Process industry
Chemical industry

Pressure and temperature measurement for chemical applications

WIKA

Part of your business

WIKA – Partner of the chemical industry

WIKA Alexander Wiegand GmbH & Co. KG has, over the past 60 years, established a reputation of innovation and quality in the manufacture and servicing of pressure and temperature measuring instruments. WIKA has established itself as a leader in the global market through applying innovative technology to new products and system solutions.

More than 5,000 employees within the WIKA group are dedicated to maintain and improve technology in pressure and temperature measurement. Just within our sales organisation, you will find more than 500 skilled and experienced employees to talk to. More than 300 engineers and technicians are searching continually to provide solutions for innovative products, improved materials and profitable production methods on behalf of WIKA.
In close cooperation with recognised universities and institutions, and also in direct contact with the end users, solutions for specific applications are developed and found.

Alexander Wiegand,
Chairman and CEO, WIKA

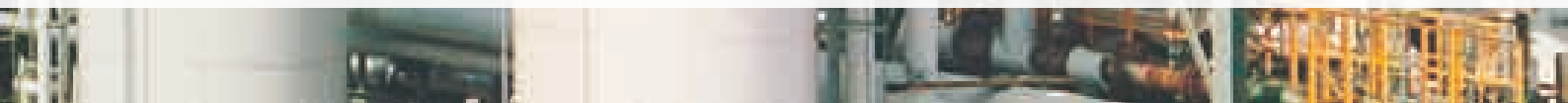
Ability to meet any Challenge

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 and temperature 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.

In pressure measuring instruments all common measurement principles are available, from absolute to relative and differential pressures. WIKA produces well over one million high-quality pressure measuring instruments annually in accordance with the Pressure Equipment Directive 97/23/EC and our quality management, according to ISO 9001, ensures all our instruments meet the same high standards of quality worldwide. Capsule gauges for measuring the lowest pressure ranges from 0 up to 2.5 mbar are available, as are bourdon tube and diaphragm gauges from special materials for pressures up to 7000 bar. By working with various professional associations and our partners we always have our finger on the pulse of the market. Closeness to our customers is a firm component of our company philosophy.

In the same way, temperature measuring tasks can be solved with WIKA temperature measuring instruments. In addition, mechanical and electrical measuring systems are available for all accepted methods for industrial temperature measurement within process engineering. Custom measurement systems (such as multi-point assemblies for chemical reactors and extremely-high-temperature measuring instruments for combustion plants) are also based around these methods. Of course WIKA also has a range of thermowells within the product range, either as a standard or as a custom design, engineered specifically for the application by WIKA engineers.

This brochure should support you in the selection of the appropriate devices for your purpose, and you will find a large selection of pressure and temperature instruments to suit your specific requirements. Our standard range already features products to cover a wide range of applications. Individually tailored advice and proposals, to match solutions to your needs, supplements 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 industry.



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Certificates and approvals

In consideration of the increasing requirements in terms of quality and product safety for chemical products, certified pressure measuring instruments make an important contribution to the safety of the production processes. WIKA therefore has a broad range of approvals and certificates for both electronic and mechanical pressure measuring instruments.

Pressure Equipment Directive 97/23/EC

The European Pressure Equipment Directive 97/23/EC has applied to all mechanical and electrical pressure measuring instruments since 2002, throughout the European Union.

WIKA is certified by TUV South Germany for the ‘conformity appraisal procedure’, Module H (comprehensive quality control). All gauges with an allowable positive pressure of greater than 200 bar are marked with the emblem CE 0036 on the dial or on the product label.

Nace MR 0175 / EN ISO 15156-3

The NACE standards MR0175 and EN ISO 15156 describe the general principles, designate requirements and give recommendations for the selection and qualification of metallic materials for use in oil and gas production plants, as well as in sour gas processing plants. In this way, sudden damage to metallic installations in oil- and gas-field equipment, which are exposed to media containing H2S, is eliminated.

As a result of careful materials selection, many of our standard pressure and temperature instruments already fulfil these high requirements.

- ATEX (Directive 94/9/EC)
- Pressure limiters / pressure switches, „special design“ per VdTÜV Note of Instructions „Pressure 100/1“
- Pressure switches per EC Gas Appliances Directive (DVGW)
- RoHS95
- Gosstandart (Russia)

Materials

The standard material used in chemical process engineering is predominantly stainless steel, with the widest-used of these being material no. 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 should be 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.

With pressure and differential pressure measuring instruments using diaphragm elements, wetted parts can be manufactured in the widest range of special materials. Measuring systems using bourdon tube devices are manufactured in 316L stainless steel (1.4404) as standard, with 316Ti (1.4571) and Monel also available.

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

Material	Code designation
Stainless steel	Material no.'s. 316L, 1.4571, 1.4404, 1.4435, 1.4541, 1.4542
Duplex 2205	Material no. 1.4462
Hastelloy B3	Material no. 2.4600
Hastelloy C4	Material no. 2.4610
Hastelloy C22	Material no. 2.4602
Hastelloy C276	Material no. 2.4819
Incoloy alloy 825	Material no. 2.4858
Inconel alloy 600	Material no. 2.4816
Duratherm	NiCo
Monel alloy 400	Material no. 2.4360
Nickel	Material no. 2.4066 / 2.4068
Gold	Au
Platinum	Pt
Tantalum	Ta
Titanium	Material no. 3.7035
Zirconium	Zr
Ceramic	wikaramic®
Polytetrafluorethylene	PTFE
Perfluoralkoxy	PFA
Copolymer of Ethene and Chlortrifluorethene	ECTFE (Halar®)

ATEX – The European harmonisation

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.

Conditions in the hazardous environment							
Explosive Atmospheres	**Duration of hazard caused by the combustible material**	**Classification of hazardous environments**					
		IEC Zones	**CE directiva**			**US NEC 500 Canada CEC**	**US NEC 505**
			Zone	Group	Category		
Gases, vapours	Continuous, long-term or frequent hazard	**Zone 0** is an area within which a dangerous, potentially explosive atmosphere is present in the form of a mixture of air and inflammable gases, vapours or mists, constantly, frequently or for long periods.	Zone 0	II	1G	Class 1 Division 1	Class 1 Zone 0
	Occasional hazard	**Zone 1** is an area within which, during normal operation, a dangerous, potentially explosive atmosphere can occasionally form as a mixture of air and inflammable gases, vapours or mists.	Zone 1	II	2G		Class 1 Zone 1
	Hazard only during abnormal operating conditions	**Zone 2** is an area within which, in normal operation, a dangerous, potentially explosive atmosphere normally only exists very briefly as a mixture of air and inflammable gases, vapours or mists.	Zone 2	II	3G	Class 1 Division 2	Class 1 Zone 2
Dusts	Continuous, long-term or frequent hazard	**Zone 20** is an area within which a dangerous, potentially explosive atmosphere is present in the form of an airborne cloud containing inflammable dust, constantly, frequently or for long periods.	Zone 20	II	1D	Class II Division 1	----
	Occasional hazard	**Zone 21** is an area within which, during normal operation, a dangerous, potentially explosive atmosphere can occasionally form as an airborne cloud containing inflammable dust.	Zone 21	II	2D		----
	Hazard due to circulating dust only during abnormal operating conditions	**Zone 22** is an area, within which, during normal operation a dangerous, potentially explosive atmosphere normally only exists very briefly as as an airborne cloud containing inflammable dust.	Zone 22	II	3D		----
Methane, dust	Environments that are hazardous	----	----	I	M1	Mining	----
	Environments that might become hazardous	----	----	I	M2	Mining	----
Fibres / flyings		----	----	----	----	Class III	----

ATEX Product directive 94/9/EC

This directive also includes non-electrical devices for the first time, since purely mechanical 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.

Zone classification

The operator 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.

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 (Safe in normal operation)

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

Types of protection (examples)

Protection type	Marking	Definition	IEC	CE directive	FM / UL
Flame proof	Ex d	Propagation of an ignition to the surrounding atmosphere is prevented	60079-1	EN 50018	FM 3600 UL 2279
Intrinsic safety	Ex i	Energy limitation of sparks and temperatures	60079-11	EN 50020* EN 50039 **	FM 3610 UL 2279
Non incendive	Ex n	Various protection types for zone 2 only	60079-15		FM 3611 UL 1604
* Instruments ** Systems					

Explosive atmospheres: G = Gas, D = Dust

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).

Grouping

Typical Gas/Dust/ Fibres/Flyings	US NEC 500 Canada CEC	US NEC 500 IEC, EC directive
Acetylene	Class I, Group A	Group IIC (IIB + H2)
Hydrogen	Class I, Group B	
Ethylene	Class I, Group C	Group IIB
Propane	Class I, Group D	Group IIA
Methane	Gaseous Mines *	Group I *
Magnesium	Class II, Group E	do not subdivide by material types
Coal	Class II, Group F	
Grain	Class II, Group G	
Cotton	Class III	
* not within scope of NEC or CEC		
Class I – gas/vapour/mist, class II – dust, Class III – fibres, flyings		

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

Maximum surface temperature	
450 °C	T1
300 °C	T2
200 °C	T3
135 °C	T4
100 °C	T5
85 °C	T6

Functional safety

Using the highest quality components is a prerequisite for avoiding any risks to personnel, the environment or assets. Reliable measurement and control components secure critical processes in the chemical industry; generally protective circuits, safety circuits or safety functions.

The required quality properties of the components used are currently specified by the IEC 61508 standard (general functional safety) as well as IEC 61511 (functional safety in the process industry). In these, among other things, the term Safety Integrity Level (SIL) is defined as the measure of reduction in risk.

The determined Safety Integrity Level (SIL) of a component is usually certified by means of manufacturer's declaration on the basis of an FMEDA (Failure Mode, Effects and Diagnostic Analysis). The FMEDA is a systematic view of the random failure behaviour of a component. In addition, the statistical values for individual components are judged along with their functional connections. The result is quantified data for the error probability and/or the reliability of the components.

For such demanding applications WIKA recommends the following qualified components.

- WIKA pressure transmitters IPT
- WIKA temperature transmitters T32
- WIKA Pressure gauge model 23x.30 with inductive sensor

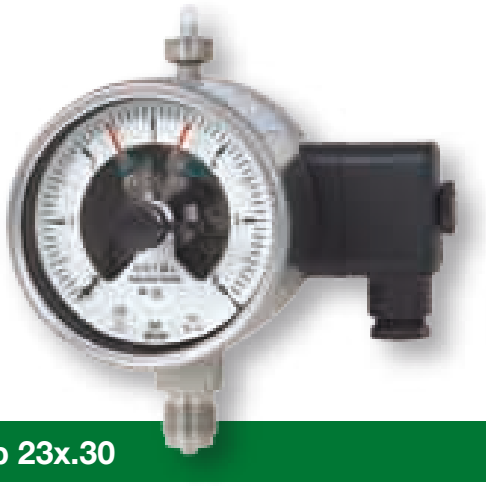
These instruments are classified according to IEC 61508 / IEC 61511.

Suitable for use in Application

SIL2

IEC 61508 / IEC 61511

Typ T32



Typ 23x.30

Typ IPT-10

For safety, the best weld

Pressure gauges

WIKA is certified as a manufacturer of pressure measuring instruments in accordance with the AD-2000/HP0 requirements and DIN EN 729-2. Apart from standard TIG hand-welding, we also employ TIG robots, resistance welding and laser welding. For pressure-bearing welded seams, 11 examinations of welding procedures are used. 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, dye penetrant tests 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 Flourescence techniques) are carried out by accredited external laboratories in accordance with DIN EN 45001.

www.linde.com

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 fulfills all requirements of the American flange standard ASME B16.5 for the use of blanking 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 multipart or one-piece standard thermowells, welding procedure tests are available according to AD2000, HP2/1 (EN 288-3/ISO 15614/1).

Thermowells

Increased safety in applications 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 according to ASME PTC 19.3 or Dittrich/Klotter. The following process parameters are required to complete the calculations:

- Flow rate in m/s
- Medium density in kg/m³
- Temperature in °C
- Pressure in bar

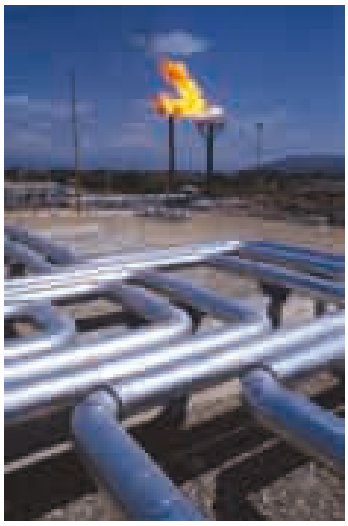
Independently of the thermowells' method of manufacture, the results of the thermowell strength calculation are always divided into two parts: Firstly, the dynamic view on vibration failures through operation at resonance and secondly, the static load through external pressure.

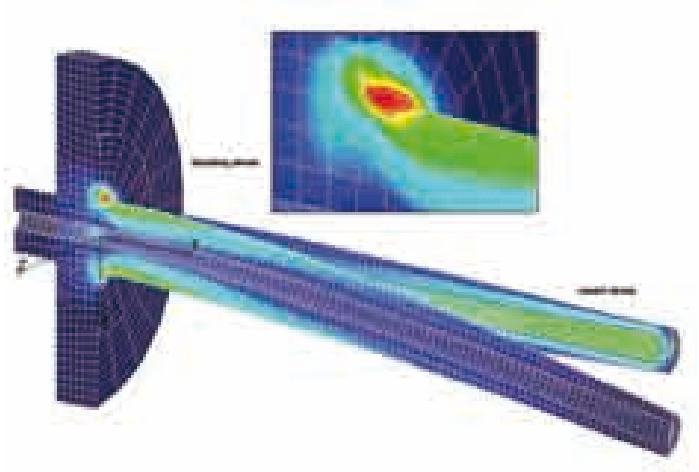
Non-destructive testing NDE/NDT

The most common non-destructive tests for thermowells are compression tests, dye penetration tests and also PMI tests.

Hydrostatic compression test

This test is carried out using external pressure on flanged thermowells, and using an internal pressure test with welded or screwed 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 class) for between 3 and 15 minutes.





Dye penetration test

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.

PMI 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 devices
- Improved process monitoring
- Reliable digital signal transmission

This means to the plant manager that his costs are reduced and his plant's availability is increased.

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)
- 4…20 mA with superimposed HART® protocol
- PROFIBUS-PA
- FOUNDATION Fieldbus™

Interoperability

Interoperability, i.e. the compatibility between components from different manufacturers, is imperative with HART®, PROFIBUS or FOUNDATION Fieldbus™. Since our pressure and temperature transmitters are standardised and registered at the relevant user organisations, interoperability is guaranteed for our pressure and temperature transmitters.

Fitting to processes using 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 pressure medium from the pressure 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 system fill fluid and from there to the measuring instrument, which is connected to the diaphragm seal either directly or else via a cooling tower or a capillary extension. Extremely difficult measuring tasks may be realised through the combination of a pressure measuring instrument with a diaphragm seal:

- Use at extreme temperatures or temperature fluctuations
- Measurements in aggressive, corrosive, highly viscous, heterogeneous and crystallising media
- Instrumentation without dead spaces or where dead spaces are reduced to a minimum
- Hygienic process connection
- Integration of pressure and temperature measurement in one measuring point
- Additional safety barrier for explosive or toxic media
- Connection to hazardous areas (Zone 0)

Process transmitter Model IPT-10 and Diaphragm seal Model 990.27, diaphragm made of Tantalum

System fill fluids

WIKA offers a wide range of system fill fluids for use between the diaphragm seal and the measuring instrument to meet many specific application requirements. For each application a suitable fill fluid is available.

Extract of the most frequently used system fill fluids for chemical processes

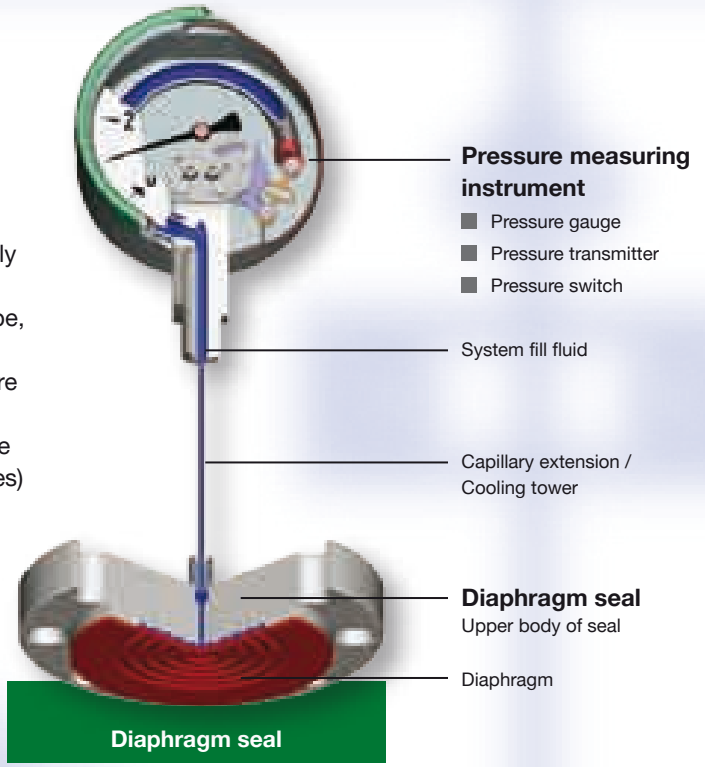
Common designation	WIKA code no.	Permissible media temperature p_{abs} < 1 bar [°C]	p_{abs} ≥ 1 bar [°C]	Density at temperature [g/cm³]	[°C]	Viscosity at temperature [m²/s10-6]	[°C]	Notes
Silicone oil	KN 2	–	-20 ... +200	0.96	+25	50	+25	standard
Silicone oil	KN 17	-90 ... + 80	-90 ... +180	0.914	+20	4	+20	
High-temperature oil	KN 3.1	-10 ... +100	-20[1] ... +300	1.07	+20	39	+20	
High-temperature oil	KN 3.2	-10 ... +200	-20[1] ... +400	1.07	+20	39	+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-compatible
Neobee® M-20	KN 62	-20[1] ... +170	-20[1] ... +250	0.85	+15	56	+20	food-compatible

1) With capillary extension from -10 °C • 2) With capillary extension from 0 °C • 3) German federal institute for material research and testing

There are two standard types of seals for the process industry: Diaphragm seals and diaphragm in-line seals.

Diaphragm seals

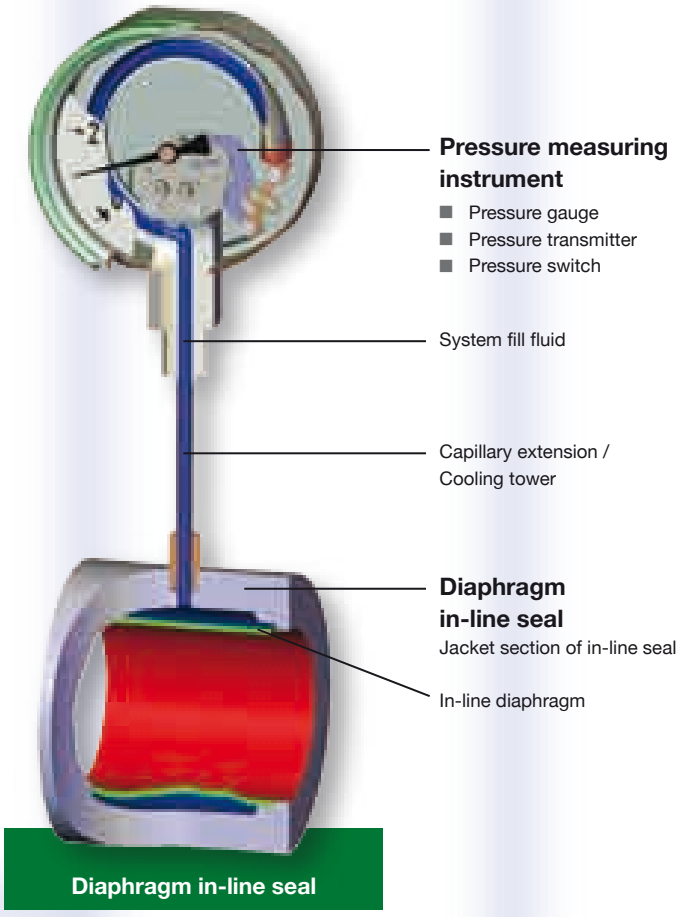
Diaphragm seals are mounted to existing fittings. Generally the fittings are T-pieces (which are integrated into a pipeline) or welding sockets (which are then welded onto a pipe, process vessel or tank). This diaphragm seal type offers the advantage that the „contact surface“ between pressure medium and diaphragm is relatively large, thus ensuring accurate pressure measurement. The fact that they can be easily dismounted (e.g. for cleaning or calibration purposes) is a further advantage.



Diaphragm in-line seals

Diaphragm in-line seals are ideal for use with flowing process media. With the seal being completely integrated in the process line, measurements are not affected by any turbulence, corners, dead legs or other obstructions in the flow direction. The diaphragm in-line seal is installed directly in the pipeline between two flanges, so that no special measuring point connections are required.

In comparison with other designs with grooves or non-circular geometry, diaphragm in-line seals with their perfectly circular cylindrical form are self-cleaning and the process medium can flow through without any hindrance. A variety of nominal pipe diameters enables adaptation to the cross-section of the particular pipeline.



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 up to 0...8000 bar with accuracies from 0.075%.

When connected to diaphragm seals these devices 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.

IPT-10

Pressure transmitter with Turn Down up to 1:30

Accuracy	from 0.075 % up to 0.1 % of span
Measuring range	0…0.1 to 0…4000 bar -1…0 to –0.1…0 bar
Output signal	4...20 mA; HART® FOUNDATION Fieldbus™ PROFIBUS PA
Approvals	intrinsically safe per ATEX flameproof enclosure per ATEX
Options	flush diaphragm integrated display SIL 2 aluminium or stainless steel case valves

UniTrans IUT-10

Pressure transmitter with Turn Down up to 1:2

Accuracy	from 0.1 % up to 1.6 % of span
Measuring range	0…0.1 to 0…4000 bar -1…0 to -0.1…0 bar
Output signal	4...20 mA; HART®
Approvals	intrinsically safe per ATEX
Options	flush diaphragm integrated display oxygen version aluminium or plastic case valves

Model 892.34.1998

Differential pressure gauge with transmitter

Accuracy	1.2 % of span
Measuring range	0…6 mbar to 0…25 bar
Max. operating pressure	40 bar
Output signal	0…20 mA (3-wire) 4…20 mA (2-wire)
Approvals	intrinsically safe per ATEX Germanischer Lloyd
Options	oxygen version valve blocks

For further information please refer to www.wika.de

E-10 / N-10 / IS-20

Pressure transmitters for applications in hazardous environments

Accuracy	0.25 to 0.5 % of span
Measuring range	0…0.1 to 0…8000 bar -1…0 to -0.1…0 bar
Approvals	
E-10	explosion proof enclosure per ATEX, FM
N-10	non-incendive per ATEX, FM, CSA
IS-20	intrinsically safe per ATEX, FM and CSA Germanischer Lloyd
Options	flush diaphragm field casing design high temperature version

IL-10

Level and depth probes

Accuracy	0.25 to 0.5 % of span
Measuring range	0…0.1 to 0…25 bar
Approvals	intrinsically safe per ATEX, FM and CSA Germanischer Lloyd
Options	battery power supply lightning protection Hastelloy design

For further information please refer to www.wika.de

Mechanical pressure gauges with bourdon tube

Model 131.11

Application	for gaseous and liquid, also aggressive media, also in aggressive environments
Nominal size [mm]	40, 50, 63
Scale ranges	0…1.0 to 0…600 bar (40 0…1.0 to 0…600 bar (50) 0…1.0 to 0…600 bar (63
Accuracy class	2.5
Material wetted parts	stainless steel

Model 232.34 / 233.34

Process gauge

Application	for gaseous and liquid, aggressive, not highly-viscous and non-crystallising media
Nominal size	4 ½“
Scale ranges	0...0.6 to 0...1000 bar 0...10 to 0...15000 psi
Accuracy class	ASME B40.1 Grade 2A
Material wetted parts	stainless steel

Models 232.50 / 233.50

Application	for gaseous and liquid, also aggressive media, also in aggressive environments
Nominal size [mm]	63, 100, 160
Scale ranges	0…1.0 to 0…1000 bar (63) 0…0.6 to 0…1000 bar (100)) 0…0.6 to 0…1600 bar (160)
Accuracy class	1.0 1.6 (NS 63)
Material wetted parts	stainless steel

Models 232.30 / 233.30 (S)

Safety pattern version

Application	particularly safe in gaseous media
Nominal size [mm]	63, 100, 160
Scale ranges	0…1.0 to 0…1000 bar (63) 0…0.6 to 0…1000 bar (100) 0…0.6 to 0…1600 bar (160)
Accuracy class	1.0 1.6 (NS 63)
Material wetted parts	stainless steel

For further information please refer to www.wika.de

Mechanical pressure gauges with diaphragm/capsule

Models 432.50 / 433.50

Application	for gaseous and liquid, also aggressive media, also in aggressive environment
Nominal size [mm]	100, 160
Scale ranges	0…16 mbar to 0…40 bar
Accuracy class	1.6
Material wetted parts	stainless steel NiCrCo alloy, FPM/FKM

Models 632.50 / 633.50

Application	for gaseous and liquid, also aggressive media, also in aggressive environments
Nominal size [mm]	63, 100, 160
Scale ranges	0…40 to 0…600 mbar (63) 0…25 to 0…600 mbar (100) 0...2.5 to 0…600 mbar (160)
Accuracy class	1.6
Material wetted parts	stainless steel, FPM/FKM

Model 432.55

Application	in food, bio and pharmaceutical industries
Nominal size [mm]	100, 160
Scale ranges	0…6 bar
Accuracy class	1.6
Material wetted parts	stainless steel

For further information please refer to www.wika.de

Mechanical pressure gauges for differential pressure

Models 732.14 / 733.14

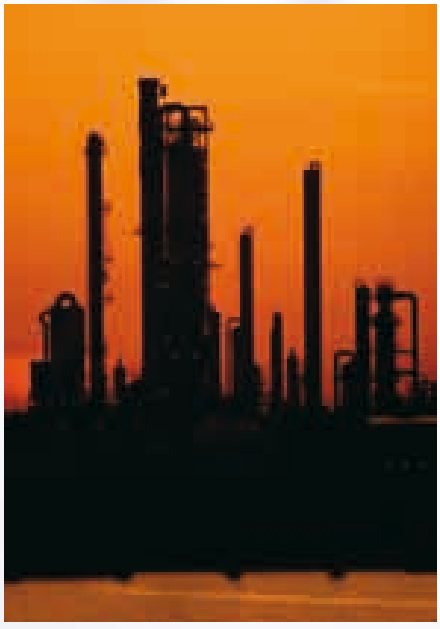
Multi purpose design, high overpressure safety

Application	for gaseous and liquid, also aggressive media,, also in aggressive environments
Nominal size [mm]	100, 160
Scale ranges	0…60 mbar to 0…40 bar
Accuracy class	1.6
Material wetted parts	stainless steel, NiCrCo alloy, FPM/FKM

Models 732.51 / 733.51

Process industry series, all welded construction

Application	for gaseous and liquid, also aggressive media, also in aggressive environments
Nominal size [mm]	100, 160
Scale ranges	0…16 mbar to 0…25 bar
Accuracy class	1.6
Material wetted parts	stainless steel, NiCrCo alloy



For further information please refer to www.wika.de

Mechanical pressure gauges with electrical accessories

Model 232.30 with 891.34

Bourdon tube pressure gauge with transmitter

Application	for gaseous and liquid, aggressive media
Nominal size [mm]	100
Scale ranges	0…0.6 bar to 0…1600 bar
Accuracy class	1.0
Material wetted parts	stainless steel
Output signal	4...20 mA
Options	alarm contact case with liquid filling Ex version

Model 232.30 with 831

Bourdon tube pressure gauge with inductive contact

Application	for gaseous and liquid, aggressive media
Nominal size [mm]	100, 160
Scale ranges	0...1 bar to 0...1000 bar
Accuracy class	1.0
Material wetted parts	stainless steel
Options	case with liquid filling SIL

Model 732.51 with 831

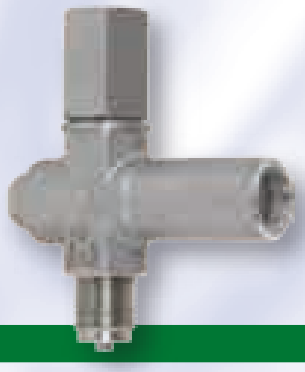
Differential pressure gauge with inductive alarm sensor

Application	for gaseous and liquid, aggressive media
Nominal size [mm]	100
Scale ranges	0…16 mbar to 0…25 bar
Accuracy class	1.6
Material wetted parts	stainless steel, NiCrCo alloy
Options	case with liquid filling

For further information please refer to www.wika.de

Accessories for pressure measuring instruments

for processes in the chemical, machine building, On-/Offshore industries



Model 910.13

Overpressure protector

The overpressure protector consists of a spring loaded piston valve. Under normal pressure conditions the spring holds the valve open. When the system pressure exceeds the set pressure, the force exerted by the spring is overcome and the valve closes. The valve will remain closed until the system pressure drops approx. 25 % below the closing pressure, where-upon the force of the spring will open the valve.

Applications	safeguarding against overpressure Stainless steel version for corrosive media, and also corrosive environments
Special features	■ Version with pressure connection in Form A or Form B ■ 7 different setting ranges selectable ■ Nominal pressure up to 600 bar ■ Overpressure safe up to 1000 bar ■ Vacuum safe

Models FOP-10 / FPT-10

Orifice plate and Pitot tube for flow measurement

Orifice plate and Pitot tube produce a differential pressure signal that is usually piped to differential pressure gauges, switches and transmitters. This is converted into flow unit and displayed or changed into a linear output signal.

Applications	for aggressive media, also in aggressive environments
Materials	Stainless steel, Hastelloy, Titanium, Monel
Special features	■ Flanges for welding or screwing ■ Complete meter run ■ Pipe sizes from 10 to 8000 mm ■ Maximum working pressure 400 bar ■ Maximum working temperature 1300 °C

Model 910.25

Pressure-equalising valves to fit differential pressure gauges

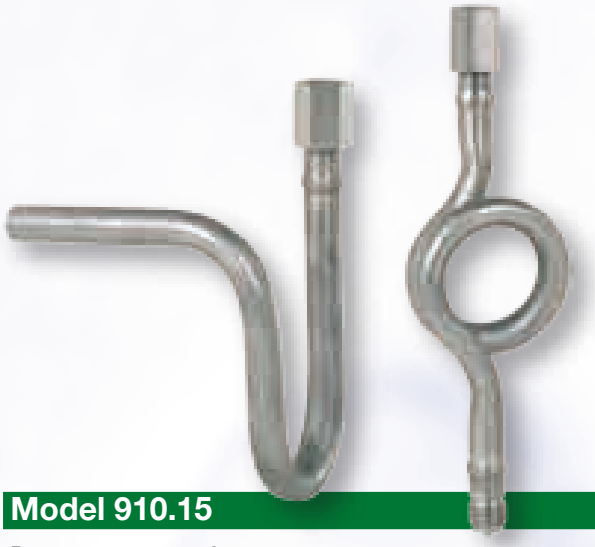
One-way valves: By means of integrated pressure-equalising valves it is ensured that the pressures on the high and low pressure sides are uniform, one-sided overpressure during start-up and operation of the pressure system is avoided and zero-point control of the instrument during operation is possible.

Three-way valves: These pressure-equalising valves with integrated isolating valves enable the isolation of the process lines without any interruption of the operation, the isolation of the pressure instrument for inspection or replacement purposes, the protection of the instrument against overpressure beyond the pressure rating of the instrument as well as the measurement of static pressure (after dismounting the differential pressure measuring instrument).

Four-way and five-way valves: These pressure-equalising valves with integrated isolating valves as well as purging and air-bleeding valves enable one- or two-sided air bleeding or purging of the system while the pressure instrument is operative.

Applications	all stainless steel versions for corrosive media and aggressive environments
Special features	■ One-way, three-way, four-way and five-way valves ■ Tough versions in copper alloy and stainless steel ■ PN 100 and 400 bar pressure rated valves with sealing cones at both sides ■ High variety of process connections ■ Pressure ratings up to 40, 100 or 400 bar

For further information please refer to www.wika.de

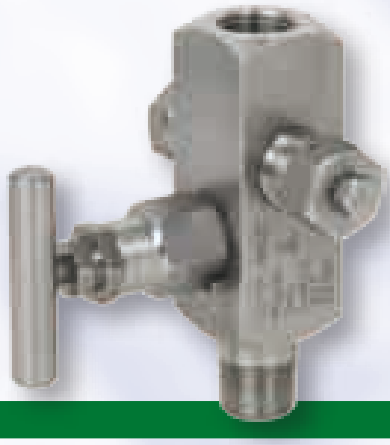


Model 910.15

Pressure gauge syphons

Pressure gauge syphons are intended to protect the pressure gauge from the effect of hot pressure media such as steam and also to reduce the effect of rapid pressure surges. The syphon is installed either directly at the connection adapter of the gauge or at the shutoff device attached under it (cock or valve). The condensate from the pressure medium that is collected inside the coiled or U-shaped portion of the syphon prevents direct contact of the hot media with the gauge.

Designs	according to DIN 16 282 and other industrial standards
Form	U-form to fit horizontal pressure tap trumpet form to fit vertical pressure tap



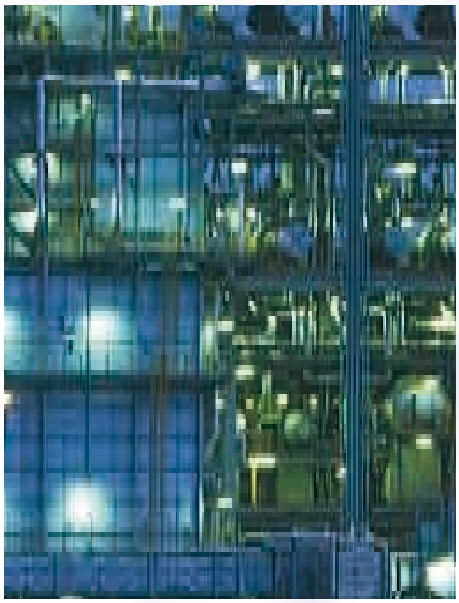
Model 910.11

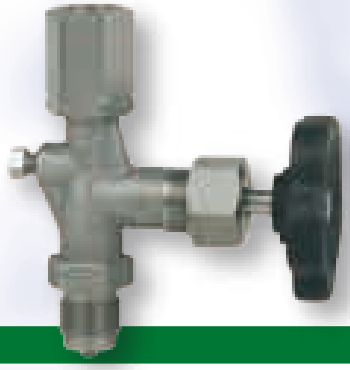
Pressure gauge valves for general applications

Suitable for isolating pressure lines and as a primary shut-off, as well as for connection to pressure and differential pressure measuring instruments.

Applications	for corrosive pressure media, and also aggressive environments
Materials	Stainless steel version, Monel, Hastelloy, Duplex
Special features	Nominal pressures up to PN 420 (6.092 PSI) Externally threaded shaft Process connection 1/2 NPT Gland packing PTFE up to 200°C, pure graphite up to 550°C NACE Specification ASME B31.1

For further information please refer to www.wika.de





Model 910.11

Pressure gauge valves for pressure measuring instruments

The shut-off valves are supplied in different designs with a rotating union nut and shaft to support the instrument. Valves fitted with a test connection enable simultaneous connection of a test gauge to check the pressure in the pipe.

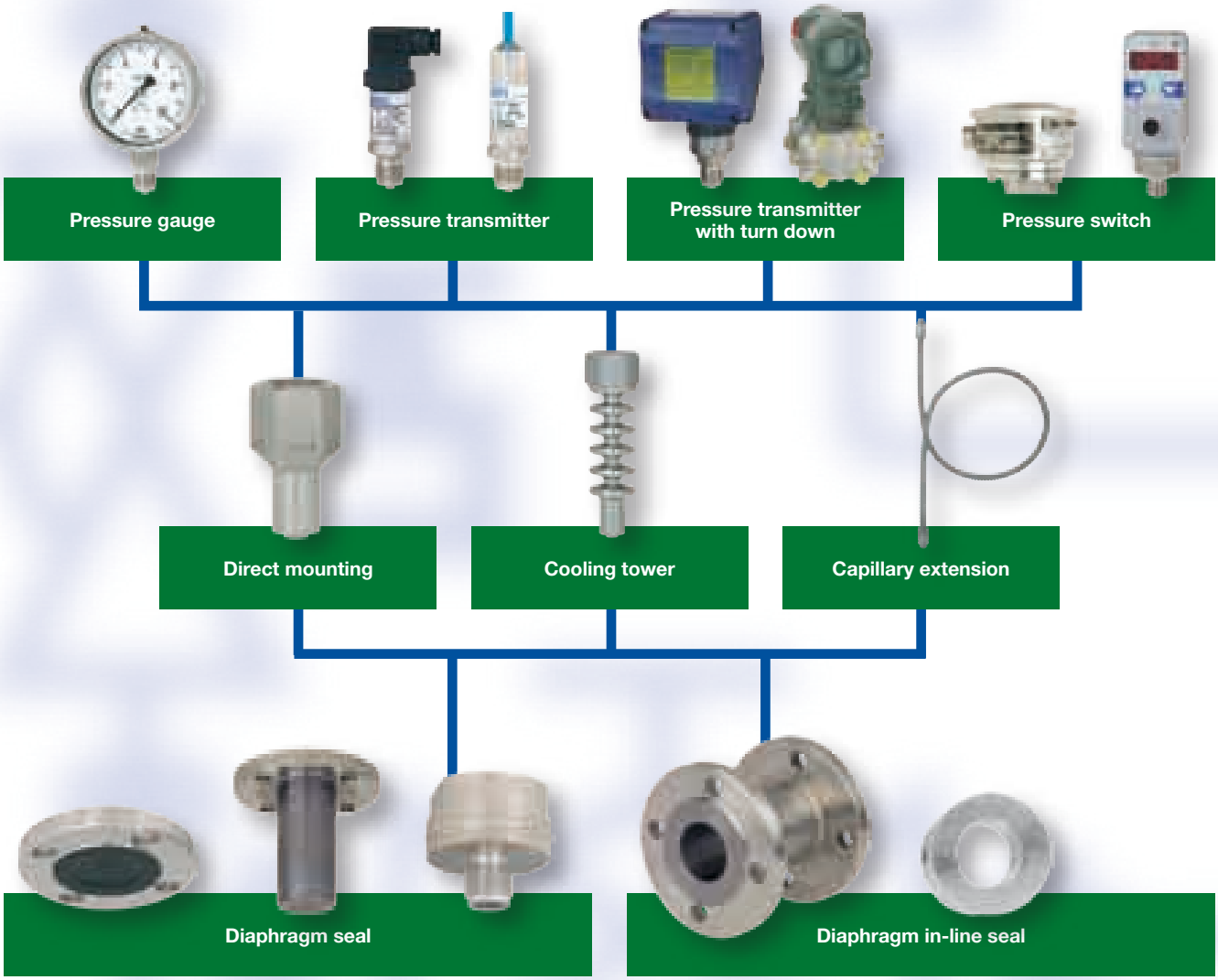
Applications	stainless steel version for corrosive pressure media, and also aggressive environments.
Special features	■ Standard valves per DIN 16 270 (with vent plug) ■ Valves with test connection per DIN 16 271 (with vent plug) ■ Valves with separate isolating test connection per DIN 16 272 ■ Nominal pressures up to 400 bar

Pressure measuring instruments with diaphragm seals

The operating limits of pressure measuring instruments can be extended by combining the measuring instruments with diaphragm seals. Meanwhile, there are over 15,000 different WIKA diaphragm seal variants available. So process engineers can measure pressure with instruments that are individual and custom-made for the application, and so are ideally tailored to their chemical processes.

Combinations and mounting possibilities of pressure measuring instruments and diaphragm seals

The connection of the diaphragm seal to the measuring instrument can either be made via direct-mounting or via a flexible capillary extension. The direct connection is made via a direct screw connection or by welding the measuring instruments to the diaphragm seal or by a connecting piece. At high temperatures a cooling tower can be inserted.



Diaphragm seals with threaded connection

Model 990.10

Threaded design

Application	general process industry
Process connection	threaded
PN max [bar]	25, 100, 250
Wetted parts	stainless steel 316L, special materials see table on page 7 sealing element: FPM (Viton®) (Viton® Flouroelastomer is a registered trademark of DuPont Performance Elastomers)
Diaphragm arrangement	internal

Model 990.36

Small diaphragm seal, with flush diaphragm

Application	especially for highly viscous and crystallising media
Process connection	male thread
PN max [bar]	600
Wetted parts	stainless steel special materials see table on page 7
Diaphragm arrangement	flush

Model 990.31

Plastic design

Application	chemical engineering with plastic piping, plating industry; especially for waste water and fertilisers
Process connection	multi-purpose connection
PN max [bar]	10
Wetted parts	body PVC (alternatively PP or PVDF) diaphragm EPDM with PTFE lining
Diaphragm arrangement	internal

Model 990.34

Welded design

Application	general applications in machinery and plant construction and in the process industry
Process connection	threaded connection
PN max [bar]	160, 400, 600 or 1000
Wetted parts	stainless steel special materials see table on page 7
Diaphragm arrangement	internal

For further information please refer to www.wika.de

Diaphragm seals with flanged connection

Model 990.27

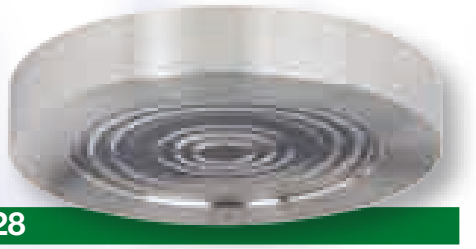
Flanged process connection, with flush diaphragm

Application	process and petrochemical industry, for exacting technical measurement requirements
Process connection	flange EN 1092-1 or ASME B 16.5
PN max [bar]	10...250 (400) (Class 150...2500)
Wetted parts	stainless steel 316L, for special materials see table page 7
Diaphragm arrangement	flush

Model 990.26

Flanged process connection, with internal diaphragm

Application	process industry; for small flanged process connections (≤ DN 25 / 1“)
Process connection	flange EN 1092-1 or ASME B 16.5
PN max [bar]	10...40 (Class 150...300)
Wetted parts	stainless steel 316L, for special materials see table page 7
Diaphragm arrangement	internal



Model 990.28

Cell-type (sandwich) seal

Application	process and petrochemical industry, for high process pressures; for fitting to the measuring point an additional blind flange is required
Process connection	flang EN 1092-1 or ASME B 16.5
PN max [bar]	16...400 (Class 150...2500)
Wetted parts	stainless steel 316L, for special materials see table page 7
Diaphragm arrangement	flush

Model 990.29

Flange-type seal

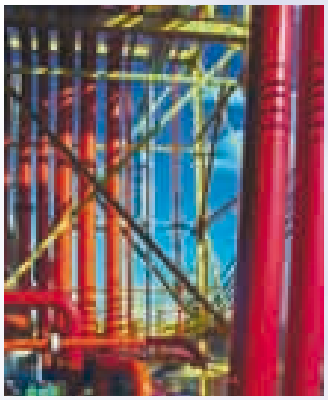
Application	process and petrochemical industry, specially for thick-walled or insulated vessels
Process connection	flange EN 1092-1 or ASME B 16.5
PN max [bar]	10...40 (100) (Class 150...300)
Wetted parts	stainless steel 316L, for special materials see table page 7
Diaphragm arrangement	flush, with extension tube

For further information please refer to www.wika.de

Diaphragm seals for in-line measurements

Diaphragm seals for block flange or saddle flange

Application	chemical engineering; System for fitting the measurement connection and integrating the measuring instrument into the process line
PN max [bar]	100 / 250
Wetted parts	stainless steel 316L, for special materials see table page 7 sealing element: FPM (Viton®) (Viton® Flouroelastomer is a registered trademark of DuPont Performance Elastomers)
Diaphragm arrangement	flush
Model	diaphragm seal 990.15 block flange for simple pipes 910.19 block flange for jacketed pipes 910.23 saddle flange 910.20



Model 981.10

Cell-type (sandwich) seal

Application	for flanged connections, for direct, permanent installation in pipelines; for flowing media; for dead-space free measuring points
Process connection	cell-type
PN max [bar]	400
Wetted parts	stainless steel 316L, for special materials see table page 7
Diaphragm arrangement	circular in-line diaphragm

Model 981.27

Flange-type seal

Application	for flanged connections, for direct, permanent installation in pipelines; for flowing media; for dead-space free measuring points
Process connection	flange assembly EN 1092-1 or ASME B 16.5
PN max [bar]	16 / 40
Wetted parts	stainless steel 316L, for special materials see table page 7
Diaphragm arrangement	circular in-line diaphragm

For further information please refer to www.wika.de

Electrical temperature measuring instruments

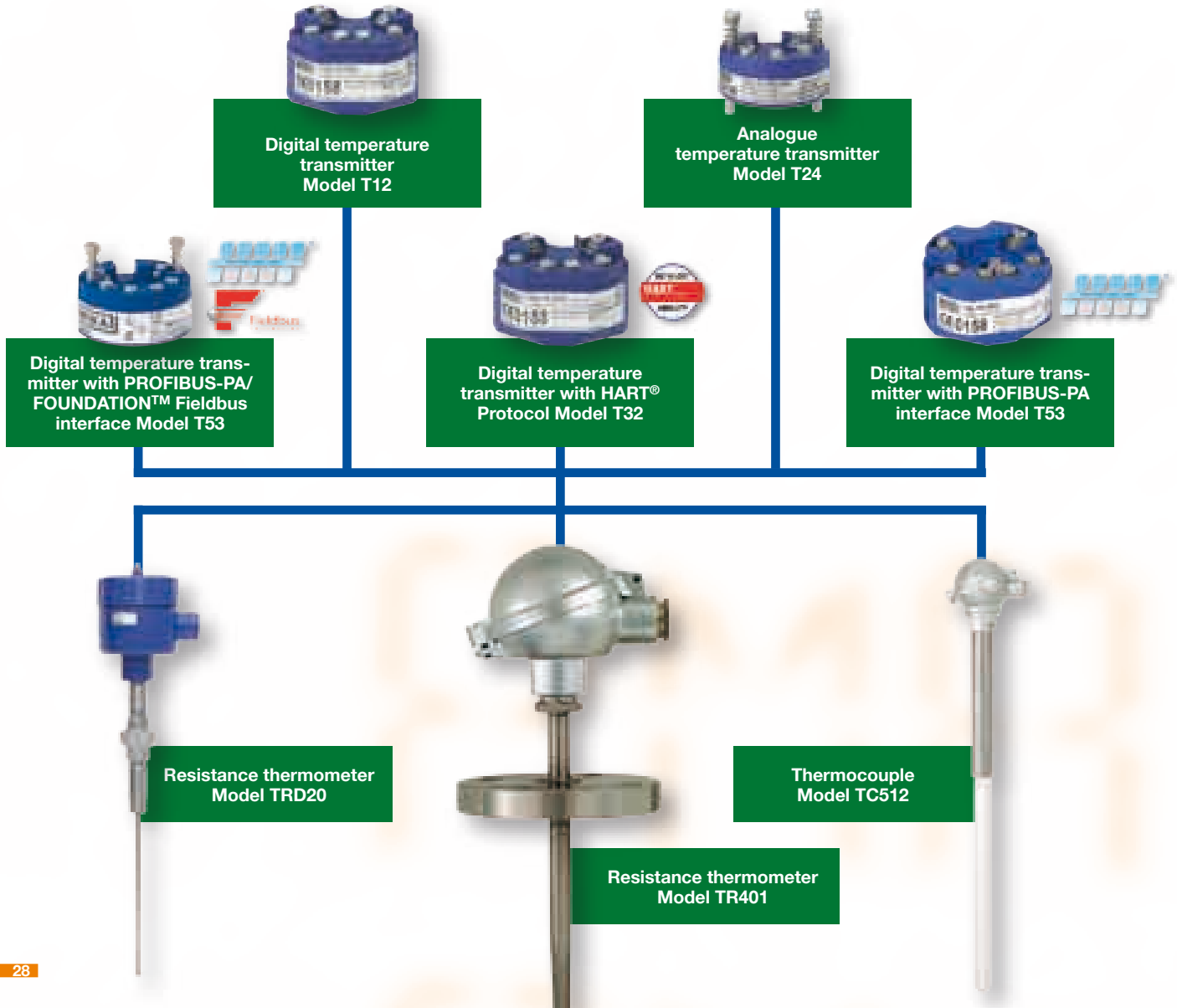
For electrical temperature measurement, WIKA designs and manufactures resistance thermometers, thermocouples and temperature transmitters. These are suited to the process conditions and, particularly resistance thermometers, to the measurement accuracy requirements of applications in both the chemical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

The major function of a transmitter is the conditioning of the temperature-dependent resistance change (for resistance thermometers) or the temperature-dependent potential difference (for thermocouples) into a load-independent standard signal. Currently the analogue 4...20 mA signal is the most frequently used signal, however digital signals (field bus technology) are becoming more and more prominent. With an analogue 4...20 mA signal, in conjunction with some intelligent circuit design, any sensor errors that occur can be alerted over the two-wire current loop, in parallel with the measured value. The conditioning and transmission of standard signals (analogue or digital) take place absolutely fail-safe, over long distances.

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 °C... +85 °C with a max. humidity of 100 %.

Instruments with analogue output signal, 4...20 mA or 4...20 mA/HART® protocol, and with digital output signal PROFIBUS PA and FOUNDATION™ fieldbus are available. Our extensive range is completed by special temperature transmitters certified according to SIL.

Combination possibilities for electrical thermometers with transmitters



Resistance thermometers

Resistance thermometers are equipped with sensorelements on the basis of metallic conductors which change their electrical resistance dependent on 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 in the connection head. Connection to the electronic evaluation system (controller, display, recorder, etc.) can be a 2, 3 or 4 wire circuit dependent on the application.

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

Accuracy classes A and B apply to all resistance thermometers. They are available with a sensor limiting error according to DIN EN 60 751.

Thermocouples

Thermocouples are temperature sensors which directly supply a voltage dependent on the temperature without additional power supply due to their thermo-electric properties. You are given a choice of various types of thermocouples matched to the appropriate temperature to be measured.

In our range of products you will find thermocouples with connected cable as well as versions with connection head. A temperature transmitter can be installed in the connection head. For connection to the electronic evaluation system (controller, display, recorder, etc.) special thermo-electric compensating cable must be used.

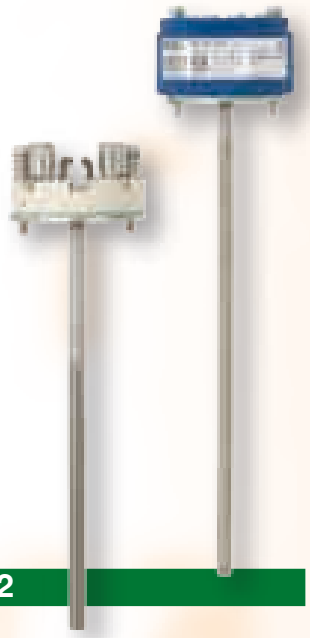
Thermocouples are suitable for applications between -100 °C and +1,800 °C (dependent on instrument model, type of thermocouple and materials coming into contact with the medium).

Accuracy classes 1 and 2 apply to all thermocouples. They are available with a sensor limiting error according to DIN EN 60 751.

Models TR200 / TC200

For fitting to thermowells

Application	machinery, plant and tank construction energy and power plant technology
Measuring range	-200 °C ... +1200 °C
Options	measuring insert exchangeable intrinsically safe version (ATEX)



Models TR002 / TC002

Flexible measuring inserts

Application	machinery, plant and tank construction energy and power plant technology
Measuring range	-200 °C ... +1200 °C
Options	intrinsically safe version (ATEX)

For further information please refer to www.wika.de

Resistance thermometers / Thermocouples

Models TR201 / TC201, TR401 / TC401

For fitting to thermowells

Applications	machinery, plant and tank construction energy and power plant technology
Measuring range	-200 °C ... +600 °C
Special features	fabricated thermowell included
Options	measuring insert exchangeable intrinsically safe versions (ATEX)

Models TRD20 / TCD20

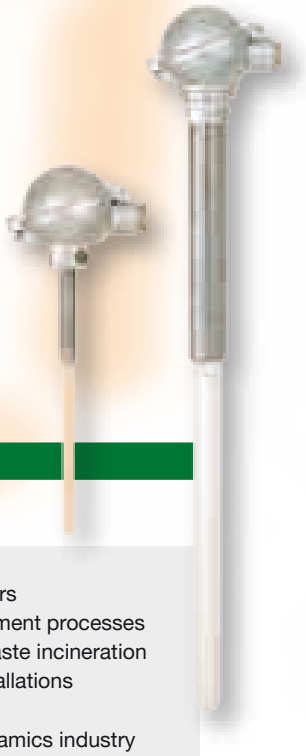
Flameproof enclosure

Applications	off-shore, machinery, plant and tank construction energy and power plant technology
Measuring range	-200 ... +1200 °C
Special features	suitable for many thermowell designs
Options	measuring insert exchangeable type examination certificate (ATEX)

Models TR7X0 / TC7X0

Sheathed design

Applications	machinery, plant and tank construction energy and power plant technology
Measuring range	-200 ... +1200 °C
Special features	internally mineral insulated high mechanical strength vibration proof
Options	intrinsically safe versions (ATEX)



Model series TC51X

Straight design per DIN 43 733,
for flue gas measurement

Applications	blast furnaces regenerating air heaters annealing / heat treatment processes refuse / hazardous waste incineration industrial heating installations heat generation glass / porcelain / ceramics industry cement and brick production
Measuring range	up to +1700 °C
Special features	thermowell made of heat resistant steel or ceramic support tube of carbon steel gastight process connection
Options	ceramic inner tube

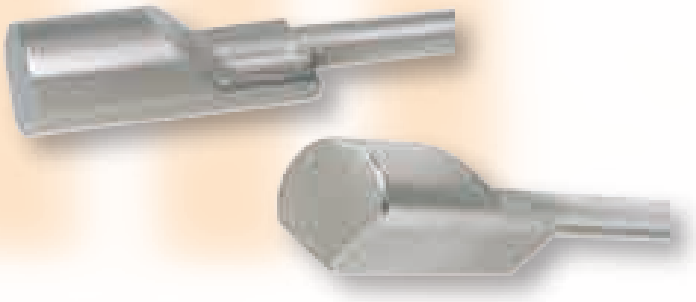
For further information please refer to www.wika.de

Customer-specific temperature sensors

The V-PAD thermocouple

The V-PAD is designed to measure the influence of high radiant temperature at the measuring point of a tube surface. The V-PAD thermocouple is directly welded to the surface of a process tube and can be supplied with or without an insulated shield.

The WIKA patented V-PAD has proven to be extremely effective and reliable in power boilers and furnaces in a large number of refineries throughout the world. Reliable tube skin measurement is essential as it provides immediate information on any rise in tube temperature and can extend the life of the tubes and time between plant shutdowns.



Reliable surface-temperature measurement

- Chemical Industry
- Superheated steam applications
- Refineries
- Furnaces
- Heat exchangers
- Power boilers

Multi-point 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 homogenously.

The measurement of the temperature distribution within a plant element can be realized cost-effectively using WIKA multi-point assemblies. Multi-point 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

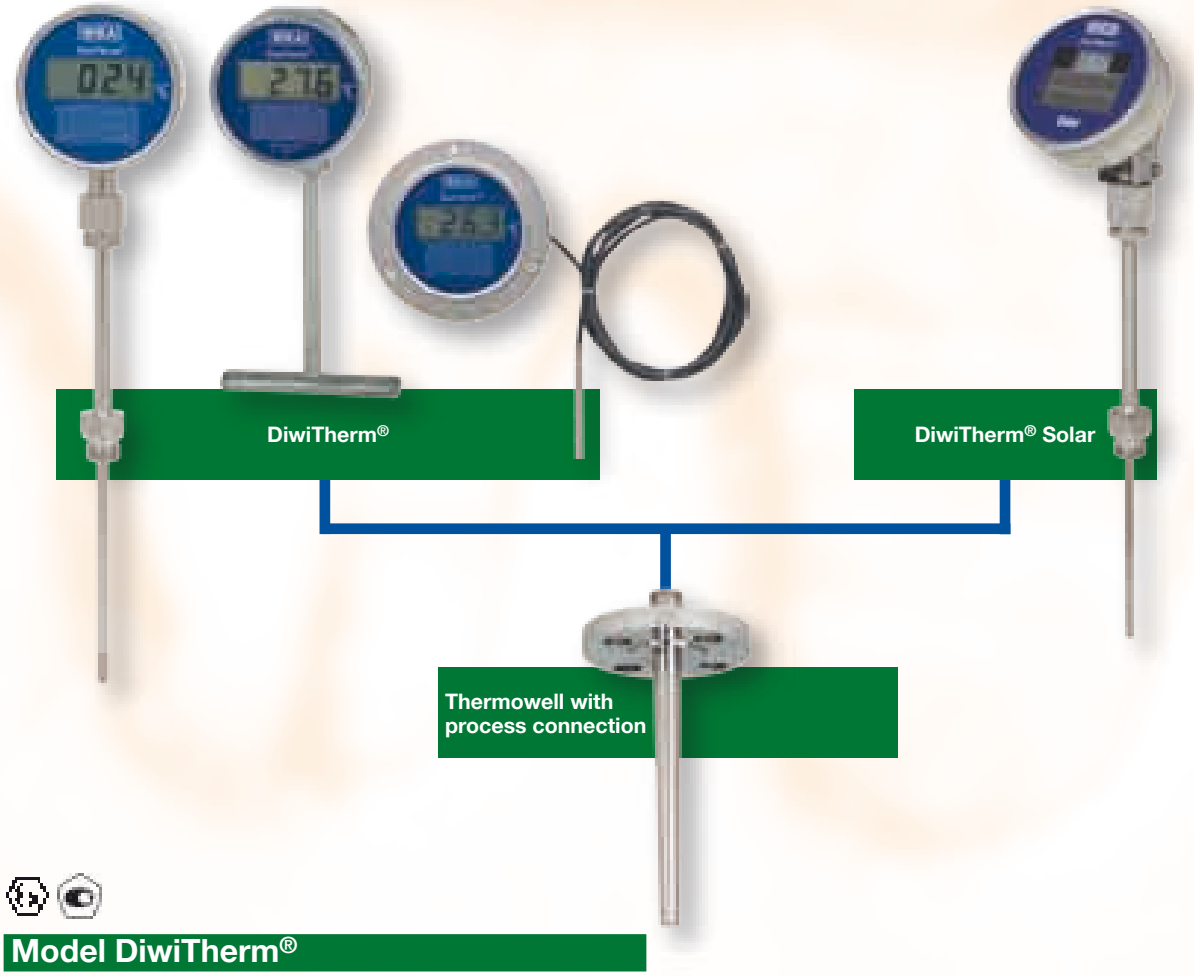
- Chemical Industry
- Distillation columns
- Vessel construction

DiwiTherm® – the ideal combination of digital display and resistance thermometer

This compact temperature measuring instrument is versatile to use and works without an external power supply. The large-sized LCD display ensures readings are made correctly. Various combination options of insertion length, neck length, connection to the thermowell etc. allow the thermometers to be matched to each thermowell size and each application.

Optionally, the DiwiTherm® can be manufactured with a process connection for tube skin temperature measurement. In addition, an analogue 4... 20 mA output version is optionally available as is an Ex version of this versatile indicator. The DiwiTherm® Solar can even run without a battery and is thus completely maintenance-free.

Combination possibilities for DiwiTherm® and thermowells



Model DiwiTherm®

Measuring principle	Pt1000
Class	± 0,5 % of measured value + 0.5 K
Nominal size	100
Material	case from stainless steel
Ingress protection	IP 65
Options	output 4...20 mA
	intrinsically safe versions (ATEX)

Model DiwiTherm® Solar

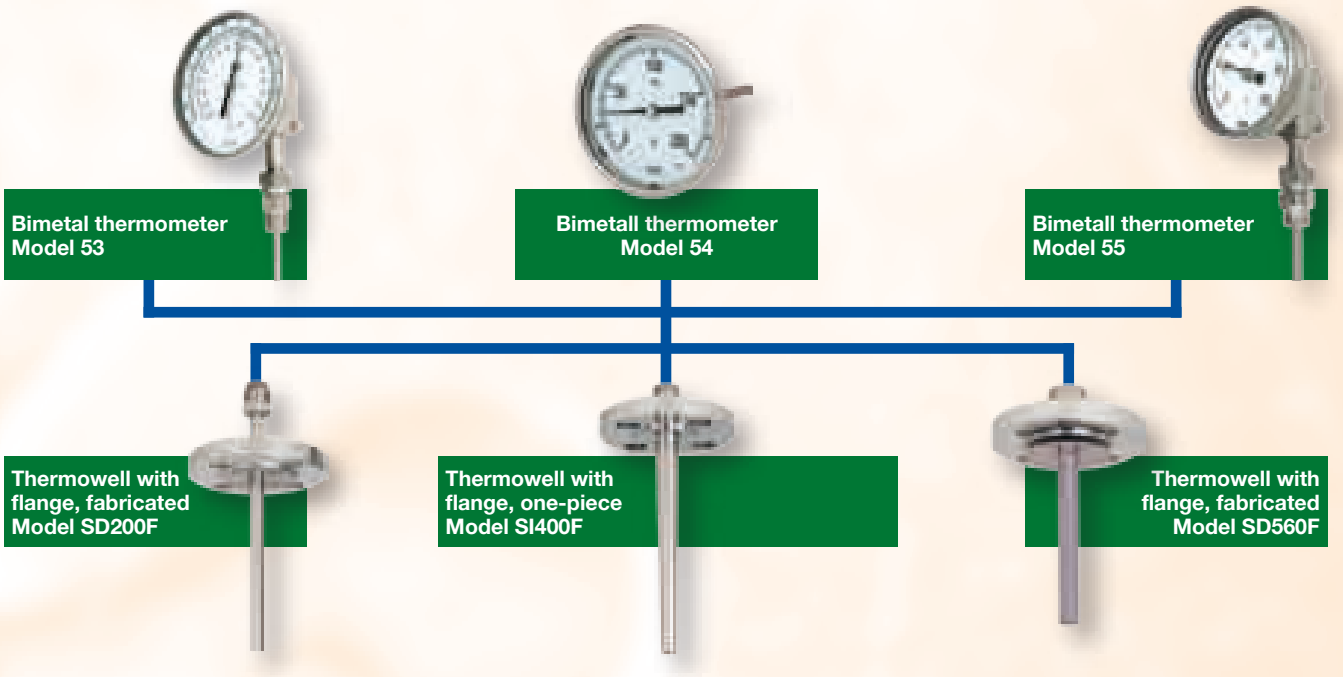
Measuring principle	NTC
Class	1% of scale range
Nominal size	100
Material	case from stainless steel
Ingress protection	IP 65

For further information please refer to www.wika.de

Mechanical temperature measuring instruments
Bimetal thermometers

The bimetal is made from two metal strips, permanently joined together, each metal having a different thermal expansion coefficient and it deflects as a result of temperature variations. The curvature is approximately proportional the change of temperature. From bimetallic strips two different measuring system forms were developed: helically wound and spirally wound. The mechanical deformation of the bimetallic strips in these spring forms results in a rotating motion with changes in temperature. If one end of the bimetal measuring system is secured, the other end turns the pointer-spindle and thus the pointer.

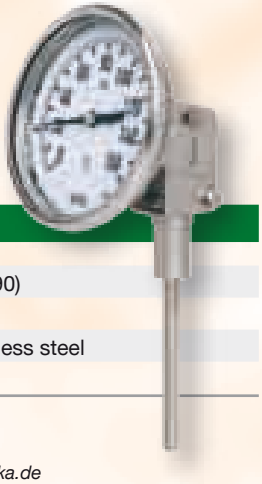
Combination possibilities for bimetal thermometers and thermowells



Applications
- Machinery, plant and tank construction
- Energy and power plant technology
- Chemical and petrochemical industry

Model 53

Class	1 (DIN EN 13 190)
Nominal size	3“, 5“
Material	case from stainless steel
Ingress protection	IP 65



Model 54

Class	1 (DIN EN 13 190)
Nominal size	63, 80, 100
Material	case from stainless steel
Ingress protection	IP 65

Model 55

Class	1 (DIN EN 13 190)
Nominal size	63, 100, 160
Material	case from stainless steel
Ingress protection	IP 65

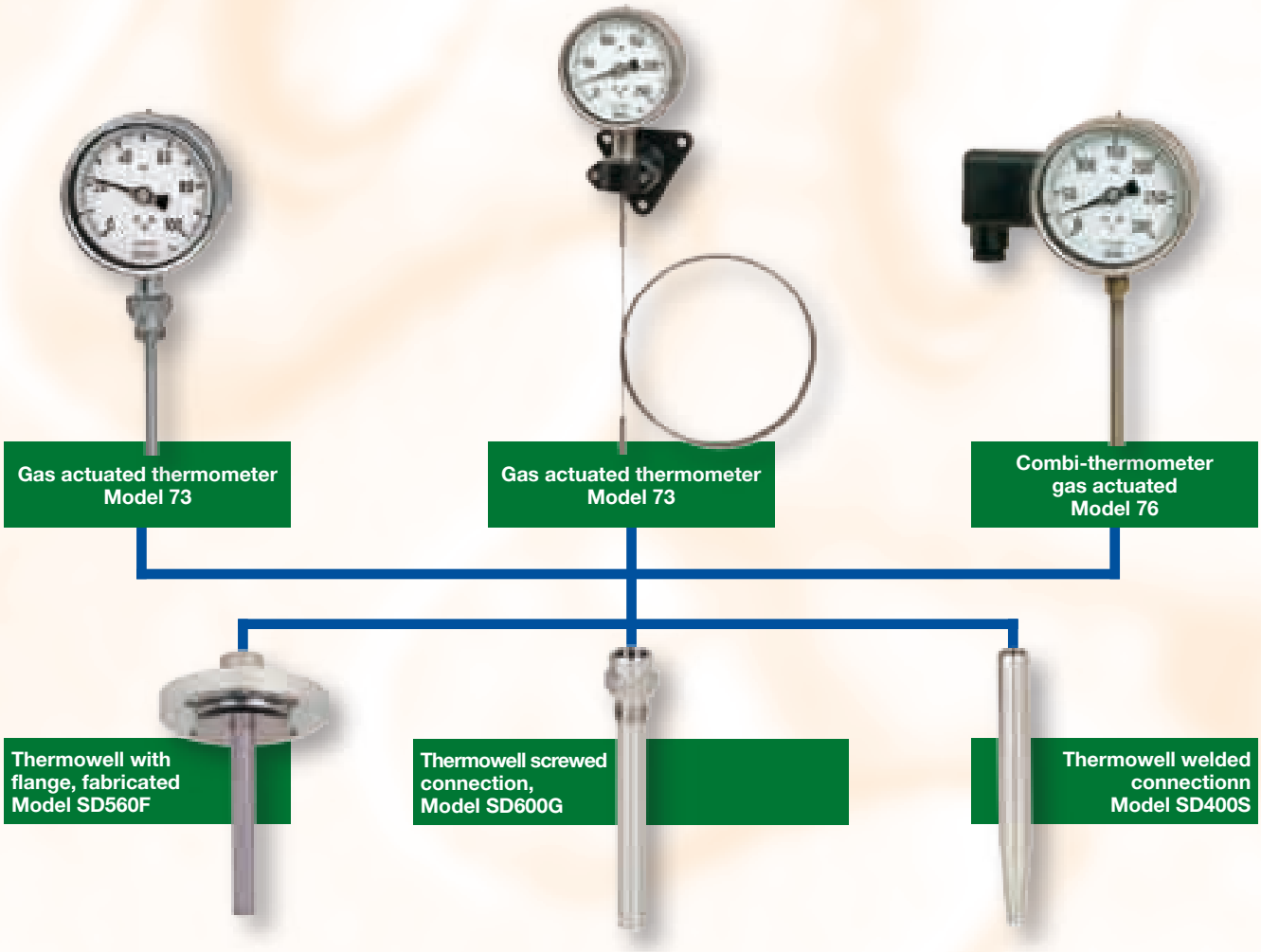
For further information please refer to www.wika.de

Mechanical temperature measuring instruments
Gas actuated thermometers

The measuring system consists of stem, a capillary and a case containing the bourdon tube element. The complete measuring system is filled with an inert gas under pressure. Any temperature variation in the stem causes a change in the internal pressure of the entire system, leading to a deflection in the bourdon tube, which is thus transferred to the pointer. By using a long capillary line, remote sensing of the temperature over distances up to 100m becomes possible.

Fluctuations of the ambient temperature at the housing can be neglected, since a bimetal element is inserted between the pointer mechanism and the bourdon tube for compensation.

Combination possibilities for gas actuated temperature measuring instruments and thermowells



Model 73

Applications	machinery, plant and tank construction energy and power plant technology chemical and petrochemical industry
Measuring principle	gas actuated - inert gas filled
Class	1 (DIN EN 13 190)
Nominal size	100, 160
Material	case from stainless steel
Ingress protection	IP 65

Model 76 Combi-thermometer, gas actuated

Applications	machinery, plant and tank construction energy and power plant technology chemical and petrochemical industry redundant measurement
Measuring principles	gas actuated - inert gas filled Pt100, 3-wire
Class Mechanical Electrical	 1 (DIN EN 13 190) B (DIN IEC 751)
Nominal size	100, 160
Material	case from stainless steel
Ingress protection	IP 65
Design	with stem or capillary

Thermometers with alarm contacts

Applications	machinery, plant and tank construction energy and power plant technology chemical and petrochemical industry
Measuring principle Model 73 Model 76 Model 55	 gas actuated - inert gas filled gas actuated - inert gas filled bimetal
Nominal size	100, 160

For further information please refer to www.wika.de

Thermowells for temperature probes

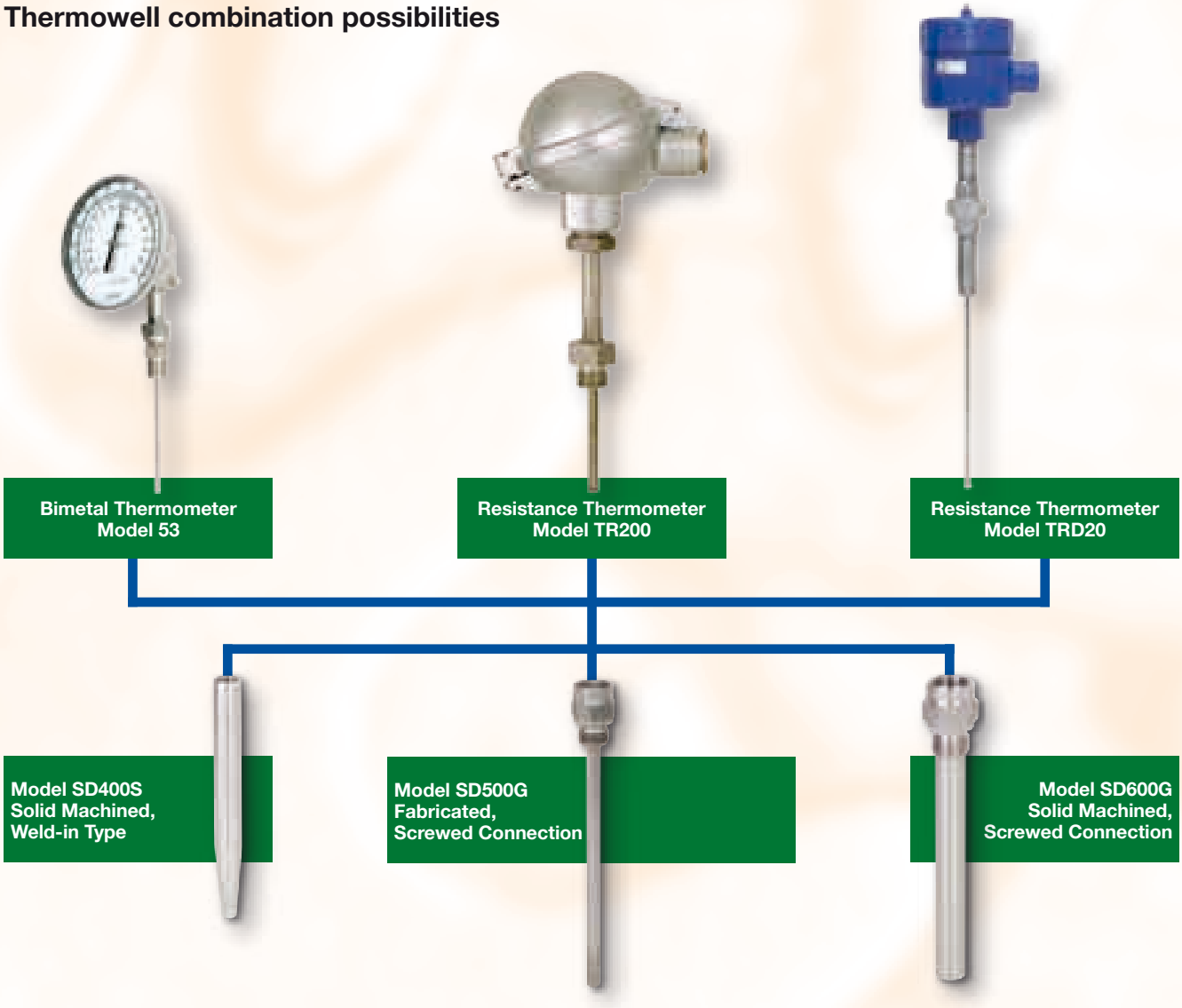
Whether in aggressive or abrasive process media, whether within high or very low-temperature ranges; in order not to expose the temperature elements of electrical or mechanical temperature measuring instruments directly to the medium, there are appropriate thermowells for each application.

Thermowells can be made from solid bar stock or built up from tubing sections and either screwed together, welded or flange-connected. They are offered in both standard and special materials, such as CrNi steel 1.4571, 316L, Hastelloy or Titanium. Each variant, by the nature of its build characteristics and its connection to the process, has specific pros and cons with regard to load limits and the special materials that can be used.

In order to manufacture flange mounting thermowells from special materials economically, alternative arrangements of standard thermowells according to DIN 43772 must be employed. Thus only the wetted parts of the thermowell are manufactured from special material, while the non-wetted flange consists of stainless steel and is welded to the special material.

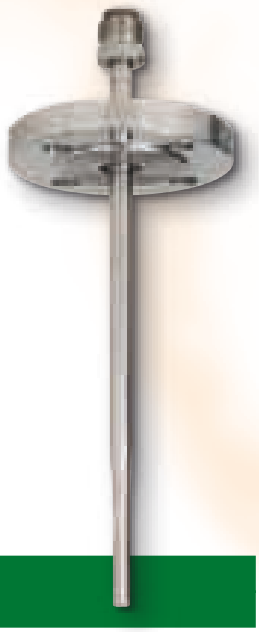
This construction can be applied to both multipart as well as one-piece thermowells. With tantalum as a special material, a removable sheath is used which is pushed over a stainless steel, carrier thermowell.

Thermowell combination possibilities



Fabricated, with Flange Model SD560F

Process connection	Flanges to valid national or international standards
Instrument connection Female thread	G 1/2, 1/2 NPT
Thermowell material	Stainless steel



Fabricated, with Flange Model SD300F

Process connection	Flanges to valid national or international standards
Instrument connection Male thread	M24 x 1.5, rotary
Thermowell material	Stainless steel

Solid Machined, Screwed Connection Model SI710G

Process connection	Running nut 1/2 NPT, 3/4 NPT, 1 NPT
Instrument connection Female thread	1/2 NPT
Thermowell material	Stainless steel

Solid Machined, with Flange Model SI410F

Process connection	Flanges to valid national or international standards
Instrument connection Female thread	G 1/2, 1/2 NPT
Thermowell material	Stainless steel
Full-Penetration Welded	

Technology at the highest level

WIKA offers a wide range of testing and calibration instruments as well as customer-specific solutions for pressure and temperature.

WIKA has developed these testing and calibration instruments using over 60 years of experience in calibrating pressure and temperature measuring instruments, and with more than 25 years of know-how gained as a member of the German Calibration Service.

Pressure calibration technology

Portable instruments, precision pressure indicators, controllers, calibrators, primary standards, incl. software and pressure generation devices

Temperature calibration technology

Portable instruments, precision temperature indicators, calibrators, calibration baths, primary standards, incl. software

Individual customer applications

Customised system solutions and systems that have been specially designed to customers specifications, ranging from simple calibration systems to entire plants and even completely equipped calibration laboratories.

Service tools

Our Service Tools Catalog will give you the maximum support regarding the calibration, adjustment, assembly and dismantling of your pressure or temperature measuring instruments.

Comprehensive and competent Services

Product quality, operational reliability and cost effectiveness are directly dependent on the accurate and reliable monitoring of the process parameters. Therefore put your trust in a competent partner when it comes to calibrating and maintaining your measuring instruments.

The WIKA Calibration and Service Center has been a member of the German Calibration Service (DKD) since 1982 and is accredited according to DIN EN ISO / IEC 17 025. Since that time we have actively brought our experience to bear in working groups and standardisation committees - Our contribution to technological progress.

For us service is more than just a word

If your instrument does not meet the specifications at first go: Any faults detected will be immediately repaired in the affiliated service area (pressure and temperature). Of course, as an independent service provider we offer the same service for instruments from other manufacturers as well.

Consulting / training

Are you planning to extend the range of instruments for your application? We will be pleased to use our experience to help you select the best suitable solutions. In cooperation with our team of testing and calibration experts customised products will be developed, on request even in the form of ready-to-use „Plug'n Play" systems. Of course the commissioning on site and the training of the operating personnel is included. Our calibration training courses will be adapted to your specific requirements, with the main emphasis on theoretical or practical aspects of calibration technology as you please. Service (e.g. adjustment) topics may also be focused on as required.

DKD laboratories for pressure and temperature

In the DKD calibration laboratories the measuring features of your equipment are tested in accordance with national and international pressure and temperature measuring standards and directives, e.g. DKD-R 6-1 (Calibration of Pressure Measuring Instruments) or EA-4/17 (Calibration of Pressure Balances). The tests are documented by means of an internationally acknowledged DKD calibration certificate.

On-site service

You don't want to let your measuring instruments out of your hands? In this case we recommend making use of our on-site service. WIKA has two fully air-conditioned calibration and service vehicles in which DKD calibrations and repairs can be carried out locally. In addition we have the approval to carry out „on-site calibrations", i.e. directly on your premises. This is particularly recommendable for complex precision measuring instruments.