Level sensors

Enhancing transparency in tanks and vessels

ifm.com/cnt/level

Contents

Never too high, never too low. Efficient tank level monitoring solutions

Knowing your tank levels means preventing production downtime. After all, if supplies run out, everything comes to a halt. Running low on lubricant can lead to serious damage to equipment. So, to keep production running smoothly, it's crucial to avoid running dry or overfilling.

But since no two media are the same, level sensors must account for varying requirements. Whether you're detecting liquids in a hygienic environment, bulk goods in harsh conditions, measuring inside or outside the tank, or working with tanks ranging from 10 cm to 10 m high – we've got the perfect level monitoring solution for you, including matching adapters and, usually, digital data transmission via IO-Link. The solution to hassle-free, continuous tank monitoring is finally here!

Which solution is the perfect fit for your needs? Let's find out!

The right product for your application
ifm.com/cnt/level

Point level detection	Sensor type	Max. measuring range [cm]
Impedance spectroscopy in contact with the medium The alternative to tuning forks, suppresses deposits and foam	LMT, LMC	–
Capacitive in contact with the medium For overflow prevention and leakage monitoring	LI	–
Capacitive without contact For detection through non-metallic tank walls	KG, KI, KQ	––
Continuous level measurement	**Sensor type**	**Max. measuring range [cm]**
Capacitive in contact with the medium For applications on hydraulic and coolant tanks	LK, LT	73
Hydrostatic in contact with the medium For industrial and hygienic applications on tanks and in free-flowing waterways	PG, PI, PA, PS, PN, PE, PM	Sensor-dependent
Guided wave radar in contact with the medium For industrial and hygienic applications	LR	200
Radar without contact For non-contact level measurement in tanks and containers up to 10 m	LW	1000
Ultrasonic without contact For long distances and difficult surfaces	UGT, UIT	800
Photoelectric without contact For long distances, angle-independent measurement with focused light spot	O1D	980
Photoelectric 3D without contact For bulk materials and for completeness monitoring	O3D	800

* All our products have CE, cULus as standard

Analogue output	Switching output	Approvals	Page
–	√	EHEDG, 3A, FDA, EC1935, WHG, ATEX, DNV/GL, FCM	06 - 07
–	√	WHG (German Federal Water Act)	08 - 09
–	√	UL	10 - 13

Analogue output	Switching output	Approvals	Page
√	√	WHG (German Federal Water Act)	14 - 15
√	√	EHEDG, 3A, FDA, EC1935, ATEX, DNV/GL, FCM	16 - 21
√	√	EHEDG, 3A, FDA, EC1935, WHG, DNV-GL	22 - 25
√	√	EHEDG, 3A, FDA, EC1935	26 - 27
√	√	ECOLAB	28 - 29
√	√	UL	30 - 31
√	√	-	32 - 33

Impedance spectroscopy – the alternative to tuning forks

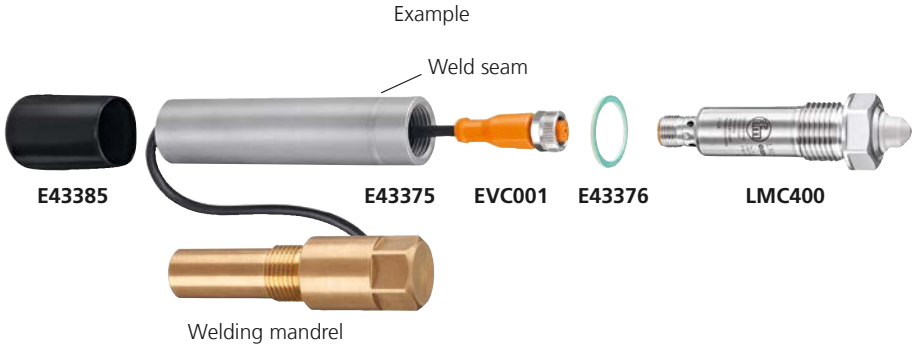
LMC type level sensors

- Flexible mounting thanks to orientation-independent installation.
- Approval to DNV/GL.
- Complementary switching outputs.
- A thread at the back permits variable insertion depths.

Process connection	Installation depth [mm]	Order no.	Order no.
Use		Water	Oil
G ½	10	**LMC100**	**LMC110**
G ½	21	**LMC400**	**LMC410**
½ NPT	34	**LMC500**	**LMC510**
½ NPT	40	**LMC502**	

Installation example LMC400

- Rear installation of the LMC400 sensor in the pipe permits variable installation depths.



Reliable detection:
Suppression of residues, splashing water or foam.

Better than a tuning fork:
No mechanical components, fully compatible regarding installation and function.

Immediately ready for use:
Factory settings for the most common media.

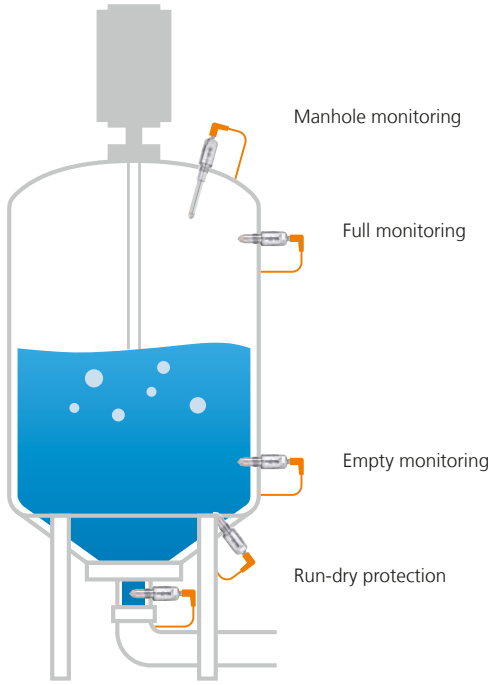
Adaptable using IO-Link:
Adaptation to and differentiation of media configurable.

More transparency:
Read process values to optimise the application.

Hygienic design:
High-grade stainless steel housing with PEEK sensor tip. Versions for industrial and hygienic applications.

IO-Link

IP69K



LMT type level sensors

- Flexible mounting thanks to orientation-independent installation.
- Shock and vibration resistant in a robust stainless steel housing.
- Hygienic approvals EHEDG, 3A and FDA.
- Versions available as overflow protection to WHG.
- Complementary switching outputs.

Process connection	Installation depth [mm]	Order no.	Order no.	Order no.
Approvals		Hygienic	WHG (German Federal Water Act)	ATEX
Preset to aqueous media				
G ½	11	**LMT100**	**LMT191**	
G ½	38	**LMT102**	**LMT192**	
G ½	153	**LMT104**	**LMT194**	
G ½	253	**LMT105**	**LMT195**	
G ¾	28	**LMT202**	**LMT292**	
G 1	38	**LMT302**	**LMT392**	
Preset to oils, fats, powder				
G ½	11	**LMT110**		**LMT01A**
G ½	153			**LMT03A**
G ½	253			**LMT04A**
Preset to sugary media				
G ½	11	**LMT121**		

Installation example LMT

- The E43414 adapter allows rear installation of sensors with customised installation lengths. The stainless steel adapter also provides a hygienic seal.

Example

Capacitive – for over-flow prevention and leakage monitoring

LI5 type point level sensors

- Optimised for use in hydraulic oils and coolants.
- Modular mounting concept for flexible use.
- It only takes one push of a button to adjust and set the output function.
- Factory preset for water-based media.

Probe length [mm]	Water temperature [°C]	Oil temperature [°C]	Order no.
2 switching outputs, 1 x temperature, 1 x level or 2 x level depending on damping (e.g. water/oil)			
132	-25...85	-25...85	**LI5131**
273	-25...85	-25...85	**LI5132**
481	-25...85	-25...85	**LI5133**
737	-25...85	-25...85	**LI5134**

Find out more about the LI point level sensor
ifm.com/fs/li2131

Ready for use in no time:
Easy mounting adjustment.

Flexible:
Normally closed / normally open programmable.

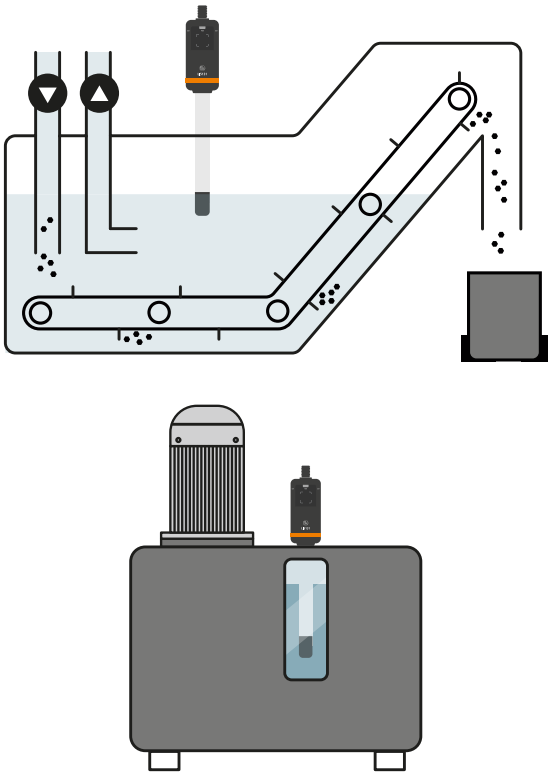
Clear:
Clearly visible indication of the switch points.

Variable use:
Insertion depths of 132 to 737 mm.

Certified:
Approval as overflow protection or leakage sensor to the German Federal Water Act.

IO-Link

IP69K



LI2 type point level sensors

- Approved as leakage sensor and overflow prevention to the German Federal Water Act (WHG).
- Factory preset for oil-based media.

Probe length [mm]	Water temperature [°C]	Oil temperature [°C]	Order no.
2 switching outputs, 1 x temperature, 1 x level or 2 x level depending on damping (e.g. water/oil)			
132	-25...85	-25...85	**LI2131**
273	-25...85	-25...85	**LI2132**
481	-25...85	-25...85	**LI2133**

Applications in accordance with WHG 0...85 °C

Accessories:

For adapters see pages 34 - 35

Capacitive – for detection through non-metallic tank walls

Sensing range [mm]	Connection	Order no.
DC PNP		
12 nf	Cable 2 m	**KQ6002**
12 nf	M8 plug	**KQ6004**
12 nf	M12 plug	**KQ6005**
12 nf	Cable 2 m	**KQ5100**
12 nf	M12 plug	**KQ5101**
12 nf	M8 plug	**KQ5102**

KQ type point level sensors

- Capacitive sensors in small plastic rectangular housing.
- Easy installation with mounting adapters and cable ties.
- Condition-based maintenance through detection of deposits and soiling.
- Identification of different media allows for use in applications such as mixing tasks in tanks.

12-digit display for optimum switch point setting (KG / KI6000).

User-friendly:
Many functions such as binary switching output, timer functions as output, damping function as well as normally closed / normally open and window function.

Communicative:
Process values, parameter setting data and diagnostic information can be transferred and evaluated via IO-Link.

Easy:
Parameter setting via IO-Link before installation, as an alternative also via pushbuttons on the sensor.

Repeatable:
Simple parameter setting of many sensors via "copy & paste" via moneo or memory plug.

Perfect:
Ingeniously simple switch point setting thanks to the LED display.

IO-Link IP65 IP67

Installation with and without contact with the medium.
Can operate in and outside the medium.

Easy empty and full teach on bypasses.
Are suited for bypass installation for easy empty and full teach without value fluctuations or interruption of the process.

Detection of bulk material and liquids.
Are suited, in contrast to other measuring principles, for liquids and bulk material.

Trouble-free use.
Look through non-metallic walls. Suppress deposits. Versions for potentially explosive atmospheres (ATEX).

KG / KI type point level sensors
- Capacitive sensors in cylindrical M18 or M30 housing.
- Protection rating IP 65 / IP 69K.
- High medium temperature up to 110 °C.
- EMC resistance up to 30,000 V.
- 12-digit display for optimum switch point setting (KG / KI6000).

Sensing range [mm]	Connection	Setting	Order no.	Order no.	Order no.
DC PNP			Normally closed	Normally open	Programmable
M18 housing, plastic					
0.5...40 nf	M12 connector	Potentiometer			**KG6000**
8 nf	Cable	Teach button			**KG5069**[1)]
12 nf	M12 connector	Teach button			**KG5066**
0.5...30 nf	Cable	Potentiometer	**KG5301**	**KG5303**	
0.5...30 nf	M12 connector	Potentiometer	**KG5307**	**KG5309**	
M30 housing, plastic					
0.5...40 nf	M12 connector	Potentiometer			**KI6000**
20 nf	M12 connector	Teach button			**KI5083**
0.5...40 nf	Cable	Potentiometer	**KI5301**	**KI5303**	
0.5...40 nf	M12 connector	Potentiometer	**KI5307**	**KI5309**	
M30 housing, metal					
8 f	M12 connector	Teach button			**KI5085**
15 nf	M12 connector	Teach button			**KI5087**

f: flush installation nf: non-flush installation
[1)] Housing white PP

Capacitive – for continuous detection through non-metallic tank walls

KQ10 type point level sensors

- Process values of 0...100 % can continuously be transferred via IO-Link in ranges of 250 mm without dead band.
- Setting of switch points and other functions, such as normally closed / normally open, hysteresis, or of the orientation and the sensing face of the sensor via IO-Link.

Design [mm]	Connection	Order no.
DC · 3 switching outputs / NO/NC programmable / maintenance		
Rectangular plastic 250 x 28 x 16.7	Cable 2 m, 5 pins	**KQ1000**
	Cable 0.1 m, M12 connector, 5 pins	**KQ1001**

Accessories	Order no.
Adapter for flat mounting	**E12675**
Pipe adapter	**E12676**
Surface-mount tape	**E12677**
Cable tie	**E10880**
IO-Link interface	**ZZ1060**

Permanently in view:
Continuous range monitoring of levels.

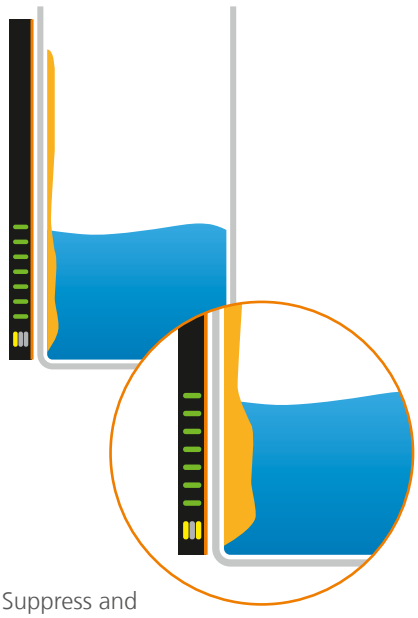
Easy installation:
"See" through non-conductive tank walls without contact and maintenance.

Three switch points in one:
Reduce the number of sensors – monitor three point levels with only one sensor.

Quick set up:
Configure switch points easily via IO-Link.

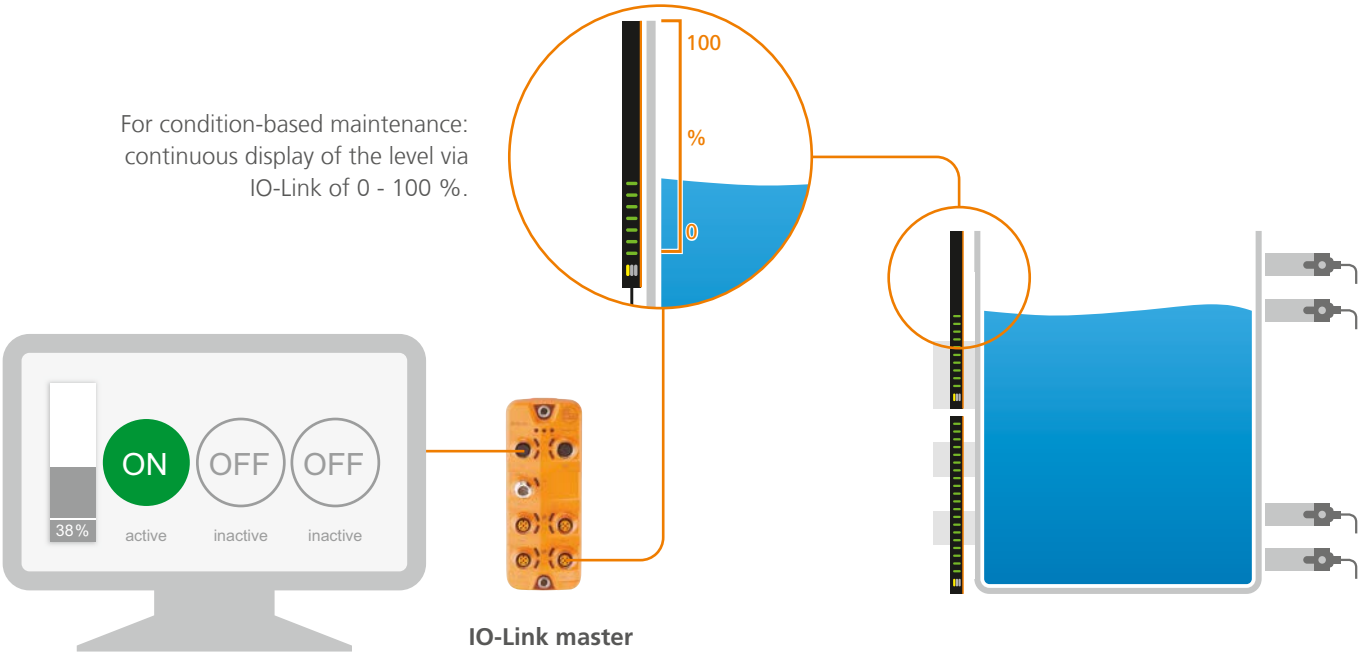
No incorrect switching:
For reliable switching. Build-up and tank walls can be suppressed by means of offset.

IO-Link IP65 IP67



Suppress and monitor deposits.

For condition-based maintenance: continuous display of the level via IO-Link of 0 - 100 %.



IO-Link master
Up to three point levels can be monitored by just one sensor; and this at the same time with continuous range monitoring.

By combining several sensors the detection range can be increased correspondingly.

Conventional limit monitoring requires two or three sensors per range.

Find out more about continuous point level monitoring
ifm.com/fs/kq1000

Capacitive – for applications on hydraulic and coolant tanks

LK type level sensors

- Display and handling directly on the unit or via IO-Link.
- As an option with analogue output or up to four switching outputs.
- Suitable for oil temperatures up to 70 °C.
- Versions complying with the German Federal Water Act selectable.

Probe length [mm]	Version	Order no.
2 switching outputs		
264		**LK1022**
472		**LK1023**
728		**LK1024**
264	Automatic medium detection	**LK7022**
472	Automatic medium detection	**LK7023**
728	Automatic medium detection	**LK7024**
264	WHG (German Federal Water Act)	**LK1222**
472	WHG (German Federal Water Act)	**LK1223**
728	WHG (German Federal Water Act)	**LK1224**
1 switching output + 1 analogue output 4...20 mA, 0...10 V		
264		**LK3122**
472		**LK3123**
728		**LK3124**
4 switching outputs		
264		**LK8122**
472		**LK8123**
728	M8 plug	**LK8124**

Versatile:
For industrial applications in water-based or oil-based media.

Optional outputs:
Versions with 2 or 4 switching outputs or analogue output (4...20 mA / 0...10 V).

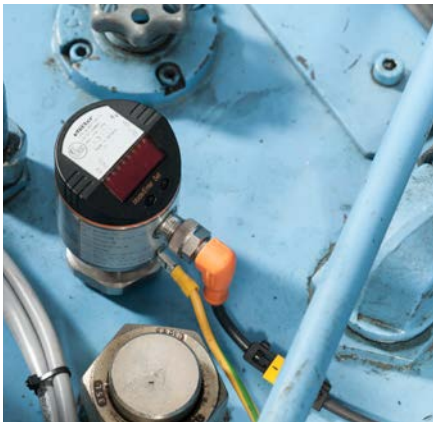
Safe:
Type LK12 with approval as overflow protection.

Combined:
Type LT for level and temperature monitoring.

Individual:
Variable insertion depths thanks to clamp fitting.

IO-Link

IP67



LT type level sensors

- Display and handling directly on the unit or via IO-Link.
- Suitable for water-based or oil-based media.
- Suitable for oil temperatures up to 70 °C.
- For level and temperature.

Probe length [mm]	Order no.
2 switching outputs for level and 2 switching outputs for temperature [1)]	
264	**LT8022**
472	**LT8023**
728	**LT8024**
1 analogue output for level 1 switching output for temperature [1)]	
264	**LT3022**
472	**LT3023**
728	**LT3024**

LT39xx and LT89xx available for Japan
[1)] Level / temperature selectable

Learn more about the LT level sensor
ifm.com/fs/lt3022

Accessories:

For adapters see pages 34 - 35

Hydrostatic – for industrial applications on tanks and in free-flowing waterways

Process connection	Measuring range relative pressure [mbar]	Order no.
Analogue output 4...20 mA		
G ¼ female	0...1000	**PA3027**
G ¼ female	0...250	**PA3028**
G ¼ male	0...250	**PA3528**
G ¼ male	0...100	**PA3589**
Analogue output 0...10 V		
G ¼ female	0...1000	**PA9027**
G ¼ female	0...250	**PA9028**

PA type pressure sensors
- 2-wire pressure transmitters.
- Ceramic-capacitive measuring cell.

Accessories:

For adapters see pages 34 - 35

Robust:
Overload-protected measuring principles with a good long-term stability.

Compact:
Pressure transmitters without display and with analogue output.

Precise:
Ceramic-capacitive and piezoresistive measuring cells.

IP65 IP68

PS type submersible pressure transmitters

- PUR or FEP cable for high resistance to media.
- Version with ATEX approval for group I, category M1 and group II, category 1G and 1D.
- Pressure compensation via internally vented cable.

Cable [m]	Measuring range relative pressure [mbar]	Order no.
For standard applications, CE approval, analogue output 4...20 mA		
PUR, 30	0...1000	**PS3617**
PUR, 15	0...1000	**PS3417**
PUR, 30	0...600	**PS3607**
PUR, 15	0...600	**PS3427**
PUR, 10	0...600	**PS3407**
PUR, 5	0...250	**PS3208**
For aggressive media, CE approval, analogue output 4...20 mA		
FEP, 30	0...1000	**PS4607**
FEP, 15	0...1000	**PS4417**
FEP, 20	0...600	**PS4506**
FEP, 10	0...600	**PS4407**
FEP, 10	0...250	**PS4408**
FEP, 5	0...250	**PS4208**
For hazardous areas, Ex approval, DNV-GL, analogue output 4...20 mA		
FEP, 15	0...1000	**PS317A**
FEP, 10	0...600	**PS307A**
FEP, 5	0...250	**PS308A**

Hydrostatic – for industrial applications on tanks

Process connection	Measuring range relative pressure [mbar]	Order no.
1 switching output and 1 analogue output 4...20 mA / 20...4 mA, scalable		
G ½ A	0...1000	**PG2457**
G ½ A	0...250	**PG2458**
G ½ A	0...100	**PG2489**

PG type pressure sensors

- Optimum legibility due to the electronic pointer display.
- Rotatable display.
- Display of the trend or of the minimum and maximum values.

Accessories:

For adapters see pages 34 - 35

Robust:
Overload-protected measuring principles with a good long-term stability.

Quick setting:
Easy to use to VDMA standard via 3 pushbuttons (type PN).

Clear:
Large pointer display with LED ring (type PG).

Precise:
Ceramic-capacitive and piezoresistive measuring cells.

IO-Link IP69K IP 67

Process connection	Measuring range relative pressure [mbar]	Order no.	Measuring range relative pressure [mbar]	Order no.
2 switching outputs			1 switching output and 1 analogue output 4...20 mA / 0...10 V	
G ¼ female	0...1000	**PN7097**	0...1000	**PN3097**
G ¼ male	0...1000	**PN7597**	0...1000	**PN3597**
2 switching outputs or 1 switching output and 1 analogue output 4...20 mA / 0...10 V, scalable				
G ¼ female	0...1000	**PN2097**	0...250	**PN2098**
G ¼ male	0...1000	**PN2597**	0...250	**PN2598**
G ¼ female	-500...500	**PN2169**		
G ¼ male	-500...500	**PN2569**		
2 switching outputs or 1 switching output and 1 analogue output 4...20 mA / 0...10 V, scalable				
G ¼ female	-1000...1000	**PE2099**		
G ¼ male	-1000...1000	**PE2599**		

PN type pressure sensors

- Programmable 2-colour display, clearly visible switch-point LEDs.
- Rotatable process connection.
- Operation via 3 raised pushbuttons.
- IO-Link.

PE type pressure sensors

- EPDM seal.

Hydrostatic – for hygienic applications on tanks

PG type pressure sensors

- Individually adjustable LED ring.
- Permanent 150 °C medium temperature.
- Robust ceramic measuring cell.
- Integrated temperature measurement and totaliser function.

Factory setting Measuring range Relative pressure [mbar]	Process connection
	Aseptoflex Vario G1 male Order no.
1 switching output and 1 analogue output 4...20 mA / 20...4 mA, scalable	
-1...25	**PG1703**
-1...10	**PG1704**
-1...4	**PG1705**

Find out more about the PG pressure sensor
ifm.com/cnt/pg1

PM type pressure transmitters

- Programmable analogue output.
- Accuracy 0.2 %.
- IO-Link.

Factory setting Measuring range Relative pressure [mbar]	Process connection		
	Aseptoflex Vario G1 male Order no.	Sealing cone G1 male Order no.	Clamp DN25...40 Order no.
Analogue output 4...20 mA, scalable			
0...100	**PM1789**	**PM1689**	-
0...250	**PM1708**	**PM1608**	**PM1108**
0...400	**PM1718**	**PM1618**	**PM1118**
-1000...1000	**PM1709**	**PM1609**	**PM1109**
0...1000	**PM1707**	**PM1607**	**PM1107**

Hygienic:
Ingress resistance, materials and approvals comply with hygienic requirements.

Robust:
Overload-resistant ceramic-capacitive measuring cells with long-term stability.

Versatile:
Variable process connections.

Precise:
High overall accuracy (0.2 %).

Suitable for CIP/SIP:
High temperature resistance and electronic temperature compensation.

Well documented:
Free factory certificate for download.

IO-Link

IP69K

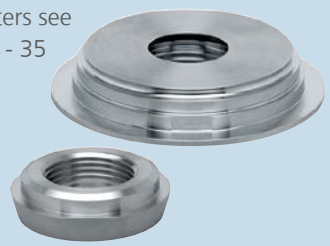
PI type pressure sensors
- Programmable analogue output in 2-wire operation.
- Additional switching output in 3/4-wire operation.
- IO-Link with very high process value resolution.

Factory setting Measuring range Relative pressure [mbar]	Process connection	
	Aseptoflex Vario G1 male Order no.	Sealing cone G1 male Order no.
1 switching output and 1 analogue output 4...20 mA / 20...4 mA		
0...100	**PI1789**	**PI1889**
0...250	**PI1708**	**PI1808**
0...400	**PI1718**	**PI1818**
-1000...1000	**PI1709**	**PI1809**
0...1000	**PI1707**	**PI1807**
0...1600	**PI1717**	**PI1817**

Find out more about the PI pressure sensor
ifm.com/cnt/pi

Accessories:

For adapters see pages 34 - 35



Guided wave radar – for industrial and hygienic applications

LR type level sensors

- Display and handling on the unit or via IO-Link.
- As an option with analogue output or up to four switching outputs.
- Rod lengths freely selectable between 10...200 cm.
- Versions complying with the German Federal Water Act selectable.

Process connection	Order no.
2 switching outputs or 1 switching and 1 analogue output 4...20 mA	
G ¾ male	**LR2050**
¾" NPT	**LR2350**
1 switching output and 1 analogue output 4...20 mA or 0...10 V	
G ¾ male	**LR3000**
¾" NPT	**LR3300**
2 switching outputs	
G ¾ male	**LR7000**
¾" NPT	**LR7300**
4 switching outputs	
G ¾ male	**LR8000**
¾" NPT	**LR8300**
4 switching outputs / German Federal Water Act (WHG)	
G ¾ male	**LR8010**[1)]

LR2059, LR3009, LR7009 and LR8009 available for Japan

[1)] Only in connection with rod and coaxial pipe, see page 25

Versatile:
Modular sensor concept, flexible in use.

Variable:
Rods can be cut to size as required.

Reliable:
Measuring principle independent of temperature influences.

Optional outputs:
Versions with two or four switching outputs or analogue output (4...20 mA / 0...10 V).

Selectable:
Designs with and without display.

IO-Link IP69K IP 67

Accessories:
For rods and coaxial pipes see pages 24 - 25

Accessories:
For adapters see pages 34 - 35

LR27 type hygienic level sensors

- Display and handling on the unit or via IO-Link.
- Medium temperature -40...150 °C.
- Pressure-resistant up to 40 bar.
- Hygienic approvals EHEDG, 3A and FDA.
- Rod lengths of 15...200 cm selectable.

Process connection	Order no.
2 switching outputs or 1 switching and 1 analogue output 4...20 mA	
Aseptoflex Vario G1	**LR2750**

LR2759 available for Japan

LR type level transmitters

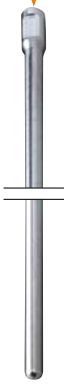
- For industrial applications.
- As an option with analogue output or up to four switching outputs.
- Protection rating IP 69K.
- Easily adjustable via IO-Link.
- Rod lengths freely selectable between 10...200 cm.

Process connection	Order no.
1 switching output and 1 analogue output 4...20 mA or 0...10 V	
G ¾ male	**LR3020**
¾" NPT	**LR3320**
2 switching outputs	
G ¾ male	**LR7020**
¾" NPT	**LR7320**
4 switching outputs	
G ¾ male	**LR8020**
¾" NPT	**LR8320**

Guided wave radar – rods and coaxial pipes

LR2750 type hygienic level sensors

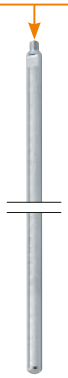
Rods for LR2750 level sensors, hygienic
Material: high-grade stainless steel (1.4404 / 316L)



Length [mm]	Order no.
150	**E43345**
300	**E43346**
500	**E43340**
545	**E43424**
700	**E43347**
1000	**E43341**
1500	**E43348**
2000	**E43342**

Level sensor ¾" NPT
Type LR3300
Type LR7300
Type LR8300
Type LR2350
Type LR3320
Type LR7320
Type LR8320

Rods for LR level sensors with ¾" NPT or G ¾ male, industrial applications
Material: high-grade stainless steel (1.4404 / 316L)



Accessories:

For adapters see pages 34 - 35

Welding adapters
G ¾ male
Type LR2050
Type LR3000
Type LR7000
Type LR8000
Type LR8010[1)]
Type LR3020
Type LR7020
Type LR8020

Welding adapter
G ¾ male E43379

Length [mm]	Order no.	Length [mm]	Order no.
150	**E43225**	700	**E43205**
210	**E43351**	800	**E43337**
240	**E43203**	1000	**E43207**
265	**E43352**	1200	**E43208**
300	**E43226**	1400	**E43209**
450	**E43204**	1600	**E43210**
500	**E43227**	2000	**E43353[2)]**

Process connection	Length [mm]	Order no.
G ¾	150	**E43230**
G ¾	210	**E43354**
G ¾	240	**E43211**
G ¾	265	**E43355**
G ¾	300	**E43228**
G ¾	450	**E43212**
G ¾	500	**E43229**
G ¾	700	**E43213**
G ¾	800	**E43336**
G ¾	1000	**E43214**
G ¾	1200, V4A	**E43244**
G ¾	1200	**E43215**
G ¾	1400	**E43216**
G ¾	1600	**E43217**
G ¾	2000	**E43356[2)]**
G ¾	450, without holes	**E43320**
G ¾	1000, without holes	**E43245**
G ¾	700, slotted	**E43333**
G ¾	1200, slotted	**E43334**

Process connection	Length [mm]	Order no.
¾" NPT	240	**E43377**
¾" NPT	450	**E43218**
¾" NPT	700	**E43219**
¾" NPT	1000	**E43220**
¾" NPT	1200	**E43223**
¾" NPT	1400	**E43224**
¾" NPT	1600	**E43221**
¾" NPT	2000	**E43378[2)]**

Coaxial pipes for LR level sensors with G ¾ male, industrial applications
Material: stainless steel (1.4301 / 304)

[1)] only in connection with rod and coaxial pipe
[2)] only for sensor types LR2050, LR3020, LR7020, LR8020

Contactless radar – for level measurement up to 10 m in tanks and open containers

LW21 type hygienic level sensors

- Can be used on open and closed tanks and containers.
- Direct measurement or through non-metallic walls.
- Measuring range 0.01…10 m.
- Medium temperature -40...150 °C.
- Pressure-resistant up to 8 bar.
- Easily adjustable via IO-Link.

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

LW2160 available with radio approval for India, Malaysia and the Philippines


Storage tanks


Plastic tanks


Outside use


Flow rate measurement

Outside of closed metal tanks, the sensor must be used with the E33705 antenna extension. Optional E33706 mounting set available.

Simple:
Quick set-up, only one parameter required.

Designed to meet requirements:
Robust high-grade stainless steel housing and approvals tailored to hygienic and industrial requirements.

IO-Link:
Remote maintenance, an advantage especially for high tanks.

Precise:
Accurate and continuous level measurement of liquids.

Flexible:
Direct measurement or through non-metallic walls.

IO-Link

IP69K

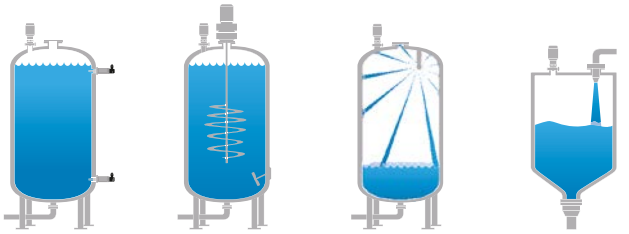
LW27 type hygienic level sensors

- Measuring range 0.01…10 m.
- Medium temperature -40...150 °C.
- Pressure-resistant up to 8 bar.
- Easily adjustable via IO-Link.
- Hygiene approvals EHEDG, 3A, USP Class VI and FDA.

Process connection	Order no.
2 switching outputs or 1 switching and 1 analogue output 4...20 mA	
Aseptoflex Vario G1	**LW2720**

LW2760 with radio approval available for India and Malaysia

Learn more about radar technology
ifm.com/cnt/radar



Ultrasonic – for long distances and difficult surfaces

Ultrasonic sensors

Type UGT Cube

Type UGT

Type UIT5xx

Type UIT3xx
Full-metal sensor
IP 69K

Design	Output[1)]	Order no.	Order no.	Order no.
Max. range [mm]		40...300	60...800	80...1200
M18 Cube	PNP, IO-Link	**UGT592**	**UGT593**	**UGT594**
M18 short	PNP, IO-Link	**UGT524**	**UGT525**	**UGT526**
M18 short	2 x PNP, IO-Link	**UGT528**	**UGT527**	**UGT529**

Max. range [mm]		150...1600	200...2200	
M18 long	2 x PNP, IO-Link	**UGT509**	**UGT512**	
M18 long	PNP, 4...20 mA, IO-Link	**UGT510**	**UGT513**	
M18 long	PNP, 0...10 V, IO-Link	**UGT511**	**UGT514**	

Max. range [mm]		250...3500	350...6000	600...8000
M30	2 x PNP, IO-Link	**UIT500**	**UIT503**	**UIT506**
M30	PNP, 4...20 mA, IO-Link	**UIT501**	**UIT504**	**UIT507**
M30	PNP, 0...10 V, IO-Link	**UIT502**	**UIT505**	**UIT508**

Max. range [mm]		250...2500		
M18 Cube	2 x PNP, IO-Link	**UIT300**		
M18 short	PNP, 4...20 mA, IO-Link	**UIT301**		
M18 short	PNP, 0...10 V, IO-Link	**UIT302**		

For versions without IO-Link or for digital/analogue mixed unit versions see ifm.com

Precise:
Accurate and continuous level measurement, e.g. of bulk materials.

Robust:
High-grade stainless steel housing for demanding applications.

Simple:
Setting via teach button, wire teach or IO-Link.

Flexible:
Normally closed / normally open programmable.

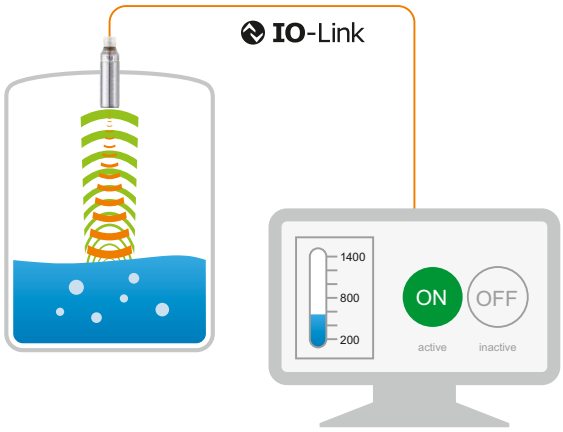
Versatile:
Versions with two switching outputs or switching and analogue outputs 4...20 mA / 0...10 V.

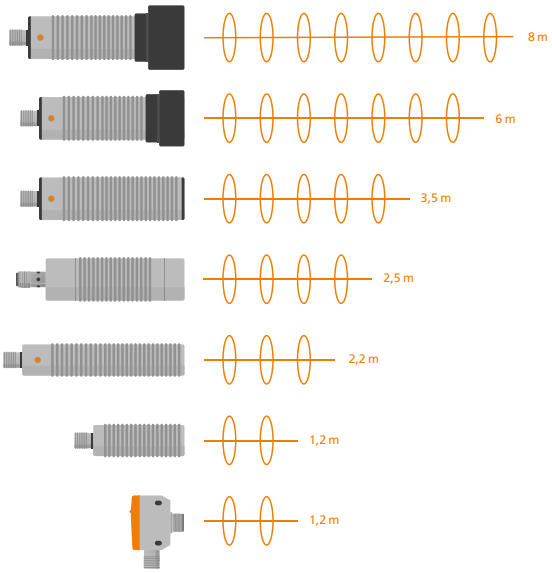
Flexible: Adjustable sound beam.

Certified: ECOLAB

IO-Link IP67 IP69K

Ultrasonic sensors also detect shiny and irregular surfaces of any colour.





Accessories for ultrasonic sensors

Version	Order no.
Sound tube for producing a smaller sound beam, M18	**E23000**
Sound deflector for installation in small spaces or in dusty environments for ranges up to 1.2 m	**E23001**
Sound deflector for installation in small spaces or in dusty environments for ranges up to 2.2 m	**E23002**
Sound deflector, M18	**E23006**
Sound tube for producing a smaller sound beam, M30	**E23007**
Sound deflector, M30	**E23008**

Find out more about ultrasonic sensors
ifm.com/cnt/ultrasonic

No distance too far. Photoelectric sensors for long ranges

Measuring range [m]	Connection	Light spot diameter [mm]	Order no.
2 switching outputs or 1 switching output and 1 analogue output 4...20 mA / 0...10 V, scalable			
0.2...9.8	M12 connector	**< 15 x 15**	**O1D300**

O1D type photoelectric distance sensors with time-of-flight measurement

- Resistant to extraneous light up to 100,000 lux.
- 2 switching outputs, one output can be configured as analogue output.
- 4-digit alphanumeric display.

Longest distance:
Photoelectric level detection of bulk materials and non-transparent liquids. Long ranges up to 9.8 m for large tanks and vessels.

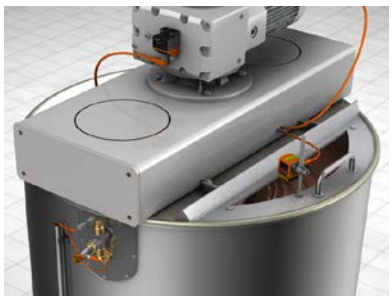
User-friendly:
Scalable detection range with window function.

Reliable detection:
Can be used in applications needing background suppression. Angle independent detection for easiest adjustment.

Flexible mounting:
Extensive range of fixing components.

Independent:
Shape, colour or structure of the surface to be detected do not matter.

IO-Link

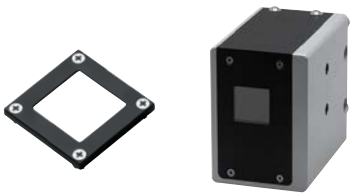


Non-contact level measurement on storage tanks.

Level detection in sugar cane delivery.

Level detection on a hopper.

Accessories for photoelectric distance sensors



Version	Order no.
Mounting accessories	
Angle bracket high-grade stainless steel (1.4404 / 316 L)	**E21120**
Clamp mounting set for rod mount Ø 12 mm	**E2D101**
Mounting adapter with process connection G1 male	**E21224**
Mounting rod, 100 mm, Ø 12 mm, M10 thread, stainless steel	**E20938**
Mounting rod, 200 mm, Ø 12 mm, M10 thread, stainless steel	**E20940**
Cube for mounting on an aluminium profile, M10 thread, stainless steel	**E20951**

Device protection	
Protective cover, glass window	**E21171**
Protective cover, PMMA window	**E21133**
Cooling box	**E21248**

Photoelectric 3D – for bulk materials and completeness monitoring

Housing material	Angle of aperture [°]	Max. field of view size [m]		Order no.
2 digital inputs, 3 digital outputs, 1 analogue output				
Aluminium	40 x 30	2.61 x 3.47	IP 65, IP 67	**O3D300**
Aluminium	60 x 45	3.75 x 5.00	IP 65, IP 67	**O3D302**
Aluminium	70 x 51	4.70 x 5.00	IP 65, IP 67	**O3D304**
Aluminium	40 x 30	2.61 x 3.47	IP 65, IP 67, IP 69K	**O3D310**
Aluminium	60 x 45	3.75 x 5.00	IP 65, IP 67, IP 69K	**O3D312**
Aluminium	70 x 51	4.70 x 5.00	IP 65, IP 67, IP 69K	**O3D314**

O3D type photoelectric 3D sensors with time-of-flight measurement

- Switching outputs and analogue outputs for simple integration into the control environment.
- Continuous measurement of uneven surfaces.
- Determines min, max or mean values.
- Teaching of different tank shapes.
- Interfering structures are suppressed.

Award winning:
Objects and scenes are detected in three dimensions. The sensor operates on the time-of-flight principle.

Independent:
Illumination, time of flight measurement and evaluation in an industrially compatible housing.

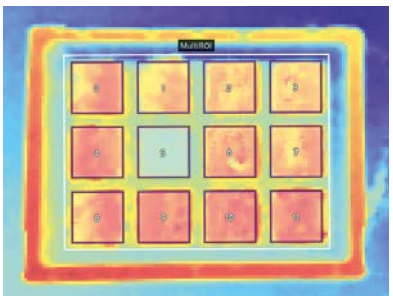
Far-sighted:
Non-contact detection of opaque media for levels of up to 10 m, resistant to extraneous light and irrespective of the colour.

Flexible:
The measuring segment can be adapted to the shape of the respective tank.

Informative:
Feedback via LED display.

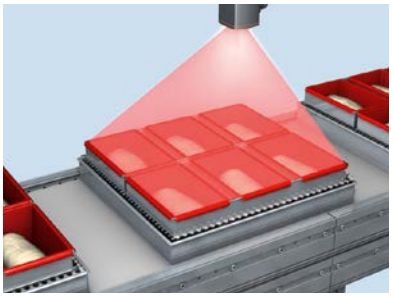
Everything under control:
Even in case of conical heaps and funnelling.

IP65 IP67 IP69K



The patented multi ROI allows for having several measuring segments incorporated into one result and, in addition, for providing the individual measured values as well.

Full crate inspection – automatic position and orientation adjustment guarantees a stable function even with a variable object position.



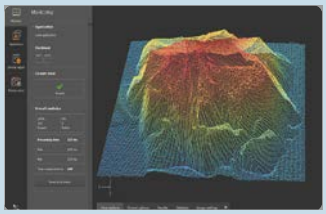
Continuous level measurement of non-transparent solids and bulk materials in tanks, silos, hoppers or in heaps. Data output is provided either in m or m3.

Accessories for 3D sensors

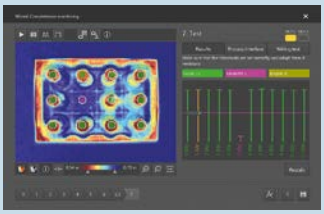
Version	Order no.
Connection cable, straight, M12 / RJ45, 2 m, MPPE, halogen-free	**EVF551**
Connection cable, angled, M12, 3 m, PVC	**E12456**
Mounting set for 3D sensors, stainless steel	**E3D301**

User-friendly.

Continuous exchange with users and extensive handling tests have led to an extremely simple usability and ease of integration of the sensor - from ordering to replacement.



Level monitoring



Completeness monitoring

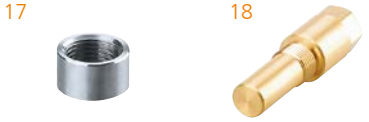
Adapters for level sensors in industrial and hygienic applications.

Adapter G ½ for type LMT

No.	Process connection	Order no.	Order no. with leakage port
Mounting adapters for industrial and hygienic applications			
1	Clamp 1 - 1.5"	**E33401**	**E43311**
1	Clamp 2"	**E33402**	**E43312**
2	Hygienic pipe fitting DN25	**E43304**	–
2	Hygienic pipe fitting DN40	**E43305**	–
3	Varivent type F DN25, D = 50	**E43306**	–
3	Varivent type N DN40...150, D = 68	**E43307**	–
4	Screw-in adapter G ¾	**E43302**	–
4	Screw-in adapter G 1	**E43303**	–
4	Screw-in adapter ¾" NPT	**E43313**	–
5	Pipe fitting DN25 SMS	**E33430**	–
	Pipe fitting DN50 SMS	–	**E33444**
6	Sealing plug G ½	**E43308**	–
7	Screw-in adapter M30 x 1.5	**E43325**	–
8	Screw-in adapter DN50 SMS	**E43344**	–
9	Screw-in adapter Aseptoflex Vario	**E43358**	–
Welding adapters for industrial and hygienic applications			
10	Collar G ½ Ø 45 mm	**E30056**	**E43315**
11	Ball G ½ Ø 35 mm	**E30055**	–
12	For tanks G ½ Ø 30 mm	**E43300**	**E43309**
12	For pipes G ½ Ø 29 mm	**E43301**	**E43310**
13	Long version G ½ Ø 50 mm	**E43319**	–
14	Welding mandrel G ½	**E43314**	–
T-pieces for industrial and hygienic applications			
15	T-piece DN25	**E43316**	–
15	T-piece DN40	**E43317**	–
15	T-piece DN50	**E43318**	–
Variable clamp adapters			
16	Clamp adapter for LMT104[1)]	**E43349**	–
16	Clamp adapter for LMT105[1)]	**E43322**	–

[1)] Only in connection with G ½ female adapter

Adapter G ½ for type LMC



No.	Version	Order no.
Welding adapters		
17	G ½ for type LMC	**E43375**
17	G ¾ for type LR	**E43379**
18	Welding mandrel for LMC4x0	**E43382**

Adapters for types G1 male / Aseptoflex Vario PG, PI, LR, PM

19


20


21

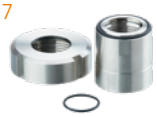

22


23


24


25


26


27


No.	Process connection	Order no.	Order no. with leakage port
Mounting adapters for industrial and hygienic applications			
19	Clamp 1 - 1.5″	**E33201**	**E33208**
19	Clamp 2″	**E33202**	**E33209**
20	Hygienic pipe fitting DN32	**E33211**	–
20	Hygienic pipe fitting DN40	**E33212**	–
20	Hygienic pipe fitting DN50	**E33213**	–
21	Universal process adapter Rd52 (PI)	**E33340**	–
22	Pipe fitting DIN 11864-1 A-BS	–	**E33304**
23	Varivent type F DN25, D = 50	**E33221**	**E33228**
23	Varivent type N DN40...150, D = 68	**E33222**	**E33229**
24	Flange DRD, D = 65	**E33242**	–
Welding adapters for industrial and hygienic applications			
25	Welding adapter Ø 85 mm (tank head)	–	**E30528**
26	Welding adapter Ø 85 mm (tank bottom)	–	**E30529**
27	Universal adapter Rd52 (PM)	**E33341**	**E33349**

Adapters for types LI, LK, LT

28


29


30


31


No.	Version	Order no.
Mounting adapters		
28	Mounting clamp Ø 16 mm	**E43000**
29	Welding adapter Ø 50 mm	**E43002**
30	Mounting adapter G ¾	**E43003**
30	Mounting adapter G 1	**E43004**
30	Mounting adapter ¾″ NPT	**E43012**
Device protection		
31	Climatic tube, 264 mm long	**E43100**
31	Climatic tube, 472 mm long	**E43101**
31	Climatic tube, 728 mm long	**E43102**

Adapters for types LR, LK

32


33


34


No.	Version	Order no.
Mounting adapters		
32	Flange plate 73 - 90 / G ¾	**E43201**
32	Flange plate 65 - 80 / G ¾	**E43202**
33	Launching plate G ¾ for type LR for installation in plastic tanks	**E43380**
33	Launching plate ¾″ NPT for type LR for installation in plastic tanks	**E43381**
Device protection		
34	Protective cover	**E43910**

Digitalisation in a winery

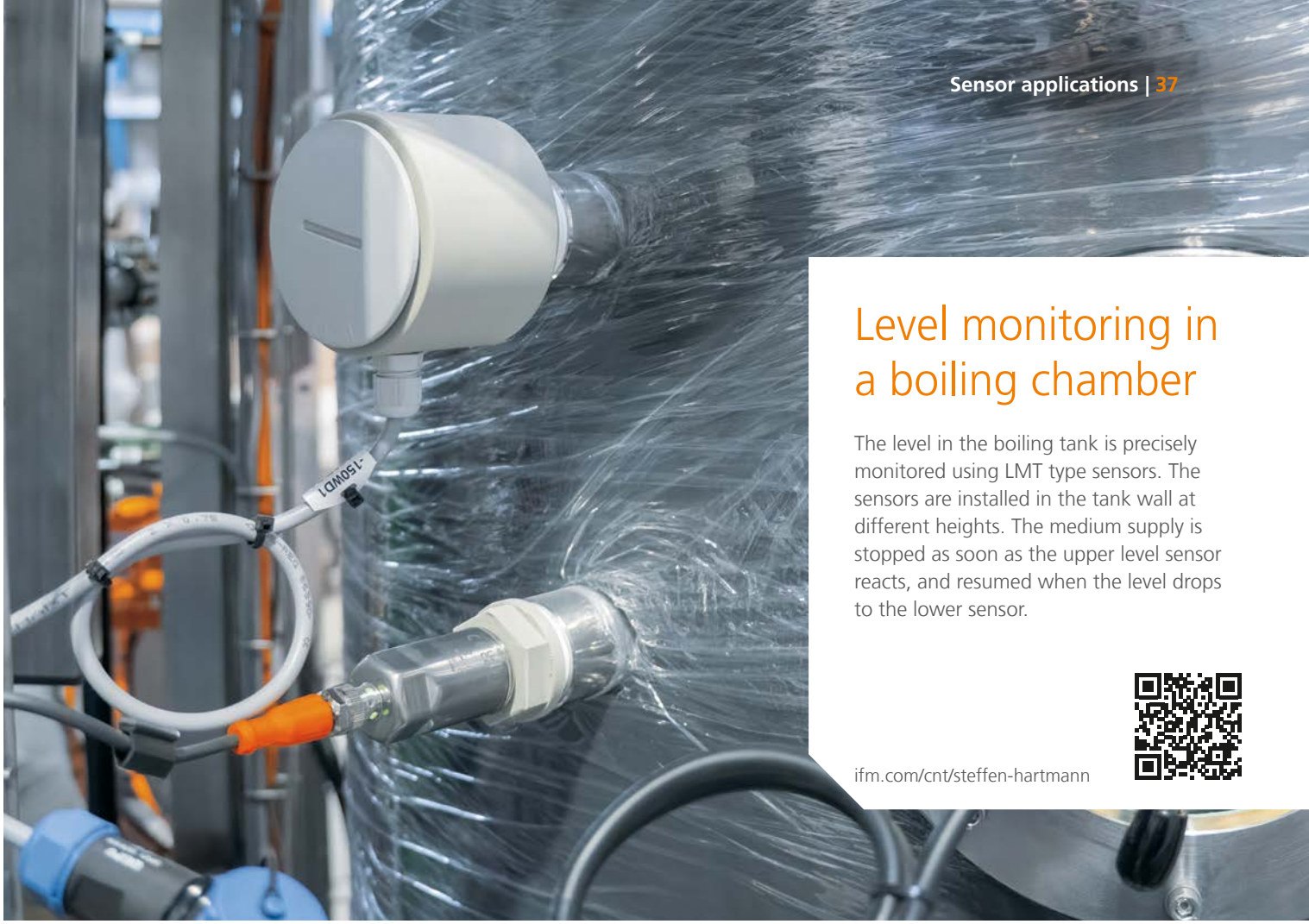
Thanks to the LW2720 radar sensor and IO-Link, the winery can now monitor and display tank levels digitally via moneo. Employees no longer need to climb 10 metres to measure levels manually – they can now monitor the process remotely.

ifm.com/cnt/steinhauser

Oil level monitoring in a hydraulic power unit

An LI type level sensor monitors the oil level and temperature in the hydraulic power unit, alerting operators when thresholds are exceeded or not met.

ifm.com/cnt/isv



Level monitoring in a boiling chamber

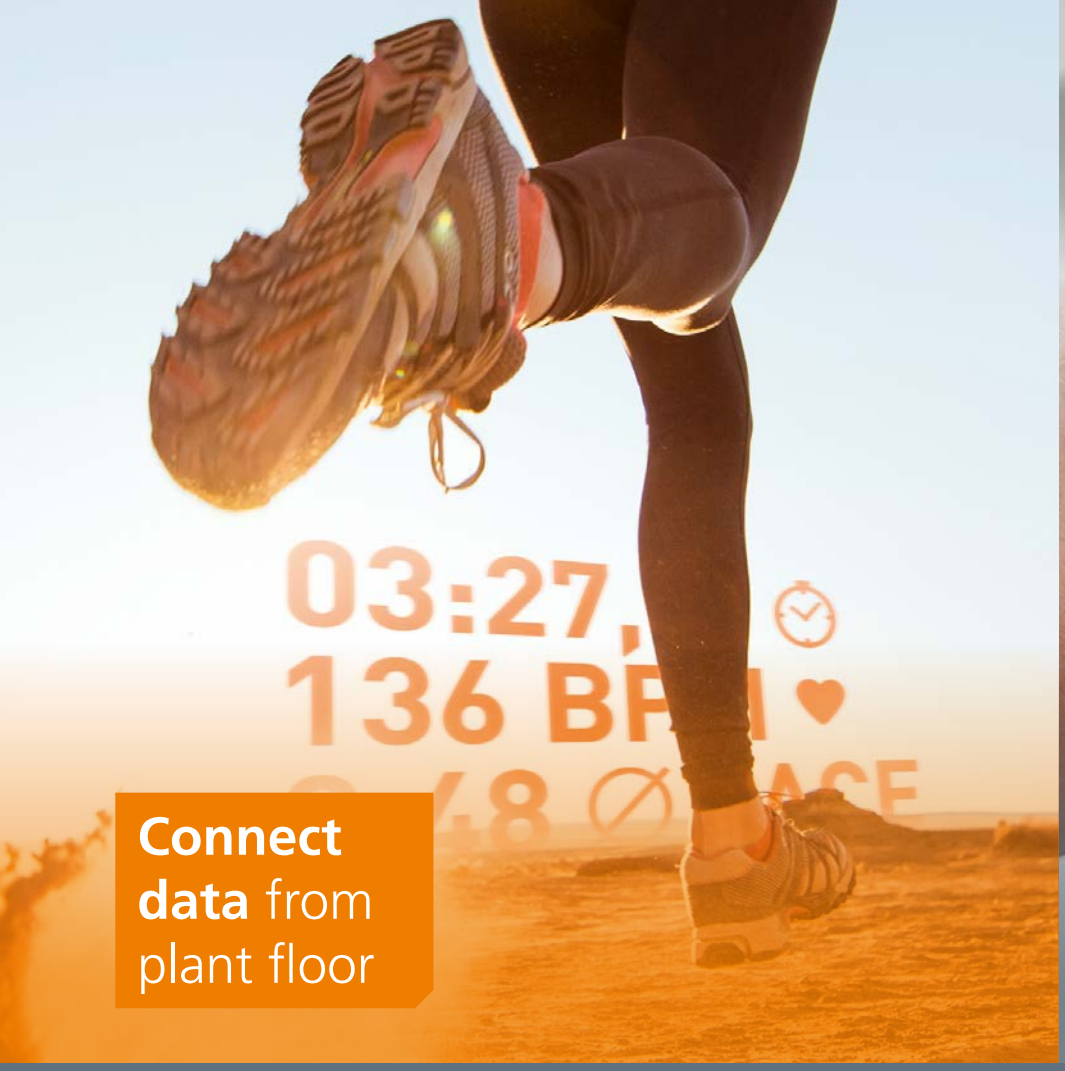
The level in the boiling tank is precisely monitored using LMT type sensors. The sensors are installed in the tank wall at different heights. The medium supply is stopped as soon as the upper level sensor reacts, and resumed when the level drops to the lower sensor.

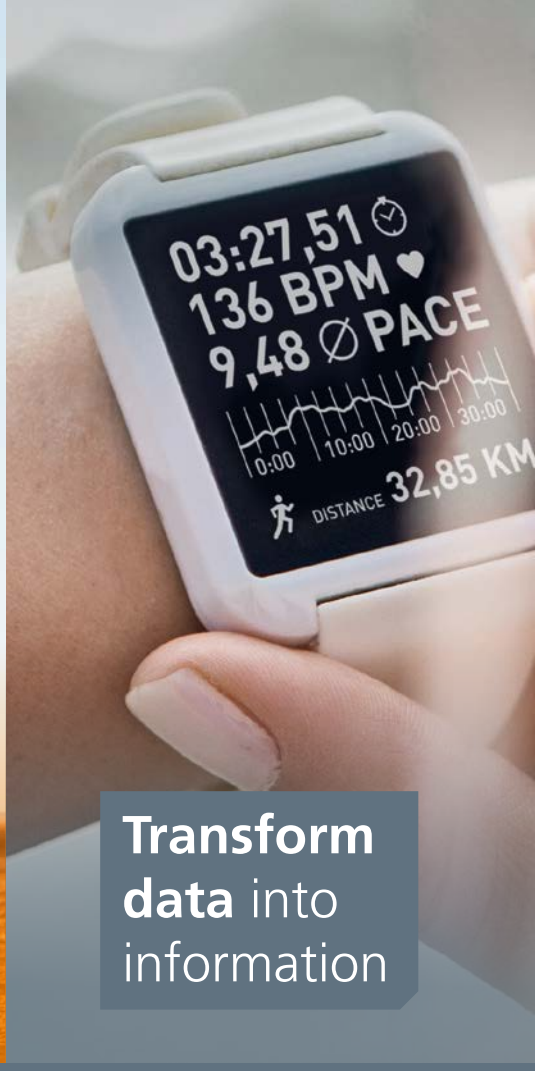
ifm.com/cnt/steffen-hartmann

Level measurement in water treatment

In water treatment, the PI pressure sensor detects the level of an ultrapure water tank using hydrostatic pressure measurement.

ifm.com/cnt/envirofalk





Utilise the full power of your data

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

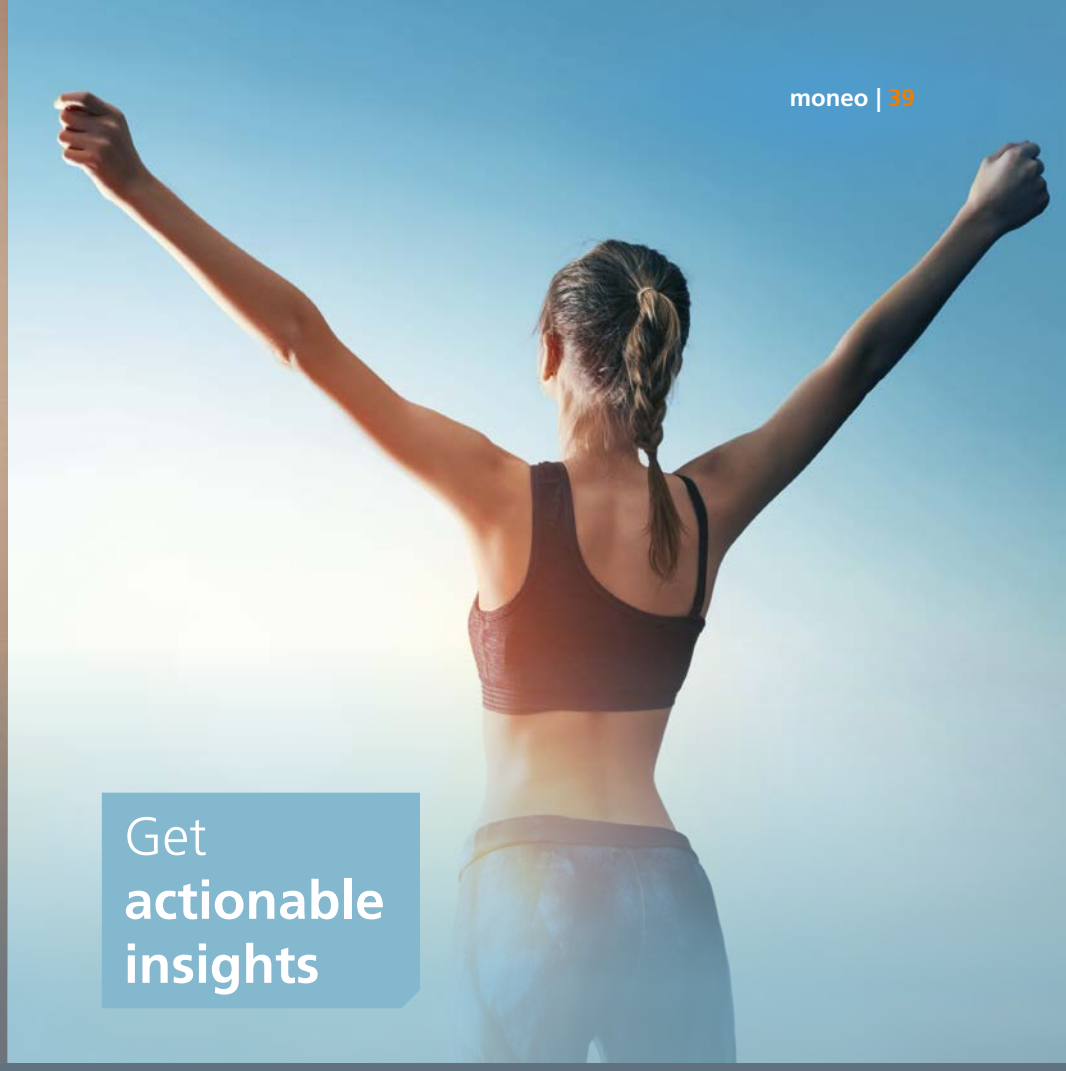
"My pulse frequency is 45 per minute when I'm asleep and healthy. If I am ill, it is about 55. Under full exertion, my heart pumps more than three times per second. I run my home course of ten kilometres in less than 50 minutes on a good day and at a temperature of about 20°C. How do I know all that?

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

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

moneo: the result of a deep understanding of the machine

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



Get **actionable insights**

Data becomes information.
Information becomes added value.

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

Never again in the red

Temperature curves, compressed air consumption, cycle times, operating hours, levels, vibration behaviour – whatever may have an influence on the **performance, production quality** and **energy efficiency** of your industrial organism, with moneo, you will be able to act before your investments will run out of steam and before wear, lacking supplies or defects will lead to downtime or before precious energy will escape ineffectively through leaks. That is real added value. It saves money, nerves and time. You can, for example, rather invest the time you save after work to improve your best time on your 10-kilometre home run.

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

Then start now. With moneo.

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