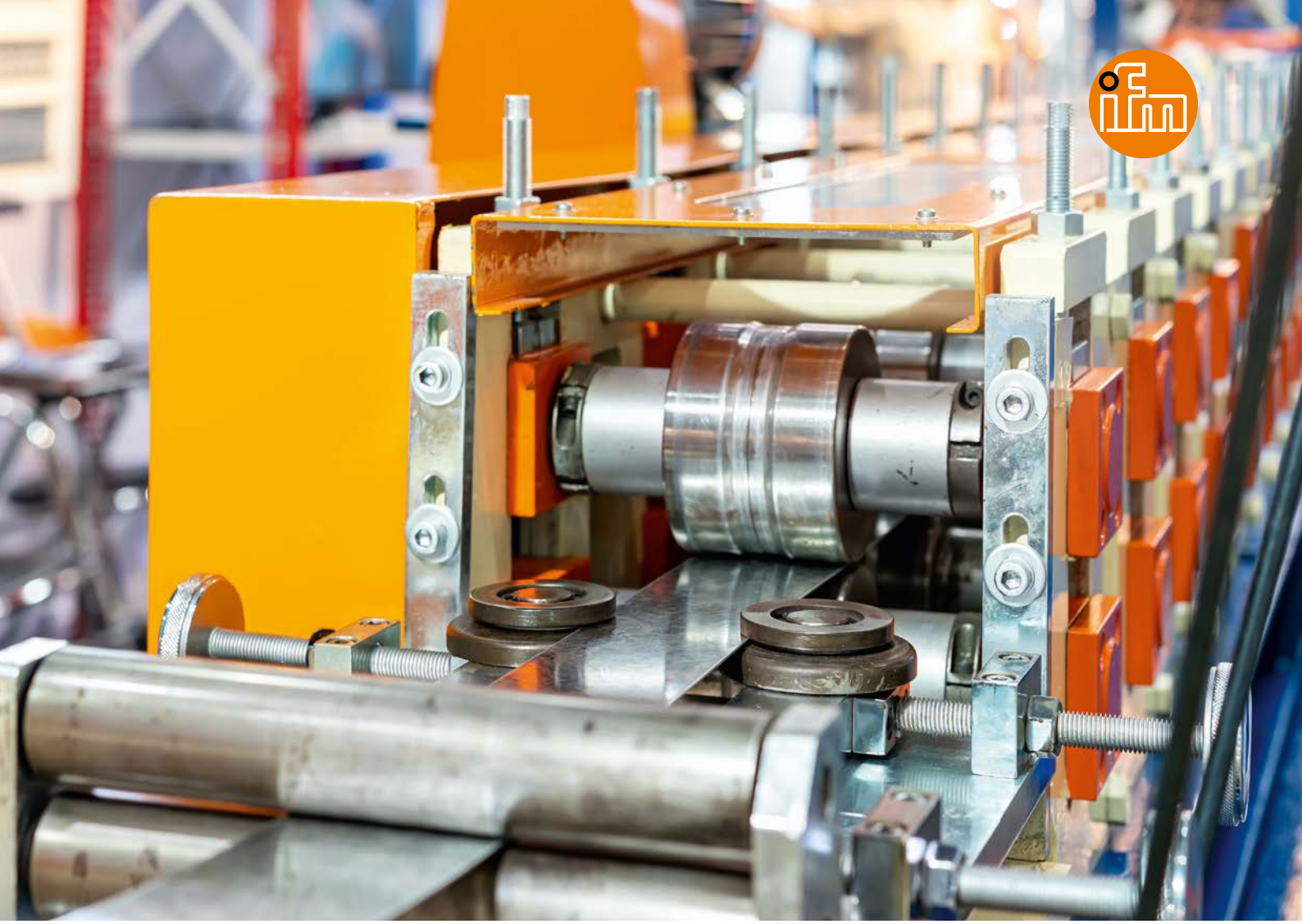
THE ORANGE BOOK

PRODUCT **FACTSHEETS**

2023/2024

INSPIRATION FOR AUTOMATION

Our product news:
ifm.com/gb/product-news



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!

Housing [mm]	Installation	Measuring range [mm]	Adjustable switch point [mm]	Order no.
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 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
Connection		M12 connector
Protection rating		IP69K

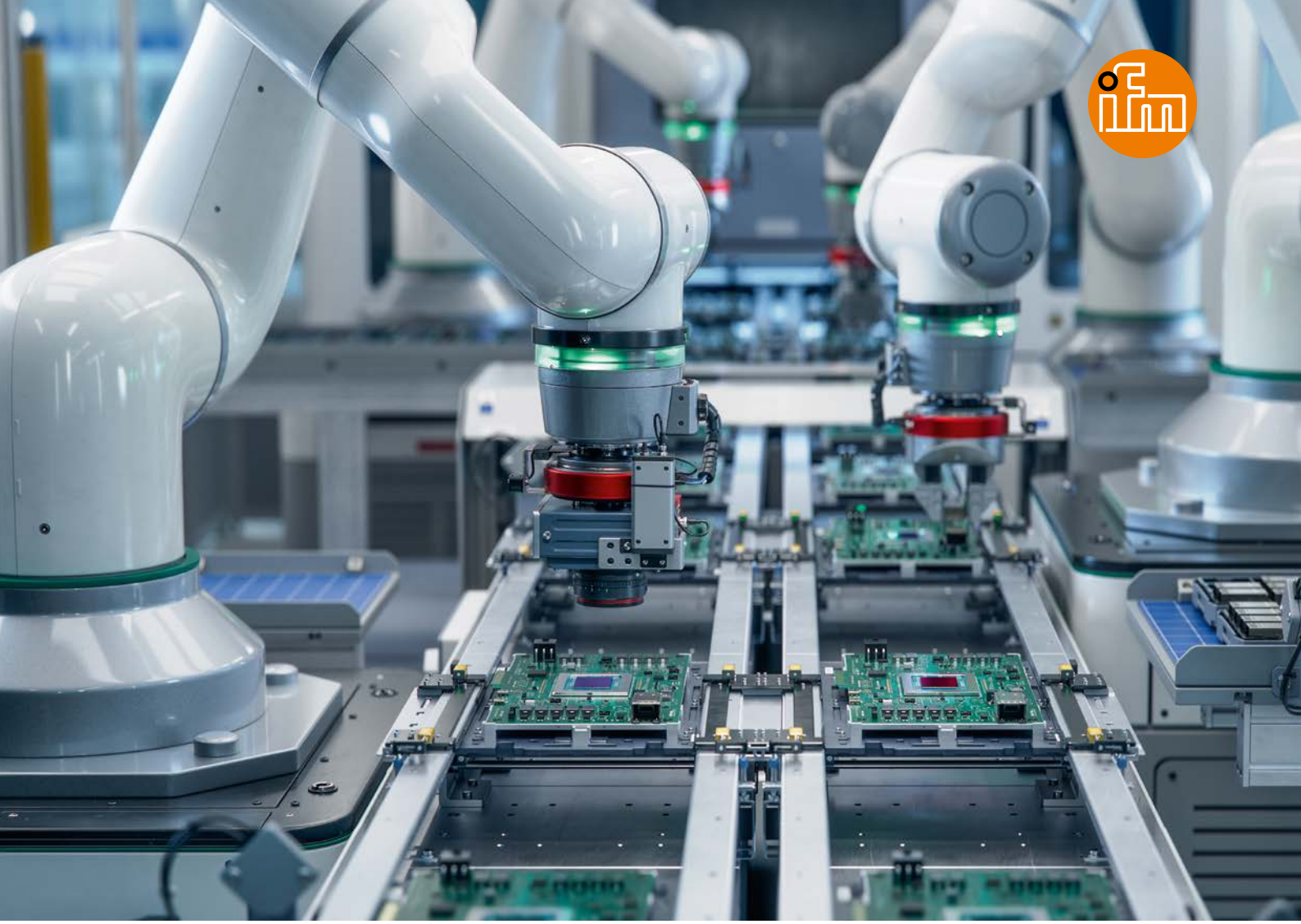
BEST FRIENDS

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

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

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

For further technical details, please visit: ifm.com/fs/IFP200



Fast and precise

Photoelectric sensor measures distances in the µm range

- Detects tiny objects with highest precision
- High switching frequencies for dynamic applications
- 3 operating modes and a robust, compact design enable a wide range of applications
- Versatile and future-proof connectivity thanks to analogue outputs and IO-Link

IP67

IO-Link

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Measuring range [mm]	Resolution [mm]	Laser spot [Ø mm]	Output	Order no.
30...80	0.01	0.5	2x PNP/NPN (selectable)	**OMH550**
30...80	0.01	0.5	1x PNP/NPN 1x analogue	**OMH551**
50...200	0.05	1	2x PNP/NPN (selectable)	**OMH552**
50...200	0.05	1	1x PNP/NPN 1x analogue	**OMH553**
50...500	0.5	1	2x PNP/NPN (selectable)	**OMH554**
50...500	0.5	1	1x PNP/NPN 1x analogue	**OMH555**

High-precision object detection

Thanks to its high resolution, the OMH sensor detects tiny objects in standard mode with an accuracy in the micrometre range. Even precise arrangements and positioning of delicate components, such as those used in battery cell production, can be reliably ensured with the high-precision OMH.

Additional speed and power mode

In fast conveyor belt applications, the sensor achieves impressive measuring frequencies of 1200 Hz in speed mode.

In power mode, the OMH maintains this micrometre precision even under challenging conditions, such as in PCB assembly. This is an outstanding feature, as ordinary distance sensors often fail to reliably detect such objects.

Ready for all kinds of challenges

Thanks to its compact and robust design as well as its analogue output, the highly precise OMH will also convince you in retrofit applications. IO-Link ensures easy parameter setting and data use in fully automated processes.

Technical data		
Measuring frequency	[Hz]	up to 1200
Temperature range	[°C]	0...50
Type of light / wave length	[nm]	laser light 630
Laser protection class		1
Electrical connection		M12, A-coded
Housing material		diecast zinc
Protection rating		IP67

BEST FRIENDS

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

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

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

For further technical details, please visit: ifm.com/fs/OMH550

Faster, further, better

New generation of OGD distance sensors

- Distance measurement with millimetre precision using PMD time-of-flight technology
- Wide range of applications: 3 operating modes now facilitate object detection even in dynamic processes
- 2-in-1: simultaneous output of distance value and reflectivity
- Process values shown on 2-colour display and sent via IO-Link

IP67 IO-Link pmd

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Material Housing	Output	Order no.
Plastic	2x PNP/NPN (selectable)	**OGD250**
Plastic	1x PNP/NPN, 1x analogue	**OGD251**
Stainless steel	2x PNP/NPN (selectable)	**OGD550**
Stainless steel	1x PNP/NPN, 1x analogue	**OGD551**

Common technical data		
Measuring range (distance)	[mm]	50…2000
Adjustable object reflectivity	[%]	6…900
Type of light / wave length	[nm]	laser light 650
Laser protection class		1
Laser spot at max. measuring range	[mm]	5
Front pane material		PMMA
Measuring frequency	[Hz]	max. 180
Mutual interference suppression		yes
Protection rating		IP67

Even more performance

The new generation of tried-and-tested distance sensors from the OGD series combines all the advantages of their various predecessor variants in just one device. The user is now presented with a choice of operating modes for optimisation in terms of either high measuring distances, maximum precision or high measuring frequencies. This reduces the number of variants while enabling an optimum adaptation to a wide range of applications.

Versatile use

The sensors of the OGD series measure distance values with millimetre precision. They are ideal assistants for positioning objects or checking presence, for example in quality control. The reflectance values can also be used, for example for identification in sorting tasks. The areas of application are wide-ranging: whether handling technology, robotics, assembly automation, conveyor technology or logistics; the new OGDs are universal problem solvers for your automation!

Light- or heavy-duty?

The choice is yours. We now offer the OGD in both plastic and stainless steel housings.

User-friendly

The sensor can be set either directly on the device by using the three operating keys and the 4-digit display, or conveniently from a distance via IO-Link.

Speaking of the display: it can do more than just display the current measured value reading. A red-green colour change indicates the status of the current measurement in a clear and simple way.

In addition to the distance value, the reflectance value can also be output for evaluation via analogue output or IO-Link, or signalled via switching output.

BEST FRIENDS

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

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

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

For further technical details, please visit: ifm.com/fs/OGD250

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 measurement data with the ifm Vision Assistant software

IP69K

IO-Link

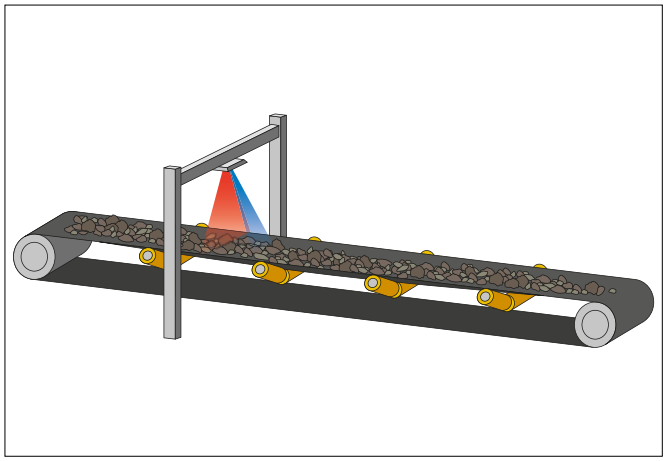
ifm – close to you!

Horizontal x vertical opening angle [°]	Type	Frequency [GHz]	Order no.
40 x 30	distance sensor	60...64	**R1D100**
40 x 30	distance sensor with reduced transmitter power	60...64	**R1D102**
40 x 20	distance sensor	77...81	**R1D200**

Distance sensor

The R1D 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	
Output	IO-Link 4...20 mA | 0...10 V
Number of digital outputs	2
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

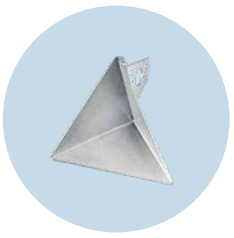
The result is a wide range of applications for the sensor, for example the detection of vehicles such as trucks and ships, during docking processes at loading and unloading ramps.

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 a PC

IO-Key
Sending IO-Link 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

Keeps both end positions in view

T-slot cylinder sensors with IO-Link

- Only 1 sensor for 2 end positions for short-stroke cylinders
- 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

IP67

IO-Link

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Number of outputs physical / digital	Connection type	Connector type	Number of conductors	Order no.
2 / 2	2 m cable	–	4	**MK5904**
1 / 2	Pigtail	M8 fix	3	**MK5905**
1 / 2	Pigtail	M8 rotatable	3	**MK5906**
2 / 2	Pigtail	M8 rotatable	4	**MK5907**
2 / 2	Pigtail	M12 rotatable	4	**MK5908**
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 parameter setting of IO-Link devices on the PC

For further technical details, please visit: ifm.com/fs/MK5904

Speed under control?

Speed monitor in compact housing

- 2 in 1: speed sensor and evaluation in one compact housing
- Many values can be read via IO-Link, switch and pulse outputs also available
- Robust metal housing, therefore no additional impact protection housing required
- Flush and non-flush versions
- Versions with ATEX approval

IP67

IO-Link

ifm – close to you!

Sensing range [mm]	Installation	ATEX	Order no.
12	for non-flush installation	no	**DI6004**
7	for flush installation	no	**DI6005**
8	for non-flush installation + ATEX	yes	**DI604A**
5	for flush installation + ATEX	yes	**DI605A**

The easiest way to keep an eye on speeds

Whether conveyors, belt drives, centrifuges or screw conveyors: The Compact speed monitor is the first choice wherever rotating or linear movements are to be monitored with regard to over-speed and underspeed.

Thanks to ATEX approval, use in hazardous areas, for example in grain processing, is also possible without risk.

Everything in a compact housing

Both the pulse-generating inductive sensor and the speed evaluation are integrated in a compact M18 housing - it doesn't get any more space-saving than this. Due to the robust metal housing, there is no need for an additional impact protection housing.

Common technical data		
Setting range	[Imp./min.]	3...24,000
Protection rating		IP67

Convenient thanks to IO-Link

The sensor provides a lot of information via IO-Link: speed values, minimum and maximum values and switch points can be read via IO-Link.

The parameter setting of, for example, the start-up delay, operating mode (Single Point Mode, Window Mode, Two Point Mode) or the "teaching" to the current speed is also conveniently carried out via IO-Link. With the help of the setting ring, the sensor can also be adjusted manually on site.

BEST FRIENDS

moneo|RTM
Analysis software for simple condition monitoring

IO-Link master
Field-compatible master with Profinet interface

Light tower
Clearly visible visualisation of operating states

For further technical details, please visit: ifm.com/fs/DI6004

Safe without a float

LI level sensor for point level and leakage monitoring

- Approved as overflow prevention and leakage sensor to the German Federal Water Act (WHG)
- Maintenance-free as there are no moving parts
- Adjustment and setting via inductive teach button
- 2 switching outputs can be defined at the measuring point
- Adjustable to different media (e.g. water, oil, cooling lubricants)

IP69K

IO-Link

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Probe length [mm]	With WHG approval	Without WHG approval
	Order no.	Order no.
132	**LI2131**	**LI5131**
273	**LI2132**	**LI5132**
481	**LI2133**	**LI5133**
737	–	**LI5134**

Smart alternative for float switches

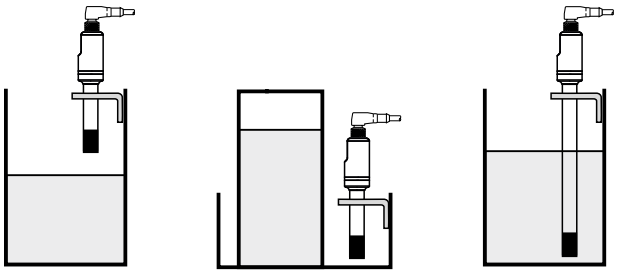
With the LI level sensor, you can reliably detect leakages and point levels on a permanent basis. The capacitive measuring system has no moving parts. Malfunction or maintenance measures due to deposits on the mechanical parts is therefore eliminated. Thanks to the WHG approval, you can also comply with the legal requirements in the environment of substances that are hazardous to water.

Easy set-up, digital communication

The sensors are factory-set for specific media (LI21xx: oils, LI51xx: aqueous media), so they can be easily put into operation via plug & play. Thanks to the teach button and IO-Link, the sensor can be adjusted to other media just as easily. Another advantage: the sensor also detects the temperature of the medium. This is transmitted via IO-Link, but can also be assigned to one of the two switching outputs.

Technical data		
Output function		2 switching outputs: 1 x temperature, 1 x level or 2 x level, depending on the damping (e.g. water/oil)
Operating voltage	[V DC]	9.6...35 (IO-Link: 18...30)
Medium temperature water / oil	[°C]	-25...85
Process connection	[mm]	Ø 16
Tank pressure	[bar]	0.5
Protection rating		IP69K

Application examples:



Overflow prevention in a supply tank for coolant emulsion

Leakage monitoring in the overflow vessel of a hydraulic power pack

Underflow prevention in a supply tank for coolant emulsion

BEST FRIENDS

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

IO-Link data splitter
Transmits IO-Link sensor data to IT level and PLC

For further technical details, please visit: ifm.com/fs/LI2131

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	Order no.
G1	2 switching outputs or 1 switching and 1 analogue output 4...20 mA	**LW2120**

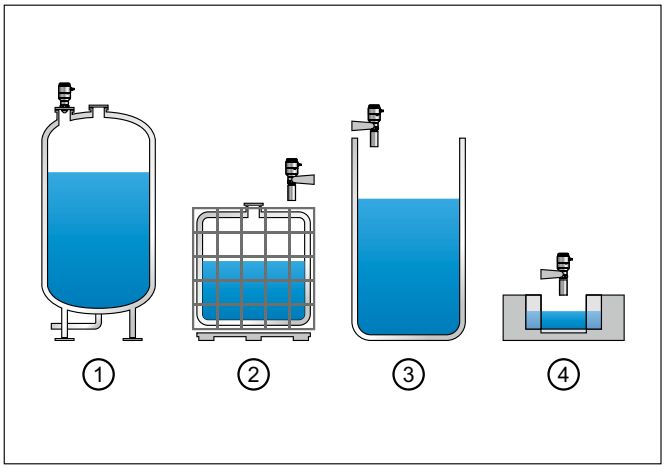
Precise measurement on open and closed tanks and containers

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.

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 rate measurement
   A flow rate measurement in Venturi flumes (e.g. Parshall, Khafagi-Venturi) can also be implemented with the radar sensor.

BEST FRIENDS

moneo|RTM
Analysis software for simple condition monitoring

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

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

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

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

IP69K

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...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**

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.

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

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.

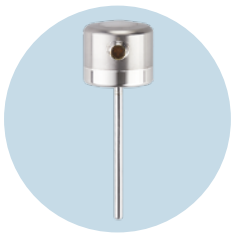
IO-Link

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.

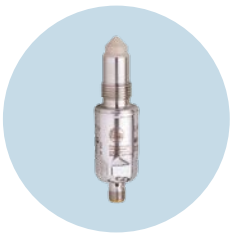
High resolution

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

Robust, flexible, hygienic

Pressure sensor with high-quality ceramic measuring cell

- Overload-resistant measuring cell with good long-term stability
- High variability thanks to different process connections
- Zero point calibration via teach button or IO-Link
- Factory certificate for download free of charge

IP69K

IO-Link

ifm – close to you!

Factory setting measuring range [bar]	Measuring range relative pressure [bar]	Process connection /order no.			
		G1 male / Aseptoflex Vario	G1 male / sealing cone	G½ male / sealing cone	TriClamp DN25...DN40 (1...1,5") DIN 32676 (ISO 2852)
0...100	-1...100	-	**PM1602**	-	-
0...40	-1...40	-	-	**PM1543**	**PM1143**
0...25	-1...25	**PM1703**	**PM1603**	**PM1503**	**PM1103**
0...16	-1...16	**PM1714**	**PM1614**	**PM1514**	**PM1114**
0...10	-1...10	**PM1704**	**PM1604**	**PM1504**	**PM1104**
0...6	-1...6	**PM1715**	**PM1615**	**PM1515**	**PM1115**
0...4	-1...4	**PM1705**	**PM1605**	**PM1505**	**PM1105**
0...2.5	-0.125...2.5	**PM1706**	**PM1606**	**PM1506**	**PM1106**
0...1.6	-0.1...1.6	**PM1717**	**PM1617**	-	**PM1117**
-1...1	-1...1	**PM1709**	**PM1609**	-	-
0...1	-0.05...1	**PM1707**	**PM1607**	**PM1507**	**PM1107**
0...0.4	-0.05...0.4	**PM1718**	**PM1618**	-	**PM1118**
0...0.25	-0.0125...0.25	**PM1708**	**PM1608**	-	**PM1108**
0...0.1	-0.005...0.1	**PM1789**	**PM1689**	-	-

Maintenance-free and robust

On the process side, the pressure sensors are maintenance-free because they have no elastomer seal. The flush and robust ceramic measuring cell is resistant to pressure and vacuum shocks and to impact by abrasive substances. In addition, the sensor withstands medium temperatures of up to 150 °C (max. 1h). It is therefore particularly suitable for all common food applications.

Flexible fitting

Thanks to the large choice of measuring ranges and process connections, you can install the sensors directly or via adapters both in pipes and in tanks. You can find suitable adapters for your requirements in our online shop.

Free factory certificate

At www.factory-certificate.ifm you can download a free factory certificate for each PM pressure sensor purchased.

Common 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)		PM1x89 / PM15xx: < ± 0.2; PM1602: < ± 0,5
Medium temperature	[°C]	-25...125 (150 max. 1 h)
Materials (wetted parts)		Ceramic 99.9 %, PTFE, stainless steel (316L/1.4435)
Protection rating		IP69K

BEST FRIENDS

Teach buttons
For simple manual zero point calibration

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/PM1602

Measuring flow rates without any obstacles

The SU Puresonic ultrasonic sensor

- Accurate flow measurement of water and ultrapure water
- 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

IP69K

IO-Link

ifm – close to you!

Process connection	Measuring range		Order no.	
	[l/min]	[gpm]	only [l/min]	[l/min] + [gpm]
G 1/2" (DN15)	0.5...65	0.13...17.17	**SU6020**	**SU6021**
G 3/4" (DN20}	0.5...75	0.13...19.81	**SU7020**	**SU7021**
G 1" (DN25)	1...240	0.25...63.4	**SU8020**	**SU8021**
G 1 1/4" (DN32}	1...275	0.25...72.64	**SU9020**	**SU9021**
G 2" (DN50)	5...1000	1.32...264.18	**SU2020**	**SU2021**
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**
1/2" NPT	0.5...65	0.13...17.17	-	**SU6621**
3/4" NPT	0.5...75	0.13...19.81	-	**SU7621**
1" NPT	1...240	0.25...63.4	-	**SU8621**
2" NPT	5...1000	1.32...264.18	-	**SU2621**

Ensuring process quality easily and permanently

The SU Puresonic detects flows with high precision. Thanks to ultrasound technology, this also applies to ultrapure water as produced in reverse osmosis plants. In combination with the LDL101 conductivity sensor, reliable quality control can be established in the filtration process.

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.

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

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

More efficiency in every way

Fast-response, precise flow sensor

- Reliable process quality through continuous monitoring of the conformal temperature control
- Contributes to precise process control and reduced material waste
- Modern energy management combined with temperature sensors
- Capable of withstanding temperatures up to 180 °C and pressures up to 30 bar

IP67

ifm – close to you!

Measuring range [l/min]	Process connection	Order no.
0.3...25	Rp 3/4	**SBT633**
0.6...50	Rp 3/4	**SBT634**
2...100	Rp 1	**SBT646**
4...200	Rp 1 1/2	**SBT657**

Common technical data		
Medium temperature	[°C]	10…180
Accuracy	[%]	± 5
Response time	[s]	< 0.01
Protection rating		IP67

Efficient production ensuring the required level of quality

The SBT type flow sensors ensure quality and efficiency in your production processes, for example in injection moulding plants, tyre production or meat substitute production. The sensor quickly and precisely determines the flow rate of the medium used for the conformal temperature control in order to heat or cool the mould depending on the process step. In the process, it will not be affected by air bubbles.

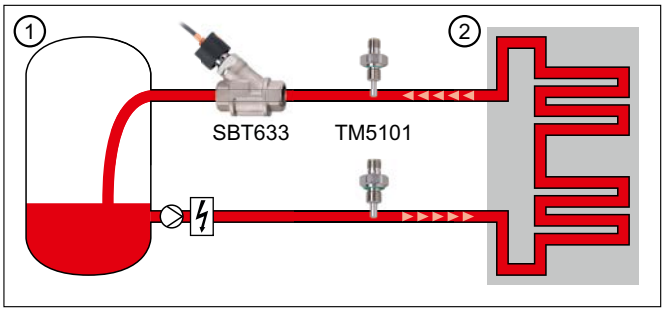
Thanks to the high repeatability, deviations from the setpoint are detected at an early stage, even when the flow rates are very low. Costly material waste due to premature or incomplete cooling is avoided.

Early identification of maintenance requirements

Depending on the nature of the heating or cooling medium, the channels incorporated into the injection mould for conformal temperature control can become clogged over time. Deposits such as lime or dirt particles can reduce or even prevent the flow of the heating or cooling medium. The precise sensor technology helps to quickly identify the maintenance requirements in the clogged piping system and to prevent quality degradation.

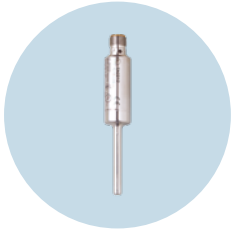
Modern energy management

Monitoring the flow and temperature has proven its worth in temperature control processes. In this way, the energy consumption of the production process can be easily monitored and optimised through precise control of temperature and flow.



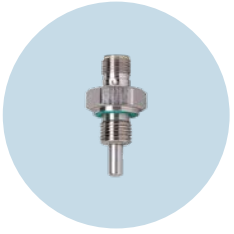
1) Temperature control unit
2) Tool

BEST FRIENDS



Temperature transmitters
Precise and fast detection of temperatures up to 200 °C

IO-Link converter
For connecting analogue sensors, with display



Temperature sensor
Precise and fast detection of temperatures up to 150 °C

For further technical details, please visit: ifm.com/fs/SBT633

Digitise your temperature values

Temperature plug for hygienic applications

- Ideal for demanding control tasks thanks to 0.01K resolution
- Analogue and switching output as well as IO-Link
- Hygienic stainless steel housing with status LED
- Versatile: temperature measuring range from -100 to 600 °C

IP69K

IO-Link

ifm – close to you!

Measuring range	Factory settings	Order no.
M12 connections · Output function 4…20 mA Switching output · IO-Link 1.1		
-100…600 °C	-100…600 °C	**TP2009**
-100…600 °C	-50…300 °C	**TP2008**
-100…600 °C	-50…150 °C	**TP2005**
-100…600 °C	-10…150 °C	**TP2001**
-100…600 °C	0…100 °C	**TP2007**
-148...1112 °F	0...300 °F	**TP2003**
M12 connections · Output function 0…10 V Switching output · IO-Link 1.1		
-100…600 °C	0…100 °C	**TP2017**

Suitable probe sensors for hygienic applications can be found on our website at **ifm.com**

Convert & digitise your temperature measurement

The measured signal converter converts the resistance values of the temperature probes into standardised analogue and switching signals. Using IO-Link, the measured value can also be transmitted in digital form without conversion losses. This makes the temperature plug an important component for a digital retrofit for existing installations.

Versatile use

The transmitter has a connection for 4-wire Pt100 / Pt1000 measuring elements. It can either be screwed directly onto the measuring element or connected using a connecting cable. The small design is also suitable for rough applications, as the plug can be mounted in a safe place away from the probe.

Plug & play

If the temperature plug is connected to the measuring element, it recognises it automatically. If the scaling of the measuring range set at the factory meets the requirements of the application, no further settings are necessary. If necessary, the user can simply adjust the scaling via IO-Link.

Minimised installation and error sources

Using two standardised M12 connections, the installation complexity of the TP temperature plug is reduced to a minimum as compared to a common head / DIN rail transmitter. Sources of error, such as cable clamps, are eliminated.

Individual adjustment

For consistently high accuracy, you can adjust the temperature plug after calibration to meet your specific requirements. For this purpose, the TP offers a wide range of setting options enabling perfect coordination of your system.

Common technical data		
Ambient temperature	[°C]	-25…70
Resolution	[K]	0.01 (TP2009: 0.1)
Display via IO-Link	[K]	±0.1
Precision via the analogue output		±0.1K ±0.1% of the scaled measuring span
Temperature coefficient (in % of the span per 10 K)		< 0.1
4-wire evaluation		Pt100 and Pt1000
Protection rating		IP69K

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

For further technical details, please visit: ifm.com/fs/TP2009

Wireless vibration monitoring

Battery-powered vibration sensor VWV

- For overall vibration and temperature monitoring in places that are difficult to access
- Radio technology with intelligent mesh topology for efficient data transmission
- Easy implementation from sensor to data visualisation

IP20 IP68

ifm – close to you!

Description	Order no.
Wireless vibration sensor 1 measurement axis	**VWV001**
Wireless vibration sensor 3 measurement axes	**VWV002**
Gateway for wireless vibration sensors	**ZB0929**

Vibration monitoring for simple machines

The battery-operated vibration sensor in combination with the ZB0929 Gateway and **moneo|RTM** enables overall monitoring of the machine condition according to ISO 10816. Together with the integrated temperature monitoring it is possible to detect imminent damage to machines and schedule demand-oriented maintenance to prevent major damage and costly downtimes.

Fast integration, reliable communication

The wireless design allows the sensors to be installed on machine parts that are difficult to access. Data is then transmitted to the gateway directly or via mesh technology - and thanks to low power consumption and a high-capacity battery, it lasts for at least four years.

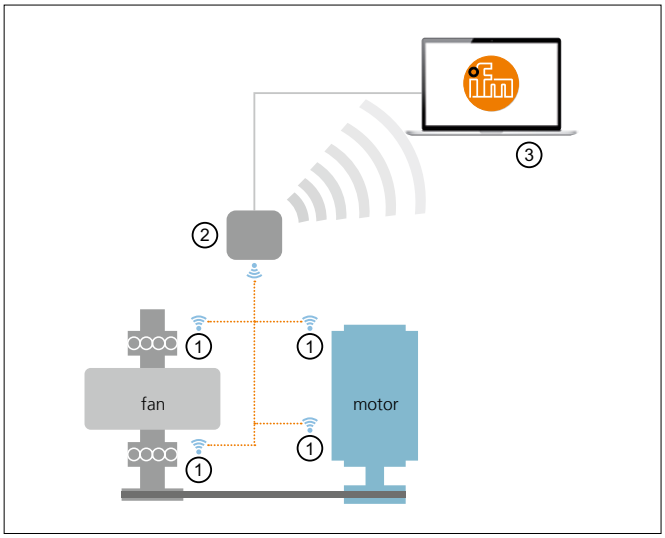
Extensive gateway connectivity

Up to 30 sensors can be connected to the gateway at the touch of a button. In addition to a wired Ethernet interface, the gateway itself also has a variety of wireless connection options.

Seamless integration into the IT level

Seamless integration into the moneo IIoT software makes the data quickly and easily available for analysis and visualisation. This makes it easy to establish reliable IT-based plant monitoring.

Common technical data VWV001, VWV002		
Measuring range	[mm/s]	0…25
Frequency range	[Hz]	10...1000
Ambient temperature	[°C]	-40...85
Communication	[GHz]	2.4 GHz (ISM band)
Protection rating		IP68
Technical data ZB0929		
Operating voltage	[V DC]	5
Communication via cable		Ethernet TCP/IP
Wireless communication		LTE CAT 1, Wi-Fi, NB-IOT
Protocol		MQTT, HTTP
Protection rating		IP 20



1) VW Vibration sensor
2) ZB0929 Gateway
3) moneo|RTM

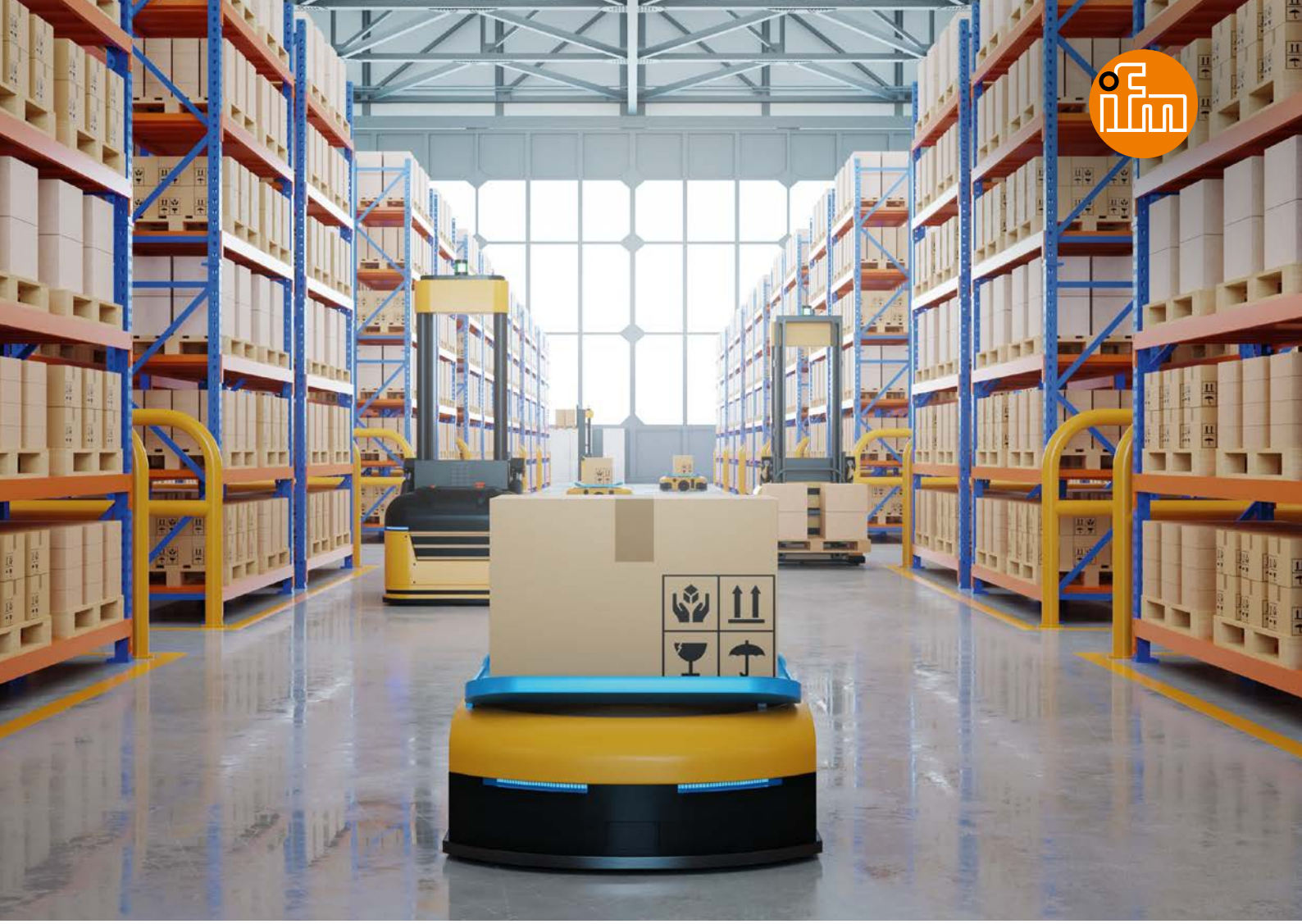
BEST FRIENDS

moneo|RTM
Analysis software for simple condition monitoring

moneo|edgeConnect IoTCore
Required interface for the integration of IoT Core devices

Ethernet-Switch
Field-ready switch with six ports

For further technical details, please visit: ifm.com/fs/VWV001



360° vision for mobile robots

3D camera-based perception platform

- Obstacle avoidance and clear space detection for route planning of autonomous vehicles
- Also detects objects below and above the scanning plane of a safety scanner
- 3D PMD cameras detect even difficult scenes and objects, e.g. forks
- Powerful integrated image evaluation, output of zone evaluation and occupancy grid

ifm – close to you!

Video Processing Unit	
Description	**Order no.**
Video Processing Unit (VPU) Connection for up to 6 cameras, Gigabit Ethernet interface for sensor signals	**OVP801**

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**

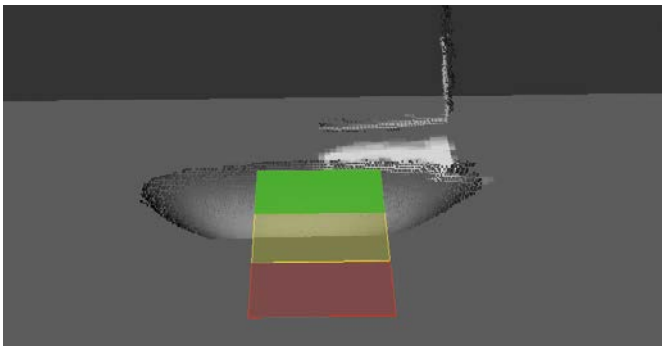
3D obstacle detection

Autonomous transport systems have to overcome two major challenges: on the one hand, collision avoidance with objects and persons, on the other hand, autonomous avoidance of obstacles. The frequently used safety scanners are only of limited help here, as they only detect the travel path in a plane just above the ground. This is where the camera platform shows its advantage: it processes the signals from up to six 3D PMD cameras installed all around the vehicle and evaluates the environment three-dimensionally, i.e. both the ground area below the field of view of the safety scanners (e.g. holes in the ground) and the view diagonally upwards. In this way, hanging loads such as crane hooks, for example, are also detected. Powerful algorithms ensure that false detections are virtually eliminated despite the high detection rate.

Easy integration

The user can define zones in the form of segmented polygons in which the system evaluates the occupancy and provides the vehicle's steering system with clear data for safe and collision-free driving.

The robotics platform captures the situation in a 2D image and in 3D distance data.



The obstacle in front of the vehicle is projected in a map on the ground. One of the three zones or the area in the so-called occupancy grid is then output as occupied.

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/OVP801

Transparent monitoring of processes

Monitoring add-on for ifm Vision Assistant

- Clear visualisation of images and data from the vision sensors on a dashboard
- Deviations from the target state can be quickly detected and their cause identified
- Easy integration of new and existing sensors through network search
- Easy process analysis and trend detection thanks to automated image and data history

ifm – close to you!

Description	Order no.
Vision Assistant Monitoring Tool (including 6 connections)	**E3D310**
Vision Assistant Monitoring Tool (+1 connection)	**E3D311**

The Monitoring Tool can be activated in the ifm Vision Assistant from version 2.6.

Central overview of the process quality

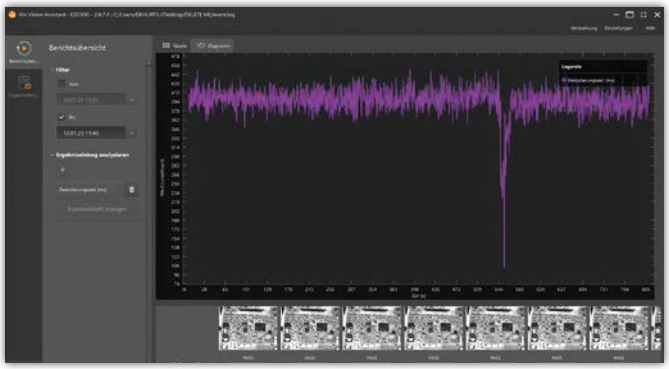
With the Monitoring Tool as an add-on for the ifm Vision Assistant you can combine the image and process data of your vision sensors in the network on a dashboard. This provides you with a clear overview of relevant live images, statistics on good and bad parts as well as status messages from the sensors at all times.

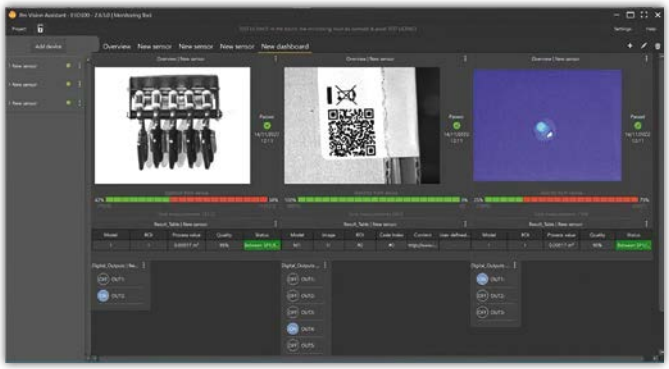
Detect and eliminate deviations more quickly

This clear overview makes it easy for you to monitor process operations both directly in the production environment and at a central location in real time and to quickly identify possible deviations. Maintenance or corrective measures can be carried out with a short reaction time and a high process quality can be maintained.

Identify trends based on data history

Besides, you can also use the automatically generated data history to analyse process developments, derive trends from them and act ahead of time.





BEST FRIENDS

O3D 3D sensor
For object measurement, gripper navigation and much more

O2D 2D vision sensor
For the analysis of surfaces and contours

O2I 1D/2D code reader
Automatic analysis and checking of codes and text

For further technical details, please visit: ifm.com/fs/E3D310

Multicode reader for IO-Link

Optical identification of 1D/2D codes and text

- Evaluation of various codes and texts in a single image
- Easy integration and configuration via IO-Link
- Ready to use out of the box, only the codes need to be taught
- Reliable detection even in case of extraneous light and demanding surfaces

IP65

IO-Link

ifm – close to you!

Versatile solution for production and logistics

The O2I multicode reader detects 1D and 2D codes as well as text elements. Even in case of multiple codes and text sections or combinations thereof, the O2I provides accurate evaluations in a single image capture. This makes the multicode reader a universally applicable solution for production and logistics processes where codes and text information are to be checked for quality or used for product tracking.

Thanks to the integrated and customisable RGBW lighting, even difficult colour combinations of code / text and background can be read with ease.

Easy integration with IO-Link

Integration is extremely simple thanks to the use of IO-Link. Once removed from the packaging, the multicode reader can be directly inserted into the existing IO-Link infrastructure. All that needs to be done in order to set the sensor to a code is to run through the teaching process. For more demanding identification tasks, the user-friendly PC software "Vision Assistant" is available.

Data with a size of more than 32 bytes are automatically divided into several blocks and transmitted to the controller via IO-Link using the fast COM3 standard. There is an automatic separation of the data blocks with an adjustable hold time of the data. A major advantage for the user is that no special function blocks are required in the control programme.

In addition, IO-Link enables convenient setting of various sensor parameters directly from the controller, including, for example, focus, data strings for code comparison or diagnosis. This makes it easy to adapt the reader to changing products or operating processes.

Description	Order no.
Illumination: RGWB	
standard lens	**O2I400**
wide-angle lens	**O2I402**
telephoto lens	**O2I404**
Illumination: red light	
standard lens	**O2I410**
wide-angle lens	**O2I412**
telephoto lens	**O2I414**
Illumination: infrared	
standard lens	**O2I420**
wide-angle lens	**O2I422**
telephoto lens	**O2I424**

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
Masters with Profinet interface for use in the field

For further technical details, please visit: ifm.com/fs/O2I400

Keeping track of the flow of goods

RFID UHF compact devices for harsh environments

- Antenna, evaluation unit and switch, all in one device, reduces installation time
- Reads up to 16 tags at a distance of up to 3 meters
- Installation in metallic or wet environments possible thanks to IP67
- Fieldbus interface, digital inputs / outputs or IO-Link for less wiring complexity

IP67

ifm – close to you!

Description	Order no.				
	PROFINET interface	EtherNet/IP interface	TCP/IP interface	IoT core	IO-Link
865…868 MHz EU/RED	**DTE801**	**DTE802**	**DTE804**	**DTE805**	**DTI801**
902...928 MHz USA, Canada, Mexico	**DTE901**	**DTE902**	**DTE904**	**DTE905**	**DTI901**
920.5...924.5 MHz China	**DTE911**	**DTE912**	**DTE914**	**DTE915**	**DTI911**
916.8...920.4 MHz Japan	**DTE961**	**DTE962**	**DTE964**	**DTE965**	–

Now also with IO-Link

Digitalisation and the resulting requirements for industrial identification solutions are increasing steadily. This is why ifm offers the compact high-performance RFID UHF devices not only with the classic fieldbus interfaces and IoT, but now with IO-Link.

Transferring data over the network, controlling actuators directly

RFID systems are an excellent solution when it comes to product tracking in intralogistics. With the IoT or IO-Link RFID UHF solutions, track and trace can be implemented in an even more streamlined fashion thanks to the simplified parameter setting and visualisation of ifm moneo configure.

Applications

With ranges of up to 3 m, the systems are ideally suited for track and trace and traceability applications. For example, vehicles can be identified and gates opened directly by means of digital outputs - without any programming effort or time delay. In intralogistics, the system is used for seamless product tracking. Up to 16 tags can be read simultaneously.

Example programmes for download

For each product we offer numerous example programmes and documentation for download free of charge.

DTE versions with fieldbus interface

The DTE evaluation systems have an integrated web server for device setup as well as monitoring and diagnostic data when integrated into the cloud. Thanks to their interfaces, the DTE versions are ideal for direct connection to PCs, industrial PCs or PLCs. Signals can also be looped through via an additional fieldbus interface, which reduces wiring complexity at field level.

In addition, the devices have two digital inputs and outputs. Integrated logic functions can be used for data pre-processing, for example, to directly control a signal lamp in accordance with the situation.

The devices with IoT core provide advanced data, events and services via common protocols such as HTTP, MQTT and JSON.

DTI versions with IO-Link

IO-Link allows particularly simple parameter setting and fast setup. For maximum flexibility, operating modes can be adjusted to the application at any time. Comprehensive antenna parameters and diagnostic data can be called up and visualised via the moneo software. This provides maximum transparency.

BEST FRIENDS

ID-Tags UHF
RFID tags with high write and read distances

IO-Link master
For use in factory automation

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

For further technical details, please visit: ifm.com/fs/DTE801

Digital sensor signals

Non-stop transmission via fieldbus

- Digital input modules for PROFINET, EtherNet/IP, EtherCAT and Modbus TCP
- Direct connection of sensors simplifies network structure
- Integrated counter function for high-frequency counter applications
- Robust housing suited for use in environments with washdown cleaning requirements

IP67 IP69K

ifm – close to you!

Description	Order no.	
	Coolant (orange)	Food (grey)
StandardLine		
PROFINET	**AL4002**	**AL4003**
EtherNet/IP	**AL4022**	**AL4023**
EtherCAT	**AL4032**	**AL4033**
Modbus TCP	**AL4042**	**AL4043**
PerformanceLine		
PROFINET	**AL4102**	**AL4103**
EtherNet/IP	**AL4122**	**AL4123**
EtherCAT	**AL4132**	**AL4133**
Modbus TCP	**AL4142**	**AL4143**

Ethernet modules for field applications

The decentralised DI modules serve as a gateway between binary sensors and the fieldbus. This means that binary switching 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

The ifm modules are the perfect choice, even in the most difficult environments: The materials and production methods are identical to the ifm jumper cables of the tried-and-tested EVC and EVF product series.
The ecolink technology guarantees reliable, permanently ingress-resistant M12 connections of the connection cables.

Common technical data	
Voltage supply StandardLine PerformanceLine	 M12 A-code M12 L-code, Daisy chain option
Number of digital inputs	2 x 8 (type 2 to IEC 61131-2)
Coolant (orange) Protection rating Housing Socket / connector	 IP67 polyamide nickel-plated brass
Food (grey) Protection rating Housing Socket / connector	 IP69K polyamide stainless steel

Expansion of the IO-Link master family with digital input modules

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

Integrated counter function for high-frequency counter applications

Sensor pulses are counted within the module and are cyclically transmitted to the PLC as a counter packet. This ensures accurate counting that is not affected by the cycle time of the PLC.

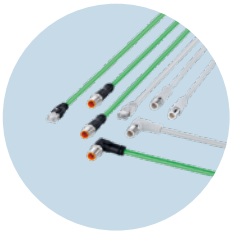
Powerful voltage supply

For voltage supply, the modules offer an A-coded M12 connector with 1 x 4 A and an L-coded M12 connector with 2 x 16 A including daisy chain functionality.

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/AL4002

Powerful all-rounder

IIoT controller for the control cabinet

- 2-in-1: cloud connector and powerful controller
- Perfect IO-Link integration
- Plug & Work access to the I/O level via Ethernet
- Can be mounted on the DIN rail in different orientations
- Powerful technology for demanding applications

IP 20

CODESYS

ifm – close to you!

Description	Order no.
IIoT controller, CabinetLine	**AE3100**

Technical data		
Operating voltage	[V DC]	18...30 DC (PELV)
Ambient temperature	[°C]	-25...55
Housing material		Die-cast aluminium passivated, stainless steel
Dimensions	[mm]	120 x 125 x 36
Protection rating		IP 20

Powerful and versatile

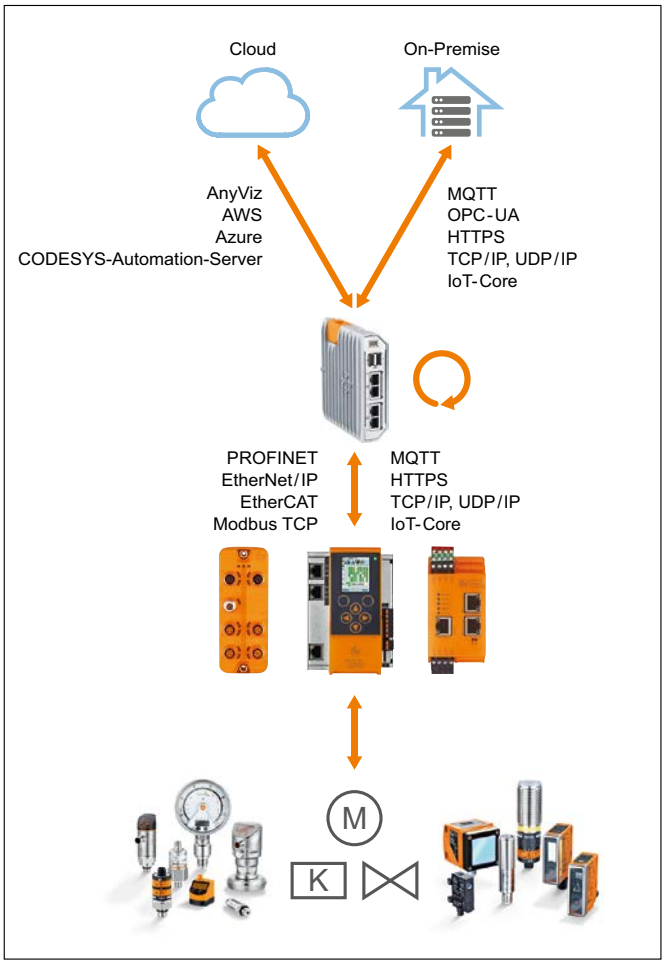
The IIoT controller is a powerful, communicative and flexible PLC solution in machine and plant digitalisation. Powerful, because at ambient temperatures of up to 55°C, the 1.3 GHz quad-core processor works at high performance level. Communicative, because it is a true language and translation talent with its various protocols, regardless of whether it is a matter of connections to the IT world or the integration of automation technology I/O data. In addition, even a Plug & Work connection of IO-Link devices is possible – including IODD interpretation. Flexible, as the IIoT controller is freely programmable via CODESYS V3.5.

You would like to manage the device remotely? No problem, the CODESYS Automation Server enables remote debugging and remote web visualisation.

Connection to different clouds

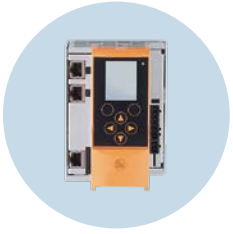
The IIoT controller allows for transmission of the recorded and prepared data to the most common cloud platforms such as AWS, Microsoft Azure and AnyViz. Furthermore, the IIoT controller speaks the common standard digitisation languages such as OPC UA and MQTT.

Whenever data is to be recorded and processed in real-time, I/Os can be read and controlled by using Industrial Ethernet protocols such as Profinet, EtherCAT, EtherNet/IP or Modbus TCP.



BEST FRIENDS

IO-Link master
For use in factory automation



Smart PLC
For data exchange with the sensor actuator level

Diagnostic electronics
Vibration monitoring of machines and equipment

For further technical details, please visit: ifm.com/fs/AE3100

IO-Link master

IO-Link master for control cabinet with IoT connection

- Separation of automation and IT network protects the installation from unauthorised access from outside
- Product versions enable simple connection to all common fieldbuses
- Easy parameter setting of master and devices using **moneo|configure free**

IP20

IO-Link

ifm – close to you!

Description	Order no.
PROFINET + IoT 8 ports	**AL1901**
EtherNet/IP + IoT 8 ports	**AL1921**
EtherCat + IoT 8 ports	**AL1930**
Modbus TCP + IoT 8 ports	**AL1940**
Powerlink + IoT 8 ports	**AL1970**
IoT only 8 ports	**AL1950**

Technical data		
Voltage supply	[A]	3.9 (US)
IIoT port		HTTP(S), JSON, MQTT
Output power	[mA]	300
Electrical connections		cage clamps
Cabinet Protection rating housing		 IP20 polyamide

Secure exchange between OT and IT level

Even in the modern world of Industry 4.0, securing your system infrastructure against external influences is a top priority. The IoT-enabled IO-Link master modules act as decentralised gateways in the automation network and forward the data from the connected sensors to the fieldbus. The connection to the IT level is made via a separate IoT Ethernet socket. The data is transmitted via the established TCP/IP JSON interface. This allows you to process relevant process data in the IT level and in ERP systems while maintaining the safety of your installation.

Convenient parameter setting using moneo|configure free

The intuitive **moneo|configure free** software automatically detects your entire IO-Link infrastructure and arranges it in the defined tree structure in a clear manner. Masters and sensors are displayed with their respective parameters and can be managed centrally in the software.

Easy sensor connection

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

BEST FRIENDS

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

Ethernet modules
Transmit digital sensor data from the field to the fieldbus

Ethernet adapter
M12 / RJ45

For further technical details, please visit: ifm.com/fs/AL1901

Connected, yet safely separated

Field-compatible IO-Link master with IoT connection

- Separation of automation and IT network protects the installation from unauthorised access from outside
- Product versions enable simple connection to all common fieldbuses
- Easy parameter setting of master and devices using **moneo|configure free**

IP67 IP69K IO-Link

ifm – close to you!

Description	Order no.	
	Coolant (orange)	Food (grey)
IO-Link master DataLine · 4x A-port		
PROFINET + IoT	**AL1304**	**AL1305**
EtherNet/IP + IoT	**AL1324**	**AL1325**
EtherCAT + IoT	**AL1330**	**AL1331**
Modbus TCP + IoT	**AL1340**	**AL1341**
IoT only	**AL1350**	**AL1351**
Powerlink + IoT	**AL1370**	**AL1371**
IO-Link master DataLine · 8x A-port		
PROFINET + IoT	**AL1306**	**AL1307**
EtherNet/IP + IoT	**AL1326**	**AL1327**
EtherCAT + IoT	**AL1332**	**AL1333**
Modbus TCP + IoT	**AL1342**	**AL1343**
IoT only	**AL1352**	**AL1353**
Powerlink + IoT	**AL1372**	**AL1373**

Secure exchange between OT and IT level

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Robust field bus modules for demanding applications

Thanks to their special housing material and high ingress resistance, the modules can be used in coolant applications or directly in wet areas in the food industry. The ecolink technology guarantees reliable, permanently ingress-resistant M12 connections of the connection cables.

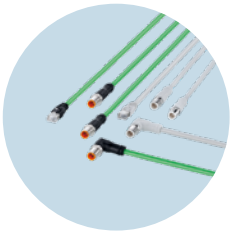
With the corresponding accessories, additional auxiliary power for the connection of IO-Link actuators can be supplied. The cable can be up to 20 metres long.

Common technical data		
Voltage supply		M12 A-code, 3.9 A (US)
IIoT port		HTTP(S), JSON, MQTT
Output power	[mA]	300
Coolant (orange) Protection rating Housing Socket / connector		 IP67 polyamide nickel-plated brass
Food (grey) Protection rating Housing Socket / connector		 IP69K polyamide stainless steel

BEST FRIENDS

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

Ethernet modules
Transmit digital sensor data from the field to the fieldbus



Ethernet cables
Available in various lengths and versions

For further technical details, please visit: ifm.com/fs/AL1304

Signalling and detection in retrofit applications

Light tower with interface for detecting machine states

- Usual signalling via freely configurable LEDs
- Detection of machine states and transfer to higher-level evaluation software via IO-Link
- Generates production KPIs thus enabling maximum transparency
- Ideal for retrofitting existing machinery and installations

IP54 IP65 IO-Link

ifm – close to you!

Buzzer	Mounting base	Protection rating	Segments	Inputs	Output	Order no.
no	yes	IP65	5	5	IO-Link	**DV1501**
yes	yes	IP54	5	6	IO-Link	**DV1511**
no	no	IP65	5	5	IO-Link	**DV1521**
yes	no	IP54	5	6	IO-Link	**DV1531**

KPIs for more transparency

In the global manufacturing industry, machinery and equipment form the heart of production. For plant operators, measuring statistical performance metrics such as Overall Equipment Effectiveness (OEE), machine availability and productivity is of critical importance.

Questions such as "Which machine has been in production and for how long?" or "How long did the last unplanned downtime last?" are omnipresent. With newly installed machines and systems, monitoring machine conditions is usually straightforward. To collect this information, modern IO-Link masters from ifm with additional IoT interfaces can be used optimally.

However, this can be a challenging task with existing machines having no such interfaces. Here too, machine conditions need to be monitored. But retrofitting existing machines with additional functionalities often proves extremely difficult. On the one hand, this is because considerable intervention in the machine could result in the loss of the CE declaration of conformity. On the other hand, subsequent changes are often costly and in some cases not even possible because the controllers used are outdated and adapting the software is hardly feasible.

The perfect solution for existing production plants

This is where ifm's innovative light tower comes into the picture, offering a smart solution for subsequent acquisition of machine data. Almost every machine has a signal light to provide visual indicators of its states using different colours. All the user needs to do is replace the "old" signal light of the machine with the new light tower from ifm. This light tower can be controlled with up to six digital signals and indicate the machine states as usual.

The integrated interface converts the segment states into IO-Link communication. The light tower is connected in parallel to an IO-Link master to transmit the machine condition to an analysis tool such as **moneo|RTM**. moneo visualises the machine condition and calculates key process metrics using its dashboards.

This retrofit solution allows easy evaluation and analysis of key process metrics even for older machines, thereby achieving maximum transparency.

BEST FRIENDS

IO-Link masters
Field-compatible masters with Profinet interface

moneo|RTM
Analysis software for simple condition monitoring

IO-Key
Sending IO-Link sensor data to the cloud via a mobile network

For further technical details, please visit: ifm.com/fs/DV1501

The perfect complement to sensors

Converter plugs with different functions

- Addition of useful functions to sensors
- Small robust plastic housing with high protection rating for local mounting on the sensor
- Clearly visible display for status or measured value indication
- Special housing versions for hygienic applications
- Parameter setting via IO-Link or rotary button

IP67 IP69K IO-Link

ifm – close to you!

Function	Input	Output	Industrial automation	Hygienic applications
			IP67	IP69K
			Order no.	
Converter IO-Link ››› analogue output	IO-Link	2x analogue 4…20 mA	**DP1213**	**DP3213**
Converter IO-Link ››› analogue output	IO-Link	2x analogue 0...10 V	**DP1223**	**DP3223**
Converter analogue ››› IO-Link	2x analogue 0...10 V	IO-Link	**DP1222**	**DP3222**
Relay adapter	2x digital PNP	2x semiconductor relay normally open	**DP1603**	**DP3603**
Relay adapter	2x digital PNP	2x semiconductor relay normally closed	**DP1613**	**DP3613**
Speed monitor	1x digital PNP	2x digital PNP/NPN	**DP2122**	**DP4122**
Threshold relay	1x analogue 4…20 mA	1x digital, 1x analogue	**DP2200**	**DP4200**
Counter	2x digital PNP	2x digital PNP/NPN	**DP2302**	**DP4302**
Pulse stretcher	2x digital PNP	2x digital PNP	**DP2402**	**DP4402**

Small on the outside, big on the inside

These handy sensor signal converters are only a few centimetres in size but feature a wide range of functions. They are the perfect complement to existing sensors, whether for retrofitting machines or simply when special functions are required that the sensor alone cannot provide.

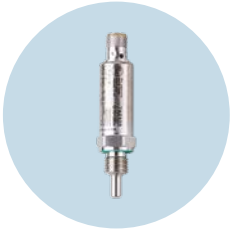
Thanks to their compact design and high protection rating, the converters can be mounted directly on the sensor or in the field.

Versions for hygienic areas

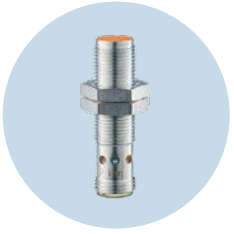
Special versions are also available for hygienic areas. Their housing material is resistant to aggressive cleaning agents and features protection rating IP69K. The smooth housing without dead band leaves no room for deposits. They have no rotary pushbuttons for setting, but can be easily configured via IO-Link, just like the versions for general industrial use. Of course, they have the ECOLAB certificate for tested material resistance.

BEST FRIENDS

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



Temperature sensors
Reliable temperature measurement



Inductive sensors
Pulse pick-up for the detection of rotating movements

For further technical details, please visit: ifm.com/fs/DP1213

Maximum performance in the smallest of spaces

The 4.3"ecomatDisplay sets new standards

- High-brightness display for maximum readability even in daylight conditions
- High computing power and memory capacity offer sufficient capacity for demanding tasks
- Maximum freedom of communication thanks to the support of multiple protocols

IP67

E1

CODESYS

ifm – close to you!

New standard in the compact class

Whenever clear 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 million colours, high-resolution display and good readability even at extreme angles or in extreme lighting conditions ensure clear information exchange 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 most relevant information. Besides, the Linux-based operating system can be used for customisation, such as visualisation via QT.The powerful DualCore processor and the equally efficient DDR4 RAM ensure reliable processing of all data and control commands. For all these technical feats, the compact HMI requires only five 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	Order no.
1x CAN, 1x Ethernet	**CR1140**
1x CAN, 1x USB	**CR1141**

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/m²]	1,000
Real-time clock		battery-buffered, up to 15 years
Power consumption	[W]	5–8
Protection rating		IP67

BEST FRIENDS

ecomatController
Controller for mobile applications, also for safety applications

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

Machines, how are you?

mobile IoT gateway for global data exchange

- Enables centralised operation and maintenance planning of mobile machines used throughout the world
- Transfer of raw data and pre-processed information to the cloud
- Local and global access to the machine via mobile network or WLAN
- Acceleration, inclination and position data provide extended insight into the machine's condition

IP67

E1

ifm – close to you!

Interface between machine and man

The mobile IoT gateway is the dialogue interface between the mobile machine and the cloud level. Via an Ethernet interface and in future also via CAN, the gateway transmits all relevant data from the vehicle to the cloud via mobile network or WLAN. The gateway itself can also transmit information about acceleration and inclination as well as position data.

Efficient maintenance and operation planning

The mobile IoT gateway is configured via ifm's IoT suite, which can be used free of charge. The data and information can then be displayed and processed in a central IT-based machine management system. In the IoT portal, which is also available in the IoT suite, you can, for example, keep an eye on the current health status of your machines at all times via freely configurable dashboards.

This means that maintenance requirements can be responded to quickly and in a targeted manner, reducing downtimes to a minimum. Besides, it is possible to import application-specific machine configurations or software updates via mobile network. Thanks to satellite-based positioning, the machine's location can be determined precisely at any time.

For simplified local maintenance, the gateway can also be accessed via WLAN or Bluetooth.

Description	Order no.
mobile IoT gateway	**CR3171**

Technical data	
Internal interfaces	1x Ethernet, 3x CAN*
External interfaces	mobile network, WLAN, Bluetooth
SIM card	eSIM
Mobile network connection	4G / LTE
Inputs / outputs	3 digital inputs, 1 digital output
Protection rating	IP67

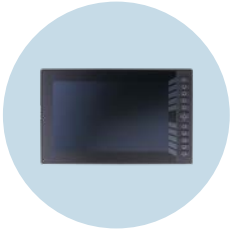
*corresponding firmware update in preparation

For the use of the mobile IoT gateway, an additional data contract must be concluded with ifm.

Further information on the data tariffs

BEST FRIENDS

Control electronics
Standard and safety controller in one device



Robust HMI
Dialogue module with integrated controller

Ethernet switch
Extends the vehicle infrastructure by 6 ports

For further technical details,please visit: ifm.com/fs/CR3171

For more efficient farming

ISOBUS gateway for agricultural machines

- Reliable communication between add-on unit and tractor unit.
- User-friendly configuration via CODESYS using ISOBUS libraries.
- Full integration of the “Task Controller” smart farming interface.

IP67

CODESYS

ifm – close to you!

Description	Order no.
ISOBUS gateway (VT, AUX-N, Task Controller)	**CR3122**
ISOBUS gateway (VT, AUX-N)	**CR3121**

Efficient smart farming made easy

The ISOBUS gateway enables easy integration of the smart farming-relevant ISOBUS functionalities in the control programme of agricultural add-on units. Thanks to the supplied ISOBUS function library, visualisation for the add-on unit can be configured quickly and conveniently using CODESYS V2.3 or V3.5.

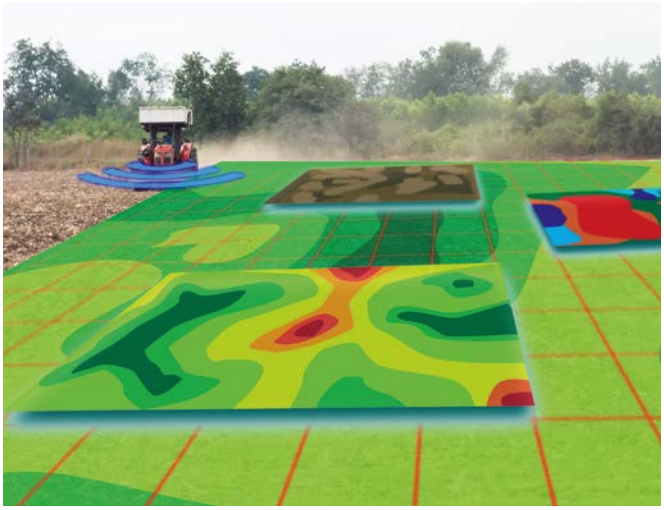
Thanks to optimised data processing, only the values to be visualised on the tractor unit's display are transmitted, reducing the load on the data bus significantly.

Making full use of the Task Controller

In addition to the Virtual Terminal and the AUX-N function (Auxiliary Control Function), the automation functions TC-Basic, TC-Geographic and TC-Section Control of the "Task Controller" smart farming interface can also be fully used via the ISOBUS gateway. With the M12 connector, the ISOBUS gateway can be easily connected with any mobile controller from ifm via the CAN interface, even subsequently.

No additional licence fees for using the AEF certified ISOBUS gateway will be required.

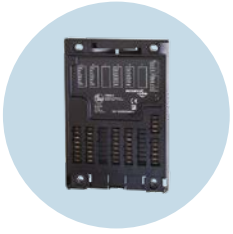
Technical data		
Ambient temperature	[°C]	-40...80
Operating voltage	[V DC]	8...32
Nominal voltage	[V DC]	12 / 24
CAN interfaces	Number Protocol	2 CAN ISO11898, ISOBUS ISO11783
Default baud rate	[Kbit/s]	250
Protection rating		IP67



The data recorded by the Task Controller can be processed at IT level and used for further efficient smart farming measures.

BEST FRIENDS

ecomatController
Controller for mobile applications, also for safety applications



BasicController
Controller with H-bridge, 16 inputs and outputs

ioControl
Decentralised connection of sensors, freely programmable

For further technical details, please visit: ifm.com/fs/CR3122

For enhanced machine teamwork

CANwireless: effective local M2M dialogue

- For CAN data exchange between machines via WLAN or Bluetooth
- 2 CAN interfaces allow for transmission of signals from motor control and additional sensors
- Interface for maintenance staff for easy data analysis and software updates

IP67

E1

ifm – close to you!

Efficient interaction of collaborative machines

The CANwireless modules enable machines to automatically exchange relevant data in a local mesh system via WLAN or Bluetooth. For example, with vehicles driving in formation, driving speed and direction can be precisely synchronised. Further information, such as the remaining load capacity, can for example help optimise process flows in the removal of goods.

The device has two CAN interfaces, allowing for transmission of both, data from motor control and sensor data collected via another CAN network.

Reading maintenance requirements, importing updates

Depending on the operating mode, the CANwireless device automatically connects to an existing network for data exchange or establishes its own network. This allows, for example, maintenance staff to read out data via a laptop on site or import software updates.

Targeted information exchange

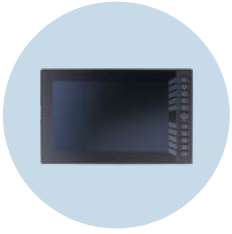
To relieve the mesh system of unnecessary data transfer, the user can freely define the data to be transmitted via the CANwireless interface.

Description	Order no.
CANwireless with internal antenna	**CR3132**
CANwireless with external antenna connection	**CR3133**

Technical data	
Internal interfaces	2x CAN
External interfaces	WLAN, Bluetooth
Radio approvals	CE/RED, UKCA, FCC, ISED, MIC
Protection rating	IP67

BEST FRIENDS

Control electronics
Standard and safety controller in one device



robust HMI
Dialogue module with integrated controller

ioControl
Decentralised connection of sensors, freely programmable

For further technical details, please visit:
ifm.com/fs/CR3132

Keeping an eye on the measured values at all times

Current loop display for 4...20 mA signals

- Analogue signal powers display
- Easy-to-read 4-digit LED display
- Simple setting menu and 3-button operation
- Free scaling and linearization of signals
- Ideal for installation in control cabinets and panels

IP65

ifm – close to you!

Display analogue values

Despite growing digitalisation, there are still many situations where analogue measured values such as the level in a tank or the temperature of a climatized room must be directly readable in the control cabinet or at the control desk. The current loop display is designed for precisely this purpose.

It is simply looped into the line of the 4...20 mA analogue signal. No voltage source is required, as the energy of the analogue signal is sufficient to power the device.

Flexible adjustment of values

The display can be configured to indicate the measurand as an actual value, such as the level in centimetres or the temperature in degrees Celsius. To this end, the user can freely define and scale the measuring range using start and end points. Even non-linear signals can easily be displayed as linear values using freely positionable linearization points. For example, an angle of aperture can be indicated using measured distance values. This provides the user with a powerful and easy-to-use measured value display.

Description	Order no.
Current loop display for 4...20 mA signals	**DX1041**

Technical data		
Analogue input	[mA]	4…20
Voltage supply		from analogue signal
Installation cut-out	[mm]	68 x 33
Digit height	[mm]	14
Display range		-1999…1999

BEST FRIENDS

Optical distance sensor
PMD time-of-flight technology for millimetre precision

Temperature transmitter
High accuracy and particularly good response dynamics

Vortex flow meter
Monitors flow and temperature in water pipes

For further technical details, please visit: ifm.com/fs/DX1041

The all-rounder among the displays

Multifunction display for various measured values

- Universal measurement input for various types of signals (current, voltage, frequency, pulses, PT100/PT1000 and thermocouples)
- Colour TFT display with extensive digital labelling
- Intuitive menu structure with help texts for easy parameter setting
- 8 adjustable alarms and 2 relay outputs
- Low installation depth with standard panel cut-out

IP65

ifm – close to you!

Technical data DX1063		
Inputs:		
Voltage	[V]	0...10
Current	[mA]	0...20
Frequency	[kHz]	up to 10
Pulse counter		up to 9999
PT100, PT1000, depending on the sensor	[°C]	-200...850
Thermocouple, depending on the sensor	[°C]	-270...1820
Switch points / alarms		8
Outputs		2x relay
Protection rating		IP65

Takes (almost) all signal types

A measured value high up in the "cloud" increases the global – but not always the local – visibility of information. For this purpose, the new multifunction display with a universal measurement input is the right choice in almost all applications.

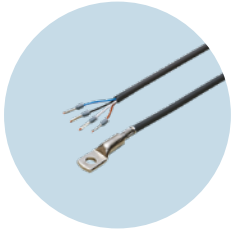
It can detect and convert analogue standard signals, pulses, frequencies and temperature sensors and display the measured value in the required unit directly on site.

Clear representation

The TFT display offers various possibilities and colours to visualise the measured value. The unit of measurement also displayed, the signal name and the location tag clearly explain the meaning of the displayed value.

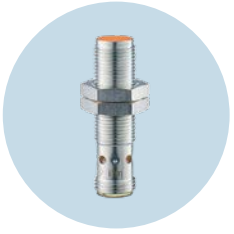
The different font and background colours of the definable alarms help to evaluate the measured value. Via the two relay outputs, individual alarms can be transferred to higher-level systems, or simple controls can be realised.

BEST FRIENDS



Temperature sensors
Precise measurement of temperatures

Pressure sensors
Accurate measurement of pressure values and levels



Inductive sensors
Detection of the position of moving objects

For further technical details, please visit: ifm.com/fs/DX1063

Making good connections

Robust cables for currents up to 16 amperes

- Low voltage drop on long cable lengths due to 2.5 mm² cable cross-section
- Standard L-code with tried-and-tested ecolink technology for safe, error-free connection
- Suitable for power supply of IO-Link masters
- Withstand the stress factors in industrial applications

IP65 IP67 IP69K

ifm – close to you!

Connection	Order no.
M12 connection cable · with socket · 5 poles · straight	
2 m	**EVCA15**
10 m	**EVCA17**
50 m	**EVCA19**
M12 connection cable · with socket · 5 poles · angled	
2 m	**EVCA20**
10 m	**EVCA22**
50 m	**EVCA24**
M12 jumper cable · 5 poles · straight-straight	
0.25 m	**EVCA25**
2 m	**EVCA28**
10 m	**EVCA30**
20 m	**EVCA31**
M12 jumper cable · 5-poles · straight-angled	
0.25 m	**EVCA32**
2 m	**EVCA35**
10 m	**EVCA37**
20 m	**EVCA38**
M12 jumper cable · 5 poles · angled-angled	
0.25 m	**EVCA39**
2 m	**EVCA42**
10 m	**EVCA44**
20 m	**EVCA45**

Common technical data		
Nominal current	[A]	16
Cables	[mm²]	5 x 2.5
Protection rating		IP65 | IP67 | IP69K in locked condition with the matching counterpart
Materials		
Housing / moulded body		TPU orange
Coupling nut		nickel-plated brass
Sealing ring		FKM
Sheath		PUR, grey

Transmission of high currents with low voltage drop

Controlling loads such as actuators via IO-Link master requires a robust infrastructure based on L-code. Our industrial-grade jumper cables are provided with an appropriately dimensioned cable cross-section and can transmit currents of up to 16 amperes without any difficulty and with almost no voltage drop.

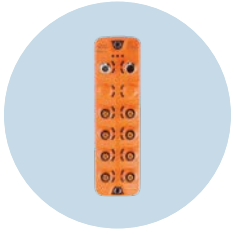
Securely permanently tight

The M12 standard connections simplify the connection of sensors and actuators. Wiring faults are ruled out. The contoured nut is easy to tighten sufficiently, so as to guarantee a perfect lasting seal even when fastened by hand.The vibration protection holds the threaded sleeve tight in its position.

With IO-Link master: secure connection at the process level

Combined with our PerformanceLine IO-Link masters, the EVC cables ensure reliable connection of sensors and actuators to the subsequent infrastructure.

BEST FRIENDS



IO-Link module
Input / output module

L-code
Y splitter

IO-Link master
Field-compatible masters

For further technical details,please visit: ifm.com/fs/EVCA15

Making the right move

ifm mate: assistance system for manual workstations

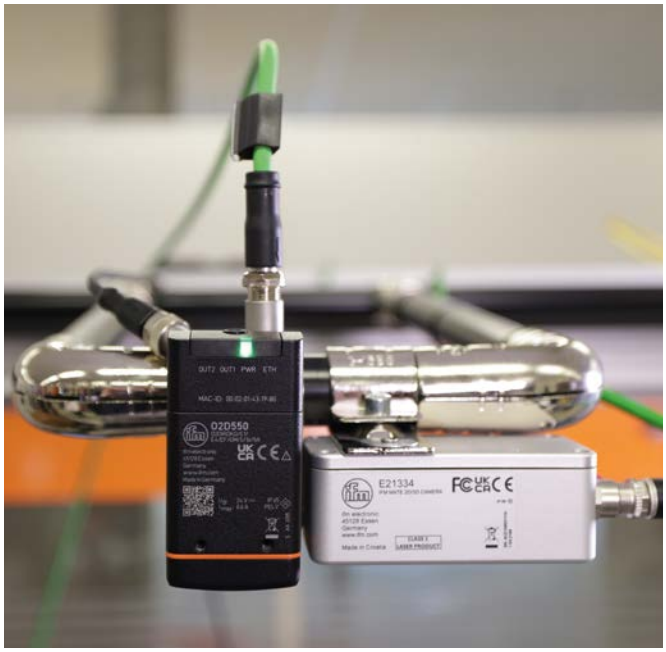
- AI-based system helps with assembly and packaging activities
- Intuitive user guidance simplifies set-up and everyday handling
- Further information on work steps facilitates the learning process
- No additional tracking items such as wristbands or VR glasses required

ifm – close to you!

Support, the easy way

With **ifm mate** you gain a patient and – theoretically – omniscient colleague for your manual workstations. Whether assembly work or packaging tasks: With **ifm mate** you can define, explain and carry out every manual work process step by step.

The core of the system is an AI algorithm that recognises the worker's hands in combination with the camera mounted above the workstation – without additional and obstructive gadgets such as wristbands or VR glasses. The defined workflow of the process is shown on the display, as well as optional supporting content such as videos or graphics.



Description	Order no.
ifm mate worker assistance system	**OXZ100**

Quality assurance with a learning effect

mate also clearly indicates deviations from the defined workflow. The missed process step is repeated until it has been carried out correctly. This improves the learning curve for the worker and ensures a high quality of execution.

Sensor integration and central library

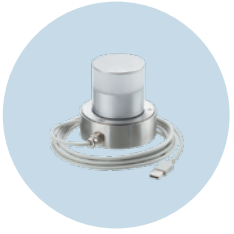
O2D5 vision sensors can be seamlessly integrated into **mate** for even more effective quality control of the workpieces, for example via target/actual contour analysis. Via REST API, the system can communicate with higher-level IT infrastructure and transmit information about the current order status or assembly progress. Dialogue with SAP is also possible so that order planning can be done centrally for the individual systems.

Learn more about the range of functions at **mate.ifm**.

BEST FRIENDS

O2D5 2D vision sensor
For the analysis of surfaces and contours

Monitor with touch panel
For display and operation of ifm mate



Signal lamp
LED lamp with USB connection for visual status indication

For further technical details, please visit: ifm.com/fs/OXZ100

Whoever says digitalisation will also say moneo.

moneo: The IIoT tool kit for industrial evolution.

Did you know that only 5 percent of sensor data is used by your PLC? Can you imagine that with the remaining 95 percent of the sensor data, you can achieve a plant transparency that allows you to permanently optimise your processes? Save costs, resources and support your employees in getting the best out of the machines while achieving high product quality. Use an IIoT software solution that provides you with the right tools and grows with your challenges. Discover moneo.

Create added value

What sensors generate and send to the IT level is initially nothing more than data, values, signals, zeros and ones. With moneo, they become information, a basis for action and added value, in short: valuable insights. For example, regarding the total value of the stocks of critical means of production, even if they are stored at different locations. Or regarding the health of engines and rotors. Or regarding the optimum moment to change tool attachments. Or much more.

moneo makes processes and their individual participants visible, tangible. Unplanned downtimes or soaring energy costs can be avoided with the help of this information. But moneo would not be moneo (and ifm would not be ifm) if this were the end of the story. Imagine what other steps could be optimised via the digital visualisation of all manufacturing processes along the entire chain...

Flexibility 4.0: moneo grows with you

In what areas would you like to benefit from innovative digitalisation solutions? Device management, condition monitoring and energy management are three applications for whose optimisation moneo and ifm offer the appropriate tools. And whether it's a single machine or an entire plant, moneo is scalable and offers you what you need. If digitalisation is an adventure trip into the unknown, then moneo is the driving assistant that keeps you safely on track.

moneo

- IO-Link parameter setting
- Predictive maintenance
- Energy monitoring

Simple setting of IO-Link parameters

Sensors create the information basis for a constant insight into the condition of your systems and thus facilitate their maintenance. But what about the infrastructure itself? Are the connected sensors, masters and evaluation units working? With the parameter setting software **moneo|configure*** you can find this out with just a few clicks. The onboarding of new or replacement units and parameter setting are just as quick and easy.
Would you like to check some sensors while walking through your production? Simply download our moneo|blue app to your smartphone and install the appropriate Bluetooth adapter and you're ready to go.

*also available as stand-alone version **moneo|configure SA**

Plant conditions at a glance

Would you like to use sensor data directly or compile and link individual data sources with logical and mathematical operators with just a few mouse clicks?

In the graphical data modeller of **moneo|OS** you can generate exactly the information you need. This allows you to capture visualised representations in the cockpit at a glance or use them in other moneo modules. The choice is yours.

Does the engine need to be serviced? Is the tool already worn? Is quality maintained? Do you know these questions? Vibrations can tell you a lot – or rather everything – about the health of moving machine parts. With **moneo|RTM** you can easily create a plant ECG that helps you to plan maintenance in advance and minimise rejects. With AI support from the **moneo|DataScience Toolbox**, you can set dynamic thresholds based on the target values of the vibration curve.

Transparent detection of energy consumption

With your car, you are certainly glad to have a tyre pressure sensor. Because it lets you know in good time when the air needs to be topped up or the tyre needs to be changed because it is defective. This is for your safety. If air escapes undetected in your compressed air system, this has no effect on your personal safety at first, but the unnecessary costs incurred directly affect the operating result.

With our compressed air meters, you can precisely detect all relevant values of the compressed air flow from the beginning to the end: total consumption, pressure and the current flow rate.
In **moneo|OS** you can easily trace the path of the air with the help of this data or set values in relation to each other. Pressure drops, excessive consumption? These indicators of leaks or malfunctions become visible immediately. Efficient energy management has never been so convenient!

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.

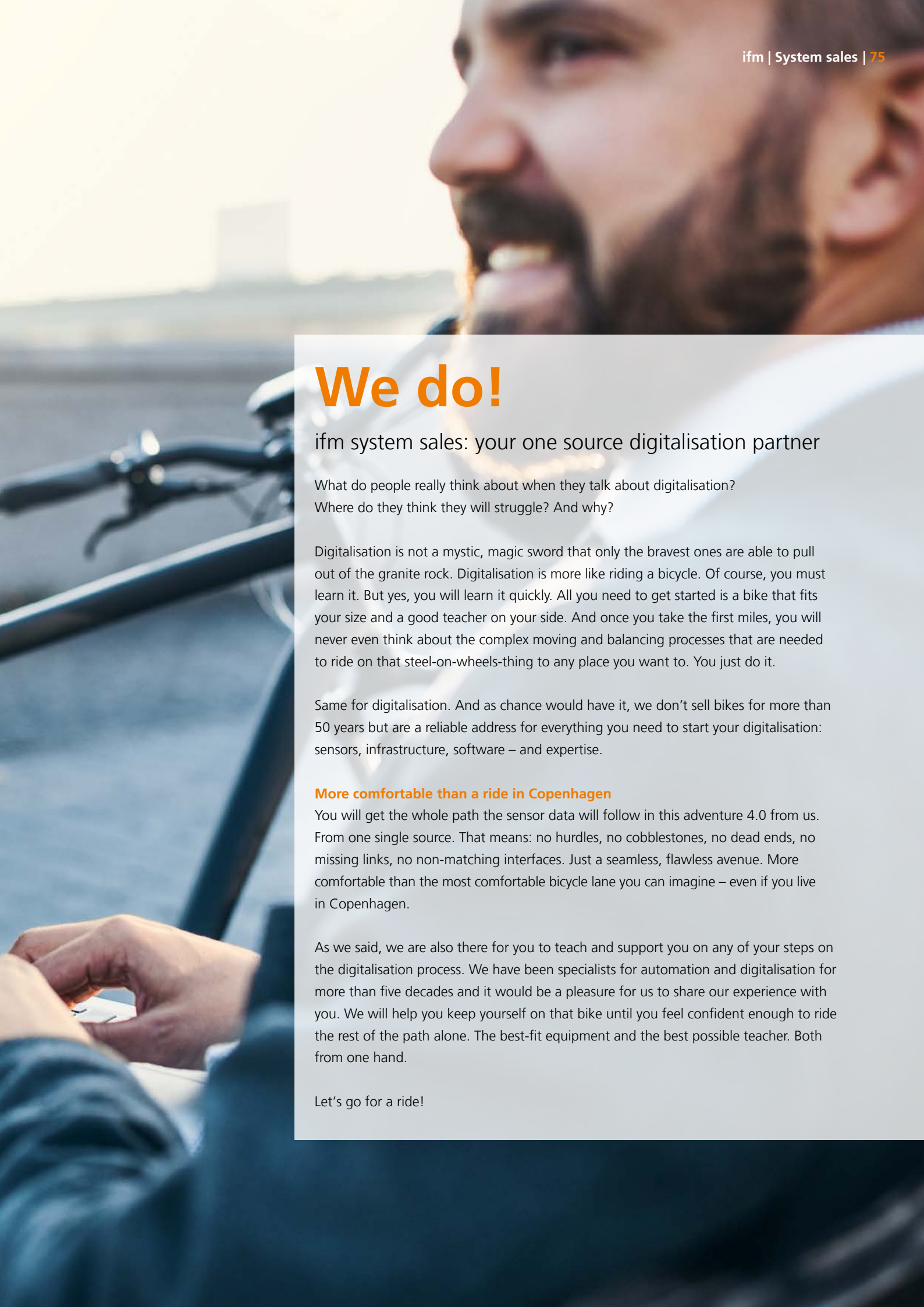
Bringing two worlds together: GIB SCX meets Industry 4.0

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.

Who says digitalisation is easy?



We do!

ifm system sales: your one source digitalisation partner

What do people really think about when they talk about digitalisation?
Where do they think they will struggle? And why?

Digitalisation is not a mystic, magic sword that only the bravest ones are able to pull out of the granite rock. Digitalisation is more like riding a bicycle. Of course, you must learn it. But yes, you will learn it quickly. All you need to get started is a bike that fits your size and a good teacher on your side. And once you take the first miles, you will never even think about the complex moving and balancing processes that are needed to ride on that steel-on-wheels-thing to any place you want to. You just do it.

Same for digitalisation. And as chance would have it, we don't sell bikes for more than 50 years but are a reliable address for everything you need to start your digitalisation: sensors, infrastructure, software – and expertise.

More comfortable than a ride in Copenhagen

You will get the whole path the sensor data will follow in this adventure 4.0 from us. From one single source. That means: no hurdles, no cobblestones, no dead ends, no missing links, no non-matching interfaces. Just a seamless, flawless avenue. More comfortable than the most comfortable bicycle lane you can imagine – even if you live in Copenhagen.

As we said, we are also there for you to teach and support you on any of your steps on the digitalisation process. We have been specialists for automation and digitalisation for more than five decades and it would be a pleasure for us to share our experience with you. We will help you keep yourself on that bike until you feel confident enough to ride the rest of the path alone. The best-fit equipment and the best possible teacher. Both from one hand.

Let's go for a ride!

This is how it goes: The flawless ifm data avenue

Do you want to know more about the health status of your fans or the best time to change the mechanical sealing of your pump? Do you want to be told when your compressor needs maintenance or your cooling circuit has a leak that needs to be fixed?

The easiest way to get this information is to let the machines tell you. And the easiest way to get the machines tell you is to contact us. We know where to put sensors to get the big health picture. We know what infrastructure is needed to get the data to your plc and to your IT level. And we know how to set the alarms to enable you to react early enough to prevent unexpected downtime and save a lot of money.

And at the end you will know all this, too.
Sounds good? Your machines say yes!

IT level

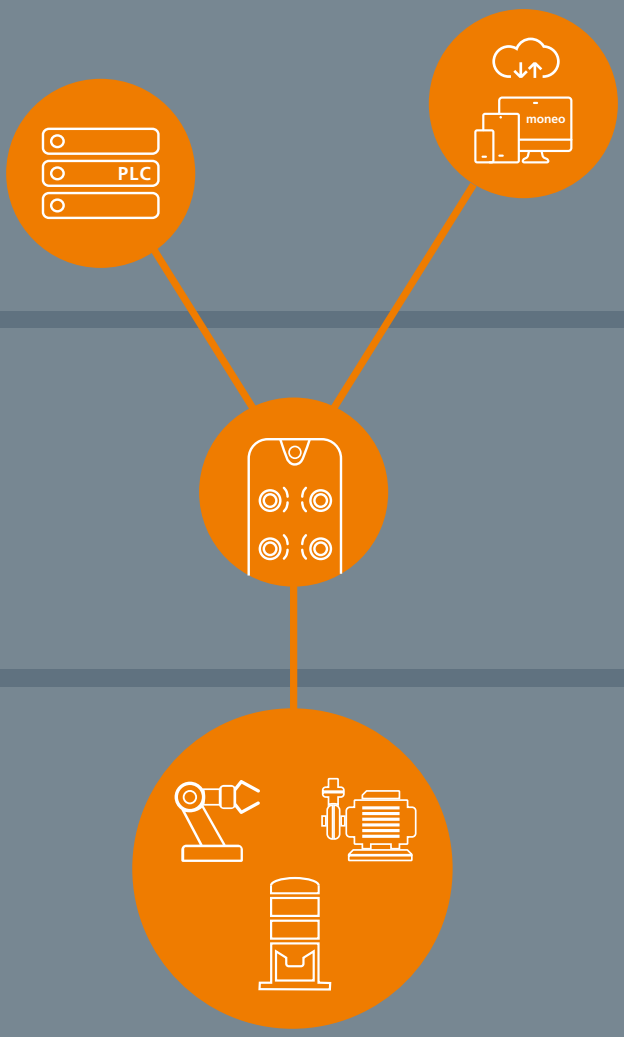
Software like the IIoT toolbox moneo processes the incoming data into value added information that helps the user to optimise his processes like internal and external supply chains or the maintenance management.

Middleware

IO-Link master, diagnostic electronics or edge devices gather and process data and transmit them to any destination where the data is further processed. This can be the plc and at the same time the IT infrastructure with ERP sytems, data memories or the cloud.

OT level

Sensors measure values like pressure, temperature, vibration, level or flow. Modern sensors with IO-Link can submit more than one value and also transmit more information like machine runtime or the number of process cycles.


PLC
moneo

Everything the automation heart desires.

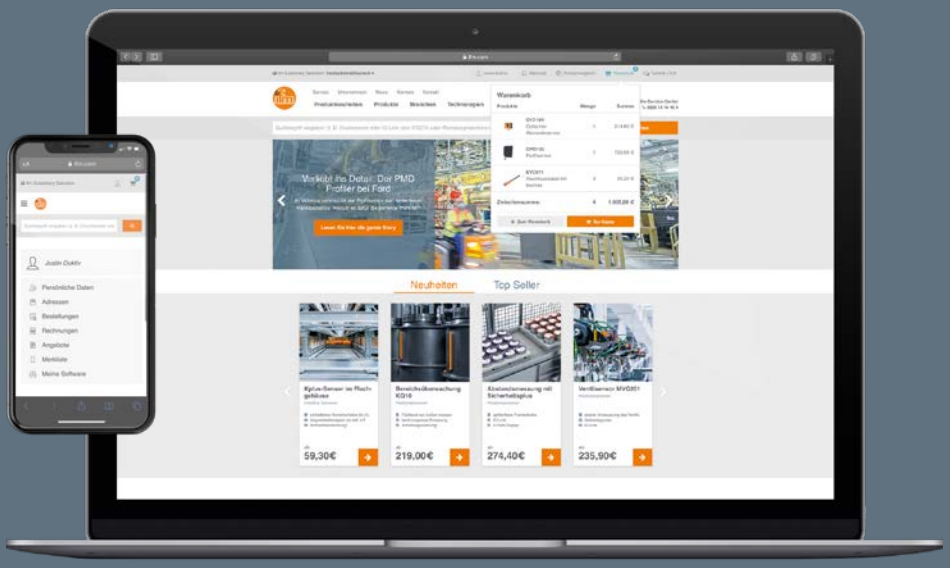
The online shop: Find more, search less.

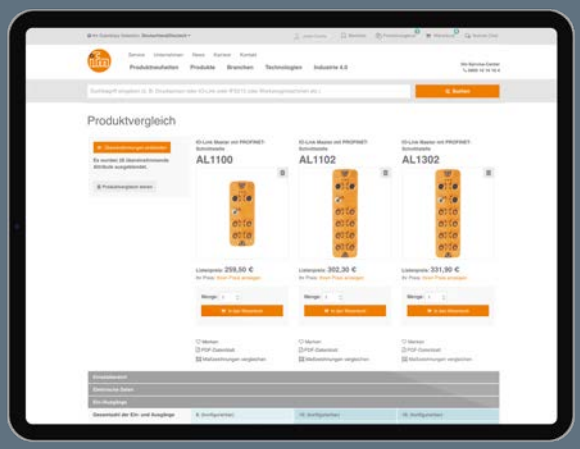
Where does efficient plant automation start? We think: when shopping! And that's why our online shop is designed to guide you to your desired product as quickly as possible. At the same time, we also want to offer you maximum service when shopping online. For example, the selectors help you to narrow 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.

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That's it? Not by far!

Our entire product portfolio is available online!

ifm.com

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