Product review

Mechatronic

pressure measuring instruments

WIKA

Part of your business

Contents

Ability to meet any challenge

Our knowledge for your success

In the course of the last six decades the name WIKA has become a symbol for sophisticated solutions in the field of pressure and temperature measurement.

Our ever increasing ability is the basis for implementation of innovative technologies in the form of reliable products and efficient system solutions.

We owe our leading position in the world market to the consistent dedication towards premium quality, to which, today, 7,900 employees of the WIKA group of companies are committed. More than 500 experienced sales representatives provide competent and individual advice and support for our customers from the beginning.
Everywhere and anytime.

Certified quality

The WIKA quality assurance management system has been certified in accordance with ISO 9001 since 1994. The quality and safety standards of our company meet the standard systems of several countries.

Made by WIKA

The development and high-tech production in our owned modern production facilities (Germany, Brazil, China, India, Canada, Poland, Switzerland, South Africa and USA) is the best warranty for our flexibility.

Whether SMD automatic insertion machines, CNC automatic machining centres, welding robots, laser welding, sputterers, thermotransfer printing or thin film production - we exploit all possibilities to achieve above-average results. And the end result: More than 50 million quality products are delivered year in, year out, in more than 100 countries. Worldwide, approximately 600 million WIKA measuring instruments are in use.

WIKA product lines

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

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 standardised 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 recognised 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 realised 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 450 °C, specific gravity from 400 kg/m^3 and pressure ranges up to 420 bar. This includes standard instruments and customised products.

Primary 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. Customised 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 and temperature, and for electrical measurands. 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.

For all product lines product reviews are available.

Pressure gauges with electrical output signal

The multi-functional intelliGAUGEs present a cost-effective and, at the same time, reliable solution for nearly all pressure measurement applications. They combine the analogue indication of a mechanical pressure gauge, needing no external power, with the electrical output signal of a pressure transmitter. These hybrid instruments are available with all commonly used electrical signals. The sensor works in a non-contact way, without any influence on the measurement signal. Many of the instruments can be delivered in accordance with ATEX Ex II 2 G ia.

Depending on the pressure gauge, the following electrical output signals are possible:

- 0.5 ... 4.5 V ratiometric
- 4 ... 20 mA, 2-wire
- 4 ... 20 mA, 2-wire with Ex approvals
- 0 ... 20 mA, 3-wire
- 0 ... 10 V, 3-wire

For pressure gauges with nominal sizes 100 and 160 mm, the electrical output signals can also be combined with switch contacts.

PGT01 plug

Bourdon tube, standard version

Nominal size:	40 mm
Scale range:	0 ... 1.6 to 0 ... 10 bar
Accuracy class:	2.5
Ingress protection:	IP 40
Data sheet:	PV 11.01

PGT02

Bourdon tube, standard version, for panel mounting

Nominal size:	40 mm
Scale range:	0 ... 1.6 to 0 ... 10 bar
Accuracy class:	2.5
Ingress protection:	IP 40
Data sheet:	PV 11.02

PGT10

Bourdon tube, plastic case

Nominal size:	40, 50 mm
Scale range:	0 ... 1.6 to 0 ... 400 bar
Accuracy class:	2.5
Ingress protection:	IP 41
Data sheet:	PV 11.05

PGT11

Bourdon tube, stainless steel case

Nominal size:	40, 50 mm
Scale range:	0 ... 1.6 to 0 ... 400 bar
Accuracy class:	2.5
Ingress protection:	IP 41
Data sheet:	PV 11.06

intelliGAUGE®

PGT21

Bourdon tube, stainless steel case

Nominal size:	50, 63 mm
Scale range:	0 ... 1.6 to 0 ... 400 bar
Accuracy class:	1.6/2.5
Ingress protection:	IP 65
Data sheet:	PV 11.03

PGT23.1x0

Bourdon tube, stainless steel version

Nominal size:	100, 160 mm
Scale range:	0 ... 0.6 to 0 ... 1,600 bar
Accuracy class:	1.0
Ingress protection:	IP 54, filled IP 65
Data sheet:	PV 12.04

PGT23.063

Bourdon tube, stainless steel version

Nominal size:	63 mm
Scale range:	0 ... 1 to 0 ... 1,000 bar
Accuracy class:	1.6
Ingress protection:	IP 54, filled IP 65
Data sheet:	PV 12.03

Further information at www.wika.com

Pressure gauges with electrical output signal

PGT43.1x0

Diaphragm, stainless steel version

Nominal size:	100, 160 mm
Scale range:	0 ... 16 mbar to 0 ... 25 bar
Accuracy class:	1.6
Ingress protection:	IP 54, filled IP 65
Data sheet:	PV 14.03

PGT43HP.1x0

Diaphragm, stainless steel version, high overpressure safety

Nominal size:	100, 160 mm
Scale range:	0 ... 16 mbar to 0 ... 40 bar
Accuracy class:	1.6
Ingress protection:	IP 54, filled IP 65
Data sheet:	PV 14.07

DPGT43.1x0

Differential pressure, stainless steel version

Nominal size:	100, 160 mm
Scale range:	0 ... 16 mbar to 0 ... 25 bar
Accuracy class:	1.6
Ingress protection:	IP 54, filled IP 65
Data sheet:	PV 17.05

DPGT43HP.1x0

Differential pressure, stainless steel version, high overpressure safety

Nominal size:	100, 160 mm
Scale range:	0 ... 60 mbar to 0 ... 40 bar
Accuracy class:	1.6
Ingress protection:	IP 54, filled IP 65
Data sheet:	PV 17.13

PGT63HP.1x0

Capsule, stainless steel version

Nominal size:	100, 160 mm
Scale range:	2.5 ... 100 mbar
Accuracy class:	1.6
Ingress protection:	IP 54
Data sheet:	PV 16.06

DPGT40

DELTA-trans with integrated differential pressure and working pressure indication

Nominal size:	100 mm
Scale range:	0 ... 0.25 to 0 ... 10 bar
Accuracy class:	2.5 (optional 1.6)
Ingress protection:	IP 54 (optional IP 65)
Data sheet:	PV 17.19

intelliGAUGE®

APGT43.1x0

Absolute pressure, stainless steel version

Nominal size:	100, 160 mm
Scale range:	0 ... 25 mbar to 0 ... 25 bar abs
Accuracy class:	2.5
Ingress protection:	IP 54, filled IP 65
Data sheet:	PV 15.02

732.15.1x0

Cryo gauge, stainless steel version

Nominal size:	100, 160 mm
Scale range:	0 ... 40 to 0 ... 4,000 mbar
Accuracy class:	1.0 ... 2.5
Ingress protection:	IP 65
Data sheet:	PM 07.29

712.15.1x0

Cryo gauge, Cu-alloy

Nominal size:	100, 160 mm
Scale range:	0 ... 40 to 0 ... 4,000 mbar
Accuracy class:	1.0 ... 2.5
Ingress protection:	IP 65
Data sheet:	PM 07.29

Pressure gauges with switch contacts

Control systems are gaining more and more importance in industrial applications. Consequently, mere pressure indication on the gauge itself is no longer sufficient, rather the measured value must be transferred to the control system via an electrical signal, e.g. by closing or opening of a circuit. WIKA is focusing on its new mechatronic product line in order to satisfy this trend.
The switchGAUGEs are based on a high-quality mechanical WIKA pressure gauge.

Depending on the model the following contacts are built-in:

- Magnetic snap-action contact, e.g. model 821
- Inductive contact model 831
- Electronic contact model 830 E
- Reed contact model 851
- Micro switch model 850
- Transistor output NPN or PNP

All instruments with inductive contacts are certified in accordance with ATEX Ex II 2 GD c TX.

PGS06

Bourdon tube, plastic case

Nominal size:	40, 50 mm
Scale range:	0 ... 1.6 to 0 ... 400 bar
Accuracy class:	2.5
Ingress protection:	IP 41
Data sheet:	PV 21.05

PGS07

Bourdon tube, stainless steel case

Nominal size:	40, 50 mm
Scale range:	0 ... 1.6 to 0 ... 400 bar
Accuracy class:	2.5
Ingress protection:	IP 41
Special feature:	Version with VdS or LPCP approval possible
Data sheet:	PV 21.06

PGS10

Bourdon tube, plastic case, standard version

Nominal size:	40, 50 mm
Scale range:	0 ... 0.6 to 0 ... 400 bar
Accuracy class:	2.5
Ingress protection:	IP 41
Data sheet:	PV 20.01

PGS11

Bourdon tube, standard version, stainless steel case

Nominal size:	40, 50, 63 mm, NS 40 optionally with VdS approval
Scale range:	0 ... 2.5 to 0 ... 400 bar
Accuracy class:	1.6 or 2.5
Ingress protection:	IP 41
Data sheet:	PV 21.01

switchGAUGE

PGS21

Bourdon tube, stainless steel case, fixed contacts

Nominal size:	40, 50, 63 mm
Scale range:	0 ... 2.5 to 0 ... 400 bar
Accuracy class:	1.6 or 2.5
Ingress protection:	IP 65
Special feature:	Version with VdS or LPCP approval possible
Data sheet:	PV 21.02

PGS25

Bourdon tube, stainless steel case

Nominal size:	50, 63 mm
Scale range:	0 ... 1.6 to 0 ... 400 bar
Accuracy class:	2.5
Ingress protection:	IP 65
Data sheet:	PV 21.04

PGS21.1x0

Bourdon tube, industrial series

Nominal size:	100, 160 mm
Scale range:	0 ... 0.6 to 0 ... 600 bar
Accuracy class:	1.0
Ingress protection:	IP 54
Data sheet:	PV 22.01

Further information at www.wika.com

Pressure gauges with switch contacts

PGS23.1x0

Bourdon tube, stainless steel version

Nominal size:	100, 160 mm
Scale range:	0 ... 0.6 to 0 ... 1,600 bar
Accuracy class:	1.0
Ingress protection:	IP 65
Data sheet:	PV 22.02

PGS23.063

Bourdon tube, stainless steel, safety version

Nominal size:	63 mm
Scale range:	0 ... 4 to 0 ... 400 bar
Accuracy class:	1.6
Ingress protection:	IP 54
Data sheet:	PV 22.03

PGS43.1x0

Diaphragm, stainless steel version

Nominal size:	100, 160 mm
Scale range:	0 ... 25 mbar to 0 ... 25 bar
Accuracy class:	1.6
Ingress protection:	IP 54
Data sheet:	PV 24.03

432.x6.1x0 with 8xx

Diaphragm, stainless steel version, high overpressure safety

Nominal size:	100, 160 mm
Scale range:	0 ... 25 mbar to 0 ... 40 bar
Accuracy class:	1.6
Ingress protection:	IP 54
Data sheet:	PV 24.07

switchGAUGE

532.53 with 8xx

Absolute pressure, stainless steel version

Nominal size:	100, 160 mm
Scale range:	0 ... 25 mbar to 0 ... 25 bar abs
Accuracy class:	1.0
Ingress protection:	IP 54
Data sheet:	PV 25.02

632.51 with 8xx

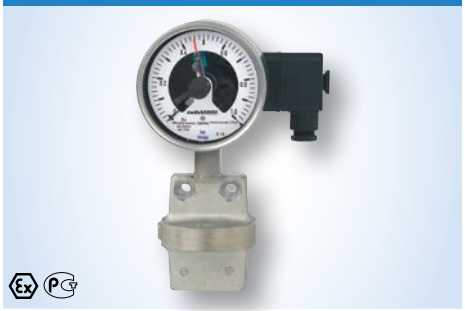
Capsule, stainless steel version

Nominal size:	100, 160 mm
Scale range:	0 ... 2.5 to 0 ... 100 mbar
Accuracy class:	1.6
Ingress protection:	IP 54
Data sheet:	PV 26.06

Differential pressure gauges with switch contacts

DPGS43.1x0

Stainless steel version



Nominal size:	100, 160 mm
Scale range:	0 ... 16 mbar to 0 ... 25 bar
Accuracy class:	1.6
Ingress protection:	IP 54, filled IP 65
Data sheet:	PV 27.05

DPGS43HP.1x0

Stainless steel version, high overpressure safety

Nominal size:	100, 160 mm
Scale range:	0 ... 60 mbar to 0 ... 40 bar
Accuracy class:	1.6
Ingress protection:	IP 54, filled IP 65
Data sheet:	PV 27.13

DPGS40

DELTA-comb, with integrated working pressure indication and micro switch

Nominal size:	100 mm
Scale range:	0 ... 250 mbar to 0 ... 10 bar
Accuracy class:	2.5 (optional 1.6)
Ingress protection:	IP 54 (optional IP 65)
Data sheet:	PV 27.20

DPS40

DELTA-switch, differential pressure switch

Nominal size:	100 mm
Scale range:	0 ... 0.25 to 0 ... 10 bar
Switch point reproducibility:	1.6 %
Ingress protection:	IP 54 (optional IP 65)
Data sheet:	PV 27.21

Accessories and types of contacts

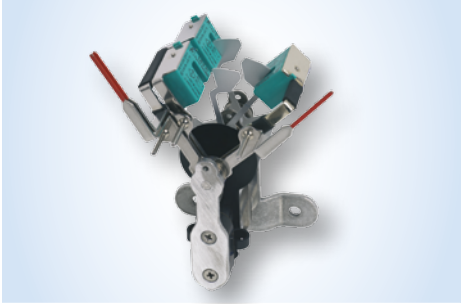
821

Magnetic snap-action contact

- No control unit and no power supply required
- Direct switching up to 250 V, 1 A
- Up to 4 switch contacts per measuring instrument

831

Inductive contact



- Long service life due to non-contact sensor
- Additional model 904.xx control unit required
- With corresponding control unit suitable for use in zone 1/21 (2 GD) hazardous areas
- Insensitive to corrosion
- Up to 3 switch contacts per measuring instrument

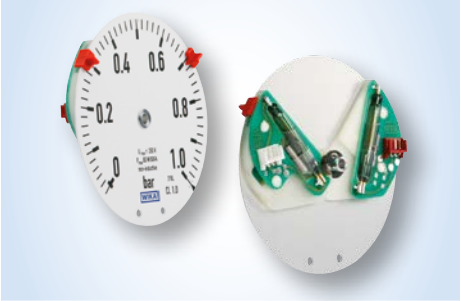
830 E

Electronic contact

- For direct triggering of a programmable logic controller (PLC)
- Long service life due to non-contact sensor
- Insensitive to corrosion
- Up to 3 switch contacts per measuring instrument

851

Reed contact



- No control unit and no power supply required
- Direct switching up to 250 V, 1 A
- Also suitable for direct triggering of a programmable logic controller (PLC)
- Free from wear as without contact
- Up to two change-over contacts per measuring instrument

905.1x

Contact protection relay for contacts model 821

Application:	For optimal contact protection and highest switching reliability
Data sheet:	AC 08.01

904.xx

Control unit for inductive contacts model 831

Application:	For operating gauges with inductive switch contacts
Data sheet:	AC 08.01

Further information at www.wika.com

Mechanical pressure switches

Mechanical pressure switches open or close a circuit, depending on whether the pressure is rising or dropping. Since instruments with such a switching function are used in many industries and applications, WIKA offers a wide portfolio of mechanical pressure switches.
WIKA offers mechanical switches both for simple and general industrial applications and particularly for safety-critical applications. Due to the use of high-quality micro switches, the mechanical pressure switches from WIKA are notable for their high precision and long-term stability. Furthermore the direct switching of electrical loads up to 15 A/220 V is enabled.

PSM01

OEM compact pressure switch

Setting range:	0.2 … 2 to 40 … 400 bar
Ingress protection:	Up to IP 67
Switching power:	2 A, AC/DC 48 V
Switching cycles:	1 x 10^6
Special feature:	Socket wrench mounting possible
Data sheet:	PV 34.81

PSM02

OEM compact pressure switch

Setting range:	0.2 … 2 to 40 … 400 bar
Ingress protection:	Up to IP 67
Switching power:	4 A, AC/DC 250 V
Switching cycles:	2 x 10^6
Special feature:	Settable hysteresis
Data sheet:	PV 34.82

PSM03

OEM compact pressure switch

Setting range:	0.2 … 2 to 40 … 400 bar
Ingress protection:	Up to IP 67
Switching power:	6 A, AC/DC 250 V
Switching cycles:	5 x 10^6
Special feature:	Adjustment knob
Data sheet:	PV 34.83

PXS, PXA

Mini pressure switch, stainless steel version

Setting range:	1 … 2.5 to 50 … 400 bar
Ingress protection:	IP 66
Ignition protection type:	Ex-ia or Ex-d
Switching power:	5 A, AC 220 V
Data sheet:	PV 34.36, PV 34.38 (Ex)

PCS, PCA, PCS-HP, PCA-HP

Compact pressure switch

Setting range:	-1 … -0.2 to 20 … 100 bar 8 … 40 to 100 … 600 bar
Ignition protection type:	Ex-ia or Ex-d
Switch:	1 x SPDT or DPDT
Switching power:	15 A, AC 220 V
Data sheet:	PV 33.30, PV 33.31 (Ex) PV 33.32, PV 33.33 (Ex)

BWX, BAX

Bourdon tube

Measuring range:	-1 … 1.5 to 0 … 600 bar
Ignition protection type:	Ex-ia or Ex-d
Switch:	1 or 2 x SPDT
Switching power:	15 A, AC 220 V
Data sheet:	PV 32.20, PV 32.22

For very low switching power ratings gold-plated contacts can be selected as an option. For use in safety applications WIKA offers switches with SIL 2 certification to IEC 61508. In addition, pressure switches for hazardous areas are available in Ex-ia and Ex-d versions. Optionally WIKA offers factory presetting of the switch points for all pressure switches.

MW1, MA1, MWB, MAB

Diaphragm

Setting range:	-0.2 ... 0 mbar to 0 … 40 bar -100 ... 0 to 0 … 100 mbar
Ignition protection type:	Ex-ia or Ex-d
Switch:	1 or 2 x SPDT
Switching power:	15 A, AC 220 V
Data sheet:	PV 31.10, PV 31.11 (Ex) PV 31.12, PV 31.13 (Ex)

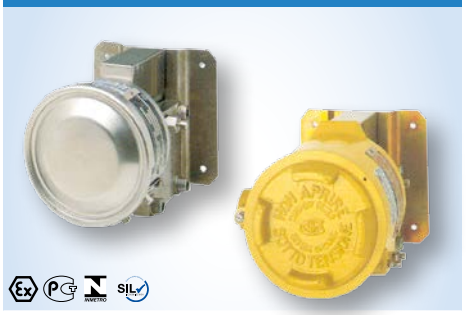
MWH, MAH

Diaphragm piston system, for high pressure ranges

Setting range:	4 … 40 to 30 … 600 bar
Ignition protection type:	Ex-ia or Ex-d
Switch:	1 or 2 x SPDT
Switching power:	15 A, AC 220 V
Data sheet:	PV 31.14, PV 31.15 (Ex)

DW, DA, DW10, DA10

Differential pressure switch



Setting range:	0 … 160 mbar to 0 … 40 bar 0 … 16 to 0 … 60 mbar
Ignition protection type:	Ex-ia or Ex-d
Static pressure:	10, 40, 100 or 160 bar
Switch:	1 or 2 x SPDT
Data sheet:	PV 35.42, PV 35.43 (Ex) PV 35.44, PV 35.45 (Ex)

DC, DE

Differential pressure switch, compact version

Setting range:	0 ... 160 mbar to 0 ... 40 bar
Ignition protection type:	Ex-ia or Ex-d
Static pressure:	40, 100 or 160 bar
Switch:	1 x SPDT or DPDT
Data sheet:	PV 35.40, PV 35.41 (Ex)

APW, APA, APW10, APA10

Absolute pressure switch

Setting range:	0 ... 160 mbar to 0 ... 1 bar 0 ... 25 to 0 ... 60 mbar
Ignition protection type:	Ex-ia or Ex-d
Overpressure safety:	11 bar abs.
Switch:	1 or 2 x SPDT
Data sheet:	SP 08.50, SP 08.51 (Ex) SP 08.52, SP 08.53 (Ex)

Further information at www.wika.com

Possibilities for combination and assembly

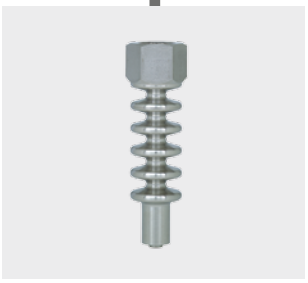
Assembly of the diaphragm seal and measuring instrument may be made via a rigid direct connection or a flexible capillary. The “rigid” assembly is made by a direct threaded connection or by welding the measuring instruments to the diaphragm seal or via an adapter. For high temperatures a cooling element can be fitted between seal and instrument.

Pressure gauges with electrical output signal

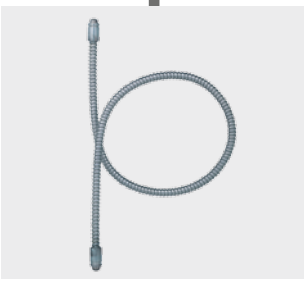
Pressure gauges with switch contacts

Mechanical pressure switches

Direct assembly



Cooling element



Capillary

Diaphragm seals with threaded connection

Diaphragm seals with flange connection

Diaphragm seals with sterile connection

The configuration of the combination of pressure measuring instruments and diaphragm seals depends, among other things, on the application conditions in which the assembly must work.
Please do not hesitate to ask us for advice regarding the selection of suitable diaphragm seals and the best configuration for your specific application.

The right solution

Your design

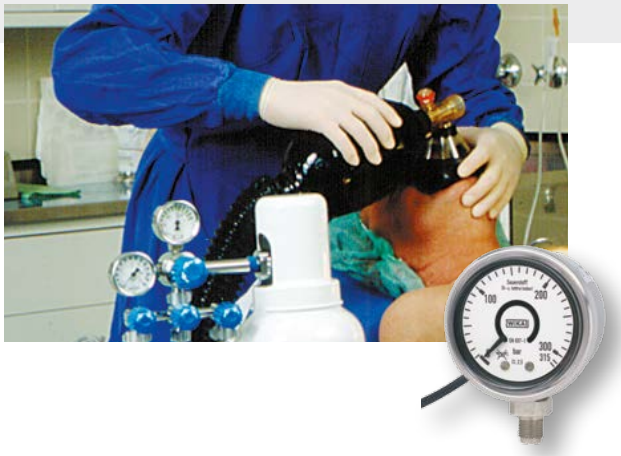
We deliver our measuring instruments just as you require. Cases and dials, scales, cables, sealings and much more can be manufactured with your logo or to the design you wish. We can also provide you with complete technical documentation in your design, with your model designation and corresponding packaging.

Indicating – transmitting – switching

In some cases, not only analogue output signals, such as 4 … 20 mA, are necessary for a PLC, but also additional signals which can switch a load directly. For these applications, intelliGAUGEs (pressure gauges with an integrated transmitter) are available, into which additional switch contacts for the direct switching of higher loads can also be integrated.

Special applications

Example medical engineering
Pressure monitoring in medical engineering covers a multitude of applications; ranging from treating patients with anaesthetic gases or special gas mixtures, to gaseous disinfectants for sterility and hygiene, to the provision of specific pressure conditions for surgery. Here, special instrument designs are used, which are suitable for operation with oxygen.



Innovative partner for OEM applications

With our high-tech production lines and technical experts, WIKA is perfectly equipped for the requirements of the OEM market.
Our standard product range includes products that can be used in numerous ways. Individually tailored advice and proposals, to match solutions to your needs, supplement our extensive offering of products and services.

Transmitters

Hall sensor

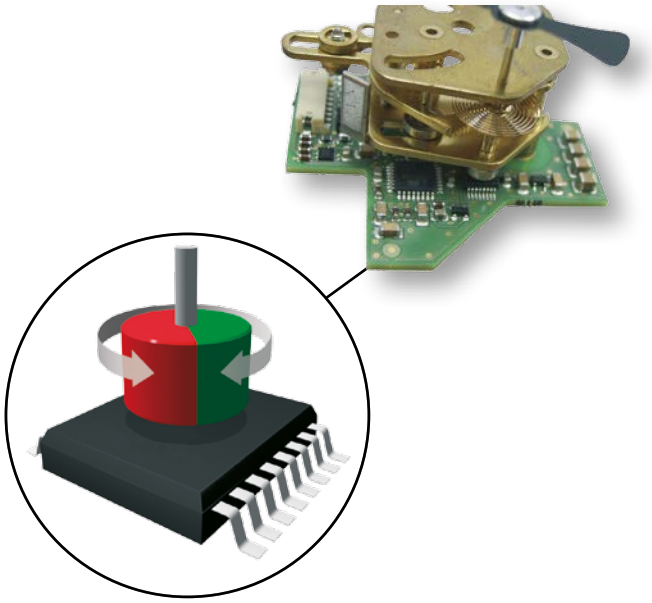
Bourdon tube pressure elements are widely used as measuring elements within pressure measurement technology due to their robustness and simple handling. Under the influence of pressure, these pressure elements deform within their elastic limits.

This motion is converted, via a mechanical movement (toothed gear), into a rotational motion. A magnet on the pointer shaft rotates proportionally to the instrument pointer as a direct linear function of the process pressure. The electronics positioned opposite the magnet register the rotary motion of the magnet.

A magnetic-field-dependent sensor picks up this change on the electronic side, contact-free, wear-free and without influence on the pressure element.

The sensor signal, proportional to the deflection, is converted to an electrical output signal via an amplifier. The span of the electrical output signal corresponds to the measuring span on the dial. With the appropriate transistor switches, switching outputs are also available.

A pressure gauge with an electrical output signal from the intelliGAUGE series combines all the advantages of a local display, without the need for a power supply, with the requirements with the requirements of an electrical signal transfer for a modern measured value registration.



Transmitter

Photo: © austriamicrosystems

Switch contacts

Built into mechanical pressure and temperature gauges - they make or break an electrical control circuit dependent upon the position of the instrument's pointer. They can be used for various monitoring functions, such as, for example, to start, stop or switch processes or even just as a "simple" alarm when a measured value either falls below, or exceeds a preset value. Magnetic snap-action contacts, inductive contacts and electronic contacts, mounted behind the instrument dial, can be set to any point across the entire scale range via the set pointer. The instrument pointer actual value pointer) moves freely across the entire scale range, independent of the setting. The contacts can be adjusted using a removable adjustment key in the window or via a spindle in the front of the instrument. For transistor outputs the switch values can be programmed to meet your requirements.

Magnetic snap-action contact model 821

This universal contact can be used in a whole range of operating conditions. The set pointer has an adjustable permanent magnet attached, giving a snap-action characteristic to the contacts. This strengthens the contact force. This snap-action behaviour provides further protection of the contacts against harmful arcing effects. The signal is made either before or after mating, dependent upon the movement of the instrument pointer.

Magnetic snap-action contact model 821

Proper operation will ensure many years of problem-free operation for the magnetic snap-action contacts. For low switching voltages, to maintain reliability, the current to be switched should not be less than 20 mA. For extremely high as well as for lower loads or switching power ratings, and also for liquid-filled gauges, we recommend the use of contact protection relays.

Reed contact model 851

This universal contact can be used in all operating conditions. It can switch loads up to 230 V/1 A directly, as well as giving a secure contact with extremely low currents. It can also be used as a direct input to PLCs. Its design and its very low mass make it particularly vibration resistant.
The contact is switched by a magnet fixed to the instrument pointer. The switching is therefore made without contact and is thus free from wear. The setting and the visualisation of the switch points is achieved via the red marks situated on the dial. The reed switch is always a change-over contact and can be used as either a normally-closed, a normally-open or a change-over contact. A maximum of 2 change-over contacts are possible per instrument.

Reed contact model 851

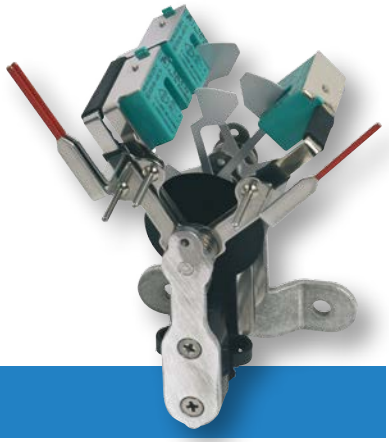
Electronic contact model 830 E

This contact can switch small loads, such as those usual in programmable logic controllers (PLC), directly. The “inductive contact with integrated amplifier” is factory-fitted to the measuring instrument. The usual advantages of inductive contacts, such as fail-safe contact operation, no wear due to proximity contact operation as well as virtually no effect on the measuring system, also apply here.
No additional control unit is required.

Electronic contact model 830 E

Inductive contact model 831

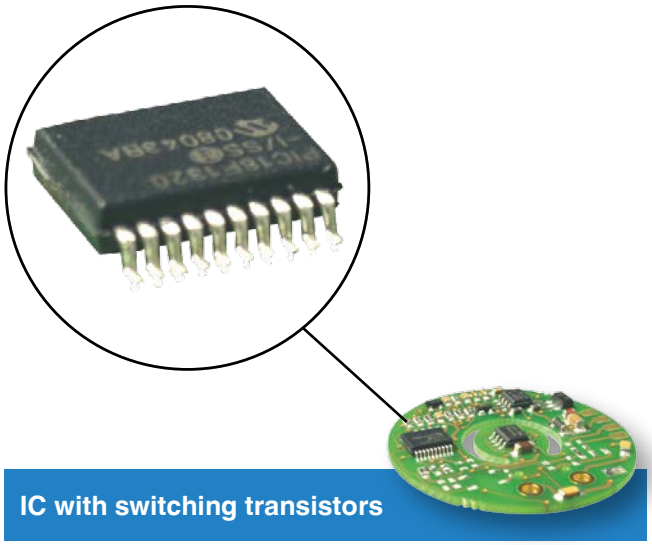
In hazardous areas, only measuring instruments with inductive contacts for zone 1 and 2 hazardous areas may be used. Outside of Ex areas, these contacts are primarily used where particularly safe switching at higher switching rates is important. Typical application areas are those in chemical, petrochemical and nuclear plants.
The inductive contact works in a non-contact way. Essentially it consists of the control head (initiator), attached to the set pointer, with its fully-potted electronics and the mechanical assembly with the moving flag. The flag is moved by the instrument pointer. The control head is supplied with a DC voltage. When the flag enters the slot in the control head this then increases its internal resistance. The subsequent change in the current acts as the input signal for switching amplifiers of the control unit. The non-contact “contact system” produces no wear within the electrical system, and so leads to a longer service life.



Inductive contact model 831

Transistor output NPN or PNP

Transistors are electronic semiconductor elements, which are used to switch on, switch off or amplify electrical signals, without any moving, mechanical components. In principle, it is an electrical resistance, controlled through either a current or a voltage. Either an NPN or a PNP bipolar transistor is used. In both designs a basic current IB controls a stronger current IC in load circuit (collector circuit). The transistors switch a maximum IC of 100 mA without any wear. They switch without any contact so that oxidation or mechanical wear cannot occur. Thus reliable switching is ensured in the long term.



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