

**PRECISE VALUES –
LEVEL MEASUREMENT
TECHNOLOGY**



POINT LEVEL DETECTION

In applications like overflow protection, min/max control, or overflow and dry-run protection, the limit value switches are used to signal whether a predetermined level has been reached or exceeded, or a value has fallen below a certain threshold.



Today, level detection is the basis for facility management and process control in the chemical, petrochemical, environmental and other related industries. With an extensive line of products, Pepperl+Fuchs can solve your specific application for these and many other industries by offering solutions to accurately detect a wide range of medium in various conditions. At Pepperl+Fuchs, our level control group is capable of providing all legally required documentation in compliance to national, European, and international standards, and our active, benchmark-setting participation in standard writing organizations maintains our expert understanding of the business. For applications involving hazardous locations or water-polluting substances, our instruments are certified by local authorities or to local codes, e.g. ATEX, FM, CSA, or WHG §19.

CONTINUOUS LEVEL MEASUREMENT

Continuous level measurement makes exact process control possible. Today's modern installations need statistical and informative data on consumption, loss prevention, process control, and balancing of materials used. This ever-increasing need for information accentuates the necessity of continuous level measurement. Pepperl+Fuchs offers a complete range of devices and interfaces for these applications.

Our instruments work with different technologies for level measurement of fluids and granular materials. Besides solutions with 4–20 mA standard outputs, we also offer two-wire digital signals, such as HART, PROFIBUS PA, and FOUNDATION fieldbus.

Our products are suitable for use in potentially explosive atmospheres in Zone 0. Our expertise with intrinsic safety and other explosion protection technologies means you can rely on our devices being appropriately certified and compliant with applicable ATEX, FM, and CSA guidelines. From the device to the interface, Pepperl+Fuchs offers complete solutions for your applications in the area of continuous level measurement.





Vibracon

Measuring principle:

Frequency Shift - The frequency-of-vibration of the fork is reduced when it comes into contact with the medium being measured. The electronic interface internal to the sensor is used to create an output signal based on this change.

Features:

- Compact and extended-length versions
- Hazardous (intrinsically safe, flame-proof and explosion-proof) and non-hazardous location configurations.
- Different electrical outputs: DC-pnp; AC relay, AC 2-wire, NAMUR (IEC 60947-5-6), AS-i
- Housing material: aluminium, plastic, or stainless steel
- All current process connections and coatings
- No adjustment or maintenance necessary
- Approvals: ATEX, WHG, FM, CSA

Applications:

Universal use as overflow protection, dry-run protection, min/max switch in all fluid applications.



Vibracon S LVL-B

The Vibracon S LVL-B is a rugged level limit switch for containers with fine or coarse, granular materials. Vibracon S detects material weight of 200 g/l and up, regardless of the DK value or electrical conductivity of the material. The compact or extended-length designs enable flexible application, even in areas susceptible to dust explosions.

Features:

- No calibration; simple commissioning
- No jams of coarse-grained material
- No moving parts
- Approval compliant with ATEX II 1/3 D

Applications:

Use in granular materials as a limit value switch



CAPACITIVE LIMIT VALUE SWITCH

Measuring principle:

Capacitance. The probe, together with its installation surroundings (e.g. the wall of the tank), forms a capacitor whose capacitance changes with a rising level of material. This change in capacitance is detected and used to generate an electronic output signal.

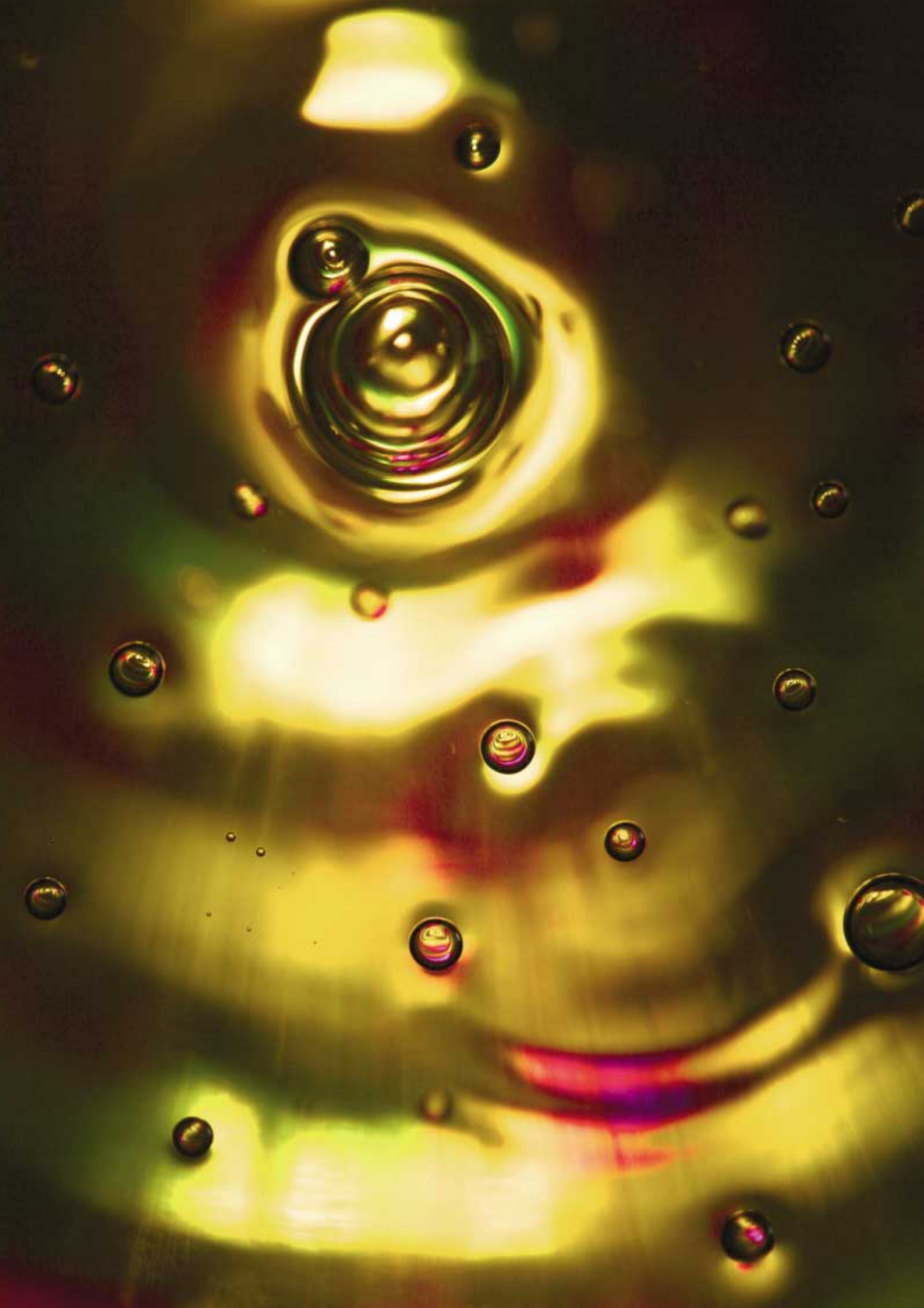
Features:

- Compact construction and extended-length versions
- Active build-up compensation
- Use in dust-Ex zone and non-Ex zone
- Different electrical outputs: DC-pnp and AC relay
- Approvals: ATEX dust-Ex, WHG, CSA

Applications:

Use with granular materials and fluids as overflow protection, min/max regulation, or dry-run protection.







CONDUCTIVE ELECTRODES

Measuring principle:

Conductivity. Cost-effective limit value recording in conductive fluids, with two, three, or five electrodes (in rod or rope versions). As soon as a conductive fluid makes a contact with the electrodes, a switch signal is triggered. Available as a compact version with integrated electronics or with a separate electrode module.

Features:

- Rod version up to 4 m/13 ft or cable version up to 15 m/23 ft
- 2 to 5 switching points can be implemented with one probe, suitable for simple 2-point control
- No calibration necessary
- Different electrical outputs: AC relay, DC-pnp, NAMUR
- Approvals: ATEX 2G Ex ia, 3G Ex nC, WHG

Applications:

Limit value recording or interface level indication, e.g. in oil and gasoline tanks, wells, or drainage shafts.



MAGNETIC IMMERSION PROBE

Measuring principle:

Guided float. A magnet built into a float body triggers reed contacts within the interior of the probe tube when rising or falling.

Features:

- Wetted parts are made of plastic or stainless steel
- Installation without affecting the float body
- Variety of process connections
- Versions available with Ex approval

Applications:

Limit value recording in fluid media.

FLOAT SWITCH

Measuring principle:

Float. The tipping movement when the float switch floats up or down on the surface of the fluid is detected by a built-in switch and triggers the switch process.

Features:

- Simple and cost-effective
- Different variants
- Several types of switch elements depending on application
- In areas designated Ex-Zone 0/Division 1 using a switch isolator

Applications:

Simple, cost-effective limit value recording in fluids.





ULTRASONIC



Measuring principle:

Ultrasonic-Sound pulses are reflected off a wide range of media and the resulting reflection measured for time in order to calculate a distance. This non-contact level measurement technique lends itself for both liquids and solids.



Features:

- Measurement range up to 7 m/23 ft for granular in granular materials and 15 m/49 ft for fluids
- Easily programmed with convenient four-line, push-button display
- Envelope visualization on the local display screen
- System integration using HART 4 – 20 mA, PROFIBUS PA, or Foundation fieldbus
- Approvals: ATEX; FM, and CSA

Applications:

Continuous level measurement in fluids and granular materials

Pulscon



Measuring principle:

Guided Radar-A constant voltage transmission pulse is directed down a stainless steel or hastelloy rod or cable and is reflected at the material surface. The level of the medium is determined by the sensor electronics and is based on the total runtime of the pulse.

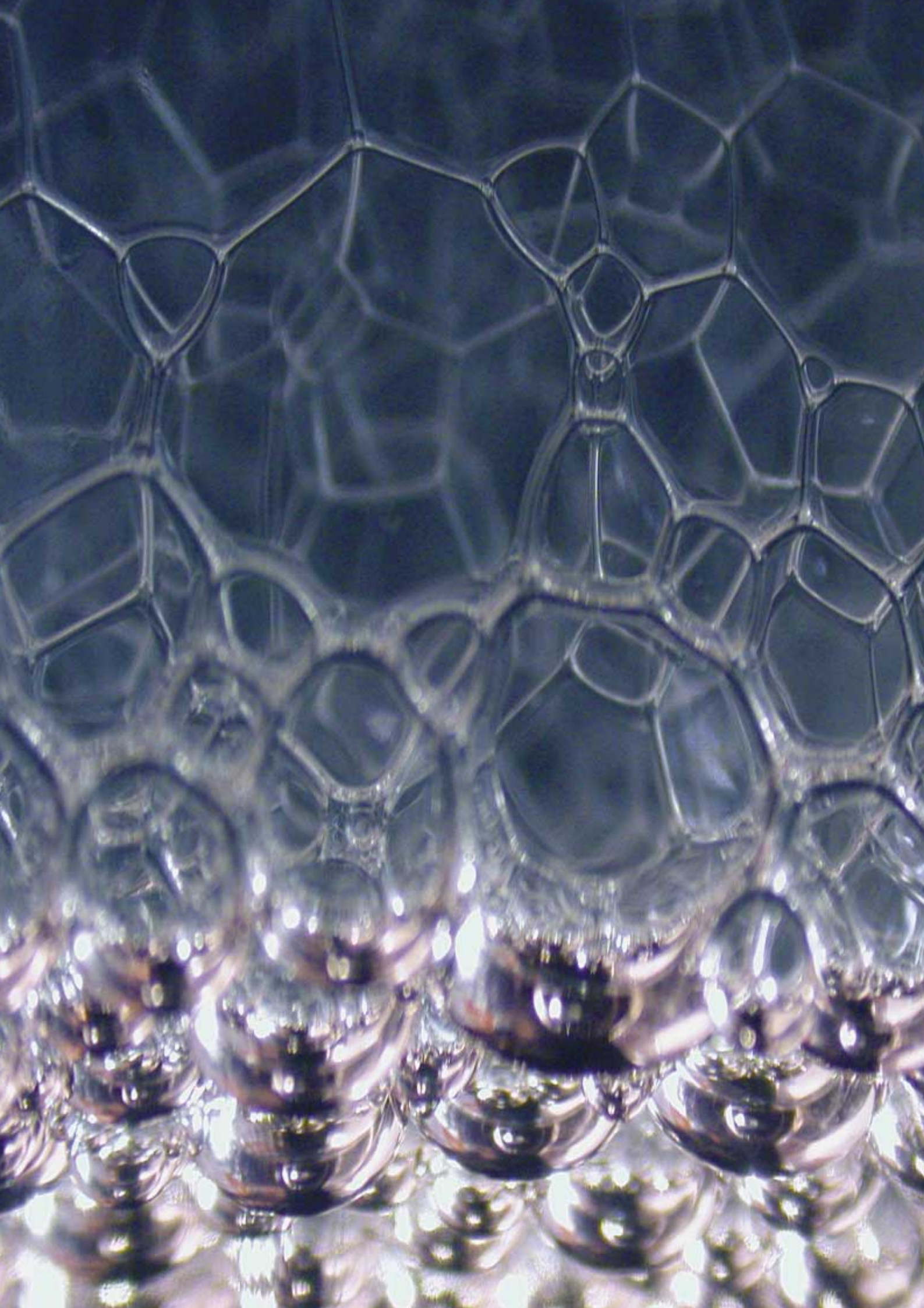


Features:

- For fluids and granular materials
- Measurement range up to 35 m/115 ft
- Rod, cable, and coax versions
- Simple commissioning and calibration
- Pressure, temperature and moving surface independent
- Different electrical interfaces: 2/4-wire, AC/DC, 4–20 mA; HART, PA, FF
- Use in Ex Zone o/Division 1
- Approvals: ATEX, FM, CSA

Applications:

Universal use for continuous level measurement in fluids and granular materials





Barcon



Measuring principle:

Pressure (relative; absolute). The pressure is transmitted through a stainless steel membrane or a ceramic-capacitive sensor cell and converted by temperature-compensating electronics into an electrical output signal proportional to the pressure or level measured.

Features:

- Robust, highly precise sensor cells (piezoresistive or ceramic-capacitive)
- Pressure measurement: Overpressure, negative overpressure, absolute pressure
- Sensing range from 100 mbar (1.5 psi/40 in. H₂O) to 400 bar (6000 psi)
- Wide variety of process connections for all industries
- Housing in aluminium or stainless steel
- Linearity better than 0.2 %
- Electrical interfaces: 4–20 mA, HART, PROFIBUS PA

Applications:

Continuous level measurement in fluids and viscous media. Pressure measurement in fluids and gases in pipelines and closed tanks.



MAGNETIC IMMERSION PROBE

Measuring principle:

Guided float. A magnet built into the floating body triggers a series of reed contacts when rising or falling. The total resistance is converted by an electronic converter into a standard output signal.

Features:

- Wetted parts are medium made of plastic or stainless steel
- Installation without affecting the float body
- Versions available with Ex approval Zone 0

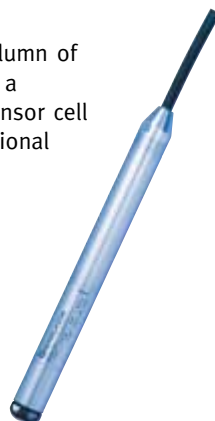
Applications:

Continuous level measurement in fluid media.

LEVEL PROBE

Measuring principle:

Hydrostatic pressure. The pressure of a column of fluid is converted by a ceramic-capacitive sensor cell into a height-proportional level signal.



Features:

- Robust, highly accurate sensor cell
- Sensing range from 100 mbar (1.5 psi/40 in. H₂O) to 20 bar (300 psi)
- Accuracy better than 0.2 %
- 22 mm / 7/8 in probe diameter
- Electrical interfaces: 4 mA - 20 mA
- Optional temperature measurement using PT100
- ATEX (EExia) certification; CSA; FM certification

Applications:

Continuous level measurement in fluids, particularly for water and sewage (e.g. wells, sewage treatment plants, salt water).

CONTROL UNITS FOR LEVEL SENSORS

Product group	TYPE	Electrical output	Control unit	Function	Ex protection
Vibracon	LVL-M1/M2	NAMUR	KFD2-SR2-EX1.W	Transformer isolated barrier	yes
Vibracon	LVL-MC2	NAMUR	KFA6-SR2-EX1.W	Transformer isolated barrier	yes
Conductive probe	LKL-P	24 V DC	KFD2-ER-1.W.LB	Electrode relay	no
		24 V DC	KFD2-ER-EX1.W.LB	Electrode relay	yes
		24 V DC	KFD2-ER-2.W.LB	Electrode relay	no
		230 V AC	KFA6-ER-1.W.LB	Electrode relay	no
Mag. immersion	LML	Magnetic switch	KFD2-SR2-EX1.W	Transformer isolated barrier	yes
Float switch	LFL-N	NAMUR	KFA6-SR2-EX2.W	Transformer isolated barrier	yes
Barcon	LHC-M	4 mA - 20 mA	KFD2-CR-1.300	Power supply	no
Barcon	PPC-M	4 mA - 20 mA	KFD2-STC4-EX1	Power supply	yes
Ultrasonic	LUC-4T	4 mA - 20 mA	KFD2-CRG-1.D	Power supply + 2 limit values	no
		4 mA - 20 mA	KFD2-CRG-EX1.D	Power supply + 2 limit values	yes
		4 mA - 20 mA	DA5-IU-2K-C	Display power supply + 2 limit values	no
		4 mA - 20 mA/HART	KFD2-STC4-1.20	Power supply	no
Pulskon	LTC	4 mA ... 20 mA/HART	KFD2-STC4-EX1	Power supply	yes
Ultrasonic	LUC-M	PA	KFD2-BR-EX1.3PA93	Power supply	yes
		PA	KFD2-BR-1.PA.93	Power supply	no
		FF	KLD2-PR-EX1-IEC	Power supply - FISCO + Entity	yes
		FF	KLD2-PR-EX1-IEC1	Power supply - FISCO	yes
		FF	KLD-PR-1.IEC	Power supply	no
Water probe	LGC	Temp./PT100	KFD2-U22-1	Converter	no
		PT100/4 mA - 20 mA	KFD2-CR-1300	Power supply	no
		Temp./PT100	KFD2-UT2-1	Converter	yes
		PT100/4 mA - 20 mA	KFD2-STC4-EX1	Power supply	yes
Mag. immersion	LMC	4 mA ... 20 mA	KFD2-STC4-EX1	Power supply	yes
		Potentiometer	KFD2-PT2-Ex1	Power supply	yes

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