MFH202
M12 connecto	or · Output function	nŁ · DC P	NP					
euten	M12 / L = 60	1.8 f	High-grade st. steel	1036	IP 65 / IP 68 / IP 69K	1000	200	MFH204
Cable 2 m · O	utput function	· DC PNP						
	M12 / L = 41	1.8 f	High-grade st. steel	1036	IP 65 / IP 68 / IP 69K	1000	200	MFH205
Cable 2 m · O	utput function	Ł・DC PNP						
	M12 / L = 41	1.8 f	High-grade st. steel	1036	IP 65 / IP 68 / IP 69K	1000	200	MFH207
Cable 2 m · O	utput function nor	mally open / o	closed · DC PNP					
	M12 / L = 41	1.8 f	High-grade st. steel	1036	IP 65 / IP 68 / IP 69K	1000	200	MFH208
M12 connecto	or · Output function	n normally op	en / closed · DC PN	Р				
	M12 / L = 60	1.8 f	High-grade st. steel	1036	IP 65 / IP 68 / IP 69K	1000	100	MFH209
M12 connecto	or · Output function	n · DC P	NP					
	M14 / L = 53	2 f	High-grade st. steel	1036	IP 65 / IP 68 / IP 69K	1000	200	M9H200
f – flush / nf –	= non flush / af = a	nuasi-flush						

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



Utrasonic sensors in stainless steel housing



- Robust high-grade stainless steel housing for demanding applications
- Sensing range up to 1.2 m in M18 cube design and 2.2 m in M18 design
- The vibrating sound transducer reduces the deposit of dirt
- Retro-reflective operation for orientation-independent object detection
- Easy setting via teach button, wire teach or IO-Link



The alternative for difficult surfaces

Ultrasonic sensors transmit and receive sound waves in the ultrasonic range. The object to be detected reflects the sound waves and the distance information is determined via time of flight measurement. As opposed to photoelectric sensors colour, transparency or the object's surface shine do not play a role. Blister packages in packaging technology or transparent plastic bowls in the food industry, for example, can be reliably detected.

High performance

The ifm ultrasonic sensors in M18 design provide a particularly small blind zone and long sensing ranges which are usually only achieved by sensors of a considerably larger design.

The sensors operate reliably with heavy soiling so that they can be used in applications in which photoelectric sensors meet their limits.



Туре	Dimensions	Sensing range	Material	Ub	Protection	f	I _{load}	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
112 connecto	r · Output function	n 2 x normally	open / closed prog	rammable · 3-w	ire · DC PNP			
-	M18 / L = 97.5	1600	stainless steel 316L / 1.4404	1030	IP 67	3	100	UGT50
	M18 / L = 97.5	2200	stainless steel 316L / 1.4404	1030	IP 67	2	100	UGT512
112 connecto	r · Output function	n 1 x NO / NC	programmable + 1	x current output	t · 3-wire · DC PNP	,		
-	M18 / L = 97.5	1600	stainless steel 316L / 1.4404	1030	IP 67	3	100	UGT51
	M18 / L = 97.5	2200	stainless steel 316L / 1.4404	1030	IP 67	2	100	UGT51
	53 x 20 x 37.7	300	stainless steel (17-4 PH/1.4542)	1030	IP 67	8	100	UGT58
	53 x 20 x 37.7	800	stainless steel (17-4 PH/1.4542)	1030	IP 67	5	100	UGT58
	53 x 20 x 37.7	1200	stainless steel (17-4 PH/1.4542)	1030	IP 67	5	100	UGT58

Ultrasonio	Ultrasonic retro-reflective sensor									
Туре	Dimensions	Sensing range	Material	Ub	Protection	f	l _{load}	Order no.		
	[mm]	[mm]		[V]		[Hz]	[mA]			
M12 connecto	M12 connector · Output function/_t. · 3-wire · DC PNP									
	M18 / L = 97.5	1600	stainless steel 316L / 1.4404	1030	IP 67	2	100	UGR500		
	M18 / L = 97.5	2200	stainless steel 316L / 1.4404	1030	IP 67	2	100	UGR501		



Photoelectric M12 sensors – robust and universal



- Available as through-beam, retroreflective and diffuse reflection sensor
- Metal housing for robust applications
- 🛑 Adjustable ranges
- LED display to check operation, switching status and function
- Wide range of system components for easy and secure mounting



Photocell in M12 housing

The robust metal housing as well as the common M12 threaded design also allow use in a rough industrial environment. In addition, the M12 photocell features easy fixing, alignment and handling.

Function check output

In case of a short-circuit of the switching output, faulty object detection (maladjustment, soiling of the lenses) or an internal failure, the function check output is set. The LEDs on the sensor indicate the type of failure.

Setting sensitivity

The setting sensitivity allows easy and precise adjustment using the potentiometer.



Safe detection of transported parts on a conveyor belt.

Cylindrica	al OF housing (M12) B	asicLine				
Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
Diffuse reflee	ction sensor · M12 connector	· 1036 DC · metal ·	IP65			
	Diffuse reflection sensor	1200 mm	Infrared	92	H/D PNP	OF5012
	Diffuse reflection sensor	1400 mm	Infrared	185	H/D PNP	OF5027
Retro-reflect	ive sensor · M12 connector · 1	036 DC · metal · IP	65			
	Retro-reflective sensor	0.051.5 m	Infrared	140	H/D PNP	OF5016
	Polarisation filter	0.20.8 m	Red	70	H/D PNP	OF5025
Through-bea	m sensor · M12 connector · 10	036 DC · metal · IP6	5			
an (an s	Transmitter	4 m	Infrared	700	_	OF5021
canajas	Receiver	4 m	Infrared	-	H/D PNP	OF5022
Prismatic	reflectors, reflective	tape and fixing	componen	ts		
Туре		1	Description			Order no.
0	Prismatic reflector · Ø 80 mm · rou Housing materials: plastics	nd · For red light and infr	ared light retro-refle	ctive sensors ·		E20005
4	Prismatic reflector · 45 x 28 mm · r Housing materials: plastics	ectangular · For red light	and infrared light re	tro-reflective sensors ·		E20452
T	Mounting set · Ø 12.2 mm · Clamp mounting · free-standing M8 · for type OF, IF · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc					
	Mounting set · Ø 12.2 mm · Clamp Housing materials: fixture: stainless			F ·		E20856
Ĩ	clamp · Ø 14 mm; M12 · free-stand	ding M12 · Housing mate	rials: clamp: diecast :	zinc		E20796



Photoelectric M18 sensors – robust and universal



Long ranges

High-

grade

stainless

steel

- Robust high-grade stainless steel housing for harsh environments
- Available as through-beam, retro-reflective and diffuse reflection sensor
- Diffuse reflection sensor with adjustable background suppression
- Universal mounting using system components and mounting accessories



All-round photocell

High-quality technology, extraordinary features and an outstanding price / performance ratio make this sensor suitable for almost all industrial areas. The robust high-grade stainless steel housing and the common M18 threaded type also allow use in a rough industrial environment.

Variants

For use in standard applications through-beam and retroreflective sensors with polarisation filter without setting options are available. The diffuse reflection sensors with background suppression can be easily and precisely adapted to your application using the potentiometer.





A safe solution in every application.

Cylindrica	l housing OG (M18) I	BasicLine				
Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
Diffuse reflec	tion sensor · M12 connector	· 1036 DC · high-gr	ade stainless ste	el · IP65		
- and m	Diffuse reflection sensor	2600 mm	Red	50	H PNP	OGT200
	Background suppression	15250 mm	Red	21	H PNP	OGH200
Retro-reflecti	ve sensor · M12 connector · 1	l036 DC · high-grac	de stainless steel	· IP65 / IP67		
-	Polarisation filter	0.034 m	Red	160	D PNP	OGP200
	Polarisation filter	0.034 m	Red	160	H PNP	OGP201
Through-bea	m sensor · M12 connector · 1	036 DC · high-grad	e stainless steel	· IP65 / IP67		
	Transmitter	20 m	Red	800	-	OG\$200
	Receiver	20 m	Red	-	D PNP	OGE200
	Receiver	20 m	Red	-	H PNP	OGE201

Prismatic reflectors, reflective tape and fixing components

Туре	Description	Order no.
0	Prismatic reflector \cdot Ø 80 mm \cdot round \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics	E20005
	Prismatic reflector \cdot 45 x 28 mm \cdot rectangular \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics	E20452
F	Mounting set \cdot Ø 18.5 mm \cdot Clamp mounting \cdot Free-standing M10 \cdot for type OG, IG, KG \cdot Housing materials: clamp: diecast zinc / fixture: steel	E20718
P	Mounting set \cdot Ø 18.5 mm \cdot Clamp mounting \cdot Free-standing M10 \cdot for type OG, IG, KG \cdot Housing materials: clamp: diecast zinc / fixture: steel	E20719
J.	Mounting set \cdot Ø 18.5 mm \cdot Clamp mounting \cdot rod mounting Ø 12 mm \cdot for type OG, IG, KG \cdot Housing materials: clamp: diecast zinc / fixture: steel	E20720



High-performance M18 photocell



Extremely long ranges

High-

grade

stainless

steel

- Robust high-grade stainless steel housing for harsh environments
- Available as through-beam, retroreflective and diffuse reflection sensor
- Teach mode for simple and precise adjustment to the application
- Universal mounting using system components and mounting accessories



High-performance photocell

High-quality technology, extraordinary features and an outstanding price / performance ratio make this sensor suitable for all industrial areas. The extremely long ranges allow use in many applications.

Highest precision and simple handling

The innovative teach mode allows optimum setting of the sensors in no time. This is high-tech for the high demands of industry on robustness and precision – implemented in a user-friendly and low-cost version with excellent performance.





Individual setting depending on the application requirements.

Cylindrica	l housing OG (M18) P	PerformanceLin	e			
Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
Diffuse reflec	tion sensor · M12 connector ·	1036 DC · high-gr	ade stainless ste	el · IP67		
	Diffuse reflection sensor	2800 mm	Red	66	H/D PNP	OGT500
	Background suppression	15300 mm	Red	25	H/D PNP	OGH500
Diffuse reflec	tion sensor · M12 connector ·	1036 DC · high-gr	ade stainless ste	el · IP65 / IP67		
	Background suppression	15300 mm	Red	25	H/D NPN	OGH502
Retro-reflecti	ve sensor · M12 connector · 1	036 DC · high-grac	le stainless steel	· IP67		
	Polarisation filter	0.035 m	Red	200	H/D PNP	OGP500
Retro-reflecti	ve sensor · M12 connector · 1	036 DC · high-grac	le stainless steel	· IP65 / IP67		
	Polarisation filter	0.035 m	Red	200	H/D PNP	OGP501
	Polarisation filter	0.035 m	Red	200	H/D NPN	OGP503
Through-bear	m sensor · M12 connector · 10)36 DC · high-grad	e stainless steel	· IP67		
)=	Transmitter	25 m	Red	1000	-	OG\$500
	Receiver	25 m	Red	-	H/D PNP	OGE500
Through-bear	m sensor · M12 connector · 10)36 DC · high-grad	e stainless steel	· IP65 / IP67		
	Receiver	25 m	Red	-	H/D PNP	OGE501
Prismatic	reflectors, reflective t	ape and fixing	component	ts		
Туре			Description			Order no.
	Prismatic reflector · Ø 80 mm · rou Housing materials: plastics	nd · For red light and infr	ared light retro-reflec	ctive sensors ·		E20005
The second	Mounting set · Ø 18.5 mm · Clamp Housing materials: clamp: diecast z		g M10 · for type OG	, IG, KG ·		E20718

Mounting set \cdot Ø 18.5 mm \cdot Clamp mounting \cdot Free-standing M10 \cdot for type OG, IG, KG \cdot Housing materials: clamp: diecast zinc / fixture: steel



Photoelectric sensor in metal housing with M18 thread



- Small, compact and robust: a high performance sensor
- Excellent quality at an attractive price
- Through-beam and retro-reflective sensors and diffuse reflection sensors with background suppression
- Easy teach mode for fast set-up
- Universal mounting and large selection of fixing accessories



New design: OG-Cube

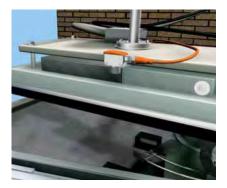
This sensor was developed for use in harsh industrial environments. The tried-andtested technology of the well-known OG series is now integrated in a stable, rectangular metal housing.

Long ranges, small design

The photoelectric sensors are distinguished by long ranges of 4 m for retro-reflective sensors and 200 mm for diffuse reflection sensors. Together with the small housing design both features provide more flexibility for the construction of plant and machinery.

Time-savings during installation and set-up

The teach mode and the extensive range of fixing components ensure fast and costsaving installation.



Compact design for applications in harsh environments.

Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Orden no.
ffuse reflect	ion sensor · M12 connector	• 1030 DC • metal •	IP67			
P	Background suppression	100 mm	Red	7	H PNP	OGH2
P	Background suppression	200 mm	Red	13	H PNP	OGH2
þ	Background suppression	15200 mm	Red	13	H/D PNP	OGH5
tro-reflectiv	re sensor · M12 connector · 1	030 DC · metal · IP	65 / IP67			
	Polarisation filter	0.14 m	Red	160	D PNP	OGP2
tro-reflectiv	e sensor · M12 connector · 1	030 DC · metal · IP	67			
-	Polarisation filter	0.14 m	Red	160	H PNP	OGP2
rough-bean	n sensor · M12 connector · 10	030 DC · metal · IP6	57			
Ç=	Transmitter	20 m	Red	800	-	OGS2
Ç=	Receiver	20 m	Red	-	D PNP	OGE2
þ	Receiver	20 m	Red	-	H PNP	OGE2
B	Receiver	20 m	Red	_	D NPN	OGE2



O5 photocells for conveying



- Extremely long ranges
- Reliable background suppression
- Easy setting of "ON" and "OFF" state by pushbuttons
- Versions with fixed setting or with potentiometer available
- Universal mounting using system components and mounting accessories





All-round photocell

High-quality technology, extraordinary features and an outstanding price / performance ratio allow use of this sensor in almost all industrial areas. Easy installation is ensured by a clever mounting concept, with special fixtures as well as an adapter plate. The plug can be rotated by 270° so that it can be aligned in any direction.

Versions without setting options

- For use in standard applications.
- Versions with potentiometer

For easy setting and simple applications.

Versions with teach function

This innovative setting method makes complicated programming unnecessary. The unit features one button each for setting a precise on and off state.









Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
Diffuse reflec	ction sensor · M12 connector	• 1036 DC • plastics	· IP67			
	Background suppression	501800 mm	Red	50	H/D PNP	O5H500
letro-reflecti	ve sensor · M12 connector ·	1036 DC · plastics ·	IP67			
	Polarisation filter	0.07510 m	Red	250	H/D PNP	O5P500
hrough-bea	m sensor · M12 connector · 1	036 DC · plastics · I	P67			
	Transmitter	25 m	Red	625	-	055500
	Receiver	25 m	Red	-	H/D PNP	O5E500
Prismatic	reflectors, reflective	tape and fixing	j componen	ts		
Туре			Description			Order no.
.0	Prismatic reflector $\cdot \emptyset$ 35 mm \cdot round \cdot fixing by screw \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics					
	Prismatic reflector · Ø 80 mm · ro Housing materials: plastics	und · For red light and infr	ared light retro-refle	ctive sensors ·		E20005
~	Prismatic reflector · 45 x 28 mm ·	rectangular · For red light	and infrared light ret	tro-reflective sensors ·		

4	Prismatic reflector \cdot 45 x 28 mm \cdot rectangular \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics	E20452
	Reflective tape \cdot TS-02 \cdot 50 x 1000 mm \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics / acrylic	E21015
Ţ	Mounting set \cdot Clamp mounting \cdot With protective cover \cdot Free-standing M10 \cdot for type O5 \cdot Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21084
Ť	Mounting set · Clamp mounting · Free-standing M10 · for type O5 · Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21083
1	Angle bracket \cdot for type O5 \cdot Housing materials: stainless steel 316Ti / 1.4571	E21087
, the	Angle bracket · for type O5 · Housing materials: stainless steel 316Ti / 1.4571	E21085



Photoelectric O6 sensors for coolant applications



The optimum choice in metalworking

The new high-performance O6 coolant sensors are especially suited for applications in metal working. Other applications are conveyor technology and the automotive industry.

The potentiometers are fitted with a double seal. The front pane is embedded flush. Viton which is proven in demanding applications was chosen as the sealing material. The transparent black housing cover ensures that, even in bright lighting conditions, the LEDs are highly visible.

Best optical performance

The diffuse reflection sensors provide reliable background suppression, even in cases of highly reflective backgrounds and objects like the oily and greasy metal surfaces of the parts to be worked. The sensing range is independent of the type and colour of the object to be detected.

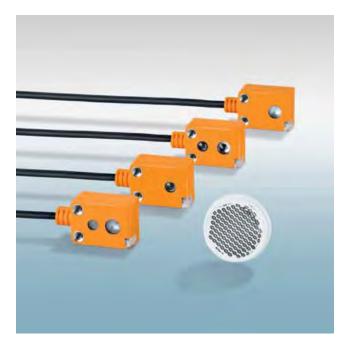
The new O6 coolant reliably performs its duty in applications with coolants / oils.



Туре	Operating principle	Range	Type of light	Spot Ø at max. range	Output H = light-on D = dark-on	Order no.
				[mm]	D = daik-on	
vittuse refie	ction sensor · M8 connector · 1	030 DC · nign-grad	de stainiess steel	· 1P65 / 1P67 ; 1P68		
	Background suppression	2200 mm	Red	8	H/D PNP	O6H40
110	Diffuse reflection sensor	5500 mm	Red	15	H/D PNP	O6T40
etro-reflect	ive sensor · M8 connector · 10	30 DC ∙ high-grade	stainless steel · I	P65 / IP67 ; IP68		
İ	Polarisation filter	0.055 m	Red	150	h/d pnp	O6P40
hrough-bea	m sensor · M8 connector · 10.	.30 DC · high-grade	stainless steel · IF	P65 / IP67 ; IP68		
Ì	Transmitter	10 m	Red	300	-	O6540
	Receiver	10 m	Red	-	h/d pnp	O6E40
ccessori	es for O6 design					
Туре		C	Description			Orde no.
	Mounting set · O6 · Clamp mountir Housing materials: stainless steel 31		nm · for type O6 ·			E2127
() e	Mounting set · O6 · Clamp mountir Housing materials: stainless steel 31		$1 \mathrm{m} \cdot \mathrm{for} \mathrm{type} \mathrm{O6} \cdot \mathrm{O}$			E2127
Br	Angle bracket · O6 · for type O6 · H	lousing materials: stainles	s steel 316Ti / 1.4571			E2127
id an by	Protective cover · O6 · for type O6 ·	Housing materials: stainle	ess steel 316Ti / 1.45	71		E2127
	Mounting rod · Ø 10 / M8 · Length: Housing materials: stainless steel 31					E2108
	Mounting rod · Ø 12 / M10 · Lengtl Housing materials: stainless steel 31					E2093
.0	Prismatic reflector · Ø 50 mm · rour Housing materials: plastics	d \cdot fixing by screw \cdot For n	ed light and infrared	light retro-reflective senso	rs ·	E2095



O7 – small powerful photoelectric sensors



- Ideal for position detection in feeding and handling
- Through-beam, retro-reflective and diffuse reflection sensors with fixed setting
- Visible red light for an easy alignment
- Diffuse reflection sensor with precise background suppression
- Small light spot for detecting small objects



Applications

Whenever there is little space for sensors or when small parts are to be detected, the small photoelectric sensors of the O7 series are the ideal problem solvers. Typical applications are feeding and handling technology.

Advantages

The small light spot and the narrow light cone enable the detection of small objects even over long distances. With their fixed setting, the sensors are ready for operation immediately after installation (plug & play). Diffuse reflection sensors with background suppression with 30, 50 or 100 mm range are available. Visible red light allows fast and simple alignment.









Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
Diffuse reflect	ion sensor · Cable 0.2 m · wi	th M8 connector · 1	030 DC · plastics	s · IP65		
a 🚥	Background suppression	530 mm	Red	2.5	H PNP	O7H20
I P	Background suppression	550 mm	Red	2.5	H PNP	O7H20
ΤΙ	Background suppression	3100 mm	Red	7	H PNP	O7H20
etro-reflectiv	e sensor · Cable 0.2 m · with	M8 connector · 10	.30 DC · plastics ·	IP65		
	Polarisation filter	0.031 m	Red	55	D PNP	O7P20
ŢΥ	Polarisation filter	0.031 m	Red	55	H PNP	O7P20
hrough-bean	n sensor · Cable 0.2 m · with	M8 connector · 10	30 DC · plastics · l	P65		
Į 🖗	Transmitter	01.5 m	Red	90	-	07520
â 📴	Receiver	01.5 m	Red	-	d pnp	O7E20
ŢΥ	Receiver	01.5 m	Red	-	H PNP	O7E20
Prismatic r	eflectors, reflective t	ape and fixing	j component	s		
Туре			Description			Orde no.
	Prismatic reflector · 48 x 48 mm · re Housing materials: front plate: PMN	ectangular · For red light //A / base: ABS	and infrared light retr	o-reflective sensors ·		E2074
	Mounting set · O7 · Clamp mountin Housing materials: fixture: stainless			steel / nut: stainless steel		E2123
Connector	S					
Туре			Description			Orde no.
ocket M8, 3-j	oole, 3-wire					
6.	Socket · straight · Free from silicone Housing materials: housing: TPU or		old-plated contacts · N	√l8 connector · 5 m ·		EVC14
			old-plated contacts · N			



OJ – photoelectric sensors for assembly and handling technology



- Ideal for position detection in feeding and handling
- Through-beam and retro-reflective sensors with adjustable range
- Visible red light facilitates alignment during mounting
- High switching frequency for fast processes
- Mounting via snap-in technology or fixing holes



Applications

Whenever there is little space for sensors or when small parts are to be detected, the small photoelectric sensors of the OJ series are the ideal problem solvers. Typical applications are assembly and handling technology.

Quick and easy mounting

The OJ50xx series is mounted using the innovative snap-in technology. The sensor is pushed into the guides of the fixture until the spring clicks home.

The units of the OJ51xx series have two fixing holes on the side for mounting. It allows quick mounting of the sensor by means of fixing holes reinforced with stainless steel sleeves, without requiring additional accessories.

Visible red light

All sensors operate with visible red light which considerably facilitates alignment during installation and set-up.







Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Orde no.
nrough-bear	n sensor · M8 connector · 10	30 DC · plastics · IP	67			
	Transmitter	10 m	Red	1000	-	OJ503
	Receiver	10 m	Red	-	H/D PNP	OJ503
-	Transmitter	10 m	Red	1000	-	OJ513
	Receiver	10 m	Red	-	H/D PNP	OJ513
etro-reflectiv	ve sensor · M8 connector · 10)30 DC · plastics · I	P67			
	Polarisation filter	02 m	Red	64	H/D PNP	OJ502
1	Polarisation filter	02 m	Red	64	H/D PNP	OJ51
ectangul _{Type}	ar housing OJ Perfor	manceLine, fro	ont sensing fa Type of light	ACE Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Orde no.
Туре		Range	Type of light	Spot Ø at max. range	H = light-on	
Туре	Operating principle	Range	Type of light	Spot Ø at max. range	H = light-on	no
Туре	Operating principle n sensor · M8 connector · 10.	Range 30 DC · plastics · IP	Type of light 67	Spot Ø at max. range [mm]	H = light-on	OJ50
Туре	Operating principle n sensor · M8 connector · 10. Transmitter	Range 30 DC · plastics · IP 10 m	Type of light 767 Red	Spot Ø at max. range [mm]	H = light-on D = dark-on	0,150 0,150
Туре	Operating principle n sensor · M8 connector · 10. Transmitter Receiver	Range 30 DC · plastics · IP 10 m 10 m	Type of light 767 Red Red	Spot Ø at max. range [mm] 1000 –	H = light-on D = dark-on – H/D PNP	
Type arough-bear	Operating principle n sensor · M8 connector · 10. Transmitter Receiver Transmitter	Range 30 DC · plastics · IP 10 m 10 m 10 m 10 m	Type of light Red Red Red	Spot Ø at max. range [mm] 1000 –	H = light-on D = dark-on - H/D PNP -	0J50 0J50 0J51
Type arough-bear	Operating principle In sensor · M8 connector · 10. Transmitter Receiver Transmitter Receiver	Range 30 DC · plastics · IP 10 m 10 m 10 m 10 m	Type of light Red Red Red	Spot Ø at max. range [mm] 1000 –	H = light-on D = dark-on - H/D PNP -	0.150 0.150 0.151



OJ diffuse reflection sensor with background suppression



- Ideal for position detection in feeding and handling
- Precise background suppression for a reliable function
- Visible red light facilitates alignment during mounting
- High switching frequency for fast processes
- Mounting via snap-in technology or fixing holes



Background suppression

With electronic background suppression the sensors can be set to ensure precise and safe detection of objects with various surfaces independently of any background.

Quick and easy mounting

The OJ50xx series is mounted using the innovative snap-in technology. The sensor is pushed into the guides of the fixture until the spring clicks home.

The units of the OJ51xx series have two fixing holes on the side for mounting. It allows quick mounting of the sensor by means of fixing holes reinforced with stainless steel sleeves, without requiring additional accessories.

Visible red light

All sensors operate with visible red light which considerably facilitates alignment during installation and set-up.





Flexible and easy setting of the detection zone.

Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Orde no.
ffuse reflec	tion sensor · M8 connector ·	1030 DC · plastics ·	IP67			
_	Diffuse reflection sensor	1600 mm	Red	60	H/D PNP	OJ502
	Diffuse reflection sensor	11000 mm	Infrared	150	H/D PNP	OJ507
-	Background suppression	15400 mm	Red	< 18	H/D PNP	OJ504
Į.	Diffuse reflection sensor	1600 mm	Red	60	H/D PNP	OJ512
-	Background suppression	100 mm	Red	< 13	H PNP	OJH2
-	Background suppression	15400 mm	Red	< 18	H/D PNP	OJ51
	lar housing OJ Perfor	manceLine, fro	nt sensing fa	асе	H/D PNP	
ectangul						OJ514 Orde no.
Туре	lar housing OJ Perfor	manceLine, fro _{Range}	nt sensing fa	ACE Spot Ø at max. range	Output H = light-on	Orde
Туре	ar housing OJ Perfor	manceLine, fro _{Range}	nt sensing fa	ACE Spot Ø at max. range	Output H = light-on	Orde
Туре	ar housing OJ Perfor Operating principle tion sensor · M8 connector ·	manceLine, fro Range 1030 DC · plastics ·	nt sensing fa	ace Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Orde no.
Туре	ar housing OJ Perfor Operating principle tion sensor · M8 connector · Diffuse reflection sensor	manceLine, fro Range 1030 DC · plastics · 1600 mm	nt sensing fa Type of light IP67 Red	ace Spot Ø at max. range [mm] 60	Output H = light-on D = dark-on	Orda no OJ50
Туре	Coperating DJ Perfor Operating principle tion sensor · M8 connector · Diffuse reflection sensor Diffuse reflection sensor	manceLine, fro Range 1030 DC · plastics · 1600 mm 11000 mm	nt sensing fa Type of light IP67 Red Infrared	ace Spot Ø at max. range [mm] 60 150	Output H = light-on D = dark-on H/D PNP H/D PNP	Orda no OJ50 OJ50

Accessories OJ housing

Туре	Description	Order no.
T	Mounting set · OJ · for side lens · Clamp mounting · free-standing M8 · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E20968
1	Swivel-mount clip \cdot for type OJ \cdot Housing materials: diecast zinc	E20974
	Angle bracket for two OL Housing materials: high grade staipless steel	E20084



E20984



Robust photoelectric fork sensors with high switching frequency



- Metal housing reduces distortion
 Quick set-up, transmitter and receiver setting not necessary
 Easy sensitivity setting via potentiometer
 Light-on / dark-on mode selectable
 - via rotary switch
 - Fine and precise light beam across the whole fork width



Optical sensors in new designs

The new ifm units with robust metal housing resist distortion compared to conventional plastic forks. Compared to through-beam sensors, their advantage is that the time-consuming alignment of transmitter and receiver is not necessary.

These optical sensors are used in particular for part monitoring in feeder and handling systems. Further application examples are belt edge or double feed monitoring with the exact sensitivity setting via potentiometer being very helpful. The fine light beam with its constant small diameter is also ideal for monitoring shaft imbalance.



Precise detection of screws in feeder systems.

Туре	Fork width (w) [mm]	Fork depth (d) [mm]	Smallest detectable object Ø [mm]	Switching frequency [Hz]	Output H = light-on D = dark-on	U _b [V]	Order no.
Optical fork s	ensor ∙ M8 conne	ctor · 1035 DC	· metal · IP67				
	10	17	0.3	10000	H/D PNP/NPN	1035	OPU200
	20	25	0.4	4000	H/D PNP	1035	OPU201
	30	35	0.5	4000	H/D PNP	1035	OPU202
	50	55	0.5	4000	H/D PNP	1035	OPU203
	80	55	0.5	4000	H/D PNP	1035	OPU204
Γ	120	60	0.8	2000	H/D PNP	1035	OPU205
Connecto	rs						
Туре			Descrip	tion			Order no.
ocket M8, 3-	pole, 3-wire						
		ee from silicone · Fre lousing: TPU orange	e from halogen · Gold-plat / sealing: FKM	ed contacts · M8 conne	ctor · 2 m ·		EVC141
•		ee from silicone · Fre lousing: TPU orange	e from halogen · Gold-plat / sealing: FKM	ed contacts · M8 connec	ctor · 5 m ·		EVC142
~	Socket · angled · Fre Housing materials: h		e from halogen · Gold-plate / sealing: FKM	d contacts · M8 connec	tor · 2 m ·		EVC144
	Socket · angled · Fre	e from silicone · Free	e from halogen · Gold-plate	ed contacts · M8 connec	tor · 5 m ·		EVC145



M18 laser sensors for highest precision for small objects



- Reliable detection even of tiny objects up to 1.5 mm
- Quality and precision at an unbeatable price
- Visible laser light spot for a simple sensor alignment
- Setting process saves time and cost during set-up
- Precise background suppression for a reliable function



Highly precise laser sensors

Even tiny objects are reliably detected thanks to the laser technology. The sensor set-up is very user-friendly: the visible laser spot and the new teach method enable optimum sensor setting in no time. Using the new OG type laser sensors price is no longer an issue.

Variants

This series covers powerful through-beam systems, retro-reflective sensors with polarisation filter and diffuse reflection sensors with background suppression for demanding applications frequently found in assembly and handling technology. All sensors have a robust stainless steel housing.



The precise laser beam allows the detection of objects even through tiny openings.

Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
Diffuse refle	ection sensor · M12 connector ·	1036 DC ⋅ high-gr	ade stainless stee			
-	Background suppression	20200 mm	Red	1.2	H/D PNP	OGH700
Retro-reflect	tive sensor · M12 connector · 1	036 DC · high-grac	le stainless steel ·	IP65 / IP67		
-	Polarisation filter	0.215 m	Red	78	H/D PNP	OGP700
	Polarisation filter	0.22 m	Red	5	H/D PNP	OGP70
hrough-bea	am sensor · M12 connector · 10)36 DC · high-grad	e stainless steel \cdot	IP65 / IP67		
	Transmitter	60 m	Red	312	-	OG\$700
	Transmitter	2 m	Red	5	-	OG\$701
	Receiver	60 m	Red	-	H/D PNP	OGE700
	Receiver	2 m	Red	-	H/D PNP	OGE701
Accessori	ies					
Туре			Description			Order no.
	Prismatic reflector · 48 x 48 mm · re Housing materials: plastics	ectangular · for retro-refle	ective laser sensors an	d glass and film detection	۱.	E20722
	Prismatic reflector \cdot 30 x 20 mm \cdot re Housing materials: front plate: PMN		ective laser sensors ·			E20994
	Prismatic reflector · Ø 10 mm · round · fixing by screw · M3 · for retro-reflective laser sensors · Housing materials: screw: stainless steel 316 / 1.4401 / spring washer: stainless steel 316 / 1.4401 / nut: stainless steel 316 / 1.4401 / front plate: PMMA / base: ABS					
. () 						E20990
•		stainless steel 316 / 1.44 nd - fixing by screw - M3	01 / nut: stainless stee · for retro-reflective la	el 316 / 1.4401 / front pla ser sensors · Housing ma	ate: PMMA / base: ABS terials: screw: stainless	E20990 E20993
• • • •	steel 316 / 1.4401 / spring washer: Prismatic reflector · Ø 19 mm · rour	stainless steel 316 / 1.44 nd · fixing by screw · M3 stainless steel 316 / 1.44 mounting · Free-standin	01 / nut: stainless stee • for retro-reflective la 01 / nut: stainless stee	el 316 / 1.4401 / front pla ser sensors · Housing ma el 316 / 1.4401 / front pla	ate: PMMA / base: ABS terials: screw: stainless	



OGD photoelectric sensors with time of flight technology



- Small design with M18 thread and time of flight technology
- Two versions: "Long Range" or "Precision"
- Provision of the distance value via IO-Link and 2-colour display
- Comfortable setting via 3 pushbuttons or parameter setting via IO-Link



"Long Range" PMD distance sensor

The OGD Long Range precisely measures the distance to the object via laser light and time of flight technology for distances up to 1,500 mm.

The class 1 laser sensor performs better than conventional red light sensors even in very demanding circumstances e.g. in detecting shiny metallic surfaces reliably. The excellent reflection resistance and background suppression, together with a high excess gain, enable reliable operation.

"Precision" version

210

This OGD version is characterised by a 300 mm range and a small light spot diameter. The distance information allows to verify the presence or the correct installation of small parts, e.g. whether an O-ring has been installed.



Precise distance detection using time of flight measurement.

Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output	Order no.
M12 connect	tor, 5 poles · 1030 DC · metal	· IP65 / IP67				
Ţ.	Photoelectric distance sensor	0.0250.3 m	Red	< 1 x 1	OUT1: normally open / closed programmable / IO-Link OUT2: normally open / closed programmable PNP	OGD592
Rectangu	lar housing OG (M18)					
Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output	Order no.
/112 connect	tor, 5 poles · 1030 DC · metal	· IP65 / IP67				
	Photoelectric distance sensor	0.0251.5 m	Red	< 5 x 5	OUT1: normally open / closed programmable / IO-Link OUT2: normally open / closed programmable PNP	OGD580
Accessori	es					
Туре			Description			Order no.
F	Mounting set · Ø 18.5 mm · Clamp Housing materials: clamp: diecast z	5	g M10 · for type OG,	, IG, KG ·		E20718
T	Mounting set · Ø 18.5 mm · Clamp Housing materials: fixture: stainless			, IG, KG ·		E20870
	USB IO-Link master · for parameter IO-Link (4.8, 38.4 and 230 Kbits/s)	setting and analysis of un for operation with FDT 1	nits · Supported com framework software	munication protocols: "ifm Container" or sof	tware "LR SENSOR"	E30390
	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					
1 7 1 1 10 1 10 10 1 10	IO-Link master with Profinet interfa Housing materials: housing: polyan			onnector ·		AL1100
	LR DEVICE (USB stick) · Parameter setting of the units via the network · Software for clear online and offline parameter setting of IO-Link sensors via USB adapter · Use via USB connection cable (drivers are supplied): E30396 IO-Link interface or E30390 IO-Link master (note the respective data sheet) · IODD import and update from ifm's homepage · Reading of IODDs via storage media · Automatic sensor identification · Graphic representation of the process values and history incl. export function · Documentation and archiving · Transferable parameter sets · Full memory plug support for IO-Link 1.1					



OJ – photoelectric laser sensors for assembly and handling technology



- High precision: Even tiny objects up to 0.8 mm can be detected reliably
- High switching frequency up to 2000 Hz for fast processes
- Front or side lens with various fixing options
- Mounting via snap-in technology or fixing holes



Applications

Whenever there is little space for sensors or when small parts are to be detected, the small photoelectric sensors of the OJ series are the ideal problem solvers. Typical applications are assembly and handling technology.

High precision and laser protection class 1

The sensors even detect tiny objects up to a diameter of only 0.8 mm. A laser of protection class 1 (EN 60825) now offers more application opportunities for this highly-precise, small and tried-and-tested sensor.

Excellent price / performance ratio

Using the new OJ type laser sensors the decision for laser units is no longer an issue.

Easy alignment and mounting

The laser light spot visible on the object simplifies the alignment of the sensors which are also installed in a very short time by means of the extensive fixing components.





Laser protection class 1 requires no additional protective measures for the operators.

Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
nrough-bean	n sensor \cdot M8 connector \cdot 10.	30 DC · plastics · IP	67			
	Transmitter	15 m	Red	< 24	-	OJ503
	Transmitter	1 m	Red	< 4	-	OJ504
	Receiver	15 m	Red	-	H/D PNP	OJ503
	Receiver	1 m	Red	-	H/D PNP	OJ504
	Transmitter	15 m	Red	< 24	-	OJ513
	Transmitter	1 m	Red	< 4	-	OJ514
	Receiver	15 m	Red	-	H/D PNP	OJ513
	Receiver	1 m	Red	-	H/D PNP	OJ514
etro-reflectiv	ve sensor · M8 connector · 10	30 DC · plastics · I	P67			
	Polarisation filter	8 m	Red	< 12	H/D PNP	OJ503
F	Polarisation filter	8 m	Red	< 12	H/D PNP	OJ51
ectangul	ar housing OJ Laser F	PerformanceLi	ne, front sen	sing face, laser	class 1	
Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Orde no.
tro-reflectiv	ve sensor · M8 connector · 10	30 DC · plastics · I	P67			
	Polarisation filter	8 m	Red	< 12	H/D PNP	OJ50
	Polarisation filter	8 m	Red	< 12	H/D PNP	OJ51
onnector	S					
Туре			Description			Orde



Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M8 connector \cdot 5 m \cdot Housing materials: housing: TPU orange / sealing: FKM

EVC154



OJ laser diffuse reflection sensor with background suppression



- Ideal for position detection in feeding and handling
- Precise background suppression for a reliable function
- High precision: Even tiny objects up to 0.8 mm can be detected reliably
- Front or side lens with various fixing options
- Mounting via snap-in technology or fixing holes



Background suppression

With electronic background suppression the sensors can be set to ensure precise and reliable detection of objects with various surfaces independently of any background.

Quick and easy mounting

The OJ50xx series is mounted using the innovative snap-in technology. The sensor is pushed into the guides of the fixture until the spring clicks home.

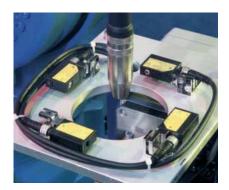
The units of the OJ51xx series have two fixing holes on the side for mounting. It allows quick mounting of the sensor by means of fixing holes reinforced with stainless steel sleeves, without requiring additional accessories.

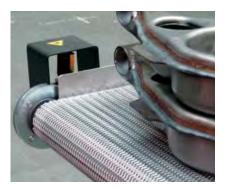
High precision

The sensors even detect tiny objects up to a diameter of only 0.8 mm.

Visible laser light spot

The laser light spot visible on the object simplifies alignment of the sensors.





Objects of different sizes are safely detected.

Rectangular housing OJ Laser PerformanceLine, lateral sensing face, laser class 1									
Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.			
Diffuse reflection sensor · M8 connector · 1030 DC · plastics · IP67									
	Background suppression	15200 mm	Red	2 x 1	H/D PNP	OJ5054			
	Background suppression	7150 mm	Red	0.8	H/D PNP	OJ5058			
	Background suppression	15200 mm	Red	2 x 1	H/D PNP	OJ5154			
	Background suppression	7150 mm	Red	0.8	H/D PNP	OJ5158			
Rectangu	lar housing OJ Laser	PerformanceLir	ne, front sen	ising face, lase	r class 1				
Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.			
Diffuse refle	ction sensor · M8 connector ·	1030 DC · plastics ·	IP67						
	Background suppression	15200 mm	Red	2 x 1	H/D PNP	OJ5052			
1	Background suppression	15200 mm	Red	2 x 1	H/D PNP	OJ5152			
	Background suppression	7150 mm	Red	0.8	H/D PNP	OJ5056			
Accessori	es OJ housing								
Туре			Description			Order no.			
R.	Mounting and fine adjustment bra	cket for laser units · for fr	ont lens · for type O	J · Housing materials: died	cast zinc	E20975			
1	Mounting and fine adjustment bracket for laser units \cdot for side lens \cdot for type OJ \cdot Housing materials: diecast zinc								
Connecto	ors								
Туре			Description			Order no.			
Socket M8, 4	-pole, 4-wire								

Socket M8, 4-pole, 4-wire



Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M8 connector \cdot 5 m \cdot Housing materials: housing: TPU orange / sealing: FKM

EVC154



Extremely compact laser, distance and level sensor



- Photoelectric distance detection with a range of up to 10 m, with reflector up to 75 m
- 2 switching outputs; one output can be configured as analogue output
- Scalable detection range and window function
- Can be used in applications needing background suppression
- 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.

Compact and flexible

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. The O1D102 has been specially designed for the detection of black metallic lacquers.

Combined advantages

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





0/4...20 mA



Туре	Operating principle	Range	Sampling rate	Spot Ø at max. range	Ub	Order no.
otoelectr	ic distance sensor · M12 con	nector · 1830 DC · me	[Hz] tal · IP67	[mm]	[V]	
	Background suppression	0.210 m	150	< 15 x 15	1830	01D10
	Background suppression	0.210 m	150	< 15 x 15	1830	01D12
	Photoelectric distance sensor	0.23.5 m	150	< 6 x 6	1830	01D1(
9	Photoelectric distance sensor	0.210 m	133	< 15 x 15	1830	01D1
ectang	ular housing O1 for o	optical distance r	neasurement, las	er class 1		
Туре	Operating principle	Range	Sampling rate	Spot Ø at max.	U _b	Orde no.
			[Hz]	range [mm]	[V]	

Photoelectric distance sensor \cdot M12 connector \cdot 18...30 DC \cdot metal \cdot IP67

	Photoelectric distance sensor	0.36 m	133	< 8 x 8	1830	O1D155
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Rectangular housing O1 Laser PerformanceLine with background suppression, laser class 2

Туре	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output	Order no.
Photoelectric	distance sensor · M12 conne	ctor · 1830 DC · me	tal · IP67			

Ņ	Background suppression	0.210 m	-	< 15 x 15	normally open / closed programmable PNP	O1D101
---	------------------------	---------	---	-----------	--	--------

Accessories O1 housing

Туре	Description	Order no.
T	Mounting set · Clamp mounting · rod mounting Ø 12 mm · for type O1D · Housing materials: fixture: stainless steel / clamp: stainless steel / screws: stainless steel / nut: high-grade stainless steel	E2D101
	Mounting set · E2D101 + E20938 + E20951	E21079



O5D – first standard photocell with time of flight measurement (PMD)



- Reliable background suppression and colour-independent detection
- Precise time of flight measurement in housing sizes of standard photoelectric sensors
- Shiny surfaces are detected reliably (e.g. stainless steel)
- Any sensor position, even an oblique angle to the object
- Switch point setting to the nearest centimetre via "+/-" buttons and display



Time of flight measurement as standard sensor

The O5D with time of flight measurement (PMD = Photonic Mixer Device) combines the following advantages: long range, reliable background suppression, visible red light and high excess gain. In the same price range as standard sensors, it is a clever alternative.

Easy handling

The switch point is set easily to the nearest centimetre via "+/-" buttons and display or alternative via IO-Link, which also allows read-out of the actual value.

Any surface and any mounting position

Shiny, matt, dark or light objects of any colour: the O5D features reliable background suppression. The unit allows any angle of incidence and thus any mounting position. This simplifies installation and saves costs.



Time of flight measurement at the price of a standard sensor.

Туре	Operating principle	Range	Sampling	Spot Ø at	Ub	Order					
			rate [Hz]	max. range [mm]	[V]	no.					
hotoelectri	c distance sensor · M12 conne	ector · 1030 DC · meta	al • IP65 / IP67 • Displa	y unit: cm							
	Background suppression	0.032 m	33	< 5	1030	O5D150					
Rectangu	lar housing O5 for op	otical distance m	easurement, las	er class 2							
Туре	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.					
Photoelectric	c distance sensor · M12 conne	ector · 1030 DC · meta	al • IP65 / IP67 • Display	y unit: cm							
	Background suppression	0.032 m	33	< 5	1030	O5D100					
hotoelectrio	c distance sensor · M12 conne	ector · 1030 DC · meta	al • IP65 / IP67 • Display	y unit: inch							
	Background suppression	0.032 m	33	< 5	1030	O5D101					
Accessori	es O5 housing										
Туре		Di	escription			Order no.					
FI.	Mounting set · Clamp mounting · Housing materials: stainless steel 3			5.		E21084					
1	Angle bracket · for type O5 · Hous	sing materials: stainless steel	316Ti / 1.4571			E21087					
Ţ.	Mounting set · Clamp mounting · Housing materials: stainless steel 3					E21083					
, the	Angle bracket · for type O5 · Hous	sing materials: stainless steel	316Ti / 1.4571			E21085					
	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										
			JOUSING MATERIALS: PA PACM 12 / PET / sealing: FPM / nut: stainless steel 316L / 1.4404 / connector: TPU JSB IO-Link master · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4.8, 38.4 and 230 (bits/s) · for operation with FDT framework software "ifm Container" or software "LR SENSOR"								
	Housing materials: PA PACM 12 /	PET / sealing: FPM / nut: sta	ts · Supported communicati	on protocols: IO-Link (4.8	3, 38.4 and 230	E30390					



Fibre optic amplifiers





Application

Fibre optic sensors are used where mounting space for photoelectric standard sensors is restricted.

Advantages of these systems: The evaluation unit (fibre optic amplifier) and the photoelectric components are located separately from the sensing surface of the system. Fibre optic sensing heads can therefore be mounted in places where access is difficult.

Through-beam principle

Transmitting and receiving fibre optics are laid separately. The two ends (fibre optic heads) are mounted opposite each other. The light beam interruption is evaluated according to the through-beam principle.

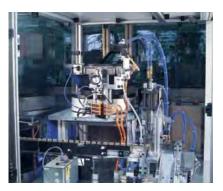
Diffuse reflection principle

Transmitting and receiving fibre optics are in one sheath and one sensing head. Evaluation is based on the diffuse reflection principle.

Fibre optics

Plastic fibre optics are suited for standard applications if no particular demands such as heat or chemical resistance are made. Glass fibre optics are more resistant to heat, ageing and chemicals than plastic fibre optics.





Tried-and-tested technology for complex applications.

OKF ampl	ifiers for <u>o</u>	glass fibre	optics					
Туре	Number of input channels	For fibre optics	Type of light	Sensing range through beam	Sensing range diffuse	Output H = light-on D = dark-on	U _b [V]	Order no.
Type OKF · Ca	able 2 m · plas	itics · DC						
;	1	FE/FT-00	Red	00.12 m	040 mm	H/D PNP	1036	OK5001
Туре ОКF · М	12 connector	· plastics · D	c					
Ţ	1	FE/FT-00	Red	00.12 m	040 mm	H/D PNP	1036	OK5008
OUF ampl	ifiers for g	glass fibr	e optics					
Туре	Number of input channels	For fibre optics	Type of light	Sensing range through beam	Sensing range diffuse	Output H = light-on D = dark-on	U _b [V]	Order no.
Type OUF · Ca	able 2 m · plas	stics · DC						
	1	FE/FT-00	Infrared	0.12 m	40 mm	H PNP	1036	OU5001
-	1	FE/FT-00	Infrared	0.12 m	40 mm	d pnp	1036	OU5002
Type OUF · M	12 connector	· plastics · D	с					
	1	FE/FT-00	Infrared	00.12 m	040 mm	H PNP	1036	OU5043
	1	FE/FT-00	Infrared	00.12 m	040 mm	D PNP	1036	OU5044
Glass fibre	e optics fo	or OOF / C	OKF and (OUF housings	, through-b	eam system		
Туре				Descript	ion			Order no.

Through-beam sensor \cdot M4 \cdot straight \cdot Housing materials: PVC, adapter:, PPO, Fibre optic: glass	E20059
Through-beam sensor \cdot Ø 3 \cdot angled \cdot Housing materials: PVC, adapter:, PPO, Fibre optic: glass	E20062



OBF fibre optic amplifier with high performance



- High performance such as a high switching frequency of 3000 Hz
- LED display to check operation, switching status and function
- Variable mounting options:
 DIN rail or free-standing mounting
- Easy parameter setting via pushbuttons
- Wide range of fibre optics and accessories



New generation

The new generation of fibre-optic amplifiers of type OBF have an unbeatable price / performance ratio.

Variable installation

The sensors can be mounted on a DIN rail or using fixing holes. The simple ifm teach concept guarantees fast set-up. The sensor is ready for operation by pressing the programming buttons twice.

For demanding applications

For demanding applications extended functions such as manual fine adjustment as well as pulse stretching (time delay function) are available.



The use of fibre optics allows the detection of objects where space is at a premium.

Туре					Output H = light-on	Ub	Order no.		
	channels	optics	Ĵ	through beam	diffuse	D = dark-on	[V]		
ype OBF · I	M12 connector	\cdot plastics \cdot D	C · Function o	heck output					
1	1	FE/FT-00	Red	02 m	0100 mm	H/D PNP/NPN	1030	OBF50	
ype OBF · I	M8 connector ·	plastics · DC	• Function ch	eck output					
1	1	FE/FT-00	Red	02 m	0100 mm	H/D PNP/NPN	1030	OBF50	
ype OBF · I	M8 connector ·	plastics · DC							
Ņ	1	FE/FT-00	Red	02 m	0100 mm	H/D PNP/NPN	1030	OBF50	
ype OBF · O	Cable 2 m · pla	stics · DC · Fu	nction check	output					
1	1	FE/FT-00	Red	02 m	0100 mm	H/D PNP/NPN	1030	OBF50	
Acrylic fi	bre optics	for OBF /	OOF hou	sings, throug	Jh-beam sys	tem			
Туре				Descript	ion			Order no.	
	Through-beam	sensor · M3 · st	raight · Housing	materials: PE (polyeth	ylene), Fibre optic: P	MMA		E20603	
11		Through-beam sensor · M4 · straight · Housing materials: PE (polyethylene), Fibre optic: PMMA							
//	Through-beam	sensor · M4 · st	raight · Housing	materials: PE (polyeth	ylene), Fibre optic: P	MMA		E2061	
 				materials: PE (polyeth materials: PE (polyeth				E2061	
 	Through-beam	sensor · M4 · st	raight · Housing		ylene), Fibre optic: P	MMA			
 	Through-beam Through-beam	sensor · M4 · str sensor · M4 · str	raight · Housing raight · Housing	materials: PE (polyeth	ylene), Fibre optic: P ylene), Fibre optic: P	ММА		E2060	



Sensors for colour, contrast, glass and film detection



- The colour sensor detects even finest shades of colour,
 5 tolerance steps can be selected
- Contrast sensor with teach function for automatic transmitted-light colour
- The sensor for transparent objects detects 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 automotive 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.

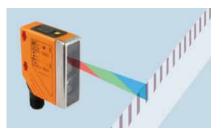
Contrast sensor for object detection

The O5K contrast sensor can solve a variety of applications in the assembly, handling and material handling technology. 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 sensors of the O5G series detect transparent objects such as film, glass, PET / plastic bottles or transparent packaging. Normal photoelectric sensors are not suited for this. Standard sensors have too much excess gain and "burn" through the clear material.







Туре	Operating principle	Measuring range	Light spot diameter [mm]	U _b [V]	Current consumption [mA]	Sampling rate / switching frequency [Hz]	Orden no.
/12 connect	or · Output function light-c	on / dark-on pr	ogrammable · DO	PNP/NPN			
	Colour sensor	1519 mm	2.5 x 6	1036	50	2000	05C50
Contrast	sensors						
Туре	Operating principle	Rang	e Tyj of li		Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Orde no.
/12 connect	or · Output function light-c	on / dark-on pr	ogrammable · DO	PNP/NPN			
	Diffuse contrast sensor	1822	mm RG	В	1.5 x 5	H/D PNP/NPN	O5K50
iensors f	or the detection of	transparen	t objects				
Туре	Operating principle	Rang	e Tyj of li		Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Orde no.
112 connect	or · Output function light-c	on / dark-on pr	ogrammable via	pushbuttor	n · DC PNP/NPN		
	Polarisation filter	03	n Re	d	80	H/D PNP/NPN	O5G5(
18 connecto	r · Output function light-or	n / dark-on pro	grammable · DC	PNP			
4	Polarisation filter	0.21.	5 m Re	d	64	H/D PNP	OJ518
1	Polarisation filter	0.21.	5 m Re	d	64	H/D PNP	OJ518
rism <u>atic</u>	reflector						

Туре	Description	Order no.
	Prismatic reflector \cdot 48 x 48 mm \cdot rectangular \cdot for retro-reflective laser sensors and glass and film detection \cdot Housing materials: plastics	E20722



Programmable incremental encoders with display



- Reduced stock-keeping: Can be used as encoder, speed sensor or counter
- Ideal for series applications:
 3 Operating modes and configuration can be set via IO-Link
- Resolution of 1...10,000 and signal level (TTL / HTL) freely programmable
- Display: Two-colour electronic rotatable display of the process values
- Versatile: M12 connector can be used radially or axially



No compromises

The magnetic sensing principle provides the accuracy of photoelectric encoders and the robustness of magnetic systems.

Simple

Resolution and signal level can be programmed.

The encoders have a wide voltage range of 4.75...30 V DC and are therefore suited for universal use.

Multifunctional

Performance Line encoders have an integrated signal evaluation for speed monitoring, counter functions and detection of the direction of rotation.

Intuitive

The encoders provide easy setting, position indication by means of display and operating keys and intuitive menu navigation.

Networked

Diagnostic and parameter data are reliably transferred via IO-Link. This makes the products fit for Industry 4.0.



Туре	Shaft	Ub	Ambient temperature	Description	Order no.
		[V]	[°C]		
M12 connec	tor · 8 poles	• Output function	HTL 50 mA (preset	at the factory) / TTL 50 mA	
-	12	4.7530	-4085	Hollow shaft encoder open to one side · display · Magnetic detection system · Connector, radial, can also be used axially	ROP520
P	12	4.7530	-4085	Hollow shaft encoder open to one side · display · Magnetic detection system · Connector, radial, can also be used axially	ROP521
	15	4.7530	-4085	Hollow shaft encoder open to one side · display · Magnetic detection system · Connector, radial, can also be used axially	ROP522
	9.525	4.7530	-4085	Hollow shaft encoder open to one side · display · Magnetic detection system · Connector, radial, can also be used axially	ROP523
	15.875	4.7530	-4085	Hollow shaft encoder open to one side · display · Magnetic detection system · Connector, radial, can also be used axially	ROP524
F	6	4.7530	-4085	Solid shaft encoder \cdot display \cdot Magnetic detection system \cdot Synchro-flange \cdot Connector, radial, can also be used axially	RUP500
	10	4.7530	-4085	Solid shaft encoder · display · Magnetic detection system · Clamping flange · Connector, radial, can also be used axially	RVP510

Accessories

σ

Туре	Description	Order no.
0-10	USB IO-Link master \cdot for parameter setting and analysis of units \cdot Supported communication protocols: IO-Link (4.8, 38.4 and 230 Kbits/s) \cdot for operation with FDT framework software "ifm Container" or software "LR SENSOR"	E30390
E alter	Jumper · straight / straight · Free from halogen · 0.3 m · Housing materials: PUR	E12432
	Stator coupling · Housing materials: stainless steel	E60205
	LR DEVICE (USB stick) · Parameter setting of the units via the network · Software for clear online and offline parameter setting of IO-Link sensors via USB adapter · Use via USB connection cable (drivers are supplied): E30396 IO-Link interface or E30390 IO-Link master (note the respective data sheet) · IODD import and update from ifm's homepage · Reading of IODDs via storage media · Automatic sensor identification · Graphic representation of the process values and history incl. export function · Documentation and archiving · Transferable parameter sets · Full memory plug support for IO-Link 1.1	QA0011
Å	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



Compact speed monitors





Compact speed monitors

In many industrial applications drives need to be monitored for rotational speed or standstill. In the automotive, food & beverage, steel and mining industries, speed sensors are used to safely detect standstill, overspeed and underspeed of drives or belt break on conveyors.

The compact speed monitors of the DI series integrate rotational speed detection and monitoring in one unit. The sensor head operates using inductive sensing principles. The sensor detects metal actuating surfaces on rotating machine parts, e.g. on toothed wheels or camshafts. The integrated evaluation converts this information into rotational speed.

The target speed is set easily via potentiometer or pushbutton on the unit.



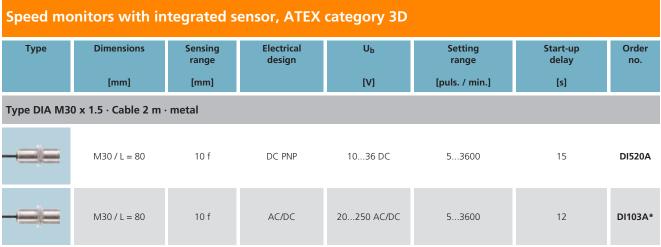


Speed mo	nitor with int Dimensions	egrated se Sensing range	nsor Electrical design	Ub	Setting range	Start-up delay	Order no.
	[mm]	[mm]	uesign	[V]	[puls. / min.]	[s]	110.
Type DGA M1	8 x 1 · M12 connec	tor · high-grac	le stainless steel				
	M18 / L = 68	12 nf	DC PNP	1036 DC	36000	015	DI6001
Type DIA M30) x 1.5 · Cable 2 m ·	metal					
	M30 / L = 80	10 f	DC PNP	1036 DC	53600	15	DI5020
	M30 / L = 80	10 f	AC/DC	20250 AC/DC	53600	12	DI0101*

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

* Note on use of miniature fuses for electrical connection

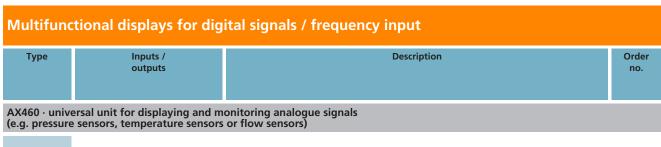
Miniature fuse to IEC60127-2 sheet 1, \leq 2 A (fast acting) Recommendation: check the unit for reliable function after a short circuit.



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

* Note on use of miniature fuses for electrical connection

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





Digital display · Multi-functional display and evaluation system · for analogue standard signals · Ambient temperature -20...60 °C · screw terminals · Operating voltage 115...230 AC (50...60 Hz) / 18...30 V DC · IP 65



Compact speed sensors with IO-Link





Compact speed monitoring

The evaluation electronics are integrated in the sensor housing. This allows for lowcost and easy monitoring of rotating as well as linear movements regarding overspeed and underspeed. The limit of the speed at which the output switches is set via IO-Link.

Applications

Especially in the field of conveying technology the compact speed sensors can be used for various applications, for example for monitoring belt conveyors or bucket elevators. Here they are typically used to monitor underspeed, blockage or stand-still. The different designs and the large speed range allow for an integration into almost any application.



Speed sensors

Compact	speed sensors						
Туре	Dimensions	Sensing range	Electrical design	Ub	Setting range	Start-up delay	Order no.
	[mm]	[mm]		[V]	[puls. / min.]	[s]	
Connector M	12 · Output functio	n/_Ł	· DC PNP/NPN				
	M30 / L = 92.3	10 f	DC PNP/NPN	1036 DC	53600	030	DI5024
M12 connect	or · Output function	n/_Ł	· DC PNP/NPN				
	M12 / L = 60	3.5 f	DC PNP/NPN	1030 DC	524000	030	DI5027
	M12 / L = 60	6.5 nf	DC PNP/NPN	1030 DC	524000	030	DI5028
	M18 / L = 60	7 f	DC PNP/NPN	1030 DC	524000	030	DI5029
	M18 / L = 60	12 nf	DC PNP/NPN	1030 DC	524000	030	DI5030
	M30 / L = 65	12 f	DC PNP/NPN	1030 DC	514400	030	DI5031
	M30 / L = 65	21 nf	DC PNP/NPN	1030 DC	514400	030	DI5032
-	40 x 40 x 54	20 f	DC PNP/NPN	1030 DC	59600	030	DI5033
	40 x 40 x 54	24 nf	DC PNP/NPN	1030 DC	59600	030	DI5034

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

Accessori	es	
Туре	Description	Order no.
	Target wheel \cdot Plastic disk with 8 screws as "target" \cdot Centered drill holes	E89010
0-10	USB IO-Link master · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4.8, 38.4 and 230 Kbits/s) · for operation with FDT framework software "ifm Container" or software "LR SENSOR"	E30390



Evaluation systems



Intuitive, user-friendly handling Integrated wide-range power supply

- Easily programmable output functions
- Devices for monitoring standstill, speed, direction, slip, and frequency
- Switching relays and transistor outputs, scalable analogue output



Evaluation systems

Pulse evaluation systems monitor rotating and linear movements as well as all physical quantities which can be converted into pulse sequences. Units with different functions allow customised monitoring of slow and fast rotational speeds as well as complex synchronous or direction monitoring. Relay or transistor outputs give a signal if the actual value is above or below the set limit value.



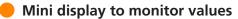


Universal	speed monitors								
Туре	U _b [V]	ln- puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out- puts analogue	Out- puts relays	Out- puts transist.	Order no.
Type FR-1 · d	ual-chamber terminals 2	x 2.5 mr	n² (2 x AWG 14) · p	lastics					
	110240 AC (5060 Hz) / 27 DC (typ. 24 DC)	1	PNP / NPN / Namur	160000	0.11000	1	2	2	DD2503
Standard	speed monitors /	stand	still monitor						
Туре	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.
Type D200 ·	Unit: 4-pole terminal stri	ps, pin se	eparation 5.0 mm ·	plastics					
	110240 AC / 27 (24) DC	1	PNP	0.110 / 101000	-	-	1	1	DD0203
Universal	speed monitors v	vith se	nsor wire mo	nitoring					
Туре	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.
Type FR-1N ·	dual-chamber terminals	2 x 2.5 n	וm² (2 x AWG 14) ·	plastics					
	110240 AC (5060 Hz) / 27 DC (typ. 24 DC)	1	Namur 8.2 V	160000	0.11000	1	2	2	DD2603
Multifun	tional displays fo	r digita	al signals / fre	quency in	out				
Туре	Inputs / outputs			D	escription				Order no.
AX460 · univ sors)	ersal unit for displaying	and mon	itoring analogue si	ignals (e.g. pre	essure sens	ors, tempe	rature se	nsors or flo	w sen-
	2 x analogue in		Digital display · Multi-functional display and evaluation system · for analogue standard signals · Ambient temperature -2060 °C · screw terminals · Operating voltage 115230 AC (5060 Hz) / 1830 V DC · IP 65					DX2041	
	2 x analogue in 4 x digital out		for analogue standa	play · Multi-functi ırd signals · Ambie ⁄oltage 115230	ent temperatu	re -2060 °C	screw ter	rminals ·	DX2042
	2 x analogue in 4 x digital out		Digital dis for analogue standar screw terminals · Op	play · Multi-functi d signals · Analog perating voltage 1	ue output · A	mbient temp	erature -20	60 °C · C · IP 65	DX2043



Decentralised display, preprocessing and conversion of analogue signals





- Clearly visible display with red / green colour change
- Compact design with protection rating IP 67
- Parameter setting via IO-Link
- Conversion of analogue measured values to an IO-Link communication



Analogue signals at a glance

The compact connector unit is simply inserted in the connection cable of analogue sensors (4...20 mA). It displays the measured values locally.

The user can set a switch point or limit at which the transistor output switches. A colour change (red / green) of the display indicates this unmistakably. Critical process states or operational problems are reliably signalled.

Converter for Industry 4.0

A special feature is the signal conversion: The threshold display converts analogue signals to digital IO-Link signals.

Today they are required in almost any modern industrial environment and for Industry 4.0 applications.



Multifunc	tional displays for ana	alogue standard signals	
Туре	Inputs / outputs	Description	Order no.
Decentralices		anyorgion of 4, 20 mA analogue signals	

Decentralised display, preprocessing and conversion of 4...20 mA analogue signals



Threshold display · 4...20 mA analogue input · transistor output · IO-Link interface · 4-digit alphanumeric display / alternating indication of red and green · Conversion of analogue measured values to an IO-Link communication · Analogue input 4...20 mA · Ambient temperature -25...60 °C · Operating voltage 18...30 V DC · IP 67

Accessories

Туре	Description	Order no.
	Mounting clip · Housing materials: 2.1247	E89208
0-10	USB IO-Link master · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4.8, 38.4 and 230 Kbits/s) · for operation with FDT framework software "ifm Container" or software "LR SENSOR"	E30390
Software		

Туре	Description	Order no.
	LR DEVICE (USB stick) · Parameter setting of the units via the network · Software for clear online and offline parameter setting of IO-Link sensors via USB adapter · Use via USB connection cable (drivers are supplied): E30396 IO-Link interface or E30390 IO-Link master (note the respective data sheet) · IODD import and update from ifm's homepage · Reading of IODDs via storage media · Automatic sensor identification · Graphic representation of the process values and history incl. export function · Documentation and archiving · Transferable parameter sets · Full memory plug support for IO-Link 1.1	QA0011



Object recognition for assembly, production and quality control



- **2D** vision sensor for object recognition
- Robust, industrially compatible housing with integrated lighting
- 🛑 Easy parameter setting

Laptop

LED

Display

- Integrated Ethernet process interface with position indication
- 128 MB RAM: teaching of 32 applications with up to 24 models each possible



Contour sensor for production control

The sensor uses orientation-independent contour verification. The application possibilities range from presence, position and orientation monitoring via sorting and counting tasks to guality control.

Lighting and evaluation unit are integrated in a robust, industrially compatible IP 67 housing for the use in the temperature range -10...60 °C. Extra-slim backlights are available for transmitted light applications.

Operating concept

With an intuitive step-by-step interface and good / bad parts the user can simply create a model of the object to be recognised. The recognition software compares the object with the stored ideal, regardless of orientation, and transmits the results (good or bad, position, orientation) to the higherlevel PLC. The sensor can manage up to 32 separate tasks with a maximum of 24 models each.





Sensors support the user with quality assurance.

Туре	Operating principle	Max. field of view size [mm]	Resolution [mm]	Detection rate [Hz]	Type of light	Ambient temperature [°C]	Orden no.
vpe O2D2 ·	M12 plug, 8 poles M12 socket,	4 poles · metal · DC					
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	1.0	10	Infrared	-1060	O2D22
-	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	2.0	10	Infrared	-1060	O2D22
	CMOS image sensor B/W, VGA resolution 640 x 480	400 x 300	0.633	10	Infrared	-1060	O2D2
xing co	mponents for vision se	ensors					
Туре		D	escription				Orde no.
	Mounting set · O2D, O2M, O2I, O2V Housing materials: fixture: stainless s			ım ·			E2D1
Ŷ	Mounting set · O2D, O2M, O2I, O2V Housing materials: fixture: stainless s			ım ·			E2D1
	Operating software · O2D						E2D2
	Glass protective pane · O2D / O2I · F	Housing materials: housin	g: diecast zinc blac	:k / lens: float glass			E211
STOR OF	Jumper · straight / straight · Etherne	t \cdot Gold-plated contacts \cdot	5 m · Housing ma	terials: TPU			E211
	Touch Panel PC · 12.1" colour displa	Touch Panel PC · 12.1 " colour display · Intel Atom CPU 1.6 GHz · 2 GByte RAM · Windows Embedded Standard 7 SP1 (32 bits)					
C.	Plastic diffuser · O2D / O2I · Housing	g materials: housing: dieca	ast zinc black / lens	5: PMMA			E2110

Socket M12, 8/7-pole, 8-wire

1

Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · Housing materials: PUR E11231

Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: PUR E11232



Object inspection for packaging, production and quality control





Stand-alone unit

Stand-alone unit with integrated lighting and evaluation in a robust, industrially compatible IP 67 housing for the use in the temperature range -10...60 °C.

User-friendly parameter setting

All parameters can be set conveniently via a menu-guided parameter setting software.

Object recognition

The blob analysis used determines the selected characteristics of objects. They allow to check the presence, size, position or completeness of the objects.

Ethernet process interfaces

The Ethernet interface also provides remote maintenance with storage of error images and evaluation data, an update option for the sensors as well as the process image for the connection of programmable logic controllers.

Applications in backlighting method

Extra-slim backlights are available for transmitted light applications.



The presence of adhesive pads for noise reduction is checked.

Туре	Operating principle	Max. field of view size	Resolution	Detection rate	Type of light	Ambient temperature	Order no.
		[mm]	[mm]	[Hz]		[°C]	
/pe O2V · M	/12 plug, 8 poles M12 socket, 4	poles · metal · DC					
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	1.0	10	White light	-1060	O2V10
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	2.0	10	White light	-1060	O2V10
	CMOS image sensor B/W, VGA resolution 640 x 480	400 x 300	0.633	10	White light	-1060	O2V10
	CMOS image sensor B/W, VGA resolution 640 x 480	640 x 480	1.0	10	Infrared	-1060	O2V12
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	2.0	10	Infrared	-1060	O2V12
	CMOS image sensor B/W, VGA resolution 640 x 480	400 x 300	0.633	10	Infrared	-1060	O2V12
ixing co	mponents for vision se	nsors					
Туре		D	escription				Orde no.
	Mounting set · O2D, O2M, O2I, O2V Housing materials: fixture: stainless s			m ·			E2D11
Ŷ	Mounting set · O2D, O2M, O2I, O2V Housing materials: fixture: stainless s			m ·			E2D11
61	Operating software · O2D						E2D20
	Glass protective pane · O2D / O2I · H	ousing materials: housin	g: diecast zinc blac	k / lens: float glas	S		E2116

•



Photoelectric 3D level measurement and point level detection



Flexible configuration

The system detects solid, opaque solids and bulk materials in tanks, silos or hoppers with levels of up to 10 m. The O3D reliably detects the load height in machinery for mechanical handling, e.g. belts, and the loading of pallets.

The sensor determines the level via a defined background and transmits the process value via analogue output or digitally and noise immune via the Ethernet process interface. Alternatively, the O3D may be used as a point level switch.

The measuring segment of the sensor can be adapted to the shape of the respective tank. Agitators and other attachments can be suppressed via "exclusion regions". Various container shapes, such as hoppers, silos or even inclined belts can be recognised by the sensor.

This means that for bulk materials the average level is indicated, even if there are conical heaps or funnelling.



Туре	Operating principle	Resolution (pixels)	Angle of aperture (horizontal x vertical)	Lighting	Max. sampling rate	Ambient temperature	Order no.
			[°]		[Hz]	[°C]	
BD sensor · T	ype O3D · M12 co	nnector · metal ·	DC				
	3D sensor	176 x 132	40 x 30	Infrared LED	25	-1050	O3D300
	3D sensor	176 x 132	60 x 45	Infrared LED	25	-1050	O3D302
	3D sensor	176 x 132	40 x 30	Infrared LED	25	-1050	O3D310
	3D sensor	176 x 132	60 x 45	Infrared LED	25	-1050	O3D312
System co	omponents						
Туре			Description				Order no.
7			Type Smart Camera · rod mounti / clamp: stainless steel	ng Ø 14 mm ·			E3D301
Connectio	on cables for	2D and 3D s	ensors				
Туре			Description				Order no.
	Jumper · straight / s	traight · Ethernet · C	ross-over patch cable \cdot 2 m \cdot Hou	sing materials: PUR / P	C		E11898
	Socket · angled · Fre	e from silicone · Free	e from halogen · Gold-plated con	tacts · M12 connector	· 2 m · Housing m	aterials: PUR	E11231

Socket \cdot straight \cdot Free from halogen \cdot M12 connector \cdot 2 m \cdot Housing materials: PUR

 Software
 Description
 Order no.

 Type
 Description
 Order no.



E3D200

E11950



Completeness monitoring for the packaging technology



Incomplete shipments – never again

If a pallet with only one incomplete handling unit reaches the customer, he often returns all goods. This does not only lead to dissatisfaction but also to additional costs. Completeness monitoring provides the remedy. Often individual sensors are installed above each individual handling unit position. This is, however, not very flexible if the handling unit type or size changes. Then changes become necessary. If colour or texture of the handling units change, conventional sensors reach their limits.

All these problems are unknown to completeness monitoring on the basis of 3D sensors: The 3D sensor looks at the handling unit from above and compares it with the models taught in by the user. It signals any deviation via a switching output.

Continuous exchange with users and extensive handling tests have lead to extraordinarily simple operation and integrability of the sensor.



Cameras	for 3D object	t recognition						
Туре	Operating principle	Resolution (pixels)	Angle of aperture (horizontal x vertical) [°]	Lighting	Max. sampling rate [Hz]	Ambient temperature [°C]	Order no.	
D camera · 1	Type O3D · M12 c	onnector · metal	· DC					
	3D camera	176 x 132	40 x 30	Infrared LED	25	-1050	O3D30	
T	3D camera	176 x 132	60 x 45	Infrared LED	25	-1050	O3D303	
	3D camera	176 x 132	40 x 30	Infrared LED	25	-1050	O3D31	
	3D camera	176 x 132	60 x 45	Infrared LED	25	-1050	O3D31	
System co	omponents							
Туре			Description				Order no.	
Þ			Type Smart Camera · rod mounti / clamp: stainless steel	ng Ø 14 mm ·			E3D301	
Connectio	on cables for	2D and 3D s	sensors					
Туре			Description				Order no.	
3 OF	Jumper · straight / s	Jumper \cdot straight / straight \cdot Ethernet \cdot Cross-over patch cable \cdot 2 m \cdot Housing materials: PUR / PC						
UT OF	, Jumper · straight / s	traight · Ethernet · Go	old-plated contacts · 2 m · Housir	ng materials: TPU			E21138	
1	Socket · straight · Fr	ree from halogen · M	12 connector · 2 m · Housing ma	terials: PUR			E11950	

Software		
Туре	Description	Order no.
	Operating software · O3D3xx	E3D300



Lighting elements for contour and position verification





Ultra-slim design

The new generation of ifm's backlights can be screwed onto a wall or the mounting accessory, requiring only little space due to the extremely slim design of only 9.2 mm.

Various operating modes

The backlights allow operation with two different light intensities due to the microprocessor technology: In the "normal" mode the element can work in the permanent or pulsed mode, in the "high" mode pulse operation with 4 times more light is possible. The exposure time is thus reduced by 75 to 80 % which is an advantage especially for fast processes.

Numerous versions

They generate a homogeneous light field with visible red or invisible infrared light. They can be obtained in three different sizes.





Specific backlights extend the range of applications of object recognition sensors and object inspection sensors.

Illumination units, backlight									
Туре	Dimensions [mm]	Type of light	Active illuminated area [mm]	l ₀ normal light intensity [mA]	l ₀ high light intensity [mA]	Trigger	Order no.		
PUR cable 0.15 m · with M12 connector · metal · DC									
	108 x 9.8 x 81	Red	50 x 50	200	100	External; 24 V PNP to IEC61131-1	O2D911		
	108 x 9.8 x 81	Infrared	50 x 50	200	100	External; 24 V PNP to IEC61131-1	O2D907		
	161.2 x 9.8 x 133	Red	100 x 100	450	250	External; 24 V PNP to IEC61131-1	O2D912		
	161.2 x 9.8 x 133	Infrared	100 x 100	450	250	External; 24 V PNP to IEC61131-1	O2D908		
PUR cable 2 r	n · metal · DC								
	108 x 9.8 x 81	Infrared	50 x 50	200	100	External; 24 V PNP to IEC61131-1	O2D903		
	108 x 9.8 x 81	Red	50 x 50	200	100	External; 24 V PNP to IEC61131-1	O2D902		
	161.2 x 9.8 x 133	Infrared	100 x 100	450	250	External; 24 V PNP to IEC61131-1	O2D905		
	161.2 x 9.8 x 133	Red	100 x 100	450	250	External; 24 V PNP to IEC61131-1	O2D904		
Illuminati	on units, ring								
Туре	Dimensions [mm]	Type of light	Active illuminated area [mm]	l ₀ normal light intensity [mA]	l ₀ high light intensity [mA]	Trigger	Order no.		
PUR cable wi	th M12 connector 0.3	3 m · metal · D	C						
	Ø 122 / L = 20.5	Red	Ø 66 / 106	800	1300	external; 24 V PNP	O2D915		
\bigcirc	Ø 122 / L = 20.5	Infrared	Ø 66 / 106	800	1400	external; 24 V PNP	O2D917		
$\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{\mathbf{$	Ø 122 / L = 20.5	White light	Ø 66 / 106	800	1200	external; 24 V PNP	O2D919		
Fixing cor	nponents for v	ision sens	ors						
Туре	Description								
•	Mounting set · Backlight 50 x 50 mm · Clamp mounting · Housing materials: Mounting plate: stainless steel / clamp: high-grade stainless steel								
	Mounting set · Backlight Housing materials: Mou			rade stainless steel			E2D109		



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									
Туре	Length	Enable zone	Housing material	U _b DC	Protection	Response time in case of a safety request / enable time	Order no.		
	[mm]	[mm]		[V]		[ms]			
M12 connecto	or · Output	function 2 x O	SSD (A1 and A2) · 4-v	vire · DC PNP					
	70	0.54 nf	High-grade st. steel	24	IP 65 / IP 67	≤ 1 / ≤ 1	GF711S		
-	70.5	18 nf	High-grade st. steel	24	IP 65 / IP 67	≤1/≤1	GG711S		
	70	15 f	Brass	24	IP 65 / IP 67	≤ 1 / ≤ 1	GG712S		
	86.5	> 10 f	Brass	24	IP 65 / IP 67	≤5/≤5	GG851S		
-	70	115 nf	High-grade st. steel	24	IP 65 / IP 67	≤ 10 / ≤ 1	GI711S		
-=	70	110 f	High-grade st. steel	24	IP 65 / IP 67	≤ 10 / ≤ 1	GI712S		

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

Inductive sensors for safety-related applications, 2 x OSSD, SIL 3, PL e										
Туре	Length	Enable zone	Housing material	U _b DC	Protection	Response time in case of a safety request / enable time	Order no.			
	[mm]	[mm]		[V]		[ms]				
M12 connector · Output function 2 x OSSD (A1 and A2) · 4-wire · DC PNP										
e	80	612 nf	High-grade st. steel	24	IP 68 / IP 69K	≤ 50 / ≤ 200	GI701S			
	66	1015 nf	PPE	24	IP 65 / IP 67	≤ 50 / ≤ 200	GM7015			
	66	420 nf	PPE	24	IP 65 / IP 67	≤ 50 / ≤ 200	GM705S			

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

Accessor	es	
Туре	Description	Order no.
	Spacer \cdot 10 mm \cdot for type IMC / GMC \cdot for centred mounting on metal \cdot Housing materials: plastics	E12528



Safety light curtains Finger protection type 4 / SIL 3



Protection for the plant personnel

Wherever motion of machine parts presents a danger to people or goods, safety light curtains are used. When activated, this protective equipment deactivates the outputs, which immediately stops the machines.

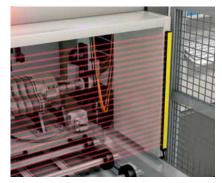
Safety light curtains consist of an optical transmitter and receiving element. In the transmitter element there are several light emitters and an equal number of receivers in the receiving element. If one or several light beams are interrupted, the system deactivates the safe outputs.

Certified safety

The safety light curtains have been developed according to current standards and have been certified by TÜV Süd. They meet the requirements to EN 61496, ESPE type 4 / SIL 3.

Finger protection

The protective function "finger protection" is guaranteed at a resolution of 14 mm.



The light curtains can be fitted simply and neatly into the application. A dead band and impermissible intervention are avoided.

Safety light curtains type 4, SIL 3, PL e, resolution 14 mm, protected area width up to 6 m											
Туре	Sensor length	Resolution / detection capacity	Protected area height	Protected area width	Response time	Ub	Order no.				
	[mm]	[mm]	[mm]	[m]	[ms]	[V]					
M12 connector											
	213	14	160	03 / 16	4	24	OY0015				
	363	14	310	03 / 16	5.5	24	OY0025				
	513	14	460	03 / 16	7.5	24	OY0035				
	663	14	610	03 / 16	9	24	OY0045				
-	813	14	760	03 / 16	11	24	OY0055				
	963	14	910	03 / 16	13	24	OY0065				
	1113	14	1060	03 / 16	14.5	24	OY0075				
	1263	14	1210	03 / 16	16.5	24	OY0085				
	1413	14	1360	03 / 16	18	24	OY0095				
	1563	14	1510	03 / 16	20	24	OY0105				



Safety light curtains Hand protection type 4 / SIL 3



Protection for the plant personnel

Wherever motion of machine parts presents a danger to people or goods, safety light curtains are used. When activated, this protective equipment deactivates the outputs, which immediately stops the machines.

Safety light curtains consist of an optical transmitter and receiving element. In the transmitter element there are several light emitters and an equal number of receivers in the receiving element. If one or several light beams are interrupted, the system deactivates the safe outputs.

Certified safety

The safety light curtains have been developed according to current standards and have been certified by TÜV Süd. They meet the requirements to EN 61496, ESPE type 4 / SIL 3.

Hand protection

The protective function 'hand protection' is guaranteed at a resolution of 14, 20, 30 or 40 mm.





Protection for the plant personnel even over long distances.

Safety light curtains type 4, SIL 3, PL e, resolution 30 mm, protected area width up to 12 m										
Туре	Sensor length	Resolution / detection capacity	Protected area height	Protected area width	Response time	Ub	Order no.			
	[mm]	[mm]	[mm]	[m]	[ms]	[V]				
M12 connector										
	213	30	160	04/312	4	24	OY0415			
	363	30	310	04 / 312	5.5	24	OY0425			
	513	30	460	04 / 312	7.5	24	OY0435			
	663	30	610	04 / 312	8.5	24	OY0445			
	813	30	760	04 / 312	10.5	24	OY0455			
	963	30	910	04 / 312	12	24	OY0465			
	1113	30	1060	04 / 312	14	24	OY0475			
	1263	30	1210	04 / 312	15.5	24	OY0485			
	1413	30	1360	04 / 312	17	24	OY0495			
	1563	30	1510	04 / 312	18.5	24	OY050S			

Safety light curtains type 4, SIL 3, PL e, resolution 40 mm, protected area width up to 12 m

Туре	Sensor length	Resolution / detection capacity	Protected area height	Protected area width	Response time	Ub	Order no.
	[mm]	[mm]	[mm]	[m]	[ms]	[V]	
M12 connector							
	213	40	160	04/312	3.5	24	OY061S
	363	40	310	04 / 312	4.5	24	OY062S
	513	40	460	04 / 312	5.5	24	OY063S
	663	40	610	04/312	6.5	24	OY064S
	813	40	760	04 / 312	7.5	24	OY065S
	963	40	910	04/312	9	24	OY0665
	1113	40	1060	04/312	10	24	OY0675
	1263	40	1210	04/312	11	24	OY0685
	1413	40	1360	04/312	12	24	OY0695
	1563	40	1510	04/312	13	24	OY0705



Safety light curtains Body protection type 4 / SIL 3



- Type 4 safety light curtains to IEC 61496
- Now with SIL 3 to IEC 61508 and PL to ISO 13849
- Compact housing dimensions (28 x 30 mm)
- Protected area width selectable on the unit: 0...4 m or 3...12 m
- Easy to connect via the tried-and-tested M12 connector (5 or 8-pin)



Protection for the plant personnel

Wherever motion of machine parts presents a danger to people or goods, safety light curtains are used. When activated, this protective equipment deactivates the outputs, which immediately stops the machines.

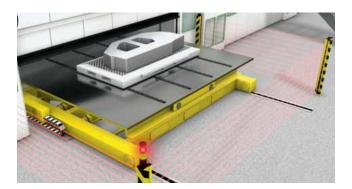
Safety light curtains consist of an optical transmitter and receiving element. In the transmitter element there are several light emitters and an equal number of receivers in the receiving element. If one or several light beams are interrupted, the system deactivates the safe outputs.

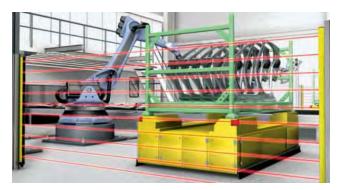
Certified safety

The safety light curtains have been developed according to current standards and have been certified by TÜV Süd. They meet the requirements to EN 61496, ESPE type 4 / SIL 3.

Protection for body or parts of bodies

The protective function 'primary guarding body or parts of bodies' is guaranteed at a resolution of 50 or 90 mm.





Efficient safeguarding of hazardous areas.

Safety lig	Safety light curtains type 4, SIL 3, PL e, resolution 50 mm, protected area width up to 12 m										
Туре	Sensor length	Resolution / detection capacity	Protected area height	Protected area width	Response time	Ub	Order no.				
	[mm]	[mm]	[mm]	[m]	[ms]	[V]					
M12 connect	or										
	363	50	310	04/312	4	24	OY0825				
	513	50	460	04 / 312	4.5	24	OY0835				
	663	50	610	04 / 312	5.5	24	OY0845				
	813	50	760	04 / 312	6.5	24	OY0855				
	963	50	910	04 / 312	7.5	24	OY0865				
	1113	50	1060	04 / 312	8.5	24	OY0875				
	1263	50	1210	04 / 312	9	24	OY0885				
	1413	50	1360	04 / 312	10	24	OY0895				
	1563	50	1510	04 / 312	11	24	OY0905				

Safety light curtains type 4, SIL 3, PL e, resolution 90 mm, protected area width up to 12 m

Туре	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
M12 connect	or						
	663	90	610	04/312	4	24	OY1045
	813	90	760	04 / 312	4.5	24	OY1055
	963	90	910	04 / 312	5	24	OY106S
	1113	90	1060	04/312	5.5	24	OY1075
	1263	90	1210	04/312	5.5	24	OY1085
	1413	90	1360	04/312	6	24	OY1095
	1563	90	1510	04/312	6.5	24	OY1105

Safety relays for safety light curtains

Туре	U _b [V]	Electrical design	ISO 13849-1: Category / performance level	IEC 61508: SIL	Order no.
	24	Relay	4 / e	3	G2001S



Safety light grids for the protection of robot cells



- Safety light grids type 2 or type 4 or to IEC 61496
- Now with SIL to IEC 61508 and PL to ISO 13849
- For applications with ranges of up to 60 m
- Safety light grids with active / passive system (single sided wiring)
- Easy to connect via the tried-and-tested M12 connector (5 or 8-pin)



Protection for the plant personnel

Safety light grids are used to protect the hazardous area of an industrial robot.

They consist of an optical transmitter and receiving element. In the transmitter element there are several light emitters and an equal number of receivers in the receiving element. If one or several light beams are interrupted, the system deactivates the safe outputs.

Based on the known transmitter / receiver principle, safety light grids offer ranges up to 60 m.

Active / passive system

The transmitter and the receiver are integrated in the housing of the active element. The passive element houses the reflecting mirrors. The electrical connection is only located on one side, this being the side of the active element. Thus, the user saves time and money with regard to wiring.

Certified safety

The safety light grids have been developed in accordance with the current standards and certified by TÜV Süd. They conform to the requirements of EN 61496, ESPE type 2 / SIL 2 or type 4 / SIL 3.





Safety light grids protect the operating area of robots.

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

Туре	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
M12 connect	or						
	736	-	510	06 / 06	10	24	OY9015
	1036	-	810	06 / 06	10.5	24	OY9025
	1136	-	910	06 / 06	10.5	24	OY9035

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

Туре	Sensor length	Resolution / detection capacity	Protected area height	Protected area width	Response time	Ub	Order no.
	[mm]	[mm]	[mm]	[m]	[ms]	[V]	
M12 connecto	or						
	653	-	510	04/312	2.5	24	OY1145
	953	-	810	04/312	3	24	OY1155
	1053	-	910	04 / 312	3	24	OY1165

Safety light grids type 4, SIL 3, PL e, 2, 3, 4 beams, protected area width up to 20 m

Туре	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
M12 connect	or						
	653	-	510	010 / 320	2.5	24	OY1205
	953	-	810	010 / 320	2.5	24	OY1215
	1053	_	910	010/320	2.5	24	OY1225

Safety light grids type 4, SIL 3, PL e, 2, 3, 4 beams, protected area width up to 60 m

Туре	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
M12 connecto	or						
	736	-	510	830 / 1860	7	24	OY951S
	1036	-	810	830 / 1860	7	24	OY952S
	1136	-	910	830 / 1860	7	24	OY953S



Safety relays for the protection of operators and machinery



- Multifunctional with relay outputs or semiconductor outputs
- E-stop with cross-fault monitoring and optional simultaneity monitoring
- Connection of mechanical safety switches and fail-safe sensors
- Two-hand control to EN 574, type IIIC, mechanical or electronic
- Certified to IEC 61508, EN 954-1, ISO 13849-1, EN 574 type IIIC



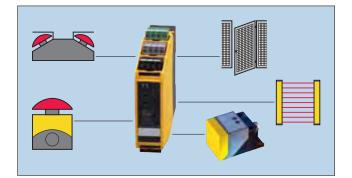
Reliable switching

This safety relay can be used in a variety of ways. It performs monitoring tasks in safety applications in combination with different non-contact guards.

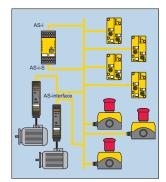
The evaluation of the signals from safety light barriers, safety light curtains, electronic fail-safe sensors or mechanical safety switches for protective guard contacts or electronic position sensors or mechanical position switches with or without cross-fault monitoring are only a few applications.

The safety relay has several multifunctional self-detecting and self-monitoring short-circuit protected inputs and outputs. The simultaneity monitoring of inputs and the functions "monitored" or "automatic start" can be set as an option.

The operation in two-hand control to EN 574 type IIIC in combination with electronic sensors or mechanical switches is another advantage of the safety relay.







Safety rel	Safety relays with relay outputs for fail-safe sensors									
Туре	U _b [V]	Electrical design	ISO 13849-1: Category / performance level	IEC 61508: SIL	Order no.					
	24	Relay	47e	3	G1501S					
	24	Relay	4/e	3	G1502S					

Safety relays with solid state outputs for fail-safe sensors

Туре	Ub [V]	Electrical design	ISO 13849-1: Category / performance level	IEC 61508: SIL	Order no.
	24	Semi-conductor outputs	4 / e	3	G1503S

Safety relays for safety light curtains

Туре	U _b [V]	Electrical design	ISO 13849-1: Category / performance level	IEC 61508: SIL	Order no.
	24	Relay	4/e	3	G2001S



Pressure sensors PN7 with two switching outputs and display



- Condition-based maintenance: Overload counter detects pressure peaks
- Extended diagnostics: minimum and maximum value memory detects pressure fluctuations
- Clearly indicate the acceptable ranges: programmable red / green display
- The process connection can be rotated for optimum alignment
- Fast switch point setting: Setting via 3 pushbuttons



Powerful pressure monitoring

The pressure sensors of the PN7 series are characterised by a modern and userfriendly design. Thanks to their high overload protection, IP 67 and captive laser labelling, the new PN7 sensors excel even in harshest environments.

Set-up, maintenance and operation are facilitated by a 4-digit LED display, which is visible from all sides even at greater distances, and two switching status LEDs on the sensor head. The display can be switched from the indication of "red" to an alternating indication of "red - green". So, switching states can be highlighted or an independent colour window can be created.

The screwed-on sensor can be rotated in any direction. Mounting brackets, which can be obtained as an option, allow installation in any position.



Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Orde no.
			[bar]	max. [bar]	min. [bar]	[V]	
2 connecto	r · Output functio	n 2 x normally oper	n / closed program	mable · DC PNP/NP	N		
	G ¼ female	Display unit	0600	800	2500	1830	PN71
	G ¼ female	Display unit	0400	800	1700	1830	PN70
	G ¼ female	Display unit	0250	500	1100	1830	PN70
	G ¼ female	Display unit	0100	300	650	1830	PN70
•	G ¼ female	Display unit	025	150	350	1830	PN70
	G ¼ female	Display unit	-110	75	150	1830	PN70
	G ¼ female	Display unit	02.5	20	50	1830	PN70
	G ¼ female	Display unit	-11	10	30	1830	PN70
	G ¼ female	Display unit	01	10	30	1830	PN70
	G ¼ male / M5 female	Display unit	0600	800	2500	1830	PN75
	G ¼ male / M5 female	Display unit	0400	800	1700	1830	PN75
	G ¼ male / M5 female	Display unit	0250	500	1100	1830	PN75
	G ¼ male / M5 female	Display unit	0100	300	650	1830	PN7
	G ¼ male / M5 female	Display unit	025	150	350	1830	PN75
	G ¼ male / M5 female	Display unit	-110	75	150	1830	PN75
	G ¼ male / M5 female	Display unit	02.5	20	50	1830	PN75
	G ¼ male / M5 female	Display unit	-11	10	30	1830	PN7
	G ¼ male / M5 female	Display unit	01	10	30	1830	PN75
cessorie	s						
Туре			Descript	ion			Ord
	Angle bracket · Housi	ng materials: PA66-					E304



E30422



Pressure sensor PN7 with two switching outputs and NPT or UNF process connection



- Two switching outputs
- High switch point accuracy and switching frequency
- Highly overload-resistant ceramic measuring cell for more than 100 million switching operations
- Different versions with pressure ranges between -1...400 bar

Vibration

and shock resistant

Clear and easy operating concept with extended features for optimum use



Long-term stability

The maximum robustness and long life ensure trouble-free and reliable operation of the pressure sensors. The ceramiccapacitive measuring principle with a special support of the measuring diaphragm makes the pressure sensors immune to overload operation and high pressure peaks.

Worldwide use for reduced storage

For the pressure switch PN7 the output logic of the switching function can be changed from PNP to NPN.

UNF process connection

For pressure sensors with UNF process connection the pressure unit psi is set at the factory.





ifm sensors are adapted to the needs of the different markets.

Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.
			[bar]	max. [bar]	min. [bar]	[V]	
M12 connec	tor · Output function	2 x normally oper	n / closed program	mable · DC PNP/NP	N		
	1/4 " NPT female	Display unit	0400	800	1700	1830	PN7270
	1/4 " NPT female	Display unit	0250	500	1100	1830	PN7271
	1/4" NPT female	Display unit	0100	300	650	1830	PN7292
	1/4 " NPT female	Display unit	025	150	350	1830	PN7293
	1/4" NPT female	Display unit	-110	75	150	1830	PN7294
	1/4" NPT female	Display unit	02.5	20	50	1830	PN7296
	1/4" NPT female	Display unit	01	10	30	1830	PN7297
	1/4 " NPT female	Display unit	-11	10	30	1830	PN7299
	7/16-20 UNF (SAE)	Display unit	0400	800	1700	1830	PN7370
	7/16-20 UNF (SAE)	Display unit	0100	300	650	1830	PN7392
-0	¼ " NPT male	Display unit	-110	75	150	1830	PN7694
	¼ " NPT male	Display unit	0100	300	650	1830	PN769
	¼" NPT male	Display unit	025	150	350	1830	PN769
•	¼ " NPT male	Display unit	02.5	20	50	1830	PN769
	¼" NPT male	Display unit	02.5	10	30	1830	PN769
•	¼ " NPT male	Display unit	-11	10	30	1830	PN769
•	¼" NPT male	Display unit	0400	800	1700	1830	PN767
	¼ " NPT male	Display unit	0250	500	1100	1830	PN767



Pressure sensor PN3 with switching output and analogue output





Robust and convenient

The maximum robustness and long life ensure trouble-free and reliable operation of the ifm pressure sensors. The ceramic-capacitive measuring principle with a special support of the measuring diaphragm makes the pressure sensors immune to overload operation and high pressure peaks. Maximum pressure peaks can be saved and read in negative as well as in positive measuring ranges.

The user can choose between the analogue output functions 4...20 mA or 0...10 V and a binary switching output. In addition, all parameters can be read and set conveniently via an interface on the PC.

Worldwide use for reduced storage

For the pressure sensors of the PN3 series, the pressure units indication (bar/mbar, kPa/MPa, psi) can be freely selected, allowing OEMs to use the same type of pressure sensor regardless of the country where the machine is to be installed.





Pressure sensors for universal use.

Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Orde no.
			[bar]	max. [bar]	min. [bar]	[V]	
112 connecto	r · Output functio	n normally open / c	losed programmal	ble; 420 mA or 0.	10 V · DC PNP		
	G ¼ female	Display unit	0600	800	2500	1830	PN316
	G ¼ female	Display unit	0400	800	1700	1830	PN307
	G ¼ female	Display unit	0250	500	1200	1830	PN307
	G ¼ female	Display unit	0100	300	650	1830	PN309
	G ¼ female	Display unit	025	150	350	1830	PN30
	G ¼ female	Display unit	-110	75	150	1830	PN30
	G ¼ female	Display unit	02.5	20	50	1830	PN30
	G ¼ female	Display unit	-10	20	50	1830	PN31
	G ¼ female	Display unit	01	10	30	1830	PN30
	G ¼ male / M5 female	Display unit	0100	300	650	1830	PN35
	G ¼ male / M5 female	Display unit	025	150	350	1830	PN35
	G ¼ male / M5 female	Display unit	010	75	150	1830	PN35
	G ¼ male / M5 female	Display unit	02.5	20	50	1830	PN35
	G ¼ male / M5 female	Display unit	01	10	30	1830	PN35
	G ¼ male / M5 female	Display unit	0600	800	2500	1830	PN35
	G ¼ male / M5 female	Display unit	0400	800	1700	1830	PN35
	G ¼ male / M5 female	Display unit	0250	500	1200	1830	PN35
cessorie	S						
Туре			Descript	ion			Ord

-	Adapter · G ¼ male - G ¼ male · Housing materials: 1.4404 / sealing ring: FKM	E30143
	Protective cover \cdot for fluid sensors with M12 connector \cdot Housing materials: Polypropylene homopolymer	E30420
	Angle bracket · Housing materials: PA66-	E30421
1	label tag · for fluid sensors · Housing materials: PA	E30422

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Pressure sensor PN2 with analogue and switching outputs





Robust measuring cell

Long-term stability and highly robust design ensure a trouble-free and reliable operation. The ceramic-capacitive measuring principle with a special support of the measuring diaphragm makes the sensors immune to overload operation and high pressure peaks.

Adaptation to the controller

The analogue output of the sensor, which can be set to either 4 ... 20 mA or 0 ... 10 V, can be very easily adapted to match the actually required measuring range. Parameters ASP (analogue start point) and AEP (analogue end point) enable user-specific setting of the sensor's zero point and span.

Worldwide use for reduced storage

For the pressure sensor PN2 the output logic (PNP or NPN) is just as selectable as the pressure units (bar /mbar, KPa/MPa, psi), allowing OEMs to use the same type of pressure sensor regardless of the country where the machine is to be installed.

Pressure sensor PN2 with IO-Link

IO-Link is a simple, point-to-point communication protocol between an IO-Link enabled device (typically a sensor or actuator) and an IO-Link master. This technology has now been implemented in the pressure sensors of the PN2 series.



Using IO-Link, machine parameters can be transferred to higher control levels.

Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.
			[bar]	max. [bar]	min. [bar]	[V]	
112 connecto r 1 x normal	or · Output functio ly open / closed pr	n 2 x normally ope ogrammable + 1 x	n / closed program analogue (420 m	mable A / 010 V; scaleal	ble 1:5) · DC PNP/NF	PN	
	G ¼ female	Display unit	0400	800	1700	1830	PN207
	G ¼ female	Display unit	0250	500	1200	1830	PN207
	G ¼ female	Display unit	0100	300	650	1830	PN209
	G ¼ female	Display unit	-125	150	350	1830	PN209
	G ¼ female	Display unit	-110	75	150	1830	PN209
	G ¼ female	Display unit	-0.1252.5	20	50	1830	PN209
	G ¼ female	Display unit	-0.051	10	30	1830	PN209
	G ¼ female	Display unit	-0.012525	10	30	1830	PN209
	G ¼ female	Display unit	-11	10	30	1830	PN209
	G ¼ male / M5 female	Display unit	0600	800	2500	1830	PN256
	G ¼ male / M5 female	Display unit	0400	800	1700	1830	PN257
	G ¼ male / M5 female	Display unit	0250	500	1200	1830	PN257
	G ¼ male / M5 female	Display unit	0100	300	650	1830	PN259
	G ¼ male / M5 female	Display unit	-125	150	350	1830	PN259
0	G ¼ male / M5 female	Display unit	-110	75	150	1830	PN259
	G ¼ male / M5 female	Display unit	-0.1252.5	20	50	1830	PN259
	G ¼ male / M5 female	Display unit	-0.051	10	30	1830	PN259
	G ¼ male / M5 female	Display unit	-0.50.5	10	30	1830	PN256
	G ¼ male / M5 female	Display unit	-0.01250.25	10	30	1830	PN259
	G ¼ male / M5 female	Display unit	-11	10	30	1830	PN259

Accessories

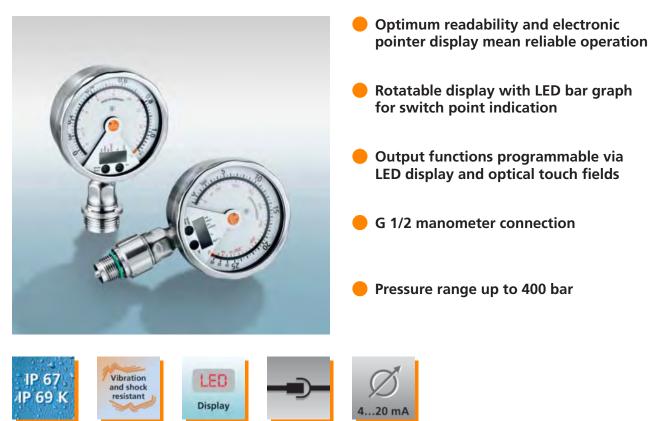
Туре	Description	Order no.
	Protective cover \cdot for fluid sensors with M12 connector \cdot Housing materials: Polypropylene homopolymer	E30420
	Angle bracket · Housing materials: PA66-	E30421



E30422



Fully electronic contact manometer



Electronic "contact manometer" PG

In many industrial areas mechanical contact manometers are often used because of their highly visible display.

The electronic "contact manometer" of the series PG combines the high visibility of a manometer display with the advantages of an electronic pressure sensor, for example the programmable switching and analogue output (scalable), the high overload protection as well as the integrated temperature compensation.

The LED bar graph shows set and reset points, trends and the limits of dynamic pressure fluctuations, if any. The pointer is controlled via a stepping motor as it has been tried and tested many times in cars (tachometer). When disconnected, the pointer is not visible.







Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.
			[bar]	max. [bar]	min. [bar]	[V]	
		n 1 x normally oper A, scalable) · DC PNI		mable			
	G ½ male	Display unit	0400	800	1200	1832	PG2450
Ŷ	G ½ male	Display unit	0250	600	1000	1832	PG2451
Ŷ	G ½ male	Display unit	0100	300	700	1832	PG2452
Q	G ½ male	Display unit	-125	100	300	1832	PG2453
ę	G ½ male	Display unit	-110	50	150	1832	PG2454
Ŷ	G ½ male	Display unit	-14	30	100	1832	PG2455
	G ½ male	Display unit	-0.1252.5	20	50	1832	PG2456
Ŷ	G ½ male	Display unit	-0.051	10	30	1832	PG2457
	G ½ male	Display unit	-11	10	30	1832	PG2409

Connecto	rs	
Туре	Description	Order no.
Socket M12,	5/4-pole, 4-wire	



 Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m ·
 EVC004

 Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m ·
 EVC005

 Housing materials: housing: TPU orange / sealing: FKM
 FKM



Flush pressure sensors for hydrostatic level measurement



- Continuous level and point level measurement with analogue / switching output
- Irrespective of conductivity and dielectrics of the medium
- High precision and absolute long-term stability due to ceramic measuring cell
- Flush process connection
- Process connection G 1 male

..20 m/



Level detection

For hydrostatic level detection of liquids in tanks and vessels, special requirements are made on the measuring device and process connection.

Apart from high accuracy and long-term stability, the sensor must meet the highest hygienic requirements. The pressure sensors meet these requirements to a particular degree.

Advantages

ifm pressure sensors feature a ceramic measuring cell which is largely resistant to aggressive media and abrasion, allowing use in a wide range of applications.

Flush mount installation in the tank or vessel wall ensures reliable cleaning and sterilisation in the process. The housing is potted, so offering optimum protection against humidity and chemicals.









Flush pres	sure sensors	with display					
Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.
			[bar]	max. [bar]	min. [bar]	[V]	
M12 connecto programmabl	or · Output function e or 1 x analogue (n 1 x normally oper (420 / 204 mA, s	n / normally closed calable) · 2 wires l	l programmable + ´ DC / 3 wires DC PNI	l x normally open / P/NPN	normally clos	ed
	Sealing cone G1 male	Display unit	-110	50	150	2032	PI2894*
- ilon	Sealing cone G1 male	Display unit	-0.051	10	30	2032	PI2897*
	Sealing cone G1 male	Display unit	-0.01240.25	10	30	2032	PI2898*

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

Electronic contact manometers with switching output and analogue output

Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.
			[bar]	max. [bar]	min. [bar]	[V]	
		n 1 x normally oper A, scalable) · DC PNI		mable			
	Sealing cone G1 male	Display unit	-110	50	150	1832	PG2894*
	Sealing cone G1 male	Display unit	-0.051	10	30	1832	PG2897*
	Sealing cone G1 male	Display unit	-0.01240.25	10	30	1832	PG2898*

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

Electronic	pressure sens	sors without d	lisplay				
Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.
			[bar]	max. [bar]	min. [bar]	[V]	
M12 connecto	or · 2-wire DC; 3-wi	ire DC					
3, g r	Sealing cone G1 male	-	ASP = 0.0 mbar; AEP = 1000 mbar	10	30	1830	PM1607
e a r	Sealing cone G1 male	-	ASP = 0.0 mbar; AEP = 250 mbar	10	30	1830	PM1608



Pressure sensor PK with easy-turn operating concept



- Simple switch point setting via two setting rings with optimum readability
- Robust stainless steel measuring cell
- Mechanical locking prevents inadvertent switch point manipulation
- High bursting pressure range for gaseous and liquid media
- Ideal use in accumulator charging circuits, hydraulic and pneumatic applications



The easy operating concept

The ease of handling is fascinating: Due to the radial setting rings with a unit scale for optimum readability every user can adjust the set point and reset point quickly and precisely even without system pressure being applied.

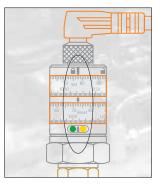
Thanks to mechanical loocking unintentional manipulation is excluded. Two clearly visible LEDs indicating the switching status and operating status provide the required transparency.

Versatile use

The robust pressure sensor can be used in nearly all industrial applications, not only in standard hydraulic and pneumatic applications but also at gas pressures up to 400 bar.

The maximum robustness of the stainless steel measuring cell ensures high long-term stability and wear-free operation over millions of pressure cycles.







Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.
	connection		[bar]	max. [bar]	min. [bar]	[V]	
/112 connect	tor · Output function	+Ł · DC	PNP				
	¼ " NPT male / M5 female	Operation	0400	600	1600	9.632	PK6220
	1/4 " NPT male / M5 female	Operation	0100	200	1000	9.632	PK6222
	14" NPT male / M5 female	Operation	010	25	300	9.632	РК6224
	G ¼ male / M5 female	Operation	0400	600	1600	9.632	РК6520
	G ¼ male / M5 female	Operation	0250	400	1000	9.632	PK6521
	G ¼ male / M5 female	Operation	0100	200	1000	9.632	РК6522
	G ¼ male / M5 female	Operation	025	60	500	9.632	РК6523
	G ¼ male / M5 female	Operation	010	25	300	9.632	РК6524
CCESSORI	Description						
0	Damping screw · for pre	essure sensors with M5	internal thread				E30057
	Protective cover · with I for pressure sensors typ		sensors type TK \cdot for vil	pration sensors type Vk	· Housing materials: PP	transparent	E30094
Connecto	ors						
-	Description						
Туре							
	5/4-pole, 4-wire						
	5/4-pole, 4-wire Socket · angled · Free fr Housing materials: hous			contacts · M12 connec	tor · 5 m ·		EVC005



Pressure sensor PK with fixed hysteresis and easy-turn operating concept



- Two separate switching outputs with fixed hysteresis (1 %)
- Simple switch point setting via two setting rings with optimum readability
- Robust stainless steel measuring cell
- Mechanical locking prevents inadvertent switch point manipulation
- High bursting pressure range for gaseous and liquid media



The ingenious solution

The compact ifm pressure sensor of the PK series is the first electronic pressure sensor to feature a successful combination of very easy setting and high long-term stability. This pressure sensor is distinguished by a high pressure peak resistance and excellent resistance against aggressive media.

The easy operating concept

Thanks to the radial setting rings with a unit scale for optimum readability every user can set the switching outputs quickly and precisely even without system pressure being applied. Units with two separate switching outputs and a fixed hysteresis have now been added to this series. The fixed reset point is 1 % of the freely selected set point.

Thanks to mechanical loocking unintentional manipulation is excluded. Two clearly visible LEDs indicating the switching status and operating status provide the required transparency.







Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Orde no.
			[bar]	max. [bar]	min. [bar]	[V]	
112 connect	or · Output functio	n/ · DC F	PNP				
	G ¼ male / M5 female	Switching status	0400	600	1600	9.632	PK75
	G ¼ male / M5 female	Switching status	0250	400	1000	9.632	PK75
	G ¼ male / M5 female	Switching status	0100	200	1000	9.632	PK75
	G ¼ male / M5 female	Switching status	025	60	500	9.632	PK75
	G ¼ male / M5 female	Switching status	010	25	300	9.632	PK75
112 connect	or · Output functio	n · DC PNP					
	G ¼ male / M5 female	Operation	0400	600	1600	9.632	PK55
	G ¼ male / M5 female	Operation	0250	400	1000	9.632	PK55
	G ¼ male / M5 female	Operation	0100	200	1000	9.632	PK55
	G ¼ male / M5 female	Operation	025	60	500	9.632	PK55
	G ¼ male / M5 female	Operation	010	25	300	9.632	PK55
ccessori	25						
			Descripti	ion			Orde
Туре			Descripti				no
a	Domaina corous for		internal thread				E300
9	Damping screw · ior p	pressure sensors with M5	internal thread				2300
	Protective cover · with		annana tuna TV, farui	bration concorr type \//	. Llousing materials, DF) transmort	E300
	for pressure sensors ty	ype PK · for temperature s	sensors type TK · Tor vi	bration sensors type vk	• Housing materials. Pr	ransparent	
onnecto	rs						
Туре			Descript	on			Ord
ocket M12, !	5/4-pole, 4-wire						
	Socket · angled · Free	from silicone · Free from	halogen · Gold-plated	contacts · M12 connec	tor · 5 m ·		EVC0
	Housing materials: he	using: TPU orange / sealir	a. EKM				



Compact pressure transmitter PA with analogue current output





Precise and compact

The pressure transmitter family PA is distinguished by a high total accuracy of 0.5 % and a compact housing. The tried-and-tested pressure sensing principle using a ceramic-capacitive measuring cell ensures reliable and long-term stable analogue values in mobile and stationary hydraulic applications.

The compact housing design allows easy installation of the units in narrow applications that are difficult to access.

Long-term stability

The maximum robustness and long life ensure trouble-free and reliable operation of the pressure transmitters. The ceramic-capacitive measuring principle with a special support of the measuring diaphragm makes the pressure transmitters immune to overload operation and high pressure peaks.



Long-term stable analogue values ensure reliable monitoring of hydraulic power packs.

Туре	Process	Display	Measuring	Poverload	Pbursting	Ub	Order
	connection		range			DC	no.
			[bar]	max. [bar]	min. [bar]	[V]	
M12 connecto	or · Output functior	n 420 mA · DC					
	G ¼ female	-	0600	800	1200	9.632	PA3060
	G ¼ female	-	0400	600	1000	9.632	PA3020
	G ¼ female	-	0250	400	850	9.632	PA3021
	G ¼ female	-	0100	300	650	9.632	PA3022
	G ¼ female	-	025	150	350	9.632	PA3023
	G ¼ female	-	010	75	150	9.632	PA3024
	G ¼ female	-	02.5	20	50	9.632	PA3026
	G ¼ female	-	01	10	30	9.632	PA3027
	G ¼ female	-	00.25	10	30	9.632	PA3028
	G ¼ female	-	-10	10	30	9.632	PA3029

Adapters

Туре	Description	Order no.
2	Adapter · G ¼ A - G ¼ A · Housing materials: 1.4404 / sealing ring: FKM	E30143

Accessories

Accessor		
Туре	Description	Order no.
-	Threshold display · 420 mA analogue input · transistor output · IO-Link interface · 4-digit alphanumeric display / alternating indication of red and green · Conversion of analogue measured values to an IO-Link communication · M12 connectors · Housing materials: PA	DP2200



Compact pressure transmitter PA with analogue voltage output





Precise and compact

The pressure transmitter family PA is distinguished by a high total accuracy of 0.5 % and a compact housing. The tried-and-tested pressure sensing principle using a ceramic-capacitive measuring cell ensures reliable and long-term stable analogue values in mobile and stationary hydraulic applications.

The compact housing design allows easy installation of the units in narrow applications that are difficult to access.

Long-term stability

The maximum robustness and long life ensure trouble-free and reliable operation of the pressure transmitters. The ceramic-capacitive measuring principle with a special support of the measuring diaphragm makes the pressure transmitters immune to overload operation and high pressure peaks.



Long-term stable analogue values ensure reliable monitoring of hydraulic power packs.

PA sensors for industrial applications with analogue outputs										
Туре	Process connection	Display	Measuring range	Poverload	Pbursting	U _b DC	Order no.			
			[bar]	max. [bar]	min. [bar]	[V]				
M12 connecto	or · Output function	n 010 V · DC								
	G ¼ female	-	0600	800	1200	1632	PA9060			
	G ¼ female	-	0400	600	1000	1632	PA9020			
	G ¼ female	-	0250	400	850	1632	PA9021			
	G ¼ female	-	0100	300	650	1632	PA9022			
and the second	G ¼ female	-	025	150	350	1632	PA9023			
	G ¼ female	-	010	75	150	1632	PA9024			
	G ¼ female	-	02.5	20	50	1632	PA9026			
	G ¼ female	-	01	10	30	1632	PA9027			
	G ¼ female	-	00.25	10	30	1632	PA9028			
	G ¼ female	-	-10	10	30	1632	PA9029			

Adapters

Туре	Description	Order no.
2	Adapter · G ¼ A - G ¼ A · Housing materials: 1.4404 / sealing ring: FKM	E30143

Accessories

Accessor		
Туре	Description	Order no.
	Threshold display · 420 mA analogue input · transistor output · IO-Link interface · 4-digit alphanumeric display / alternating indication of red and green · Conversion of analogue measured values to an IO-Link communication · M12 connectors · Housing materials: PA	DP2200



PS7 – control unit for part seat monitoring



- Adjustment to the required gap distance using the mechanical setting dial
- Ceramic-capacitive measured value acquisition for maximum long-term stability
- Low supply pressures for process-optimised use
- Two switch points: fine / course detection or additional function check
- Non-contact measurement in the micrometre range

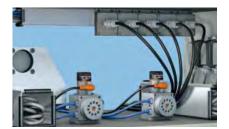


Detection of very small gap distances

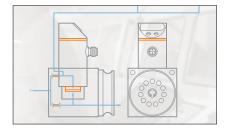
Metal forming and machining to assembly automation, workpiece positioning and gap detection in harsh operating conditions (dirt, extreme temperatures) continue to present a challenge for project engineers. Whether workpiece or tool, pallet or conical spindle insert - the success of the machining operation depends on a clear position definition with gap distances sometimes down to 0.01 mm. The pneumatic backpressure measurement system is used to blow the work surface clean. At the same time the required gap distances are clearly detected and converted into good signals.

Advantages and customer's benefits

The integrated pneumatic bridge circuit of the PS7 system effectively "de-couples" the measurement result from the fluctuations in supply pressure. Supported with the electronic display the bridge can be adjusted repeatably and documentably by turning the patented setting dial. Adjustment, menu navigation and saving the values for set-up, operation and maintenance are easy to understand. The PS7 system can be protected both mechanically and electronically against unauthorised access.







Part seat monitoring

Туре	Description	Order no.
	Control unit for part seat monitoring · Setting by adjustment of the pneumatic bridge · Integrated pressure sensor with 2 switching outputs · and 4-digit alphanumerical display for trend display or display of current pressure · Cable	PS7570

Accessories

Туре	Description	Order no.
٥.	Thread extension · G 1/8 · Housing materials: Brass nickel-plated / sealing: NBR	E30075
9	Connector \cdot QS-G 1/8-6 \cdot with hexagonal socket 4 mm a/f \cdot for tube with Ø 6 mm \cdot Housing materials: steel / PBT / Brass / aluminium	E30076
ē	Connector \cdot QS-G 1/8-8 \cdot with hexagonal socket 5 mm a/f \cdot for tube with Ø 8 mm \cdot Housing materials: steel / PBT / Brass / aluminium	E30077

Connectors

Туре	Description	Order no.
Socket M12,	5/4-pole, 4-wire	
	Socket \cdot straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M12 connector \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC001
5. P	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC002
	Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M12 connector \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC004
and a second	Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M12 connector \cdot 5 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC005



Electronic pressure sensor PNI with analogue input



- Evaluation of external voltage / current values
- Continuous comparison of set / actual values directly in the sensor
- Integrated special functions for adaptation to specific tasks
- 4-digit LED display, pressure indication in bar, psi and MPa
- Differential pressure monitoring by processing a pressure transmitter signal



Adjustable switch point

Variable pressures in the clamp hydraulics of a machine tool: It is a big advantage if the switch point of the pressure sensor can be adjusted electronically according to the valve position. The clamping pressure is to be within a variable acceptable range (window). If the pressure is outside the preset window, the respective switch point is not active. What is particular is that the range is adjusted automatically depending on the situation using an external analogue signal.

Differential pressure switch

By evaluating the analogue signal of an external pressure transmitter the sensor switches if the pressure is above or below the set differential pressure. Applications are, for example, filter monitoring or airlocks.

Functionality

The two freely configurable switching outputs of the pressure sensor can be continuously adjusted using an analogue input signal (0/4 - 20 mA / 0 - 10 V). The display indicates either the input pressure, the output pressure or the differential pressure.





0/4...20 mA

Differential pressure measurement in filter monitoring.

Туре	Process connection	Display	Measuring range [bar]	P _{overload} max. [bar]	P _{bursting} min. [bar]	U _b DC [V]	Order no.
/12 connect	or · Output function	2 x normally open	/ closed program	mable · DC PNP/NP	N		
	G ¼ female	Display unit	0250	400	850	1830	PNI021
	G ¼ female	Display unit	0100	300	650	1830	PNI022
	G ¼ female	Display unit	025	100	350	1830	PNI023
	G ¼ female	Display unit	010	50	150	1830	PNI024
Accessori	es						
Туре			Descript	ion			Order no.
-	T splitter · M12 x 1 · Or	rientation: · connectors /	A / B horizontal (for a	vertical sensor) · Housing	g materials: PUR		E11566
	T splitter · M12 x 1 · Or	rientation: · connectors /	A / B vertical (for a ver	tical sensor) · Housing m	aterials: PUR		E11696
Connecto	rs						
Туре			Descript	ion			Order no.
ocket M12,	5/4-pole, 4-wire						_
2	Socket · angled · Free f Housing materials: hou	rom silicone · Free from sing: TPU orange / sealir	halogen · Gold-plated ng: FKM	contacts · M12 connect	tor · 5 m ·		EVC005
6. mar		from silicone · Free from sing: TPU orange / sealir		d contacts · M12 connec	ctor · 5 m ·		EVC002
Socket M12,	8/7-pole, 8-wire						
ocket M12,		rom silicone · Free from	halogen · Gold-plated	contacts · M12 connect	tor · 2 m ·		E11231



Compact pressure sensors for pneumatics



- Extended diagnostics: minimum and maximum value memory detects pressure fluctuations
- Slanted display for good readability and handling
- Two-colour display for indication of the switching status
- Easy installation using integrated mounting holes and accessories
- One switching and one analogue output for great flexibility in use



Pneumatics at a glance

The PQ series pressure sensors are designed to monitor system pressure in pneumatic and compressed-air networks of machines and plants. The sensors can be used for both relative and differential pressure measurement. This makes them particularly suited for monitoring of filters for soiling or clogging. The measuring cell is insensitive to liquids or deposits that might occur in the system. It is overload protected and highly accurate.

A 4-digit LED display, which can be seen from a distance and easily read, and two pushbuttons allow easy set-up, maintenance and operation of the sensor. The display can be switched from the indication of "red" to an alternating indication of "red - green". So, switching states can be highlighted.



Thanks to the two-coloured display, interpreting the indicated values is easy.

Туре	Process connection	Display	Measuring range	Poverload	Pbu	irsting	U _b DC	Orde no.
			[bar]	max. [bar]	min	. [bar]	[V]	
8 connecto	or · Output function '	I x NO / NC program	mable + 1 x curr	ent output · DC I	PNP			
	G 1/8 female / M5 female	Display unit	-11	20		30	1832	PQ38
2	G 1/8 female / M5 female	Display unit	-110	20		30	1832	PQ38
8 connecto 1 x norma	or · Output function 2 Ily closed (diagnostic	2 x normally open / c function) · DC PNP	losed programm	able or 1 x norm	ally open a	closed progr	ammable	
	G 1/8 female	Display unit	-11	20		30	1832	PQ78
2	G 1/8 female	Display unit	-110	20		30	1832	PQ78
ccessor	ies							
Туре			Descripti	on				Orde
11100	DIN rail clip · Housing materials: stainless steel							E373
ŀ	Adapter · R1/8 - R1/8 ·	rotatable - Housing materi	ials: Brass nickel-plat	ed				E373
onnecto		rotatable · Housing materi	ials: Brass nickel-plat	ed				E373
onnecto Type		rotatable · Housing materi Wire specification	ials: Brass nickel-plat Material housing , nut	U	Ta [°C]	Pro- tection	LEDs	E373 Orde no
Туре	ors	Wire	Material housing	, U			LEDs	Ord
Туре	O rs Cable	Wire	Material housing nut	, U			LEDs	Ord
Туре	Cable 4-pole, 4-wire	Wire specification	Material housing / nut	, U [V] 50 AC	[°C]	tection IP 65 / IP 67 /		Ord no
Туре	Cable Cable 4-pole, 4-wire 2 m black PUR cable 5 m black	Wire specification 4 x 0.25 mm ² , Ø 3.7 m	nm TPU / Brass TPU / Brass	, U [V] 50 AC 60 DC 50 AC	[°C] -2590	tection IP 65 / IP 67 / IP 68 / IP 69K IP 65 / IP 67 /		Ord no EVC1
Туре	Cable	Wire specification 4 x 0.25 mm², Ø 3.7 m² 4 x 0.25 mm², Ø 3.7 m²	nm TPU / Brass nm TPU / Brass nm TPU / Brass	, U [V] 50 AC 60 DC 50 AC 60 DC 50 AC	[°C] -2590 -2590	tection IP 65 / IP 67 / IP 68 / IP 69K IP 65 / IP 67 / IP 68 / IP 69K		Ord no EVC1
Туре	Cable	Wire specification 4 x 0.25 mm², Ø 3.7 m² 4 x 0.25 mm², Ø 3.7 m² 4 x 0.25 mm², Ø 3.7 m²	Material housing / nut nm TPU / Brass nm TPU / Brass nm TPU / Brass nm TPU / Brass nm TPU / Brass	U [V] 50 AC 60 DC 50 AC 60 DC 50 AC 60 DC 50 AC 60 DC	[°C] -2590 -2590 -2590	tection IP 65 / IP 67 / IP 68 / IP 69K IP 65 / IP 67 / IP 68 / IP 69K IP 65 / IP 67 / IP 68 / IP 69K IP 65 / IP 67 /		Ord no EVC1 EVC1



IO-Link displays: process values at a glance



More plant transparency

The two IO-Link displays are a flexible solution to display process conditions and messages in plant modules or small plants.

aptop

Integration and function

The E30391 IO-Link display is controlled by a PLC via IO-Link. It displays process values, freely defined texts, messages, and QR codes. Clear text and a colour change of text and background guarantee a quick overview. By means of buttons the user can trigger control actions of the PLC or acknowledge messages.

The E30430 IO-Link inline display is installed between sensor and IO-Link master. It receives process values directly from the sensor. No PLC programming is required. It displays up to four process values and two switching states. For ifm units operated in the IO-Link mode, it is a plug & play solution.

Alternatively, texts and settings can be predetermined via an IO-Link device tool such as LR DEVICE.



Pressure sensors

IO-Link displays								
Туре	Description							
	IO-Link display unit · Connector · Housing materials: stainless steel / PC / PBT-GF 30 / PPS / FKM / PA66 GF30							
		ink inline display for visualisin evice catalogue · Connector · I					devices;	E30430
Accessori	es							
Туре			Description					Order no.
	DIN rail clip · for IO-Link	display unit · Housing materia	ls: PA / stainless steel					E30429
Connecto	rs							
Туре	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro- tection	LEDs	Order no.
Y splitter , 5-	pole							
4	M12 connector	-	PUR / diecast zinc	60 DC	-2585	IP 67	-	E12481



Flow sensor in robust stainless steel housing



- Increased repeatability across the extended measuring range
- Simplified setting mode for quick set-up
- Variable process connection using adapters
- Reliable monitoring of gases and liquids
- Electronic locking of the set values



Simple, fast and flexible installation

The flow sensors of the SI5 series can be integrated into almost every application by means of a wide selection of process adapters. The robust stainless steel housing provides high reliability even in cases of harsh environmental conditions.

The unit is unaffected by the orientation of the sensing face with respect to the direction of flow, providing increased flexibility of installation.

Easy handling and high functionality

A pushbutton is used for flow range and switch point setting. Current flow and switch point are indicated with the local multi-coloured LEDs. Electronic locking of the settings and factory reset of the parameters provide additional safety.







Compact l	nousings for adapt	ers for flow monite	oring						
Туре	Setting range liquids / gases	Material sensor tip	Medium temperature	Pressure rating	Response time	Ub	Order no.		
	[cm/s]		[°C]	[bar]	[s]	[V]			
M12 connector · Output function/L · DC PNP									
-	3300 / 2003000	stainless steel 316L / 1.4404	-2580	30	110	1936	SI5000		
<u> </u>	3300 / 2003000	stainless steel 316L / 1.4404	-2580	300	12 / 110	1836	SI5010		
M12 connecto	or \cdot Output function 2 x no	ormally open / closed prog	grammable · DC	PNP					
_	3300 / 2003000	stainless steel 316L / 1.4404	-2580	300	110	1836	SI5002		
M12 connecto	or · Output function 420	mA analogue · DC							
-	3300 / -	stainless steel 316L / 1.4404	-2580	300	110	1936	SI5004		
Compact o	designs for adapte	r with flow and ter	nperature n	nonitoring					
Туре	Setting range liquids / gases	Material sensor tip	Medium temperature	Pressure rating	Response time	Ub	Order no.		
	[cm/s]		[°C]	[bar]	[s]	[V]			
M12 connecto	or · Output function 2 x no	ormally open / closed prog	grammable · DC	PNP					
_ ;	3300 / 2003000	stainless steel 316L / 1.4404	-2580	300	110	1836	SI5007		



Calorimetric flow meters for liquids and gases



- Optimised for water, oils, glycol and air
- Fast response time and integrated temperature measurement
- Red/green colour change for process values
- Internal pipe diameter selectable from 15...400 mm
- The process connection can be rotated for optimum alignment

Measurement technique

grade

stainless

steel

The SA type flow meter operates on the calorimetric measuring principle. Two measuring elements as well as a heat source are located on the measuring tip. The physical effect that a flowing medium absorbs heat energy and conducts it away is used. The resulting temperature change is an indication of flow.

6'

P 67

FD

Display

Device function

The new SA type sensor has been designed to detect and measure flow and temperature even in large internal pipe diameters up to 400 mm. Therefore it serves different applications. Switching outputs, analogue signals and IO-Link provide various options to further process the signals.

Flow met	ers with integrated	l temperature meas	urement				
Туре	Setting range liquids / gases	Material sensor tip	Medium temperature	Pressure rating	Response time	Ub	Order no.
	[cm/s]		[°C]	[bar]	[s]	[V]	
M12 connect OUT2: norma	or · Output function OUT1 Illy open / normally closed	: normally open / normally programmable or freque	y closed program ncy or analogue	mmable or fre (420 mA so	equency or IO- aleable)	Link	
	0.043	stainless steel (316L / 1.4404)	-2090	100	0.5	1830	SA2000
ant	0.043	stainless steel (316L / 1.4404)	-2090	100	0.5	1830	SA5000
	0.043	stainless steel (316L / 1.4404)	-20100	50	0.5	1830	SA4100
1 70	0.043	stainless steel (316L / 1.4404)	-20100	50	0.5	1830	SA4300
M12 connect	or · Output function OUT1	: analogue (420 mA scal	able) OUT2: Ana	alogue (420	mA scalable)		
	0.043	stainless steel (316L / 1.4404)	-2090	100	0.5	1830	SA2004
	0.043	stainless steel (316L / 1.4404)	-2090	100	0.5	1830	SA5004
	0.043	stainless steel (316L / 1.4404)	-20100	50	0.5	1830	SA4104
	0.043	stainless steel (316L / 1.4404)	-20100	50	0.5	1830	SA4304
Accessori	es						
Туре		Des	cription				Order no.
0-10		eter setting and analysis of units ts/s) · for operation with FDT fran				NSOR"	E30390
.	Progressive ring fitting \cdot Ø 8 mm - G1/2 \cdot Housing materials: stainless steel / sealing ring: FKM						E40258
	Progressive ring fitting · Ø 8 m	m - G 1/4 · Housing materials: sta	ainless steel / sealing	g ring: FKM			E40259
4	Progressive ring fitting · Ø 8 m	m - G 3/4 · Housing materials: sta	ainless steel / sealing	g ring: FKM			E40260



Magnetic-inductive inline flow meter



- With volumetric flow quantity, total quantity and temperature indication
- High accuracy, repeatability and measurement dynamics
- Suitable for conductive media from 20 μS/cm, flow rate up to 100 l/min
- Binary, analogue and pulse outputs for signal processing
- Different process connections using adapters









Measuring principle

The flow meter is based on Faraday's principle of induction. The conductive medium flowing through a pipe in a magnetic field generates a voltage which is proportional to the flow velocity or volumetric flow quantity.

Device function

This voltage is tapped via electrodes and converted in the evaluation electronics. Analogue, binary and pulse outputs offer various possibilities to process the measured data. Due to the flexible programming via pushbuttons the flow meter can be adapted to different conditions. It is installed using an adapter. The unit features a high protection rating and a robust, compact housing.







Туре	Process connection	Measuring range	Medium temperature	Pressure rating	Response time	Ub	Order no.
		[l/min]	[°C]	[bar]	[s]	[V]	
or pulse or fre	quency or empty	pipe detection or	open / normally clo IO-Link OUT2: norn y pipe detection · I	osed programmable nally open / normal OC PNP/NPN	ly closed programm	nable	
	G2 flat seal	8600	-1070	16	< 0.35	1832	SM200
	G2 flat seal	6.5300	-1070	16	< 0.35	1832	SM900
				rammable or pulse / 010 V, scaleable) · DC PNP/NPN		
÷	G1⁄2	0.2525.00	-1070	16	< 0.150	1830	SM600
	G¾	0.550.0	-1070	16	< 0.150	1830	SM700
	G1	0.7100.0	-1070	16	< 0.150	1830	SM800
				rammable or pulse / 010 V, scaleable			
	G ¼ flat seal	203000 ml/min	060	10	< 0.150	1830	SM400

Cooling water control panels

Туре	Description	Order no.
der.	Cooling water control panel \cdot M22 x 1.5 A \cdot Housing materials: pipes: stainless steel	ZZ0432
Mar and	Cooling water control panel - G ½ I - Housing materials: pipes: stainless steel	ZZ0452



Ultrasonic flow meter in robust inline design



- With volumetric flow quantity, total quantity and medium temperature display
- Suited for water up to a flow rate of 100 litres per minute
- Binary, analogue and pulse outputs for signal processing
- High measurement dynamics and resolution due to the transit time difference principle
- 4-digit alphanumeric display, LEDs for indication of units and switch points









Measuring principle

The SU type ultrasonic flow meter operates on the transit time difference principle. Two sound transducers are positioned in a defined pipe length. These sound transducers alternately emit sound pulses. The pulse trains emitted with the flow in the pipe length are transported faster to the receiver by the flowing medium. From this transit time difference results the current volumetric flow quantity.

High functionality

In addition to volumetric flow monitoring the SU also monitors the temperature of the medium. It is displayed on the unit and provided for signal processing. Therefore, the system is particularly suited for monitoring cooling circuits.

Sensor functions

Analogue, binary and pulse outputs offer various possibilities to process sensor data. Furthermore, a volumetric flow quantity, total quantity and medium temperature display is integrated.







Туре	Process connection	Measuring range	Medium temperature	Pressure rating	Response time	Ub	Order no.	
		[l/min]	[°C]	[bar]	[s]	[V]		
M12 connecto OUT2: norma	or · Output functionally open / closed p	on OUT1: normally programmable or a	open / closed prog nalogue (420 mA	rammable or pulse / 010 V, scaleable) · DC PNP/NPN			
Ĩ	G¾	0.150.0	-1080	16	< 0.250	1930	SU7000	
	G1	0.2100.0	-1080	16	< 0.250	1930	SU8000	
	G1¼	0.4200.0	-1080	16	< 0.250	1930	SU9000	
M12 connector · Output function 2 x analogue (420 mA scalable) · DC								
	G1¼	0.0200.0	-1080	16	< 0.250	1930	SU9004	
M12 connecto	or · Output function	on 2 x normally ope	en / closed program	nmable · DC PNP				
Ĩ	G¾	0.150.0	-1080	16	< 0.250	1930	SU7200	
	G1	0.2100.0	-1080	16	< 0.250	1930	SU8200	
Cooling w	ater control	panels						
Туре			Descrip	tion			Order no.	
	Cooling water control panel · M22 x 1.5 A · Housing materials: pipes: stainless steel						ZZ0057	



Inline vortex flow meters with versatile multi-colour display



- Makes the purchase of further sensors superfluous: Measurement and transmission via IO-Link
- Minimum / maximum value memory for extended diagnostics
- Electronically rotatable multi-colour display
- Rotatable G, R or NPT process connections as option
- Can be used for water with and without conductivity (deionised water)



Turbulence as a measure for the flow

Behind a bluff body integrated in the measuring pipe, the flowing medium generates swirling vortices depending on its velocity. These vortices are detected by a piezo-ceramic sensor. If the cross-section is known, the number of the vortices allows to determine the flow rate.

This flow rate measurement principle, known as vortex principle, is virtually independent of pressure and temperature fluctuations of the medium. It allows a simple design and thus a low-cost production of sensors for flow rate measurement.

The current flow and temperature are provided either as standardised current signal (4...20 mA), as frequency signal, switching output or via IO-Link.



Flow met	ers with inte	grated tempe	rature measu	rement			
Туре	Process connection	Measuring range	Medium temperature	Pressure rating	Response time	Ub	Order no.
		[l/min]	[°C]	[bar]	[s]	[V]	
M12 connecto	or						
	G 1⁄2	120	-1090	12	< 1	1830	SV4200
	G 1⁄2	120	-1090	12	< 1	1830	SV4204
	Rc 1⁄2	120	-1090	12	< 1	1830	SV4500
	Rc 1⁄2	120	-1090	12	< 1	1830	SV4504
	G 1⁄2	240	-1090	12	< 1	1830	SV5200
	G 1⁄2	240	-1090	12	< 1	1830	SV5204
	Rc 1⁄2	240	-1090	12	< 1	1830	SV5500
	Rc 1⁄2	240	-1090	12	< 1	1830	SV5504
	G ¾	5100	-1090	12	< 1	1830	SV7200
	G 3⁄4	5100	-1090	12	< 1	1830	SV7204
4 角	Rc ¾	5100	-1090	12	< 1	1830	SV7500
	Rc ¾	5100	-1090	12	< 1	1830	SV7504
	1⁄2" NPT	0.265.28	14194	12	< 1	1830	SV4610
	1⁄2 " NPT	0.5510.55	14 194	12	< 1	1830	SV5610
.	³4 " NPT	1.326.4	14194	12	< 1	1830	SV7610

Accessories for flow sensors

Туре	Description	Order no.

1

USB IO-Link master · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4.8, 38.4 and 230 Kbits/s) · for operation with FDT framework software "ifm Container" or software "LR SENSOR" E30390



Robust mechatronic flow sensor





Mechatronic flow sensor

The flow sensor operates on the principle of spring-supported piston: The piston, located in the valve seat in the housing, is lifted by the flowing medium against the spring resistance. The piston position is detected by an inductive sensor and is output as a binary signal.

The spring resistance forces the piston to return to its original position with decreasing flow. This ensures position-independent installation of the flow sensor preventing backflow.

The switch points can be easily set and fixed via a setting screw. The robust mechanical design ensures use in harsh environments. The units are maintenance-free.



Fast response time in cooling circuits to protect welding guns and transformers.

Туре	Process connection	Measuring	Medium temperature	Pressure rating	Response time	U _b	Order no.
	connection	range [l/min]	[°C]	[bar]	[s]	[V]	no.
112 connect	or · Output function						
- State	Rp ½	220	085	25	< 0.01	1030	SBY32
CON .	Rp ¾	115	085	40	< 0.01	1030	SBY33
ren f	Rp ¾	125	085	40	< 0.01	1030	SBY33
Pop -	Rp ¾	250	085	40	< 0.01	1030	SBY33
	Rp 1	5100	085	25	< 0.01	1030	SBY34
	Rp 11⁄2	20200	085	25	< 0.01	1030	SBY35
Mechatro	onic flow sens	ors for machi	ne tools				
Туре	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating	Response time [s]	U _b	Orde no.
/12 connect	or · Output function			[bar]	[2]	[V]	
	G 1⁄2	0.325	060	200	< 0.01	1030	SBU32
112 connect	or · Output function	on analogue · DC					
	G 1⁄2	0.325	060	200	< 0.01	24	SBU62
The second	G ½	0.350	060	200	< 0.01	24	SBU62



Inline mechatronic flow meters with display



Display

Mechatronic flow sensor

100°C

The flow sensor works according to the spring-supported piston principle: The piston, located in the valve seat in the housing, is lifted by the flowing medium against the spring resistance.

The piston position is monitored via a magnetic field sensor and is output as an analogue signal. The spring resistance forces the piston to return to its original position with decreasing flow. This ensures position-independent installation of the flow sensor preventing backflow.

The sensor head can be rotated by 360 °C so that it can be read in any position.

Туре	Process connection	Measuring range	Medium temperature	Pressure rating	Response time	Ub	Order no.
		[l/min]	[°C]	[bar]	[s]	[V]	
112 connecto OUT2: NO / NO	r · Output functio	on OUT1: NO / NC or analogue · DC	programmable or fi	requency or IO-Link			
	Rp ¾	0.315	-10100	40	0.01	1830	SBY232
1 and the second	Rp ¾	0.525	-10100	40	0.01	1830	SBY233
	Rp ¾	150	-10100	40	0.01	1830	SBY234
and the second second	Rp 1	2100	-10100	25	0.01	1830	SBY246
	Rp 1½	4200	-10100	25	0.01	1830	SBY257
	G ½	0.315	-10100	40	0.01	1830	SBG232
and the second s	G ½	0.525	-10100	40	0.01	1830	SBG23
	G 1⁄2	150	-10100	40	0.01	1830	SBG234
	G ¾	2100	-10100	25	0.01	1830	SBG24
	G 1¼	4200	-10100	25	0.01	1830	SBG25



IO-Link interface \cdot for parameter setting and analysis of units with max. 65 mA current consumption \cdot Supported communication protocols: IO-Link (4800 and 38400 bits/s) EPS protocol (19200 bits/s) \cdot for operation with FDT framework software "ifm Container" or software "LR SENSOR"

E30396

no.



Compressed air meters with display and totaliser function



- For compressed air in industrial use as well as argon (Ar), carbon dioxide (CO₂), nitrogen (N₂)
- Large measuring range up to 700 Nm³/h, detection of very small leaks
- Fast response time and high response sensitivity
- With volumetric flow quantity, total quantity and temperature indication
- Analogue, switching and pulse outputs for signal processing



Calorimetric measuring principle

The compressed air meter detects the standard volume flow directly (according to ISO 2533). This makes corrections, in case of temperature or pressure fluctuations, unnecessary. The high measurement dynamics of the system enables the reliable detection of even minute quantities, e.g. leakage. High accuracy and repeatability are ensured by the integration of the sensor's measuring elements into a defined pipe length.

All information at hand

The integral 4-digit LED display plus the status LEDs allow information to be available at the point of monitoring. Whether peak consumption, present or accumulated consumption: Set switching or alarm values can be programmed and read simply by pressing a pushbutton. All settings can be protected using the electronic lock function.

Signal processing

Switching outputs, analogue outputs and pulse outputs are available for signal processing. Parameters are set in the user menu.



easureme dynamics



.20 mA

0...10 V





Compress	ed air meters	;							
Туре	Process connection	Setting range	Pressure rating	Response time	Ub	Order no.			
		[Nm³/h]	[bar]	[s]	[V]				
M12 connector · Output function OUT1: normally open / closed programmable or pulse OUT2: normally open / closed programmable or analogue (420 mA scaleable) · DC PNP									
	G ¼ (DN8)	0.1215.00	16	< 0.1	1830	SD5000			
	R½ (DN15)	0.675.0	16	< 0.1	1830	SD6000			
	R1 (DN25)	1.8225.0	16	< 0.1	1830	SD8000			
	R1½ (DN40)	3.5410.0	16	< 0.1	1830	SD9000			
0-	R2 (DN50)	5700	16	< 0.1	1830	SD2000			
1	G 1 I	182110	16	< 0.1	1830	SD0523			

Compressed air meter for special gases

Туре	Process connection	Setting range [Nm³/h]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
		on OUT1: normally open / clo programmable or analogue (

	G ¼ (DN8)	N ₂ : 0.0415.00 Ar: 0.0824.04 CO ₂ : 0.0414.36	060	16	< 0.1	1830	SD5100
	R½ (DN15)	N ₂ : 0.275.0 Ar: 0.4122.0 CO ₂ : 0.274.7	060	16	< 0.1	1830	SD6100
	R1 (DN25)	N ₂ : 0.8225.0 Ar: 1.2366.6 CO ₂ : 0.8223.6	060	16	< 0.1	1830	SD8100

Adapters

Туре	Description	Order no.						





Electronic point level sensors for liquid media



- Easy pushbutton adjustment in the application
- Overflow protection or normally closed / normally open programmable
- Clearly visible switching status indication
- Extended setting range for increased application reliability
- Modular mounting concept for flexible use



Application

The point level sensors have been optimised for use in hydraulic oils and coolants. They are used to monitor the minimum level, leakage or overflow of tanks. The extended setting range increases the application reliability.

Easy set-up

The new operating concept enables setting and adjustment of the output function by pressing just one pushbutton. Deposits can be suppressed during operation without carrying out a complete new adjustment.

Reliable

The LI21 series is approved to the German Federal Water Act (WHG) section 19. For the LI51 series the output function (normally open / normally closed) is programmable.







Point level sensors for oils and lubricants										
Туре	Probe length [mm]	Output	U _b [V]	Medium temperature water [°C]	Medium temperature oil [°C]	l _{load} [mA]	Order no.			
M12 connect		on/t · DC Pl								
	132	normally open / closed programmable	1036	035 (LI5141 + E43103: 065)	065	200	LI5141			
	273	normally open / closed programmable	1036	035 (LI5142 + E43100: 065)	065	200	LI5142			
-	481	normally open / closed programmable	1036	035 (LI5143 + E43101: 060)	065	200	LI5143			
	737	normally open / closed programmable	1036	035 (LI5144 + E43102: 055)	065	200	LI5144			
8 1 A 1	1									
		oils and coolant n Federal Wate _{Output}		G), section 19 Medium temperature water [°C]	Medium temperature oil [°C]	l _{load} [mA]	Order no.			
approval _{Type}	to the Germa Probe length	n Federal Wate	r Act (WH) ∪ь	Medium temperature water	temperature oil					
approval _{Type}	to the Germa Probe length [mm]	n Federal Wate	r Act (WH) ∪ь	Medium temperature water	temperature oil					
approval _{Type}	to the Germa Probe length [mm] or · Output functio	n Federal Water Output ont · DC PNP	r Act (WH) Ub [V]	Medium temperature water [°C]	temperature oil [°C]	[mA]	no.			
approval _{Type} M12 connect	to the Germa Probe length [mm] or · Output function 132	n Federal Wate Output ont · DC PNP Normally closed	r Act (WH) Ub [V] 1036	Medium temperature water [°C] 035	temperature oil [°C] 065	[mA] 200	no. Li2141			
approval _{Type}	to the Germa Probe length [mm] or · Output function 132 273	n Federal Wate Output On <u>L · DC PNP</u> Normally closed Normally closed	r Act (WH) Ub [V] 1036	Medium temperature water [°C] 035 035	temperature oil [°C] 065 065	[mA] 200 200	no. LI2141 LI2142			
approval _{Type} M12 connect	to the Germa Probe length [mm] or · Output function 132 273 481	n Federal Wate Output On <u>t</u> · DC PNP Normally closed Normally closed	r Act (WH) Ub [V] 1036 1036 1036	Medium temperature water [°C] 035 035 035	temperature oil [°⊂] 065 065 065	[mA] 200 200 200	no. LI2141 LI2142 LI2143			



Electronic point level sensors LMT



- Quicker adaptation to changing conditions: transmission of the process value instead of reprogramming
- Adjustment to the medium is either preset (LMT100 / 110 / 121) or can be done using IO-Link
- Hygienic design with maintenancefree sealing concept
- Resistant to foam and deposits

High-

grade stainless

steel

Easy mounting thanks to orientation-independent installation



Level under control

The LMT point level sensor reliably monitors the level in storage tanks or protects pumps against running dry. Its compact sensor tip allows integration even in small DN25 pipes.

"Plug & Play"

The factory setting to different types of media makes adjustment unnecessary, even for viscous and sticky products. The selection of units is based on a comprehensive list of media, i.e. one sensor for all media.

LMT121 differentiates between different media

The LMT121 can be simply adjusted to virtually any liquid and viscous medium or bulk material thanks to 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.



Point level monitoring of liquids even in the case of a high degree of soiling.

Туре	Process connection	Process pressure max. [bar]	Application	Protection	Order no.				
M12 connect	or · Output function 2	x normally open / closed	programmable · DC PNP/NPN						
	G ½ male	-140	liquids, viscous media and powders	IP 68 / IP 69K	LMT102				
	G ½ male	-140	liquids, viscous media and powders	IP 68 / IP 69K	LMT104				
ه مع	G ½ male	-140	liquids, viscous media and powders	IP 68 / IP 69K	LMT10				
	G ½ male	-140	liquids, viscous media and powders	IP 68 / IP 69K	LMT12				
	G ½ male	-140	liquids, viscous media and powders	IP 68 / IP 69K	LMT100				
	G ½ male	-140	liquids, viscous media and powders	IP 68 / IP 69K	LMT110				
Adapters									
Туре			Description		Order no.				
	Welding adapter \cdot G ½ - Ø 30 mm \cdot for tanks \cdot Housing materials: stainless steel 316L / 1.4435								
	Welding adapter \cdot G ½ - Ø 29 mm \cdot for pipes \cdot Housing materials: stainless steel 316L / 1.4435								
T	Adapter · G ¾ · Housing r	naterials: stainless steel 316L / 1.	.4435		E43302				
T	Adapter · G 1 · Housing m	naterials: stainless steel 316L / 1.4	4435		E43303				
Connecto	ors								
Туре			Description		Order no.				
Socket M12,	5/4-pole, 4-wire								
0.		Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM							
		iocket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · łousing materials: housing: TPU orange / sealing: FKM							



LMT point level sensors for maintenance-free overflow prevention to WHG*



- Flexible installation independent of the orientation
- Shock and vibration resistant in a robust stainless steel housing
- Plug & Play Factory default setting to hydrous media
- Can be set to other media such as oil using IO-Link
- Suppression of deposits



Reliable and flexible

The LMTx9x sensor family provides dependable overflow protection. Different lengths and process connections allow versatile and position-independent installation.

IO-Link creates transparency

The sensors can be adjusted to all liquids that are hazardous to water. Parameters are conveniently set on the PC or via IO-Link and USB interface. The digital transmission of measured values creates maximum transparency.

Robust

The high-quality high-grade stainless steel housing is shock and vibration resistant.

* (WHG = German Federal Water Act)



In spite of harsh conditions such as foam or deposits LMT194 reliably prevents overflow of the tank.

Туре	Process	Output						
	connection		[V]	temperature water [°C]	temperature oil [°C]	[mA]	no.	
M12 connect	or · Application liq	uids						
	G ½ male	1 x NO / 1 x NC (WHG) PNP	1830	-4085 / 085	-40100 / 0100	100	LMT191	
	G ½ male	1 x NO / 1 x NC (WHG) PNP	1830	-2585 / 085	-25100 / 0100	100	LMT192	
	G ¾ male	1 x NO / 1 x NC (WHG) PNP	1830	-2585 / 085	-25100 / 0100	100	LMT292	
	G 1 male	1 x NO / 1 x NC (WHG) PNP	1830	-2585 / 085	-25100 / 0100	100	LMT392	
_	G ½ male	1 x NO / 1 x NC (WHG) PNP	1830	-2585 / 085	-25100 / 0100	100	LMT194	
	G ½ male	1 x NO / 1 x NC (WHG) PNP	1830	-2585 / 085	-25100 / 0100	100	LMT195	
Accessori	es for LMT lev	vel sensors						
Туре			Desc	ription			Order no.	
6	Adapter · G ¾ · Hous	ing materials: stainless stee	316L / 1.4435				E43302	
T	Adapter · G 1 · Housi	ng materials: stainless steel	316L / 1.4435				E43303	
Ť	Adapter · ¾ " NPT · H	lousing materials: stainless s	steel 316L / 1.44	04			E43313	
Ħ	Welding adapter · G	½ - Ø 30 mm · for tanks · ⊦	lousing material	s: stainless steel 316L / 1	.4435		E43300	
	Welding adapter · G	½ - Ø 29 mm · for pipes · ⊦	lousing materials	s: stainless steel 316L / 1	4435		E43301	
		for parameter setting and a d 230 Kbits/s) · for operatio				ENSOR"	E30390	
-	of IO-Link sensors via master (note the resp) · Parameter setting of the USB adapter · Use via USB ective data sheet) · IODD ir ntification · Graphic represe	connection cable	e (drivers are supplied): E e from ifm's homepage	30396 IO-Link interface or Reading of IODDs via stor	r E30390 IO-Link rage media ·	QA001	



Point level sensors for general use



- Most reliable deposit suppression on the market
- Flexible installation independent of the orientation
- Quicker adaptation to changing conditions: transmission of the process value instead of reprogramming
- Factory set for simple "plug & play"
- Differentiation of media by switch point setting



Level under control

The LMC family of sensors reliably monitor limit levels, e.g. in tool machines or wastewater management, and protect pumps from running dry. Rear installation permits variable installation depths and application-specific installation.

Versatile sensor for all media

The LMC can be set to almost any liquid or viscous medium and bulk materials. Permanent medium temperatures up to 100 °C or a heavy build-up are no problem. The distinction of two media is possible due to the two switching outputs which can be set independently. The parameters can be set via IO-Link and USB interface accessory.



Туре	Process connection	Output	U _b	Medium temperature	I _{load}	Order no.	
	connection		[V]	[°C]	[mA]		
112 connecto	or · Application wate	r, water-based media					
	G ½ male	OUT1: normally open / closed programmable / IO-Link OUT2: normally open / closed programmable PNP/NPN	1830	-25100	50	LMC10	
	G ½ male	OUT1: normally open / closed programmable / IO-Link OUT2: normally open / closed programmable PNP/NPN	1830	-25100	50	LMC40	
112 connecto	r · Application oils,	oil-based media					
(3	G ½ male	OUT1: normally open / closed programmable / IO-Link OUT2: normally open / closed programmable PNP/NPN	-25100	50	LMC11		
	G ½ male	OUT1: normally open / closed programmable / IO-Link OUT2: normally open / closed programmable PNP/NPN	1830	-25100	50	LMC41	
	½ "NPT	OUT1: normally open / closed programmable / IO-Link OUT2: normally open / closed programmable PNP/NPN	1830	-25100	50	LMC51	
112 connecto	r · Application wate	er, water-based media					
	½″ NPT	OUT1: normally open / closed programmable / IO-Link OUT2: normally open / closed programmable PNP/NPN	1830	-25100	50	LMC50	
112 connecto	r · Application liqui	ds, viscous media and powders					
	½″ NPT	2 x normally open / closed programmable PNP/NPN	1830	-	100	LMC50	
ccessorie	s for LMC leve	l sensors					
Туре		Descripti	on			Order no.	
-10		parameter setting and analysis of units · Sup 30 Kbits/s) · for operation with FDT framewor			SENSOR"	E30390	
	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						
- I -	Jumper · straight / straig	ht · Free from halogen · 0.3 m · Housing mat	erials: PUR			E1243	
E	of IO-Link sensors via US master (note the respect	Parameter setting of the units via the network B adapter · Use via USB connection cable (dri vie data sheet) · IODD import and update fro fication · Graphic representation of the proce:	vers are supplied): E: m ifm's homepage ·	30396 IO-Link interface of Reading of IODDs via sto	or E30390 IO-Link orage media	QA001	



Level sensors LK





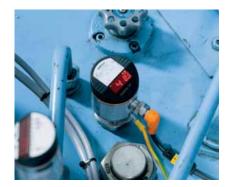
Capacitive level sensor

The LK capacitive level sensor evaluates the capacitance of the medium. This measuring principle requires no moving parts and is therefore not affected by foam and soiling in the medium.

The ideal sensor for industrial applications

The LK is suitable for water/oil-based media and can therefore be used in hydraulic and coolant tanks. Thanks to the integrated overflow prevention the workshop remains dry and the tanks to be monitored remain filled.

Besides conventional set-up via pushbuttons and display, the LK family can also be configured quickly and easily via IO-Link (e.g. USB interface). IO-Link continuously transmits the level, independently of the output function of the sensor.



Electronic	level sens	ors for oil	s and coola	ints			
Туре	Probe length [mm]	Active zone [mm]	U _b [V]	Medium temperature water [°C]	Medium temperature oil [°C]	l _{load} [mA]	Order no.
M12 connecto OUT2: analog	or (according to	o EN 61076-2-		unction OUT1: NO / NC pro			
	264	195	1830	035 / 3565	070	200	LK3122
	472	390	1830	035 / 3560	070	200	LK3123
	728	585	1830	035 / 3555	070	200	LK3124
M12 connecto OUT2: norma	or (according to lly open / close	o EN 61076-2- ed programma	101) · Output f able · DC PNP/I	unction OUT1: normally op NPN	en / closed programmable	/ IO-Link	
	264	195	1830	035 / 3565	070	200	LK1022
	472	390	1830	035 / 3560	070	200	LK1023
	728	585	1830	035 / 3555	070	200	LK1024
M12 connecto OUT24: NO	or (according to /NC programm	o EN 61076-2- able · DC PNP	101) · Output f /NPN	unction OUT1: NO / NC pro	grammable / IO-Link		
	264	195	1830	035 / 3565	070	200	LK8122

	472	390	1830	035 / 3560	070	200	LK8123
	728	585	1830	035 / 3555	070	200	LK8124

Accessories

Туре	Description	Order no.
R	Protective cover · for LK / LL / LR / LT sensors · Housing materials: PP	E43910



Modular guided-wave radar level sensors



Application

The LR level sensor operates according to the guided microwave principle and measures the level using electromagnetic pulses in the nanosecond range. The sensor is suitable for continuous level monitoring of almost all liquids. Deposits on the probe, quick pressure and temperature changes do not affect the measurement.

Installation

The sensor is installed in the tank using a process connection or flange. If necessary, the probe can be easily shortened and adapted to the tank by the user.

Setting

The setting of all parameters and programming of the switch points and indication of the current level can be made via two programming buttons and a 4-digit alphanumeric display or more conveniently via IO-Link.





The probe length can be individually adapted to the application.

Туре	Process connection	Probe length	Active zone	Ub	Medium temperature	l _{load}	Order no.			
		[mm]	[mm]	[V]	[°C]	[mA]				
M12 connector (according to EN 61076-2-101) · Output function normally open / closed programmable; 420 mA or 010 V · DC PNP										
	G ¾ male	_	L-40 (L-60)	1830	080	200	LR3000			
M12 connecto	or (according to EN	l 61076-2-101) · Outp	ut function 2	k normally op	en / closed programmab	le · DC PNP				
	G ¾ male	-	L-40 (L-60)	1830	080	200	LR7000			
M12 connector (according to EN 61076-2-101) · Output function 4 x normally open / closed programmable · DC PNP										
			at function 4	t normany op	en / cioseu programmab					
	G ¾ male	-	L-40 (L-60)	1830	080	200	LR8			

Accessories for level sensors LR

Туре	Description	Order no.
	Probe · Probe length: 240 mm · for level sensors LR · Housing materials: stainless steel 316L / 1.4404	E43203
	Probe \cdot Probe length: 450 mm \cdot for level sensors LR \cdot Housing materials: stainless steel 316L / 1.4404	E43204
	Probe · Probe length: 700 mm · for level sensors LR · Housing materials: stainless steel 316L / 1.4404	E43205
	Probe \cdot Probe length: 1000 mm \cdot for level sensors LR \cdot Housing materials: stainless steel 316L / 1.4404	E43207
	Probe · Probe length: 1200 mm · for level sensors LR · Housing materials: stainless steel 316L / 1.4404	E43208
	Probe \cdot Probe length: 1600 mm \cdot for level sensors LR \cdot Housing materials: stainless steel 316L / 1.4404	E43210
	Flange plate \cdot 65-80 / G $ m 34$ \cdot for level sensors LR \cdot Housing materials: flange: stainless steel	E43202



Level sensors LT with integrated temperature measurement



- Level and temperature measurement for water- and oil-based media
- Integrated overflow prevention
- Select level or temperature output
- 4 x switching outputs or 1 x analogue and 1 x switching output
- Available in 3 lengths (264 mm, 472 mm and 728 mm)



One sensor, two measured values

Typical applications are hydraulic power packs and machine tools. The advantage of this sensor: the combined level and temperature monitoring with only one unit reduces the number of sensors, mounting locations, stock-keeping and the installation complexity.

Advantage IO-Link

IO-Link transmits both parameters (level, temperature) as digital process values via one single cable. This means that only one input port is required on the controller. Simple and time-saving parameter setting via IO-Link.

Easy installation

Variable installation length for flexible installation.



Compact	sensors for	level and	temperati	ure monitoring			
Туре	Probe length	Active zone	Ub	Medium temperature water	Medium temperature oil	l _{load} [mA]	Order no.
M12 connect	[mm]	[mm]	[V]	[°C] function OUT1: NO / NC pro	[°C]		
				analogue signal for temper			
	264	195	1830	035 / 3565	070	200	LT3022
	472	390	1830	035 / 3560	070	200	LT3023
	728	585	1830	035 / 3555	070	200	LT3024
	or (according to /NC programma			function OUT1: NO / NC pro	grammable / IO-Link		
	264	195	1830	035 / 3565	070	200	LT8022
e	472	390	1830	035 / 3560	070	200	LT8023
	728	585	1830	035 / 3555	070	200	LT8024
Accessori	es						
Туре				Description			Order no.
0=10				ysis of units · Supported communi ith FDT framework software "ifm		OR"	E30390
				rs - Storage capacity: 2 Kbytes - 1 / nut: stainless steel 316L / 1.440-	4 / connector: TPU		E30398
C Gran	Jumper · straight	/ straight · Free	from halogen · 0.3	$m \cdot Housing materials: PUR$			E12432
	of IO-Link sensors master (note the Automatic sensor	via USB adapte respective data s identification ·	r · Use via USB con heet) · IODD impo Graphic representa	ts via the network - Software for cl nection cable (drivers are supplied rt and update from ifm's homepag tion of the process values and hist emory plug support for IO-Link 1.1): E30396 IO-Link interface or E30 ge · Reading of IODDs via storage	0390 IO-Link media ·	QA0011



Modular temperature sensors



- Extended diagnostics: minimum and maximum value memory detects temperature fluctuations
- Improved measuring accuracy due to digital transmission of the temperature value via IO-Link.
- Clearly indicate the acceptable ranges: programmable red / green display
- Flexible installation thanks to modular concept
- Versions with analogue (4...20 mA/0...10 V) or switching output (2 x PNP/NPN)



One unit for many sensors

The TR evaluation unit is suited for connection of Pt100 / Pt1000 sensors (TT, TM and TS series).

Automatic detection of the probe

The evaluation unit automatically detects whether two-wire, three-wire or four-wire Pt100 or Pt1000 sensors are connected.

Wide measuring range

Thanks to the extended measuring range of -100...600 °C, an enormous number of common temperature measurement and monitoring tasks in the manufacturing and process industries can be solved. And, of course, ifm also offers the corresponding temperature sensors.

Туре	Measuring	Process	Display	Ub	Current	I _{load}	Order
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	range	connection	2.5pmJ		consumption		no.
M12 connect	[°C / °F] or · Output function	1 x normally open /	closed programmat	[V]	[mA]	[mA]	
- 1 x analogu	ue (420 mA / 010	V, scalable) · DC PN	P/NPN				
	-100600 / - 1481112	G ½ male	Display unit	1832	50	250	TR2439
M12 connect	or · Output function	2 x normally open /	closed programmab	ble · DC PNP/NPI	N		
	-100600/- 1481112	G ½ male	Display unit	1832	50	250	TR7439
Cable sen	sors for indust	rial applicatior	15				
Туре	Measuring range	Diameter	Cable material	Sensor element	Dynamic r T05 /		Order no.
	[°C]	[mm]			[s]	I	
Cable with co	onnector 2 m · high-g	ırade stainless steel					
0	-100600	Ø 6 / L = 100	PTFE cable	-	12 /	34	TS245
.	-100600	Ø 6 / L = 150	PTFE cable	-	12 /	34	TS245
0	-100600	Ø 6 / L = 200	PTFE cable	-	12 /	34	TS245
0	-100600	Ø 6 / L = 250	PTFE cable	-	12 /	34	TS2454
Accessori	es						
Туре			Description				Order no.
			nalysis of units · Supporte n with FDT framework so			NSOR"	E3039
			nsors - Storage capacity: 2 PM / nut: stainless steel 3		nector: TPU		E3039
	of IO-Link sensors via US master (note the respec	5B adapter · Use via USB tive data sheet) · IODD in fication · Graphic represe	units via the network · Sc connection cable (drivers nport and update from ifr ntation of the process va memory blug support fo	are supplied): E303 n's homepage · Rea lues and history incl	96 IO-Link interface or ding of IODDs via stora	E30390 IO-Link ge media ·	QA001



Pt100 / Pt1000 temperature sensors



- 4-wire Pt100 / Pt1000, 6 or 10 mm, PTFE cable with M12 connector
- Temperature sensors for installation in clamp fittings
- Temperature measurement from -50...250 °C
- Connection to the evaluation unit via M12 connector



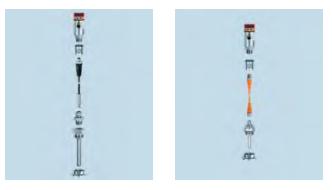
Temperature sensors for evaluation unit

Different requirements in a variety of applications demand temperature sensors which differ in the required accuracy, materials used and design. Furthermore the connection to existing evaluation units is as requested as the connection to PLCs or AS-i modules. The listed Pt100 / Pt1000 temperature sensors can be directly connected to the ifm evaluation unit TR or the temperature plug TP. Connection is conveniently made via M12 connectors.

The right sensor for every application

The sensors TS2056 and TS2256 can be used at temperatures much above 200 °C. In conjunction with the evaluation unit TR2432 they are a sensible combination for use in higher temperature areas.





Cable sen	sors for standa	ard applications								
Туре	Measuring range	Diameter	Cable material	Sensor element	Dynamic response T05 / T09	Order no.				
	[°C]	[mm]			[s]					
Cable with co	nnector 2 m · high-	grade stainless steel								
	-4090	Ø 10	PUR cable	1 x Pt 100	6 / 25	TS2089				
-	-50250	Ø 10 / L = 42	PTFE cable	1 x Pt 100	12 / 39	TS2056				
Cable with connector 2 m · stainless steel										
and the second s	-4090	12 x 8.7 x 51	PUR cable	1 x Pt 100	9 / 15	TS2229				
Cable with co	nnector 2 m · high-	grade stainless steel								
	-4090	Ø 6	PUR cable	1 x Pt 100	3 / 10	TS2289				
a la	-50250	Ø 6 / L = 50	PTFE cable	1 x Pt 100	11/37	TS2256				
	-4090	M6	PUR cable	1 x Pt 100	3/9	TS2689				
Accessorie	es									
Туре			Description			Order no.				
<u></u>		perature sensors · G ½ ma lless steel / 304 / 1.4301 /				TR2439				
		perature sensors · G ½ ma nless steel / 304 / 1.4301 /				TR7439				
		rter for temperature senso PACM 12 / PET / sealing: Ff			: TPU	TP3237				
-		ter for temperature senso PACM 12 / PET / sealing: FI			: TPU	TP3231				
		rter for temperature senso PACM 12 / PET / sealing: FI			: TPU	TP3232				



Pt100 / Pt1000 probe sensors with 4-wire connection



- Ideal response times of T05 = 1 s and T09 = 3 s
- Precise temperature measurement using an integrated Pt100 / Pt1000 sensor element
- Robust stainless steel housing with IP 68 and IP 69K protection ratings, 8 or 10 mm probe diameter
- Pressure resistance of 160 bar for different application areas
- Variable installation depth thanks to different probe lengths



Long lasting precision

The TTxx81 type probe sensors ensure very precise temperature measurement using a Pt100 element of precision class A.

In addition, long life is guaranteed by the high protection ratings IP 68 / IP 69K and the stainless steel housing.

Even faster response times

Using the latest technologies, the response time is extremely fast. This sensor is suited for all high-precision and rapid processes.

A wide range of applications

The sensors are available in 8 and 10 mm diameters as well as in different lengths. So they can be integrated into almost any application using process adapters and standardised M12 connectors.

The listed Pt100 / Pt1000 temperature sensors can be directly connected to the ifm evaluation unit TR or the temperature plug TP.







rade stainless st nade st na	10 10 10 10	Installation length	1 x Pt 100 1 x Pt 100 1 x Pt 100 1 x Pt 100 1 x Pt 100 Sensor element	[5] 1/3 1/3 1/3 1/3 1/3 Dynamic response T05 / T09	TT1081 TT2081 TT3081 TT5081
150 150 150 150 sors for sta	10 10 10 10 ndard appl	260 360 560 lications Installation length	1 x Pt 100 1 x Pt 100 1 x Pt 100 5ensor	1/3 1/3 1/3 Dynamic response	ТТ2081 ТТ3081 ТТ5081
150 150 150 sors for sta uring	10 10 10 ndard appl	260 360 560 lications Installation length	1 x Pt 100 1 x Pt 100 1 x Pt 100 5ensor	1/3 1/3 1/3 Dynamic response	ТТ2081 ТТ3081 ТТ5081
150 150 Isors for sta uring ge	10 10 Indard appl Diameter	360 560 lications Installation length	1 x Pt 100 1 x Pt 100 Sensor	1/3 1/3 Dynamic response	TT308 TT508
150 Isors for sta uring ge	10 Indard appl Diameter	560 lications Installation length	1 x Pt 100 Sensor	1/3 Dynamic response	TT508
uring ge	ndard appl _{Diameter}	lications Installation length	Sensor	Dynamic response	Order
uring ge	Diameter	Installation length			
c]	[mm]				
c]	[mm]				
	frind	[mm]		[s]	
rade stainless st	teel				
.150	10	160	1 x Pt 1000	1/3	TT105
.150	10	260	1 x Pt 1000	1/3	TT205
.150	10	360	1 x Pt 1000	1/3	TT305
.150	10	560	1 x Pt 1000	1/3	TT505
		Description			Orde no.
	.150 .150 .150 .150	.150 10 .150 10 .150 10	.150 10 160 .150 10 260 .150 10 360 .150 10 560	.150 10 160 1 x Pt 1000 .150 10 260 1 x Pt 1000 .150 10 360 1 x Pt 1000 .150 10 560 1 x Pt 1000	.150 10 160 1 x Pt 1000 1/3 .150 10 260 1 x Pt 1000 1/3 .150 10 360 1 x Pt 1000 1/3 .150 10 560 1 x Pt 1000 1/3

	Evaluation unit for temperature sensors \cdot G ½ male \cdot for Pt100 and Pt1000 measuring elements \cdot Housing materials: stainless steel / 304 / 1.4301 / PBT+PC-GF 30 / PBT-GF 20 / PC	TR7439
	Measured signal converter for temperature sensors · for Pt100 and Pt1000 measuring elements · Housing materials: PA PACM 12 / PET / sealing: FPM / nut: stainless steel 316L / 1.4404 / connector: TPU	TP3237
	Measured signal converter for temperature sensors \cdot for Pt100 and Pt1000 measuring elements \cdot Housing materials: PA PACM 12 / PET / sealing: FPM / nut: stainless steel 316L / 1.4404 / connector: TPU	TP3231



TP temperature plug – modular transmitter



4...20 mA

Minimised installation and error sources

Using two standardised M12 connections, the installation complexity of the TP temperature plug is reduced to a minimum as compared to a common head / DIN rail transmitter. Furthermore, error sources such as cable clamps are eliminated.

Versatile use

Thanks to 4-wire Pt100 / Pt1000 evaluation, the transmitter can also be connected to a Pt element using connection cables. Due to its small size, it is also suited for harsh applications, because it can be installed in a safe position. In addition the scalability of the TP between -50 and 300 °C, using the USB interface E30396 allows individual adaptation of the measuring range to almost any application.





Use of a modular TP transmitter instead of a common head / DIN rail transmitter.

Modular temperature transmitters									
Туре	Factory setting	Process connection	Ub	Ambient temperature	Measuring element	Order no.			
	[°C / °F]		[V]	[°C]					
M12 connect	or · Output function	420 mA analogue	• DC						
Д	0100 / -	M12	2032	-2570	for Pt100 and Pt1000 measuring elements	TP3237			
	-50150 / -	M12	2032	-2570	for Pt100 and Pt1000 measuring elements	TP3231			
	-50300 / -	M12	2032	-2570	for Pt100 and Pt1000 measuring elements	TP3232			
	- / 0300	M12	2032	-2570	for Pt100 and Pt1000 measuring elements	TP3233			
VI12 connect	or · Output function	010 V analogue ·	DC						
	0100 / -	M12	1832	-2570	for Pt100 and Pt1000 measuring elements	TP9237			
Software									
Туре	Description								
Connecto	IO-Link (4.8, 38.4 and 2			orted communication pr < software "ifm Containe	otocols: r" or software "LR SENSOR"	E30390			
Туре	Description								
Socket M12,	5/4-pole, 4-wire								
	Socket · angled · Free fr Housing materials: hous			contacts · M12 connecto	r · 2 m ·	EVC004			
	Socket · angled · Free fr Housing materials: hous			contacts · M12 connecto	r · 5 m ·	EVC005			
lumper M12	plug / M12 socket, 4	/5-pole, 4-wire							
and the second	Jumper · straight / straig Housing materials: hous			old-plated contacts · 2 m		EVC013			
- Call	Jumper · angled / angled · Free from silicone · Free from halogen · Gold-plated contacts · 2 m · Housing materials: housing: TPU orange / sealing: FKM								
	Jumper · angled / angled Housing materials: hous			d-plated contacts · 5 m ·		EVC034			



Temperature sensors with temperature probe and display



- Extended diagnostics: Minimum / maximum value memory detects temperature fluctuations
- Improved measuring accuracy due to digital transmission of the temperature value via IO-Link.
- Measuring range of -50...150 °C, response time T05 / T09 = 1s / 3s
- Clearly indicate the acceptable ranges: programmable red / green display
- Versions with analogue (4...20 mA/0...10 V) or switching output (2 x PNP/NPN)



Quick and resistant

The compact TN type temperature sensors are distinguished by excellent response times, high pressure resistance and adaptive process connections. The sensors easily resist applications with temperatures up to 150 °C and high pressure loads up to 400 bar. The measuring range is freely scalable.

More convenience and clarity

Quick and easy handling via three pushbuttons. The display can be switched from the indication of "red" to an alternating indication of "red - green". So, switching states can be highlighted or an independent colour window can be created. The sensor head can be rotated and offers optimum readability from any position. Thanks to captive laser labelling on the stainless steel housing, the units can still be identified after years.







			play, IO-Link			
Туре	Measuring range	Process connection	Installation length	Ub	Dynamic response T05 / T09	Order no.
	[°C / °F]		[mm]	[V]	[s]	
M12 connect + 1 x analogu	or · Output function ue (420 mA / 010	1 x normally open / V, scalable) · DC PNI	closed programmab P/NPN	le		
Q	-50150 / -58302	M18 x 1.5	45	1832	1/3	TN2511
M12 connect	or · Output function	2 x normally open /	closed programmab			
	on output function		ciosca programmas			
0	-50150 / -58302	M18 x 1.5	45	1832	1/3	TN7511
M12 connector or 1 x norma	or · Output function lly open / closed pro	2 x normally open / grammable + 1 x an	closed programmab alogue (420 mA / 0	le 10 V) · DC PNP/N	PN	
	-50150 / -58302	G 1/2	30	1832	1/3	TN2405
3/****	-50150 / -58302	G 1/2	50	1832	1/3	TN2415
	-50150 / -58302	G 1/2	100	1832	1/3	TN2435
1997	-50150 / -58302	G 1/2	150	1832	1/3	TN2445
	301307 30302	0 172	150	1052	175	1112445
	-50150 / -58302	1/2 " NPT	30	1832	1/3	TN2303
	-50150 / -58302	1/2" NPT	50	1832	1/3	TN2313
	-50150 / -58302	G 1/4	25	1832	1/3	TN2105
	-50150 / -58302	G 1/4	50	1832	1/3	TN2115
		2			.,,,	
	-50150 / -58302	1/4" NPT	25	1832	1/3	TN2603
	-50150 / -58302	1/4" NPT	50	1832	1/3	TN2613



Temperature sensors with easy-turn operating concept





Fit – set – that's it

The first switching temperature sensor with intuitive handling, combined with an excellent response time and a compact housing.

Easy to fit

The easy handling via two radial setting rings on the sensor enables quick and precise setting of the switch points for the users, also without system temperature being applied. Thanks to mechanical locking unintentional manipulation is excluded. The protective cap, which can be obtained as an option, ensures protection against tampering.





Intuitive setting of target values.

Туре	Measuring range	Process connection	Installation length	Ub	Dynamic response T05 / T09	Orde no.
	[°C / °F]		[mm]	[V]	[s]	
112 connecto	or · Output function _	_+_t · DC PNF	P			
	-20140 / -4284	G 1/4	50	9.632	1/3	TK611
-0110	-20140 / -4284	1/4" NPT	50	9.632	1/3	тк631
112 connecto	or · Output function _	/ · DC PNF	p			
	-25140 / -13284	G 1/4	50	9.632	1/3	тк71 [,]
	-25140 / -13284	1/4" NPT	50	9.632	1/3	тк73
112 connecto	or · Output function 1	x normally open / 1	1 x normally closed	· DC PNP		
- (D	-25140 / -13284	G 1/2	250	9.632	1/3	ТК74
ccessori	es					
Туре			Description			Orde no.
	Protective cover · with lear for pressure sensors type F		sors type TK \cdot for vibratio	on sensors type VK \cdot Hous	ing materials: PP transparent	E3009
onnecto	rs					
Туре			Description			Orde no.
ocket M12, !	5/4-pole, 4-wire					

Socket \cdot straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M12 connector \cdot 5 m \cdot Housing materials: housing: TPU orange / sealing: FKM

EVC002



Infrared temperature sensor with IO-Link and LED pilot light



- IO-Link, analogue output 4...20 mA and switching output, freely programmable
- Adjustable for different target materials
- Scratch-resistant precision lenses for minimum sensitivity to ambient light
- LED pilot light for alignment and control
- Simulation function: activated on the sensor or by external control signal



Non-contact temperature measurement

For the precise temperature measurement of particularly hot objects or objects which are difficult to access, e.g. in the steel, plastics or glass industries. The measured value is provided via the analogue output. In addition, a switching output and an IO-Link interface are provided.

Integrated LED pilot light

The pilot light shows the user the exact position and size of the measuring segment. The green light is visible very well even on glowing surfaces. Besides a low current consumption, the LED is distinguished by a virtually unlimited lifetime.

Batch-related programming

Thanks to the integrated IO-Link communication interface, the parameters can be dynamically adjusted to the application from the control room. Local parameter setting on the unit is not necessary, but can optionally be done via the buttons and the display.



ا ا ا ا ا ا I I	0999.5 0999.5 2501600 2501600 5002500 3001600 ir purge - for infrared te pousing materials: stainle	μm] μm]	Infrared : with Infrared : with tem tem tem tem tem tem tem tem tem	transparent crysta anti-reflex coating transparent crysta anti-reflex coating pered optical glass pered optical glass pered optical glass pered optical glass pered optical glass	I lens g I lens g s s s s s s	[ms] < 100 < 2 < 2 < 2 < 2 < 2 < 2 : 304 / 1.4301	0	TW2000 TW2100 TW2001 TW2002 TW2011 TW2011 COrder no.
ا ا ا ا ا ا I I	0999.5 0999.5 2501600 2501600 5002500 3001600 ir purge - for infrared te pousing materials: stainle	814 814 1.01.7 1.01.7 0.781.06 1.01.7	Infrared : with Infrared : with tem tem tem tem tem tem tem tem tem	transparent crysta anti-reflex coating transparent crysta anti-reflex coating pered optical glass pered optical glass pered optical glass pered optical glass pered optical glass	I lens g I lens g s s s s s s	< 10 < 2 < 2 < 2 < 2	0	TW2100 TW2001 TW2101 TW2002 TW2011 Corder no.
۲ ۲ ۲ ۲	0999.5 2501600 2501600 5002500 3001600 ir purge · for infrared te booling jacket · for infrared sulating tube · for infrared	ed temperature sensors TWxxxx	with Infrared : with Infrared : with Unifrared : Unifr	anti-reflex coating transparent crysta anti-reflex coating pered optical glass pered optical glass pered optical glass pered optical glass pered optical glass	g I lens g s s s s s	< 10 < 2 < 2 < 2 < 2	0	TW2100 TW2007 TW2107 TW2007 TW2017 Corder no.
۲ ۲ ۲ ۲	2501600 2501600 5002500 3001600 r purge · for infrared te busing materials: stainle pooling jacket · for infrar sulating tube · for infrar	1.01.7 1.01.7 0.781.06 1.01.7 ses steel / Brass / sealing ring: alu ed temperature sensors TWxxxx	With with temp temp <td>anti-reflex coating pered optical glass pered optical glass pered optical glass pered optical glass pered optical glass ? ? TW -</td> <td>g s s s s</td> <td>< 2 < 2 < 2 < 2</td> <td></td> <td>TW2007 TW2107 TW2007 TW2017 Corder no.</td>	anti-reflex coating pered optical glass pered optical glass pered optical glass pered optical glass pered optical glass ? ? TW -	g s s s s	< 2 < 2 < 2 < 2		TW2007 TW2107 TW2007 TW2017 Corder no.
Type A Image: Comparison of the comparison o	2501600 5002500 3001600 Ir purge · for infrared te pusing materials: stainle pooling jacket · for infrar sulating tube · for infrar	ed temperature sensors TWxxxx	0 design · for type 0 design · for type x, M30 design · for	pered optical glass pered optical glass pered optical glass pered optical glass TW -	s s	< 2 < 2		TW210 TW200 TW201 Order no.
Type A Image: Comparison of the comparison o	5002500 3001600 Ir purge · for infrared te pusing materials: stainle pooling jacket · for infrar sulating tube · for infrar	0.781.06 1.01.7 mperature sensors TWxxxx, M3d ed temperature sensors TWxxxx	tem tem Description	pered optical glass pered optical glass pered optical glass TW -	s s	< 2		TW200
Type A Image: Comparison of the comparison o	3001600 ir purge · for infrared te pusing materials: stainle pooling jacket · for infrar sulating tube · for infrar	1.01.7 mperature sensors TWxxxx, M3t ess steel / Brass / sealing ring: alu ed temperature sensors TWxxxx	tem Description 0 design · for type uminium 4, M30 design · for	pered optical glass	S	< 2		TW201 Order no.
Type A Image: Comparison of the second	ir purge · for infrared te ousing materials: stainle poling jacket · for infrar sulating tube · for infrar	mperature sensors TWxxxx, M30 sss steel / Brass / sealing ring: alu ed temperature sensors TWxxxx	Description 0 design · for type uminium 4, M30 design · for	e TW ·				Order no. E35063
Type A Image: Comparison of the comparison o	ir purge · for infrared te ousing materials: stainle ooling jacket · for infrar sulating tube · for infrar	ed temperature sensors TWxxxx	0 design · for type uminium r, M30 design · for	r type TW · Housin	ng materials	: 304 / 1.4301		no. E3506:
Image: Constraint of the second of the se	ousing materials: stainle poling jacket - for infrar sulating tube - for infrar	ed temperature sensors TWxxxx	0 design · for type uminium r, M30 design · for	r type TW · Housin	ng materials	: 304 / 1.4301		no. E3506
	ousing materials: stainle poling jacket - for infrar sulating tube - for infrar	ed temperature sensors TWxxxx	uminium s, M30 design · for	r type TW · Housin	ng materials	: 304 / 1.4301		
	sulating tube · for infra				ng materials	: 304 / 1.4301		E3506
	-	red temperature sensors TWxxx	x, M30 design · fo	r type TW · Housi				
					ng materials	s: POM		E35067
of m		parameter setting and analysis o th FDT framework software "ifr				O-Link (4.8, 38.4	and 230	E3039
	IO-Link sensors via USE aster (note the respectiv utomatic sensor identifi	arameter setting of the units via 8 adapter · Use via USB connecti ve data sheet) · IODD import and cation · Graphic representation ole parameter sets · Full memory	ion cable (drivers a d update from ifm of the process valu	are supplied): E303 n's homepage · Re ues and history ind	396 IO-Link ading of IO	interface or E30. DDs via storage r	390 IO-Link nedia ·	QA001
Connectors								
Туре	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro- tection	LEDs	Order no.
ocket M12, hal	ogen-free, screene	d, screen connected to th	e socket, 5-po	le, 5-wire				
	2 m black PUR cable	5 x 0.25 mm², Ø 4.9 mm	TPU / Brass	30 AC	-2590	IP 65 / IP 67	_	EVC54
				36 DC				



Evaluation unit for flow sensors



- Integrated flow, temperature and wire-break monitoring
- Switch point, flow and temperature setting via potentiometer
- Multicolour LED bar graph display for quick setting
- Signal output via potential-free relay contacts, changeover contacts
- Connection options: insulation displacement terminal, screw terminal and cage clamp



Evaluation unit for sensors

The evaluation unit ensures high functionality in a space-saving housing for control cabinet mounting. The connection options (Combicon) provide flexibility for different connection concepts. In addition to flow indication via the multicolour LED bar graph, the adjustable limit temperature of the medium as well as, for safety reasons, a wire break between the sensor and the evaluation unit are signalled via LEDs and a relay output. The operating elements are located on the front and can be set using a screw driver. The evaluation units are available in two versions (AC or DC) and form a system for flow monitoring together with the SF type flow sensors.

Local evaluation unit SR5900

The evaluation unit SR5900 is used for connection of SF type flow sensors with different immersion depths. Standardised M12 connections are used for connecting the evaluation unit and sensor as well as for the supply. The evaluation and display unit SR5900 can be used in different applications, e.g. for various immersion depths and a wide range of aggressive liquids. Flow and switch point are indicated by LEDs directly on the unit.



The evaluation is carried out outside the measurement location.

Control m	nonitors fo	or industr	ial applica	ations						
Туре	U _b / Tolerance [V] / [%]	Current consumpt. [mA]	Power consumpt. [VA]	Power-on delay time [s]	Output when flow is present	Output when temperature is exceeded	Output in case of wire break	Order no.		
Combicon co	Combicon connector · Output function \checkmark · DC									
	24 DC / +10 / -20	90	_	1080	relay energised	relay energised	relay de-energised	SR0150*		
Combicon co	nnector · Out	put function	_∕⊑ · AC							
	90240 AC / -5 /+10	-	4	1080	relay energised	relay energised	relay de-energised	SN0150*		
M12 connect	M12 connector · Output function/t · DC PNP									
	1936 DC	70	_	10	no / nc programmable	_	_	SR5900		

* Note on use of miniature fuses for electrical connection

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

Flow sens	ors for connectio	n to control mon	itors, industria	al applicat	ions		
Туре	Setting range liquids / gases	Greatest sensitivity	Medium temperature	Response time	Max. T ₀ gradient	Pressure rating	Order no.
	[cm/s]	[cm/s]	[°C]	[s]	[K/min]	[bar]	
M12 connecto	or						
	3300 / 2003000	360 / 200800	-2580	110	300	300	SF5200
	3300 / 2003000	360 / 200800	-2580	110	300	100	SF5700
Cable 6 m							
	3300 / 2003000	360 / 200800	0120 / 0100	110	300	300	SF5300
	3300 / 2003000	360 / 200800	-2580	110	300	300	SF5350



Inductive dual sensors for valve actuators



- Quick and secure mounting using only three screws
- Units with M12 connector or terminal chamber
- Non-contact and self-cleaning system
- Resistant to mechanical stress such as vibration and shocks
- Large selection of switching cams



Electronic valve position monitoring

In industrial processes where liquids, air or gases are used, valves are needed for dosing and control. Pneumatic valve actuators are normally used for mechanical positioning. The valve position must be monitored electronically.

Dual sensor for valve actuators

ifm offers a compact dual inductive sensor with two integral sensors for position feedback on valve actuators.

A round target, also called a 'puck', with two metal screws offset by 90° is mounted on the actuator shaft. The screws are located at a different height. A compact dual inductive sensor (type IND) with two integral sensors detects the upper or lower metal screw depending on the valve position and thus the two switch positions. This system operates reliably with no wear at all. It is virtually resistant to external influence and insensitive to mechanical stress such as vibration and shock.









Sensors fo	or industrial a	pplication	5						
Туре	Dimensions	Sensing range	Material	Ub	Protection	f AC / DC	l _{load} AC / DC	Order no.	
	[mm]	[mm]		[V]		[Hz]	[mA]		
M12 connecto	or · Output functio	n/	· DC PNP						
	40 x 26 x 26	4 nf	PBT	1036	IP 67	1300	250	IN5225	
-	40 x 26 x 47	4 nf	PBT	1036	IP 67	1300	250	IN5327	
Terminals · O	Terminals · Output function / · DC PNP								
	33 x 60 x 92	4 nf	PA (polyamide)	1030	IP 67	500	100	IN5409	

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

Switching	g cams for sensors with quarter-turn actuators	
Туре	Description	Order no.
()	Target puck · Ø 102 mm · adjustable target screws · Housing colour: black · Housing materials: Target puck: PVC / screws: stainless steel 316Ti / 1.4571	E17119
	Target puck $\cdot Ø$ 102 mm \cdot 3 possible switching flag positions \cdot Housing colour: black \cdot Housing materials: Target puck: PA 6 / screws: V2A	E17328
	Target puck $\cdot Ø$ 53 mm \cdot 3 possible switching flag positions \cdot Housing colour: black \cdot Housing materials: Target puck: PA 6 black / screws: V2A	E17320
	Target puck \cdot Ø 53 mm \cdot Housing materials: Target puck: PA 6 black / Metal parts: stainless steel	E12517
	Target puck \cdot Ø 65 mm \cdot 3 possible switching flag positions \cdot Housing colour: black \cdot Housing materials: Target puck: PA 6 / screws: V2A	E17327
P]	Spacer · Housing materials: PA 6 black / screw: stainless steel	E12526



Continuous position feedback and diagnostics



- Great all-round position visibility from a distance
- **Continuous position feedback**
- Easy setting via teach button or IO-Link
- Diagnostic functions: cycle time and count, seal monitoring



Flexible configuration

The smart valve sensor matches settings to the application software (LR Device) or inductive teach button. Any end position of the valve and the size of the sensing range can be set. A third switch point can be selected, for example for three-way valves or for switching off the pump to avoid pressure peaks.

Diagnostic functions

The IO-Link communication interface allows the identification of different wear conditions. On the one hand, the sensor features seal monitoring indicating a change of the closed position, which can point to deposits or wear of the seal, for example. On the other hand, the different positions can be counted and the time taken can be measured.



Position s	ensors for risi	ng stem v	alves					
Туре	Dimensions	Sensing range	Material	Ub	Protection	f AC / DC	I _{load} AC / DC	Order no.
	[mm]	[mm]		[V]		[Hz]	[mA]	
M12 connector · Output function 3 x NO / NC (selectable) · DC PNP								
	56.6 x 50 x 95	56.6 x 50 x 95 – PA (polyamide) 1030 IP 65 / IP 67 – 100						
Accessories								
Туре	Description							Order no.
	Montageplatte \cdot for type MVQ \cdot Housing materials: POM black						E12569	
	Montageplatte · for ty	pe MVQ · Housin	g materials: POM black					E12573

Accessories for IO-Link

Туре	Description	Order no.
0-10	USB IO-Link master · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4.8, 38.4 and 230 Kbits/s) · for operation with FDT framework software "ifm Container" or software "LR SENSOR"	E30390
	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
at i a si si as	IO-Link master with Profinet interface \cdot I/O modules for field applications \cdot M12 connector \cdot Housing materials: housing: polyamide / socket: Brass nickel-plated	AL1100
	LR DEVICE (USB stick) · Parameter setting of the units via the network · Software for clear online and offline parameter setting of IO-Link sensors via USB adapter · Use via USB connection cable (drivers are supplied): E30396 IO-Link interface or E30390 IO-Link master (note the respective data sheet) · IODD import and update from ifm's homepage · Reading of IODDs via storage media · Automatic sensor identification · Graphic representation of the process values and history incl. export function · Documentation and archiving · Transferable parameter sets · Full memory plug support for IO-Link 1.1	QA0011



AS-Interface gateways with AS-i master profile M4



- Supports all slaves of the AS-i specification 1.0 to 3.0
- Extended diagnosis in the device display and via the fieldbuses
- Flexible handling of analogue values
- For different fieldbuses: Profibus DP, EtherNet/IP



AS-Interface

The actuator-sensor interface (AS-i) sets new technological standards in plant design and automation.

AS-i considerably reduces wiring complexity since conventional parallel wiring of each sensor or actuator to the controller is no longer necessary. This saves the user a great number of terminals, splitter boxes, input/output cards and cable lines.

AS-i masters, gateways and controllers

AS-i masters and gateways are basic components of AS-i networks. They are usually placed in the control cabinet and ensure data communication and power supply of the connected slaves, sensors and actuators.

The AS-i master assumes the most important function in every AS-Interface network. It is responsible for the control of the complete communication.

AS-i gateways make a connection from AS-Interface to a higher-level bus system. Thus the advantages of both systems can be combined.

Via fieldbus gateways, e.g. to Profibus DP, several AS-i installation islands can be connected to a control room across longer distances, e.g. in an assembly hall.





Gateways allow connection of AS-i to different fieldbuses.

Туре	Number of AS-i masters	Description	Order no.
	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
a	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
	2	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	AC1412
	1	AS-i EtherNet/IP gateway · AS-i master · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · 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	AC1421
	2	AS-i EtherNet/IP gateway · AS-i master · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · 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	AC1422
II	1	SmartPLC DataLine with EtherCAT slave interface · AS-i master · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · 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	AC1433
1	2	SmartPLC DataLine with EtherCAT slave interface · AS-i master · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · 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	AC1434
Accessorie	es		
Туре		Description	Orde



CoDeSys for Automation Alliance · Software CD for controller E Version 2.3 in several languages · Single user licence · Compatible operating systems: Win2000 (32 bits), WinXP (32/64 bits), WinVista (32/64 bits), Win7 (32/64 bits)

AC0340

no.



Power supplies



Efficient and reliable

Due to innovative technology the new ifm power supplies require considerably less space in the control cabinet, as compared to common cabinet power supplies. Another advantage of the efficient design is the above average degree of efficiency of up to 94 per cent. This saves energy costs and reduces waste heat in the control cabinet.

In the development of the power supplies, particular importance was attached to a sufficient dimensioning of the components, so that operation is permanently ensured even in the limit areas of the specification. This results in an excellent MTBF value of about 1.4 million hours.

Moreover, all ifm power supplies feature sufficient power reserves to reliably handle even short current spikes.



AS-Interface power supplies / earth fault monitors

AS-i pow	er supplies		
Туре	Output current AS-i [A]	Description	Order no.
	4	Power supply \cdot AS-i power supply 115/230 V AC \cdot Integrated data decoupling \cdot steel sheet	AC1254
	8	Power supply \cdot AS-i power supply 115/230 V AC \cdot Integrated data decoupling \cdot steel sheet	AC1258
	4	Power supply \cdot DC convertor 24 V DC for AS-i system voltage \cdot Integrated data decoupling \cdot steel sheet	AC1257
	8	Power supply \cdot Three-phase AS-i power supply 380480 V AC \cdot Integrated data decoupling \cdot steel sheet	AC1253

24 V DC power supplies

Туре	Current	Output voltage	Nominal voltage	Mains buffering time	Efficiency typ.	Order no.
	[A]	[V]	[V]	[ms]	[%]	
	5	2428 DC	2 x 400 AC	27 (400 V AC; 50 Hz) / 48 (480 V AC; 60 Hz)	90.4	DN4032
	10	2428 DC	115 / 230 AC	46 (120 V AC; 60 Hz) / 47 (230 V AC; 50 Hz)	91	DN4013
	20	2428 DC	115 / 230 AC	26 (120 V AC; 60 Hz) / 26 (230 V AC; 50 Hz)	92.7	DN4014
	10	2428 DC	3 x 400 AC	34 (400 V AC; 50 Hz) / 54 (480 V AC; 60 Hz)	92.8	DN4033
	20	2428 DC	3 x 400 AC	22 (400 V AC; 50 Hz) / 22 (480 V AC; 60 Hz)	95	DN4034
	40	2428 DC	3 x 400 AC	25 (400 V AC; 50 Hz) / 25 (480 V AC; 60 Hz)	95.3	E84036
	40	2428 DC	115 / 230 AC	27 (120 V AC; 60 Hz) / 27 (230 V AC; 50 Hz)	93.6	E84016



SmartLine modules for control cabinets



Even for small local control cabinets

The new SmartLine modules feature a housing that is only 25 mm wide, so they will easily fit into a small panel.

The transistor module is only 52 mm deep, so requires very little space, making it ideal for local control panels. At just 108 mm deep and 25 mm wide the relay module also won't take up much space in a classic control cabinet.

Powerful and flexible

The supplied cage clamps allow easy and efficient universal wiring. Double terminals help the user to loop through the power supply.

Sensor supply and the outputs of the transistor version are rated with 1 A, the relay modules switch up to 6 A.

Extended addressing mode

Up to 62 units can be connected to a master of specification 3.0 with M4 profile as A or B slaves. The modules can be addressed either prior to installation without voltage or when connected and wired via the addressing socket.



AS-Interface I/O modules

I/O modu	les for control cabinet	s	
Туре	Inputs / outputs	Description	Order no.
-	4 inputs / 4 outputs	Active AS-i module \cdot String mounting possible \cdot Version 3.0 with extended addressing mode \cdot Only for operation with AS-i masters with the profile M4 \cdot plastics / PC GF20	AC3200
10 4 4 10 10 10 10 10	4 inputs / 4 outputs	Active AS-i module \cdot String mounting possible \cdot Version 3.0 with extended addressing mode \cdot Only for operation with AS-i masters with the profile M4 \cdot plastics / PC GF20	AC3201
	4 inputs / 4 outputs	Active AS-i module \cdot String mounting possible \cdot Addressing socket \cdot Version 3.0 with extended addressing mode \cdot Only for operation with AS-i masters with the profile M4 \cdot plastics / PC GF20	AC3220
.	4 inputs / 4 outputs	Active AS-i module · String mounting possible · Addressing socket · Version 3.0 with extended addressing mode · Only for operation with AS-i masters with the profile M4 · plastics / PC GF20	AC3221
1	4 analogue inputs 420 mA	Active AS-i module · Supply either from AS-i or an external 24 V source · Combicon connector for sensor connection · PC GF20	AC3216
2	4 analogue inputs 010 V	Active AS-i module · Supply either from AS-i or an external 24 V source · Combicon connector for sensor connection · PC GF20	AC3217
1	4 analogue outputs 020 mA	Active AS-i module · Supply either from AS-i or an external 24 V source · Combicon connector for actuator connection · PC GF20	AC3218
2	4 analogue outputs 010 V	Active AS-i module · Supply either from AS-i or an external 24 V source · Combicon connector for actuator connection · PC GF20	AC3219
1	4 inputs Pt100	Active AS-i module · Combicon connection · PC GF20	AC3222

Accessories

Туре	Description	Order no.
	Addressing cable · for AS-i slaves · 1.6 m	E70213
-	AS-i addressing unit · AS-i version 3.0 with extended addressing mode	AC1154



CompactLine modules



- 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.





Field mod	lules IP 67		
Туре	Inputs / outputs	Description	Order no.
	4 inputs	Active CompactLine module · fully potted housing · IR addressing possible · Digital inputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	AC2410
	4 inputs	Active CompactLine module · IR addressing possible · Metal parts from 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: stainless steel / Piercing contacts: CuSn6 surface nickel and tin-plated / O-Ring : EPDM	AC2451
	4 inputs	Active CompactLine module · IR addressing possible · Version 2.11 and 3.0 with extended addressing mode · Digital inputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	AC2457
	4 outputs	Active CompactLine module · IR addressing possible · Digital outputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	AC2417
	4 inputs / 4 outputs	Active CompactLine module · IR addressing possible · Metal parts from stainless steel · 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: stainless steel / Piercing contacts: CuSn6 surface nickel and tin-plated / O-Ring : EPDM	AC2452
	4 inputs / 4 outputs	Active CompactLine module · 60 x 152 x 27 · IR addressing possible · Digital inputs and outputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	AC2412
	4 inputs / 4 outputs	Active CompactLine module · IR addressing possible · Digital inputs and outputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : Viton / Piercing contacts: CuSn6 surface nickel and tin-plated	AC2459
	4 inputs / 4 outputs; bidirectional	Active CompactLine module · IR addressing possible · Version 3.0 with extended addressing mode · Only for operation with AS-i masters with the profile M4 · Metal parts from stainless steel · Sockets M12 x 1 · PA 6.6 / socket: stainless steel 316L / 1.4404 / threaded inserts in the lower part: stainless steel 316L / 1.4404 / O-Ring : EPDM / Piercing contacts: CuSn6 surface nickel and tin-plated / screws: stainless steel	AC2455
1	2 outputs / 2 inputs	Compact M8 AS-i module \cdot 90.5 x 30 x 23.5 \cdot Digital inputs and outputs supplied via AS-i \cdot AS-i connection via M12 connector \cdot Version 2.11 and 3.0 with extended addressing mode \cdot M8 ecolink interface \cdot Sockets M8 x 1 \cdot PBT	AC2482
	8 inputs	Compact M8 AS-i module \cdot 134.5 x 30 x 23.5 \cdot Digital inputs \cdot AS-i connection via M12 connector \cdot Version 3.0 with extended addressing mode \cdot M8 ecolink interface \cdot Only for operation with AS-i masters with the profile M4 \cdot Sockets M8 x 1 \cdot PBT	AC2488



ClassicLine modules



- 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



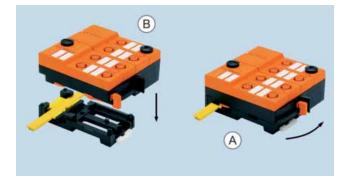
Easy connection due to toolless mounting.

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).

AS-Interface I/O modules

Field mod	lules IP 67		
Туре	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 / Piercing contacts: CuSn6 surface nickel and tin-plated	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 / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5214
	4 inputs / 3 outputs	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 / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5204
<u>a o a e</u>	4 inputs / 4 outputs	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 / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5235
	2 inputs 420 mA	Active ClassicLine module \cdot 2 analogue inputs 420 mA \cdot For the connection of 2-wire and 3-wire sensors \cdot Addressing socket \cdot Three orientations of the flat cable are possible \cdot PA / Piercing contacts: CuSn6 surface nickel and tin-plated	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 / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5225
0000	4 inputs / 4 outputs	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · Digital inputs and outputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5209
	4 inputs	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · Digital inputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5205
	4 outputs	Active ClassicLine module · Addressing socket · Three orientations of the flat cable are possible · Digital outputs · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5208
0000	8 digital inputs (2 slaves)	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 / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5210
0.0	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 / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5245

Accessories

Accessori		
Туре	Description	Order no.
	Addressing cable \cdot for AS-i slaves \cdot 1.6 m	E70213
-	AS-i addressing unit · AS-i version 3.0 with extended addressing mode	AC1154



AirBoxes: AS-i pneumatics with quick mounting technology





Introduction

After successfully launching the ClassicLine modules for field applications we are now introducing the AirBoxes with various new features.

The AirBoxes are now easier to use with their novel assembly technology, additional valve functions and many other new features.

Special features

- slide valves free from overlapping
- 2 x 3/2-way valves, 1 x 5/2-way valve (monostable / bistable)
- 1 x 5/3-way valve with blocked middle position
- quick mounting of upper and lower parts
- flat cable can be inserted from 3 different directions
- extended addressing mode





AS-i AirBo	oxes		
Туре	Inputs / outputs	Description	Order no.
	4 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 · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5228
	4 inputs / 1 output ; AirBox supply via AS-i	AS-i AirBox · 5/2-way slide valve free from overlapping · monostable · 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 / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5246
	4 inputs / 2 outputs; AirBox supply via AS-i	AS-i AirBox · 5/2-way bistable 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 / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5251
	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
8	4 inputs / 2 outputs; AirBox supply via external 24 V DC	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 · Version 2.11 and 3.0 with extended addressing mode · Addressing socket · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5243
	4 inputs / 2 outputs; AirBox supply via external 24 V DC	AS-i AirBox · 5/2-way bistable 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 / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5253
	4 inputs / 2 outputs; AirBox supply via AS-i	AS-i AirBox · 5/3-way slide valve free from overlapping · closed · 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 / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5270
	4 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-7.F.F · PA / POM / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5285

Accessories

Туре	Description	Order no.
an ar	Silencer · Housing materials: connection piece: PP / filter: PE	E75232
~ 1	Push-in T-fitting · Housing materials: housing: Nickel-plated brass / PA66 / tooth lock washer: stainless steel	E75227
	Push-in L-fitting · Diameter reduction from Ø8 mm to Ø6 mm · Housing materials: housing: Nickel-plated brass / PA66 / tooth lock washer: stainless steel	E75229
71	Sealing plug for AirBox · Housing materials: housing: PA66	E75231



Safety at Work

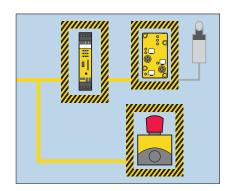




Safety on the AS-i bus

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	
Туре	Description	Order no.
Ţ	Safe active AS-i module \cdot Connection via M12x1 sockets or cage clamps \cdot For connection of an electro-sensitive protective equipment (ESPE) type 4 to EN 61496-1 \cdot PA 6 \cdot Complies with the requirements: ISO 13849-1: category 4 \cdot ISO 13849-1: PL e \cdot IEC 61508: SIL 3	AC007S
0	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 · PC GF20 · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	AC010S
	AS-i Safety at Work · Safe AS-i input module 2SI - 2LO · Addressing socket · Three orientations of the flat cable are possible · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 62061: SILcl 3	AC505S
00	AS-i Safety at Work · Safe AS-i input module 4SI / 2DO T / 2LO · Addressing socket · Three orientations of the flat cable are possible · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated · Complies with the requirements: ISO 13849-1: category 3 · ISO 13849-1: PL d · IEC 62061: SILcl 2	AC506S
00	AS-i Safety at Work · Addressing socket · Three orientations of the flat cable are possible · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3 · IEC 62061: SILcl 3	AC507S
00	AS-i Safety at Work · Addressing socket · Three orientations of the flat cable are possible · Sockets M12 x 1 · PA / Piercing contacts: CuSn6 surface nickel and tin-plated · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3 · IEC 62061: SILcl 3	AC508S
00	AS-i Safety at Work \cdot Sockets M12 x 1 \cdot PA / Piercing contacts: CuSn6 surface nickel and tin-plated \cdot Complies with the requirements: ISO 13849-1: category 3 \cdot ISO 13849-1: PL d \cdot IEC 62061: SILcl 2	AC5095
	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 · PA · Complies with the requirements: ISO 13849-1: PL e · IEC 61508: SIL 3	AC0305
	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 · PA · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	AC0095
	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	AC0415
	AS-i safety monitor · Extended functionality · 2-channel · Configuration and setup by configuration software ASIMON · Screw terminal · polyamide black · Complies with the requirements: ISO 13849-1: PL e · IEC 61508: SIL 3	AC004S



SafeLine SmartPLC: fail-safe automation system



All-in-one: more than just a PLC

Just as a smartphone is more than just a phone, the new SmartPLC is more than just a simple PLC. It has the flexibility for different tasks, even in safety-related applications up to SIL 3, PL e.

For example as:

- fail-safe PLC
- standard PLC
- AS-i gateway
- visualisation system
- protocol converter
- data logger
- intelligent evaluation unit (ifm system solutions)

Two integrated PLCs (1 x fail-safe, 1 x standard), powerful processors, a large memory and a multitude of supported protocols allow the control of sophisticated systems – and this at an unbeatable price!



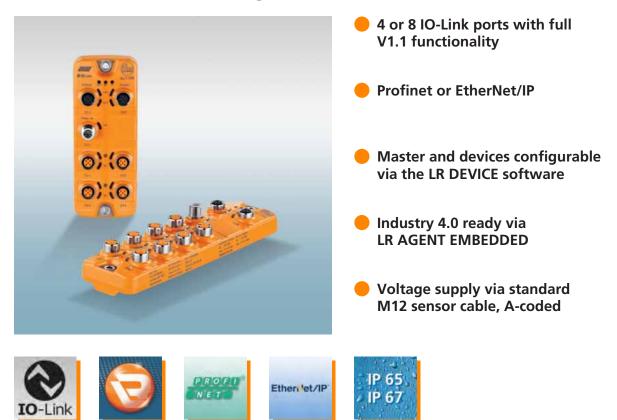
SmartPL(Description	Order no.
Ĩ	AS-i Profinet gateway with safe preprocessing · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · Profinet RT device class B · LCD colour display · Integrated safety and non safety PLC · Configuration and setup by CODESYS V3 configuration software · aluminium powder-coated / steel sheet galvanised / Makrolon · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	AC402S
Ĩ	AS-i Profibus gateway · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · Profibus DP (DPV0 + DPV1) · LCD colour display · Configuration and setup by CODESYS V3 configuration software · aluminium powder-coated / steel sheet galvanised / Makrolon · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	AC4125
	AS-i EtherNet/IP gateway with safe preprocessing · Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · LCD colour display · Integrated safety and non safety PLC · Configuration and setup by CODESYS V3 configuration software · aluminium powder-coated / steel sheet galvanised / Makrolon · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	AC4225
Ĩ	Ethernet configuration interface with dynamic web interface for configuration and diagnosis including remote maintenance · LCD colour display · Configuration and setup by CODESYS V3 configuration software · aluminium powder-coated / steel sheet galvanised / Makrolon · Complies with the requirements: ISO 13849-1: category 4 · ISO 13849-1: PL e · IEC 61508: SIL 3	AC4325
Accessor	ies	
Туре	Description	Order no.

AS-i data decoupling module \cdot Combicon connection \cdot Housing materials: Makrolon

AC1250



IO-Link master: Connection for intelligent sensors



Robust field bus modules with safe connection

The decentralised IO-Link master modules are used as gateways between intelligent IO-Link sensors and the fieldbus. They are the perfect choice, even in the most difficult environments: The materials and production methods are identical to the ifm jumper cables of the tried-and-tested EVC product series. The ecolink technology guarantees reliable, permanently ingress-resistant M12 connections of the connection cables.

Energy limitation for UL class 2 units

Many sensors require an energy-limited supply with UL class 2 approval. The limitation of energy is usually achieved via a corresponding power supply. With the AL series IO-Link master, sensors can be supplied according to UL class 2 without using an energy-limited power supply approved to UL class 2.



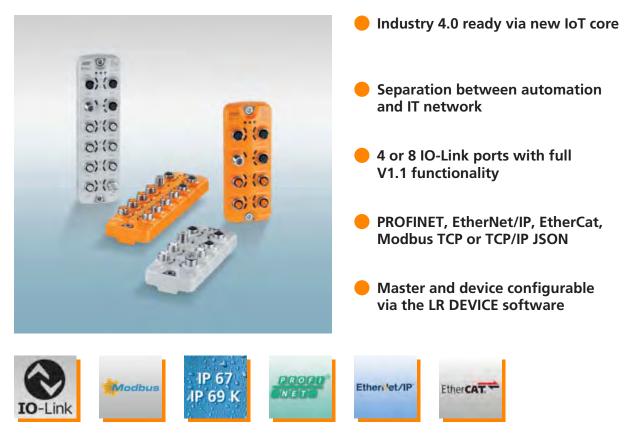
IO-Link co	omponents		
Туре	Inputs / outputs	Description	Order no.
	max. 4 IO-Link ports / max. 8 digital inputs / max. 4 digital outputs	IO-Link master with Profinet interface · I/O modules for field applications · M12 connector · housing: polyamide / socket: Brass nickel-plated	AL1100
	max. 4 IO-Link ports / max. 8 digital inputs / max. 4 digital outputs	IO-Link master with EtherNet/IP interface · I/O modules for field applications · M12 connector · housing: polyamide / socket: Brass nickel-plated	AL1120
	max. 8 IO-Link ports / max. 16 digital inputs / max. 8 digital outputs	IO-Link master with Profinet interface · I/O modules for field applications · M12 connector · housing: polyamide / socket: Brass nickel-plated	AL1102
	max. 8 IO-Link ports / max. 16 digital inputs / max. 8 digital outputs	IO-Link master with EtherNet/IP interface · I/O modules for field applications · M12 connector · housing: polyamide / socket: Brass nickel-plated	AL1122
	4 x 2 inputs	Active CompactLine module (IO-Link device) · 4 way · Supply via IO-Link M12 connector · Digital inputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / O-Ring : Viton	AL2400
	8 x 2 inputs	Active CompactLine module (IO-Link device) · 8 way · Supply via IO-Link M12 connector · Digital inputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / O-Ring : Viton	AL2401
at to as for at the	6 x 2 outputs	Active CompactLine module (IO-Link device) · I/O modules for field applications · Sockets M12 x 1 · housing: polyamide orange / socket: Brass nickel-plated	AL2330

Accessories and software

Туре	Description	Order no.
	LR DEVICE (USB stick) · Parameter setting of the units via the network · Software for clear online and offline parameter setting of IO-Link sensors via USB adapter · Use via USB connection cable (drivers are supplied): E30396 IO-Link interface or E30390 IO-Link master (note the respective data sheet) · IODD import and update from ifm's homepage · Reading of IODDs via storage media · Automatic sensor identification · Graphic representation of the process values and history incl. export function · Documentation and archiving · Transferable parameter sets · Full memory plug support for IO-Link 1.1	QA0011
ę	Y splitter · M12 plug - 2 M12 sockets · Free from silicone · Free from halogen · Gold-plated contacts · Housing materials: housing: PA orange / sealing: FKM	EBC113
,* • <u>*</u>	Protective cap · M12 · for M12 sockets of ClassicLine modules, CompactLine modules and AirBoxes · Housing materials: PA black	E73004



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



IO-Link master for the automation and IT world

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

Robust field bus modules for demanding applications

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



O-Link co	omponents		
Туре	Inputs / outputs	Description	Order no.
	max. 4 IO-Link ports / max. 8 digital inputs / max. 4 digital outputs	IO-Link master with Profinet interface · I/O modules for field applications · M12 connector · housing: polyamide / socket: Brass nickel-plated	AL1300
	max. 4 IO-Link ports / max. 8 digital inputs / max. 4 digital outputs	IO-Link master with EtherNet/IP interface · I/O modules for field applications · M12 connector · housing: polyamide / socket: Brass nickel-plated	AL1320
	max. 4 IO-Link ports / max. 8 digital inputs / max. 4 digital outputs	IO-Link master with EtherCat interface · I/O modules for field applications · M12 connector · housing: polyamide / socket: Brass nickel-plated	AL1330
	max. 4 IO-Link ports / max. 8 digital inputs / max. 4 digital outputs	IO-Link master with Modbus TCP interface · I/O modules for field applications · M12 connector · housing: polyamide / socket: Brass nickel-plated	AL1340
-	max. 8 IO-Link ports / max. 16 digital inputs / max. 8 digital outputs	IO-Link master with Profinet interface \cdot I/O modules for field applications \cdot M12 connector \cdot housing: polyamide grey / socket: Brass nickel-plated	AL1302
	max. 8 IO-Link ports / max. 16 digital inputs / max. 8 digital outputs	IO-Link master with EtherNet/IP interface · I/O modules for field applications · M12 connector · housing: polyamide grey / socket: Brass nickel-plated	AL1322
	max. 8 IO-Link ports / max. 16 digital inputs / max. 8 digital outputs	IO-Link master with EtherCat interface · I/O modules for field applications · M12 connector · housing: polyamide grey / socket: Brass nickel-plated	AL1332
	max. 8 IO-Link ports / max. 16 digital inputs / max. 8 digital outputs	IO-Link master with Modbus TCP interface · I/O modules for field applications · M12 connector · housing: polyamide grey / socket: Brass nickel-plated	AL1342
Connecto	ors		

Туре	Description	Order no.
Jumper M12	plug / RJ45 plug, 4/8-pole, 4-wire	

/

STORE OF	Jumper \cdot straight / straight \cdot Ethernet \cdot Cross-over patch cable \cdot 0.5 m \cdot Housing materials: TPU / PA	E12490
Work	Jumper \cdot straight / straight \cdot Ethernet \cdot Cross-over patch cable \cdot 2 m \cdot Housing materials: TPU / PA	E12090
Sel of	Jumper \cdot straight / straight \cdot Ethernet \cdot Cross-over patch cable \cdot 5 m \cdot Housing materials: TPU / PA	E12491
CHINA STR	Jumper \cdot straight / straight \cdot Ethernet \cdot Cross-over patch cable \cdot 10 m \cdot Housing materials: TPU / PA	E12492



IO-Link master with extra power



Robust field bus modules with safe connection

The decentralised IO-Link masters are used as gateways between intelligent IO-Link sensors and the fieldbus. They are the perfect choice, even in the most difficult environments: The materials and production methods are identical to the ifm jumper cables of the tried-and-tested EVC product series. The ecolink technology guarantees reliable, permanently ingress-resistant M12 connections of the connection cables.

Extra power

The IO-Link masters are equipped with two T-coded M12 connections for voltage supply. With this power cabling, the current path can simply be daisy-chained. The B ports of the 8-port IO-Link master allow direct connection of IO-Link actuators, such as valve islands.



IO-Link co	omponents		
Туре	Inputs / outputs	Description	Order no.
	max. 4 IO-Link ports / max. 8 digital inputs / max. 4 digital outputs	IO-Link master with Profinet interface · I/O modules for field applications · M12 connector · housing: polyamide / socket: Brass nickel-plated	AL1200
	max. 8 IO-Link ports / max. 12 digital inputs / max. 8 digital outputs	IO-Link master with Profinet interface · I/O modules for field applications · M12 connector · housing: polyamide / socket: Brass nickel-plated	AL1202
	max. 4 IO-Link ports / max. 8 digital inputs / max. 4 digital outputs	IO-Link master with EtherNet/IP interface · I/O modules for field applications · M12 connector · housing: polyamide / socket: Brass nickel-plated	AL1220
	max. 8 IO-Link ports / max. 12 digital inputs / max. 8 digital outputs	IO-Link master with EtherNet/IP interface · I/O modules for field applications · M12 connector · housing: polyamide / socket: Brass nickel-plated	AL1222
	4 x 2 inputs	Active CompactLine module (IO-Link device) · 4 way · Supply via IO-Link M12 connector · Digital inputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / O-Ring : Viton	AL2400
	8 x 2 inputs	Active CompactLine module (IO-Link device) · 8 way · Supply via IO-Link M12 connector · Digital inputs · Sockets M12 x 1 · PA / socket: Brass nickel-plated / O-Ring : Viton	AL2401
at to as for at the	6 x 2 outputs	Active CompactLine module (IO-Link device) · I/O modules for field applications · Sockets M12 x 1 · housing: polyamide orange / socket: Brass nickel-plated	AL2330

Connectors

Туре	Description	Order no.
Socket M12,	4-pole, 4-wire	

1 Martin	Socket \cdot straight \cdot Power cable \cdot T-coded \cdot Gold-plated contacts \cdot M12 connector \cdot 0.5 m \cdot Housing materials: PP	E12494
1	Socket \cdot straight \cdot Power cable \cdot T-coded \cdot Gold-plated contacts \cdot M12 connector \cdot 2 m \cdot Housing materials: PP	E12430
· Tarrent	Socket \cdot straight \cdot Power cable \cdot T-coded \cdot Gold-plated contacts \cdot M12 connector \cdot 5 m \cdot Housing materials: PP	E12495
1 Martin	Socket \cdot straight \cdot Power cable \cdot T-coded \cdot Gold-plated contacts \cdot M12 connector \cdot 10 m \cdot Housing materials: PP	E12496



M8 input module converts digital signals to IO-Link signals



- To expand IO-Link master modules by digital inputs
- Compact due to M8 sockets
- Robust plastic housing in a small design for limited space
- Short-circuit and overload detection



Digital inputs for IO-Link

The new IO-Link input modules provide an easy and cost-effective way to expand the IO-Link master modules for field use by digital inputs. The compact M8 version is used when digital signals have to be collected in a very small space.

Up to eight overload and short-circuit protected M8 ports are available. They collect 8 digital sensor signals in a decentralised manner and convert them to IO-Link communication. The connection to the master is established via an M12 connection cable. Fault analysis is available via IO-Link.

Robust

The robust plastic housing resists the harsh requirements in the field.

IO-Link components

Туре	Inputs / outputs	Description	Order no.
8	4 inputs	Active CompactLine module (IO-Link device) · Supply via IO-Link M12 connector · Sockets M8 x 1 · PBT / socket: Brass nickel-plated / O-Ring : Viton	AL2410
	8 inputs	Active CompactLine module (IO-Link device) · Supply via IO-Link M12 connector · Sockets M8 x 1 · PBT / socket: Brass nickel-plated / O-Ring : Viton	AL2411
onnectors			
Туре		Description	Order no.
lumper M12 plug / M12 socket, 4/5-pole, 4-wire			

J.

1-h 'Y Housing materials: housing: TPU orange / sealing: FKM

Jumper \cdot straight / straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM

Accessories and software

Туре	Description	Order no.
	IO-Link master with Profinet interface · I/O modules for field applications · M12 connector · Housing materials: housing: polyamide / socket: Brass nickel-plated	AL1100
0=10	USB IO-Link master · for parameter setting and analysis of units · Supported communication protocols: IO-Link (4.8, 38.4 and 230 Kbits/s) · for operation with FDT framework software "ifm Container" or software "LR SENSOR"	E30390
F-1	LR DEVICE (USB stick) · Parameter setting of the units via the network · Software for clear online and offline parameter setting of IO-Link sensors via USB adapter · Use via USB connection cable (drivers are supplied): E30396 IO-Link interface or E30390 IO-Link	

IO-Link sensors via USB adapter · Use via USB connection cable (drivers are supplied): E30396 IO-Link interface or E30390 IO-Link master (note the respective data sheet) · IODD import and update from ifm's homepage · Reading of IODDs via storage media · Automatic sensor identification · Graphic representation of the process values and history incl. export function · Documentation and archiving · Transferable parameter sets · Full memory plug support for IO-Link 1.1 rface or E30390 IO-Link EVC719

QA0011



IO-Link master for the control cabinet



IO-Link master for the automation and IT world

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

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

IO-Link masters Туре Inputs / Description Order outputs no. max. 8 IO-Link ports / IO-Link master with Profinet interface \cdot I/O modules for use in the control cabinet \cdot max. 16 digital inputs / AL1900 Screw terminal \cdot housing: polyamide max. 8 digital outputs max. 8 IO-Link ports / max. 16 digital inputs / IO-Link master with EtherNet/IP interface \cdot I/O modules for use in the control cabinet \cdot AL1920 Screw terminal · housing: polyamide max. 8 digital outputs max. 8 IO-Link ports / max. 16 digital inputs / IO-Link master with EtherCat interface \cdot I/O modules for use in the control cabinet \cdot AL1930 Screw terminal · housing: polyamide max. 8 digital outputs max. 8 IO-Link ports / IO-Link master with Modbus TCP interface · I/O modules for use in the control cabinet · AL1940 max. 16 digital inputs / Screw terminal · housing: polyamide max. 8 digital outputs

Software

Туре	Description	Order no.
	LR DEVICE (USB stick) · Parameter setting of the units via the network · Software for clear online and offline parameter setting of IO-Link sensors via USB adapter · Use via USB connection cable (drivers are supplied): E30396 IO-Link interface or E30390 IO-Link master (note the respective data sheet) · IODD import and update from ifm's homepage · Reading of IODDs via storage media · Automatic sensor identification · Graphic representation of the process values and history incl. export function · Documentation and archiving · Transferable parameter sets · Full memory plug support for IO-Link 1.1	QA0011

Accessories

Туре	Description	Order no.
ei le mic mic	Active CompactLine module (IO-Link device) \cdot I/O modules for field applications \cdot Sockets M12 x 1 \cdot Housing materials: housing: polyamide orange / socket: Brass nickel-plated	AL2330
See of	Jumper \cdot straight / straight \cdot Ethernet \cdot Cross-over patch cable \cdot 0.5 m \cdot Housing materials: TPU / PA	E12490
	Adapter - appled - Connector	E21140



 $\mathsf{Adapter} \cdot \mathsf{angled} \cdot \mathsf{Connector}$

E21140



LR DEVICE Parameter setting software via IO-Link master



- Easy and fast IO-Link master parameter setting
- Clear representation
- Easy and fast device parameter setting (point-to-multipoint connection)
- Transferable parameter sets



Features

- Online and offline parameter setting
- Supports all IO-Link devices
- Software and parameter description in all supported languages
- Detailed description texts of all parameter contents
- Parameter sets grouped according to topics
- Parameter setting of IO-Link master (AL11XX-series)
- Supports the latest ifm IO-Link devices
- Supports IO-Link actuators
- Parameter setting of devices via network

Customer benefits

- Optimised by means of graphic visualisation of the process values
- Shortened set-up time
- Optimised device replacement process
- Paperless recording of parameter sets



Software		
Туре	Description	Order no.
F	LR DEVICE (USB stick) · Parameter setting of the units via the network · Software for clear online and offline parameter setting of IO-Link sensors via USB adapter · Use via USB connection cable (drivers are supplied): E30396 IO-Link interface or E30390 IO-Link master (note the respective data sheet) · IODD import and update from ifm's homepage · Reading of IODDs via storage media · Automatic sensor identification · Graphic representation of the process values and history incl. export function · Documentation and archiving · Transferable parameter sets · Full memory plug support for IO-Link 1.1	QA0011
	LR DEVICE (download) · Parameter setting of the units via the network · Software for clear online and offline parameter setting of IO-Link sensors via USB adapter · Use via USB connection cable (drivers are supplied): E30396 IO-Link interface or E30390 IO-Link master (note the respective data sheet) · IODD import and update from ifm's homepage · Reading of IODDs via storage media · Automatic sensor identification · Graphic representation of the process values and history incl. export function · Documentation and archiving · Transferable parameter sets · Full memory plug support for IO-Link 1.1	QA0012



RFID with AS-i



- Industrially compatible identification system in 125 kHz technology
- Coding of workpiece carriers in routing conveyors
- Quick and easy set-up: plug & play
- Read / write head requiring little space due to slim design
- Compact and at a low cost: antenna and evaluation in one housing



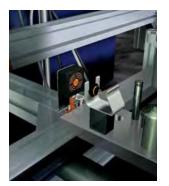
RFID and AS-Interface for identification

The ID tags (code carriers) are mounted on the objects to be identified such as tanks, goods or workpiece carriers. When they come into the detection range of the read / write heads, the information is read at up to 0.5 m/s. The read / write heads are used in the AS-i network as analogue slaves according to the profile 7.4 or 7.3 with an M4 master controlling up to 31 RFID systems.

The transmission of energy between the ID tag and the read / write head is based on the physical principle of inductive coupling with a frequency of 125 kHz.

The compact RFID systems include, in addition to the antenna, the complete evaluation and the interface to AS-i. The devices can be operated directly at the AS-Interface, enabling the data transmission to the controller, e.g. check a defined number of characters within a code.







Туре	Dimensions	Travel speed read / write	Process interface	Orde no.
	[mm]	[m/s]		
12 connec	tor			
	55 x 24 x 41	read: \leq 0.5 (distance to the ID tag 15 mm) write: only static	AS-i	DTA10
	55 x 24 x 41	read: \leq 0.5 (distance to the ID tag 15 mm)	AS-i	DTA10
	40 x 40 x 54	read: \leq 0.5 (distance to the ID tag 30 mm) write: only static	AS-i	DTA20
	40 x 40 x 54	read: \leq 0.5 (distance to the ID tag 30 mm)	AS-i	DTA2
	92 x 80 x 40	read: \leq 0.5 (distance to the ID tag 40 mm) write: only static	AS-i	DTA3
	92 x 80 x 40	read: \leq 0.5 (distance to the ID tag 40 mm)	AS-i	DTA3
				110.
Туре		Description		Orde no.
	ID tag · ID-TAG/M5x16	6.5/01 \cdot M5 x 16.5 mm \cdot Screw mounting \cdot Housing materials: PA black (RA	L 9005)	E803
	ID tag · ID-TAG/TRIAN	GLE HOUSING/01 \cdot with ID tag E80301 \cdot Housing materials: PBT orange (RA	L 2003) / PA black (RAL 9005)	E803
0	ID tag · ID-TAG/D30x2	2.15/01 \cdot Ø 30 x 2.15 mm \cdot Housing materials: polycarbonate black		E803
0	ID tag · ID-TAG/D50x2	2.2/01 \cdot Ø 50 x 2.2 mm \cdot Housing materials: polycarbonate black		E803
	ID tag · ID-TAG/D26x4	I/01 \cdot Ø 26 x 4 mm \cdot Housing materials: PA High Temperature		E803
onnecto	ors			

97 - OF	Jumper \cdot straight / straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 1 m \cdot Housing materials: housing: TPU orange / sealing: FKM
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6

EVC012

EVC013



RFID for production and conveying



- RFID evaluation unit with PROFIBUS, PROFINET, Ethernet or TCP/IP
- 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".

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.





Туре	Description	Order no.
2 conne	ctor	
00,0	RFID evaluation unit · for up to 4 read/write heads type ANT41x/ANT51x · Housing materials: Upper part: PA Grivory GV-5H orange / Upper part: TPE / lower part: GD-AlSi12	DTE10
	RFID evaluation unit · for up to 4 read/write heads type ANT41x/ANT51x · Housing materials: Upper part: PA Grivory GV-5H orange / Upper part: TPE / lower part: GD-AlSi12	DTE10
	RFID evaluation unit · for up to 4 read/write heads type ANT41x/ANT51x · Housing materials: Upper part: PA Grivory GV-5H orange / Upper part: TPE / lower part: GD-AlSi12	DTE10
	RFID evaluation unit \cdot for up to 4 read/write heads type ANT41x/ANT51x \cdot Housing materials: Upper part: PA Grivory GV-5H orange / Upper part: TPE / lower part: GD-AlSi12	DTE10
ID an	tennas 125 kHz / 13.56 MHz	
ID ant	tennas 125 kHz / 13.56 MHz Description	Orde no.
		Order no. ANT51
	Description Read/write head · M12 connector · 5 positions of the sensing face selectable ·	no.
	Description Read/write head · M12 connector · 5 positions of the sensing face selectable · Housing materials: housing: PA / Metal parts: stainless steel Read/write head · M12 connector · 5 positions of the sensing face selectable ·	no. ANT51
	Description Read/write head · M12 connector · 5 positions of the sensing face selectable · Housing materials: housing: PA / Metal parts: stainless steel Read/write head · M12 connector · 5 positions of the sensing face selectable · Housing materials: housing: PA / Metal parts: stainless steel	no. ANT51 ANT51
	Description Read/write head · M12 connector · 5 positions of the sensing face selectable · Housing materials: housing: PA / Metal parts: stainless steel Read/write head · M12 connector · 5 positions of the sensing face selectable · Housing materials: housing: PA / Metal parts: stainless steel Read/write head · M12 connector · 5 positions of the sensing face selectable · Housing materials: housing: PA / Metal parts: stainless steel Read/write head · M12 connector · 5 positions of the sensing face selectable · Housing materials: housing: PA / Metal parts: stainless steel Read/write head · M12 connector · Housing materials: housing: stainless steel / Top: PPS	ANT51 ANT51 ANT41

Jumpers for hygienic and wet areas

Туре	Description	Order no.
Jumper M12	plug / M12 socket, 5-pole, 5-wire	



Jumper \cdot straight / straight \cdot Free from silicone \cdot Gold-plated contacts \cdot 5 m \cdot Housing materials: housing: PVC orange / sealing: EPDM

EVT062



RFID antennas with IO-Link



- Nine unit versions for different applications
- Flexible parameter setting, diagnostics and data handling thanks to IO-Link
- Perfect for identification tasks with small data volumes
- Easy visualisation of the antenna parameters with LR DEVICE or IO-Link master via the IODD



Applications

Thanks to the easy integration via IO-Link the new RFID antennas are suitable for a wide range of applications.

They are perfect for use for the identification of workpiece carriers in conveyor technology, as only a small amount of data needs to be transmitted.

In machine tools, magazines and moulded parts can be detected via RFID and IO-Link. This reduces cycle times and increases the production quantity.

In automotive production, body components or engines are compared to order numbers via RFID in order to control processing steps or check the final assembly.



RFID 13.56 MHz

RFID 13.56	MHz antenna	
Туре	Description	Order no.
	Read/write head \cdot M12 connector \cdot Housing materials: housing: stainless steel / Top: PPS	DTI410
	Read/write head \cdot M12 connector \cdot Housing materials: housing: stainless steel / Top: PPS	DTI411
	Read/write head · M18 x 1 · M12 connector · Housing materials: housing: stainless steel / Top: PPS / connector housing: PEI	DTI420
-	Read/write head · M18 x 1 · M12 connector · Housing materials: housing: stainless steel / Top: PPS / connector housing: PEI	DTI421
	Read/write head \cdot M12 connector \cdot Housing materials: housing: stainless steel / Top: PPS	DTI430
-	Read/write head \cdot M12 connector \cdot Housing materials: housing: stainless steel / Top: PPS	DTI431
-	Read/write head · M12 connector · 5 positions of the sensing face selectable · Housing materials: housing: PA / Metal parts: stainless steel	DTI513
	Read/write head \cdot M12 connector \cdot Cable with connector \cdot 1 m \cdot Housing materials: PBT / TPE-U / stainless steel	DTI515
	Read/write head \cdot M12 connector \cdot Cable with connector \cdot 2 m \cdot Housing materials: PBT / TPE-U / stainless steel	DTI516

Accessories

Туре	Description	Order no.
	Antenna adapter to increase the ranges · Housing materials: PVC	E80390
	Antenna adapter to increase the ranges · Housing materials: PVC	E80391
	Antenna adapter for a wider sensing field · Housing materials: POM	E80392



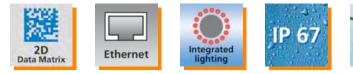
Multicode readers for identification of codes



- Reading of DataMatrix codes according to ECC200 and other 1D / 2D codes
- Very small housing for flexible use
- Simple, menu-guided parameter setting
- Integrated lighting

Laptop

Adjustable code comparator in the sensor



DataMatrix code readers

Throughout industry one code is becoming more and more popular: the DataMatrix code to ECC200. The DataMatrix code is a two-dimensional code containing much more information with the same structure size than comparable codes like bar code or stacked codes. Several thousand characters can be stored in one code. Other advantages are the high reading speed and very high reading security even if the code is soiled or damaged. In addition to the DataMatrix code the ifm sensor reads many other 1D or 2D codes.

Orientation-independent reading

Independent of the orientation and the number of codes, the high-performance algorithms automatically decode 1D or 2D codes.

Code comparator system in the sensor

Complex application programming is no longer necessary due to adjustable, selective code identification and comparison in the sensor.







Multicode reader							
Туре	Dimensions	Max. field of view size	Type of light	Motion speed	Process interface	Order no.	
	[mm]	[mm]	LED	[m/s]			
Multicode Reader · M12 plug, 8 poles · M12 socket, 4 poles							
	60 x 42 x 53.5	64 x 48	red light	≤ 7	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I300	
	60 x 42 x 53.5	64 x 48	infrared	≤ 7	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I301	
	60 x 42 x 53.5	132 x 94	red light	≤ 7	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I302	
	60 x 42 x 53.5	132 x 94	infrared	≤ 7	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I303	
	60 x 42 x 59	400 x 300	red light	≤ 7	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I304	
	60 x 42 x 59	400 x 300	infrared	≤ 7	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I305	
Accessori	es						
Туре			Description			Order no.	
1. 13		2M, O2I, O2V · Clamp n ıre: stainless steel / clam	nounting · rod mounting Ø p: stainless steel	ð 12 mm ·		E2D110	
Ŷ		2M, O2I, O2V · Clamp n ıre: stainless steel / clam	nounting · rod mounting Ø p: stainless steel	∛ 14 mm ·		E2D112	
	Glass protective pane \cdot	O2D / O2I · Housing ma	terials: housing: diecast zir	nc black / lens: float glass		E21168	
Connecto	rs						
Туре			Description			Order no.	
Socket M12,	8/7-pole, 8-wire						
	Socket · straight · Free from halogen · M12 connector · 2 m · Housing materials: PUR					E11950	
1 Tomas	Socket · straight · Free	from halogen · M12 cor	nector · 5 m · Housing ma	terials: PUR		E11807	
	Socket · straight · Free	from halogen · M12 cor	nector · 10 m · Housing m	aterials: PUR		E11311	
Jumper M12 plug / RJ45 plug, 4/8-pole, 4-wire							

Jumper · straight / straight · Ethernet · Cross-over patch cable · 2 m · Housing materials: PUR / PC



371

E11898



Vibration sensors for VSE diagnostic unit



Avoid machine damage

grade stainless steel

Vibration sensors monitor machines and plants and are designed for fixed mounting on a machine. The sensor measures the rms vibration velocity on a non-rotating component surface and is used for measured data acquisition, especially for the octavis diagnostic unit, type VSE.

Vibration sensor VSA001

The accelerometer VSA001 ensures the correct transmission of high-frequency vibration signals even over distances of up to 30 m. The compact and extremely robust design provides good long-term stability and independence of temperature even under adverse environmental conditions.

Vibration sensor VSA002

The special mechanical design as well as the integrated pigtail enable an almost flush integration in the machine surface. The vibration sensor type VSA002 permits vibration monitoring where the installation of a sensor has not been previously possible due to lack of space.

Vibration sensor VSA004

Thanks to the flat design of about 12 mm and the lateral entry of the shielded cable the unit can be installed in locations which are difficult to access.





Long-term stability, independence of temperature and noise immunity thanks to state-of-the-art silicon sensors.

Туре	Description	Orde no.
-	Accelerometer · for connection to external diagnostic electronics type VSE · M8 x 1.25 · Connector · Housing materials: housing: stainless steel 316L / 1.4404	VSA0
	Accelerometer · for connection to external diagnostic electronics type VSE · M16 x 1.5 · Cable with connector · 0.8 m · Housing materials: housing: stainless steel 316L / 1.4404	VSA0
	Accelerometer \cdot for connection to external diagnostic electronics type VSE \cdot Mounting screw \cdot Cable \cdot 3 m \cdot Housing materials: housing: stainless steel 316L / 1.4404	VSA0
-(0)	Accelerometer \cdot for connection to external diagnostic electronics type VSE \cdot Mounting screw \cdot Cable \cdot 10 m \cdot Housing materials: housing: stainless steel 316L / 1.4404	VSA0
-=	Accelerometer \cdot for connection to external diagnostic electronics type VSE \cdot M16 x 1.5 \cdot Cable \cdot 6 m \cdot Housing materials: housing: stainless steel 316L / 1.4404	VSA0

Diagnostic electronics – control cabinet modules for vibration diagnosis type VSE

Туре	Description	Order no.
	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 · Combicon connection · Housing materials: PA	VSE002
	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 - Combicon connection - Housing materials: PA	VSE100
	Diagnostic electronics for vibration sensors · Parameter setting via PC software VES004 · TCP/IP Ethernet interface · Profinet IO data interface · Mounting on DIN rail · Housing materials: PA	VSE150
	Diagnostic electronics for vibration sensors · Parameter setting via PC software VES004 · TCP/IP Ethernet interface · EtherNet/IP data interface · Mounting on DIN rail · Housing materials: PA	VSE151
	Diagnostic electronics for vibration sensors · Parameter setting via PC software VES004 · TCP/IP Ethernet interface · Modbus TCP data interface · Mounting on DIN rail · Housing materials: PA	VSE153



Diagnostic unit for vibration sensors



- Low system costs for an optimised machine uptime
- Frequency-selective machine diagnosis of up to four measuring points
- Ethernet interface for integration into operational data logging systems
- Integrated history memory with real-time clock
- Correlation possible with two operating parameters (e.g. speed and power)



Diagnostic unit VSE002

Using the diagnostic unit it is possible to continuously and simultaneously analyse and evaluate the measured signals of up to four vibration sensors with the octavis technology. Pre-alarm and alarm are electrically signalled via switching outputs. The trend can be electrically signalled via the analogue output. 2000 values can be stored in the diagnostic unit.

Diagnostic unit VSE100

In addition to the standard alarm and analogue outputs VSE100 can signal up to eight other freely configurable I/O states of diagnosis objects. Also, the I/Os can be used as inputs, electronically trigger diagnosis (e.g. in a reference run of a machine tool spindle), collect switching states of other sensors and transmit them to the operational data logging system via the OPC standard. The integrated FIFO history memory can store 33,000 values with time stamp.

Using the Ethernet interface the decentralised diagnostic unit can also be integrated into higher-level systems. Due to the compatibility of the data (OPC) the diagnostic values can be easily integrated into all usual visualisation environments and can be made accessible to remote diagnosis within the framework of teleservice concepts.







Туре	Description	Order no.
	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 · Combicon connection · Housing materials: PA	VSE00
	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 · Combicon connection · Housing materials: PA	VSE10
	Diagnostic electronics for vibration sensors · Parameter setting via PC software VES004 · TCP/IP Ethernet interface · Profinet IO data interface · Mounting on DIN rail · Housing materials: PA	VSE15
ð	Diagnostic electronics for vibration sensors · Parameter setting via PC software VES004 · TCP/IP Ethernet interface · EtherNet/IP data interface · Mounting on DIN rail · Housing materials: PA	VSE15
	Diagnostic electronics for vibration sensors · Parameter setting via PC software VES004 · TCP/IP Ethernet interface · Modbus TCP data interface · Mounting on DIN rail · Housing materials: PA	VSE15

Vibration sensors for external diagnostic electronics type VSE

Туре	Description	Order no.
A.	Accelerometer \cdot for connection to external diagnostic electronics type VSE \cdot M8 x 1.25 \cdot Connector \cdot Housing materials: housing: stainless steel 316L / 1.4404	VSA001
	Accelerometer \cdot for connection to external diagnostic electronics type VSE \cdot M16 x 1.5 \cdot Cable with connector \cdot 0.8 m \cdot Housing materials: housing: stainless steel 316L / 1.4404	VSA002
	Accelerometer \cdot for connection to external diagnostic electronics type VSE \cdot Mounting screw \cdot Cable \cdot 3 m \cdot Housing materials: housing: stainless steel 316L / 1.4404	VSA004
	Accelerometer \cdot for connection to external diagnostic electronics type VSE \cdot Mounting screw \cdot Cable \cdot 10 m \cdot Housing materials: housing: stainless steel 316L / 1.4404	VSA005
	Accelerometer \cdot for connection to external diagnostic electronics type VSE \cdot M16 x 1.5 \cdot Cable \cdot 6 m \cdot Housing materials: housing: stainless steel 316L / 1.4404	VSA006



Vibration sensors and transmitters



- Permanent vibration monitoring to ISO 10816
- Transmitter signal 4...20 mA for direct display at the control desk
- LED display on the unit
- VK sensors combine switching function and transmitter in one unit



Avoid machine damage

Vibration sensors type VT and VK monitor machines and plants to ISO 10816 and are designed for fixed mounting on a machine. The sensor measures the rms vibration velocity (true rms) on a non-rotating component surface. It transfers the characteristic value as current signal (4...20 mA) to the process control system.

Vibration monitor VK

Vibration sensors type VK additionally have a switching output. When an adjustable limit value is exceeded the device sets to alarm via a switching contact.

The easy set-up via two radial setting rings allows quick setting of the switch point and response delay. The protective cap, which can be obtained as an option, ensures protection against tampering.

Set-up

The units are easy to set up without an additional parameter setting software.



Monitoring of the overall vibration of rotating parts (fans, centrifuges, etc.).

Vibration	sensors for vibration monitoring of machines and plants to ISO 10816			
Туре	Description			
	Vibration monitor · Connection via M12 connector · Vibration monitor to DIN ISO 10816 · Measuring range RMS: 025 mm/s · Switching output NC DC PNP and analogue output 420 mA · M8 x 1.25 · 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: 050 mm/s · Switching output NC DC PNP and analogue output 420 mA · M8 x 1.25 · Housing materials: PBT / PC / FPM / stainless steel 316L / 1.4404	VKV022		
	Vibration transmitter · Connection via M12 connector · Vibration transmitter to ISO 10816 · Measuring range RMS: 025 mm/s · Analogue output 420 mA · 2-wire connection technology · set screw · Housing materials: stainless steel 316L / 1.4404	VTV122		
-(====	Vibration transmitter · Connection via M12 connector · Vibration transmitter to ISO 10816 · Measuring range RMS: 025 mm/s · Analogue output 420 mA · 2-wire connection technology · ATEX approval · Group II, category 3D/3G · set screw · Housing materials: stainless steel 316L / 1.4404	VTV12A		
	Vibration transmitter · Connection via M12 connector · Vibration transmitter to ISO 10816 · Measuring range RMS: 050 mm/s · Analogue output 420 mA · 2-wire connection technology · set screw · Housing materials: stainless steel 316L / 1.4404	VTV121		

Δ	ccesso	ries	VK
<u> </u>	CCCSSC		

Туре	Description	Order no.
	Protective cover · with lead seal option · for pressure sensors type PK · for temperature sensors type TK · for vibration sensors type VK · Housing materials: PP transparent	E30094

Connectors

Туре	Description	Order no.
Socket M12,	5/4-pole, 4-wire	
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC001
0	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC002
	Socket \cdot straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M12 connector \cdot 10 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC003



Combined oil moisture and temperature sensor



- **Continuous condition monitoring** of oils
- Two analogue outputs (4...20 mA) for relative moisture and temperature
- Wide input voltage range 9...33 V DC
- **Medium temperature** -20...100 °C
- Process connection G 3/4 for direct installation



Application

Water is generally not wanted in hydraulic liquids and lubricants.

High concentrations of water can seriously affect operation or even cause damage. Measuring principle

The sensor measures the relative moisture in the oil in the range of 0...100 % by means of a capacitive measuring element. At 0 % the oil is absolutely without any water content. At 100 %, however, the medium is completely saturated. No more water is dissolved and is then present as free water.

Besides the relative moisture the sensor also outputs the medium temperature as an analogue signal.



LDH100 - to ensure that oil remains dry!

Oil moisture sensor						
Туре	Process connection	Pressure rating [bar]	Protection	Medium temperature oil [°C]	Ambient temperature [°C]	Order no.
M12 connect	or · Output functio	n 420 mA analogue				
	G ¾	50	IP 67	-40105	-4085	LDH100

Accessories for oil moisture sensor LDH

Туре	Description	Order no.
	Adapter block \cdot D33 / G ¾ \cdot for oil moisture sensor LDH100 \cdot Housing materials: aluminium	E43400
. .		

Connectors

Туре	Description	Order no.
Socket M12,	8/7-pole, 8-wire	

Socket · angled · M12 connector · 2 m · Housing materials: TPU		
Socket M12,	screened, screen connected to the socket, 8/7-pole, 8-wire	
1 Tom	Socket · straight · M12 connector · 2 m · Housing materials: TPU	E80021



Configurable signal lamps



 Perfect visibility
 Modern LED RGB technology – long life, reduced stock-keeping
 Different modes configurable via IO-Link or setting menu
 Also as standard version with digital inputs
 Easy installation



High performance

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

Flexible configuration

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



Signal lamp	5				
Туре	Dimensions [Ø x H]	Communication	Items supplied	Protection rating	Order no.
	70 x 344	Digital inputs / IO-Link	Mounting base	IP 65	DV1500
	70 x 384	Digital inputs / IO-Link	Mounting base / buzzer	IP 54	DV1510
-	70 x 244	Digital inputs / IO-Link	-	IP 65	DV1520
	70 x 284	Digital inputs / IO-Link	buzzer	IP 54	DV1530
	70 x 344	IO-Link	Mounting base	IP 65	DV2500
	70 x 384	IO-Link	Mounting base / buzzer	IP 54	DV2510
	70 x 244	IO-Link	-	IP 65	DV2520
	70 x 284	IO-Link	buzzer	IP 54	DV2530
Accessories					
Туре		Descrip	tion		Order no.

Туре	Description	Order no.
æ	Base · Housing materials: aluminium black	E89060
	Wall bracket · Housing materials: aluminium black	E89061
I	Mounting tube · Length: 100 mm · Housing materials: aluminium black	E89065
	Mounting tube · Length: 300 mm · Housing materials: aluminium black	E89066
	Mounting tube - Length: 800 mm - Housing materials: aluminium black	E89067



ecolink connection technology



- Connection technology meets the M8/M12 standard (EN 61076)
- Optimum sealing even when mounted without tools
- Mechanical end stop protects the O-ring against destruction
- Nut secured against shock and vibration due to saw tooth vibration protection
- LEDs clearly visible even in cases of high light exposure



ecolink connection technology 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 innovative profiled sealing ring seals radially and axially, guaranteeing a high protection rating. 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.

EVW type sockets are designed for welding applications. They have a weld-slag resistant PUR cable, a nut with weld-slag resistant special coating, are suitable for drag chains and torsion resistant.

EVT type sockets are designed for wet areas and can be used at ambient temperatures up to 100 $^{\circ}\text{C}.$





The secure connection even in difficult applications.

	for industrial applications	
Туре	Description	Order no.
Socket M12	, 5/4-pole, 4-wire	
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC001
0.	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC002
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC003
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC004
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC005
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC006
Socket M12	, 5/4-pole, 4-wire, LED, PNP	
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · Housing materials: housing: TPU black transparent / sealing: FKM	EVC644
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: TPU black transparent / sealing: FKM	EVC645
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 10 m · Housing materials: housing: TPU black transparent / sealing: FKM	EVC646
	Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M12 connector \cdot 2 m \cdot Housing materials: housing: TPU black transparent / sealing: FKM	EVC007
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: TPU black transparent / sealing: FKM	EVC008
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 10 m · Housing materials: housing: TPU black transparent / sealing: FKM	EVC009
Socket M12	, 5-pole, 5-wire	
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC070
0.	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC071
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC072



Туре	Description	Order no.
Socket M8,	3-pole, 3-wire	
	Socket \cdot straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M8 connector \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC141
5.	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M8 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC142
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M8 connector · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC143
	Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M8 connector \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC144
~	Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M8 connector \cdot 5 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC145
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M8 connector · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC146
Socket M8,	3-pole, 3-wire, LED, PNP	
	Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M8 connector \cdot 2 m \cdot Housing materials: housing: TPU black transparent / sealing: FKM	EVC147
~	Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M8 connector \cdot 5 m \cdot Housing materials: housing: TPU black transparent / sealing: FKM	EVC148
	Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M8 connector \cdot 10 m \cdot Housing materials: housing: TPU black transparent / sealing: FKM	EVC149
Socket M8,	1-pole, 4-wire	
	Socket \cdot straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M8 connector \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC150
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M8 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC151
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M8 connector · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC152
	Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M8 connector \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC153
~	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M8 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC154
	Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M8 connector \cdot 10 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC155

		no.
umper M12	plug / M12 socket, 3/5-pole, 3-wire	
and the second second	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 0.3 m · Housing materials: housing: TPU orange / sealing: FKM	EVC040
07 OF	Jumper \cdot straight / straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 0.6 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC041
and the second	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVC042
and the second s	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC043
C. Star	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 3 m · Housing materials: housing: TPU orange / sealing: FKM	EVC102
and the second second	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC044
17 OF	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC493
umper M12	plug / M12 socket, 3/5-pole, 3-wire, LED, PNP	
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 0.3 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC050
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 0.6 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC051
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 1 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC052
*	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 2 m \cdot Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC053
	Jumper - straight / angled - Free from silicone - Free from halogen - Gold-plated contacts - 3 m - Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC104
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 5 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC054
umper M12	plug / M12 socket, 4/5-pole, 4-wire	



Туре	Description	Order no.
Jumper M12	plug / M12 socket, 4/5-pole, 4-wire	
	Jumper · angled / straight · Free from silicone · Free from halogen · Gold-plated contacts · 0.6 m · Housing materials: housing: TPU orange / sealing: FKM	EVC026
	Jumper · angled / straight · Free from silicone · Free from halogen · Gold-plated contacts · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVC027
	Jumper · angled / straight · Free from silicone · Free from halogen · Gold-plated contacts · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC028
	Jumper · angled / straight · Free from silicone · Free from halogen · Gold-plated contacts · 3 m · Housing materials: housing: TPU orange / sealing: FKM	EVC140
	Jumper · angled / straight · Free from silicone · Free from halogen · Gold-plated contacts · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC029
	Jumper · angled / straight · Free from silicone · Free from halogen · Gold-plated contacts · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC342
	Jumper \cdot angled / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 0.3 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC030
	Jumper · angled / angled · Free from silicone · Free from halogen · Gold-plated contacts · 0.6 m · Housing materials: housing: TPU orange / sealing: FKM	EVC031
	Jumper · angled / angled · Free from silicone · Free from halogen · Gold-plated contacts · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVC032
E CAR	Jumper \cdot angled / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC033
	Jumper · angled / angled · Free from silicone · Free from halogen · Gold-plated contacts · 3 m · Housing materials: housing: TPU orange / sealing: FKM	EVC617
	Jumper · angled / angled · Free from silicone · Free from halogen · Gold-plated contacts · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC034
	Jumper · angled / angled · Free from silicone · Free from halogen · Gold-plated contacts · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC404
57 OF	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 0.3 m · Housing materials: housing: TPU orange / sealing: FKM	EVC010
ST OF	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 0.6 m · Housing materials: housing: TPU orange / sealing: FKM	EVC011
57 6T	Jumper - straight / straight - Free from silicone - Free from halogen - Gold-plated contacts - 1 m - Housing materials: housing: TPU orange / sealing: FKM	EVC012
57 OF	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC013

Sockets

Туре	Description	Order no.
Jumper M12	plug / M12 socket, 4/5-pole, 4-wire	
5.00 m	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 3 m · Housing materials: housing: TPU orange / sealing: FKM	EVC100
978 (SP	Jumper - straight / straight - Free from silicone - Free from halogen - Gold-plated contacts - 5 m - Housing materials: housing: TPU orange / sealing: FKM	EVC014
S.M. STA	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC108
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 0.3 m · Housing materials: housing: TPU orange / sealing: FKM	EVC015
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 0.6 m · Housing materials: housing: TPU orange / sealing: FKM	EVC016
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVC017
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC018
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 3 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC101
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 5 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC019
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC109
Jumper ca	ıbles	
Туре	Description	Order no.
Jumper M12	plug / M12 socket, 4/5-pole, 4-wire, LED, PNP	
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 0.3 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC020
all and	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 0.6 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC021
	Jumper - straight / angled - Free from silicone - Free from halogen - Gold-plated contacts - 1 m - Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC022
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 2 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC023



Туре	Description	Order no.
Jumper M12	plug / M12 socket, 4/5-pole, 4-wire, LED, PNP	
_	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 3 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC096
Selection of the select	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 5 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC024
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 10 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC135
	Jumper · angled / angled · Free from silicone · Free from halogen · Gold-plated contacts · 0.3 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC035
	Jumper · angled / angled · Free from silicone · Free from halogen · Gold-plated contacts · 0.6 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC036
and the second s	Jumper - angled / angled - Free from silicone - Free from halogen - Gold-plated contacts - 1 m - Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC037
-	Jumper · angled / angled · Free from silicone · Free from halogen · Gold-plated contacts · 2 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC038
	Jumper · angled / angled · Free from silicone · Free from halogen · Gold-plated contacts · 5 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVC039
Jumper M8-	olug / M8-socket, 3-pole, 3-wire	
57.57	Jumper \cdot straight / straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 0.3 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC265
57.57	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 0.6 m · Housing materials: housing: TPU orange / sealing: FKM	EVC266
57.57	Jumper \cdot straight / straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 1 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC267
57.54	Jumper \cdot straight / straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC268
57.59	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 3 m · Housing materials: housing: TPU orange / sealing: FKM	EVC320
57.57	Jumper \cdot straight / straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 5 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC269
5- 5-	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC467
a a	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 0.3 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC275

Sockets

Туре	Description	Order no.
Jumper M8-p	lug / M8-socket, 3-pole, 3-wire	
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 0.6 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC276
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 1 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC277
a contraction	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC278
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 3 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC462
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 5 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC279
Jumper M8-p	lug / M8-socket, 4-pole, 4-wire	
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 0.3 m · Housing materials: housing: TPU orange / sealing: FKM	EVC310
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 0.6 m · Housing materials: housing: TPU orange / sealing: FKM	EVC311
2 gran	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVC312
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC313
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC314
1-	Jumper \cdot angled / straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC455
	Jumper · angled / straight · Free from silicone · Free from halogen · Gold-plated contacts · 2.5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC456
100	Jumper \cdot angled / straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 3 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC457
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 0.3 m · Housing materials: housing: TPU orange / sealing: FKM	EVC300
and the second	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 0.6 m · Housing materials: housing: TPU orange / sealing: FKM	EVC301
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 1 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC302



Туре	Description	Order no.
Jumper M8-J	olug / M8-socket, 4-pole, 4-wire	
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC303
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC304
Jumper M12	plug / M8 socket, 3-pole, 3-wire	
	Jumper \cdot straight / straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 0.3 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC215
	Jumper - straight / straight - Free from silicone - Free from halogen - Gold-plated contacts - 0.6 m - Housing materials: housing: TPU orange / sealing: FKM	EVC216
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVC217
Contraction of the second	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC218
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 3 m · Housing materials: housing: TPU orange / sealing: FKM	EVC630
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC219
	Jumper \cdot straight / straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 10 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC412
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 0.3 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC230
	Jumper - straight / angled - Free from silicone - Free from halogen - Gold-plated contacts - 0.6 m - Housing materials: housing: TPU orange / sealing: FKM	EVC231
No.	Jumper - straight / angled - Free from silicone - Free from halogen - Gold-plated contacts - 1 m - Housing materials: housing: TPU orange / sealing: FKM	EVC232
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC233
	Jumper - straight / angled - Free from silicone - Free from halogen - Gold-plated contacts - 5 m - Housing materials: housing: TPU orange / sealing: FKM	EVC234
Jumper M12	plug / M8 socket, 4-pole, 4-wire	
-	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 0.3 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC235
-	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 0.6 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC236

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

Sockets

Туре	Description	Order no.
Jumper M12	plug / M8 socket, 4-pole, 4-wire	
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 1 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC237
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC238
000 m	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC239
Jumper M12	plug / M12 socket, 3/5-pole, 3-wire	
97 OF	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 0.5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC566
S. Star	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVC042
S. Star	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC043
S. Star	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC044
97 J	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC493
Jumper M8-p	lug / M12-socket, 3/5-pole, 3-wire	
97.0	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 0.3 m · Housing materials: housing: TPU orange / sealing: FKM	EVC255
97.5	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 0.6 m · Housing materials: housing: TPU orange / sealing: FKM	EVC256
97.00	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVC257
97.00	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC258
97.00	Jumper \cdot straight / straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 3 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC415
97.J	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC259
67 <u>.</u> ,	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC466



Туре	Description	Order no.
Jumper M8-	olug / M12-socket, 3/5/4-pole, 3-wire	
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 0.3 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC245
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 0.6 m · Housing materials: housing: TPU orange / sealing: FKM	EVC246
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVC247
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC248
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · 3 m · Housing materials: housing: TPU orange / sealing: FKM	EVC463
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 5 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC249
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot 10 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC410

Cable plugs for industrial applications

Туре	Description	Order no.
Cable plug N	112, 4-pole, 4-wire	
	Cable plug · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 0.3 m · Housing materials: housing: TPU orange	EVC112
-	Cable plug · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 0.5 m · Housing materials: housing: TPU orange	EVC184
-	Cable plug · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · Housing materials: housing: TPU orange	EVC076
-	Cable plug · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 3 m · Housing materials: housing: TPU orange	EVC384
-	Cable plug \cdot straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M12 connector \cdot 5 m \cdot Housing materials: housing: TPU orange	EVC077
-	Cable plug · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 10 m · Housing materials: housing: TPU orange	EVC078

Sockets

Туре	Description	Orde no.
nper M12	plug / valve plug type B (according to DIN EN 175301-803), 3-pole, 3-wire, LED	
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot with protective circuitry \cdot 0.3 m \cdot Housing materials: PUR	E114
S	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot with protective circuitry \cdot 0.6 m \cdot Housing materials: PUR	E114
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot with protective circuitry \cdot 1 m \cdot Housing materials: PUR	E114
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot with protective circuitry \cdot 2 m \cdot Housing materials: PUR	E114
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Free from halogen \cdot with protective circuitry \cdot 5 m \cdot Housing materials: PUR	E114

Туре	Description	Order no.
Socket M12,	8/7-pole, 8-wire	
	Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M12 connector \cdot 1 m \cdot Housing materials: PUR	E12362
a star	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · Housing materials: PUR	E11231
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: PUR	E11232
	Socket \cdot straight \cdot Free from halogen \cdot M12 connector \cdot 2 m \cdot Housing materials: PUR	E11950
1 Tomas	Socket \cdot straight \cdot Free from halogen \cdot M12 connector \cdot 5 m \cdot Housing materials: PUR	E11807
	Socket \cdot straight \cdot Free from halogen \cdot M12 connector \cdot 10 m \cdot Housing materials: PUR	E11311
Socket M23,	12-pole, 12-wire	
	Socket \cdot angled \cdot Free from halogen \cdot M23 connector \cdot 5 m \cdot Housing materials: PUR black	E11739

Socket \cdot angled \cdot Free from halogen \cdot M23 connector \cdot 10 m \cdot Housing materials: PUR black

393

E11740



Туре	Description	Order no.
Socket M23,	12-pole, 12-wire	
	Socket \cdot angled \cdot Free from halogen \cdot M23 connector \cdot 15 m \cdot Housing materials: PUR black	E11741
	Socket \cdot straight \cdot Free from halogen \cdot M23 connector \cdot 5 m \cdot Housing materials: PUR black	E11736
	Socket \cdot straight \cdot Free from halogen \cdot M23 connector \cdot 10 m \cdot Housing materials: PUR black	E11737
	Socket \cdot straight \cdot Free from halogen \cdot M23 connector \cdot 15 m \cdot Housing materials: PUR black	E11738

M12 sockets for industrial applications

Туре	Description	Order no.

Wirable socket M12, 4-pole



Wirable socket · straight · Free from silicone · Free from halogen · wirable · Gold-plated contacts · M12 connector · Housing materials: PA	E11508
Wirable socket · angled · Free from silicone · Free from halogen · wirable · Gold-plated contacts · M12 connector · Housing materials: PA	E11509

Wirable socket M12, 4-pole, LED, PNP

Wirable socket · angled · Free from silicone · Free from halogen · wirable · Gold-plated contacts · M12 connector · E11510 Housing materials: PA

Wirable plug M12, 4-pole



 Wirable plug · straight · Free from silicone · Free from halogen · wirable · Gold-plated contacts · M12 connector ·
 E11504

 Wirable plug · angled · Free from silicone · Free from halogen · wirable · Gold-plated contacts · M12 connector ·
 E11504

Wirable socket M12, 5-pole



Wirable socket · straight · Free from silicone · Free from halogen · wirable · Gold-plated contacts · M12 connector · Housing materials: PA

E11511

E11512

Wirable socket · angled · Free from silicone · Free from halogen · wirable · Gold-plated contacts · M12 connector · Housing materials: PA

Sockets

Туре	Description	Order no.
Wirable plug	M12, 5-pole	
2	Wirable plug · straight · Free from silicone · Free from halogen · wirable · Gold-plated contacts · M12 connector · Housing materials: PA	E11506
	Wirable plug · angled · Free from silicone · Free from halogen · wirable · Gold-plated contacts · M12 connector · Housing materials: PA	E11507
M23 sock	ets for industrial applications	
Туре	Description	Order no.
Wirable M23	socket, 12 poles	
	Wirable socket \cdot angled \cdot wirable \cdot M23 connector \cdot Housing materials: Brass nickel-plated	E10447
FT	Wirable socket \cdot straight \cdot wirable \cdot M23 connector \cdot Housing materials: Brass nickel-plated	E10448
Connectio	on cables for industrial imaging	
Туре	Description	Order no.
Jumper M12	plug / M12 plug, 4-pole, 4-wire	
NT OF	Jumper \cdot straight / straight \cdot Ethernet \cdot Gold-plated contacts \cdot 0.5 m \cdot Housing materials: TPU	E12422
UNUT	Jumper \cdot straight / straight \cdot Ethernet \cdot Gold-plated contacts \cdot 2 m \cdot Housing materials: TPU	E21138
UT OF	Jumper - straight / straight - Ethernet - Gold-plated contacts - 5 m - Housing materials: TPU	E21139
OF OF	Jumper - straight / straight - Ethernet - Gold-plated contacts - 10 m - Housing materials: TPU	E21137
UNUT	Jumper \cdot straight / straight \cdot Ethernet \cdot Gold-plated contacts \cdot 20 m \cdot Housing materials: TPU	E12423
Jumper M12 plug / RJ45 plug, 4/8-pole, 4-wire		
C MARINE	Jumper \cdot straight / straight \cdot Ethernet \cdot Cross-over patch cable \cdot 2 m \cdot Housing materials: PUR / PC	E11898
- Contraction	Jumper \cdot straight / straight \cdot Ethernet \cdot Cross-over patch cable \cdot 0.5 m \cdot Housing materials: TPU / PA	E12490



Туре	Description	Order
		no.
Jumper M12	plug / RJ45 plug, 4/8-pole, 4-wire	
Con and a second	Jumper · straight / straight · Ethernet · Cross-over patch cable · 5 m · Housing materials: TPU / PA	E12491
3 of	Jumper \cdot straight / straight \cdot Ethernet \cdot Cross-over patch cable \cdot 10 m \cdot Housing materials: TPU / PA	E12492
Jumper M12	plug / RJ45 plug, screened, screen not connected to the socket, 4/8-pole, 4-wire	
West and	Jumper \cdot straight / straight \cdot Ethernet \cdot 10 m \cdot Housing materials: PUR / PC	E12204
CONTRACT OF	Jumper · straight / straight · Ethernet · 20 m · Housing materials: PUR / PC	E12205
West and	Jumper \cdot straight / straight \cdot Ethernet \cdot Cross-over patch cable \cdot 5 m \cdot Housing materials: PUR / PC	E12283
Adapter , 4/8	3-pole	
. 🚿	Adapter · angled · Connector	E21140
Socket M12,	4-pole, 4-wire	
· Tarres	Socket · straight · Power cable · T-coded · Gold-plated contacts · M12 connector · 0.5 m · Housing materials: PP	E12494
1	Socket \cdot straight \cdot Power cable \cdot T-coded \cdot Gold-plated contacts \cdot M12 connector \cdot 2 m \cdot Housing materials: PP	E12430
· ·	Socket · straight · Power cable · T-coded · Gold-plated contacts · M12 connector · 5 m · Housing materials: PP	E12495
· ·····	Socket · straight · Power cable · T-coded · Gold-plated contacts · M12 connector · 10 m · Housing materials: PP	E12496
M12 sock	ets with increased cross-section	
Туре	Description	Order no.
Socket M12,	5-pole, 4-wire	
67 ²	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVC706
97	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC707

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

Sockets

Туре	Description	Order no.
Socket M12,	5-pole, 4-wire	
0	Socket \cdot straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M12 connector \cdot 10 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC708
67	Socket \cdot straight \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M12 connector \cdot 20 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC709
0	Socket \cdot angled \cdot Free from silicone \cdot Free from halogen \cdot Gold-plated contacts \cdot M12 connector \cdot 2 m \cdot Housing materials: housing: TPU orange / sealing: FKM	EVC711
0	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVC712
0	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVC713
0	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · M12 connector · 20 m · Housing materials: housing: TPU orange / sealing: FKM	EVC714
Connecto	rs weld slag resistant	
Туре	Description	Order no.
	Description 5/4-pole, 4-wire	
	5/4-pole, 4-wire Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 2 m ·	no.
	5/4-pole, 4-wire Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 5 m ·	no. Evwoo1
	5/4-pole, 4-wire Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	NO. EVW001 EVW002
	5/4-pole, 4-wire Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 10 m · Housing materials: housing: TPU orange / sealing: FKM	no.
	5/4-pole, 4-wire Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 10 m · Housing materials: housing: TPU orange / sealing: FKM Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 10 m · Housing materials: housing: TPU orange / sealing: FKM Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM	no. EVW001 EVW002 EVW003 EVW004
Socket M12,	5/4-pole, 4-wire Socket - straight - Free from silicone - Free from halogen - Gold-plated contacts - For welding applications - M12 connector - 2 m - Housing materials: housing: TPU orange / sealing: FKM Socket - straight - Free from silicone - Free from halogen - Gold-plated contacts - For welding applications - M12 connector - 5 m - Housing materials: housing: TPU orange / sealing: FKM Socket - straight - Free from silicone - Free from halogen - Gold-plated contacts - For welding applications - M12 connector - 10 m - Housing materials: housing: TPU orange / sealing: FKM Socket - angled - Free from silicone - Free from halogen - Gold-plated contacts - For welding applications - M12 connector - 2 m - Housing materials: housing: TPU orange / sealing: FKM Socket - angled - Free from silicone - Free from halogen - Gold-plated contacts - For welding applications - M12 connector - 2 m - Housing materials: housing: TPU orange / sealing: FKM Socket - angled - Free from silicone - Free from halogen - Gold-plated contacts - For welding applications - M12 connector - 2 m - Housing materials: housing: TPU orange / sealing: FKM Socket - angled - Free from silicone - Free from halogen - Gold-plated contacts - For welding applications - M12 connector - 2 m - Housing materials: housing: TPU orange / sealing: FKM Socket - angled - Free from silicone - Free from halogen - Gold-plated contacts - For welding applications - M12 connector - 5 m - Housing materials: housing: TPU orange / sealing: FKM	no. Evwoo1 Evwoo2 Evwoo3 Evwoo4



Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 2 m · Housing materials: housing: TPU black transparent / sealing: FKM



Туре	Description	Order no.
Socket M12,	5/4-pole, 4-wire, LED, PNP	
970	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 5 m · Housing materials: housing: TPU black transparent / sealing: FKM	EVW168
070	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 10 m · Housing materials: housing: TPU black transparent / sealing: FKM	EVW169
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 2 m · Housing materials: housing: TPU black transparent / sealing: FKM	EVW007
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 5 m · Housing materials: housing: TPU black transparent / sealing: FKM	EVW008
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 10 m · Housing materials: housing: TPU black transparent / sealing: FKM	EVW009
Socket M12,	5/4-pole, 5-wire	
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVW010
01	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVW011
	Socket · straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVW012
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVW013
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVW014
	Socket · angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · M12 connector · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVW015
Jumpers	weld slag resistant	
Туре	Description	Order no.

Jumper M12 plug / M12 socket, 4/5-pole, 4-wire

	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 0.3 m · Housing materials: housing: TPU orange / sealing: FKM	EVW036
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 0.5 m · Housing materials: housing: TPU orange / sealing: FKM	EVW022
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVW030

Sockets

Туре	Description	Order no.
Jumper M12	olug / M12 socket, 4/5-pole, 4-wire	
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVW031
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 3 m · Housing materials: housing: TPU orange / sealing: FKM	EVW032
and the second s	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVW034
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVW035
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 0.3 m · Housing materials: housing: TPU orange / sealing: FKM	EVW037
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 0.6 m · Housing materials: housing: TPU orange / sealing: FKM	EVW144
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVW024
all a second	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 2 m · Housing materials: housing: TPU orange / sealing: FKM	EVW025
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 3 m · Housing materials: housing: TPU orange / sealing: FKM	EVW026
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 5 m · Housing materials: housing: TPU orange / sealing: FKM	EVW028
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 10 m · Housing materials: housing: TPU orange / sealing: FKM	EVW029
Jumper M12	olug / M12 socket, 4/5-pole, 4-wire, LED, PNP	
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 0.6 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVW139
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 1 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVW038
-	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 2 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVW039
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 3 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVW040
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 5 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVW041



Туре	Description	Order no.
Jumper M12	e plug / M12 socket, 4/5-pole, 4-wire, LED, PNP	
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 10 m · Housing materials: housing connector: TPU orange / housing socket: TPU black transparent / sealing: FKM	EVW042
Jumper M12	plug / M8 socket, 3-pole, 3-wire	
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 0.3 m · Housing materials: housing: TPU orange / sealing: FKM	EVW076
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 0.6 m · Housing materials: housing: TPU orange / sealing: FKM	EVW077
	Jumper - straight / straight - Free from silicone - Free from halogen - Gold-plated contacts - For welding applications - 1 m - Housing materials: housing: TPU orange / sealing: FKM	EVW078
	Jumper - straight / straight - Free from silicone - Free from halogen - Gold-plated contacts - For welding applications - 1.5 m - Housing materials: housing: TPU orange / sealing: FKM	EVW079
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 3 m · Housing materials: housing: TPU orange / sealing: FKM	EVW080
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 0.3 m · Housing materials: housing: TPU orange / sealing: FKM	EVW081
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 0.6 m · Housing materials: housing: TPU orange / sealing: FKM	EVW082
	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVW083
a de la como	Jumper · straight / angled · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 1.5 m · Housing materials: housing: TPU orange / sealing: FKM	EVW084
Jumper M12	2 plug / M8 socket, 4-pole, 4-wire	
	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 0.3 m · Housing materials: housing: TPU orange / sealing: FKM	EVW085
1	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 0.6 m · Housing materials: housing: TPU orange / sealing: FKM	EVW086
1	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVW087
100 m	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 1.5 m · Housing materials: housing: TPU orange / sealing: FKM	EVW088
	Jumper - straight / straight - Free from silicone - Free from halogen - Gold-plated contacts - For welding applications - 3 m - Housing materials: housing: TPU orange / sealing: FKM	EVW089

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

Sockets

Туре	Description	Order no.
Jumper M8-p	lug / M8-socket, 4-pole, 3-wire	
07 (P	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 0.3 m · Housing materials: housing: TPU orange / sealing: FKM	EVW102
0707	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 0.6 m · Housing materials: housing: TPU orange / sealing: FKM	EVW103
0707	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 1 m · Housing materials: housing: TPU orange / sealing: FKM	EVW104
0707	Jumper · straight / straight · Free from silicone · Free from halogen · Gold-plated contacts · For welding applications · 1.5 m · Housing materials: housing: TPU orange / sealing: FKM	EVW105
Connecto	rs for wet areas	
Туре	Description	Order no.
Socket M12,	5/4-pole, 4-wire	
	Socket · straight · Free from silicone · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT001
	Socket \cdot straight \cdot Free from silicone \cdot Gold-plated contacts \cdot M12 connector \cdot 10 m \cdot Housing materials: housing: PVC orange / sealing: EPDM	EVT002
	Socket \cdot angled \cdot Free from silicone \cdot Gold-plated contacts \cdot M12 connector \cdot 5 m \cdot Housing materials: housing: PVC orange / sealing: EPDM	EVT004
	Socket \cdot angled \cdot Free from silicone \cdot Gold-plated contacts \cdot M12 connector \cdot 10 m \cdot Housing materials: housing: PVC orange / sealing: EPDM	EVT005
Socket M12,	5/4-pole, 4-wire, LED, PNP	
	Socket · angled · Free from silicone · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: PVC black transparent / sealing: EPDM	EVT007
	Socket · angled · Free from silicone · Gold-plated contacts · M12 connector · 10 m · Housing materials: housing: PVC black transparent / sealing: EPDM	EVT008
	Socket · angled · Free from silicone · Gold-plated contacts · M12 connector · 15 m · Housing materials: housing: PVC black transparent / sealing: EPDM	EVT096
Socket M12,	5-pole, 5-wire	
	Socket · straight · Free from silicone · Gold-plated contacts · M12 connector · 5 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT010
	Socket · straight · Free from silicone · Gold-plated contacts · M12 connector · 10 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT011



Туре	Description	Order no.
ocket M12,	5-pole, 5-wire	
	Socket \cdot straight \cdot Free from silicone \cdot Gold-plated contacts \cdot M12 connector \cdot 25 m \cdot Housing materials: housing: PVC orange / sealing: EPDM	EVT012
•	Socket - angled - Free from silicone - Gold-plated contacts - M12 connector - 5 m - Housing materials: housing: PVC orange / sealing: EPDM	EVT013
•	Socket - angled - Free from silicone - Gold-plated contacts - M12 connector - 10 m - Housing materials: housing: PVC orange / sealing: EPDM	EVT014
•	Socket - angled - Free from silicone - Gold-plated contacts - M12 connector - 25 m - Housing materials: housing: PVC orange / sealing: EPDM	EVT015
ocket M8, 4	pole, 4-wire	
	Socket · straight · Free from silicone · Gold-plated contacts · M8 connector · 2 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT134
	Socket - straight - Free from silicone - Gold-plated contacts - M8 connector - 5 m - Housing materials: housing: PVC orange / sealing: EPDM	EVT135
C	Socket · straight · Free from silicone · Gold-plated contacts · M8 connector · 10 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT136
	Socket · straight · Free from silicone · Gold-plated contacts · M8 connector · 15 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT274
	Socket · straight · Free from silicone · Gold-plated contacts · M8 connector · 25 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT137
	Socket - angled - Free from silicone - Gold-plated contacts - M8 connector - 2 m - Housing materials: housing: PVC orange / sealing: EPDM	EVT138
	Socket · angled · Free from silicone · Gold-plated contacts · M8 connector · 5 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT139
~	Socket · angled · Free from silicone · Gold-plated contacts · M8 connector · 10 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT140
	Socket · angled · Free from silicone · Gold-plated contacts · M8 connector · 15 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT275
	Socket · angled · Free from silicone · Gold-plated contacts · M8 connector · 25 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT141
umper M12	olug / M12 socket, 4/5-pole, 4-wire	



Jumper \cdot straight / angled \cdot Free from silicone \cdot Gold-plated contacts \cdot 0.3 m \cdot Housing materials: housing: PVC orange / sealing: EPDM

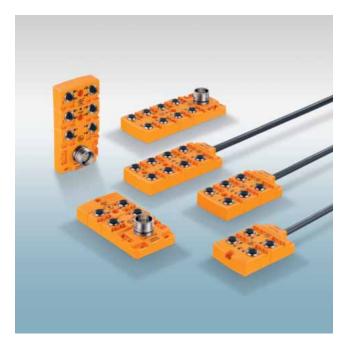
EVT046

Sockets

Туре	Description	Order no.
Jumper M12	plug / M12 socket, 4/5-pole, 4-wire	
	Jumper · straight / angled · Free from silicone · Gold-plated contacts · 0.6 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT047
	Jumper · straight / angled · Free from silicone · Gold-plated contacts · 1 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT048
	Jumper · straight / angled · Free from silicone · Gold-plated contacts · 2 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT049
	Jumper · straight / angled · Free from silicone · Gold-plated contacts · 5 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT050
	Jumper \cdot straight / angled \cdot Free from silicone \cdot Gold-plated contacts \cdot 10 m \cdot Housing materials: housing: PVC orange / sealing: EPDM	EVT051
	Jumper · straight / angled · Free from silicone · Gold-plated contacts · 3 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT445
	Jumper · straight / straight · Free from silicone · Gold-plated contacts · 0.3 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT040
	Jumper · straight / straight · Free from silicone · Gold-plated contacts · 0.6 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT041
	Jumper · straight / straight · Free from silicone · Gold-plated contacts · 1 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT042
	Jumper · straight / straight · Free from silicone · Gold-plated contacts · 2 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT043
	Jumper · straight / straight · Free from silicone · Gold-plated contacts · 5 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT044
	Jumper · straight / straight · Free from silicone · Gold-plated contacts · 10 m · Housing materials: housing: PVC orange / sealing: EPDM	EVT045



Central splitter M12 with ecolink technology



- The mechanical end stop protects the O-ring against destruction
- Optimum sealing even when mounted without tools
- Connection technology meets the M12 standard (EN 61076)
- High-quality materials for a high plant uptime



Splitter with ecolink technology for demanding applications.

Most applications require special solutions.

Only high-quality materials, assured production processes and faultless installation lead to success in the long run. The new ecolink technology prevents incorrect mounting. An integrated mechanical end stop protects the O-ring from destruction. So rapid and secure installation is possible without an expensive torque wrench.





Splitter with ecolink technology, the secure connection.

Splitter boxes

Splitter b	oxes for industrial applications	
Туре	Description	Order no.
M12 splitter	box for 1 signal	
	Splitter box · 4 way · Free from halogen · Free from silicone · Gold-plated contacts · Cable · 5 m · Housing materials: PA	EBC013
	Splitter box \cdot 4 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Cable \cdot 10 m \cdot Housing materials: PA	EBC025
	Splitter box \cdot 6 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Cable \cdot 5 m \cdot Housing materials: PA	EBC017
ann	Splitter box · 6 way · Free from halogen · Free from silicone · Gold-plated contacts · Cable · 10 m · Housing materials: PA	EBC029
	Splitter box \cdot 8 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Cable \cdot 5 m \cdot Housing materials: PA	EBC021
	Splitter box · 8 way · Free from halogen · Free from silicone · Gold-plated contacts · Cable · 10 m · Housing materials: PA	EBC033
	Splitter box \cdot 4 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Housing materials: PA	EBC001
	Splitter box \cdot 6 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Housing materials: PA	EBC005
0 0111	Splitter box \cdot 8 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Housing materials: PA	EBC009
M12 splitter	box for 1 signal, LED	
	Splitter box \cdot 4 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Cable \cdot 5 m \cdot Housing materials: PA	EBC015
1160	Splitter box \cdot 4 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Cable \cdot 10 m \cdot Housing materials: PA	EBC027
-	Splitter box · 6 way · Free from halogen · Free from silicone · Gold-plated contacts · Cable · 5 m · Housing materials: PA	EBC019
	Splitter box \cdot 6 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Cable \cdot 10 m \cdot Housing materials: PA	EBC031
	Splitter box \cdot 8 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Cable \cdot 5 m \cdot Housing materials: PA	EBC023
mm	Splitter box \cdot 8 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Cable \cdot 10 m \cdot Housing materials: PA	EBC035



Туре	Description	Order no.
M12 splitter	box for 1 signal, LED	
	Splitter box \cdot 4 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Housing materials: PA	EBC002
	Splitter box \cdot 6 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Housing materials: PA	EBC006
04444	Splitter box \cdot 8 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Housing materials: PA	EBC010
M12 splitter	box for 2 signals	
	Splitter box \cdot 4 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Cable \cdot 5 m \cdot Housing materials: PA	EBC014
	Splitter box · 4 way · Free from halogen · Free from silicone · Gold-plated contacts · Cable · 10 m · Housing materials: PA	EBC026
-1111	Splitter box · 6 way · Free from halogen · Free from silicone · Gold-plated contacts · Cable · 5 m · Housing materials: PA	EBC018
-999	Splitter box · 6 way · Free from halogen · Free from silicone · Gold-plated contacts · Cable · 10 m · Housing materials: PA	EBC030
-9999	Splitter box · 8 way · Free from halogen · Free from silicone · Gold-plated contacts · Cable · 5 m · Housing materials: PA	EBC022
	Splitter box \cdot 8 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Cable \cdot 10 m \cdot Housing materials: PA	EBC034
	Splitter box \cdot 4 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Housing materials: PA	EBC003
	Splitter box \cdot 6 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Housing materials: PA	EBC007
PHH	Splitter box \cdot 8 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Housing materials: PA	EBC011
M12 splitter	box for 2 signals, LED	
_	Splitter box · 4 way · Free from halogen · Free from silicone · Gold-plated contacts · Cable · 5 m · Housing materials: PA	EBC016
(K 8]	Splitter box · 4 way · Free from halogen · Free from silicone · Gold-plated contacts · Cable · 10 m · Housing materials: PA	EBC028
	Splitter box · 6 way · Free from halogen · Free from silicone · Gold-plated contacts · Cable · 5 m · Housing materials: PA	EBC020

Splitter boxes

Туре	Description	Order no.
M12 splitter	box for 2 signals, LED	
-	Splitter box · 6 way · Free from halogen · Free from silicone · Gold-plated contacts · Cable · 10 m · Housing materials: PA	EBC032
-000	Splitter box · 8 way · Free from halogen · Free from silicone · Gold-plated contacts · Cable · 5 m · Housing materials: PA	EBC024
	Splitter box · 8 way · Free from halogen · Free from silicone · Gold-plated contacts · Cable · 10 m · Housing materials: PA	EBC036
	Splitter box \cdot 4 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Housing materials: PA	EBC004
	Splitter box \cdot 6 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Housing materials: PA	EBC008
PHH	Splitter box \cdot 8 way \cdot Free from halogen \cdot Free from silicone \cdot Gold-plated contacts \cdot Housing materials: PA	EBC012
Y splitter M1	2-plug / 2 x M12-socket, 5-pole	
2	Y splitter · M12 plug - 2 M12 sockets · Free from silicone · Free from halogen · Gold-plated contacts · Housing materials: housing: PA orange / sealing: FKM	EBC113
	Y splitter · M12 plug - 2 M12 sockets · Free from silicone · Free from halogen · Gold-plated contacts · Housing materials: housing: PA orange / sealing: FKM	EBC114
Y splitter , 5-	pole	
d.	Y splitter · M12 plug - 2 M12 sockets · Free from halogen · Free from silicone · Gold-plated contacts · Housing materials: PUR	E12481
Y splitter , 4/	3-pole	
1	Y splitter · M12 plug - 2 M8 sockets · Free from halogen · Free from silicone · Gold-plated contacts · Housing materials: PUR	E10802
T splitter		
۶.	T splitter · M12 x 1 · Orientation: · connectors A / B horizontal (for a vertical sensor) · Housing materials: PUR	E11566
	T splitter · M12 x 1 · Housing materials: PUR	E11627



Basic mounting accessories, adjustable mounting systems



Mounting accessories

The correct mounting of the sensor is decisive for the machine function. ifm offers a complete range of accessories for simple and secure mounting.

In addition to individual components such as angle brackets, nuts and mounting clamps, special mounting sets and adjustable mounting systems allow low-cost, fast and flexible mounting solutions.

Accessories for photoelectric sensors

Especially for photoelectric sensors the quality of fastening and accessories used is of great importance for the reliability of the complete sensor system.

Here you find the suitable reflectors, angle brackets, mounting sets, diaphragms and lenses.

Accessories for cylinder sensors

For cylinder sensors ifm provides tailor-made accessories for fastening the sensors to the different pneumatic cylinder types.





Accessori	es mounting components	
Туре	Description	Order no.
9	Mounting sleeve \cdot M12 x 1 - Ø 8 mm \cdot 28 mm \cdot with end stop \cdot for type M8 \cdot Housing materials: Brass anti-spatter / nut: Brass anti-spatter	E12587
8	Mounting sleeve \cdot M16 x 1 - Ø 12 mm \cdot 33.5 mm \cdot with end stop \cdot for type M12 \cdot Housing materials: Brass anti-spatter / nut: Brass anti-spatter	E12452
(FF)	Mounting sleeve \cdot M16 x 1 - Ø 12 mm \cdot 34 mm \cdot with end stop \cdot for type M12 \cdot Housing materials: Brass nickel-plated	E10806
	Mounting sleeve · M22 x 1 - Ø 18 mm · 33.5 mm · with end stop · for type M18 · Housing materials: Brass anti-spatter / nut: Brass anti-spatter	E12453
(FF)	Mounting sleeve \cdot M24 x 1.5 - Ø 18 mm \cdot 36 mm \cdot with end stop \cdot for type M18 \cdot Housing materials: Brass nickel-plated	E10807
	Mounting sleeve \cdot M36 x 1.5 - Ø 30 mm \cdot 33.5 mm \cdot with end stop \cdot for type M30 \cdot Housing materials: Brass anti-spatter / nut: Brass anti-spatter	E12454
	Mounting sleeve \cdot M36 x 1.5 - Ø 30 mm \cdot 36 mm \cdot with end stop \cdot for type M30 \cdot Housing materials: Brass nickel-plated	E10808
(FF)	Mounting sleeve \cdot M12 x 1 - Ø 8 mm \cdot 32 mm \cdot with end stop \cdot for type M8 \cdot Housing materials: Brass special coating	E10848
	Mounting sleeve \cdot M12 x 1 - Ø 8 mm \cdot 42 mm \cdot with end stop \cdot for type M8 \cdot Housing materials: Brass special coating	E10849
	Mounting sleeve \cdot M16 x 1 - Ø 12 mm \cdot with end stop \cdot for type M12 \cdot Housing materials: Brass nickel-plated	E11114
N.	Mounting sleeve \cdot M22 x 1 - Ø 18 mm \cdot with end stop \cdot for type M18 \cdot Housing materials: Brass white bronze coated	E11115
	Mounting sleeve \cdot M16 x 1 - Ø 12 mm \cdot 45 mm \cdot with end stop \cdot for type M12 \cdot Housing materials: Brass nickel-plated	E10741
	Mounting sleeve \cdot M24 x 1.5 - Ø 18 mm \cdot 58 mm \cdot with end stop \cdot for type M18 \cdot Housing materials: Brass nickel-plated	E10742
	Mounting sleeve \cdot M36 x 1.5 - Ø 30 mm \cdot 58 mm \cdot with end stop \cdot for type M30 \cdot Housing materials: Brass nickel-plated	E10743
	Mounting clamp \cdot Ø 8 mm \cdot with end stop \cdot for type M8 \cdot Housing materials: PC	E11521
	Mounting clamp \cdot Ø 12 mm \cdot with end stop \cdot for type M12 \cdot Housing materials: PC	E11047



Туре	Description	Order no.
	Mounting clamp \cdot Ø 18 mm \cdot with end stop \cdot for type M18 \cdot Housing materials: PC	E11048
	Mounting clamp \cdot Ø 30 mm \cdot with end stop \cdot for type M30 \cdot Housing materials: PC	E11049
000	Angle bracket \cdot for type M8 \cdot Housing materials: stainless steel	E10734
B	Angle bracket \cdot for type M12 \cdot Housing materials: stainless steel	E10735
	Angle bracket \cdot for type M18 \cdot Housing materials: stainless steel	E10736
08	Angle bracket · for type M30 · Housing materials: stainless steel	E10737

Accessories for sensors with smooth sleeve

Туре	Description	Order no.
	Mounting clamp \cdot Ø 12 mm \cdot Housing materials: PBT	E10015
	Mounting clamp \cdot Ø 20 mm - Ø 18 mm \cdot with reducing bush \cdot for type M18 \cdot Housing materials: PBT	E10076
Q.	Mounting clamp \cdot Ø 34 mm - Ø 30 mm \cdot with reducing bush \cdot for type M30 \cdot Housing materials: PBT	E10077
and the second	Mounting clamp \cdot Ø 8 mm \cdot Housing materials: aluminium black anodised	E10221

Accessories for threaded M8 housings

Туре	Description	Order no.
ST. Come	Limit plungers \cdot for types M8 x 1 \cdot with Sn = 1 mm f, 2 mm f and 3 mm f \cdot Housing materials: Limit plungers: free cutting steel / plunger: C45K hardened on front / nut: Brass nickel-plated	E10154

Description Order no. Wounting set • Ø 12.2 mm • Clamp mounting • free-standing M8 • for type OF JE •

Mounting set $\cdot Ø$ 12.2 mm \cdot Clamp mounting \cdot free-standing M8 \cdot for type OF, IF \cdot Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc

Туре	Description	Order no.
7	Mounting set \cdot Ø 12.2 mm \cdot Clamp mounting \cdot free-standing M8 \cdot for type OF, IF \cdot Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E20860
Accessori	es for threaded M18 housings	
Туре	Description	Order no.
Ŧ	Mounting set $\cdot Ø$ 18.5 mm \cdot Clamp mounting \cdot Free-standing M10 \cdot for type OG, IG, KG \cdot Housing materials: clamp: diecast zinc / fixture: steel	E20718
T	Mounting set \cdot Ø 18.5 mm \cdot Clamp mounting \cdot Free-standing M10 \cdot for type OG, IG, KG \cdot Housing materials: clamp: diecast zinc / fixture: steel	E20719
J.	Mounting set \cdot Ø 18.5 mm \cdot Clamp mounting \cdot rod mounting Ø 12 mm \cdot for type OG, IG, KG \cdot Housing materials: clamp: diecast zinc / fixture: steel	E20720
T	Mounting set \cdot Ø 18.5 mm \cdot Clamp mounting \cdot aluminium profile \cdot for type OG, IG, KG \cdot Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc / Cube: diecast zinc	E20867
Ð	Mounting set \cdot Ø 18.5 mm \cdot Clamp mounting \cdot rod mounting Ø 12 mm \cdot for type OG, IG, KG \cdot Housing materials: clamp: high-grade stainless steel / fixture: high-grade stainless steel	E21206
30	Mounting set · Ø 18.5 mm · Clamp mounting · rod mounting Ø 12 mm · for type OG, IG, KG · Housing materials: clamp: high-grade stainless steel / fixture: high-grade stainless steel	E21207
<u>ے چ</u>	Mounting set \cdot Ø 18.5 mm \cdot Clamp mounting \cdot rod mounting Ø 12 mm \cdot for type OG, IG, KG \cdot Housing materials: clamp: diecast zinc / fixture: steel	E20721

Accessories for rectangular housings

Туре	Description	Order no.
P	Mounting bracket \cdot with integrated snap-on rail \cdot for type IDC \cdot Housing materials: stainless steel	E10730
	Mounting plate · for type IMC · Housing materials: Mounting plate: stainless steel / washer: stainless steel / screws: stainless steel	E12106
	Mounting set \cdot angled \cdot only for flush-mountable sensors \cdot Clamp mounting \cdot rod mounting Ø 14 mm \cdot for type IME, IMC \cdot Housing materials: clamp: stainless steel / fixture: stainless steel 316Ti / 1.4571	E11119
	Mounting set · straight · only for flush-mountable sensors · Clamp mounting · rod mounting Ø 14 mm · for type IME, IMC · Housing materials: clamp: stainless steel / fixture: stainless steel 316Ti / 1.4571	E11120



Accessories for ultrasonic sensors

Туре	Description	Order no.
6	Sound Tube · for type UG, UG-Cube · Housing materials: POM	E23000
	Sound deflector \cdot for type UG, UG-Cube \cdot Housing materials: stainless steel	E23001
	Sound deflector · for type UG, UG-Cube · Housing materials: stainless steel	E23002

Accessories O1 housing

Туре	Description	Order no.
6	Protective bracket \cdot O1D \cdot for type O1D \cdot Housing materials: Angle bracket: stainless steel 316 / 1.4401 / screws: stainless steel / housing: polyamide	E21236
:M	Mounting set · Clamp mounting · rod mounting Ø 12 mm · for type O1D · Housing materials: fixture: stainless steel / clamp: stainless steel / steel / screws: stainless steel / nut: high-grade stainless steel	E2D101
	Protective cover · O1D · Housing materials: bezel: ZnAl4Cu1 finish black / window: glass transparent and colourless / sealing: FPM 75+/-5 Shore A black / screws: stainless steel	E21171
	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
	Cooling box · Protective housing with an active cooling system for the O1D design · for type O1D · Housing materials: housing: aluminium transparent anodised / cover: aluminium black anodised / bezel: aluminium black anodised / window: float glass / cable gland: Brass nickel-plated / nozzle: Brass nickel-plated / sealing: FPM	E21248

Accessories O5 housing

Туре	Description	Order no.
the	Angle bracket \cdot for type O5 \cdot Housing materials: stainless steel 316Ti / 1.4571	E21085
1	Angle bracket \cdot for type O5 \cdot Housing materials: stainless steel 316Ti / 1.4571	E21087
4	Mounting set \cdot Clamp mounting \cdot With protective cover \cdot rod mounting Ø 14 mm \cdot for type O5 \cdot Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: stainless steel	E21142
-	Mounting set \cdot Clamp mounting \cdot With protective cover \cdot rod mounting Ø 12 mm \cdot for type O5 \cdot Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21210

Туре	Description	Order no.
T.	Mounting set · Clamp mounting · Free-standing M10 · for type O5 · Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21083
-	Mounting set \cdot Clamp mounting \cdot With protective cover \cdot Free-standing M10 \cdot for type O5 \cdot Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21084
đ.	Mounting set · Clamp mounting · rod mounting Ø 12 mm · for type O5, O5D · Housing materials: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E21211

Accessories OJ housing

Туре	Description	Order no.
7	Mounting set · OJ · for side lens · Clamp mounting · free-standing M8 · Housing materials: fixture: stainless steel 316Ti / 1.4571 / clamp: diecast zinc	E20968
	Swivel-mount clip · for type OJ · Housing materials: diecast zinc	E20974
ß	Mounting and fine adjustment bracket for laser units \cdot for front lens \cdot for type OJ \cdot Housing materials: diecast zinc	E20975
k	Mounting and fine adjustment bracket for laser units \cdot for side lens \cdot for type OJ \cdot Housing materials: diecast zinc	E20976
	Angle bracket \cdot for type OJ \cdot Housing materials: high-grade stainless steel	E20984
	Mounting set · OJ · for side lens · rod mounting Ø 10 mm · Housing materials: clamp: diecast zinc / fixture: stainless steel 316Ti / 1.4571	E21095

Fixing components

Туре	Description	Order no.
1	mounting rod · Ø 14 / M12 · Length: 130 mm · straight · Housing materials: stainless steel 316Ti / 1.4571	E20939
	mounting rod \cdot Ø 12 / M10 \cdot Length: 130 mm \cdot straight \cdot Housing materials: stainless steel 316Ti / 1.4571	E20938
	mounting rod \cdot Ø 12 / M10 \cdot Length: 200 mm \cdot angled \cdot Housing materials: stainless steel 316Ti / 1.4571	E20940
- F	mounting rod \cdot Ø 14 / M12 \cdot Length: 200 mm \cdot angled \cdot Housing materials: stainless steel 316Ti / 1.4571	E20941



Туре	Description	Order no.
	Cube · M8 · aluminium profile · Housing materials: diecast zinc	E20950
-11-	Cube · M10 · aluminium profile · Housing materials: diecast zinc	E20951
	Cube · M12 · aluminium profile · Housing materials: diecast zinc	E20952
. 5	clamp \cdot Ø 14 mm \cdot rod mounting Ø 14 mm \cdot Housing materials: clamp: stainless steel	E21109
	clamp \cdot Ø 12 mm \cdot rod mounting Ø 12 mm \cdot Housing materials: clamp: stainless steel	E21110
	Connection piece · Ø 20 mm · for the connection of two clamps with Ø 20 mm · Housing materials: stainless steel 316L / 1.4404	E21076

Accessories for photoelectric sensors

Туре	Description	Order no.
4	Prismatic reflector \cdot 45 x 28 mm \cdot rectangular \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics	E20452
	Prismatic reflector \cdot 96 x 96 mm \cdot rectangular \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics	E20454
	Prismatic reflector \cdot 48 x 48 mm \cdot rectangular \cdot for retro-reflective laser sensors and glass and film detection \cdot Housing materials: plastics	E20722
	Prismatic reflector \cdot Ø 40 mm \cdot round \cdot push-fit fastener \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics	E20851
	Prismatic reflector \cdot 80 x 80 mm \cdot rectangular \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics	E20739
4	Prismatic reflector \cdot 48 x 48 mm \cdot rectangular \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: front plate: PMMA / base: ABS	E20744
•_	Prismatic reflector $\cdot \emptyset$ 25 mm \cdot round \cdot fixing by screw \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics	E20953
.0	Prismatic reflector $\cdot \emptyset$ 35 mm \cdot round \cdot fixing by screw \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics	E20954
,	Prismatic reflector \cdot Ø 50 mm \cdot round \cdot fixing by screw \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics	E20956

Туре	Description	Order no.
	Spacer \cdot 10 mm \cdot for type IMC / GMC \cdot for centred mounting on metal \cdot Housing materials: plastics	E12528
	Prismatic reflector \cdot Ø 20 mm \cdot round \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics	E20003
	Prismatic reflector \cdot Ø 42 mm \cdot round \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics	E20004
	Prismatic reflector \cdot Ø 80 mm \cdot round \cdot For red light and infrared light retro-reflective sensors \cdot Housing materials: plastics	E20005
•	Prismatic reflector $\cdot \emptyset$ 10 mm \cdot round \cdot fixing by screw \cdot M3 \cdot for retro-reflective laser sensors \cdot Housing materials: screw: stainless steel 316 / 1.4401 / spring washer: stainless steel 316 / 1.4401 / nut: stainless steel 316 / 1.4401 / front plate: PMMA / base: ABS	E20990
	Prismatic reflector $\cdot \emptyset$ 15 mm \cdot round \cdot fixing by screw \cdot M3 \cdot for retro-reflective laser sensors \cdot Housing materials: screw: stainless steel 316 / 1.4401 / spring washer: stainless steel 316 / 1.4401 / nut: stainless steel 316 / 1.4401 / front plate: PMMA / base: ABS	E20992
	Prismatic reflector $\cdot \emptyset$ 19 mm \cdot round \cdot fixing by screw \cdot M3 \cdot for retro-reflective laser sensors \cdot Housing materials: screw: stainless steel 316 / 1.4401 / 1.44	E20993
	Prismatic reflector · 30 x 20 mm · rectangular · for retro-reflective laser sensors · Housing materials: front plate: PMMA / base: ABS	E20994
	Reflective tape · TS-02 · 50 x 1000 mm · For red light and infrared light retro-reflective sensors · Housing materials: plastics / acrylic	E21015

Accessories for vision sensors

Туре	Description	Order no.
C	Plastic diffuser · O2D / O2I · Housing materials: housing: diecast zinc black / lens: PMMA	E21165
	Plastic protective pane for the food industry · O2D / O2I · Housing materials: housing: diecast zinc black / lens: PMMA	E21166
100	Glass protective pane \cdot O2D / O2I \cdot Housing materials: housing: diecast zinc black / lens: float glass	E21168
(All and a second secon	Laser protection pane plastic · O2D / O2I · Housing materials: housing: diecast zinc black / lens: PMMA / filter: polycarbonate	E21169
Sec	Daylight filter · O2D · Housing materials: housing: diecast zinc black / lens: PMMA / Metal ring: aluminium black anodised / sealing: FPM 75+/-5 Shore A black	E21172
1123	Mounting set · O2D, O2M, O2I, O2V · Clamp mounting · rod mounting Ø 12 mm · Housing materials: fixture: stainless steel / clamp: stainless steel	E2D110



Туре	Description	Order no.
Ŷ	Mounting set \cdot O2D, O2M, O2I, O2V \cdot Clamp mounting \cdot rod mounting Ø 14 mm \cdot Housing materials: fixture: stainless steel / clamp: stainless steel	E2D112
Ø	Mounting bracket \cdot for Touch Panel PC \cdot for wall mounting \cdot VESA standard 100 x 100 mm \cdot Housing materials: fixture: metal	E2D401
1	Mounting set \cdot for Touch Panel PC \cdot for control cabinet mounting \cdot Housing materials: fixture: metal / End cap: plastics	E2D402

Accessori	es safety light curtains / safety light grids	
Туре	Description	Order no.
	Corner mirror · Length: 250 mm · for safety light curtains · Protected area height · 160 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	EY1001
	Corner mirror · Length: 400 mm · for safety light curtains · Protected area height · 310 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	EY1002
	Corner mirror · Length: 540 mm · for safety light curtains · Protected area height · 460 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	EY1003
	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
<u></u> 1	Corner mirror · Length: 885 mm · for safety light curtains · Protected area height · 760 mm · for type OY · Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	EY1005
	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 \cdot Length: 1400 mm \cdot for safety light curtains \cdot Protected area height \cdot 1210 mm \cdot for type OY \cdot Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	EY1008
	Corner mirror \cdot Length: 1450 mm \cdot for safety light curtains \cdot Protected area height \cdot 1360 mm \cdot for type OY \cdot Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	EY1009
	Corner mirror \cdot Length: 1600 mm \cdot for safety light curtains \cdot Protected area height \cdot 1510 mm \cdot for type OY \cdot Housing materials: aluminium epoxy-powder coated / plastics / Accessories: steel galvanised	EY1010
ė,	Vibration damper \cdot for type OY \cdot Housing materials: rubber / metal galvanised	EY3001
	Vibration damper \cdot for type OY \cdot Housing materials: rubber / metal galvanised	EY3002

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Adjustable brackets \cdot axial \pm 7° \cdot for type OY \cdot Housing materials: metal galvanised

Туре	Description	Order no.
U.	Adjustable brackets \cdot axial \pm 7° \cdot for type OY \cdot Housing materials: metal galvanised	EY3005
	Test rod \cdot Ø 14 mm \cdot Probe length: 150 mm \cdot for safety light curtains \cdot for type OY \cdot Housing materials: aluminium	EY3006
	Test rod \cdot Ø 20 mm \cdot Probe length: 150 mm \cdot for safety light curtains \cdot for type OY \cdot Housing materials: aluminium	EY3007
	Test rod \cdot Ø 30 mm \cdot Probe length: 150 mm \cdot for safety light curtains \cdot for type OY \cdot Housing materials: aluminium	EY3008
	Test rod \cdot Ø 40 mm \cdot Probe length: 150 mm \cdot for safety light curtains \cdot for type OY \cdot Housing materials: aluminium	EY3009
	Laser adjustment aid \cdot for safety light curtains \cdot for type OY \cdot Housing materials: plastics	EY3099
Accessori	es for process sensors	
Туре	Description	Order no.
¢	Adapter \cdot G $\frac{1}{2}$ \cdot Housing materials: stainless steel / sealing: FPM	E30000
:0.	Flange adapter · G ¼ · Hole spacing · 31.1 mm · Housing materials: sealing: NBR, acrylonitrile-butadiene-rubber / flange: aluminium / hollow screw: Brass	E30003
-	Adapter · G ¼ A - G ¼ A · Housing materials: 1.4404 / sealing ring: FKM	E30143
9	Welding adapter · G ¾ - Ø 50 mm · Housing materials: stainless steel 316L / 1.4404	E30009
	Welding adapter \cdot G 1 - Ø 50 mm \cdot Housing materials: stainless steel 316L / 1.4404	E30013

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Туре	Description	Order no.
	Mounting clamp \cdot Ø 16 mm \cdot for capacitive level sensors LK, LI, LT, LL \cdot Housing materials: PP	E43000
	Mounting clamp · Ø 34 mm · Housing materials: PA	E10193
۲	Flange plate · 73-90 D16 · for capacitive level sensors LK, LI, LT, LL · according to DIN 24557 · Housing materials: aluminium anodised / nut: stainless steel / Spacer: Brass / rubber ring: FPM / sealing: NBR	E43001
-	Welding adapter · Ø 50 D16 · D16 · for capacitive level sensors LK, Ll, LT, LL · Housing materials: flange: stainless steel / nut: stainless steel / Spacer: Brass / rubber ring: FPM	E43002
2	Mounting adapter · G ¾ D16 · D16 · for capacitive level sensors LK, LI, LT, LL · Housing materials: flange: stainless steel / nut: stainless steel / Spacer: Brass / rubber ring: FPM / sealing: Tesnit	E43003
	Mounting adapter · G 1 D16 · D16 · for capacitive level sensors LK, LI, LT, LL · Housing materials: flange: stainless steel / nut: stainless steel / Spacer: Brass / rubber ring: FPM / sealing: Tesnit	E43004
	Flange plate · 100-125 D16 · for capacitive level sensors LK, Ll, LT, LL · Housing materials: flange: aluminium anodised / nut: stainless steel / Spacer: Brass / rubber ring: FPM	E43005
	Flange plate · 65-80 D16 · for capacitive level sensors LK, LI, LT, LL · Housing materials: flange: aluminium anodised / nut: stainless steel / Spacer: Brass / rubber ring: FPM	E43006
ł	Mounting adapter · ¾" NPT D16 · D16 · for capacitive level sensors LK, LI, LT, LL · Housing materials: flange: stainless steel / nut: stainless steel / Spacer: Brass / rubber ring: FPM	E43012
	Mounting adapter \cdot 1 * NPT D16 \cdot D16 \cdot for capacitive level sensors LK, Ll, LT, LL \cdot Housing materials: flange: stainless steel / nut: stainless steel / Spacer: Brass / rubber ring: FPM	E43013
	Mounting set · Ø 16 mm · for capacitive level sensors LK, LI, LT, LL · Housing materials: PP / Metal parts: steel galvanised	E43016
	Flange plate · 73-90 / G ¾ · for level sensors LR · according to DIN 24557 · Housing materials: flange: stainless steel / sealing: NBR	E43201
	Flange plate \cdot 65-80 / G $\frac{3}{4}$ \cdot for level sensors LR \cdot Housing materials: flange: stainless steel	E43202
R	Protective cover \cdot for LK / LL / LR / LT sensors \cdot Housing materials: PP	E43910
	Probe \cdot Probe length: 150 mm \cdot for level sensors LR \cdot Housing materials: stainless steel 316L / 1.4404	E43225
	Probe \cdot Probe length: 240 mm \cdot for level sensors LR \cdot Housing materials: stainless steel 316L / 1.4404	E43203
	Probe \cdot Probe length: 300 mm \cdot for level sensors LR \cdot Housing materials: stainless steel 316L / 1.4404	E43226

Туре	Description	Order no.
	Probe · Probe length: 450 mm · for level sensors LR · Housing materials: stainless steel 316L / 1.4404	E43204
	Probe \cdot Probe length: 500 mm \cdot for level sensors LR \cdot Housing materials: stainless steel 316L / 1.4404	E43227
	Probe \cdot Probe length: 700 mm \cdot for level sensors LR \cdot Housing materials: stainless steel 316L / 1.4404	E43205
	Probe \cdot Probe length: 1000 mm \cdot for level sensors LR \cdot Housing materials: stainless steel 316L / 1.4404	E43207
	Probe \cdot Probe length: 1200 mm \cdot for level sensors LR \cdot Housing materials: stainless steel 316L / 1.4404	E43208
	Probe · Probe length: 1400 mm · for level sensors LR · Housing materials: stainless steel 316L / 1.4404	E43209
	Probe · Probe length: 1600 mm · for level sensors LR · Housing materials: stainless steel 316L / 1.4404	E43210

Accessories for flow sensors

Туре	Description	Order no.
Ĩ	Adapter \cdot G 1/4- G 1/2 \cdot Housing materials: stainless steel 316L / 1.4404	E40266
	Adapter \cdot G 1 ¹ / ₄ - R 1 \cdot for flow monitor type SU9 \cdot Housing materials: stainless steel 316L / 1.4404	E40205
	Adapter · G 1 - ¾" NPT · for flow monitor type SM8 / SU8 · Housing materials: stainless steel 316L / 1.4404	E40193
	Adapter \cdot G 1 - R $\frac{1}{2}$ · for flow monitor type SM8 / SU8 · Housing materials: stainless steel 316L / 1.4404	E40179
	Adapter \cdot G 1 - R $\frac{3}{4}$ \cdot for flow monitor type SM8 / SU8 \cdot Housing materials: stainless steel 316L / 1.4404	E40180
	Adapter · G ¾ - ½" NPT · for flow monitor type SM7 / SU7 · Housing materials: stainless steel 316L / 1.4404	E40191
	Adapter \cdot G ¾ - R ½ \cdot for flow monitor type SM7 / SU7 \cdot Housing materials: stainless steel 316L / 1.4404	E40178
	Adapter \cdot M18 x 1.5 - G $\frac{1}{2}$ · Insertion depth of the probe of SID, SFD, TN: \cdot 21 mm \cdot Housing materials: CW614N	E40097



Туре	Description	Order no.
	Adapter \cdot M18 x 1.5 - G $\frac{1}{4}$ · Insertion depth of the probe of SID, SFD, TN: \cdot 13.5 mm \cdot Housing materials: CW614N	E40098
*	Adapter \cdot M18 x 1.5 - G $\frac{1}{2}$ · Insertion depth of the probe of SID, SFD, TN: \cdot 21 mm \cdot Housing materials: stainless steel 316L / 1.4404	E40096
	Adapter \cdot M18 x 1.5 - G $\frac{1}{4}$ · Insertion depth of the probe of SID, SFD, TN: \cdot 13.5 mm \cdot Housing materials: stainless steel 316L / 1.4404	E40099
-	Adapter \cdot M18 x 1.5 - M12 x 1 \cdot Insertion depth of the probe of SID, SFD, TN: \cdot 13.5 mm \cdot Housing materials: stainless steel 316L / 1.4404	E40101
8	Adapter · M18 x 1.5 - L18 · for mounting in T-pieces · Insertion depth of the probe of SID, SFD, TN: · 28.5 mm · Housing materials: nut: stainless steel 316Ti / 1.4571 / adapter: stainless steel 316L / 1.4404 / O-ring: FKM 16 x 1.5 gr 70° Shore A	E40104
O	Mounting clamp \cdot Ø 23 mm \cdot for air flow monitor SLG \cdot Housing materials: PBT	E40048
99°	Grounding clamp · Housing materials: stainless steel 316L / 1.4404	E40234
R	Protective cover · for flow sensors type SI5xxx, SI6xxx, SR59xx · Housing materials: PP uncoloured	E40203
	Adapter · G ½ - R ½ · for flow monitor type SM6 · flat seal · Housing materials: stainless steel 316Ti / 1.4571	E40199
00	Adapter · G ¾ - G ¾ · for flow monitor type SM7 / SU7 · Housing materials: stainless steel 316L / 1.4404	E40216
	Progressive ring T-piece DIN 2353 · QL 18-18-18 · for sensors and adapters with process connection M26 x 1.5 · Recommendation: precision steel pipes 18 x 1.5 to DIN 2391/ISO 3304 · Housing materials: stainless steel 316Ti / 1.4571	E40078
	Progressive ring T-piece DIN 2353 · QL 22-18-22 · for sensors and adapters with process connection M26 x 1.5 · Recommendation: precision steel pipes 22 x 1.5 to DIN 2391/ISO 3304 · Housing materials: stainless steel 316Ti / 1.4571	E40079
	Progressive ring T-piece DIN 2353 · QL 28-18-28 · for sensors and adapters with process connection M26 x 1.5 · Recommendation: precision steel pipes 28 x 1.5 to DIN 2391/ISO 3304 · Housing materials: stainless steel 316Ti / 1.4571	E40080
~	T-piece · R¾ - M26 x 1.5 - R¾ · for sensors and adapters with process connection M26 x 1.5 · Flow rate: 020 l/min · Housing materials: stainless steel 316Ti / 1.4571	E40137
	Welding adapter \cdot M18 x 1.5 - Ø 24 mm \cdot Insertion depth of the probe of SID, SFD, TN: \cdot 15 mm \cdot Housing materials: stainless steel 316L / 1.4404	E40124
	Flow adapter (for low flow rates) \cdot M12 x 1 - G 1/8 \cdot for flow sensors and compact flow monitors with adapter \cdot Housing materials: stainless steel 316L / 1.4404	E40129
	Flow adapter (for low flow rates) · M12 x 1 - G 1/8 · for type SA5 · Housing materials: stainless steel 316L / 1.4404	E40434

Туре	Description	Order no.
C.	Mounting plate · Housing materials: stainless steel 316L / 1.4404	E40249
y.	label tag \cdot for fluid sensors \cdot Housing materials: PA	E30422
Accessor	es for temperature sensors	
-		
Туре	Description	Order no.
Type	Description Progressive ring fitting for temperature sensors · Ø 6 mm - G ½ · Housing materials: stainless steel 316Ti / 1.4571	

8		
	Mounting set \cdot for direct connection of temperature sensors TT to control monitors TR \cdot Housing materials: stainless steel	E30017
ê.,	Clamp fitting \cdot Ø 6/8/10 mm - G ½ \cdot for temperature sensors \cdot Housing materials: stainless steel / FPM	E30018
.	Adapter · M18 x 1.5 - G 1/2 · Housing materials: stainless steel 316L / 1.4404 / O-ring: FPM (fitted)	E30073
R	Thermowell for temperature sensors · Ø 10 mm - G ½ · Probe length: 82 mm · Housing materials: stainless steel 316L / 1.4404	E35010
	Thermowell for temperature sensors · Ø 10 mm - G ½ · Probe length: 182 mm · Housing materials: stainless steel 316L / 1.4404	E35020
	Thermowell for temperature sensors · Ø 10 mm - G ½ · Probe length: 282 mm · Housing materials: stainless steel 316L / 1.4404	E35030
	Thermowell for temperature sensors · Ø 10 mm - G ½ · Probe length: 482 mm · Housing materials: stainless steel 316L / 1.4404	E35050
	Protective cover · for fluid sensors with M12 connector · Housing materials: Polypropylene homopolymer	E30420



24 V power supplies



Primary switched-mode power supplies

Switched-mode power supplies are an economic solution to supply sensors, actuators and sensitive electronic components. They are distinguished by their compact, light weight, slim design ensuring reliable installation on the rail. A stable output voltage, under different loads and at fluctuating input voltages, ensures operational reliability and plant uptime.

Two LEDs and a DCok output indicate and signal operating states.

The units can be used worldwide due to their wide-range input and cULus approval.

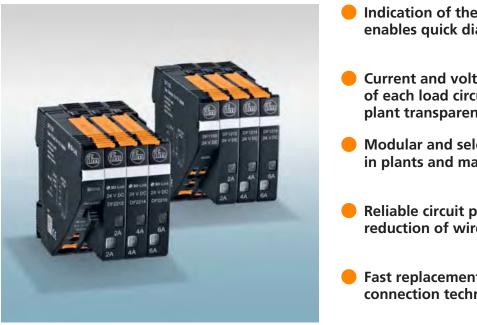


ifm offers an extensive range of switchedmode power supplies.

Switched-mode power supplies								
Туре	Current	Output voltage	Nominal voltage	Mains buffering time	Efficiency typ.	Order no.		
	[A]	[V]	[V]	[ms]	[%]			
a	1.25	2428	115 / 230 AC	120 (230 V AC; 24 V DC; 1.25 A)	84	DN1030		
	2.5	2428	115 / 230 AC	90 (230 V AC; 24 V DC; 2.5 A)	88	DN1031		
<u></u>	3.3	2428 DC	115 / 230 AC	30 (120 V AC; 60 Hz) / 128 (230 V AC; 50 Hz)	88	DN4011		
	5	2428 DC	115 / 230 AC	80 (120 V AC; 60 Hz) / 78 (230 V AC; 50 Hz)	89.4	DN4012		
<u></u>	10	2428 DC	115 / 230 AC	46 (120 V AC; 60 Hz) / 47 (230 V AC; 50 Hz)	91	DN4013		
	20	2428 DC	115 / 230 AC	26 (120 V AC; 60 Hz) / 26 (230 V AC; 50 Hz)	92.7	DN4014		
	5	2428 DC	2 x 400 AC	27 (400 V AC; 50 Hz) / 48 (480 V AC; 60 Hz)	90.4	DN403		
	10	2428 DC	3 x 400 AC	34 (400 V AC; 50 Hz) / 54 (480 V AC; 60 Hz)	92.8	DN403		
	20	2428 DC	3 x 400 AC	22 (400 V AC; 50 Hz) / 22 (480 V AC; 60 Hz)	95	DN403		
	40	2428 DC	3 x 400 AC	25 (400 V AC; 50 Hz) / 25 (480 V AC; 60 Hz)	95.3	E84036		
	40	2428 DC	115 / 230 AC	27 (120 V AC; 60 Hz) / 27 (230 V AC; 50 Hz)	93.6	E84016		



Electronic 24 V circuit breakers



- Indication of the trigger enables quick diagnostics
- **Current and voltage measurement** of each load circuit for more plant transparency
- Modular and selective protection in plants and machinery
- **Reliable circuit protection allows** reduction of wire cross-sections
- Fast replacement using innovative connection technology



Safety on the 24 V side

As opposed to the 230 V primary side, the circuit protection in the secondary circuit is often neglected. Another issue is that in the event of a failure of the 24 V DC voltage supply, standard mechanical circuit breakers often do not trigger. This may happen with long cables, for example.

The electronic circuit breakers from ifm monitor the circuit ideally and, if required, disconnect reliably. Individual branch circuits can be selectively disconnected. This allows a reduction of wire cross-sections in the load circuit of the switched-mode power supplies. The system has a modular structure and can be ideally adapted to the circuits of plant and machinery.



Power supplies

Electroni	Electronic circuit protection modules							
Туре	Description	Order no.						
	Supply module, standard \cdot Input current (max. total current) 40 A \cdot for circuit protecion modules DF12xx	DF1100						
4	Supply module, IO-Link · Input current (max. total current) 40 A · for circuit protection modules DF22xx	DF2100						
4	Supply module, IO-Link · Input current (max. total current) 40 A · for circuit protection modules DF22xx	DF2101						
1	Circuit protection module, standard \cdot Nominal current (Fail-safe element) 2 x 2 A \cdot for supply module DF1100	DF1212						
1	Circuit protection module, standard \cdot Nominal current (Fail-safe element) 2 x 4 A \cdot for supply module DF1100	DF1214						
1	Circuit protection module, standard \cdot Nominal current (Fail-safe element) 2 x 6 A \cdot for supply module DF1100	DF1216						
1	Circuit protection module, standard \cdot Nominal current (Fail-safe element) 1 x 8 A \cdot for supply module DF1100	DF1208						
1	Circuit protection module, standard \cdot Nominal current (Fail-safe element) 1 x 10 A \cdot for supply module DF1100	DF1210						
1	Circuit protection module, IO-Link \cdot Nominal current (Fail-safe element) 1 x 8 A \cdot for supply module DF2100	DF2208						
1	Circuit protection module, IO-Link \cdot Nominal current (Fail-safe element) 1 x 10 A \cdot for supply module DF2100	DF2210						
1	Circuit protection module, IO-Link \cdot Nominal current (Fail-safe element) 2 x 2 A \cdot for supply module DF2100	DF2212						
1	Circuit protection module, IO-Link \cdot Nominal current (Fail-safe element) 2 x 4 A \cdot for supply module DF2100	DF2214						
1	Circuit protection module, IO-Link \cdot Nominal current (Fail-safe element) 2 x 6 A \cdot for supply module DF2100	DF2216						

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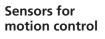


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