



Product Review

Level Measuring Instruments



Smart in sensing



WIKA Product Lines

The WIKA program covers the following product lines for various fields of application.

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Ability to Meet any Challenge

As a family-run business acting globally, with over 7,900 highly qualified employees, the WIKA group of companies is a worldwide leader in pressure and temperature measurement. The company also sets the standard in the measurement of level and flow, and in calibration technology. Founded in 1946, WIKA is today a strong and reliable partner for all the requirements of industrial measurement technology, thanks to a broad portfolio of high-precision instruments and comprehensive services.

With manufacturing locations around the globe, WIKA ensures flexibility and the highest delivery performance. Every year, over 50 million quality products, both standard and customer-specific solutions, are delivered in batches of 1 to over 10,000 units. With numerous wholly-owned subsidiaries and partners, WIKA competently and reliably supports its customers worldwide. Our experienced engineers and sales experts are your competent and dependable contacts locally.

Electronic pressure measurement

WIKA offers a complete range of electronic pressure measuring instruments: pressure sensors, pressure switches, pressure transmitters and process transmitters for the measurement of gauge, absolute and differential pressure. Our pressure measuring instruments are available in the measuring ranges 0 ... 0.6 mbar to 0 ... 15,000 bar. These instruments come supplied with standardized current or voltage output signals (also intrinsically safe per ATEX or with flameproof enclosure), interfaces and protocols for various field buses. Whether ceramic thick film, metal thin film or piezo-resistive, WIKA is the leading manufacturer worldwide that develops and produces the full range of today's leading sensor technologies.

Mechatronic pressure measurement

As a result of the almost unlimited options for different combinations of mechanical and electrical connections, an extraordinary range of instrument variants is possible. Various digital and analogue output signals are also available for these measuring instruments.

For our measuring instruments we use latest sensors, tested in automotive applications millions of times over. They work without any kind of mechanical contact, consequently they are wear-resistant, and there's absolutely no influence on the mechanics.

Mechanical pressure measurement

Indicating pressure gauges for gauge, absolute and differential pressure with Bourdon tube, diaphragm or capsule pressure elements have been tested millions of times over. These instruments cover scale ranges from 0 ... 0.5 mbar to 0 ... 7,000 bar and indication accuracies of up to 0.1%.

Diaphragm seals

WIKA diaphragm seals, mounted with pressure gauges, pressure transducers, pressure transmitters etc., are recognized and valued internationally for the most difficult of measuring tasks. The measuring instruments can therefore be used at extreme temperatures (-130 ... +400 °C), and with aggressive, corrosive, heterogeneous, abrasive, highly viscous or toxic media. The optimal diaphragm seal designs, materials and filling media are available for each application.

Electrical temperature measurement

Our range of products includes thermocouples, resistance thermometers (also with on-site display), temperature switches as well as analogue and digital temperature transmitters for all industrial applications. Measuring ranges from -200 ... +1,600 °C are covered.

Mechatronic temperature measurement

As a result of the integration of switch contacts and output signals into our mechanical temperature measuring instruments, we can offer a wide variety of combined instruments. With switch contacts the pointer position triggers a change-over. Electrical output signals are realized via an additional, independent sensor circuit (resistance thermometer or thermocouple).

Mechanical temperature measurement

The mechanical temperature measuring instruments work on the bimetal, expansion or gas actuation principle and cover scale ranges from -200 ... +700 °C. All thermometers are suited for operation in a thermowell if necessary.

Level measurement

WIKA has a comprehensive range of level measuring instruments available for temperatures up to 540 °C / 1000 °F, specific gravity from .35 and pressure ranges up to 5000 PSI. This includes standard instruments and customized products.

Flow measurement

Orifice plates, meter runs, flow nozzles, Venturi tubes and pitot tubes are part of our portfolio of primary flow elements and restriction orifices. The wide range of our products is able to cover the majority of industrial applications. Customized solutions can be developed to meet your special needs.

Calibration technology

WIKA offers a broad product range of calibration instruments for the physical units of measurement for pressure, temperature and electrical measurements. Numerous patents ensure unmatched performance from many of our calibration instruments. The range of services covers the calibration of pressure and temperature measuring instruments in our accredited DKD/DAkkS calibration laboratories and a mobile service to calibrate your instruments on site.

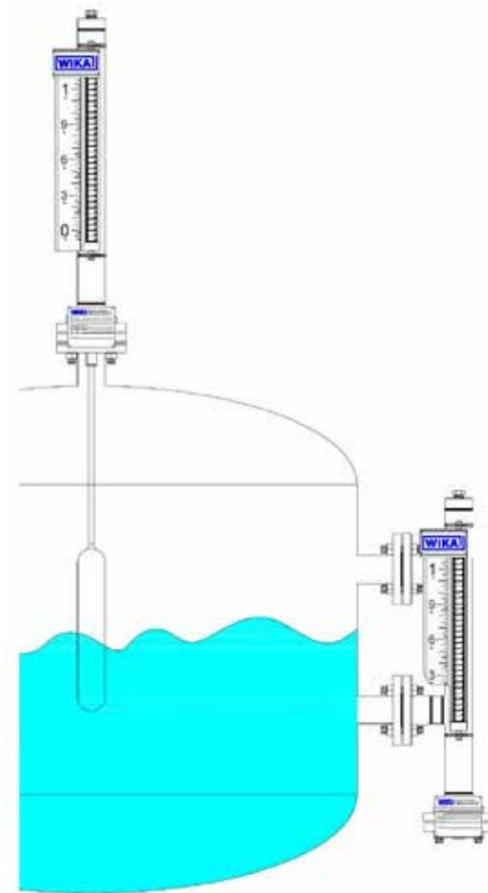
Magnetic Level Indicators

Theory of Operation

WIKA engineers scrutinize each level application to assure the best solution to manage the simplest to the harshest process conditions. Floats are designed specifically for each application, taking into account process variables such as Temperature, Pressure and Specific Gravity.

Our skilled machinists and welders hone chambers out of a non-magnetic material, most commonly Stainless Steel. All steel chambers will be designed and constructed in accordance with ASME B31.1, B31.3, or to meet NACE if required. Bypass level Chambers are built per end user's specifications to fit existing process connections or for new construction.

The Magnetic Level Indicators can mount horizontally with side connections to a tank, or vertically to be mounted on top of or below a tank. Each float includes a magnet assembly. As the tank level increases and decreases, so does the precision float. The magnetic flux of the float affects the bar-graph indicator assembly mounted outside of and isolated from the application conditions. This allows visual indication of process level without the threat of environmental or personnel injury due to glass gauge leakage or failure.



Features

- Continuous level measurement via visual and non-invasive indication
- Individual design and corrosion resistant materials make the products suitable for a broad range of applications
- Temperature range up to 540°C / 1000°F
- Pressure range from vacuum up to 5,000 PSI
- Interface measurement and overall level from Δ density $\geq 100\text{kg/m}^3$
- Easy to install, no extra piping required for most installations
- Visual level indication up to 100 feet / 30 meters
- Indicator glass does not come in contact with process
- Reliable for high temperature, high pressure, corrosive, and cryogenic applications
- All level chambers are manufactured to meet ASME B31.1 or ASME B31.3

Applications

Magnetic Level Indicators are suitable for most industrial and commercial applications including:

- Chemical and petrochemical industries
- Energy and power plant technology
- Feed water heaters or boilers
- Oil and gas industries
- Offshore exploration and drilling
- Refining
- Pipeline compressor applications
- Pulp and paper
- Food and beverage
- Gas plants
- Pharmaceutical

Measurement Via Communicating Chambers

The Magnetic Level Indicator can be built economically for simple atmospheric pressure applications all the way to 5000+ PSI. Temperatures range from Cryogenic to 540 °C / 1000 °F. Standard lengths include up to 20'. Other lengths are available if a higher level gauge is required.

For most applications, Stainless Steel chambers are standard. The bypass allows for mating with Carbon Steel process vessels by including Carbon Steel flanges as an option. We offer a variety of Chamber Materials including Hastelloy C, Titanium, Inconel 625, Polypropylene, CPVC, Kynar, 321SS, 317SS, Alloy20, 347SS, 254MO and more.

The simplest way to build a gauge would be to include NPT or slip-on flange connections. At WIKA, we go out of our way to assure that we reach your level of expectations. The chamber allows for a variety

of flange options, threaded connections, o-let's and more, ranging in size from 1/2" to 8" as standard. Furthermore, gauges can include any vent and drain configuration necessary. Are valves required? Give us your specifications and we'll make sure that your level indicator is ready for installation, right out of the box.

At WIKA, we assure quality engineering and workmanship is included with every magnetic level indicator chamber, but it doesn't stop there. We go to the next level including unmatched technology with our indicator which utilizes the original magnetic bar-graph design: stainless steel flippers rotating on stainless steel pivot points. Any false indications caused by corrosion issues disappear, only to be replaced by confidence in the WIKA magnetic level indicator.

Custom designed for your needs.

The WIKA Magnetic Level Indicator is suitable for a variety of applications. Compared to the common Site Glass Gauge, the WMI Indicator provides better visibility of actual tank levels, requires virtually no maintenance, and increases the safety of any level gauge application.



Closed top, flanged bottom with side process connections



Flanged top and bottom with side process connections



Top and bottom process connections



Top mount



Dual chamber with redundant level transmitters and guided wave radar

Sight Glass Level Indicators

Transparent sight glass level indicator

With this level indicator design, the liquid is encapsulated between two transparent sight glasses.

This allows the liquid to be looked through and thus provides a clear indication of the level. Transparent level indicators are available in double-cover plate design for pressure ranges up to PN100.

They are the most suitable indicators for steam applications above 35 bar, where mica shields have to be used to protect the sight glasses from corrosion by the steam boiler water.

They can also be utilized in a great number of other applications, in particular for observing interface layers or liquid color. A backlighting illuminator can be fitted to the rear to improve visibility.



Operating principle "transparent"

Reflex sight glass level indicator

The principle of the reflex level indicator is based on the reflection of light. In the gas or steam phase, the light is reflected by the prismatic grooves of the sight glass so that bright indication is achieved. In the liquid phase, the light is absorbed, resulting in a dark indication of the level. Reflex level indicators are available in cover box design for pressure ranges up to PN 25 and in cover plate design for pressure ranges up to PN 100. They are the suitable and favorably priced indicators for steam application up to 35 bar and are also suited for numerous applications in the process industry.



Operating principle "reflex"

Dual Gauge Series

Combines the tried-and-trusted bypass with further independent measuring principles

Options

- Guided wave radar (GWR) w/ redundant level transmitter
- Reed measuring chain
- Magnetostrictive level transmitter
- Limit switch (magnetic, tuning fork)
- Through air radar
- Capacitance level transmitters
- The wide range of combination and design possibilities offer a very large application spectrum.

Benefits

- Compact design
- Only 2 process connections required
- Absolute measuring redundancy possible
- Visual level measurement constantly given
- Up to 3 independent measuring principles possible
- Customer-specific versions

Output signals/communication

2- and 4-wire technology, 4 ... 20 mA, HART®, PROFIBUS® PA, FOUNDATION™ Fieldbus/DTM/FDT (PACTware™)



Magnetostrictive Level Transmitters

WIKA models BLM-SF-FM Magnetostrictive liquid level sensors

Level sensors with a magnetostrictive, high-resolution measuring principle are used for continuous level measurement of liquids and are based on determining the position of a magnetic float following the magnetostrictive measuring principle. The sensors are mounted on the outside of a magnetic level indicator. The magnetic field of the float tensions the wire. By measuring the elapsed transit time, it is possible to determine the start point of the torsional stress wave and therefore the float position with a high degree of accuracy.

Features

- FM approved and/or intrinsically safe
- No scheduled maintenance or recalibration
- High accuracy and repeatability
- 4 to 20 mA analog output with HART 7
- SIL2 with manufacturer's declaration

Applications

- Inventory Control
- Process Vessel
- Magnetic level gauges
- Custody transfer



Magnetostrictive level transmitter

Guided Wave Radar

Continuous level measurement and point level detection in liquids and bulk solids

The SITRANS LG series are guided wave radar transmitters for level, level/interface, and volume measurement of liquids and solids. It is unaffected by changes in process conditions, high temperatures and pressures, and steam. The SITRANS LG series comes in four different models, depending on the applications, level of performance, and functionality required including hygienic & corrosives, liquids, solids, and extreme conditions.

Benefits

- High accuracy to +/- 2mm
- Advanced diagnostics available for safety
- Simple menu driven display offers ease of setup
- Large range of options offers reliability in most continuous measurement applications
- Ease of maintenance through module design and field replaceable and adjustable probe options
- Highly immune to buildup
- Measures complete range of probe, which is favorable for small vessels
- Functional safety suitable (SIL2)



Guided wave radar

Reed Chain Transmitters

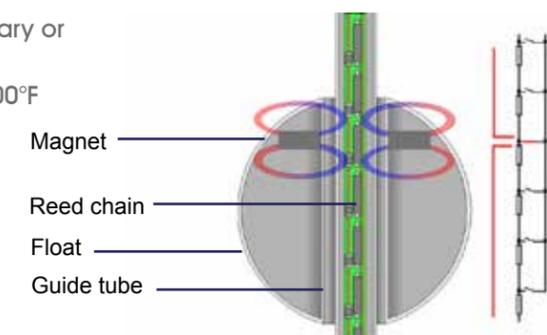
WIKA models WIR, BLR-SBDF, WFR & FLR-SBDF

Reed chain operating principle

A float with a built in magnetic system actuates a small reed contact through the wall of the guide tube. These reed switches form a resistance measuring chain that continuously generates a resistance proportional to the height of the level. [See figure at right]

Features

- FM approved
- Mounted internally with WIKA level chamber or externally with WIKA magnetic level indicator
- Offers a varying accuracy of 5mm to 18mm
- Can be offered with a stainless head for sanitary or 3A approved applications
- Robust design allows for temperature up to 600°F



Float Level Switches

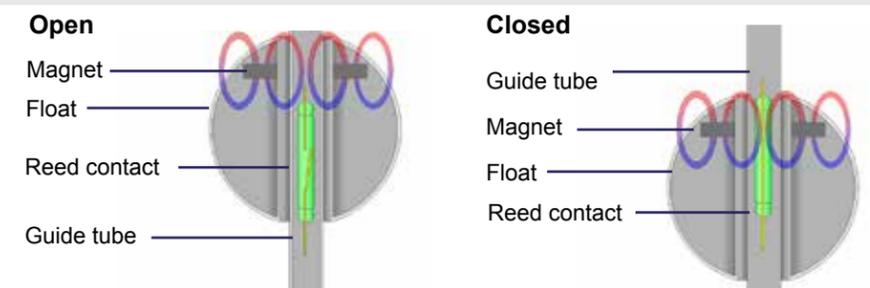
WIKA models WFS

Features

- FM approved
- Mounted in tank or with WIKA level chamber
- Ability to contact up to six switch points
- Can be offered with sanitary connections and stainless housing with 3A approval

Reed contacts operating principle

A float with a built in magnetic system actuates a small reed contact through the wall of the guide tube. Thus the switching operation is without direct contact to the liquid, free of wear and tear, and does not require any power supply. [See figures below]



Level Switches

WIKA WRS level switches are non-invasive alarm switches that mount to the level gauge chamber and are magnetically actuated by the float through the chamber wall. These switches provide a low cost, reliable alarm and control without modification to the chamber.



Optional Scales

In addition to the standard stainless steel scale, other scale options are available. WIKA can provide scales in inches, metric units, percentages (0% - 100%) or custom.

WIKA Indicators can be offered hermetically sealed and made fully from stainless steel. We also can include our InSight material on the flippers and scale to maximize visibility from far distances.

We also can custom manufacture floats for specific applications. Many competitors only use stock ones that are generally longer and wider. It allows us to use 2" pipe vs 2-1/2" saving on space and cost. We also do not array our magnets. Our magnets are North to North facing and there is a central carbon steel plate between them. It focuses the magnetic field for pinpoint accuracy.



Insulation

WIKA offers insulation for high temperatures as well as cryogenic service. Insulation supplied from our factory will reduce contractor costs and help to maintain process temperatures as well as mitigate personnel injury.

Steam tracing

WIKA utilizes threaded steam trace blocks which provides an easy way to connect steam lines to the WIKA chamber.

Electrical Heat tracing

WIKA provides both constant wattage and self-regulating heat tracing.

FASTSM
FULL AUDIT SERVICE TEAM

Documentation

All materials are supported by material traceability reports (MTR's), which are available upon request. Both NACE MR-01-75 and NACE MR0103 are available if required. All bolting, nuts, and fittings are ANSI B31.1/B31.3 compliant. All welding is performed by code certified welders.

WIKA has integrated the FAST team to perform level measurement surveys at your site.



39.6%

of pressure gauges reviewed have failed or are in danger of failing

Based on over 250 audits of processing by WIKA



For 70 years, WIKI has continuously advanced instrumentation for pressure, temperature, level, flow and force measurement. Our broad selection of standard and custom solutions, as well as services, work to support operational safety, productivity and profitability. A global leader in lean manufacturing, WIKI can be your reliable partner anywhere in the world.



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