Pressure
Temperature
Level
Calibration

Chemical and petrochemical industries

WIKA

Part of your business

About us

Alexander Wiegand,
Chairman and CEO WIKA

Over the past 60 years WIKA Alexander Wiegand SE & Co. KG has built a reputation for innovation and quality in the manufacture and service of pressure and temperature measuring instruments. On the basis of steadily growing efficiency, innovative technologies are applied when developing new products and system solutions. The reliability of the products and the readiness to face all challenges of the market have been the key factors for WIKA to achieve a leading position in the global market.

Within the WIKA Group more than 7,000 employees are dedicated to maintaining and improving technology in pressure and temperature measurement. Over 500 experienced employees of the sales department consult the customers and users competently on a partnership basis.

More than 300 engineers and technicians are searching continually on behalf of WIKA to provide innovative product solutions, improved materials and profitable production methods. In close co-operation with renowned universities, institutes and industrial companies, solutions for specific applications are developed and designed.

Contents

WIKA – Your partner in the chemical and petrochemical industries

The chemical industry makes extremely high demands on all instruments used within the process. They are subject to strict international guidelines like the PED and ATEX. Electronic and mechanical measuring instruments for pressure, temperature and level are used for general applications as well as in potentially explosive areas, and must operate as satisfactorily in aggressive environments as in non-aggressive environments.

You will find a large selection of pressure and temperature and level measuring instruments to suit your specific requirements. Individually tailored advice and proposals, to match solutions to your needs, supplement our extensive offering of products and services. Our expertise and dependability, in addition to our worldwide sales and service network, has made WIKA a global contracting partner with many well-known names in the international chemical and petrochemical industries.

Certificates and approvals

Given the increasing demands in terms of quality and product safety of chemical products, certified measuring instruments for pressure, temperature and level contribute considerably to the safety of the production processes. Therefore WIKA offers a wide range of approvals and certificates.

Pressure equipment directive 97/23/EC

The European pressure equipment directive 97/23/EC has to be applied to almost all mechanical and electrical pressure measuring instruments, throughout the European Union. WIKA is certified by TUV South Germany for the 'conformity appraisal procedure', module H (comprehensive quality control).

Materials

Stainless steels are the standard material in chemical process technology. The most commonly used materials worldwide are 316L and 1.4404/1.4435.

For high-pressure measurement, high-strength stainless steel is used, while for pressure measurements at elevated temperatures, temperature resistant stainless steel is needed. For chemical processes involving highly-aggressive media – in combination with diaphragm seals/gauges with diaphragm or capsule for pressure measurement, or thermowells for temperature measurement – an extensive range of chemically-resistant materials is available. In these cases, all wetted parts are manufactured from the respective special material.

Diaphragm seals are manufactured from 316L stainless steel (1.4404/1.4435) as a standard. If diaphragm seals are required with wetted parts in special metals, then these are “metallically bonded” using one of WIKA’s patented procedures. The junction between the diaphragm and the diaphragm seal body is designed to be diffusion-tight, vacuum protected and tear-resistant, and also resistant to all extremes of temperature to which the diaphragm seal might be exposed.

Material	Code designation
Stainless steel	Mat.-no. 316L, 1.4571, 1.4404, 1.4435, 1.4541, 1.4542, 1.4539
Duplex 2205	Mat. no. 1.4462
Hastelloy B3	Mat. no. 2.4600
Hastelloy C22	Mat. no. 2.4602
Hastelloy C276	Mat. no. 2.4819
Incoloy alloy 825	Mat. no. 2.4858
Inconel alloy 718	Mat. no. 2.4816
Duratherm	NiCo
Monel alloy 400	Mat. no. 2.4360
Nickel	Mat. no. 2.4066/2.4068
Gold	Au
Platinum	Pt
Tantalum	Ta
Titanium	Mat. no. 3.7035
Zirconium	Zr
Ceramic	wikaramic®
Polytetrafluorethylene	PTFE
Perfluoralkoxy	PFA
Copolymer of ethene and chlortrifluorethylene	ECTFE (Halar®)

With pressure and differential pressure measuring instruments using diaphragm elements, wetted parts can be manufactured in the widest range of special materials. Measuring systems for Bourdon tube instruments are manufactured in 316L stainless steel (1.4404) as standard. In addition WIKA offers materials per EN ISO 15156-3/NACE MR 0175 and NACE MR 0103 for use in the petrochemical industry.

All pressure-bearing materials used can be supplied with a 3.1 traceability certificate.

Use in explosion-protected areas

Explosion protection is a section of technology, which deals with the protection from the occurrence of explosions and with their effects. It serves the avoidance of damage to persons or objects caused by technical products, plants and other equipment. Explosion protection comprises technical solutions, such as ignition protection types, and legal provisions, such as the ATEX directives of the European Union.

Zone classification

The operator/employer is obligated, independent of the size of his business, to evaluate all areas of his business according to potentially explosive zones and state this in the explosion protection document. The zones are categorised according to the probability of the occurrence of a potentially explosive atmosphere.

Conditions in the hazardous area

Material groups	Temporary behaviour of the flammable material in the hazardous area	Classification of hazardous areas						
		IEC	EPL*	EU directive 94/9/EC (ATEX)			US NEC 500 Canada CEC	US NEC 505
				Zone	Group	Category		
Gases, vapours	Are present continuously, for long periods or frequently	Zone 0	Ga	Zone 0	II	1 G	Class I Division 1	Class I Zone 0
	Occur occasionally	Zone 1	Gb	Zone 1	II	2 G		Class I Zone 1
	Probably do not occur at all, but if they do, only rarely or for short periods	Zone 2	Gc	Zone 2	II	3 G	Class I Division 2	Class I Zone 2
Dust	Are present continuously, for long periods or frequently	Zone 20	Da	Zone 20	II	1 D	Class II Division 1	--
	Occur occasionally	Zone 21	Db	Zone 21	II	2 D		--
	Probably do not occur at all, due to suspended dust, but if they do, only rarely or for short periods	Zone 22	Dc	Zone 22	II	3 D	Class II Division 2	--
Methane, dust	Hazardous areas	--	Ma	--	I	M1	--	--
	Potentially hazardous areas	--	Mb	--	I	M2	--	--
Fibres/ flyings		--		--	--	--	Class III	--

*) Equipment protection level per IEC 2007 and CENELEC 2009

ATEX product directive 94/9/EC

The name ATEX (from the French “Atmosphère explosible”) is used as a synonym for the two European Community directives covering the subject of explosion protection; the product directive 94/9/EC and the operating directive 1999/92/EC. This directive also includes non-electrical instruments for the first time, since purely mechanical pressure gauges can also present an ignition risk through inadmissibly high heating. The purpose of the directive is to protect people who work within hazardous areas. Appendix II of the directive contains the fundamental health and safety requirements to be considered by the manufacturer and to be verified by appropriate conformity assessment procedures.

Equipment groups

- Equipment group I (equipment for use in above-ground or underground areas of mines)
- Equipment group II (equipment for use within all other areas)

Category

- Category 1 (very high safety)
- Category 2 (high safety)
- Category 3 (safety in normal operation)

Instruments of a certain category may be used only for certain zones. E.g. instruments of category 2 only for zones 1 and 2 (with gas or vapours) and/or for zones 21 and 22 (for dust).

Ignition protection types (examples)

Ignition protection type	Marking	Definition	IEC	ATEX approval	FM/UL
Flameproof enclosure	Ex d	Propagation of an explosion to the outside is prevented.	IEC 60079-1	EN 60079-1	FM 3615 UL 1203
Intrinsic safety	Ex i	Limitation of the energy of sparks and temperatures	IEC 60079-11	EN 60079-11	FM 3610 UL 913
Ignition protection type “n”	Ex n	Different protection principles only for Zone II/Div. 2	IEC 60079-15	EN 60079-15	FM 3611 ANSI/ISA 12.12.01

Explosion group

Gases and vapours are divided into three explosion groups (IIA, IIB and IIC) according to their individual inflammability.

So the degree of risk increases from explosion group IIA to IIC. (The higher explosion group, e.g. IIC, in each case covers the lower ones, e.g. IIA and IIB).

Groups

IEC/ATEX/NEC 505		NEC 500 /CEC	
Gas groups			
Group I			
I	Methane	- -*	
Group II		**Class I**	
IIA	Propane	Propane	Class I, group D
IIB	Ethylene	Ethylene	Class I, group C
IIB + H2	Ethylene + hydrogen	Acetylene	Class I, group B
IIC	Acetylene Hydrogen	Hydrogen	Class I, group A
Dust groups			
Group III**		**Class II/Class III**	
IIIA	Flammable flakes	Fibres, flyings	Class III
IIIB	Non-conducting dust	Non-carbon-containing dust	Class II, group G
IIIC	Conducting dust	Carbon-containing dust	Class II, group F
		Metal dust	Class II, group E

* does not fall under the scope of NEC or CEC

** per IEC 2007 and CENELEC 2009

Temperature classes

In order to make the project engineering of installations easier, six temperature classes (T1 to T6) for permissible surface temperatures were specified. Depending on their individual ignition temperatures, inflammable gases and vapours are assigned a particular temperature class. A higher temperature class also covers lower temperature classes.

Temperature classes and maximum surface temperatures

Class	T1	T2	T2A, T2B, T2C, T2D	T3	T3A,T3B, T3C	T4	T4A	T5	T6
IEC/ATEX/NEC 505	450 °C	300 °C	--	200 °C	--	135 °C	--	100 °C	85 °C
NEC 500/CEC	450 °C	300 °C	280 °C 260 °C 230 °C 215 °C	200 °C	180 °C 165 °C 160 °C	135 °C	120 °C	100 °C	85 °C

Functional safety

Using components of excellent quality is a prerequisite for preventing risks to persons, the environment and property. Reliable components in control and instrumentation technology (C&I) safeguard critical processes in the chemical and petrochemical industries. In this connection one is generally speaking about circuit breakers, safety circuits or safety functions.
The required safety-relevant characteristics of the components used are currently specified through, for example, the IEC 61508 (functional safety - general) and IEC 61511 (functional safety in the process industry) standards. Here, amongst other things, the term Safety Integrity Level (SIL) is defined. The failure rates of a component are determined by the manufacturer and made available to the user. An essential tool in this context is FMEDA (Failure Modes, Effects and Diagnostic Analysis). With this, the statistical values of individual components and their functional correlations are jointly assessed. The results are quantified data on the probability of failure and the reliability of the components.

Safety-related values

IEC 61508 applies to all applications of electronic systems whose malfunction could have a massive influence on the safety of persons, the environment and equipment. The safety-related requirement is calculated in accordance with the probability of occurrence of a damaging event and its potential impact. The higher the expected extent of the damage and its probability of occurrence, the higher the classification from SIL 1 to SIL 4 is set.

This classification is made by the plant operator, using a 'risk graph'. In accordance with IEC 61508, the entire safety circuit, i.e. all components used in the circuit (sensors, logic processors, actuators) must be considered. In order that such a calculation and risk assessment can be carried out, a knowledge of the construction of each individual component is needed.

Suitable for use in Application
SIL
IEC 61508 / IEC 61511

The following instruments are classified in accordance with IEC 61508/IEC 61511:

- Pressure transmitter IS-20
- Process transmitter IPT
- Temperature transmitter T32
- Pressure gauge with switch contact, PGS23

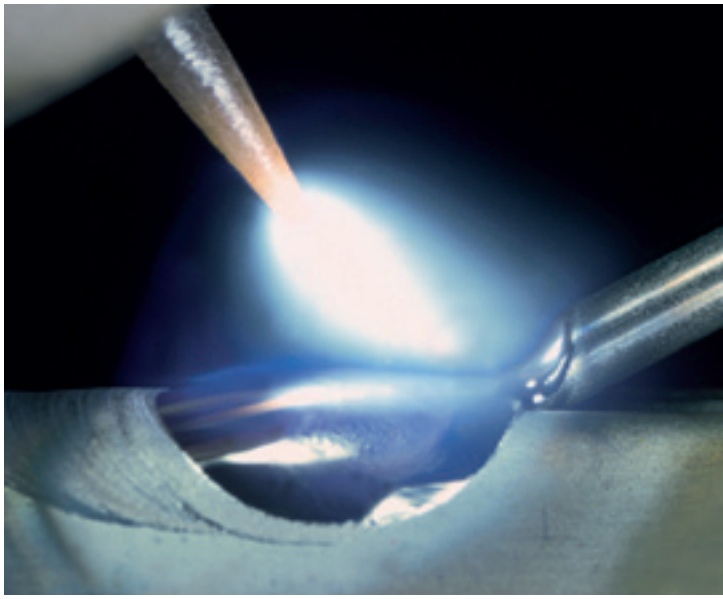
Model T32

Model IPT-10

For safety, the best weld

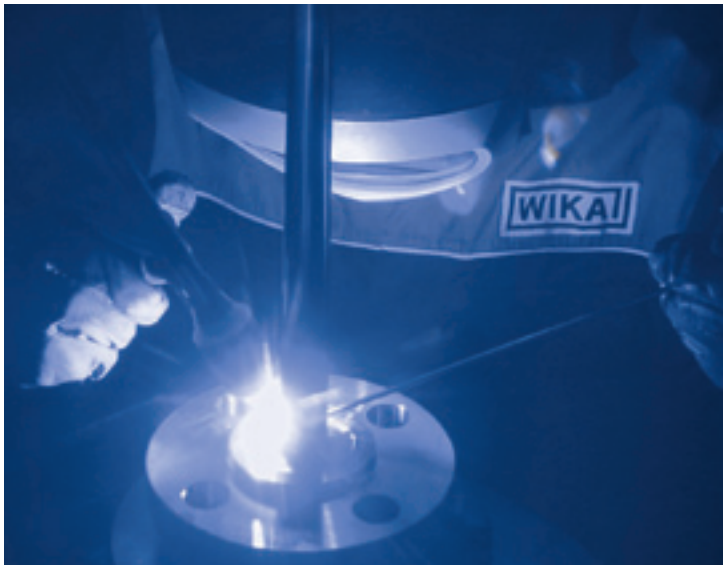
Pressure and temperature measuring instruments

WIKA is certified as a manufacturer of pressure and temperature measuring instruments in accordance with the AD-2000/HP0 requirements, DIN EN 729-2 and DIN 2303. Apart from standard TIG hand-welding, we also employ TIG robots, resistance welding and laser welding. For pressure-bearing welded seams, over 30 welding procedure tests are available. Austenitic stainless steel as well as nickel-based alloys (e.g. Monel 400) are used.
The testing methods employed by WIKA include helium leak tests, liquid penetrant inspections and in-house ultrasonic testing. Test personnel are trained in accordance with DIN EN 473 stage 2. Positive material identification (PMI) is achieved through optical emission spectroscopy. Further investigations (e.g. X-ray inspection or PMI testing using X-ray fluorescence techniques) are carried out by accredited external laboratories in accordance with DIN EN 45001.



Thermowells

Internationally, the most common welded joint between flanges and thermowells is the full penetration weld of the flange (full penetration welding, FPW). As well as fulfilling the highest requirements of stability this welding method also meets all requirements of the American flange standard ASME B16.5 for the use of blind flanges.
The WIKA thermowell centre in Klingenberg manufactures thermowells to the widest range of welding procedure tests in accordance with ASME Sec. IX for full and partial penetration. The welding procedure tests encompass component dimensions from 5 mm and include all common flange widths. Furthermore, for all common welded joints on fabricated or solid-machined standard thermowells, welding procedure tests are available according to AD2000, HP2/1 (EN 288-3/ ISO 15614/1).



Thermowells

Increased safety with high process loads

Calculations for establishing the stability of thermowells make it possible to minimise or eliminate the possibility of damage to the thermowells even before the plants where they are used are commissioned. The calculations can be made in accordance with ASME PTC 19.3 or Dittrich/Klotter. The following process parameters are required to complete the calculations:

- Flow rate in m/s
- Density of medium in kg/m^3
- Temperature in °C
- Pressure in bar

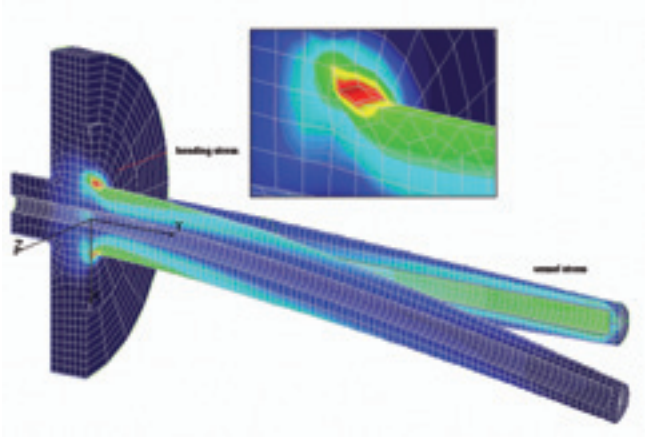
Independently of the thermowells' method of manufacture, the results of the thermowell strength calculation are always divided into two parts: Firstly, the dynamic view on vibration failures through operation at resonance and secondly, the static load through external pressure.

Non-destructive tests NDE/NDT

The most common non-destructive tests for thermowells are the pressure test, the liquid penetrant inspection and also the PMI test.

Hydrostatic pressure test

This test is carried out using external pressure on flanged thermowells, and using an internal pressure test with welded or threaded thermowells. The level of the test pressure is determined according to the construction of the thermowell and the flange used. Common pressures used are between 60 and 500 bar (1.5 times the flange pressure rating) for between 3 and 15 minutes.



Liquid penetrant inspection (LPI)

With this test in particular, the weld seams are examined for defects such as cracks or pores. In this process the thermowell is wetted with a low viscosity indicator, which infiltrates any possible cracks which exist through the capillary effect. After the thermowell surface has been cleaned thoroughly, defects are made visible under UV light or by a developer.

Positive material identification test (PMI)

The PMI (positive material identification) test proves which alloy constituents exist in the material. There are various common test procedures. With spectrographic analysis an arc is generated between the thermowell surface and the test equipment, and the spectrum of this arc enables the alloy's elements to be identified – both qualitatively and quantitatively. This process does leave a characteristic burn mark on the workpiece. A test procedure which doesn't damage the surface is X-ray analysis; during the X-ray the atoms of the thermowell material are energised until they radiate themselves. The wavelength and intensity of the emitted radiation is again a measure of the alloy's constituent elements and their concentrations.

Electrical output signals

Bus technology

The general trend towards using digital bus systems instead of the conventional field instruments with an analogue output signal is being seen in the chemical industry as well. Advantages:

- Higher accuracy
- Reduced wiring requirements
- Possibility of parameterisation
- Extended diagnostics of field instruments
- Improved process monitoring
- Reliable digital signal transmission

To plant managers this means a cost reduction and an increased availability of their plants.

Standard output signals

Based on the variety of output signals available our measuring instruments can be easily integrated into any plant concept. Among others, the following standard output signals are available:

- Analogue (e.g. 4 … 20 mA, 0 … 10 V)
- Analogue 4 ... 20 mA, version per ATEX Ex II 2G Ex ia IIC T4/T5/T6
- 4 … 20 mA with a superimposed HART® protocol
- PROFIBUS-PA
- FOUNDATION Fieldbus

Interoperability

Internal and external tests certify the compatibility of our transmitters with almost all open software and hardware tools.

Adaptation to the process with diaphragm seals

By using diaphragm seals, pressure measuring instruments can be adapted to even the harshest of conditions within process industries. A diaphragm made of the appropriate material separates the medium to be measured from the measuring instrument.
The internal space between the diaphragm and the pressure measuring instrument is completely filled with a system fill fluid. The process pressure is transmitted by the elastic diaphragm into the fluid and from there to the measuring instrument. The instrument is connected to the diaphragm seal via a cooling element, a capillary or directly. By connecting the measuring instrument via diaphragm seals even the most difficult measuring requirements can be met:

- Use at extreme temperatures or temperature fluctuations
- Measurements in aggressive, corrosive, highly viscous, heterogeneous, crystallising media
- Process connection which is either free of dead spaces or where dead spaces are reduced
- Hygienic connection to the process
- Integration of pressure and temperature measurement into one measuring point
- Additional safety barrier for explosive or toxic media

Differential pressure transmitter DPT-10 with capillaries and flange-type diaphragm seals

System fill fluids

WIKA offers a broad range of system fill fluids between the diaphragm seal and the measuring instrument for a wide variety of applications.

For each application specially selected fluids are available.

Extract from the most frequently used system fill fluids in chemical process technology

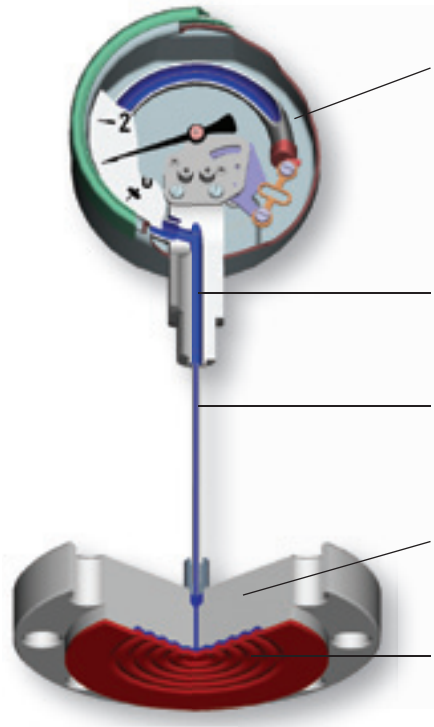
Name	WIKA code No. KN	Permissible medium temperature[1]		S.G. at temperature		Viscosity at temperature		Notes
		pabs < 1 bar [°C]	pabs ≥ 1 bar [°C]	[g/cm³]	[°C]	[m²/s10⁻⁶]	[°C]	
Silicone oil	KN 2	–	-20 … +200	0.96	+25	50	+25	Standard
Silicone oil	KN 17	-90 … +80	-90 … +180	0.914	+20	4	+20	
High-temperature oil	KN 32	-10 … +200	-20 … +400	1.07	+20	57	+20	
Halocarbon	KN 21	-40 … +80	-40 … +175 (max. 160 bar)	1.968	+20	14	+20	for oxygen and chlorine, BAM[3] tested
Glycerine	KN 7	–	-20[2] … +230	1.26	+20	1110	+20	food and beverage
Neobee® M-20	KN 59	-20 … +160	-20 … +200	0.92	+20	10.1	+25	food and beverage

1) Under reference conditions
2) Vacuum service necessary
3) Federal institute for material research and testing

Diaphragm seals

Diaphragm seal, standard version

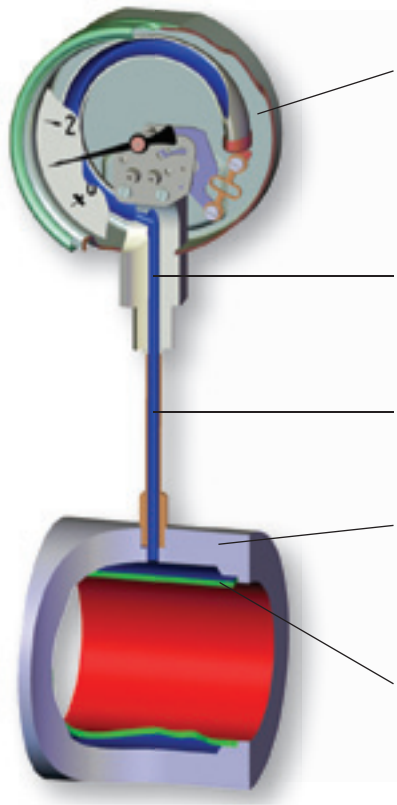
Standard diaphragm seals are mounted to existing fittings or flanges. Usually the fittings are T-pieces which are integrated into a pipeline, or welding sockets which are welded to a pipeline, the process reactor or a tank. This diaphragm seal type offers the advantage that the “contact surface” between pressure medium and diaphragm is relatively large, thus ensuring accurate pressure measurement, especially for very low pressures (< 600 mbar). The fact that they can be easily dismounted, e.g. for cleaning or calibration purposes, is a further advantage.



In-line diaphragm seal

The in-line diaphragm seal is perfectly suited for use with flowing media. With the seal being completely integrated into the process line, measurements are not affected by any turbulence, corners, dead spaces or other obstructions in the flow direction. The in-line diaphragm seal is installed directly into the pipeline; this makes the designing of special measuring point connections unnecessary.

In comparison with other designs with grooves or non-circular geometry, in-line diaphragm seals with their perfectly circular cylindrical form are self-cleaning. Different nominal widths allow the in-line diaphragm seals to be adapted to any pipeline cross-section.



Electronic pressure measuring instruments

WIKA offers a complete range of electronic pressure measuring instruments for the measurement of gauge pressure, absolute pressure, differential pressure, level and flow. We offer solutions for measuring ranges from 0 ... 1 mbar to 0 ... 6,000 bar with accuracies from 0.075 %.

When connected to diaphragm seals these instruments can also be used with both highly-aggressive and high-temperature media. With their 'intrinsically safe' and 'explosion proof enclosure' types of protection the electronic pressure measuring instruments from WIKA are ideally suited for permanent use in hazardous environments (zone 0). They can measure the pressure of, e.g., gases, vapours and dusts.
A wide range of configuration options at the instrument or via software enable the instrument to be easily set-up for the particular measuring task, e.g. input of the tank geometry or the density of the medium. Whether standard instrument or customer-specific version – for every application the optimal solution.

DPT-10

Differential pressure transmitter, intrinsically safe or with flameproof enclosure

Non-linearity (% of span): ≤ 0.075 ... 0.15
Measuring range: 0 ... 10 mbar to 0 ... 40 bar
Special feature:
- Freely scaleable measuring ranges (turndown to 30 : 1)
- Static load 160 bar, optionally 420 bar
- Case from plastic, aluminium or stainless steel
- With integrated display and mounting bracket for wall/pipe mounting (optional)

Data sheet: PE 86.21

IPT-10

Process pressure transmitter, intrinsically safe or with flameproof enclosure

Non-linearity (% of span): ≤ 0.075 ... 0.1
Measuring range:
- 0 ... 0.1 to 0 ... 4,000 bar
- -1 ... 0 to -1 ... +60 bar
- 0 ... 0.1 to 0 ... 60 bar absolute

Special feature:
- Freely scaleable measuring ranges (turndown to 30 : 1)
- Case from plastic, aluminium or stainless steel
- Flush process connection (optional)
- With integrated display and mounting bracket for wall/pipe mounting (optional)

Data sheet: PE 86.11

UT-10, IUT-10

Universal pressure transmitter, standard version or intrinsically safe

Non-linearity (% of span): ≤ 0.1
Measuring range:
- 0 ... 0.4 to 0 ... 4,000 bar
- -1 ... 0 to -1 ... +15 bar
- 0 ... 0.4 to 0 ... 16 bar absolute

Special feature:
- Freely scaleable measuring ranges (turndown to 20 : 1)
- Case from plastic or aluminium
- Flush process connection (optional)

Data sheet: PE 86.01 (UT-10), PE 86.02 (IUT-10)

IL-10

Submersible pressure transmitter, intrinsically safe

Accuracy (± % of span): 0.25 or 0.5
Measuring range: 0 … 0.1 to 0 … 25 bar relative
Special feature:
- Hastelloy design (optional)
- Highly resistive FEP cable (optional)

Data sheet: PE 81.23

IS-20-S, IS-20-F, IS-20-H

Pressure transmitter, intrinsically safe

Accuracy (% of span): ≤ 0.5
Measuring range:
- 0 … 0.1 to 0 … 6,000 bar relative
- 0 … 0.25 to 0 … 25 bar absolute

Special feature:
- Further worldwide Ex approvals
- High-pressure version (optional)
- Flush process connection (optional)
- Suitable for SIL 2 per IEC 61508/IEC 61511

Data sheet: PE 81.50, PE 81.51, PE 81.52 (GL)

N-10

Pressure transmitter, non-incendive

Accuracy (% of span): ≤ 0.5
Measuring range:
- 0 … 0.1 to 0 … 1,000 bar relative
- 0 … 0.25 to 0 … 25 bar absolute

Special feature:
- Low-power version
- Flush process connection (optional)

Data sheet: PE 81.26

E-10

Pressure transmitter, explosion proof

Accuracy (% of span): ≤ 0.5
Measuring range:
- 0 … 0.4 to 0 … 1,000 bar relative
- 0 ... 0.4 to 0 ... 16 bar absolute

Special feature:
- Low-power version
- For acid gas applications (NACE)
- Flush process connection (optional)

Data sheet: PE 81.27

Mechatronic pressure measuring instruments

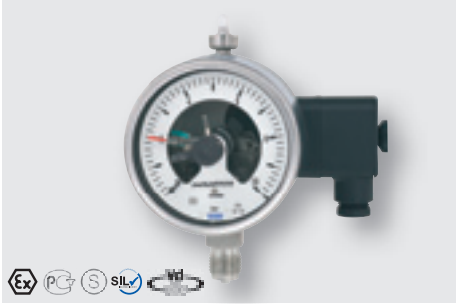
PGT23

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

PGS23

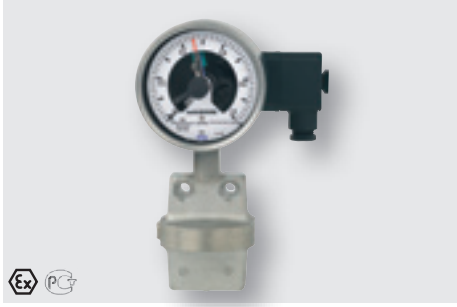
Bourdon tube, stainless steel version



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

DPGS43

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 27.05

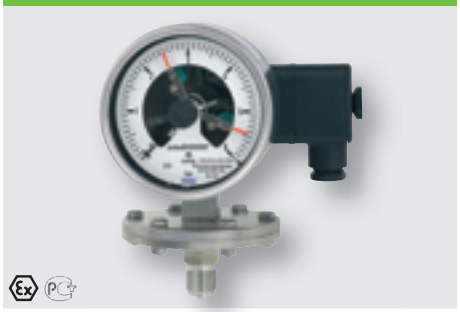
PGT43

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

PGS43

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
Data sheet:	PV 24.03

DPGT43

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

Mechanical pressure measuring instruments with Bourdon tube

232.50, 233.50

Bourdon tube, stainless steel version

Nominal size:	63, 100, 160 mm
Scale range:	■ NS 63: 0 ... 1.0 to 0 ... 1,000 bar ■ NS 100: 0 ... 0.6 to 0 ... 1,000 bar ■ NS 160: 0 ... 0.6 to 0 ... 1,600 bar
Accuracy class:	1.0/1.6 (NS 63)
Ingress protection:	IP 65
Data sheet:	PM 02.02

232.30, 233.30

Safety version, stainless steel

Nominal size:	63, 100, 160 mm
Scale range:	■ NS 63: 0 ... 1.0 to 0... 1,000 bar ■ NS 100: 0 ... 0.6 to 0 ... 1,000 bar ■ NS 160: 0 ... 0.6 to 0 ... 1,600 bar
Accuracy class:	1.0 (NS 100, 160), 1.6 (NS 63)
Ingress protection:	IP 65
Data sheet:	PM 02.04

232.34, 233.34

Process gauge, safety version

Nominal size:	4 1/2"
Scale range:	0 ... 0.6 bar to 0 ... 1,000 bar (0 ... 10 psi to 0 ... 15,000 psi)
Accuracy class:	Grade 2A per ASME B 40.1 (corresponds to indication accuracy 0.5 %)
Ingress protection:	IP 54 (with liquid filling IP 65)
Data sheet:	PM 02.10

Mechanical pressure measuring instruments

with diaphragm or capsule element

432.50, 433.50

Stainless steel version, high overpressure safety

Nominal size:	100, 160 mm
Scale range:	0 ... 16 mbar to 0 ... 25 bar
Accuracy class:	1.6
Ingress protection:	IP 54
Data sheet:	PM 04.03

632.50

Stainless steel version, for very low pressures

Nominal size:	63, 100, 160 mm
Scale range:	■ NS 63: 0 ... 40 to 0 ... 600 mbar ■ NS 100: 0 ... 16 to 0 ... 600 mbar ■ NS 160: 0 ... 2.5 to 0 ... 600 mbar
Accuracy class:	1.6
Ingress protection:	IP 65
Data sheet:	PM 06.03

532.5x

Stainless steel version, for absolute pressure

Nominal size:	100, 160 mm
Scale range:	0 ... 25 mbar to 0 ... 25 bar abs high overpressure safety
Accuracy class:	0.6 ... 2.5
Ingress protection:	IP 54
Data sheet:	PM 05.02

for differential pressure

732.14

Stainless steel version, high over-pressure safety up to max. 400 bar

Nominal size:	100, 160 mm
Scale range:	■ 0 ... 60 to 0 ... 250 mbar (measuring cell DN 140) ■ 0 ... 0.4 to 0 ... 40 bar (measuring cell DN 80)
Accuracy class:	1.6
Ingress protection:	IP 54
Data sheet:	PM 07.13

732.51

Stainless steel version, all-metal media chamber

Nominal size:	100, 160 mm
Scale range:	0 ... 16 mbar to 0 ... 25 bar
Accuracy class:	1.6
Ingress protection:	IP 54
Data sheet:	PM 07.05

Accessories for pressure measuring instruments

910.10, 910.11, 910.81

Stopcocks and shut-off valves

Application: For pressure gauge isolation
Data sheet: AC 09.01, AC 09.02, AC 09.18

910.80

Monoflange

Application: For pressure gauge isolation
Data sheet: AC 09.17

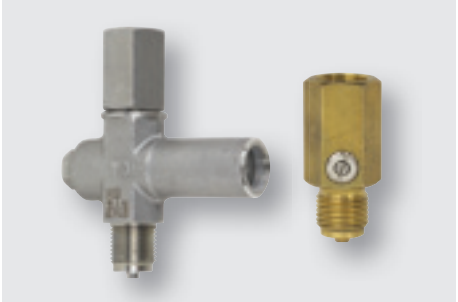
910.25

Pressure compensating valve for differential pressure gauges

Application: For isolating, pressure compensating as well as purging and venting differential pressure gauges
Data sheet: AC 09.11

910.12, 910.13

Snubber and overpressure protector



Application: For the protection of pressure gauges from pressure surges and pulsations or overpressures
Data sheet: AC 09.03, AC 09.04

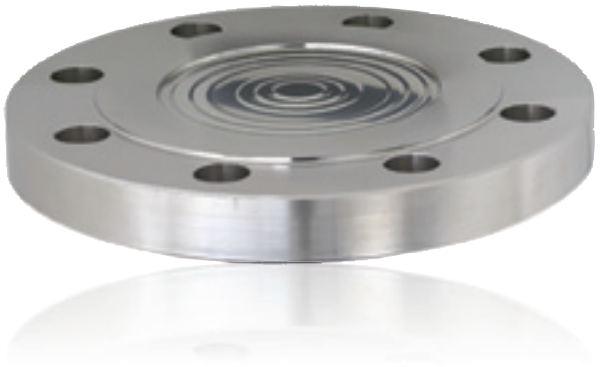
910.15

Syphon

Application: For the protection of pressure gauges from excessive pulsation and heat
Data sheet: AC 09.06

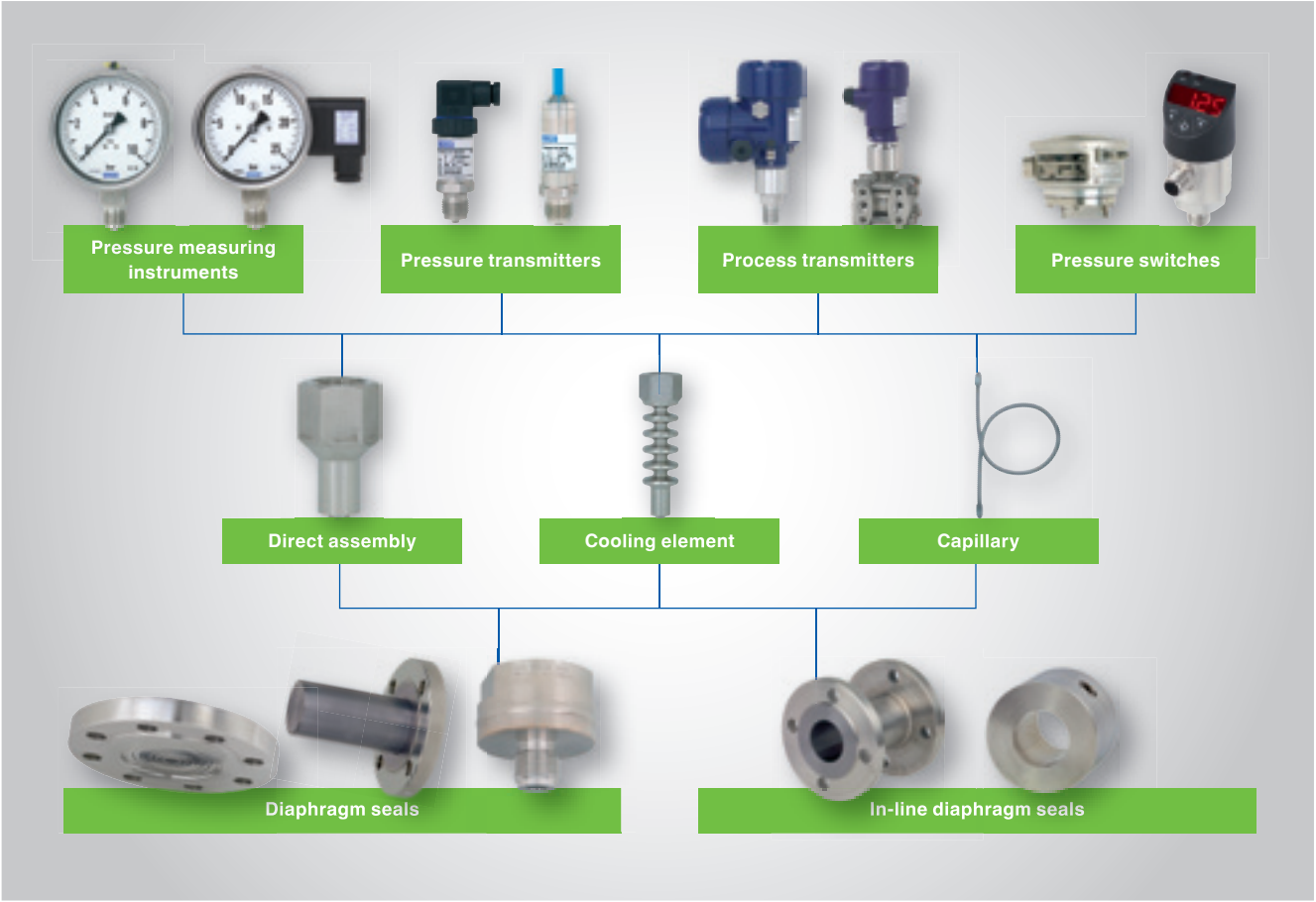
Diaphragm seals

The combination of pressure measuring instruments with diaphragm seals has multiplied the application areas of the measuring instruments considerably. At WIKA there are currently more than 15,000 different diaphragm seal variants available. This enables process engineers to measure pressure with instruments that are individual and custom-made for the application, and so are ideally tailored to their chemical processes.



Possibilities for combination and assembly of pressure measuring instruments and diaphragm seals

Assembly of the diaphragm seal and measuring instrument may be made via a direct connection or a flexible capillary. The rigid assembly is made by a direct threaded connection or 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.



Diaphragm seals with threaded connection

990.10

Threaded design

Application:	General applications in the process industry
PN max:	25, 100 or 250 bar
Data sheet:	DS 99.01

990.36

Small diaphragm seal with flush diaphragm

Application:	Particularly for highly viscous and crystallising media
PN max:	600 bar
Data sheet:	DS 99.03

990.31

Plastic body, threaded design

Application:	Chemical engineering with plastic pipework, electroplating; particularly for wastewater and agricultural fertilisers
PN max:	10 bar
Data sheet:	DS 99.02

990.34

Welded design

Application:	Machine-building, plant-construction and process-industry applications with high requirements
PN max:	160, 400, 600 or 1,000 bar
Data sheet:	DS 99.04

Diaphragm seals with flange connection

990.27

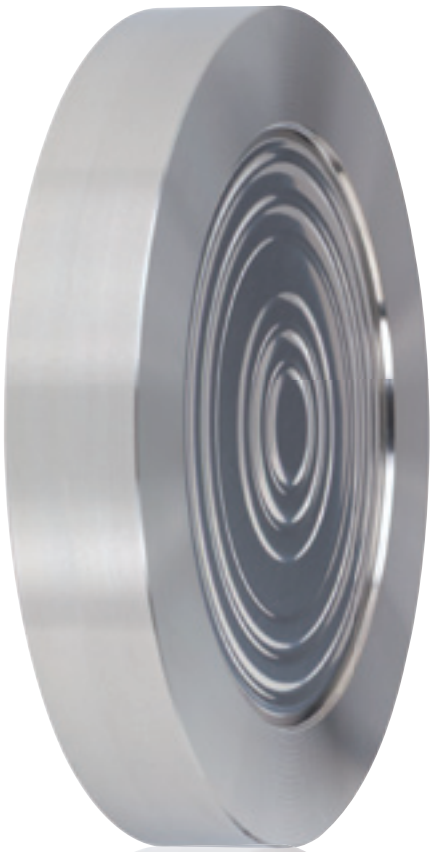
Flush diaphragm

Application:	Process and petrochemical industries with high measuring requirements
PN max:	10 ... 250 (400) bar (class 150 ... 2,500)
Data sheet:	DS 99.27

990.41

Large working volume, threaded design

Application:	To combine with capsule or diaphragm pressure gauges and transmitters for low pressures
PN max:	10 ... 40 bar (class 150 ... 300)
Data sheet:	CS 99.03



990.28

Cell-type (pancake)

Application:	Process and petrochemical industries with high measuring requirements
PN max:	10 ... 100 (400) bar (class 150 ... 2,500)
Data sheet:	DS 99.28

990.29

Flange-type with extended diaphragm

Application:	Process and petrochemical industries, particularly for thick or insulated tank walls
PN max:	10 ... 100 (400) bar (class 150 ... 2,500)
Data sheet:	DS 99.29

Diaphragm seals for in-line pressure measurement

981.10

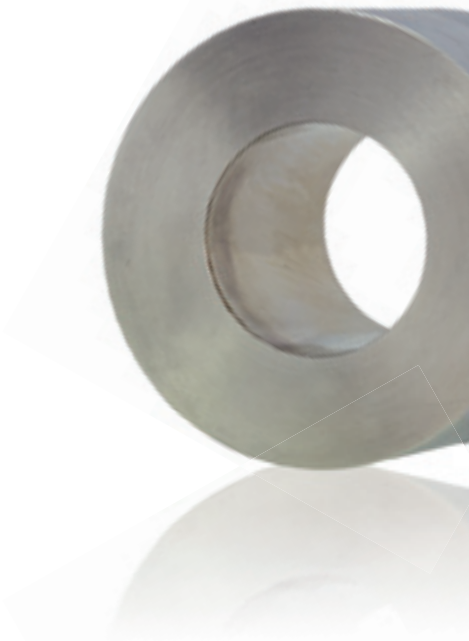
In-line diaphragm seal, cell-type

Application:	For direct, permanent installation in pipelines; for flowing media; for measuring points free of dead space
PN max:	400 bar
Data sheet:	DS 98.28

981.27

In-line diaphragm seal, flange-type

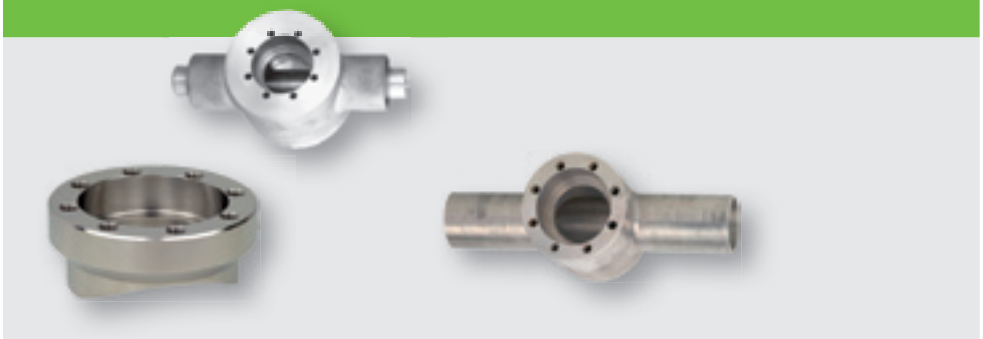
Application:	For direct, permanent installation in pipelines; for flowing media; for measuring points free of dead space
PN max:	16 or 40 bar
Data sheet:	DS 98.27



990.15

Diaphragm seal for block flange or saddle flange

Accessories



Application:	Chemical process technology; system for the production of output terminals and for the integration of the measuring instruments into the product pipeline
PN max [bar]:	100/250
Wetted parts:	Stainless steel 316L, for special materials see table on page 7 Sealing: FPM (Viton®)
Diaphragm arrangement:	Flush
Model:	■ Diaphragm seal 990.15 ■ Block flange for single pipes 910.19 ■ Block flange for double-jacket pipes 910.23 ■ Saddle flange 910.20

Electrical temperature measuring instruments

For electrical temperature measurement, WIKA designs and manufactures resistance thermometers, thermocouples and temperature transmitters. Particularly resistance thermometers are suited to the process conditions and to the measurement accuracy requirements of applications in both the chemical and the pharmaceutical and biotechnology industries.

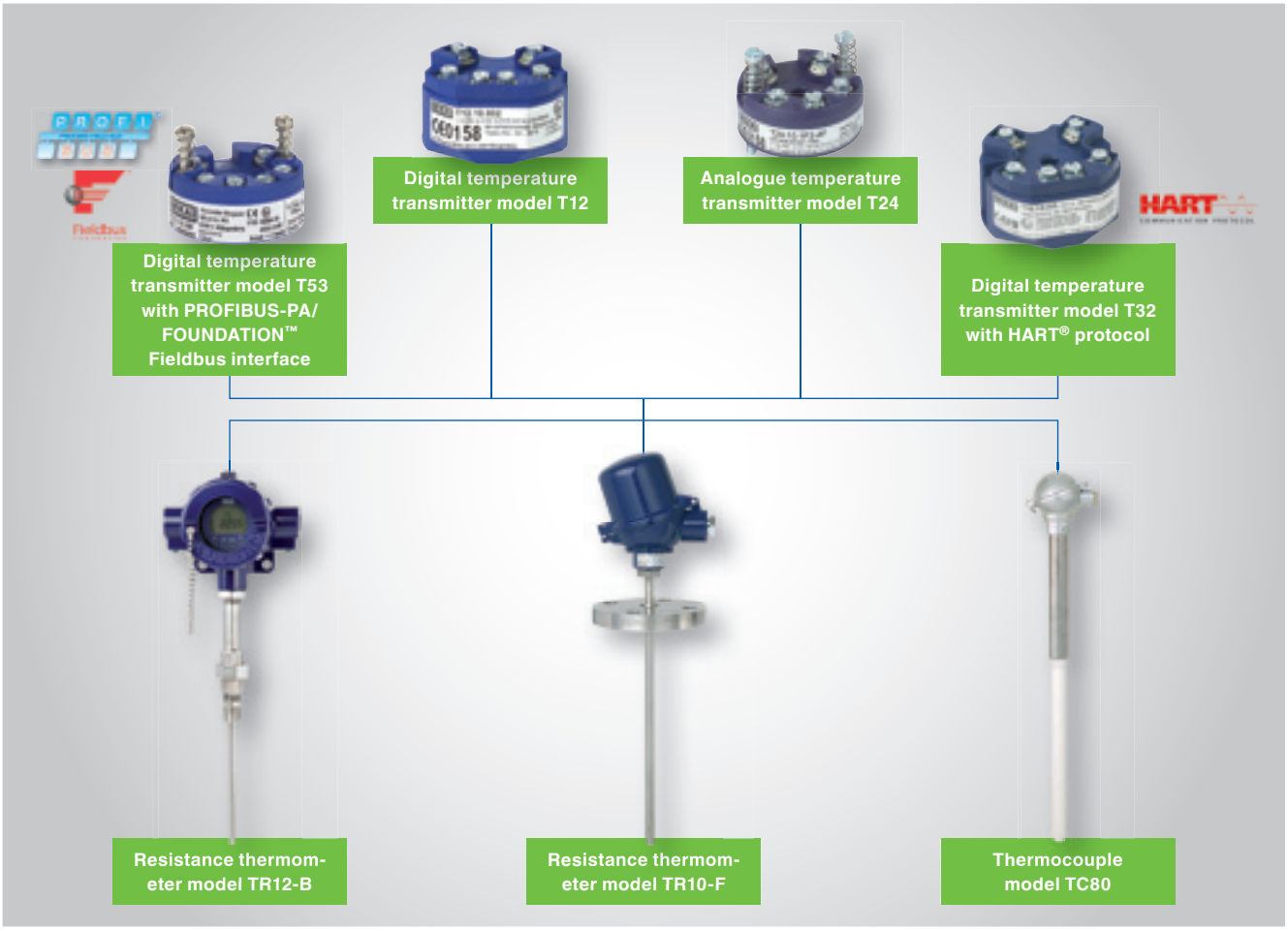
Transmitters convert the temperature-dependent change in resistance of resistance thermometers or the temperature-dependent voltage change in a thermocouple into a proportional standard signal. The most commonly used standard signal is the analogue 4 ... 20 mA signal, though digital signals (fieldbus) are gaining more and more importance.

By using intelligent circuit concepts with analogue 4 … 20 mA signals, any sensor errors that occur are signalled and simultaneously transmitted with the measured value over a two-wire line (current loop). The conversion and transmission of the standard signals (analogue or digital) is made over long distances and completely fail-safe. A temperature transmitter can either be mounted directly at the measuring point in the connection head or on a DIN rail in a cabinet.

All resistance thermometers and transmitters listed can also be used in hazardous areas. In addition to this they are distinguished by a wide permissible ambient temperature range of -40 ... +85 °C with a maximum humidity of 100 %.

Our extensive range is completed by high-quality, functional temperature transmitters. Instruments with 4 ... 20 mA output signal as well as HART®, PROFIBUS-PA and FOUNDATION™ interface are available.

Possibilities for combination of electrical thermometers with transmitters



Resistance thermometers

Resistance thermometers are equipped with platinum temperature sensor elements which change their electrical resistance as a function of temperature. In our range of products you will find resistance thermometers with connected cable as well as versions with connection head. A temperature transmitter can be installed directly in the connection head.

Resistance thermometers are suitable for applications between -200 and +600 °C (dependent on instrument model, sensor element and materials coming into contact with the medium).

Accuracy classes AA, A and B apply to all resistance thermometers. They are available with a sensor limiting error to DIN EN 60751.

Thermocouples

Thermocouples generate a voltage directly dependent on temperature. Suited to the corresponding measurement temperature, you can choose from a variety of thermocouple models.

In our range of products you will find resistance thermometers with connected cable as well as versions with connection head. A temperature transmitter can be installed in the connection head.

Thermocouples are particularly suitable for high temperatures up to 1,600 °C and at very high oscillating stresses (dependent on instrument model, sensor element and materials coming into contact with the medium).

Accuracy classes 1 and 2 apply to all thermocouples. They are available with a sensor limiting error to DIN EN 60584.

Resistance thermometers

TR10-A

Measuring insert

Sensor element: 1 x Pt100, 2 x Pt100
Measuring range: -200 … +600 °C
Connection method: 2-, 3- and 4-wire
Data sheet: TE 60.01

TR10-B

For additional thermowell

Sensor element: 1 x Pt100, 2 x Pt100
Measuring range: -200 … +600 °C
Connection method: 2-, 3- and 4-wire
Data sheet: TE 60.02

TR10-C

Threaded, with fabricated thermowell

Sensor element: 1 x Pt100, 2 x Pt100
Measuring range: -200 … +600 °C
Connection method: 2-, 3- and 4-wire
Process connection: Mounting thread
Data sheet: TE 60.03

TR10-F

Flanged resistance thermometer, with fabricated thermowell

Sensor element: 1 x Pt100, 2 x Pt100
Measuring range: -200 … +600 °C
Connection method: 2-, 3- and 4-wire
Process connection: Flange
Data sheet: TE 60.06

TR10-L

Flameproof enclosure, for additional thermowell

Sensor element: 1 x Pt100, 2 x Pt100
Measuring range: -200 … +600 °C
Connection method: 2-, 3- and 4-wire
Data sheet: TE 60.12

TR12-B

Process resistance thermometer, for additional thermowell

Sensor element: 1 x Pt100, 2 x Pt100
Measuring range: -200 … +600 °C
Connection method: 2-, 3- and 4-wire
Option: Ex i, Ex d
Data sheet: TE 60.17

TR30

Compact version

Sensor element:	1 x Pt100
Measuring range:	-50 ... +250 °C
Output:	Pt100, 4 ... 20 mA, 0 ... 10 V
Data sheet:	TE 60.30

TR40

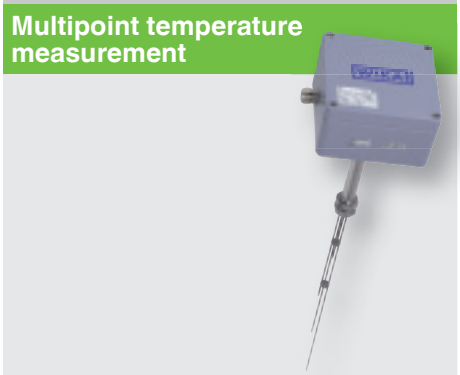
Cable resistance thermometer

Sensor element:	1 x Pt100, 2 x Pt100
Measuring range:	-200 … +600 °C
Connection method:	2-, 3- and 4-wire
Cable:	PVC, silicone, PTFE
Data sheet:	TE 60.40

Customer-specific solutions

TR95

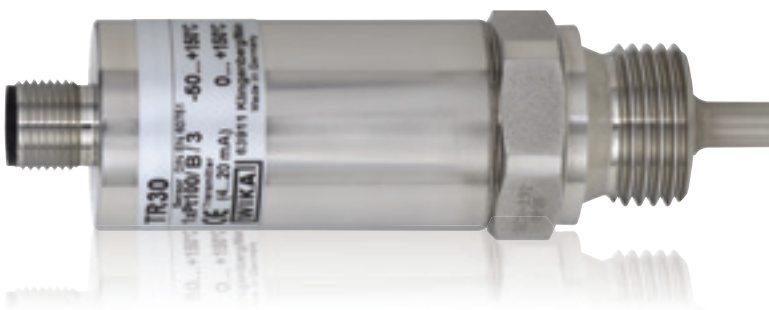
Multipoint temperature measurement



Chemical reactions are very strongly affected by the temperature. This means that if the temperature within a reactor varies widely, one can also assume that the chemical reaction will not occur homogeneously.

The measurement of the temperature distribution within a plant element can be realised cost-effectively using WIKA multipoint assemblies. Multipoint assemblies are always designed and built to the individual requirements of our customers. They can contain up to 50 individual temperature measuring points, whose measurement signals can be read directly or by means of transmitters.

Applications:
- Chemical industry
- Distillation columns
- Vessel construction



Thermocouples

TC10-A

Measuring insert

Sensor element:	Type K, J, E, N or T
Measuring range:	-200 … +1,200 °C
Measuring point:	Ungrounded or grounded
Data sheet:	TE 65.01

TC10-B

For additional thermowell

Sensor element:	Type K, J, E, N or T
Measuring range:	-200 … +1,200 °C
Measuring point:	Ungrounded or grounded
Data sheet:	TE 65.02

TC10-C

Threaded, with fabricated thermowell

Sensor element:	Type K, J, E, N or T
Measuring range:	-200 … +600 °C
Measuring point:	Ungrounded or grounded
Process connection:	Mounting thread
Data sheet:	TE 65.03

TC10-F

Flanged thermocouple, with fabricated thermowell

Sensor element:	Type K, J, E, N or T
Measuring range:	-200 … +600 °C
Measuring point:	Ungrounded or grounded
Process connection:	Flange
Data sheet:	TE 65.06

TC10-L

Flameproof enclosure, for additional thermowell

Sensor element:	Type K, J, E, N or T
Measuring range:	-200 … +1,200 °C
Measuring point:	Ungrounded or grounded
Data sheet:	TE 65.12

TC12-B

Process thermocouple, for additional thermowell

Sensor element:	Type K, J, E or N
Measuring range:	-200 … +1,200 °C
Measuring point:	Ungrounded or grounded
Option:	Ex i, Ex d
Data sheet:	TE 65.17

TC40

Cable thermocouple

Sensor element:	Type K, J, E, N or T
Measuring range:	-200 ... +1,260 °C
Measuring point:	Ungrounded or grounded
Cable:	PVC, silicone, PTFE, glass fibre
Data sheet:	TE 65.40

TC80

Straight thermocouple per EN 50446

Sensor element:	Type S, R, B, K, N or J
Measuring range:	0 ... +1,600 °C
Measuring point:	Ungrounded
Process connection:	Stop flange, threaded bushing
Data sheet:	TE 65.80

Customer-specific solutions

TC59-V

Tube skin thermocouple assembly

With the patented WIKA V-PAD it is possible to measure, as accurately as possible, the surface temperature of a pipe within an incinerator. The name V-PAD derives from the shape of the sensor, which has a V-form and thus enables a penetration-welded junction between sensor and pipe. The TC59 has already given excellent results worldwide in many refineries.

Applications:
- Refineries
- Chemical industry
- Heat exchangers
- High-performance boilers

TC90

High-pressure thermocouple

With our new generation of TC90 high-pressure thermocouples, reliable temperature measurement in, for example, plastics production and processing applications is possible. Each TC90 high-pressure thermocouple is individually manufactured and tested to customer specification. These instruments are manufactured using special manufacturing processes and, in order to ensure their quality, special test arrangements and material tests are applied. This measuring assembly is sealed by means of metal-to-metal sealing, high-pressure threaded connectors or sealing lenses, which have both proven to be ideally suited to highest-pressure applications over many years.

Applications:
- Plastics-producing industry
- General high pressure applications

TC95

Multipoint thermocouple

Chemical reactions are very strongly affected by the temperature. This means that if the temperature within a reactor varies widely, one can also assume that the chemical reaction will not occur homogeneously. The measurement of the temperature distribution within a plant element can be realised cost-effectively using WIKA multipoint assemblies. Multipoint assemblies are always designed and built to the individual requirements of our customers. They can contain up to 50 individual temperature measuring points, whose measurement signals can be read directly or by means of transmitters.

Applications:
- Chemical industry
- Distillation columns
- Vessel construction

Field indicators for current loops with HART® communication

DIH series field indicators are 4 ... 20 mA current loop indicators which additionally can offer a superimposed HART® communication between the connected transmitter and the control room. Thus the scale range and units are automatically adopted dependent on the settings of the connected HART® transmitter.

With this field indicator it is possible to display range alarms as well as MIN and MAX values. Error-current signals from the connected transmitters are also detected and displayed. The display can be used in conjunction with any 4 ... 20 mA transmitter.

DIH50, DIH52

For current loops with HART® communication

Dimensions:	150 x 127 x 127 mm
Case:	Aluminium
Special feature:	■ Adjustment of indication range and unit via HART® communication ■ Model DIH52 additionally suitable for multidrop operation and with local master function
Approval:	■ Intrinsically safe per ATEX ■ Flameproof enclosure
Data sheet:	AC 80.10

DIH62

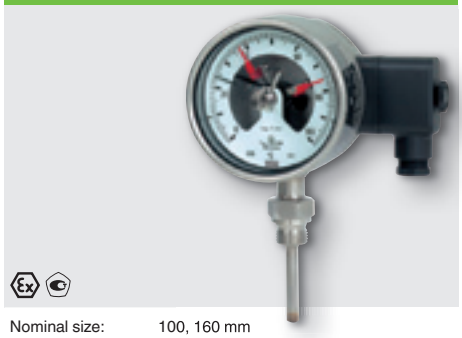
For current loops with HART® communication

Dimensions:	85 x 110 x 139 mm
Case:	Plastic, aluminium or stainless steel
Special feature:	■ Adjustment of indication range and unit via HART® communication ■ Suitable for multidrop operation and with local master function
Approval:	■ Intrinsically safe per ATEX
Data sheet:	AC 80.10

Mechatronic temperature measuring instruments

55 with 8xx

Bimetal thermometer, stainless steel version



Nominal size:	100, 160 mm
Measuring range:	-60 ... +20 to +100 ... +500 °C
Wetted parts:	Stainless steel
Option:	Liquid damping to max. 250 °C (case and sensor)
Data sheet:	TV 25.01

54

Twin-Temp bimetal thermometer with Pt100

Nominal size:	63, 80, 100, 160 mm
Measuring range:	-20 ... +40 to +30 ... +220 °C
Wetted parts:	Stainless steel
Option:	Liquid damping to max. 250 °C (case and sensor)
Data sheet:	TV 15.01

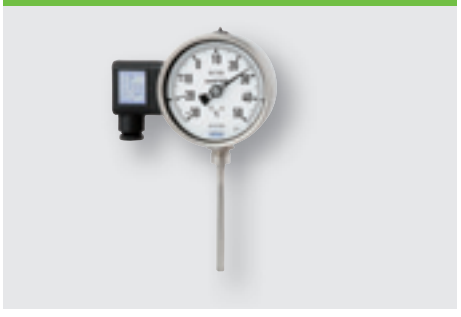
73 with 8xx

Gas-actuated thermometer, stainless steel version

Nominal size:	100, 160, 144 x 144 mm
Measuring range:	-60 ... +40 to +100 ... +600 °C
Wetted parts:	Stainless steel
Option:	■ Capillary ■ Liquid damping (case)
Data sheet:	TV 27.01

TGT73

intelliTHERM® gas-actuated thermometer



Nominal size:	100, 160 mm
Measuring range:	-60 ... +40 to +100 ... +600 °C
Wetted parts:	Stainless steel
Option:	■ Capillary ■ Liquid damping (case)
Data sheet:	TV 17.10

Mechanical temperature measuring instruments

Gas-actuated thermometers

The measuring system consists of a stem, capillary and Bourdon tube in the case. The entire measuring system is filled with an inert gas under pressure. Any change in temperature at the stem causes a change in internal pressure in the entire measuring system. The pressure thus deforms the Bourdon tube and the deflection is transferred to the pointer.

By using a long capillary line, remote sensing of the temperature over distances up to 100 m becomes possible.

Variations in the ambient temperature acting on the case are compensated for by a bimetal element mounted between the movement and the Bourdon tube.

R73, S73, A73

Axial and radial, adjustable stem and dial

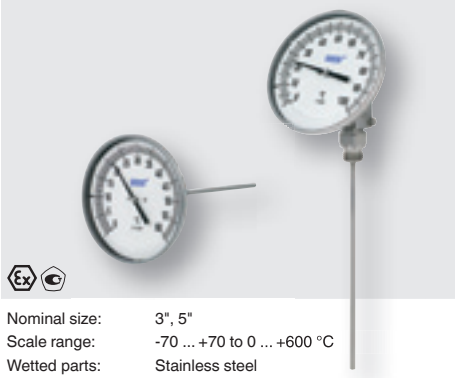
Nominal size:	100, 160 mm
Scale range:	-200 ... +50 to 0 ... +700 °C
Wetted parts:	Stainless steel
Option:	■ Liquid damping (case) ■ Contact bulb
Data sheet:	TM 73.01

Bimetal thermometers

A strip, made from two securely laminated rolled sheets, with metals having different coefficients of expansion (“bimetal”), will bend on any temperature change. If one end of the bimetal measuring system is fixed securely, the other will rotate the pointer shaft and thus also the pointer.

53

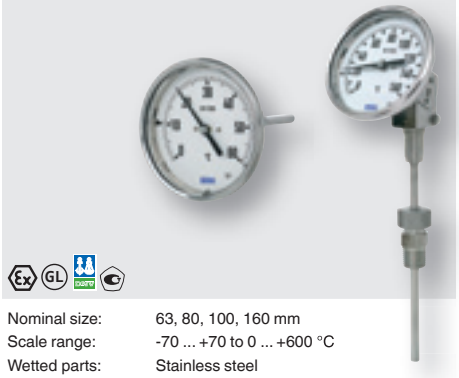
Process industry series, axial, with adjustable stem and dial



Nominal size:	3", 5"
Scale range:	-70 ... +70 to 0 ... +600 °C
Wetted parts:	Stainless steel
Option:	Liquid damping to max. 250 °C (case and sensor)
Data sheet:	TM 53.01

54

Industrial series, axial and radial, adjustable stem and dial



Nominal size:	63, 80, 100, 160 mm
Scale range:	-70 ... +70 to 0 ... +600 °C
Wetted parts:	Stainless steel
Option:	Liquid damping to max. 250 °C (case and sensor)
Data sheet:	TM 54.01

55

Stainless steel version, axial and radial, adjustable stem and dial

Nominal size:	63, 100, 160 mm
Scale range:	-70 ... +70 °C to 0 ... +600 °C
Wetted parts:	Stainless steel
Option:	Liquid damping to max. 250 °C (case and sensor)
Data sheet:	TM 55.01

Thermowells

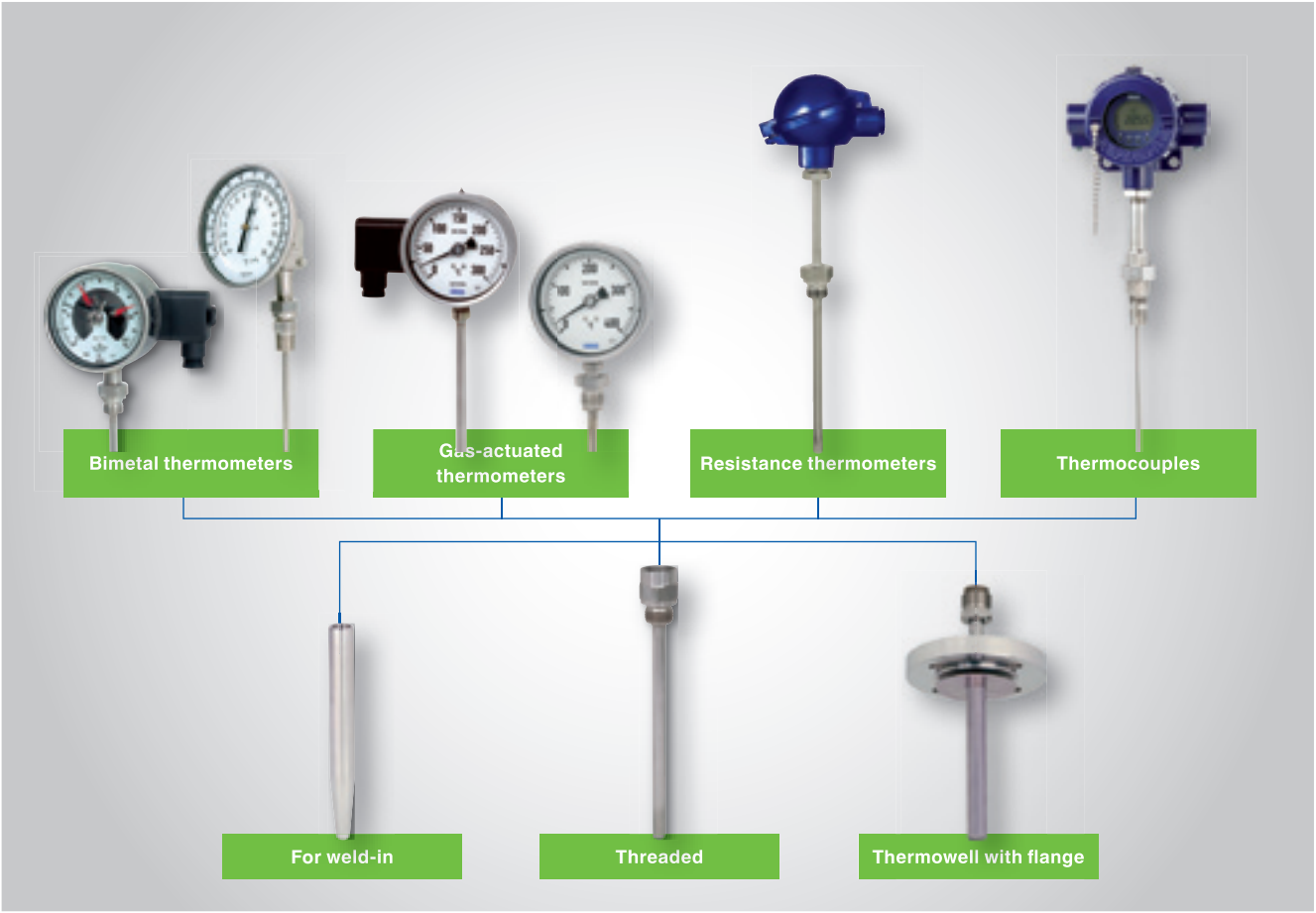
Whether in aggressive or abrasive process media, whether in high- or low-temperature ranges: For electrical or mechanical thermometers, to prevent direct exposure of their temperature sensors to the medium, thermowells that suit each application are available.

Thermowells can be machined from solid barstock or assembled from tube sections and can either be screw-, weld- or flange-fitted. They are offered in standard and special materials such as stainless steel 1.4571, 316L, Hastelloy® or titanium. Each version, depending on its construction type and its mounting to the process, has certain advantages and drawbacks with respect to its load limits and the special materials that can be used. In order to manufacture thermowells for flange mounting at low cost from special materials, the designs used differ from standard thermowells in accordance with DIN 43772. Thus, only the wetted parts of the thermowell are manufactured from special materials, whereas the non-wetted flange is made of stainless steel and is welded to the special material.

This design is used both for fabricated and solid machined thermowells. With tantalum as special material a removable jacket is used, which is slid over the supporting thermowell from stainless steel.

Possibilities for combination with thermowells

Assembly of the diaphragm seal and measuring instrument may be made via a 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.



TW10

Flanged (solid machined)

Thermowell form:	Tapered, straight or stepped
Nominal size:	ASME 1 to 4 inch (DIN/EN DN 25 to DN 100)
Pressure rating:	ASME to 2,500 psig (DIN/EN to PN 100)
Data sheet:	TW 95.10, TW 95.11, TW 95.12

TW15

Threaded (solid machined)

Thermowell form:	Tapered, straight or stepped
Head version:	Hexagon, round with hexagon, or round with spanner flats
Process connection:	½, ¾ or 1 NPT
Data sheet:	TW 95.15

TW40

Flanged (fabricated) (DIN 43772 form 2F, 3F)

Thermowell form:	Form 2F or 3F
Nominal size:	DIN/EN DN 25 to DN 50 (ASME 1 to 2 inch)
Pressure rating:	DIN/EN up to PN 100 (ASME up to 1,500 psig)
Data sheet:	TW 95.40

Level measuring instruments

BNA

Bypass level indicator

Material:	Austenitic steels, 6Mo, Hastelloy, titanium, Monel, Inconel, Incoloy, Duplex, Super Duplex
Process connection:	■ Flange: DIN, ANSI ■ Thread ■ Weld stub
Temperature:	-160 ... +450 °C
S.G.:	≥ 400 kg/m³
Data sheet:	LM 10.01

RMG

Level sensor

Process connection:	■ Mounting thread ■ Flange: DIN, ANSI
Guide tube length:	Max. 6,000 mm
Pressure:	0 ... 200 bar
Temperature:	-80 ... +200 °C
S.G.:	≥ 400 kg/m³
Data sheet:	LM 20.02

LGG

Sight glass level indicator

Material:	Forged steel, heat-resistant C-steel, stainless steel, Monel, Hastelloy
Design:	Available as welded, glass tube, reflection, transparent and refraction indicators
Pressure:	0 ... 250 bar
Temperature:	-200 ... +400 °C
Data sheet:	LM 33.01

RSM

Float switch with permanent magnet

Switch points:	Max. 8 switch points
Process connection:	■ Mounting thread ■ Flange: DIN, ANSI
Guide tube length:	Max. 6,000 mm
Pressure:	0 ... 200 bar
Temperature:	-196 ... +300 °C
S.G.:	≥ 390 kg/m³
Data sheet:	LM 30.01

LSO.02

Mini limit switch

Material:	Stainless steel, quartz glass, PTFE
Process connection:	■ M16 x 1.5 ■ G ½ A ■ ½ NPT
Insertion length:	24 mm
Pressure:	0 ... 50 bar
Temperature:	-30 ... +140 °C
Data sheet:	LM 31.01

LSO.06

Transducer

Material:	Stainless steel, Hastelloy, KM-glass, quartz glass, sapphire, graphite
Process connection:	■ G ½ A ■ ½ NPT
Pressure:	0 ... 500 bar
Temperature:	-269 ... +400 °C
Data sheet:	LM 31.10

LSO.25

Switching amplifier, for transducer model LSO.06

Output:	1 signal relay, 1 failure relay
Function:	High or low alarm
Time delay:	Up to 8 s
Voltage supply:	AC 24, 115, 120, 230 V, DC 24 V
Data sheet:	LM 31.20

Calibration technology

From individual components ...

WIKA is the ideal partner for solutions in calibration technology, whether only a single service instrument is required quickly on site, or whether a fully automated calibration system needs to be designed for the laboratory or production. We are able to offer an appropriate solution for each application. In relation to the measuring task and the measurement parameters, the following product matrix will assist you.

Portable pressure generation

Test pumps serve as pressure generators for the testing of mechanical and electronic pressure measuring instruments through comparative measurements. These pressure tests can be carried out statically in the laboratory or workshop, or on site at the measuring point.

Measuring components

High-precision pressure sensors and very stable standard thermometers are ideal for applications as references in industrial laboratories. Due to their analogue or digital interfaces they can be connected to existing evaluation instruments.

Hand-helds, calibrators

Our hand-held measuring instruments (process tools) offer a simple capability for measurement or simulation of all established measurement parameters on site. They can be operated with a wide variety of pressure sensors or thermometers.

... to a fully automated system

Digital indicating precision measuring instruments

High-accuracy digital precision measuring instruments are ideal for application as reference standards in industrial laboratories, enabling high-accuracy calibration. They feature exceptionally simple handling and an extensive range of functionality.

Digital precision instruments and controllers

Due to their integrated controller, these instruments offer exceptional convenience. Typically, a fully automated setting of the required value can be set via the interface.

Fully automatic calibration systems as integrated solutions

Fully automated calibration systems are customer-specific, turnkey installations which can be fitted in laboratories as well as in the production environment. With integrated reference instruments and calibration software, calibration certificates can be generated and archived in a simple and reproducible way.

- **Pressure**
- **Temperature**
- **Current, voltage, resistance**

Services

From -1 bar to 5,000 bar — DKD-K-03701

Our calibration laboratory for pressure (DKD-K-03701) has been accredited to DIN EN ISO/IEC 17025 since 1982.

We calibrate your pressure measuring instruments quickly and precisely:

- in the range from -1 ... 5,000 bar
- using high-precision reference standards (pressure balances) and working standards (precise electrical pressure measuring instruments)
- with an accuracy from 0.004 ... 0.01 % of the measured value depending on the pressure range
- in accordance with the directives DIN EN 837, DKD/DAkkS R 6-1, EA 10/03 or EA 10/17

From -196 °C to 1,200 °C — DKD-K-03702

Our calibration laboratory for temperature (DKD-K-03702) has been accredited to DIN EN ISO/IEC 17025 since 1992.

We calibrate your temperature measuring instruments quickly and precisely:

- in the range from -196 ... +1,200 °C
- in calibration baths, tube furnaces or at fixed points using appropriate reference thermometers
- with an accuracy from 2 mK to 1.5 K depending on temperature and the applied procedure
- in accordance with the appropriate DKD/DAkkS and EA directives

On-site calibration — DKD-K-03701

In order to have the least possible impact on the production process, we offer you a time-saving, on-site DKD/DAkkS calibration throughout Germany.

We calibrate your pressure and temperature measuring instruments quickly and precisely:

- in our calibration van or on your workbench
- Factory test certificates for temperature from -35 °C ... 650 °C
- with a DKD/DAkkS accreditation for pressure
  – in the range from -1 ... 1,600 bar
  – with accuracies between 0.01 % and 0.05 % of FS for the standard used

Consulting and training

If you are planning to expand your instrumentation, we will gladly lend our experience in the selection of the appropriate solution.

In collaboration with our team of calibration technology experts, we develop tailor-made solutions.

If required, also as a turnkey plug and play system. On-site commissioning as well as the training of the operator is naturally included.

Our calibration courses are individually matched to your requirements and needs. Thus we can set the topics for the theory as well as the practice of calibration technology.

WIKA worldwide

Europe

Austria
WIKA Messgerätevertrieb
Ursula Wiegand GmbH & Co. KG
1230 Vienna
Tel. (+43) 1 86916-31
Fax: (+43) 1 86916-34
E-mail: info@wika.at
www.wika.at

Belarus
WIKA Belarus
Ul. Zaharova 50B
Office 3H
220088 Minsk
Tel. (+375) 17-294 57 11
Fax: (+375) 17-294 57 11
E-mail: info@wika.by
www.wika.by

Benelux
WIKA Benelux
6101 WX Echt
Tel. (+31) 475 535-500
Fax: (+31) 475 535-446
E-mail: info@wika.nl
www.wika.nl

Bulgaria
WIKA Bulgaria EOOD
Bul. "Al. Stamboliiski" 205
1309 Sofia
Tel. (+359) 2 82138-10
Fax: (+359) 2 82138-13
E-mail: t.antonov@wika.bg

Croatia
WIKA Croatia d.o.o.
Hrastovicka 19
10250 Zagreb-Lucko
Tel. (+385) 1 6531034
Fax: (+385) 1 6531357
E-mail: info@wika.hr
www.wika.hr

Finland
WIKA Finland Oy
00210 Helsinki
Tel. (+358) 9-682 49 20
Fax: (+358) 9-682 49 270
E-mail: info@wika.fi
www.wika.fi

France
WIKA Instruments s.a.r.l.
95610 Eragny-sur-Oise
Tel. (+33) 1 343084-84
Fax: (+33) 1 343084-94
E-mail: info@wika.fr
www.wika.fr

Germany
WIKA Alexander Wiegand
SE & Co. KG
63911 Klingenberg
Tel. (+49) 9372 132-0
Fax: (+49) 9372 132-406
E-mail: info@wika.de
www.wika.de

Italy
WIKA Italia Srl & C. Sas
20020 Arese (Milano)
Tel. (+39) 02 9386-11
Fax: (+39) 02 9386-174
E-mail: info@wika.it
www.wika.it

Poland
WIKA Polska S.A.
87-800 Wloclawek
Tel. (+48) 542 3011-00
Fax: (+48) 542 3011-01
E-mail: info@wikapolska.pl
www.wikapolska.pl

Romania
WIKA Instruments Romania
S.R.L.
Bucuresti, Sector 5
Calea Rahovei Nr. 266-268
Corp 61, Etaj 1
Tel. (+40) 21 4048327
Fax: (+40) 21 4563137
E-mail: m.anghel@wika.ro
www.wika.ro

Russia
ZAO WIKA MERA
127015 Moscow
Tel. (+7) 495-648 01 80
Fax: (+7) 495-648 01 81
E-mail: info@wika.ru
www.wika.ru

Serbia
WIKA Merna Tehnika d.o.o.
Sime Solaje 15
11060 Belgrade
Tel. (+381) 11 2763722
Fax: (+381) 11 753674
E-mail: info@wika.co.yu
www.wika.co.yu

Spain
Instrumentos WIKA, S.A.
C/Josep Carner, 11-17
08205 Sabadell (Barcelona)
Tel. (+34) 933 938630
Fax: (+34) 933 938666
E-mail: info@wika.es
www.wika.es

Switzerland
MANOMETER AG
6285 Hitzkirch
Tel. (+41) 41 91972-72
Fax: (+41) 41 91972-73
E-mail: info@manometer.ch
www.manometer.ch

Turkey
WIKA Instruments Istanbul
Basinc ve Sicaklik Ölcme
Cihazlari
Ith. Ihr. ve Tic. Ltd. Sti.
Bayraktar Bulvari No. 17
34775 Şerifali-Yukarı Dudullu -
Istanbul
Tel. (+90) 216 41590-66
Fax: (+90) 216 41590-97
E-mail: info@wika.com.tr
www.wika.com.tr

Ukraine
TOV WIKA Prylad
M. Raskovoy Str. 11, A
PO 200
02660 Kyiv
Tel. (+38) 044 496-8380
Fax: (+38) 044 496-8380
E-mail: info@wika.ua
www.wika.ua

United Kingdom
WIKA Instruments Ltd
Merstham, Redhill RH13LG
Tel. (+44) 1737 644-008
Fax: (+44) 1737 644-403
E-mail: info@wika.co.uk
www.wika.co.uk

North America

Canada
WIKA Instruments Ltd.
Head Office
Edmonton, Alberta, T6N 1C8
Tel. (+1) 780 46370-35
Fax: (+1) 780 46200-17
E-mail: info@wika.ca
www.wika.ca

Mexico
Instrumentos WIKA Mexico
S.A. de C.V.
01210 Mexico D.F.
Tel. (+52) 55 50205300
Fax: (+52) 55 50205300
E-mail: ventas@wika.com
www.wika.com.mx

USA
WIKA Instrument Corporation
Lawrenceville, GA 30043
Tel. (+1) 770 5138200
Fax: (+1) 770 3385118
E-mail: info@wika.com
www.wika.com

WIKA Instrument Corporation
Houston Facility
950 Hall Court
Deer Park, TX 77536
Tel. (+1) 713-475 0022
Fax: (+1) 713-475 0011
E-mail: info@wikahouston.com
www.wika.com

Mensor Corporation
201 Barnes Drive
San Marcos, TX 78666
Tel. (+1) 512 3964200-15
Fax: (+1) 512 3961820
E-mail: sales@mensor.com
www.mensor.com

South America

Argentina
WIKA Argentina S.A.
Buenos Aires
Tel. (+54) 11 47301800
Fax: (+54) 11 47610050
E-mail: info@wika.com.ar
www.wika.com.ar

Brazil
WIKA do Brasil Ind. e Com. Ltda.
CEP 18560-000 Iperó - SP
Tel. (+55) 15 34599700
Fax: (+55) 15 32661650
E-mail: marketing@wika.com.br
www.wika.com.br

Chile
WIKA Chile S.p.A.
Coronel Pereira 72
Oficina 101
Las Condes
Santiago de Chile
Tel. (+56) 2 3651719
www.wika.cl

Asia

China
WIKA International Trading
(Shanghai) Co., Ltd.
A2615, NO.100, Zunyi Road
Changning District
Shanghai 200051
Tel. (+86) 21 538525-72
Fax: (+86) 21 538525-75
E-mail: info@wika.cn
www. wika.com.cn

WIKA Instrumentation
(Suzhou) Co., Ltd.
81, Ta Yuan Road,
SND, Suzhou 215011
Tel. (+86) 512 6878 8000
Fax: (+86) 512 6809 2321
E-mail: info@wika.cn
www. wika.com.cn

India
WIKA Instruments India Pvt. Ltd.
Village Kesnand, Wagholi
Pune - 412 207
Tel. (+91) 20 66293-200
Fax: (+91) 20 66293-325
E-mail: sales@wika.co.in
www.wika.co.in

Japan
WIKA Japan K. K.
Tokyo 105-0023
Tel. (+81) 3 543966-73
Fax: (+81) 3 543966-74
E-mail: info@wika.co.jp

Kazakhstan
TOO WIKA Kazakhstan
050050 Almaty
Tel. (+7) 727 2330848
Fax: (+7) 727 2789905
E-mail: info@wika.kz
www.wika.kz

Korea
WIKA Korea Ltd.
#569-21 Gasan-dong
Seoul 153-771 Korea
Tel. (+82) 2 869 05 05
Fax: (+82) 2 869 05 25
E-mail: info@wika.co.kr
www.wika.co.kr

Malaysia
WIKA Instrumentation (M)
Sdn. Bhd.
47100 Puchong, Selangor
Tel. (+60) 3 80 63 10 80
Fax: (+60) 3 80 63 10 70
E-mail: info@wika.com.my
www.wika.com.my

Singapore
WIKA Instrumentation Pte. Ltd.
569625 Singapore
Tel. (+65) 68 44 55 06
Fax: (+65) 68 44 55 07
E-mail: info@wika.com.sg
www.wika.com.sg

Taiwan
WIKA Instrumentation Taiwan Ltd.
Pinjen, Taoyuan
Tel. (+886) 3 420 6052
Fax: (+886) 3 490 0080
E-mail: info@wika.com.tw
www.wika.com.tw

Thailand
WIKA Instrumentation Corporation
(Thailand) Co., Ltd.
850/7 Ladkrabang Road,
Ladkrabang
Bangkok 10520
Tel. (+66) 2 326 6876-80
Fax: (+66) 2 326 6874
E-mail: info@wika.co.th
www.wika.co.th

Africa/Middle East

Egypt
WIKA Near East Ltd.
El-Serag City Towers
-Tower#2 - Office#67-
Nasr City Cairo
Tel. (+20) 2 22733140
Fax: (+20) 2 22703815
E-mail: info@wika.com.eg
www.wika.com.eg

Namibia
WIKA Instruments Namibia
(Pty) Ltd.
P.O. Box 31263
Pionierspark
Windhoek
Tel. (+26) 4 6123 8811
Fax: (+26) 4 6123 3403
E-mail: info@wika.com.na
www.wika.com.na

South Africa
WIKA Instruments (Pty.) Ltd.
Gardenview,
Johannesburg 2047
Tel. (+27) 11 62100-00
Fax: (+27) 11 62100-59
E-mail: sales@wika.co.za
www.wika.co.za

United Arab Emirates
WIKA Middle East FZE
Jebel Ali, Dubai
Tel. (+971) 4 8839-090
Fax: (+971) 4 8839-198
E-mail: wikame@emirates.net.ae
www.wika.ae

Australia

Australia
WIKA Australia Pty. Ltd.
Rydalmere, NSW 2116
Tel. (+61) 2 88455222
Fax: (+61) 2 96844767
E-mail: sales@wika.com.au
www.wika.com.au

New Zealand
WIKA Instruments Limited
Unit 7/49 Sainsbury Road
St Lukes - Auckland 1025
Tel. (+64) 9 8479020
Fax: (+64) 9 8465964
E-mail: info@wika.co.nz
www.wika.co.nz

WIKA Alexander Wiegand SE & Co. KG
Alexander-Wiegand-Straße 30 • 63911 Klingenberg/Germany
Tel. (+49) 9372/132-0 • Fax (+49) 9372/132-406
E-mail info@wika.de • www.wika.de

WIKA
Part of your business

12396207 06/2012 GB