Energy | Chemical/petrochemical industry | Oil & gas | Water/wastewater

Dial thermometers in the process industry

WIKA

Smart in sensing

Our knowledge for your success

Alexander Wiegand,
Chairman and CEO, WIKA

About us

As a family-run business acting globally, with 10,000 highly qualified employees, the WIKA group of companies is a worldwide leader in pressure and temperature measurement. The company also sets the standard in the measurement of level, force and flow, and in calibration technology.
Founded in 1946, WIKA is today a strong and reliable partner for all the requirements of industrial measurement technology, thanks to a broad portfolio of high-precision instruments and comprehensive services.

Excellence in technology and service

With manufacturing locations around the globe, WIKA ensures flexibility and the highest delivery performance. Every year, over 50 million quality products, both standard and customer-specific solutions, are delivered in batches of 1 to over 10,000 units.

With numerous wholly owned subsidiaries and partners, WIKA competently and reliably supports its customers worldwide. Our experienced engineers and sales experts are your competent and dependable contacts locally.

Global player for mechanical temperature measuring instruments

Presence in over 80 countries

Think global, act local: WIKA is represented around the world by numerous wholly-owned subsidiaries and other sales agencies. And because we are local, we understand the relevant country-specific requirements, standards and applications. This is how we ensure individual support to our customers.

This makes us unique

- Global production sites
- Qualified technological know-how
- Unrivalled breadth and depth of products
- Practical expertise in manufacturing processes
- Perfected lean management
- Customer-focused consulting and service

Quality made by WIKA

Global production sites

The high-tech production in our owned modern production facilities (Germany, Brazil, China, India, South Africa and USA) is the best guarantee for short delivery times throughout the world. It also enables a high flexibility for country or customer-specific special features. WIKA also stands for excellent quality:

Since 1994 the quality management system has been certified to ISO 9001. The effectiveness of the quality management system is regularly evaluated and improved upon through internal and external audits. Through WIKA's corporate quality standards, uniform and effective worldwide, we set the benchmark here.

Qualified technological know-how

The 3 technologies, with bimetal coil, expansion and gas-actuated systems are developed, qualified and manufactured in-house by WIKA. With the manufacture of our bimetal thermometers, we apply the highest quality in our choice of raw materials and ensure that the measured value displays are matched individually to the instrument.

Our “Swiss Movement” movements are not only as precise as a Swiss clockwork, but they are also especially robust and durable. These elementary assemblies are the perfect basis for the development of new products. When the product design is defined, the production line is also planned and implemented within WIKA´s equipment construction. Finally, the product and process development is extensively qualified within our own test laboratory.

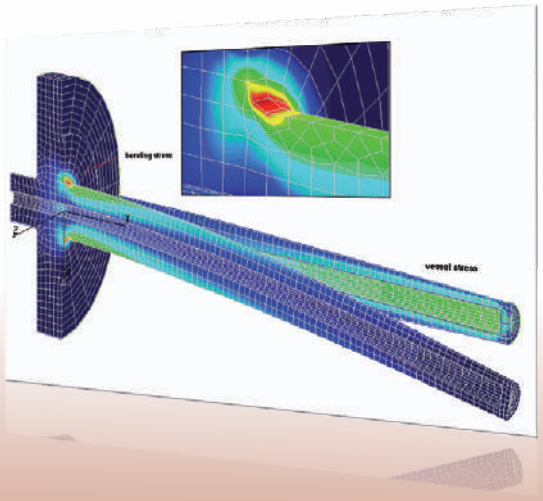
Unrivalled breadth and depth of products

Our dial indicating thermometers work on the bimetal, expansion or gas actuation principle. This enables scale ranges of -200 ... +700 °C in different accuracy classes, response times and resilience to environmental influences. Diverse connection designs, stem diameters and individual stem lengths enable a flexible measuring point design.

Dial indicating thermometers with capillaries are particularly versatile. All thermometers are suited for operation in a thermowell if necessary. Accepted around the world, a variety of measuring ranges, process connections, approvals, nominal sizes or liquid fillings are a guarantee for the optimal measuring point design.

WIKA offers a comprehensive range of measuring instruments for process technology

Benefit from our many years of experience



Practical expertise in manufacturing processes

Manufacturing processes and procedures at WIKA are based on many years of experience. This technical expertise in processes is typically documented within process control plans as well as operating procedures and work instructions. New or modified processes are evaluated with regard to performance and quality and released for manufacturing by process sign-offs.

The core processes in the thermometer production are, for example, 100 % calibration and the adjustment of the instruments. Here, we use various temperature baths in order to cover the full selection of temperature ranges. It is not only the processes that are clearly defined, but also the employees who are appropriately trained.

Perfected lean management

Production processes are designed and continuously improved in accordance with the WIKA Production System (WPS), based on the KAIZEN philosophy. The environment and energy programme is also refined continuously within the meaning of “continuous improvement”. Complex problems are dealt with in a structured way by in-house Black Belts using the Six Sigma Method, thus ensuring lasting solutions.

Through the WPS, we pursue the objective of improving the quality of the products and processes, and thus to achieve the highest possible customer satisfaction through the best quality, the highest delivery reliability as well as attractive delivery times and prices. Customer orientation is at the centre of all our efforts at WIKA.

Customer-focused consulting and service

Our sales organisation not only offers you standard products, but also our consulting competence for complete measuring assemblies. As a reliable partner in the contractor business, we can support you through all phases of the project, from planning, through the realisation and implementation of the project to technical inspections, logistics solutions, on-site support and after-sales service.

We also offer you a comprehensive range of services in calibration technology through our worldwide subsidiaries which are accredited to country-specific regulations, on-site service of your instruments, calibration equipment and also consulting and training in the field of calibration.

7 selection criteria lead you to the right standard product ...

1 2 3

Model	Minimum scale range			Maximum scale range			Nominal size					
	≥ -60 °C	≥ -70 °C	≥ -200 °C	≤ +400 °C	≤ +600 °C	≤ +700 °C	63 mm	80 mm	100 mm	160 mm	3", 4", 5", 6"	
TG53	●	●	○	●	●	○	○	○	○	○	●	
TG54	●	●	○	●	●	○	●	●	●	●	○	
55	●	●	○	●	●	○	●	○	●	●	○	
70 [1)]	●	○	○	●	○	○	●	○	●	●	○	
73	●	●	●	●	●	●	○	○	●	●	○	

[1)] Accuracy: Cl. 2 to EN 13190

● possible
○ not possible

Model TG53

Bimetal thermometer for the requirements of ASME B40.200

Model TG54

Bimetal thermometer for the requirements of EN 13190

Model 55

Bimetal thermometer with maintenance-friendly bayonet case

4 5 6 7

	Remote display		Response time		Accuracy		Special features	
	Direct on-site display	Remote display (with capillary)	< 3 min.	> 3 min.	Cl. 1 to EN 13190	±1 % of full scale value, ASME B40.200 (grade A)	Liquid damping	Version with adjustable stem and dial
	●	○	○	●	○	●	●	●
	●	○	○	●	●	○	●	●
	●	○	○	●	●	○	●	●
	●	●	○	●	●	○	●	●
	●	●	●	○	●	○	●	●

Model 70

Expansion thermometer, remote transmission

Model 73

Gas-actuated thermometer, fast response characteristics, remote transmission

The products in detail

These measuring instruments for the process industry are manufactured completely from stainless steel for increased corrosion resistance. They are developed, qualified and process-monitored in production in line with DIN EN 13190. The core components are WIKA's internally developed measuring systems and the Swiss precision movement. For harsh operating conditions, all instruments are also available with liquid filling.

A specific selection of instruments are also available with integrated switch contacts or transmitters. Thus, not only does a measuring point provide an on-site display without the need for a power supply, but also it provides an electrical output signal for monitoring or control.

Mechanical version	Model TG53	Model TG54	Model 55	
Scale range	-70 … +250 °C to 0 … 600 °C	-70 … +250 °C to 0 … 600 °C	-70 … +250 °C to 0 … 600 °C	
Nominal size	3", 4", 5", 6"	63, 80, 100, 160 mm	63, 100, 160 mm	
Remote display (with capillary)	---	---	---	
Response time	> 3 minutes	> 3 minutes	> 3 minutes	
Accuracy class	±1 % of full scale value, ASME B40.200 (grade A)	Cl. 1	Cl. 1	
Special features	■ Liquid filling up to max. 250 °C ■ Version with adjustable stem and dial ■ ATEX version ■ External zero adjustment ■ Approval DNV-GL	■ Liquid filling up to max. 250 °C ■ Version with adjustable stem and dial ■ ATEX version ■ Approval DNV-GL ■ External zero adjustment	■ Liquid filling up to max. 250 °C ■ Version with adjustable stem and dial ■ ATEX version ■ Casing with epoxy resin coating	
Mechatronic version	**---**	**---**	**Model TGS58, TGT58**	

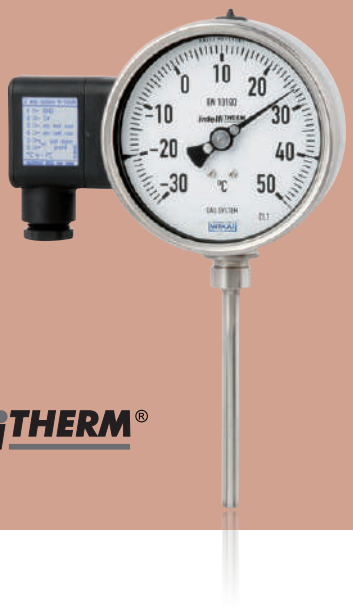
	Model 70	Model 73
	-60 … 40 °C to 0 … 400 °C	-200 … 50 °C to 0 … 700 °C
	63, 100, 160 mm	100, 160 mm
	■ Up to a max. of 10 m possible ■ Protective sleeve for capillary: spiral protective sleeve	■ Up to a max. of 60 m possible ■ Protective sleeve for capillary: spiral protective sleeve ■ Ø 7 mm or PVC coating
	> 3 minutes	< 3 minutes
	Cl. 2, optional Cl. 1	Cl. 1
	■ Liquid filling up to max. scale range ■ Temperature measurement without any contact to the medium ■ Version with adjustable stem and dial	■ Liquid filling up to max. scale range ■ Version with adjustable stem and dial ■ ATEX version ■ Temperature measurement without any contact to the medium
	Model 70-8xx	**Model TGS73, TGT73**

You can find many more products in the “Mechanical temperature measuring instruments” and “Mechatronic temperature measuring instruments” product reviews at **www.wika.com.**

Temperature measuring instruments with electrical output signal

A temperature measuring instrument with an electrical output signal from the intelliTHERM® series combines all the advantages of an on-site display (without the need for a power supply) with the requirements of an electrical signal transmission for a measured value registration to the latest technology requirements.

A magnet on the pointer shaft rotates proportionally to the instrument pointer as a direct linear function of the process temperature. The electronics positioned opposite the magnet register the rotary motion of the magnet. A magnetic-field-dependent sensor picks up this change on the electronic side, contact-free, wear-free and without influence on the pressure element. The sensor signal, proportional to the deflection, is converted to an electrical output signal via an amplifier (US patent no. 8.030.990).



intelliTHERM®

Temperature measuring instruments with switch contacts

Switch contacts built into mechanical temperature measuring instruments close or open circuits depending on the process temperature. They can be used for various monitoring functions when a measured value either falls below or exceeds a preset value. Switch contacts are fitted behind the dial and can be set over the entire scale range using the set pointer. The instrument pointer actual value pointer) moves freely across the entire scale range, independent of the setting. The contacts can be adjusted individually, using a removable adjustment key in the window.

switchTHERM

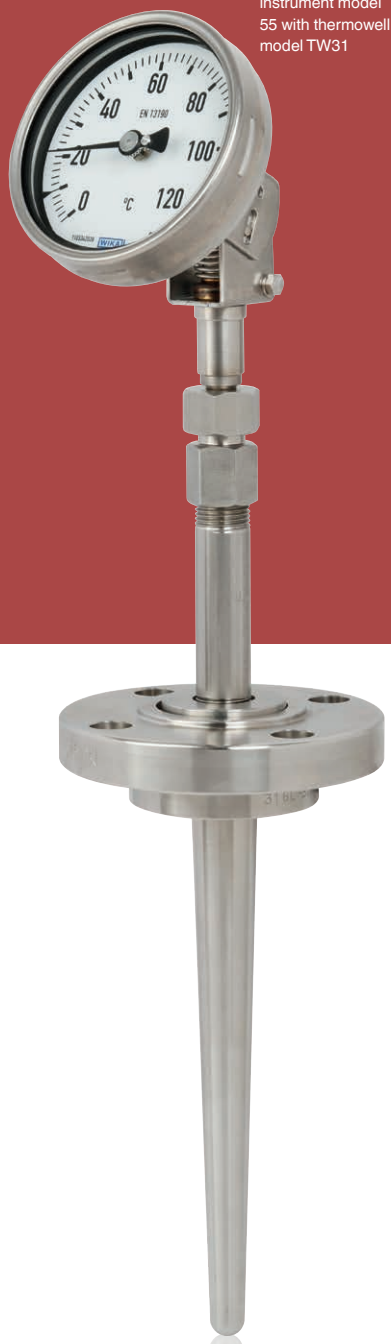
For general applications	For hazardous areas	For PLC	For general applications and PLC
Magnetic snap-action contact	**Inductive contact**	**Electronic contact**	**Reed contact**
			
Model 821	Model 831	Model 830 E	Model 851

Additional services

For all temperature measuring instruments we offer you a wide variety of options, approvals, certificates and also thermowells, ...

- Liquid filling for applications with shocks and vibration
- Complete measuring point design taking all environmental factors into account
- Various mounting and fitting solutions (e.g. clamping ring)
- 2.2 test report to EN 10204 (e.g. state-of-the-art manufacturing, material proof, indication accuracy)
- 3.1 inspection certificate to EN 10204 (e.g. indication accuracy)
- Extensive product certifications such as EAC, GOST, GL
- CE conformity (ATEX, EMC, NSR)
- Thermowell mounting

Assembly



Temperature measuring instrument model 55 with thermowell model TW31

Thermowells

Non-destructive tests

- **Hydrostatic pressure test**
  This test is carried out using external pressure on flanged thermowells, and using an internal pressure test for welded or threaded thermowells. Usually, the pressure tests are with 1.5 times the flange pressure rating for 3 to 15 minutes.
- **Liquid penetrant test**
  This testing is used, in particular, to examine the weld seams for surface defects. In this process, the thermowell is wetted with a low-viscosity indicator, which infiltrates any possible cracks which exist. After being thoroughly cleaned, defects are made visible using a developer.
- **Positive Material Identification test (PMI)**
  The PMI (positive material identification) test proves which alloy constituents exist in the material. With X-ray analysis, the atoms of the thermowell material are energised by the X-rays until they radiate themselves. The wavelength and intensity of the emitted radiation is in turn a measure of the alloy's constituent elements and their concentration.

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