THE ORANGE BOOK

PRODUCT **FACTSHEETS**

2024/2025

INSPIRATION FOR AUTOMATION

5 YEARS
Warranty
on **ifm products**

Our product news:
ifm.com/cnt/productnews

P|Prox: detection with micrometre precision

Accurate detection of distances to metallic surfaces

- Non-contact, inductive detection principle, suitable for all types of metal

- Ready for use out of the box, high repeatability

- Simple 1-point or even more accurate 3-point calibration possible

- Robust industrial design for a wide range of applications

IP69K

IO-Link

ifm – close to you!

Type [mm]	Installation	Measuring range [mm]	Adjustable switch point [mm]	Order no.
M8 x 1 x 60	flush	0.05...1.5	0.05...1.5	**IEP200**
M8 x 1 x 60	non-flush	0.05...3	0.05...3	**IEP201**
M12 x 1 x 60	flush	0.2…2	0.2...1.9	**IFP200**
M12 x 1 x 60	non-flush	0.4…4	0.4…3.8	**IFP201**
M18 x 1 x 60	flush	0.5…5	0.5…4.75	**IGP200**
M18 x 1 x 60	non-flush	0.8…8	0.8…7.6	**IGP201**
M30 x 1.5 x 60	flush	1…10	1…9.5	**IIP200**
M30 x 1.5 x 60	non-flush	1.5…15	1.5…14.25	**IIP201**

Inexpensive alternative to expensive measuring systems

Many industrial applications require accurate detection of distances to metallic surfaces, for example, sheet metal detection in the automotive industry or distances at grinding mills in the food sector. In these applications, the new distance sensors are an inexpensive and powerful alternative to expensive measuring systems.

Accurate distance detection

Using an inductive and, thus, non-contact detection principle, these sensors detect distances in the micrometre range and provide them as distance values via IO-Link. The type of metal has no influence on the measured value. Only the shape factor of the target influences the possible measuring range and the accuracy of the sensor. The sensor is factory calibrated and ready for immediate use. Thanks to 1-point or the even more accurate 3-point calibration, IO-Link guarantees high accuracy even with deviating target shape factors.

Robust design

The sensors are available in 60 mm long industry standard M8, M12, M18 or M30 housings for flush or non-flush mounting. Moreover, the sensors are magnetic field resistant and have a stainless steel threaded sleeve. As a result, they have a high protection rating of up to IP69K and can be easily used in demanding environments.

Technical data		
Communication interface		IO-Link
Type of transmission		COM2 (38.4 kbaud)
IO-Link revision		1.1
SIO mode		yes
Required master port class		A
Min. process cycle	[ms]	3.2
Ambient temperature	[°C]	-25…70
Indication		4x yellow LED
Protection rating		IP65, IP66, IP67, IP68, IP69K

BEST FRIENDS
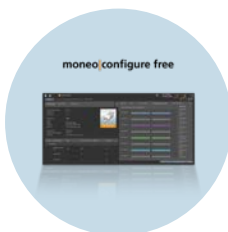
moneo|configure free
Software for parameter setting of the IO-Link infrastructure

IO-Link interface
For setting the parameters of IO-Link devices on the PC

IO-Link masters
Field-compatible masters with Profinet interface

For further technical details, please visit:
ifm.com/fs/IEP200

Precision in confined spaces

Miniature inductive sensors

- M5 housing or cylindrical smooth 4 mm housing for confined installation conditions

- Longer sensing range for accurate and reliable position detection

- High switching frequency for dynamic processes

- Robust housing for demanding industrial environments

- Simplify connection

IP67

ifm – close to you!

Type	Electrical design	Switching output	M8 connector Order no.	2 m cable Order no.
M5x0,5	PNP	NO	IY5062	IY5066
M5x0,5	PNP	NC	IY5063	IY5067
M5x0,5	NPN	NC	IY5064	IY5069
M5x0,5	NPN	NO	IY5065	IY5068
Ø 4 mm	PNP	NO	IZ5057	IZ5061
Ø 4 mm	PNP	NC	IZ5058	IZ5062
Ø 4 mm	NPN	NC	IZ5059	IZ5064
Ø 4 mm	NPN	NO	IZ5060	IZ5063

Applications

The inductive IY/IZ type sensors are used in various industrial areas where space is limited, for example, in machine tools, assembly automation and electronics production. They detect end positions of small grippers and clamps, can be used to accurately monitor speed of gears and rotary movements.

Longer sensing range for stable processes

The longer sensing range makes it easy to position the sensors. The position detection is reliable even in case of mechanical tolerances, avoiding accidental switching. This increases the process reliability.

Installation

The M5 thread makes it easy to screw in the IY housing. The IZ housing has a 4 mm smooth sleeve and can be fastened precisely and efficiently using the corresponding holder.

## Protection rating IP67 for challenging environmental conditions

The robust housing has been specially developed for demanding industrial environments and offers durability and reliability. Thanks to protection rating IP67, the sensors guarantee reliable performance even under extreme conditions such as dust, moisture and vibrations, which improves process stability and efficiency in various industrial sectors.

Technical data		
Sensing range	[mm]	1.5
Installation		flush mountable
Current rating	[mA]	100
Operating voltage	[V]	10…30
Switching frequency	[Hz]	2000
Housing material		Sensing face: POM orange Housing: stainless steel
Switching status indication		LED yellow
Protection rating		IP65 | IP67

BEST FRIENDS

Connection cables M8
Reliable connections for harsh environments
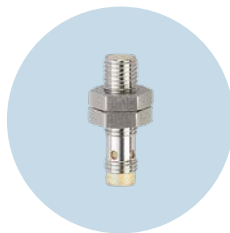
Inductive sensors M8
Compact housings and long sensing ranges
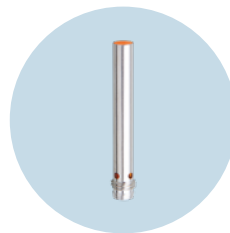
Smooth sleeve inductive sensors
Space-saving sensors for limited space

For further technical details, please visit:
ifm.com/fs/IY5062
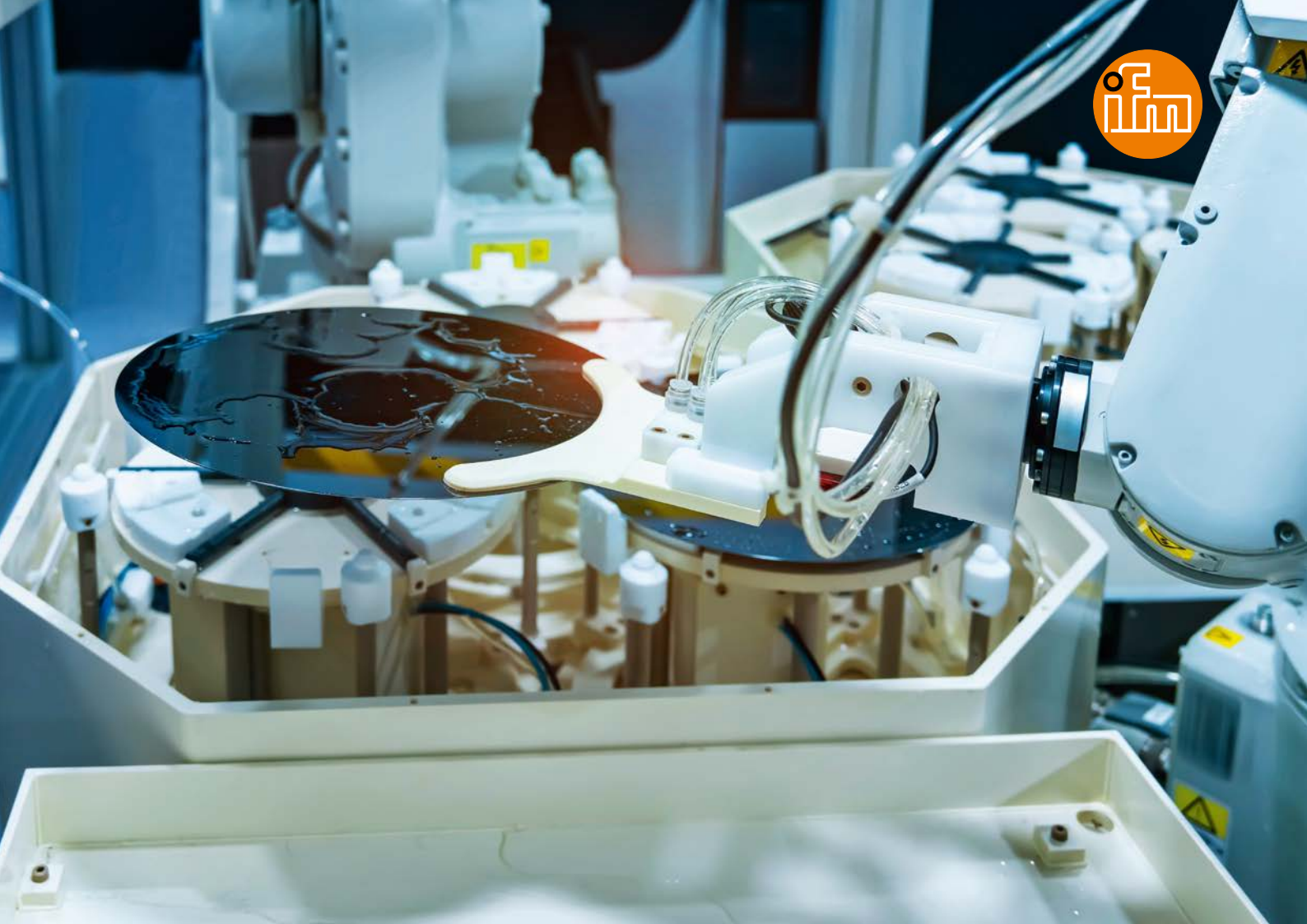
Perfectly setting the switch point

Chemically resistant capacitive sensors

• Unique visualisation and operating concept via LED display

• See and readjust deviations of the switch point

• Chemically resistant PP housing

• Free from PFAS

• High electromagnetic compatibility

IP67

IO-Link

ifm – close to you!

Type	Setting range [mm]	Output	Connection cable	Order no.
M18	0.5…30	PNP	2 m PUR, 3-wire	**KG6015**
M18	0.5…30	NPN	2 m PUR, 3-wire	**KG6016**
M30	0.5…40	PNP	10 m PUR, 3-wire	**KI6005**
M30	0.5…40	NPN	10 m PUR, 3-wire	**KI6006**

Perfect switch point setting

The new capacitive sensors impress with their outstanding technical data and the innovative, patented ifm visualisation concept. The sensor's LED bar display enables the ideal adjustment of the switch point to the application conditions. The switch point is always in the centre of the display, green LEDs on both sides indicate the reliability. Deposits and material changes are directly visible so that the switch point can be easily and precisely readjusted using a potentiometer or IO-Link.

Chemically resistant

The robust and chemically resistant PP housing is specially designed to last in areas with acids and alkalis. This makes the sensor particularly durable and reliable, even in demanding industrial environments, and it is typically used in the semiconductor, solar and chemical industries.

Avoid production downtimes

The IO-Link process value provides information about installation and possible deposits, increases production safety and prevents downtime, which saves costs and ensures smooth operation.

The risk of failures or shutdowns is minimised by detecting and avoiding impending faults in good time. The intuitive LED display facilitates process adjustments and enables simple switch point adjustments by the user.

Common technical data		
Output function		normally open / normally closed (adjustable)
Housing material		Polypropylene (PP)
Switching frequency	[Hz]	40
Ambient temperature	[°C]	-25…80
Medium temperature	[°C]	-25…110
Protection rating		IP65	IP67

BEST FRIENDS

IO-Link masters
Masters with Profinet interface for use in the field

Inductive conductivity sensor
Resistant to aggressive media
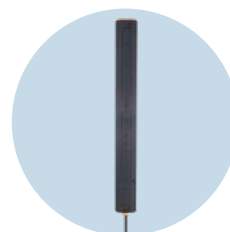
Continuous level sensor
Detection through non-metallic and non-conductive surfaces

For further technical details, please visit:
ifm.com/fs/KG6015

Withstand dirt and moisture

Eternity touch sensors for machine control

- Ideally suited for use in demanding installation situations

- Permanently reliable operation due to the suppression of deposits and splashing water

- Also available as a signal lamp for clear feedback of the machine status

IP69K

IO-Link

ifm – close to you!

Material	Connection	Order no.	
		Touch sensor	Signal lamp
plastic	M12 connector	**KTE101**	**KTV101**
plastic	cable, 2 m	**KTE102**	**KTV102**
stainless steel	M12 connector	**KTE301**	–
stainless steel	cable, 2 m	**KTE302**	–

Ergonomic control of machines and processes

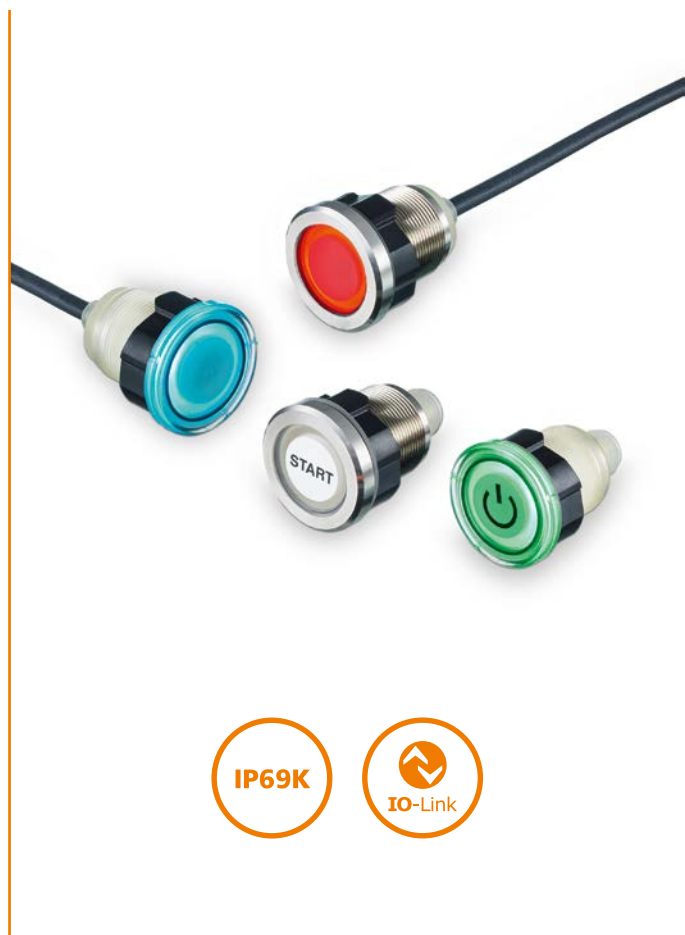No more aching fingers and wrists, no more uncertainty about the process status: With the Eternity touch sensors, you can control machines and processes with a light tap of your finger. To ensure that this works reliably even in case of deposits, the sensitivity of the touch sensor can be adjusted to suit the working environment.

Permanently reliable and FDA-compliant

Thanks to protection class IP69K and the suppression of splashing water, you don't need to worry about the KTE even in damp environments. No water can get inside; and splashing water, for example from cleaning processes, is distinguished from deliberate actuation of the sensor. Important for the food industry: When installed with the optionally available E12840 seal, the KTE is compliant with FDA. This also underlines its permanently reliable operation. You have our word on that – and a 5-year warranty.

Button, switch, colours – experience the new versatility

For clear visual feedback, the touch sensors, which are also available as pure feedback indicators, can adopt any RGB colour and display it permanently or in flash mode. Regardless of whether the KTE is operated with or without IO-Link, versatile switching functions are available: as button or switch, normally closed or normally open, with or without time delay.

Bundling switches, networking operations

For networked operations, up to two additional sensors or even mechanical switches can be connected to a touch sensor. If an 8-port IO-Link master bundles the signals decentrally in the field, up to 24 devices can be integrated.

Common technical data	
Installation size	M22
Interface	IO-Link
Displayable colours	16.7 million (RGB)
Protection rating	IP69K front IP65 | IP67 back

BEST FRIENDS
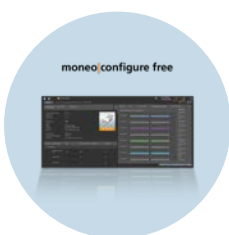
moneo|configure free
Software for parameter setting of the IO-Link infrastructure
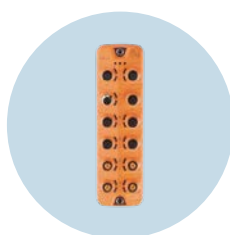
IO-Link masters
Field-compatible masters for use in hygienic areas

IO-Link interfaces
For setting the parameters of IO-Link devices on the PC

For further technical details, please visit:
ifm.com/fs/KTE101
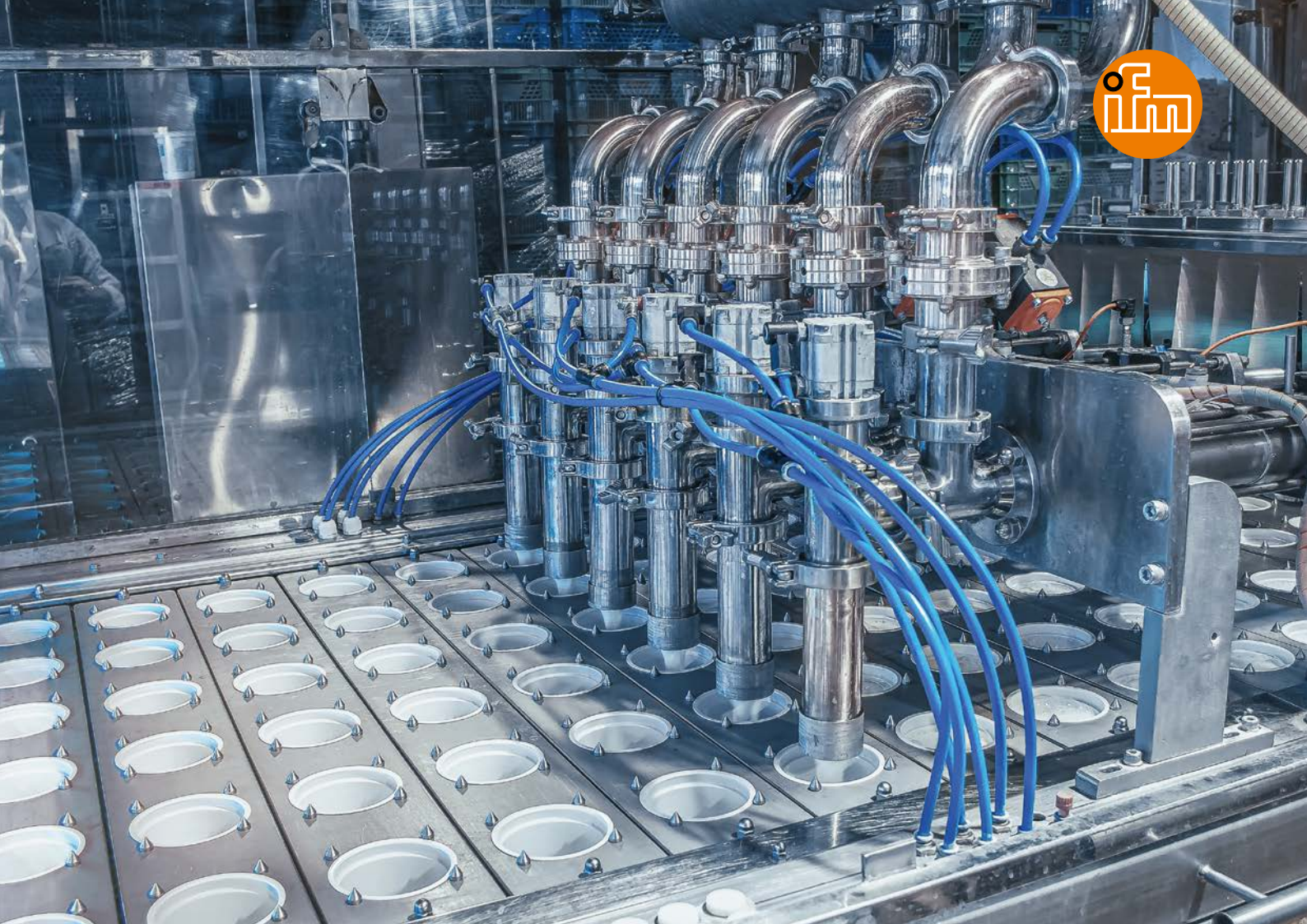
Non-contact distance detection

Full-metal ultrasonic sensor for harsh environments

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

- Resistant to aggressive media

- Long ranges of up to 2,500 mm

- Digital or analogue measured value output

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

IP69K

IO-Link

ifm – close to you!

Output	Range [mm]	Switching frequency [Hz]	Operating temperature range [°C]	Order no.
M18 · IO-Link				
2x PNP / 2x NPN	50…400	10	-10…70	**UGT300**
PNP + 4…20 mA / NPN + 4…20 mA	50…400	10	-10…70	**UGT301**
PNP + 0...10 V / NPN + 0…10 V	50…400	10	-10…70	**UGT302**
2x PNP / 2x NPN	100...1,000	6	-20…70	**UGT303**
PNP + 4…20 mA / NPN + 4…20 mA	100...1,000	6	-20…70	**UGT304**
PNP + 0...10 V / NPN + 0…10 V	100...1,000	6	-20…70	**UGT305**
M30 · IO-Link				
2x PNP / 2x NPN	250...2,500	1	-10…60	**UIT300**
PNP + 4…20 mA / NPN + 4…20 mA	250...2,500	1	-10…60	**UIT301**
PNP + 0...10 V / NPN + 0…10 V	250...2,500	1	-10…60	**UIT302**

Level monitoring in any application

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

IO-Link included

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

Common technical data		
Operating voltage	[V]	10…30
Current rating switching output	[mA]	100
Temperature compensation		yes
Housing material		high-grade stainless steel
Connection		M12 connector
Switching status indication		yellow
Protection rating		IP65 | IP67 IP68 | IP69K

BEST FRIENDS

USB IO-Link master
For parameter setting and analysis of devices

MVQ position sensor
Monitoring and diagnostics of quarter-turn actuators
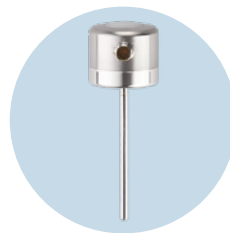
TCC temperature sensor
Including self-monitoring for maximum process reliability

For further technical details, please visit:
ifm.com/fs/UGT300

Smartly positioned

High-precision positioner for industrial valves

- Precisely approach and hold any valve position

- Extensive diagnostic functions enable condition monitoring via IO-Link

- Individually adjustable RGB LEDs for clear visual feedback and localisation

- Flexible, modular system: sensor, solenoid valve, throttle plate and connection cables in a set

IP65

IO-Link

ifm – close to you!

Precise positioning of valves

Positioners are used to move valves and ball valves precisely to the required position, based on a signal from the control level indicating the degree to which the valve is to open in percent.

The positioner developed by ifm is based on the proven MVQ sensor and is supplemented by a new control unit. The connected solenoid valve is precisely controlled using the algorithms integrated in the MVQ. By controlling the supply and exhaust air, the valve is reliably moved to the required position and held there securely. The positioner provides feedback via its indicators and the control system when the valve has reached the required position.

The device has several teach-in modes to maximise efficiency and ease of set-up. Besides, a self-learning algorithm has been developed that continuously monitors, improves and expands the performance of the positioner.

Complete set

The MVQ positioner is supplied as a comprehensive set consisting of the MVQ301 sensor and control unit, a pneumatic solenoid valve, a throttle plate and a Y cable. Its modular design makes it easy to install directly on the NAMUR interface of the actuator. Different versions of the set are available, which differ, for example, in their behaviour to power or compressed air failures.

Available sets			Order no.
MVQ301 sensor and control unit, EVC508 Y connection cable, throttle plate, silencer (pre-mounted)	+	3/3-way solenoid valve (NAMUR)	**ZZ0687**
	+	5/3-way solenoid valve (NAMUR)	**ZZ0686**
	+	5/3-way solenoid valve (NAMUR) with fail-safe position	**ZZ0688**

Common technical data of the sets		
Operating range of the actuator	[°]	50...300
Indication of the operating range	[%]	0 corresponds to CLOSE, 100 corresponds to OPEN
Control accuracy	[%]	± 0,5
Operating pressure of the solenoid valve	[bar]	3...8
Compressed air flow rate	[l/min]	max. 1250
Environmental conditions	[°C]	-25...70 (sensor) -10...50 (solenoid valves)
Communication interface		IO-Link
Required master port class		B
Protection rating		IP65

BEST FRIENDS
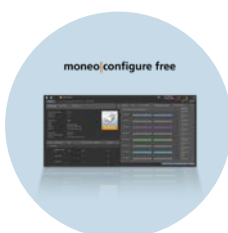
moneo|configure free
Software for parameter setting of the IO-Link infrastructure

IO-Link masters
Masters with Profinet interface for use in the field
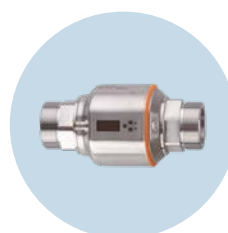
Flow meters
Flow, total quantity and temperature measurement

For further technical details, please visit:
ifm.com/fs/MVQ301
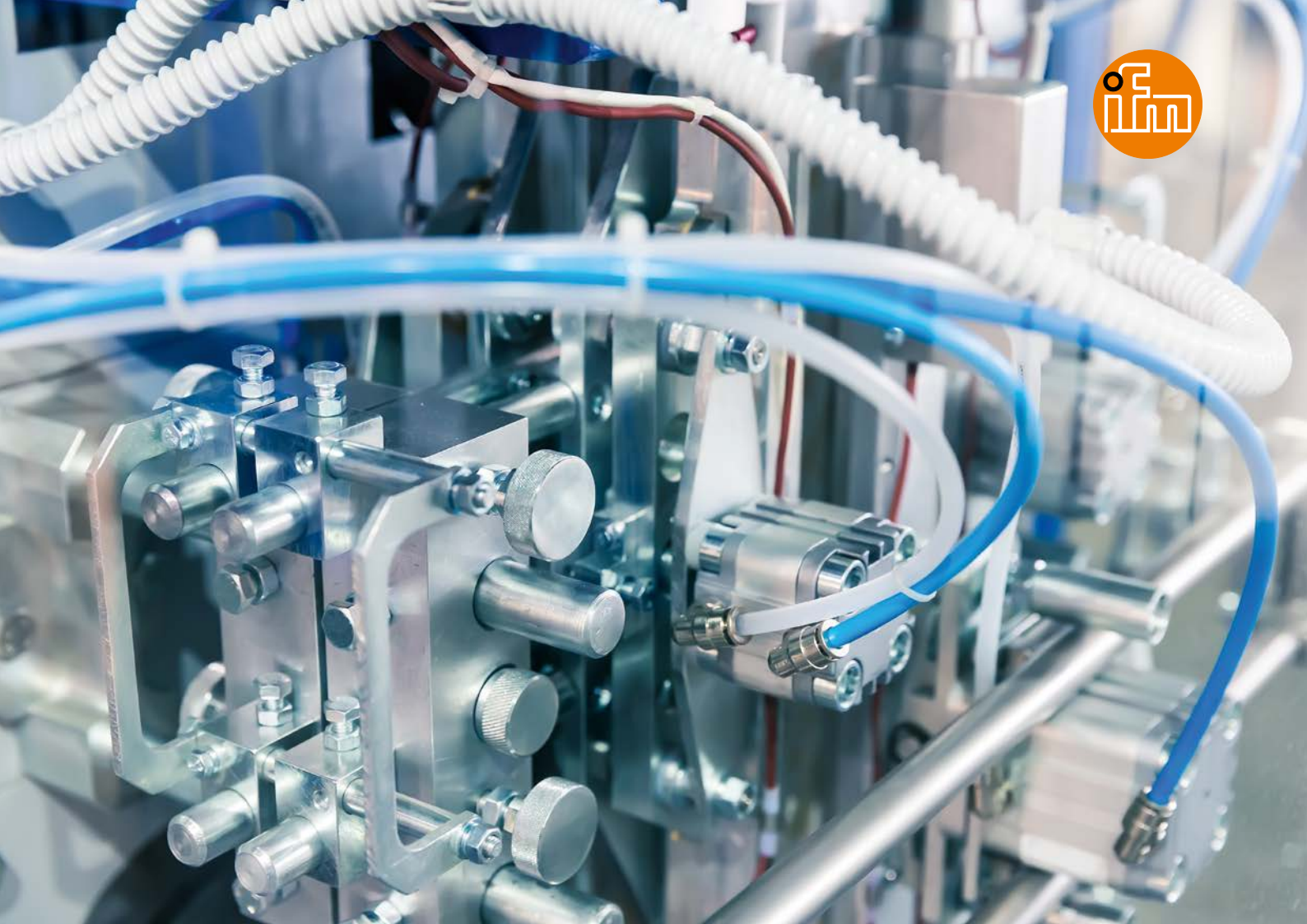
Keep a close eye on more than just the end positions

T-slot and C-slot cylinder sensors with IO-Link

- Monitoring end positions with flexible tolerances

- End position setting aid with second LED

- Inline quality monitoring with 50 mm detection range

- Monitoring critical pneumatic cylinders using the switching cycle counter

- Fast fault localisation thanks to extensive diagnostic functions

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Number of outputs physical / digital	Connection type	Connector type	Number of conductors	T-slot Order no.	C-slot Order no.
1 / 2	2 m cable	–	3	–	**MK5800**
2 / 2	2 m cable	–	4	**MK5904**	–
1 / 2	0.3 m pigtail	M8 fix	3	**MK5905**	**MK5801**
1 / 2	0.3 m pigtail	M8 rotatable	3	**MK5906**	**MK5802**
2 / 2	0.3 m pigtail	M8 rotatable	4	**MK5907**	–
2 / 2	0.3 m pigtail	M12 rotatable	4	**MK5908**	–
1 / 2	0.3 m pigtail	M12 rotatable	3	–	**MK5803**
1 / 2	6 m cable	–	3	–	**MK5804**
2 / 2	6 m cable	–	4	**MK5909**	–

Versatile cylinder monitoring

This IO-Link sensor with two configurable hardware outputs will upgrade your machine in no time. The outputs can be configured to your application requirements. A high-resolution process value with a detection range of 50 mm enables continuous monitoring as well as digital transmission via IO-Link. Thanks to the teach function and the Bluetooth adapter, the installed sensor can be easily adjusted from outside the machine.

Integrated diagnostic functions

Combined functions, such as the stroke counter (switching cycle counter), time monitoring between both end positions or device temperature provide servicing assistance and enable maintenance to be carried out as required.
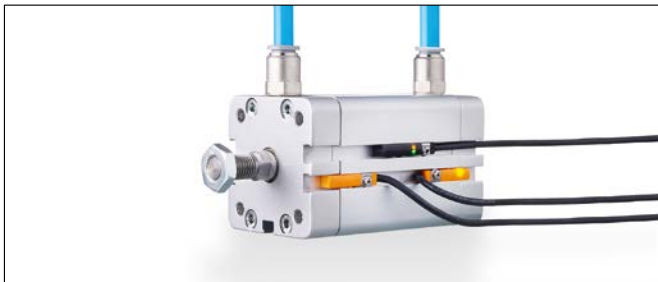
One sensor instead of two: On short-stroke cylinders, one IO-Link cylinder sensor (upper groove) is now sufficient to detect both end positions instead of two conventional sensors (lower groove) as was previously the case.

Common technical data		
Operating principle		3D Hall
Electrical design		PNP / NPN (selectable)
Output function		NO / NC (selectable)
Output functions		Switch point / counter / diagnostic (selectable)
Switching frequency	[Hz]	200
Setting range	[mm]	typ. 50
Linearity	[%]	< 5
Resolution	[mm]	typ. 0.01
Repeatability	[mm]	< 0.2
Protection rating		IP67

BEST FRIENDS

moneo|configure free
Software for parameter setting of the IO-Link infrastructure

moneo|blue
Manage IO-Link devices conveniently via smartphone app

IO-Link interface
For setting the parameters of IO-Link devices on the PC

For further technical details, please visit: ifm.com/fs/MK5800

Distance measurement even in poor visibility

Radar sensor for harsh environmental and weather conditions

• Long ranges and a wide temperature range

• Reliable measurements even in precipitation, fog, dust and dirt

• Simultaneous detection of distance and speed

• Adaptable to specific applications thanks to various operating modes

• Intuitive set-up and visualisation of the measured data using the ifm Vision Assistant software

ifm – close to you!

IP69K

IO-Link

Type	Angle of aperture horizontal x vertical [°]	Frequency [GHz]	Outputs (2x configurable)	Order no.*
Distance sensor	40 x 30	60...64	IO-Link | binary | 4...20 mA | 0...10 V	**R1D100**
Distance sensor	40 x 30	60…64	CAN J1939	**R1D101**
Distance sensor with reduced transmitter power	40 x 30	60...64	IO-Link | binary | 4...20 mA | 0...10 V	**R1D102**
Distance sensor	40 x 20	77...81	IO-Link | binary | 4...20 mA | 0...10 V	**R1D200**
Distance sensor	40 x 20	77…81	CAN J1939	**R1D201**

*The application area of the device depends on the base frequency used and the country in which it is operated. You will find an overview in the operating instructions and at ifm.com.

Distance sensor

The distance sensor detects objects by means of a focused radar beam. The powerful technology also allows the detection of targets whose reflection properties are poor.

The data obtained in this way can be clearly visualised using the "Vision Assistant" software. For example, the distance profile can show multiple objects simultaneously, while their relative speed can also be output at the same time.
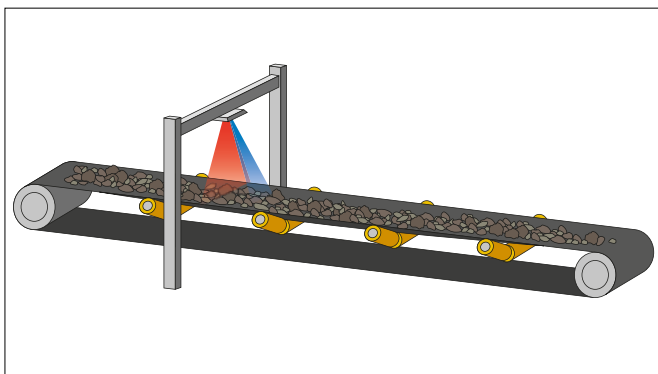
The radar sensor detects the load height and speed of a conveyor belt.

Common technical data		
Temperature range	[°C]	-40…80
Protection rating		IP65 | IP67 | IP69K

Reliable detection in harsh environments

With its long range, shock and vibration resistance properties and different operating modes, the radar sensor is designed to accurately detect objects even in the most adverse conditions. Whether in rain, snow, strong wind or extreme dust: the powerful radar sensor technology ensures reliable operation at all times.

Application areas

The result is a wide range of applications for the sensor, for example the detection of vehicles such as trucks and ships, during docking processes at loading and unloading ramps.

In addition, the radar sensor enables conveyor belt monitoring with regard to load and speed and scores in car washes with its robustness against spray. In a nutshell: a true all-rounder in distance and speed measurement.

BEST FRIENDS

IO-Link interface
For setting the parameters of IO-Link devices on the PC

io-key
Sending sensor data to the cloud via a mobile network
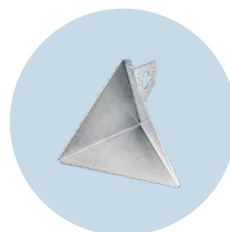
Corner reflectors
Used as set-up aid and as a reliable target object

For further technical details, please visit: ifm.com/fs/R1D100

Area surveillance in all weather conditions

3D radar sensor for mobile use

- Simultaneous detection of several objects and intelligent target selection by distance, signal strength or RCS

- Output of position (x, y, z), distance and speed of the objects via IO-Link and CAN

- Large angle of aperture, freely adjustable 3D detection field

IP69K   IO-Link

ifm – close to you!

Type	Angle of aperture horizontal x vertical [°]	Frequency [GHz]	Output (2x configurable)	Order no.
3D Distance	140 x 50	60...64	IO-Link | binary | 4...20 mA | 0...10 V	**R2D100**
3D Distance & 3D Area	140 x 50	60...64	CAN J1939	**R2D101**
3D Area	140 x 50	60...64	IO-Link | binary	**R2D110**
3D Distance	140 x 30	77...81	IO-Link | binary | 4...20 mA | 0...10 V	**R2D200**
3D Distance & 3D Area	140 x 30	77...81	CAN J1939	**R2D201**
3D Area	140 x 30	77...81	IO-Link | binary	**R2D210**

The application area of the respective device depends on the base frequency used and the country in which it is operated.
You will find an overview in the operating instructions and at ifm.com.

Reliable object detection in any weather

Detecting objects, determining their direction of movement and speed – even in the presence of precipitation, dust, fog and dirt: the R2D is the perfect addition to your mobile machines when it comes to avoiding collisions with objects. Whether alone or in combination with the mobile 3D sensors from ifm: the robust radar sensors ensure reliable distance detection even in poor visibility.

Two versions, many setting options

The large horizontal angle of aperture of 140° ensures maximum area coverage. In the "3D Distance" version, the sensor transmits the x, y and z coordinates of the objects in the form of a dense point cloud. The "3D Area" type sensor summarises the information itself into objects, transmitting their position, direction of movement and speed.

The detection field of both versions can be limited individually. Various filter options and other settings such as warning zones and early warning times further increase the effectiveness of the R2D.

Common technical data		
Temperature range	[°C]	-40…80
Protection rating		IP65 | IP67 | IP69K
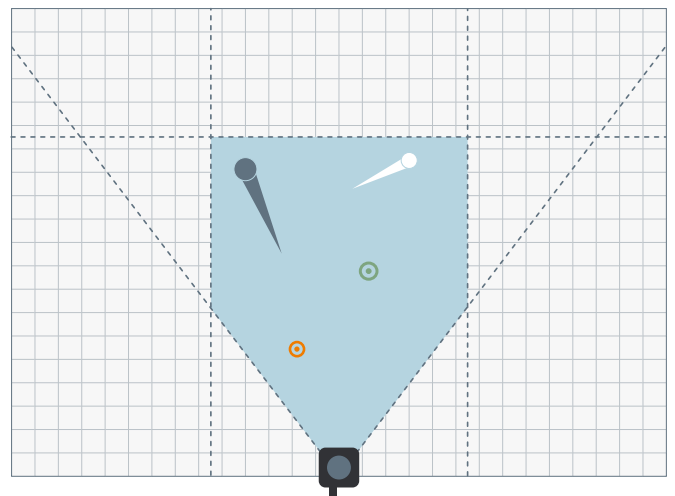
The radar detection field can be customised. Static and dynamic targets are displayed differently.

BEST FRIENDS

Graphic display
Programmable HMI for the control of mobile machines

BasicController
Controller with H-bridge, 16 inputs and outputs

3D sensor suitable for mobile use
Robust distance measurement using time-of-flight technology

For further technical details, please visit: ifm.com/fs/R2D100

Bringing everything safely into position

Safety encoders for mobile machines

- Integrated safety check, TÜV certificate and daisy chain option simplify system set-up

- Accurate position synchronisation in motion thanks to the "preset on the fly" function

- Additional ifm mode with active safe state e.g. for faster system response

IP69K PL/SIL CODESYS

ifm – close to you!

Safety for mobile machines

Whether in municipal vehicles, in AGVs in intralogistics, or in AMRs for heavy-duty use in mines or harbours: Wherever vehicles or superstructures are moved or steered automatically, the safety of the surroundings and the vehicle itself must be guaranteed at all times. The safety encoder from ifm can be used to record the position, angle and speed values of moving elements such as axles, turntable ladders, crane arms or tipping skips. This information can be used to derive steering, turning or tilting angles or the current height position of lifting elements. Continuous position synchronisation, for example, via RFID, is also possible thanks to the "preset on the fly" function.

Fast integration, also in series

The sensor redundancy required to ensure safe operation is already integrated in the safety encoder. This and the corresponding continuous self-monitoring of safe operation have been tested and certified by TÜV Rheinland. The sensor is also integrated into the SISTEMA library. This immensely reduces the effort required to implement and subsequently accept safety-related automation. The safety encoder also has both a CAN input and a CAN output. Hence, several encoders or other compatible sensors can be connected in series, making the installation of safety sensors efficient and simple.

Seamless communication with the controller

The combination with the ifm controller also significantly reduces the programming effort in Codesys because the seamless connection of the encoder to the controller and secure communication between the two products is guaranteed by default.

Safety encoder, 58 mm	Order no.
Axial connection	
solid shaft 10 mm	**RM900S**
hollow shaft, 12 mm	**RM901S**
Radial connection	
solid shaft, 10 mm	**RM902S**
hollow shaft, 12 mm	**RM903S**

Technical data		
Operating voltage	[V DC]	8...36
Resolution	[bits]	29 (Multiturn: 16; single turn: 13)
M12 CANbus connections		1x in; 1x out
Communication protocols		CANopen, CANopen Safety
Safety level		SIL2; PLd; AgPLd*; MPLd*
Protection rating		IP69K

*in preparation
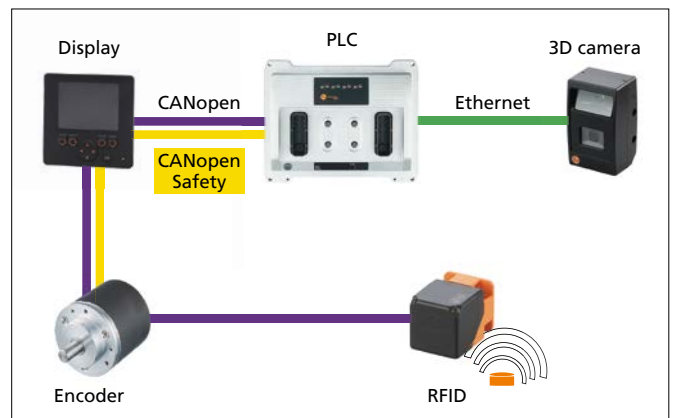
BEST FRIENDS

ecomatController
Controller for mobile applications, also for safety applications

Graphic display
Programmable HMI for the control of mobile machines

RFID read/write head
Antenna and evaluation in one device

For further technical details, please visit:
ifm.com/fs/RM900S

Even more sturdy and precise, and also faster

Robust high-resolution pressure sensor

- Pressure peak and overload resistant ceramic measuring cell with diagnostic function

- Fast compensation of dynamic temperature changes

- Permanent 150°C medium temperature

- Factory certificate for free download

- Very high resolution thanks to 32 bits and IO-Link

ifm – close to you!

Factory setting measuring range [bar]	Measuring range relative pressure [bar]	Order no.	
		G1 / Aseptoflex Vario	G1 / sealing cone
0...160	0...160	-	PI1612
0...100	-1...100	-	PI1602
0...40	-1...40	PI1743	PI1843
0...25	-1...25	PI1703	PI1803
0...16	-1...16	PI1714	PI1814
0...10	-1...10	PI1704	PI1804
0...6	-1...6	PI1715	PI1815
0...4	-1...4	PI1705	PI1805
0...2.5	-0.124...2.5	PI1706	PI1806
0...1.6	-0.1...1.6	PI1717	PI1817
0...1	-0.05...1	PI1707	PI1807
-1...1	-1...1	PI1709	PI1809
0...0.4	-0.05...0.4	PI1718	PI1818
0...0.25	-0.0124...0.25	PI1708	PI1808
0...0.1	-0.005...0.1	PI1789	PI1889

Technical data		
Step response time analogue output	[ms]	30 (2L) / 7 (3L)
Accuracy (in % of the span) deviation of the characteristics (to DIN EN 61298-2)		< ± 0.2
Medium temperature	[°C]	-25...150
Materials (wetted parts)		Ceramic 99.9 %, PTFE, stainless steel (316L/1.4435)
Communication interface		IO-Link 1.1 COM2 (38.4 kbaud)
Protection rating		IP69K

A successful product improved even further

The ifm pressure sensors of the PI series have proven their worth in the food and beverage industry for many years. The key to success lies in the extremely robust ceramic measuring cell, which can easily withstand even extreme pressure peaks and overloads. Ceramic is also resistant to abrasive media. Unlike conventional sensors with a metallic diaphragm, no oil is required as a pressure transfer medium. This eliminates the risk of medium contamination when the sensor is damaged. As a result, the ceramic measuring cell offers maximum safety, especially in applications in the food and beverage industry. A new feature is an advanced diagnostic function that continuously monitors the status of the measuring cell. It provides maximum confidence in the measurement while also meeting the documentation requirements of critical processes.

Sophisticated compensation for temperature changes

With pressure sensors, highly dynamic temperature fluctuations often lead to a scenario where the measured values only slowly approximate the actual pressure value. The new dynamic temperature compensation on the PI balances these effects in tanks and pipes by using an intelligent algorithm, making the measurement signal even more reliable.

IO-Link

IO-Link enables not only the loss-free digital transmission of measured values, but also the sensor configuration and provision of diagnostic data, e.g. excess temperature or measuring cell monitoring. Alternatively, the sensor can also be configured on site using the conventional method with three operating keys and a setting menu.

High resolution

The resolution of the IO-Link signal has been increased to 20,000 steps, especially for hydrostatic measurement in tanks.

BEST FRIENDS
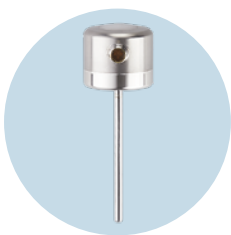
TCC temperature sensor
Including self-monitoring for maximum process reliability
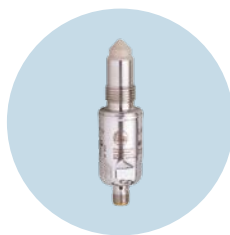
LMT level sensor
Point level detection even with difficult media
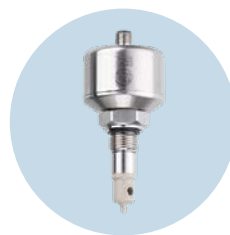
LDL conductivity sensor
Precise distinction of liquid media based on their conductivity

For further technical details, please visit: ifm.com/fs/PI1602

The grip strength always clearly in view

PQ Cube pressure sensor sets new standards

- Robust measuring cell resists dust, dirt and moisture
- Easy-to-read 1" TFT display
- Smart installation concept requires fewer adapters
- Made for use in demanding environments

IP65

IO-Link

ifm – close to you!

Measuring range [bar]	Outputs	Order no.
		G $^1/_8$
-1...10	2 switching outputs DC PNP/NPN	**PQS812**
-1...1	2 switching outputs DC PNP/NPN	**PQS816**
-1...0	2 switching outputs DC PNP/NPN	**PQS819**
-1...10	1 switching output + 1 analogue output 4...20 mA / 0...10 V / 1...5 V	**PQC812**
-1...1	1 switching output + 1 analogue output 4...20 mA / 0...10 V / 1...5 V	**PQC816**
-1...0	1 switching output + 1 analogue output 4...20 mA / 0...10 V / 1...5 V	**PQC819**

Robust in every corner

The robustness of the PQ Cube makes it the ideal choice for use on vacuum grippers and all other pneumatic applications. Whether it is the IP65 housing, the brass sockets or the proven accurate, dust and dirt resistant measuring cell – everything is designed for permanent use in demanding industrial environments.

TFT display: convenient data visualisation

At the same time, we have not compromised on comfort: On the 1" TFT display you can read all relevant data and information in clear writing. A nine-language installation wizard helps you set it up.

Avoid the flood of adapters

Thanks to the smart installation concept, you can install the PQ Cube in many cases without additional adapters. Find out more in our online shop.

Common technical data		
Ambient temperature / medium temperature	[°C]	0...60
Switch point accuracy	[%]	< ± 0.5
Linearity error		< ± 0.5 % (LS) / < ± 0.25 % (BFSL)
Communication interface		IO-Link 1.1 COM 3
Connector		M8
Protection rating		IP65

LS = Limit Value Setting
BFSL = Best Fit Straight Line
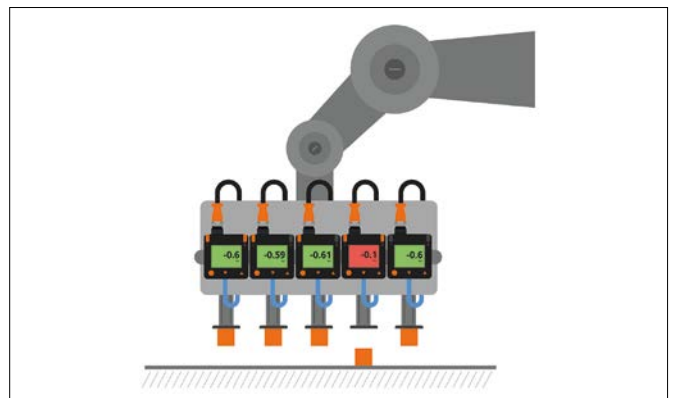
The current status can be identified quickly and clearly due to the red / green colour change.

BEST FRIENDS
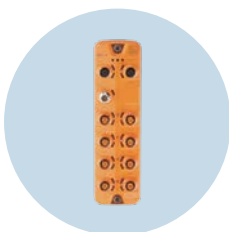
IO-Link masters
For use in the field with up to 8 ports.
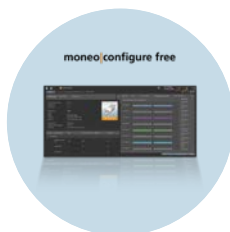
moneo|configure free
Software for parameter setting of the IO-Link infrastructure

IO-Link interface
For parameter setting of IO-Link devices on the PC

For further technical details, please visit: ifm.com/fs/PQS812

Non-contact level measurement

Radar sensor for open and closed containers

- Level measurement with millimetre precision up to 10 metres

- Non-contact measuring principle, therefore no problems from deposits or wear

- Direct measurement or through non-metallic walls

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

IP69K

IO-Link

ifm – close to you!

Process connection	Outputs	Frequency range [GHz]	Order no.
G1	2 switching outputs or 1 switching and 1 analogue output 4...20 mA	77-81	**LW2120**
G1	2 switching outputs or 1 switching and 1 analogue output 4...20 mA	76-77	**LW2160***

*Available for India and Malaysia

Precise measurement on open and closed tanks and containers

The LW2120 radar level sensor measures levels of liquid media up to 10 metres precisely and without blind areas. The 80 GHz frequency used ensures stable and precise measurement results, even in the presence of steam or condensate in the tank for example.

With the antenna extension, available as an accessory, the sensor may also be used outside closed metal tanks, for example on open tubs.

The radar measuring system can also penetrate through non-metallic walls, allowing the level sensor to be easily mounted above plastic tanks such as IBC containers.

View measurement behaviour in real time

The freely available Vision Assistant software enables intuitive set-up of the sensor and clear visualisation of the process values. The behaviour of the sensor can be viewed in real time and reliable measurement ensured.
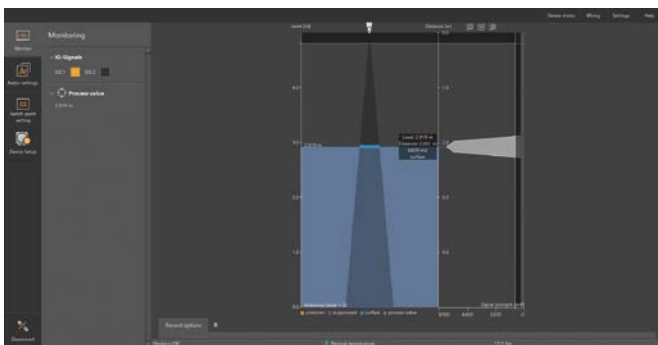
Common technical data		
Measuring range	[m]	0.01...10
Measuring accuracy	[mm]	± 2
Measuring principle		FMCW (80 GHz)
Protection rating		IP69K
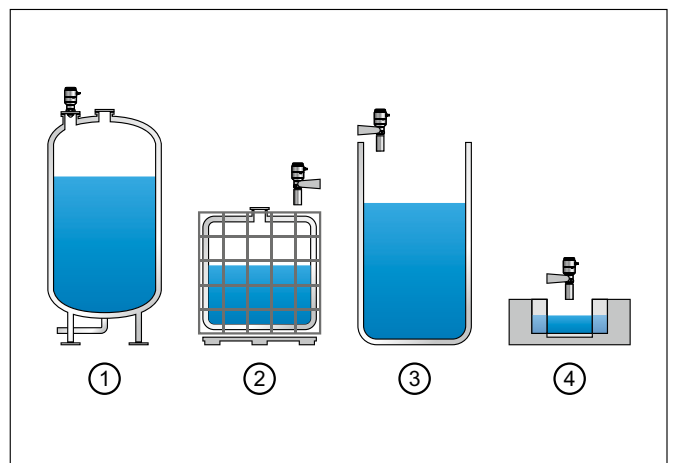
1) Storage tank
2) Plastic container
3) Outside use
4) Flow measurement
   Flow rate measurement in Venturi flumes (e.g. Parshall, Khafagi-Venturi) can also be implemented with the radar sensor.

BEST FRIENDS

Antenna extension
For use of the sensor outside closed tanks

moneo|RTM
Analysis software for simple condition monitoring

IO-Link interface
For setting the parameters of IO-Link devices on the PC

For further technical details, please visit: ifm.com/fs/LW2120

Non-contact level measurement

Hygienic radar level sensor with IO-Link

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

- Non-contact measuring principle, therefore no problems from deposits or wear

- Certified for use in hygienic areas

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

IP69K

IO-Link

ifm – close to you!

Process connection	Outputs	Frequency range [GHz]	Order no.
Aseptoflex Vario G1	2 switching outputs or 1 switching and 1 analogue output 4...20 mA	77-81	**LW2720**
Aseptoflex Vario G1	2 switching outputs or 1 switching and 1 analogue output 4...20 mA	76-77	**LW2760***

*Available for India and Malaysia

Trouble-free monitoring of large tanks

With the LW2720 level sensor, levels of liquid media in tanks with a height of up to 10 metres can be monitored precisely and without blind areas. The non-contact radar measuring principle prevents malfunctions or failures of the sensor caused by the adhesion of viscous media or damage from agitators.

The 80 GHz frequency used ensures stable and precise measurement results even in the presence of steam or condensate in the tank. The sensor is designed for use in hygienic areas, so that even CIP and SIP processes or the use of spray balls do not impair its proper functioning.

More convenience thanks to IO-Link

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

Common technical data		
Measuring range	[m]	0.01...10
Measuring accuracy	[mm]	± 2
Measuring principle		FMCW (80 GHz)
Protection rating		IP69K

View measurement behaviour in real time

The freely available Vision Assistant software enables intuitive set-up of the sensor and clear visualisation of the process values. The behaviour of the sensor can be viewed in real time and reliable measurement ensured.

1) Storage tank
2) Mixing tank
3) CIP process
4) Batch filling

BEST FRIENDS

Starterkit
Hardware and software for testing the LW2720 via IO-Link
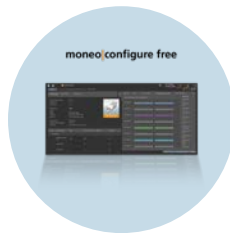
moneo|configure free
Software for parameter setting of the IO-Link infrastructure

IO-Link interface
For setting the parameters of IO-Link devices on the PC

For further technical details, please visit: ifm.com/fs/LW2720

The game changer

Hygienic flow meter with IO-Link

- Magnetic-inductive flow meter completes the portfolio for the food industry

- Reduces the need for measuring points by providing flow rate, total volume, temperature and conductivity

- Easy to set up thanks to app-based menu and guided installation

IP69K

IO-Link

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Nominal width	Measuring range [m³/h]	Order no.		
		Units of measurement: SI, EU With TFT display	Units of measurement: SI, EU, Imperial With TFT display	Units of measurement: SI, EU, Imperial Without TFT display
DN40 (1 ½")	0.3…45.0	**SMF320**	**SMF321**	**SMF350**
DN50 (2")	0.6…72.0	**SMF420**	**SMF421**	**SMF450**
DN65 (2 ½")	1.2…120.0	**SMF520**	**SMF521**	**SMF550**
DN80 (3")	1.8…180.0	**SMF620**	**SMF621**	**SMF650**
DN100 (4")	3.0…300.0	**SMF720**	**SMF721**	**SMF750**

No more blind spots in the digital process

The SM Foodmag magnetic-inductive flow meter takes the flow measurement of liquid and creamy foods to a new level. Equipped with IO-Link, the sensor is the first of its kind to enable digital data transmission from the process, eliminating the last blind spot in the digitalised, transparent production process. On site, the display itself and the all-round visible status LED provide information on the current status. The sensor version without display can be used for installation situations in which no visualisation of the process values is required.

Measures what matters

The sensor detects the current flow rate, total volume and flow direction, as well as the presence of the medium (often referred to as empty pipe detection). It also transmits conductivity and temperature to the control system and IT level. This can reduce the need for additional measuring points in the system.

Convenience, clarity, safety

The integration of the SM Foodmag almost takes care of itself. Combined with our patented cables, the standard M12 connection ensures a fast, waterproof and error-free connection to the data infrastructure. Standard installation dimensions and a flexible choice of seals and process adapters make it easy to integrate into existing systems.

The app-based menu structure and guided installation make parameter setting a breeze. Locally and digitally, the SM Foodmag ensures maximum visibility inside the pipe - for greater process reliability.

Technical data		
Accuracy, flow rate under reference conditions, optional (subject to a charge)	[%]	± 0.5 MW + 1.5 mm/s ± 0.2 MW + 2 mm/s
Response time	[s]	0.3
Repeatability	[%]	± 0.1 MW
Medium temperature	[°C]	-20...150 (continuously)
Accuracy, temperature	[K]	± 1
Measuring range, conductivity	[µS/cm]	100...100,000
Accuracy, conductivity 100... 20,000 µS/cm 20,000... 100,000 µS/cm	[%]	± 10 MW ± 20 MW
Materials (wetted parts)		PFA; High-grade stainless steel (316L/1.4435)
Protection rating		IP67	IP69K

MW: measured value

BEST FRIENDS

IO-Link masters
Field-compatible masters for use in hygienic areas

Conductivity sensor
Precise distinction of liquid media based on their conductivity

Pressure sensor
Hygienic, with robust and flush-mounted ceramic measuring cell

For further technical details, please visit: ifm.com/fs/SMF320

Measuring flow rates without any obstacles

The SU Puresonic ultrasonic sensor

- Accurate flow measurement of conductive and non-conductive media

- Component-free stainless steel measuring pipe offers high media resistance and permanent ingress resistance

- Conclusions about the signal quality possible on the basis of the signal strength provided

- Sensor status always in view via the operating status LED

IP67   IP69K   IO-Link

ifm – close to you!

Process connection	Measuring range		Order no. [l/min]		Order no. [l/min] + [gpm]	
	[l/min]	[gpm]	Water	Water, glycol, oil	Water	Water, glycol, oil
G ½ " (DN15)	0.5...65	0.13...17.17	**SU6020**	**SU6030**	**SU6021**	**SU6031**
G ¾ " (DN20)	0.5...75	0.13...19.81	**SU7020**	**SU7030**	**SU7021**	**SU7031**
G 1 " (DN25)	1...240	0.25...63.4	**SU8020**	**SU8030**	**SU8021**	**SU8031**
G 1 ¼ " (DN32)	1...275	0.25...72.64	**SU9020**	**SU9030**	**SU9021**	**SU9031**
G 2 " (DN50)	5...1000	1.32...264.18	**SU2020**	**SU2030**	**SU2021**	**SU2031**
½ " NPT	0.5...65	0.13...17.17	-	-	**SU6621**	**SU6631**
¾ " NPT	0.5...75	0.13...19.81	-	-	**SU7621**	**SU7631**
1 " NPT	1...240	0.25...63.4	-	-	**SU8621**	**SU8631**
2 " NPT	5...1000	1.32...264.18	-	-	**SU2621**	**SU2631**
			Water, edible oils			
Clamp 1 " (DIN32676 series C)	1...240	0.25...63.4	**SUH200**		**SUH201**	
Clamp 2 " (DIN32676 series C)	5...1000	1.32...264.18	**SUH400**		**SUH401**	

Ensuring process quality easily and permanently

The SU Puresonic ultrasonic sensor detects flows of conductive and non-conductive media with high precision. Water, glycol mixtures, coolants, oils and edible oils are all detected with equal reliability.

Robust measuring pipe without structures

The measuring pipe of the SU Puresonic is made of stainless steel and is free of measuring elements, seals and moving parts. This means that faults due to damage, leaks or blockages are excluded from the outset, as are design-related pressure drops.

Condition monitoring made easy

Equipped with IO-Link and a highly visible status LED, the SU Puresonic has everything you need to continuously monitor process quality. In this way, the status of the signal quality can be quickly read both at the IT level and in the field. If it is decreasing, this can be an indication of increased particle density or deposits on the inner wall of the pipe.

You can find further information about the SU Puresonic as well as customer experience reports on our website.

Technical data		
Pressure rating	[bar]	< 100
Output functions		IO-Link, analogue output 4...20 mA, pulse output, switching output, diagnostic output
Flow Accuracy (water) SU8, SU9, SU2, SUH2, SUH4: SU6, SU7: Repeatability Minimum conductivity	[%] [%] [µS]	 ± (1.0 MW + 0.5 MEW) ± (2.0 MW + 0.5 MEW) ± 0.2 from 0
Temperature Measuring range Accuracy	[°C] [K]	 -20...100 ± 2.5
Protection rating		IP67, IP69K

MW = Measuring range value
MEW = Measuring range end value

BEST FRIENDS

Vortex flow meter
Also detects deionised water and cooling water

Conductivity sensor
Measures the conductivity of a medium, such as ultrapure water

IO-Link masters
Field-compatible masters with Profinet interface

For further technical details, please visit:
ifm.com/fs/SU6020

Do you want to know the flow?

The new generation of vortex sensors

- Suitable for ultrapure water, water and water-based media
- Precise measurement of flow and temperature
- Durable and robust thanks to hydrolysis-resistant plastic
- High pressure and temperature resistance

IP65

ifm – close to you!

Process connection	Nominal width	Order no.	
		Seal: FKM	Seal: EPDM
G ½"	DN6	**SV3051**	**SV3151**
G ½"	DN8	**SV4051**	**SV4151**
G ¾"	DN10	**SV5051**	**SV5151**
G ¾"	DN15	**SV6051**	**SV6151**
G 1"	DN20	**SV7051**	**SV7151**
G 1 ¼"	DN25	**SV8051**	**SV8151**

Common technical data		
Outputs		1x 4…20 mA 1x Pt1000
Measuring accuracy water	[%]	Q < 50 % MEW: < 1 (MEW) Q > 50 % MEW: < 2 (MW)
Repeatability	[%]	0.2 (MEW)
Medium temperature	[°C]	-15…125
Pressure rating	[bar]	16 (to max. 90 °C)
Bursting pressure	[bar]	100 (to max. 90 °C)
Materials (wetted parts)		PPS; PPSU; FKM or EPDM
Protection rating		IP65

Q = volume flow
MW = Measuring range value
MEW = Measuring range end value

Tried-and-tested principle redesigned

New design, improved robustness and proven precision: with their inner and outer values, the new generation of Vortex sensors convinces all along the line, making the flow measurement of deionised water, drinking water or cooling water more easier than ever before.

Thanks to the new design and new materials, the number of inner seals could be minimised: housing and bluff body are made of one piece, guaranteeing high pressure and temperature resistance.

More robust against hydrolysis, pressure and temperature

The material used is characterised by high hydrolysis resistance, which has a positive effect on the service life of the device. In addition, the material is resistant to microbiological attack, which reduces the risk of legionella development, especially in cooling water circuits.

Identical installation dimensions

The installation dimensions correspond to those of the existing Vortex generation, allowing for a smooth changeover to the new generation.

BEST FRIENDS

Temperature plug
Converts resistance values into analogue or IO-Link signals

Converter and display
Converts an analogue current signal into a digital signal

Level sensor
Continuous level detection in tanks and containers

For further technical details, please visit: ifm.com/fs/SV3051
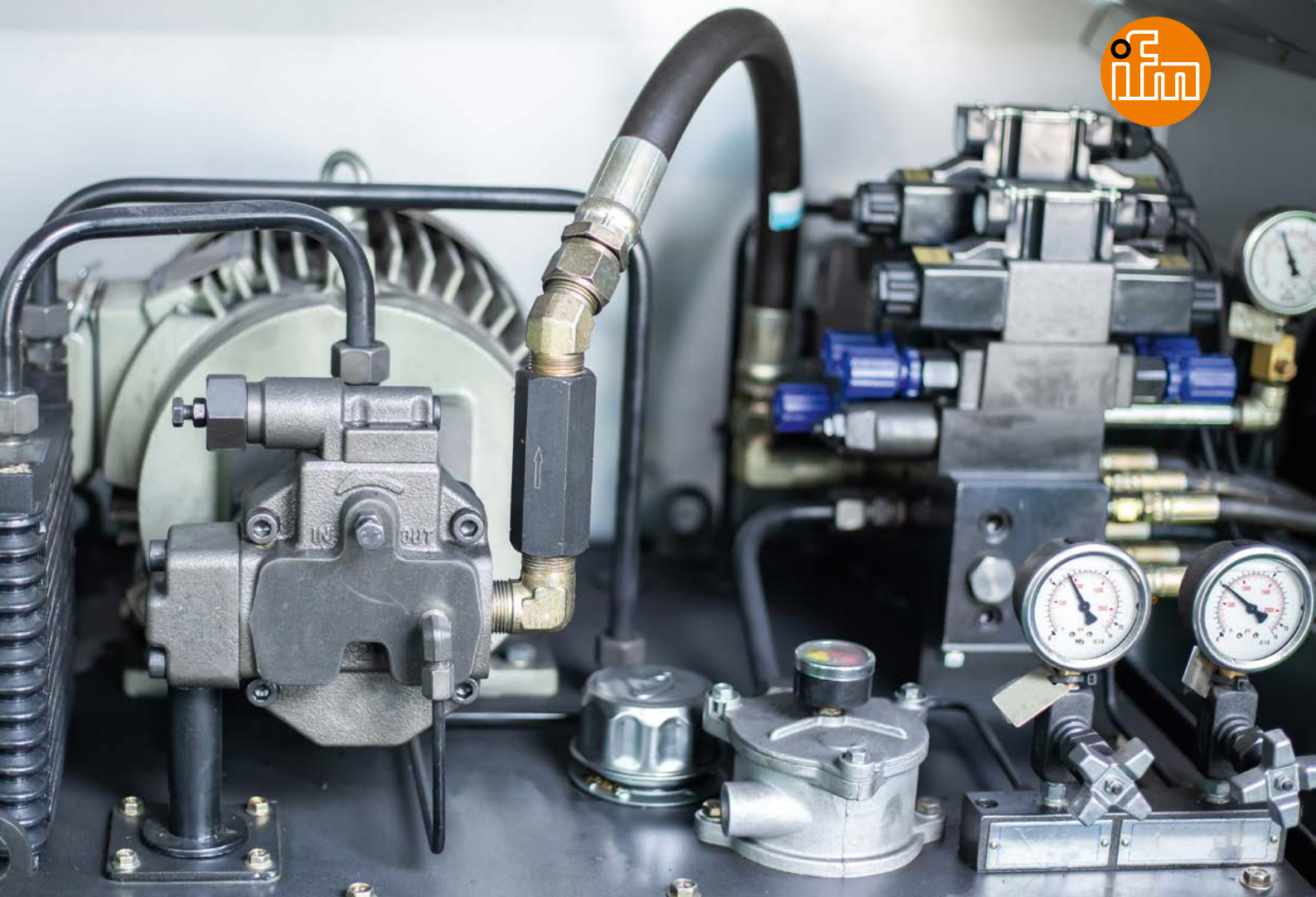
Every drop counts

Mechatronic flow sensors designed for oils

- Precise measurements for viscosities from 5 to 320 cSt

- Fast flow or temperature changes do not affect the measurement

- High measurement dynamics reduces type versions

- For high-pressure applications up to 100 bar

IO-Link   IP67

ifm – close to you!

Process connection and pressure rating	Order no.								
	G ¾ – PN 100			G 1 – PN 100				G 1 ½ – PN 63	
Max. flow in l/min	15	25	50	15	25	50	100	100	200
ISO VG – 10 cSt	**SB1232**	**SB1233**	**SB1234**	–	–	–	**SB1246**	–	**SB1257**
ISO VG – 32 cSt	**SB9232**	**SB9233**	–	–	–	–	–	–	–
ISO VG – 46 cSt	**SB2232**	**SB2233**	**SB2234**	–	–	–	**SB2246**	–	**SB2257**
ISO VG – 68 cSt	**SB3232**	**SB3233**	–	–	–	**SB3244**	**SB3246**	–	**SB3257**
ISO VG – 100 cSt	**SB4232**	–	–	–	**SB4243**	**SB4244**	–	**SB4256**	**SB4257**
ISO VG – 150 cSt	–	–	–	**SB5242**	–	**SB5244**	–	**SB5256**	–
ISO VG – 220 cSt	–	–	–	**SB6242**	**SB6243**	–	–	–	–
ISO VG – 320 cSt	–	–	–	**SB7242**	**SB7243**	**SB7244**	–	**SB7256**	**SB7257**

Easily withstands even the harsh environments of heavy industry

The rougher the process environment, the higher the stress that the sensors need to withstand. For such conditions, the SB mechatronic flow sensor, specifically suited for viscous oils, is the right choice.
It provides the perfect combination of accuracy, flexibility and robustness required in heavy industry or in the steel industry. The sensor easily deals with high pressures, temperature fluctuations and air bubbles in the medium.

High performance

Due to the use of application-specific mechanics and a complex adjustment carried out during production, the SB, like all other sensors of this series, is designed for maximum precision and minimum response time. Even with fluctuating temperature and viscosity values, the integrated temperature compensation and special oil calibration guarantee precise measurement results.

Common technical data	
Accuracy flow measurement	± 5 % of the final value*
Repeatability	± 1 %
Accuracy temperature measurement	3 K (25 °C; Q > 1 l/min)
Response time [s]	0.01
Medium temperature [°C]	-10...100
Pressure rating [bar]	up to 100
Output signal	IO-Link (configurable), switching output, frequency output, flow / temperature
Protection rating	IP65 | IP67

* Q > 1 l/min; 20...70 °C medium temperature

BEST FRIENDS

Level sensor
Detects minimum levels, overflow or leakage

Pressure sensor with display
Precisely detects tank pressures and levels
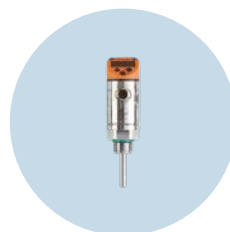
Temperature sensor with display
Highly accurate measured values with local display

For further technical details, please visit:
ifm.com/fs/SB1232

Energy saving made easy

Precise compressed air measurement for effective energy management

- The basis for a comprehensive energy management system according to ISO 50001 or EMAS

- Improvement of energy efficiency via leakage monitoring

- Pressure monitoring thanks to the integrated pressure sensor

- Different process values being indicated simultaneously removes the need for multiple instruments

IP67

IO-Link

ifm – close to you!

"All-in-one sensor" reduces costs

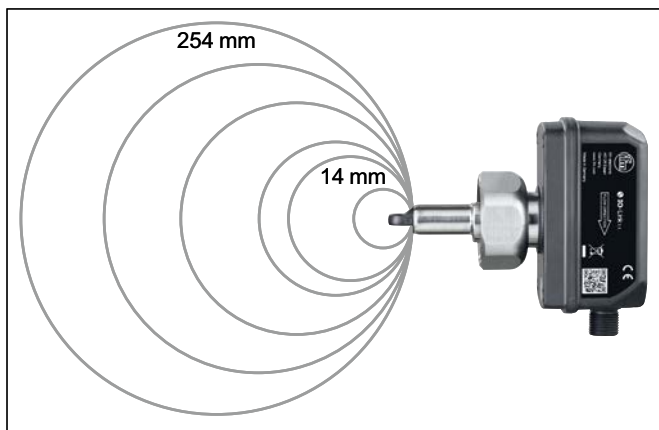The compressed air meter is a real all-rounder. Thanks to the integrated sensors for temperature and optionally also for pressure, the user can see four process values (flow rate, pressure, temperature and total consumption) at a glance, which provide information about the energy efficiency of their system. In addition to the inline versions, screw-in versions (SD1540, SD1440) are also available for pipes from 14 to 254 mm diameter and a pressure of up to 50 bar.

Energy efficiency thanks to leakage monitoring

The precise flow monitoring allows for leakage detection and energy cost savings. In addition, the high repeatability of the device enables exact allocation of the costs of compressed air to the respective production line as well as optimised product cost calculation.

Basis for seamless energy management

Following the EU directive on energy efficiency DIN EN ISO 50001, all member states have undertaken to achieve energy savings. The requirement for obtaining energy tax reductions is the implementation of an energy management system. Combining the compressed air meter with regular DAkkS calibrations provides the optimum basis for this.

Measuring range [m³/h]	Medium	Process connection	Order no.
0.05...15	air	G ¼ (DN8)	**SD5500**
0.25...75	air	R ½ (DN15)	**SD6500**
0.8...225	air	R 1 (DN25)	**SD8500**
1.4...410	air	R 1 ½ (DN40)	**SD9500**
2.5...700	air	R 2 (DN50)	**SD2500**
0.3...26260	air	G 1	**SD1540**
0.3...26260	air / nitrogen	G 1	**SD1440**

Calibration certificates	Order no.
ISO calibration (6 calibration points)	**ZC0020**
DAkkS calibration (6 calibration points)	**ZC0075**

Common technical data		
Flow		
Accuracy	[%]	± (2.0 MV + 0.5 MEW)
Repeatability	[%]	± (0.8 MV + 0.2 MEW)
Response time	[s]	0.1
Flow SD1440, SD1540		
Accuracy	[%]	± (6.0 MV + 0.6 MEW)
Repeatability	[%]	± (1.5 MV)
Response time	[s]	0.1
Temperature		
Measuring range	[°C]	-10...60
Pressure		
Measuring range	[bar]	-1...16
Output signal		Switching output, analogue output, pulse output, IO-Link (configurable)
Protection rating		IP67

MW = value of the measuring range
MEW = final value of the measuring range

The sensor outputs the consumption depending on the pipe diameter.

BEST FRIENDS

Pressure sensors
Especially for pneumatic processes
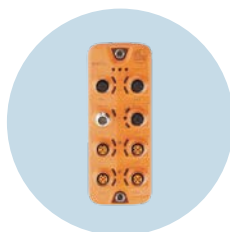
IO-Link masters
Field-compatible masters with Profinet interface

Compressed air meters
Precisely measures flow and consumption

For further technical details, please visit: ifm.com/fs/SD5500

Fast, precise, non-invasive

Passive surface temperature probe

- Clamp-on solution reduces installation costs and effort

- Also suitable for use in hygienic areas

- Fast response time and high measurement accuracy for a clear process overview

IP69K

ifm – close to you!

External pipe diameter [mm]	Nominal width	Order no.
21…24	DN20	**TSM301**
25…30	DN25	**TSM401**
32…36	DN32	**TSM501**
38…45	DN40	**TSM601**
48…54	DN50	**TSM701**

Common technical data		
Temperature measuring range	[°C]	-25...160
Measurement accuracy	[%]	2
Measuring element		Pt1000
Response time T09	[s]	25
Protection rating		IP69K

Simple process monitoring even on small pipes

The temperature probe for surface mounting enables quick, flexible and easy measuring point configuration. The passive temperature probe is particularly suitable for use on small pipe diameters where invasive temperature monitoring would significantly affect the flow of the medium. As the values are recorded non-invasively, there is no risk of contamination of the medium. Instead, the installation is easy and does not require time-consuming and cost-intensive drilling and welding, so that the measuring point can also be installed in the running process.

Tested hygienic suitability

Thanks to a temperature range of up to 160 °C, high protection rating IP69K and the hygienically safe mounting principle tested by Ecolab, the probe is also suitable for use in food production. In combination with invasive temperature monitoring, for example, complete heating of the pipes required in the CIP process can be ensured.

BEST FRIENDS

Temperature plug
Converts resistance values into analogue or IO-Link signals

moneo|blue
Manage IO-Link devices conveniently via smartphone app

IO-Link masters
Field-compatible masters for use in hygienic areas

For further technical details, please visit: ifm.com/fs/TSM301

Time for an oil change?

Oil humidity sensor keeps an eye on quality

- Monitors the relative humidity and temperature of ester and mineral oils
- Continuous measurement enables condition-based changes and maintenance
- Easy installation thanks to standardised process connection and M12 connector

IP69K

IO-Link

ifm – close to you!

Process connection	Outputs	Order no.
G ½	2x 4…20 mA	**LDH110**
G ½	IO-Link	**LDH112**
½ NPT	IO-Link	**LDH122**

Common technical data		
Media		Mineral oils, synthetic esters, organic oils
Operating voltage LDH110	[V DC]	9…33
Operating voltage LDH1x2	[V DC]	18...30
Rel. oil humidity measuring range	[% RH]	0...100
Temperature measuring range	[°C]	-40…120
Pressure rating	[bar]	50
Materials housing		stainless steel (316L / 1.4404), PEI
Materials seal		FKM
Protection rating		IP68	IP69K

Condition-based oil management

The LDH oil humidity sensor continuously measures the relative humidity and temperature of the oil. This enables plant operators to carry out condition-based changes and maintenance. It allows the medium to be used with maximum efficiency while avoiding plant damage due to reduced cooling or lubricating action. Corrosion and cavitation caused by free water can also be effectively prevented.
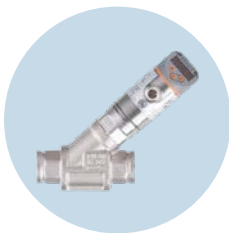
Thanks to the G½ thread and standardised M12 connector the LDH can be put into operation easily and correctly, and with the IO-Link technology the data can be conveniently used for IT-based condition monitoring.

The stainless steel housing permanently withstands the harshest conditions of the operating environment.

BEST FRIENDS

Flow sensor
Mechatronic measuring principle with fast response time
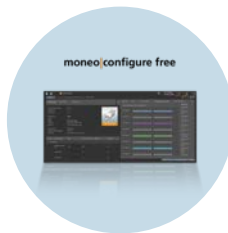
moneo|configure free
Software for parameter setting of the IO-Link infrastructure

Oil particle monitor
Measures the particle concentration and displays the degree of purity

For further technical details, please visit:
ifm.com/fs/LDH110

Continuous corrosion resistance

Conductivity sensor made of polypropylene

- Resistant to salt and other aggressive media

- Detects conductivity using the tried-and-tested inductive measuring principle

- Compact design facilitating installation where space is limited

IO-Link   IP69K

ifm – close to you!

Measuring principle	Installation depth [mm]	Process connection	Connector type	Order no.
Inductive	81	G 1½ coupling nut	M12	**LDL400**

For filter installations, shipping applications and dosing stations

The LDL400 is the polypropylene version of ifm's proven LDL200 inductive conductivity sensor. Its material properties make it the ideal choice for applications in which metallic sensors tend to corrode: direct contact with salty ambient air or other aggressive, acidic or alkaline media, such as cleaning agents, poses no problem for the LDL400. With a diameter of eight millimetres, the measuring channel ensures optimum flow of the medium while minimising the risk of blockages.

Continuous, temperature-compensated measurement

The sensor continuously measures the conductivity of a medium in the range from 100 to 2 million µS/cm and outputs this as a temperature-compensated digital or analogue value. Furthermore, the percentage concentration of NaCl in ultrapure water can be accessed acyclically. This means that the LDL400 can be used universally in almost every conceivable water treatment application and, since it comes with an MR type approval certificate from the EU RO MR Group, the LDL400 can be easily integrated in ship automation applications.

Technical data		
Conductivity measuring range	[µS/cm]	100...2000000
Measurement accuracy	[%]	2 (MV) ± 25µS/cm
Temperature measuring range	[°C]	-25...100
NaCl concentration measuring range	[%]	0...25 (at 20...50 °C)
Medium temperature under UL conditions	[°C] [°C]	-25...80 -25...65
Pressure rating	[bar]	10 (at 20 °C) 6 (at 60 °C)
Ambient temperature	[°C]	-25...50
Output		IO-Link, 1x 4...20 mA
Protection rating		IP68 | IP69K

MV = value of the measuring range

BEST FRIENDS

Vortex flow meter
Monitors flow and temperature in water pipes

LW level sensor
80 GHz radar sensor for non-contact measurement
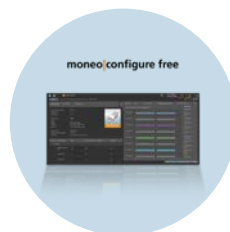
moneo|configure free
Software for parameter setting of the IO-Link infrastructure

For further technical details, please visit:
ifm.com/fs/LDL400

For easy welding(-in) operations

Welding adapters for tanks

- Welding adapters for quick and uncomplicated welding

- Flexibility at the weld seam and maximum dimensional stability on the inside weld area

- Optimum sensor fitting even with thicker metals and multiple welding layers

- Useful accessories for post-processing and leak checking

ifm – close to you!

Process connection	Adapter diameter	Description	Order no.
G ½ sealing cone	85 mm	for tank top and wall	**E43919**
G ½ sealing cone	85 mm	for small tank diameters at the hopper and outlet	**E43918**
G ½ sealing cone	85 mm	for large tank diameters at the hopper and outlet	**E43920**
G 1 Aseptoflex Vario	85 mm	for tank top and wall	**E30528**
G 1 Aseptoflex Vario	85 mm	for small tank diameters at the hopper and outlet	**E30531**
G 1 Aseptoflex Vario	85 mm	for large tank diameters at the hopper and outlet	**E30529**

Special welding adapters for tanks

The special adapters represent an innovative solution allowing for a quick and simple welding operation to be carried out in the tank. All stresses from the welding operation that may be caused by multiple welding layers and thick-walled metals are absorbed in the flexible transition area of the adapter.

Optional cooling adapters simplify and improve the welding result with special and standard adapters and provide additional stabilisation during the welding operation.

Post-processing

For post-processing, in particular for grinding and polishing of the weld seam, the grinding protection devices provided for the respective adapters, and appropriate for internal and external processing, must be used.

Leak check

With the leak check kit, available as an accessory, the sealing edge of the welded adapter can be checked for leaks without the need for time-consuming filling of the tank. In the event of a leak, this is made visible or audible at the leakage port of the welding adapter.

Accessories

Description	Order no.	
	G ½ sealing cone	G 1 Aseptoflex Vario
Grinding protection for the sealing edge of welding adapters E30528, E43919	**E43924**	**E30161**
Grinding protection for the sealing edge of welding adapters E30529, E30531, E43918, E43920	**E43923**	**E30162**
Welding mandrel	**E43314**	**E30452**
Welding mandrel, water-cooled	**E43929**	**E30532**
Leak test kit	**E43922**	**E30530**
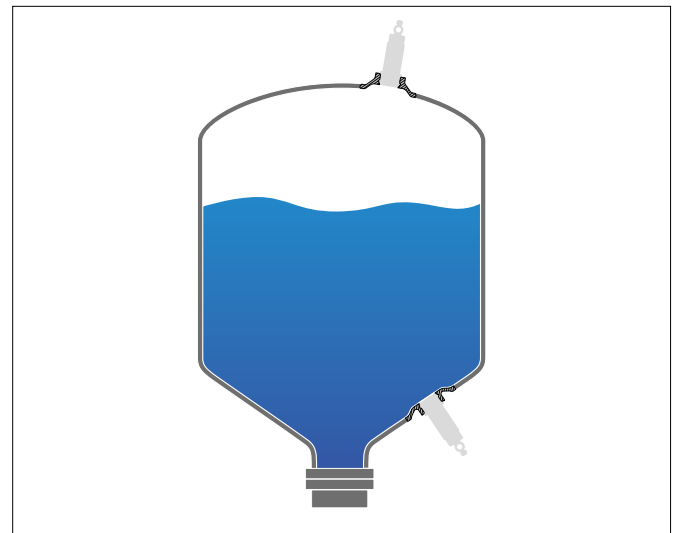
BEST FRIENDS
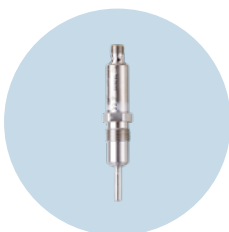
Temperature sensors
Reliable temperature measurement

Pressure sensors
Accurate measurement of pressure values and levels
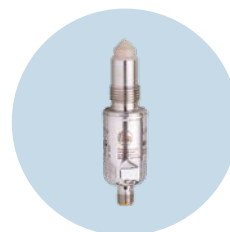
Level sensors
Point level detection even with difficult media

For further technical details, please visit: ifm.com/fs/E43919

Machine condition in all dimensions

VVB as 3-axis vibration sensor with IO-Link

- Automatic monitoring of the relevant condition indicators

- Integrated unbalance and bearing analysis

- IO-Link simplifies integration into existing control systems and IT-based maintenance planning

IP69K **IO-Link**

ifm – close to you!

Proven indicators monitored in 3 dimensions

The VVB30x continuously detects the vibrations in three measurement axes and uses them to calculate proven indicators for evaluating the machine condition. This provides the user with information on fatigue (v-RMS), mechanical friction (a-RMS), impacts (a-Peak) and bearing wear (Crest). The surface temperature is also transmitted as an additional wear indicator.

In the Basic condition monitoring version, the sensor also analyses machine unbalance and detects the machine operating hours based on the vibration level. The DataScience condition monitoring version also has the integrated option of bearing analysis BearingScout™.

Data flow towards control system and IT level

All data is transmitted simultaneously both to the control system and to the IT level via IO-Link, so that the user has all relevant indicators for IT-based condition monitoring, for example in the **moneo** IIoT platform.
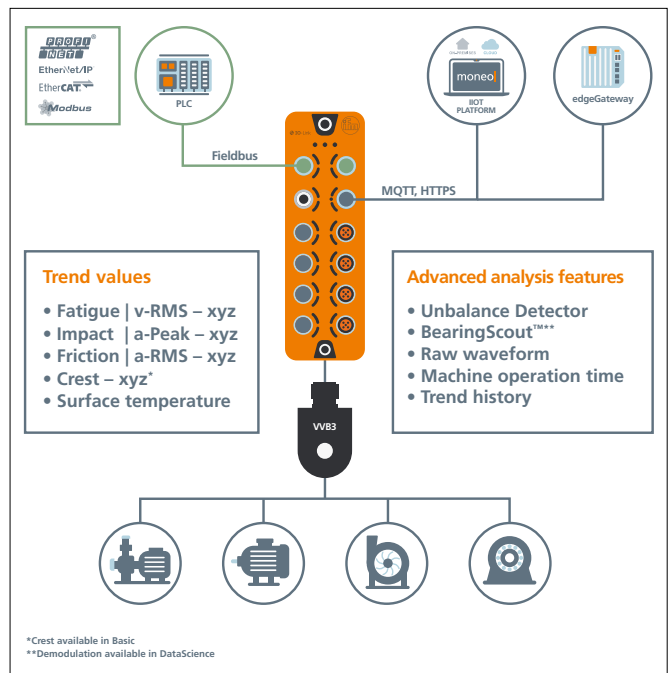
Simple limit value setting to ISO 20816-3

Setting the vibration limit values is also easy with the VVB30x: based on the ISO 20816-3 standard, the machine category can be selected and the limit values defined for this can be transferred to the sensor by system command. If a limit value is exceeded, a detailed fault analysis is easily possible thanks to the integrated BLOB ring memory. Up to 12 seconds of raw data can be provided automatically. In addition, the sensor is equipped with an internal characteristic value history that provides an overview of the last nine days.

Thanks to the VVB30x, a comprehensive vibration analysis and precise machine monitoring is easier than ever before.

Version Condition monitoring	Units of measurement	Order no.
Basic	m/s, m/s², °C	**VVB301**
DataScience	m/s, m/s², °C	**VVB302**
Basic	mm/s, mg, °C	**VVB305**
DataScience	mm/s, mg, °C	**VVB306**

Technical data		
Frequency range	[Hz]	2...5600
Measuring range velocity	[mm/s]	0...300
Measuring range acceleration	[g]	0...16
Ambient temperature	[°C]	-30...80
Protection rating		IP67 | IP68 | IP69K

Trend values
- Fatigue | v-RMS – xyz
- Impact | a-Peak – xyz
- Friction | a-RMS – xyz
- Crest – xyz*
- Surface temperature

Advanced analysis features
- Unbalance Detector
- BearingScout™**
- Raw waveform
- Machine operation time
- Trend history

*Crest available in Basic
**Demodulation available in DataScience

BEST FRIENDS

moneo IIoT platform
Analysis software for simple condition monitoring
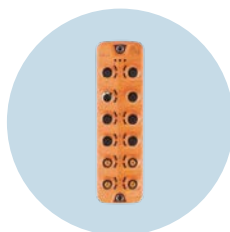
IO-Link masters
Field-compatible, transmits data to PLC and IT simultaneously
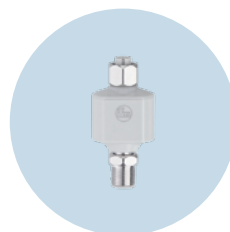
Bluetooth mesh
Connection to the IT level without complex wiring

For further technical details, please visit: ifm.com/fs/VVB301

Analogue signals that add up

Evaluation unit for analogue standard signals

- Monitoring, analysis and offsetting of two analogue values

- Ideal for determining differential values, e.g. pressure, flow, level or temperature values

- Limit value indication via two separate relay outputs

- Extensive and convenient parameter setting via IO-Link

- Clearly visible OLED display for actual value indication and parameter setting

ifm – close to you!

Technical data DL3003	
Input	2x analogue (4...20 mA or 0...10 V)
Output	2x relay, 1x analogue (4...20 mA), IO-Link, 24 V DC (for sensor supply)
Operating voltage	110...250 V AC or 24 V DC
Protection rating	IP20

Monitoring analogue process values

Everywhere in industry, electronic sensors are used to detect process values such as temperature, pressure or flow.

Process value monitoring often takes place directly in the sensor. However, sometimes separate monitoring devices are required, for example if two measured values are to be offset against each other and the resulting value is to be monitored.

Calculating and evaluating measured values

The evaluation unit has various operating modes and two analogue sensors can be connected.

This way, two switching points can be assigned to a measured signal, or a limit value can be assigned to two measured values. The two measured signals can be scaled and linked with each other using mathematical functions such as addition or subtraction.

The process value calculated in this way can be monitored with up to two switching points and can be output as an analogue signal (4...20 mA).

Measured values can be transmitted digitally to a higher-level controller via IO-Link. The device's extensive parameter setting is also conveniently carried out via IO-Link.

Differential pressure measurement on filters
Two pressure sensors measure the pressure before and after the filter. If the filter becomes clogged over time, the differential pressure increases.

Pressure measurement in a fermentation tank
In addition to the hydrostatic pressure at the bottom of the tank, the pressure of the gas above the medium, which increases as a result of fermentation, is measured and subtracted from the hydrostatic pressure to determine the level.

BEST FRIENDS

moneo|RTM
Analysis software for simple condition monitoring

Pressure sensors
Precise detection of pressure values and levels

Temperature sensors
Reliable temperature detection

For further technical details, please visit:
ifm.com/fs/DL3003

The faster way to the pallet

Complete solution for pallet pocket recognition

- Powerful video processing unit with pre-installed "Pallet Detection System (PDS)" software

- Interfaces for 6 camera heads and other sensors for efficient AGV controller

- High frame rate ensures reliable and fast tracking during pallet movement

ifm – *close to you!*

Video Processing Unit (VPU)	
Version	**Order no.**
Connection for up to 6 cameras, Gigabit Ethernet interface for sensor signals; integrated pallet detection system	**OVP812**
With additional collision protection	**OVP813**

Camera heads			
Dimensions [mm]	**Image resolution [pixels]**	**Angle of aperture [°]**	**Order no.**
90 x 31 x 26	38 K	60 x 45	**O3R222**

Powerful solution for more efficiency

The Pallet Detection System PDS contributes to more efficient intralogistics processes by accelerating autonomous and semi-autonomous pallet handling. The proven combination of powerful 2D/3D camera heads and an equally high-performance video processing unit has been extended to include software that quickly and precisely identifies all standard pallet types with two pockets, fully automatically and regardless of their position, and takes over the navigation of the forks down to the centimetre.

The quality of the camera heads and the high repetition rate ensure the availability of meaningful 3D point clouds even in dynamic and difficult operating conditions. Unexpected pallet movements are quickly detected so that the programme can quickly implement fork tracking.
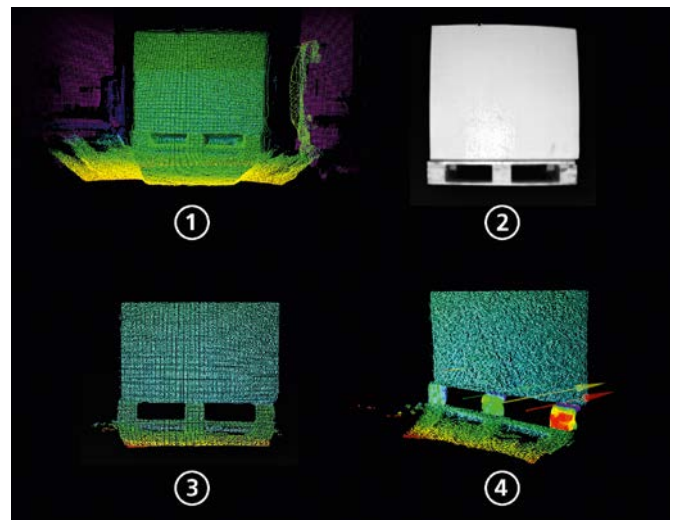
In a first step, the PDS pallet detection processes the amplitude and distance data detected by the O3R2xx vision sensor ①. Unlike the 2D image ②, the 3D image may still contain artefacts and interference. This is why the image is filtered in the next step to "clean" the image and eliminate unwanted pixels ③. The filtered image is then used to exactly determine the location and position of the pallet and its pockets in three dimensions ④.

BEST FRIENDS

Graphic display
Programmable HMI for the control of mobile machines

Multiturn encoders
Precise detection of positions and rotational movement

ecomatController
Powerful 32-bit controllers reliably control AGVs

For further technical details, please visit: ifm.com/fs/OVP812

Uniting all senses

Versatile perception platform

- Central processing of image and sensor information

- Synchronisation of several cameras for 360° coverage

- Standardised SDKs for Docker architecture as well as Python, C++, CUDA and ROS

- Latest time-of-flight imager with high extraneous light stability

POWERED BY
pmd

ToF

ifm – close to you!

Video Processing Unit (VPU)	
Version	**Order no.**
Video Processing Unit (VPU), Connection for up to 6 cameras, Gigabit Ethernet interface for sensor signals	**OVP810**

Camera heads			
Dimensions [mm]	**Image resolution [pixel]**	**Angle of aperture [°]**	**Order no.**
90 x 31 x 26	38 K	60 x 45	**O3R222**
90 x 31 x 26	38 K	105 x 78	**O3R225**

Integrated and upgradeable vision system

The O3R platform is the comprehensive solution for centralised, synchronised processing of image and sensor information in autonomous mobile robots such as automated guided vehicles. The simplified integration and reliable interaction of cameras and sensors enables the robust implementation of relevant functions such as collision avoidance, navigation and positioning.

In addition, analysis and dimensioning of stationary objects can be implemented, and is handled more effectively by means of several cameras. Examples include the measurement of pallets, logs, packages or suitcases.

Powerful and open

The core of the system is a powerful computing unit called Video Processing Unit (VPU). Based on a yocto-Linux and Docker architecture, open development environments such as Python, C++, CUDA and ROS are supported. The VPU analyses information from up to six camera heads as well as sensor information via the Gigabit Ethernet interface. All relevant "senses" that an AGV needs for safe autonomous navigation are thus available at a central point.

Camera head with imager developed in-house

ifm also offers suitable, high-performance camera heads as part of the platform solution: the 2D/3D cameras have an angle of aperture of either 60 or 105 degrees and are equipped with the latest time-of-flight imager from pmdtechnologies ag. This company of the ifm group of companies develops all sensors for the vision products of the automation specialist and adapts them precisely to the respective requirements.

Thanks to the modulated infrared light, the 2D/3D camera detects objects with maximum reliability even with increased exposure to ambient light.

BEST FRIENDS

Graphic display
Programmable HMI for the control of mobile machines

Multiturn encoders
Precise detection of positions and rotational movement

ecomatController
Powerful 32-bit controllers reliably control AGVs

For further technical details, please visit: ifm.com/fs/OVP810
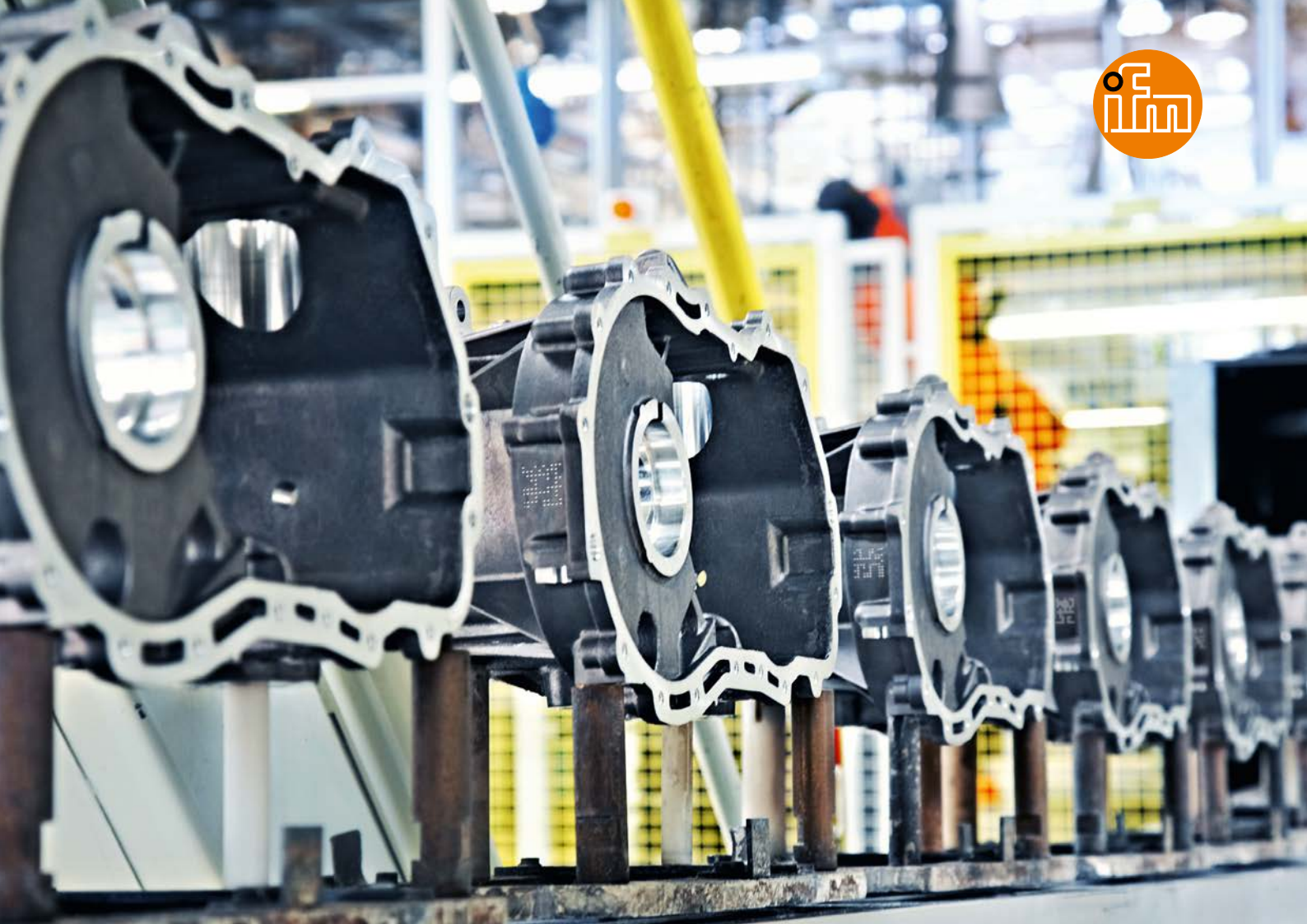
Surface inspection, code analysis

O2U5: two vision sensors in one

- The 2D vision sensor allows for analysis of surfaces and contours as well as for reading of codes and characters

- Universal - numerous interfaces enable seamless integration into the controller

- Easy handling thanks to user-friendly software, application wizards and removable memory

IP65

IO-Link

ifm – close to you!

Versatile inspection options

The O2U5 provides the user with almost unlimited combination possibilities in 2D inspection. Surfaces and contours of objects can now be analysed simultaneously with QR or bar codes. For example, the QR code can be used to check whether the component actually corresponds to the order, while at the same time the contour and surface analysis allows for performing the final quality control before installation.

Tailored integration, simple configuration

The variety of combinations now available to the user for quality assurance remains easily manageable thanks to the ifm Vision Assistant, with the user-friendly software being available free of charge.
It allows for setting of interface, exposure and other parameters of the O2U5. In addition, numerous application presets (wizards) provide powerful support for fast set-up. If the device needs to be replaced, the stored parameters can be quickly transferred to the new device thanks to the removable memory. For ideal integration into your application, you can select the suitable combination of illumination and lens.

Benefit from more information online: performance overview and field of view calculator

A comprehensive overview of the performance range in contour and surface analysis as well as in code and character reading is available online where we also provide you with a field of view calculator to help you select the right lens.

Version	Order no.
Illumination: red light	
standard lens	**O2U530**
wide-angle lens	**O2U532**
telephoto lens	**O2U534**
Illumination: RGBW	
standard lens	**O2U540**
wide-angle lens	**O2U542**
telephoto lens	**O2U544**
Illumination: infrared	
standard lens	**O2U550**
wide-angle lens	**O2U552**
telephoto lens	**O2U554**

Technical data		
Connection		5 poles
Interfaces		TCP/IP; PROFINET; Ethernet/IP; IO-Link
Operating voltage	[V]	18…30 DC
Ambient temperature	[°C]	-10…50
Protection rating		IP65

BEST FRIENDS

Vision Assistant
PC software for configuration and parameter setting

Monitoring add-on
Visualisation of images and data on the dashboard

IO-Link masters
Field-compatible masters with PROFINET interface

For further technical details, please visit:
ifm.com/fs/O2U530

A first: full-metal housing offers robust safety

Fail-safe inductive sensors for industrial and mobile applications

- Robust full-metal housing
- Wide temperature range of -40...85°C
- Shock and vibration resistance
- TÜV-approved safety
- Safe state if target is absent

ifm – close to you!

(PL/SIL) (IP69K)

Type	Total length [mm]	Enable zone [mm]	Safe switch-off distance [mm]	Order no.
4-wire · M12 connector				
M12	60	0...1.5	>6	**GF761S**
M18	60	0...3.5	>10.5	**GG761S**
M30	65	0...6	>18	**GI761S**

Robust safety

Fail-safe sensors protect both man and machine. To date, ifm is the only supplier to market fail-safe inductive sensors in a robust full-metal housing in order to ensure maximum reliability even under extreme conditions. The full-metal housing offers optimum protection against permanent moisture. In addition, the sensors are well secured against shock and vibration loads that are particularly prevalent in mobile machines. Due to the extended temperature range of -40 to 85 °C, they can be used in freezing cold and summer heat, indoors and outdoors on vehicles and machines.

Applications

Typical applications for fail-safe sensors can be service lids or manholes, where they ensure that the machine cannot start until the lid is closed. On mobile machines such as mobile cranes or cherry pickers, safety sensors often monitor the outriggers that are extended to prevent the vehicle from tipping over.

Common technical data		
Operating voltage	[V DC]	9...32
Housing materials		sensing face: stainless steel housing: stainless steel
Output function		2x OSSD
Safety-related sub-function		target is absent
Ambient temperature	[°C]	-40...85
Safety classification		ISO 13849-1: category 2, PL d IEC 61508: SIL 2, HFT=0, SC 2
Protection rating		IP65, IP66, IP67, IP68, IP69K

BEST FRIENDS

Safety relay
With potential-free relay contacts

Controller for mobile applications
Safety controller with CANopen Safety

Fail-safe inductive sensors
No special target required

For further technical details, please visit:
ifm.com/fs/GF7615

Full metal ensures maximum safety

Fail-safe inductive sensors for the food industry

- Robust full-metal housing with high protection rating

- Wide temperature range of -25...100°C

- Shock and vibration resistant

- TÜV-tested safety

- Safe state if target is absent

PL/SIL   IP69K

ifm – close to you!

Type	Housing length [mm]	Enable zone [mm]	Safe switch-off distance [mm]	Order no.
4-wire · M12 connector				
M12	60	0…1.5	>6	**GF762S**
M18	60	0…3.5	>10.5	**GG762S**
M30	65	0…6	>18	**GI762S**

Safety in full metal

To date, ifm is the only supplier to market fail-safe inductive sensors in a robust full-metal housing in order to ensure maximum safety even under extreme conditions. The full-metal housing offers optimum protection against permanent moisture. Thanks to the extended temperature range of -25 to 100 °C, the sensors are ideally suited for applications in the food and beverage industry.

Applications

Typical applications for fail-safe sensors can be found on service lids or manholes on tanks or silos, where they ensure that processes cannot start until the lids are closed to eliminate any risk to individuals and machinery. The full-metal housing shows all its benefits on valves or valve manifolds that are subject to frequent cleaning processes, as it can easily withstand permanent moisture or wetness. These fail-safe sensors are also ideal for monitoring high-speed doors in cold stores.

Common technical data		
Operating voltage	[V DC]	10…30
Housing materials		Sensing face: stainless steel Housing: stainless steel
Output function		2x OSSD
Safety-related sub-function		Target is absent
Ambient temperature	[°C]	-25…100
Safety classification		ISO 13849-1: Category 2, PL d IEC 61508: SIL 2, HFT=0, SC 2
Protection rating		IP65, IP66, IP67, IP68, IP69K

BEST FRIENDS

Safety relay
With potential-free relay contacts
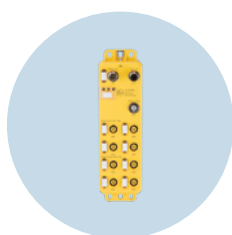
PROFIsafe IO-Link module
For PROFIsafe telegrams via IO-Link

Fail-safe inductive sensors
No special actuator required

For further technical details, please visit:
ifm.com/fs/GF72S

Linking digital IO signals in the field

I/O modules for PROFINET and EtherNet/IP

- Efficient network structure thanks to direct connection of sensors and actuators with the fieldbus level

- Integrated counter function for high-frequency counter applications and direct switching of the outputs

- Robust housing suited for use in environments with high hygiene requirements

IP67   IP69K

ifm – close to you!

Description	Order no.	
	Coolant (orange)	Food (grey)
StandardLine		
PROFINET	**AL4202**	**AL4203**
EtherNet/IP	**AL4222**	**AL4223**
Modbus TCP	**AL4242**	**AL4243**
PerformanceLine		
PROFINET	**AL4302**	**AL4303**
EtherNet/IP	**AL4322**	**AL4323**
Modbus TCP	**AL4342**	**AL4343**

Common technical data	
Voltage supply StandardLine PerformanceLine	 M12 A-code M12 L-code, daisy chain option
Number of inputs and outputs	4x 2 DO (UA) 4x 2 DI (US)
Current rating of the outputs StandardLine PerformanceLine	 3.6 A Port 1 + 4 3.6 A Port 1 + 2 3.6 A Port 3 + 4
Counter application	yes
Output switching function (SSC)	adjustable per counter
Passive safety	PL d
Coolant (orange) Protection rating Housing Socket / connector	 IP67 polyamide nickel-plated brass
Food (grey) Protection rating Housing Socket / connector	 IP69K polyamide stainless steel

Ethernet modules for field applications

The decentralised IO modules serve as a gateway between binary sensors / actuators and the fieldbus. This means that binary input and output signals in the field can be transmitted directly via the fieldbus. No further transmission systems are needed in the fieldbus topology.

Robust and permanently tight

In combination with ifm's ecolink connection technology, the ifm modules are the perfect choice, even for the most difficult applications. The materials and production methods are identical to the ifm jumper cables of the tried-and-tested EVC and EVF product series. The ecolink technology guarantees reliable, permanently ingress-resistant M12 connections of the connection cables.

Extension with digital input / output modules

The new Ethernet modules are the perfect addition to ifm's IO-Link master family. They feature the same design, port configuration and standardised M12 connections. The upper 4 output ports allow an output current of up to 3.6 A, while the lower 4 ports enable the connection of sensors.

Integrated counter function

Sensor pulses are counted within the module and are cyclically transmitted to the PLC as a counter packet. This provides an accurate count that is not affected by the controller's cycle time. Direct control of the outputs with different switching logics is thus enabled.

Powerful voltage supply

For power supply, the PerformanceLine modules have L-coded M12 connections with 2x16A. This allows daisy-chaining. The StandardLine modules offer A-coded M12 connections with 3.9 A (US) and 4 A (UA).

BEST FRIENDS
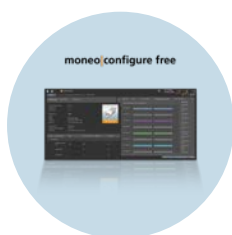
moneo|configure free
Software for parameter setting of the IO-Link infrastructure

IO-Link masters
Transmission of data and parameters to the PLC
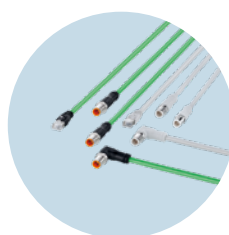
Ethernet cables
Available in various lengths and versions

For further technical details, please visit:
ifm.com/fs/AL4202

AS-i modules for hygienic areas

Field modules with ecolink M12 screw connection

- The special plastic housing meets the high requirements for food production

- The ecolink screw connection offers ingress resistance up to IP69K

- Robust thanks to full potting

- Wide operating temperature range and high protection rating

- Clearly visible LEDs for operation, switching status and fault indication

ifm – close to you!

Version	Current rating per port	Connection technology	Order no.
Passive splitter box, 4 ports	4 A	AS-i / IO-Link	**AC2950**
Passive splitter box, 8 ports	4 A	AS-i / IO-Link	**AC2951**
I/O module 2x (2 DI / 1 DO), 2 ports	100 mA (output, supply via AS-i)	AS-i	**AC2952**
I/O module 4x DI-Y, 4 ports	–	AS-i	**AC2954**

Robust for demanding applications

The special PA housing design, the stainless steel connectors and the high ingress resistance to IP69K enable permanent use in areas with frequent intensive cleaning processes, for example in the food and beverage industry. Thanks to full potting, both the modules themselves and the ecolink M12 connectors reliably withstand shock and vibration loads over the long term. By the way: the ecolink connections are compatible with the M12 connectors usual in industry. However, maximum ingress resistance is only ensured with the ifm ecolink connectors.

Versions

Passive splitter boxes

Passive voltage splitters essentially function like "multiple sockets" for AS-i networks, but also for IO-Link structures. They enable the voltage supply of components such as valve heads, quarter-turn sensors, motor controls and IO-Link masters. Short circuits and excessively high currents are clearly signalled by a red LED. This helps to quickly recognise and rectify malfunctions or damage to the infrastructure, the actuators or the entire system.

Common technical data		
Ambient temperature	[°C]	-25...60
Materials Housing Connector Sealing		PA grey Stainless steel (316L / 1.4404) EPDM
Protection rating		IP65, IP66, IP67, IP69K (operation with stainless steel protective caps: IP69K)

I/O modules

Digital I/O modules enable the connection of sensors and actuators that communicate with the controller via the AS-Interface. In contrast to conventional AS-i modules, the modules here do not use flat cable insulation displacement technology, but M12 round cable connection technology - both at the I/O ports and at the AS-i connection. In this way, they fulfil the special requirements for wet areas.

BEST FRIENDS

AS-i gateway
With PROFINET interface and integrated PLC

Inductive sensors
Robust stainless steel housing for the food industry

AS-i illuminated pushbutton module
Illuminated buttons in stainless steel housing

For further technical details, please visit:
ifm.com/fs/AC2950

Reliable connection

moneo|edgeGateway for use in the field and in the control cabinet

- Easy and secure connection of the sensor level to the cloud

- Translation of incoming IO-Link process data into readable information

- Aggregation, selection, processing and linking of information with the Dataflow Modeler to obtain relevant key figures

- Version with IP20 protection rating for the control cabinet or with IP67 for use in the field

- Physical separation of the IT and automation network

IP20   IP67

ifm – close to you!

Description	Order no.
moneo|edgeGateway for the control cabinet	**AE2100**
moneo|edgeGateway for use in the field	**AE2400**
moneo IIoT Core Cloud subscription	**QCM100**

Common technical data		
Operating voltage	[V DC]	18...32 (PELV)
Ambient temperature	[°C]	-25...55
Housing material		Passivated die-cast aluminium, stainless steel
Dimensions	[mm]	AE2100: 125 x 125 x 36 AE2400: 251 x 125 x 34
Protection rating		IP20 (AE2100) IP67 (AE2400)

Powerful and secure

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

Its centrepiece is the 1.2 GHz quad-core processor which works at maximum performance level in environments with ambient temperatures of up to 55°C.

moneo\|edgeGateway can be easily configured in order to send all relevant plant data as readable information into various cloud platforms.

Thanks to the integrated ifm Dataflow Modeler, using custom processing logics is very intuitive and particularly secure because there are two independent networks, one for the plant network and one for the IT infrastructure.
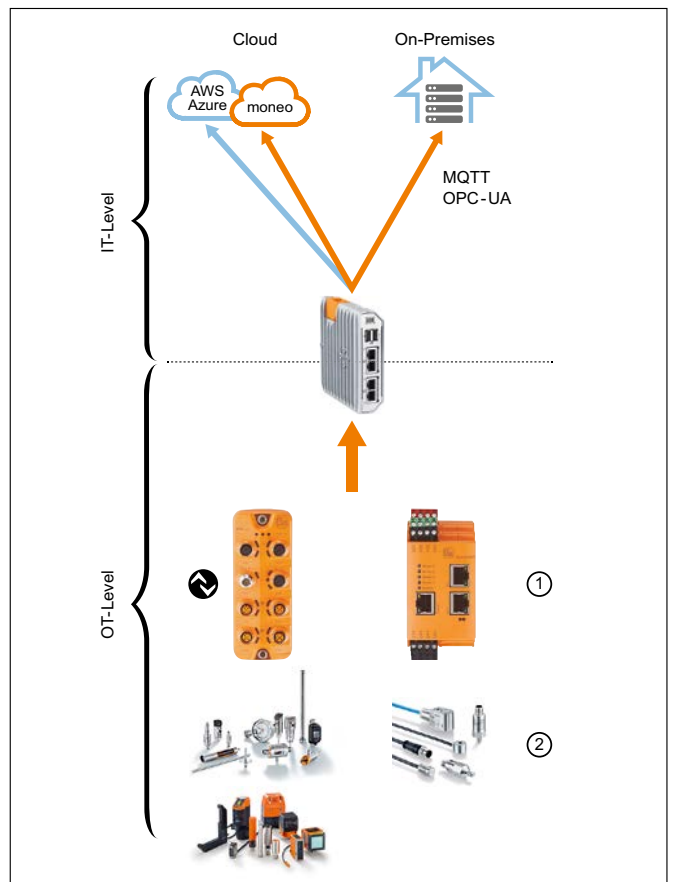
Direct connection to different clouds

The device guides you step-by-step through the basic IT configuration to get it up and running on your network and connect it to the ifm **moneo\|cloud**.

With the ifm **moneo\|cloud**, we offer you an IIoT platform that provides basic functions for optimising your machine availability, process quality and energy consumption without programming knowledge.

Optionally, connections to the AWS IoT Core and Microsoft Azure IoT Hub can be set up, or to on-premise servers in the IT infrastructure via the IIoT de facto standards of OPC-UA and MQTT.

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

BEST FRIENDS

IO-Link masters
Field-compatible masters with Profinet interface

moneo\|RTM
Analysis software for simple condition monitoring

Diagnostic electronics
Vibration monitoring of machines and equipment

For further technical details, please visit:
ifm.com/fs/AE2100

Digitise temperatures

Integrate measuring probes directly into IO-Link

- 4 ports for direct connection of Pt100, Pt1000 elements and thermocouples

- Recognise tiny temperature trends thanks to the fine resolution of 0.01 °C

- High precision (0.3 %) across the entire measuring range

- Robust housing with high protection rating

IP67   IP69K

ifm – close to you!

Digitisation of measuring probe for IO-Link

IO-Link has become established as an intelligent interface for integrating smart sensors and devices in various industries. Nevertheless, conventional temperature probes (Pt100 / Pt1000 elements or thermocouples) are still widely used in many machines and systems, which have to be connected to the central controller.

With the new IO-Link measuring modules, up to four temperature probes can be connected to an IO-Link master port, optionally in 2-, 3- or 4-wire connection technology.

The pin configuration of the M12 connector can be customised using the IO-Link parameter setting.

Adjustment of the measured value

Especially when measuring temperature with thermocouple elements, the metals used in the cables and contacts have a considerable influence on the measured value. The measured value can therefore be adjusted to the measuring line used using the "Cold junction offset" and "Temperature zero point calibration" parameters.

To cover a large number range with high resolution, the measured value is displayed as a "floating number" in the process data.

Protection rating	Order no.
IP65 | IP67 | IP69K (Operation with stainless steel protective caps: IP69K)	**AL2284**
IP65 | IP67	**AL2384**

Common technical data		
Operating voltage	[V]	18…30
Current consumption	[mA]	< 200 (US)
Number of inputs		4
Type of inputs		2-, 3- and 4-wire sensors: Pt100, Pt1000 thermocouple: type K, type J
Communication interface		IO-Link, COM3 (230.4 kbaud)
Ambient temperature	[C°]	-25…60

In thermoplastic moulding processes, temperature probes detect even the finest temperature trends thanks to an impressive resolution of 0.01 °C.

In mining, the digitised measured temperature values can be transmitted precisely and without loss even over long distances.

BEST FRIENDS
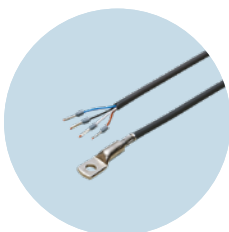
Temperature probe
Precise measurement of temperatures

IO-Link masters
Field-compatible masters with Profinet interface
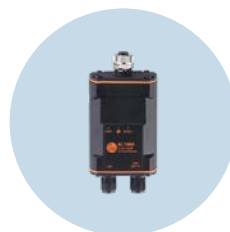
USB IO-Link masters
For parameter setting and analysis of devices

For further technical details, please visit: ifm.com/fs/AL2284

Switch off safely

I/O modules without interaction for IO-Link

- 8 independently configurable digital and analogue I/O ports for IO-Link communication

- Electrical separation between auxiliary voltage and IO-Link

- Without interaction in applications up to PL d (category 3)

- Digital input filters, powerful outputs (2 A each)

- Parameter setting and diagnostics via IO-Link

IP67   IP69K

ifm – close to you!

Input and output functions	Order no.	
	Coolant	Food
Module with DI, 0...10 V, 4...20 mA / DO	**AL2607**	**AL2507**
Module with DI / DO	**AL2627**	**AL2527**

Common technical data	
External voltage supply	L-code
US and UA electrically separated	yes
Switchable current per module [A]	16
Non-interaction	PL d (category 3)
Operating voltage [V DC]	18…30
Ambient temperature [°C]	-25…60
Coolant (orange) Protection rating Housing Socket / connector	IP67 polyamide nickel-plated brass M12
Food (grey) Protection rating Housing Socket / connector	IP69K polyamide stainless steel M12

Digital and analogue ports for IO-Link

With their IO-Link masters, ifm offers an ideal solution for recording sensor signals directly in the machine without using a control cabinet.

A machine controller, however, must also be able to record digital and analogue signals and control electrical actuators in addition to IO-Link information. The I/O modules for IO-Link offer precisely these functions, making them an ideal extension to the IO-Link masters.

For safety-related applications

A particular challenge is that in certain applications, the voltage of the actuators (UA) must be switched off in a safety-related way.

The modules have been developed so that they can be used in relevant safety-related applications up to PL d (category 3) without interaction.

Switching off without interaction

In classic safety technology, the voltage supply to hazardous actuators (UA) is switched off centrally via a safety relay.

In modern, decentralised fieldbus systems, however, the actuators are controlled via "non-safe" outputs of I/O modules, while the voltage supply to these I/O modules is increasingly being switched off centrally via an upstream safety relay or a safety controller.

A dilemma here is that a fault could theoretically occur in the non-safe I/O modules, resulting in the output continuing to be supplied by US even though UA has been switched off. For this reason, the modules have been redesigned and built in such a way as to rule out this theoretical error.

Many competitors refer to "passive safety" in this context. However, the term is misleading as it suggests a safety device. This is why we expressly refer to "non-interaction" and "fault exclusion".

BEST FRIENDS

IO-Link master
Field-compatible master with EtherNet/IP interface

Safety relay
Signal output via potential-free relay contacts

IP67 power supply
24 volt supply in the field, controllable via IO-Link

For further technical details, please visit:
ifm.com/fs/AL2607

Digitising switching signals

Universal IO module for IO-Link

- 16 connection wires for digital input or output signals
- Easy installation in panels, button housings or directly in the cable path
- Reliable M12 connector for connection to IO-Link masters
- Robust plastic housing with high protection rating IP67

IP67

IO-Link

ifm – close to you!

Description	Order no.
IO module for IO-Link	**AL5021**

Digital connection ports for IO-Link

The digital connection of IO-Link has proven its worth as an intelligent interface for integrating smart sensors and devices. Many machines and installations, however, still have conventionally wired units which need to be connected to the central controller. Examples in this context include keypad modules, control panels and panels, light towers or valve terminals. The universal module, characterised by its ability to connect 16 digital inputs or outputs directly to an IO-Link master port, provides a remedy in this respect. The compact and potted design requires but little space while enabling flexible mounting, for example directly next to signal transmitters or in button housings.

Easy connection

Each of the 16 connection wires can be used as input or output.

As the signal state of the output is always fed back to the input, no special configuration is required. When not operated as an output, an external signal can be detected as an input signal at the connection.

The universal module is designed such as to fit straight away into many customary button housings, allowing connection of the control and signalling devices.

Technical data		
Operating voltage	[V DC]	18...30
Inputs / outputs (configurable)		16
Digital input circuit		PNP (type 3 (IEC 61131-2))
Max. current load of the outputs in total	[A]	1
Communication interface		IO-Link
Protection rating		IP67

Power supply for external actuators

The module is supplied with power from an IO-Link A-port master. The total current consumption of all IOs can be up to 1 A, which ensures an efficient supply of external actuators.

In case of small button housings, the module can be mounted outside in the cable path. The potted plastic housing provides the high protection rating IP67.

BEST FRIENDS

IO-Link interface
For setting the parameters of IO-Link devices on the PC

IO-Link masters
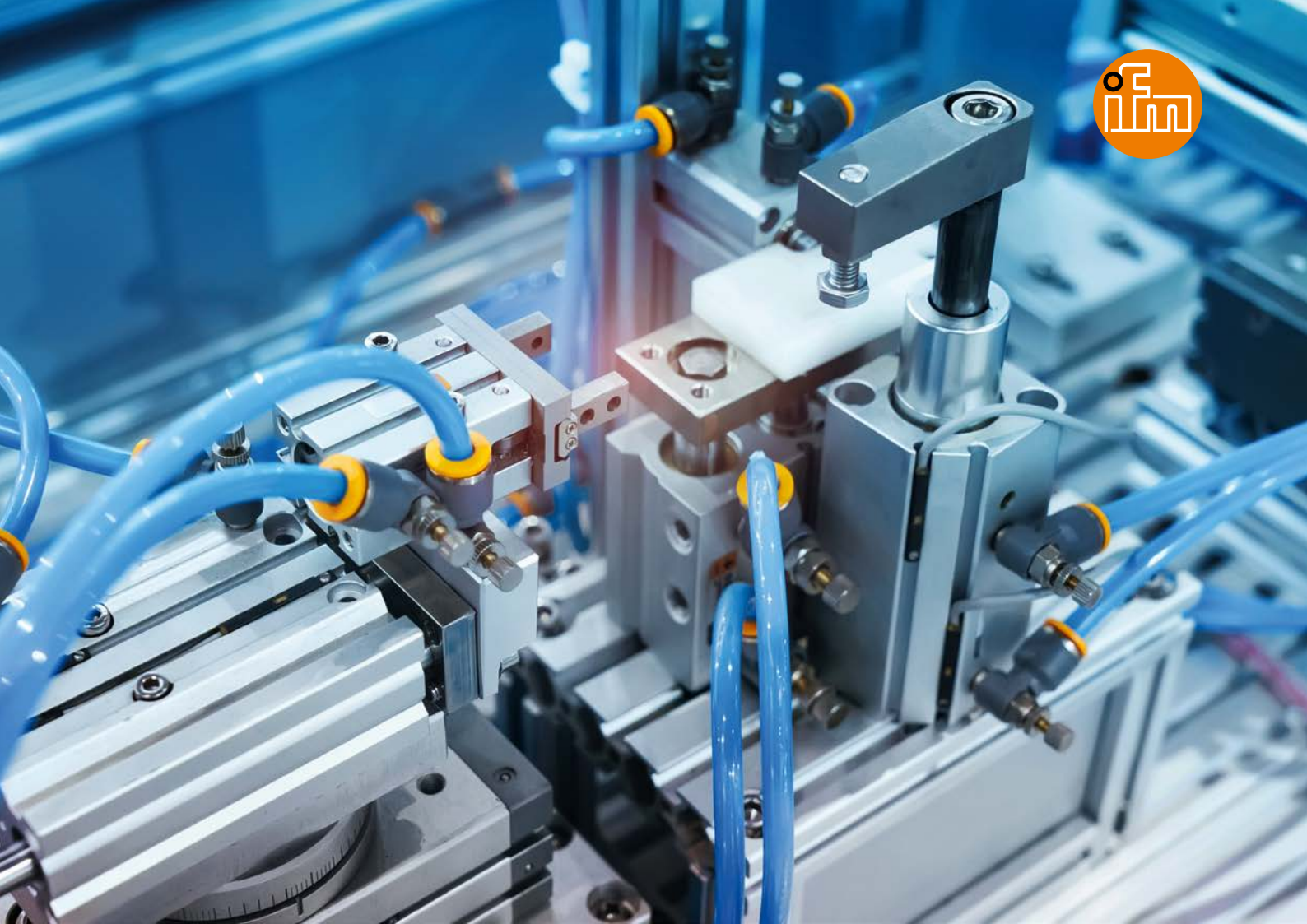Field-compatible masters with Profinet interface

Illuminated capacitive touch sensors
Non-contact switching without mechanical pressure

For further technical details, please visit: ifm.com/fs/AL5021

Controlling pneumatics via IO-Link

AirBoxes with IO-Link

• For decentralised control of cylinders and pneumatic actuators

• Combination of IO-Link I/O module and solenoid valve

• High energy efficiency due to application near the actuator

• Production data acquisition and diagnostics via IO-Link

• 4x 2 digital inputs, e.g. for the feedback of position sensors

ifm – close to you!

IP67

IO-Link

Applications

Pneumatic AirBoxes control cylinders or actuators using compressed air and are found in a wide range of industrial applications. They are used in almost all areas in which pneumatics are used for positioning. Examples include pick and place applications, machine tools, robotics, handling and conveyor belts. In filling systems, AirBoxes control actuators, for example during dosing or filling.

Thanks to their compact design, AirBoxes can be mounted close to the pneumatic actuators to be controlled. The short distance minimises the risk of leaks and therefore significantly increases energy efficiency. Besides, short pneumatic tubes allow for short switching times.

The AirBoxes provide digital inputs to which, for example, cylinder sensors for position feedback can be connected. Long, separate cable paths to the plant controller are not required.

IO-Link benefits

The electrical connection is made via a 24 V power supply, eliminating the need for additional auxiliary voltage and screened cables. This simplifies cabling considerably. Diagnostics are also made easier: Production data such as operating hours, switch-on operations and internal temperature are logged in the Air-Box. This enables predictive maintenance and offers maximum transparency, for example for remote service purposes. External faults such as short circuits at the digital inputs are reliably detected. All in all, these advantages improve the efficiency, reliability and process quality of machines and systems.

Valve version	Order no.
2x 3/2-way valve	**AL5228**
1x 5/2-way valve, monostable	**AL5246**
1x 5/2-way, bistable	**AL5251**
1x 5/3-way valve, blocked middle position	**AL5270**

Common technical data		
Inputs		4 ports with 2 digital inputs each
Pressure range	[bar]	2/3…8
Air flow	[l/min]	500 (at 6 bar Δp 1 bar)
Compressed air		lubricated and non-lubricated
Compressed air connection		8 mm push-in
Required master port class		A
Protection rating		IP65 | IP67

BEST FRIENDS

IO-Link masters
Masters with Profinet interface for use in the field

Cylinder sensors
End position detection for different cylinder designs

PQ pressure sensor
System pressure monitoring in pneumatic systems

For further technical details, please visit: ifm.com/fs/AL5228

Unlimited variety of colours

Control module for RGBW LED light bars

- For controlling 24 V RGBW LED light bars
- PWM outputs for setting any colour and brightness
- Control via IO-Link or by means of digital inputs
- The IP67 protection rating allows installation directly in the field

ifm – close to you!

Description	Order no.
Control module for ifm RGBW light bars	**DP1615**

Create any colour imaginable

This control module for RGBW LED light bars from ifm opens up limitless possibilities in illumination. It enables precise setting of any colour, which is particularly effective when illuminating company logos.

The brightness of the LED light bars can also be adjusted as required to reduce glare when used as a status indicator.

Control via IO-Link or switching signal

Thanks to the integration of IO-Link, it is now possible to define three different display presets, consisting of colour, brightness and flashing pattern, which can be activated either via IO-Link or via the digital inputs on the control module.

The use of IO-Link allows the values for each output to be set individually. This enables a smooth transition between brightness values and colours.
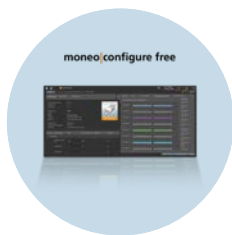
Technical data		
Operating voltage	[V]	21.6...26.4
Current rating per output	[mA]	400 (red, green, blue) 640 (white)
Total current rating	[mA]	1200
Control		IO-Link or 3x digital inputs
Protection rating		IP67

BEST FRIENDS

IO-Link masters
Field-compatible PerformanceLine, up to 2 A per port

moneo|configure free
Software for parameter setting of the IO-Link infrastructure

LED strips
For illumination and signalling

For further technical details, please visit:
ifm.com/fs/DP1615

Upgrade to IIoT?
With ease wireless!

Bluetooth mesh system for easy retrofitting

- Sensors can be connected subsequently to the IT level without complex wiring

- Easy retrofitting and digitalisation of extensive systems

- New nodes can be incorporated via smartphone

- Password protection for your data security

IP67 IP69K IO-Link

ifm – close to you!

Description	Order no.
Bluetooth mesh IO-Link adapter	**EIO344**
Bluetooth mesh IoT base station	**EIO404**

Simple digitisation in the inventory

With the Bluetooth mesh system, you can easily evaluate sensor data from your existing system at the IT level. Use the information gained in this way to increase the efficiency of your system – with considerably reduced wiring complexity.

Up to 50 sensors in a mesh network

Starting from a base station, which is the interface for bidirectional communication with the IT level, up to 50 Bluetooth adapters communicate with each other in encrypted form. Even data packets from the most remote sensors are securely transmitted wirelessly to the base station via the resulting mesh network, which can span the entire system. The adapters can be screwed directly onto the sensor and are supplied with power via the existing cable. Depending on local conditions, the mesh nodes can be up to 20 metres apart, making the system suitable for large installations.

Convenient network management

You can easily manage the mesh network using our moneo software or the corresponding free smartphone app. Add new nodes, read out data or configure the sensors as required.

You can find more about setting up and managing the mesh network and further details about the Bluetooth mesh system on our website.

Technical data	
Maximum number of nodes	50
Maximum distance between nodes [m]	20
Encryption standard	AES128
Protection class Base station Adapter	IP67 IP69K
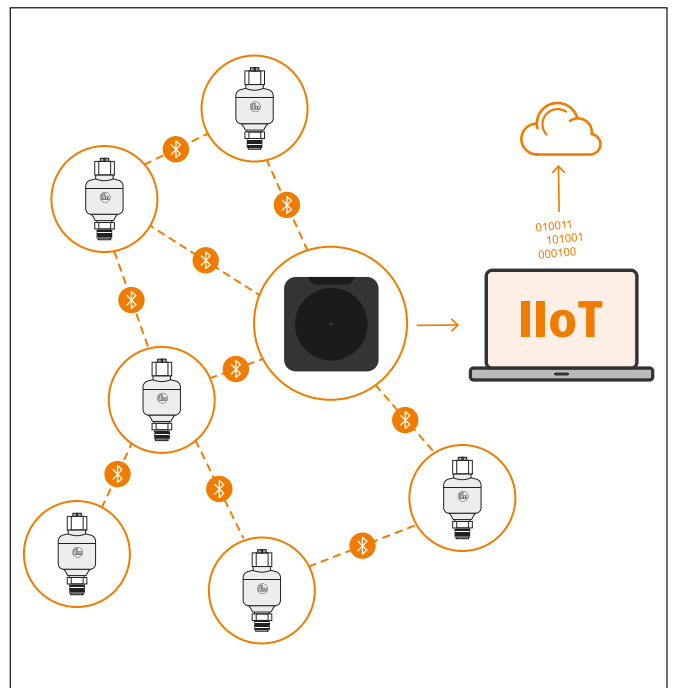
BEST FRIENDS

edgeGateway
For secure transmission of system data to the IT level

moneo|IIoT Core Cloud
Cloud subscription to the moneo IIoT platform

VVB vibration sensor
Easy condition monitoring via IO-Link

For further technical details, please visit: ifm.com/fs/EIO344

Strong, safe, multifunctional

The new generation of ecomatBasic controllers

- Powerful safety controller for mobile machines

- TÜV-certified library for simple implementation of safety-related functions*

- Multifunctional inputs and current-controlled outputs ensure maximum adaptability

ifm – close to you!

CODESYS PL/SIL IP20

Interfaces	Safe inputs (analogue / resistor / frequency)	Outputs (of which safe)	Order no.
2x CAN, 1x Ethernet	16 (8/4/4)	16 (4)	**CR413S**
2x CAN	12 (4/4/4)	12 (-)	**CR403S**

Software library	Order no.
TÜV-certified, with safety POUs for CR413S and CR403S; workstation licence	**CP100S***

Common technical data		
Operating voltage	[V]	8…32
Nominal voltage	[V]	12 / 24
Programming language		CODESYS 3.5
Safety level		SIL 2; PL d; AgPL d; ASIL C
Safety interfaces	CAN:	CANopen safety J1939 safety
	Ethernet:	CIP safety
Protection class		IP20

Two controllers in one

The new generation of ecomatBasic controllers has everything you need in terms of performance and flexibility to reliably control mobile machines. In addition to a controller for standard applications, the ecomatBasic also offers a separate controller for safety-related functions.

More power – also for retrofitting

With up to 16 multifunctional inputs and outputs each, the controller is designed to meet any customer-specific requirement – especially as the computing power has been more than doubled compared to the first generation. Utilising this extra performance and the convenience of CODESYS 3.5 in existing machines is easy: The dimensions of the CR403S are identical to those of the BasicController series.

Certified safety

Whether driverless transport system or mobile machine operated by a person: Safety comes first. Each input of the ecomatBasic can be used within the scope of functional safety. Besides, up to four safe outputs are available (CR413S).

In order to use safety-related functions, the optional TÜV-certified software library offered by ifm is required. It includes a large number of safety POUs with which the most common requirements can be easily and safely implemented*.

*available as from Q1 2025

BEST FRIENDS

mobile IoT gateway
For mobile transmission of data to the cloud

ioControl
Decentralised connection of sensors, freely programmable

Robust HMI
4.3-inch dialogue module with integrated controller

For further technical details, please visit: ifm.com/fs/CR413S

Maximum performance in the smallest of spaces

The 4.3"ecomatDisplay sets new standards

- High-brightness display for maximum readability even in daylight conditions

- Ideally suited for demanding tasks thanks to high computing power and memory capacity

- Maximum freedom of communication thanks to the support of multiple protocols

ifm – close to you!

IP67   E1   CODESYS

New standard in the compact class

Whenever efficient communication, precision and performance in the smallest of spaces are required, the most compact member of the ecomatDisplay family is the perfect choice. Because the 4.3-inch HMI makes no compromises when it comes to human-machine interaction: 16.7 million colours, high-resolution display and good readability even at extreme angles or in extreme lighting conditions ensure clear information exchange in any situation. Versions with RGB keypad or capacitive touch screen are available for easy operation in any situation.

Easy to connect, economical, communicative

Numerous connection options and a wide range of supported communication protocols allow for simple and extensive integration of the ecomatDisplay into the machine. CODESYS 3.5 and the comprehensive ifm library of software modules enable convenient visualisation of the information. Besides, the Linux-based operating system can be used for customisation, such as visualisation via QT. The powerful DualCore processor and the 1 GB DDR4 RAM ensure reliable processing of all data and control commands. For all these technical feats, the compact HMI requires less than ten watts of power.

Tough

The robust housing, already known from other ecomatDisplays, provides the 4.3" device with maximum protection against external influences, making it ideally suited for use in extreme working environments.

Connections	Input	Order no.
1x CAN, 1x Ethernet	RGB keypad	**CR1140**
1x CAN, 1x USB	RGB keypad	**CR1141**
1x CAN, 1x Ethernet	Touch display	**CR1142**
1x CAN, 1x USB	Touch display	**CR1143**
1x CAN, 1x Ethernet	none, only display	**CR1144**

Technical data		
Processor		ARM dual core, 1.4 GHz
Memory / RAM		4 GB / 1 GB DDR4
Retain variables	[kB]	8
Communication protocols		CAN, CANopen, J1939, Modbus TCP, EtherNet/IP, OPC UA
Display resolution	[pixel]	800 x 480
Display brightness	[cd/m^2]	1,000
Real-time clock		battery-buffered
Power consumption	[W]	5…8
Protection rating		IP67

BEST FRIENDS

ecomatBasic
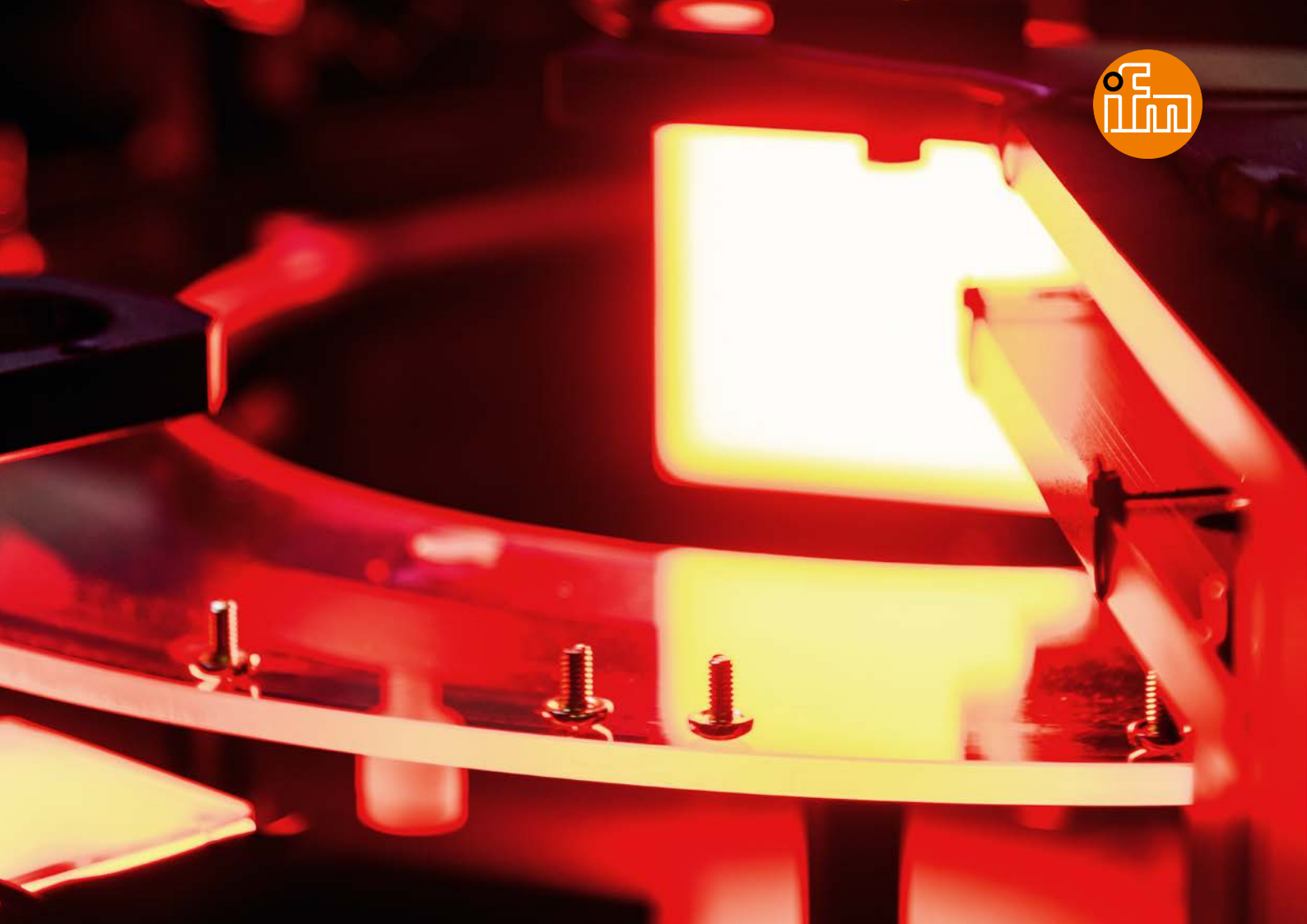Controller with H-bridge, 32 inputs and outputs

ecomatPanel
Keypad with rotary button and six keys, backlit

ioControl
Decentralised connection of sensors, freely programmable

For further technical details, please visit:
ifm.com/fs/CR1140

Coloured signals and bright light

Flexible LED strip in RGB and white

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

- Extremely robust, fully potted design with protection rating IP68

- Powerful LEDs for high light yield

- Bent or straight installation
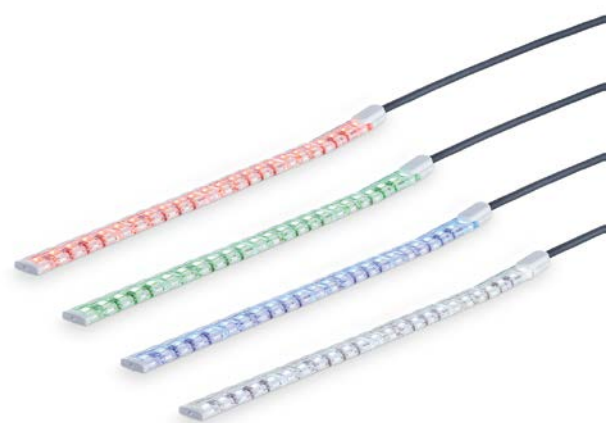
IP68

ifm – close to you!

Illuminated area length [mm]	Current consumption [mA]	Luminous flux [lm]	Order no.	
			Industry	Food
62.5	90	red: 11.56 / green: 35.75 / blue: 7.25 / white: 49.83	**DV1100**	**DV1200**
250	360	red: 46.24 / green: 143.12 / blue: 29 / white: 199.32	**DV1101**	**DV1201**
500	720	red: 92.48 / green: 286.24 / blue: 58 / white: 398.64	**DV1102**	**DV1202**
750	1080	red: 138.72 / green: 429.36 / blue: 87 / white: 597.96	**DV1103**	**DV1203**
1000	1440	red: 184.96 / green: 572.48 / blue: 174 / white: 797.28	**DV1104**	**DV1204**

Illumination and signalling all-in-one

LED strips not only fulfil the function of illumination, for example during mounting. They can also indicate the machine status via different light colours.

Flexible application options and different lengths make the LED strips extremely versatile. Thanks to the optional use of aluminium profiles, they can be quickly and securely fastened, and they illuminate even out-of-the way corners without casting shadows.

The robust design with protection rating IP68 allows their use in various demanding environments.

Wide range of colour options

The powerful LEDs of the LED strips are available in RGB and white. Triggering is via four digital inputs that can be used to produce the colours red, yellow, green, blue, cyan and purple, as well as pure white light. Indeed any colour shade is possible thanks to PWM control.

Common technical data		
Operating voltage	[V DC]	21.6...26.4
Colour temperature	[K]	7500
Typ. life cycle	[h]	30000
Ambient temperature	[°C]	-20...45
Housing material - Versions for industrial applications: - Versions for food applications:		TPU (orange) TPU (grey)
Protection rating		IP68

BEST FRIENDS

Light towers
Clearly visible visualisation of operating states

Illuminated capacitive touch sensors
Switching of machines and systems.

Air humidity sensors
Monitoring the climate in the control cabinet or production process

For further technical details, please visit: ifm.com/fs/DV1100

Wireless cloud connectivity

Industrial-grade LTE 4G router

- Reliable bridge between Ethernet and LTE Cat-4 for stable connectivity

- Web interface, firewall, NAT, DHCP server and nano SIM card slot are integrated

- Flexible voltage supply via terminals or Power over Ethernet (PoE)

- High protection rating IP66 / IP67 possible using optional accessories

- M50 thread for easy integration into control cabinets

IP67

ifm – *close to you!*

Version	Radio approval	Frequency band	Order no.
Industrial LTE router (EMEA)	CE/RED	B1, B3, B7, B8, B20, B28	**AE9000**
Industrial LTE router (US)	FCC	B2, B4, B5, B12, B13, B14, B25, B26, B66	**AE9001**

Interface between plant and cloud

The Industrial LTE 4G router from ifm is used in various application areas where a reliable internet or cloud connection is required, but a wired IT infrastructure is not available. Possible reasons for this can be long distances making grid connection uneconomical, or the fact that the system is still in the concept phase.

The router provides a cost-effective and fast solution to overcome these challenges and facilitate a reliable internet connection for applications.

For example, edgeDevices can use the Ethernet port to store relevant machine data in cloud services. With their **moneo|Cloud**, ifm offers an IIoT platform that provides basic functions for optimising machine availability, process quality and energy consumption without any programming knowledge.

The router is also the preferred choice for remote access and remote diagnostics in industrial environments.

Simple and protected installation

Thanks to the M50 thread, integration into control cabinets is easy, and the upper part of the device is protected to IP66 / IP67. The optional set of accessories (E90001) extends this protection to the entire housing and enables uncomplicated mounting on walls or masts with a diameter of 50...150 mm.

Common technical data	
Communication interfaces	GNSS, mobile communications, 1x Ethernet
Protocol	TCP/IP, UDP/IP
Integrated functions	Firewall, NAT, DHCP server
Protection rating	Upper part: IP66 | IP67 Connections: IP21 (IP67 when using the E90001 mounting set)

Mounting set	Order no.
For protection rating IP66 | IP67 for wall and mast mounting (Ø 50...150 mm)	**E90001**

BEST FRIENDS

edgeGateway control cabinet
Connection of the sensor level to the cloud

edgeGateway field applications
Connection of the sensor level to the cloud

moneo|Cloud
IIoT solution in the cloud

For further technical details, please visit:
ifm.com/fs/ae9000

Utilise the full power of your data

moneo: the IIoT platform for those who care about their plants

„My pulse frequency is 45 per minute when I'm asleep and healthy. If I am ill, it is about 55. Under full exertion, my heart pumps more than three times per second. I run my home course of ten kilometres in less than 50 minutes on a good day and at a temperature of about 20°C. How do I know all that?

The fitness tracker on my wrist collects my body data and my performances on a daily basis and analyses them for me. It helps me understand my body system. I can tell at a glance whether my body can cope with the exertion or whether I'm in the red zone and overexerting."

The sensors on my wrist make my complex human organism transparent to me. While such a thing may have been difficult to imagine in the past, it is hardly anything special for us today. Take a glance at your wrist to check how your body is doing. Just like that.

moneo: the result of a deep understanding of the machine

Monitoring the status and current condition of your machines and plants is very simple. With moneo. For more than half a century, we have had our finger on the pulse of the industry, shaping the evolution of automation. We are now distilling this expertise and in-depth understanding of all kinds of machines and plants from the OT level and combine it with the inexhaustible possibilities of digitalisation. Thanks to our IIoT platform, you can check the condition of your plant at any time. It will show you whether everything is running in the green zone or whether performance is declining, consumption values are getting out of hand or maintenance is required.

Get
actionable insights

Data becomes information.
Information becomes added value.

Your plant already offers the preconditions for it: sensors permanently provide data on temperature, pressure, level and object presence. In most cases, however, this data only reaches the controller. And this only accounts for about 5 per cent of the wealth of knowledge that is available. Thanks to moneo, you can easily benefit from the remaining 95 per cent. Like a fitness tracker, our IIoT platform collects the incoming data, evaluates it and generates information you can use to optimise your processes and workflows and to optimise maintenance schedules.

Never again in the red

Temperature curves, compressed air consumption, cycle times, operating hours, levels, vibration behaviour – whatever may have an influence on the **performance, production quality** and **energy efficiency** of your industrial organism, with

moneo, you will be able to act before your investments will run out of steam and before wear, lacking supplies or defects will lead to downtime or before precious energy will escape ineffectively through leaks. That is real added value. It saves money, nerves and time. You can, for example, rather invest the time you save after work to improve your best time on your 10-kilometre home run.

Do you want to understand your machines and plants better and keep them fit? Are you ready for more information, performance and efficiency?

Then start now. With moneo.

www.moneo.ifm

Turning the dream of clockwork into reality

How the IIoT can help you achieve a perfectly synchronised supply chain

Reference 57260, Aeternitas Mega 4, Calibre 89. If this name gets you excited, then you are definitely someone who is fascinated by the art of watchmaking. And that is totally understandable. It really is incredible to see how countless complications – as a horologist calls the different functions of a watch – can be implemented in such a small space. It's all down to precise interaction of cogs, springs, levers and shafts. Of course, a work of art like this doesn't come about overnight.

It took around eight years for the 2,826 components of the Reference 57260 to be conceived, developed, produced and assembled, resulting in no less than 31 hands that provide 57 different functions. Sorry, we mean complications.

Complicated? It doesn't have to be that way.
The issue of time (and unfortunately sometimes also the issue of complications) plays a crucial role in supply chain management. Every unused or wasted unit of time costs money. Efficiency is to a supply chain manager what perfection is to a watchmaker. And they are essentially one and the same thing. To achieve maximum efficiency, all the units involved need to engage perfectly with one another, like clockwork, at all times. That is the only way to deliver the best possible results across all functions – ideally without any complications getting in the way. It sounds complicated but it's not really. At least not if you look for experienced supply chain specialists to perform the task, just like a watchmaker. They have perfected the craft of composing and synchronising all the cogs in the supply chain over many decades.

The first bit of good news is that you've already found these experts. The second bit of good news is that our seamless combination of sensors and software can turn your dream of perfectly clean, well-oiled and pleasantly whirring clockwork into a reality much more quickly than the example we talked about earlier.

Bringing two worlds together: GIB SCX meets Industry 4.0
How does it work? Very easy: We bring the production and IT levels closer together, ideally using existing frameworks. No matter whether we are talking about machine maintenance requirements, production capacity or intralogistic material flows: in Industry 4.0 they are all recorded using sensors, forwarded to the IT level and converted into readable information, for example using the moneo IIoT software. Our native "Shop Floor Integration" interface sends the information to SAP in real time. There, thanks to our "GIB SCX" supply chain solution, which also has native SAP integration and certification, all of the operational and strategic units involved access the exact same standardised data. This creates transparency and ensures that all subprocesses are perfectly synchronised. This means that everyone from purchasing to shipping can respond very quickly to even unscheduled maintenance requirements or spur-of-the-moment large orders. Everything is integrated and coordinated.

One cog engages with the other. Complex operations that were previously carried out manually run automatically in the background. Like the delicate work of art behind a clock face. An onlooker only sees the information displayed. But they know that the clockwork is running.

Precisely, cleanly and reliably. We turn the dream into a reality.

Everything the automation heart desires.

## The online shop: Find more, search less.

Where does efficient plant automation start? We think: when shopping! And that's why our online shop is designed to guide you to your desired product as quickly as possible. At the same time, we also want to offer you maximum service when shopping online. For example, the selectors help you to narrow down the search to the suitable product versions. In your personal my ifm account you can easily import comprehensive order lists, create your own offers in no time and convert them into an order with just one click.

Products, accessories and interesting facts

Are you looking for the suitable accessories for your product? No problem! We have compiled everything you need to know about installation, parameter setting and set-up and added it to the respective product page. Of course, in our online shop you will also find lots of interesting information about the technologies in our sensors, inspiration in the form of application reports, factory certificates for free download, and, and, and...

So if you are thinking about how to shop more efficiently, a visit to ifm.com is definitely worthwhile!
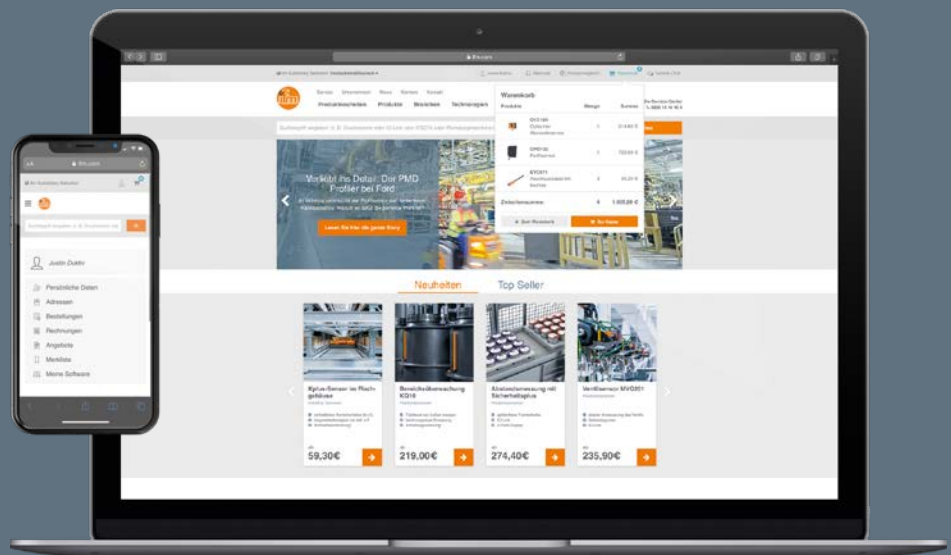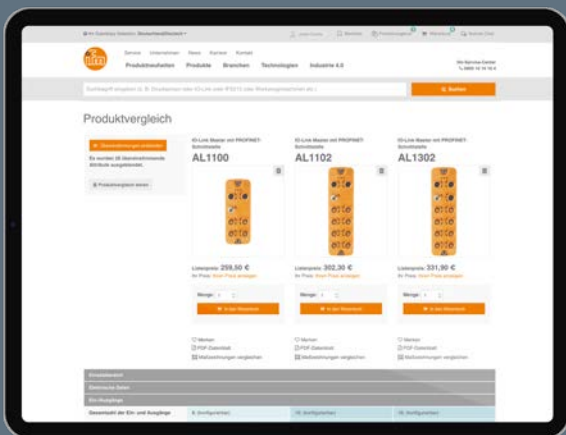
More transparency: Search for products, select, compare, get a support opinion, choose – and buy at your individual price.

More efficiency: Import order lists, create favourites, place previous orders again.

More flexibility: You decide how you pay and when we deliver.
If you are in a hurry: use our express shipping.

More you: Create offers yourself, convert them into orders with one click, track shipments and status, save and retrieve invoices.
my ifm – it's yours!

More future: Digitisation, Industry 4.0, finding solutions, downloading software, managing licences –
all in one place.

More time: No closing times, no nasty surprises, shopping at any time, always up-to-date availability – and a reassuring 6 weeks' right of return.

That's it? Not by far!

Our entire product portfolio is available online!

ifm.com