# Heating technology







## **About us**

As a family-run business acting globally, with over 9,300 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.

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.

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# WIKA – your partner for heating technology

Whether in residential or office accommodation, in private households or public buildings; whether with wood, oil, gas or solar power: Modern heating technology enables you to obtain an efficient and sustained supply of heat and hot water.

This conserves resources and the environment. Furthermore, it is subject to stringent standards and regulations.

WIKA offers manufacturers and distributors a comprehensive range of pressure, temperature and level measuring instruments tailored to suit a wide range of requirements. We of course back this up with individual consultancy support. Together, we will find appropriate solutions for your measurement task.

Competence, reliability and a worldwide sales and service network have made WIKA into a global contract partner to renowned international companies in the heating technology sector. You too can benefit from our services!

With this brochure, you will receive an overview of our products and services for heating technology. We will be pleased to assist you with any questions you may have.

# Competent. Reliable. High performance.

## Technological know-how and unique level of in-house production

WIKA ensures its renowned high level of product quality, right from the outset, through its highly motivated development team, a unique level of in-house production as well as specific production processes, all based on many years of experience.

Our all-inclusive range of methodological expertise is expressed by the comprehensive nature of our process management schedules and our clearly defined operating procedures and work instructions. For example, we subject all product and process developments to a comprehensive series of tests in our dedicated test laboratories before integrating them in our production facilities. For these tests, many of our internal standards are formulated in a much more stringent way than, as an example, specified in the basic European standard, EN 837.

#### **Excellent quality, outstanding employees**

Quality made by WIKA – we set a great deal in motion to live up to this promise on a daily basis. For example, we continuously improve our production operations through Lean Management, the KAIZEN philosophy and Six Sigma. Sustainability plays a significant role in this. We also secure this with in-house Black Belts as well as with globally valid matrix certification with audits conducted by an independent and globally renowned certification body.

Parallel to this, a comprehensive range of qualification measures promote the expertise and abilities of each individual. That is because the know-how of our employees is what drives the quality of our products. In a nutshell: Continuous optimisation, market and customer orientation, an uncompromising approach to quality, employee satisfaction and environmental protection are firmly entrenched elements of our management system. That is why, for today and for the future, we are your reliable partner in measurement technology.



#### **Everything from one source**

As a WIKA customer, you have access to a unique depth and breadth of products. To measure pressure, temperature and level, we can provide you with a selection of mechanical, mechatronic and electronic measuring instruments. The optimum complement to our broad product range is the comprehensive WIKA programme of accessories. This comprises valves, stopcocks, syphons, digital indicators, temperature controllers and much more.

#### **Optimum inventory control**

Thanks to Vendor Managed Inventory (VMI) you always have the right products in stock in the quantity you require. With this supplier-controlled inventory and delivery method, we can plan the optimum delivery time. That takes account of your current as well as of your future requirements. We take care of restocking in good time, and assume the responsibility for your inventory items.

## Just in time – Efficient production without warehousing

More than 1.5 million stock instruments await your request for delivery. Thanks to impeccable logistics, every WIKA product gets to the right place at the right time – all around the world.

#### Your design

WIKA enables you to design your products individually: Starting from the customer-specific design of the dial and extending across numerous options for case geometry and colour, and finishing with the labelling of your product.

#### Individual complete package

Share your packaging wishes with us. Decide on the nature and scope of enclosed documentation. Decide on the labelling, which can be provided either with barcode or with 2D code.

#### Advantage through innovation

We are always pleased to develop new products and services with you on a joint basis that are specifically tailored to suit your requirements. To generate ideas, we run dedicated workshops with interested customers.

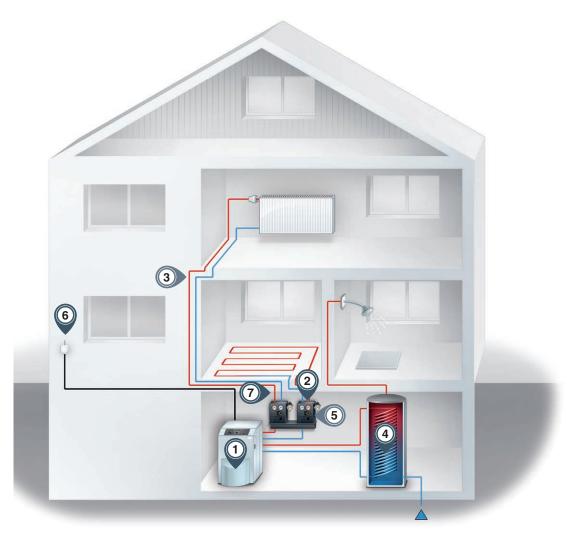
Talk to us.

## **Heating systems**

Whether private households, administration buildings or industrial premises – you will find appropriate measuring instruments for heating and hot water supply at WIKA.

For example, you could measure the exhaust gas temperature of a boiler with our resistance thermometer TR40 and the industrial water temperature in the hot water tank with expansion or bimetal thermometers. Measurement of ambient temperature is performed by what is at present the smallest outdoor thermometer on the market: TF41 – small and compact, with or without a protective sun cover.

There is a choice of different output signals available, so that these instruments can be easily integrated into any plant concept.



#### Legend - Measuring points:

- Boiler
- 2 Boiler (temperature)
- ③ Heating circuit (differential pressure in high-rise buildings)
- (4) Hot water tank (temperature)
- (5) Heating circuit (pressure)
- (6) Environment, outside of the building (temperature)
- (7) Heating circuit (temperature)

## **Temperature**

## **Temperature**

## **Pressure**



Bimetal thermometer A43, A50, A51, A52



Cable thermocouple TC40



Pressure gauge



Expansion thermometer IFC



Outdoor thermometer 
(5)
TF41



Compact pressure switch PSM



Expansion thermometers TF58, TF59



Strap-on thermometer 
TF44



Differential pressure gauges



Bimetal thermomanometer THM10



OEM insertion thermometer TF45 with connection lead



Accessories



Safety temperature limiter SB15



Universal controller for panel mounting CS6x



Cable resistance thermometer TR40



Bimetal thermometer A46

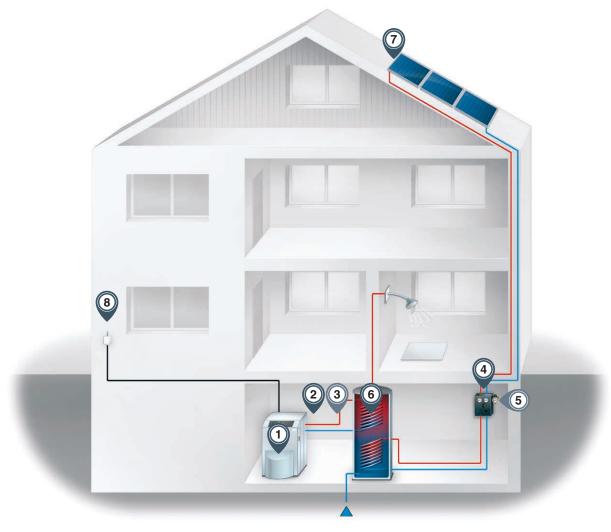


## Solar thermal systems

The sun is the biggest supplier of energy to the earth, and provides the starting point for an environmentally sound way to obtain energy: solar thermal energy. To supplement a gas, oil or electrically powered heating system or as a constituent element in an ice storage heating system, a solar plant converts free solar power into heat. To achieve a regular plant service life of 20 to 25 years, every single component needs to be manufactured to a high quality standard.

As a collector or storage sensor, we recommend the TF45 insertion thermometer, available with a vast array of measuring elements and switchgear. You can protect your storage heating unit from overheating through the use of an SB15 safety temperature limiter. This shuts down the solar circuit pump and prevents the storage vessel from overheating, thereby also preventing the build-up of steam in the drinking water circuit.

Pressure monitoring plays an equivalently important role to temperature monitoring. The pressure conditions in the solar circuit have a decisive impact on the efficiency and service life of a solar power plant. To monitor the prevailing pressure, you can choose from a range of mechanical pressure gauges (111), as well as contact pressure gauges (PGS) or pressure gauges with output signal (PGT).



#### Legend - Measuring points:

- 1 Boiler (temperature)
- Peating flow/return (temperature)
- 3 Heating flow/return (pressure)
- Solar flow/return (temperature)
- (5) Solar circuit (pressure)
- (6) Hot water tank (temperature)
- 7 Collector (temperature)
- ® Environment, outside of the building (temperature)

## **Temperature**

## **Temperature**

## Pressure



Bimetal thermometer A43, A50, A51, A52



Outdoor thermometer TF41



Pressure gauge 111



Expansion thermometer IFC



Cable thermocouple TC40



Compact pressure switch PSM



Expansion thermometers TF58, TF59



Strap-on thermometer 3
TF44



Contact pressure gauge PGS, PGT

with switch contact or electrical signal



Bimetal thermomanometer THM10



OEM insertion thermometer TF45

with connection lead



**Accessories** 



Safety temperature limiter SB15



Universal controller for panel mounting CS6x



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Cable resistance thermometer TR40



Bimetal thermometer A46



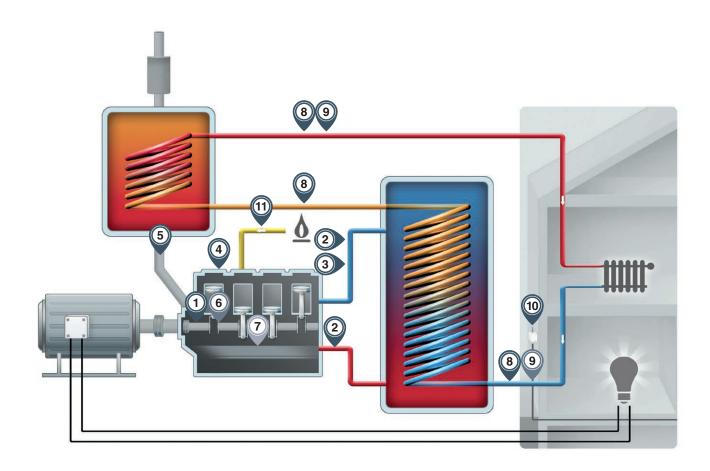
## Combined heat and power plants

Just a few years ago, combined heat and power plants were only conceivable for power plants, industrial buildings or residential developments, but now they are finding their way into the basements of private homes. Through the development of "Micro CHP", with a footprint the size of a washing machine, this form of combined heat and power (CHP) is also becoming of interest to private households.

For this kind of domestic CHP solution, we can offer you reliable and inexpensive measuring instruments for pressure, temperature and level. For example, check the oil pressure of an internal combustion engine with the A-10 electronic pressure sensor, while obtaining a reliable oil level check with the OLS-C01 optoelectronic level switch or with the FLS magnetic float switch.

Oil temperature is monitored by the TF35 screw-in thermometer or by our type-tested SB15 safety temperature limiter.

With the pressure gauges with integrated output signal or switching functions (PGS or PGT), you can keep an eye on the water pressure in the heating circuit while simultaneously obtaining an electrical signal that can be used for control and regulation purposes.



#### Legend - Measuring points:

- (1) Engine oil (temperature)
- Coolant circuit (temperature)
- Coolant circuit (pressure)
- (temperature)
- S Exhaust gas (temperature)
- 6 Engine oil (pressure)
- 7 Engine oil (level)
- (8) Heating circuit (temperature, flow/return)
- Heating circuit (pressure, flow/return)
- Environment, outside of the building (temperature)
- (11) Gas supply line (pressure)

## **Temperature**

## **Temperature**

#### Pressure



Bimetal thermometer A43, A50, A51, A52



Resistance thermometer TR10-B



Contact pressure gauge PGS, PGT with switch contact or electrical signal



Safety temperature limiter SB15



Resistance thermometer TR33 Miniature design



Differential pressure gauge



Cable thermocouple TC40



Cable resistance thermometer TR40



Pressure sensor A-10, S-20



OEM screw-in thermometer TF35 with plug connection



Temperature controller with digital indicator SC58, SC64



Pressure gauge 111, 212.20, 232.50, 213.53



Outdoor thermometer 2 TF41



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Universal controller for panel mounting CS6x



Capsule pressure gauge 611.10, 611.13, 612.20



Strap-on thermometer TF44

Level



Compact pressure switch PSM



OEM insertion thermometer TF45 with connection lead Page 27

Optoelectronic OEM level switch OLS-C01



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Accessories



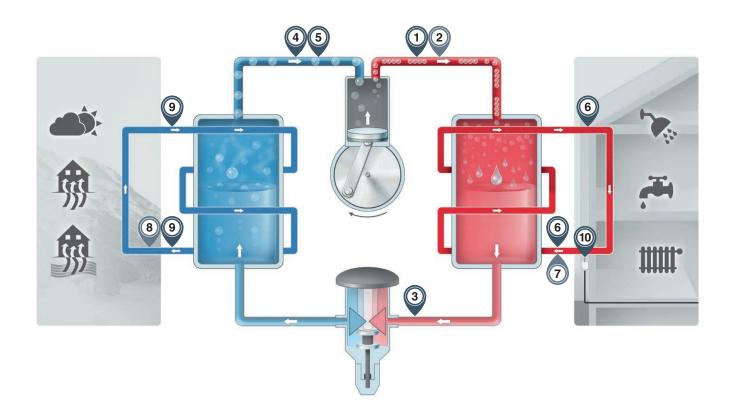
Float switch for industrial applications RLS-1000, RLS-2000

## **Heat pumps**

The heat pump principle had already been developed back in the 18th century. What originally arose from a need to cool food is now used in the heating and air-conditioning of buildings.

To monitor pressure and temperature measuring parameters in heat pump circuits, different measuring principles can be employed. In the case of pressure measurement, this programme extends from the tried-and-tested Bourdon tube pressure gauge, with or without electrical output signal (PGT) or switching function (PGS), through to pressure sensors.

To monitor the temperature of a heat pump, multiple versions of screw-in, insertion and strap-on thermometers are available. With the TF41 outdoor thermometer, you also create a reliable weather compensation for your controller.



#### Legend - Measuring points:

- 1 Hot gas (temperature)
- (2) High-pressure line (pressure)
- 3 Liquid line (temperature)
- Suction gas (temperature)
- (5) Low-pressure line (pressure)
- (6) Heating circuit (temperature)
- 7 Heating circuit (pressure)
- Collector circuit (pressure)
- Collector circuit (temperature)
- (m) Environment, outside of the building (temperature)

## **Temperature**

## **Pressure**

## **Pressure**



**OEM screw-in thermo**meter TF35 with connector

2 **5** 7 8 Page 22-23

Contact pressure gauge PGS, PGT with switch contact or electrical



**Pressure measuring** 

signal

Page 24-25

instruments 101.00, 101.12 with capillary



**Outdoor thermometer** TF41



Pressure sensor R-1



**Pressure measuring** instrument PGS05

with electronic switch and capillary



Insertion thermometer TF43

with injection-moulded plastic measuring element and cable



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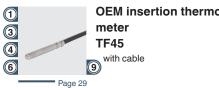
**Accessories** 



Strap-on thermometer TF44



**OEM** insertion thermometer TF45 with cable







Cable resistance thermometer **TR40** 



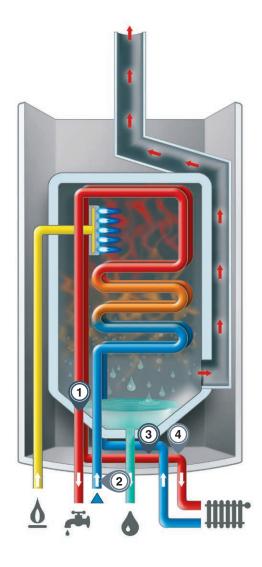
## Wall-hung gas boilers

Wall-hung gas boilers in our living spaces deliver heat and home comfort. These can be condensing boilers or combi-boilers: we can provide the right pressure and temperature measuring instruments for either of these variants.

Our portfolio includes measuring instruments for monitoring and controlling hot water and industrial water circuits. Although mechanical pressure switches are used to perform the pressure-dependent opening and closing of circuits, a current-independent on-site display can be made available with model PGS contact pressure gauges. Depending on your needs, you can choose from various different output signals. You create a pressure display independent of

measuring points by using a pressure measuring instrument with capillary. Specifically for applications calling for frequent bending of capillaries, we offer the alternative to the familiar copper capillaries of ultra-flexible plastic capillaries. To measure the temperature of hot water or industrial water, expansion thermometers or thermomanometers can be used.





#### Legend - Measuring points:

- 1 Hot water (temperature)
- ② Cold water (pressure)
- 3 Heating water (temperature)
- Heating circuit (pressure)

## **Temperature**

## Pressure

## **Pressure**



Expansion thermometer IFC



Pressure measuring instruments 101.00, 101.12 with capillary



Contact pressure gauge PGS05 with electronic switch and capillary



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Thermomanometer MFT with remote line and capillary



Compact pressure switch PSM



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Accessories



Bimetal thermomanometer THM10

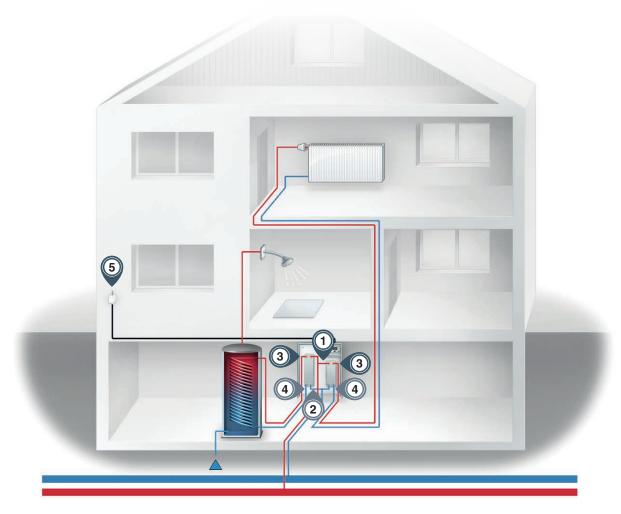


# Heat transfer stations Distribution stations

District heating – one module in the efficient use of resources. Using energy through combined heat and power (CHP) and at the same time greatly boosting the efficiency rating of the system – one of the outstanding advantages of local and district heating.

The principle of combined heat and power (CHP) is to take waste heat that would otherwise be unused, e.g. from electricity-generating power plants, and to supply it to consumers, even over long distances, thereby increasing the utilisation level of these power plants to as much as 90 %. To assure problem-free connection to the district and local heating network, the operators devise their own technical connection requirements (TAB). These stipulate how and under what conditions a house station can be connected to the supply network, either directly or indirectly.

Depending on the measurement task involved, you decide which of our mechanical or electrical measuring instruments to use. There is a choice of different output signals, switching functions and measuring elements, meaning that you have no problem integrating these in any plant concept for open-loop or closed-loop control purposes. For example, to implement the temperature safeguard specified in DIN 4747 part 1 (technical safety equipment in heat generating plants), found in every TAB, you could employ our type-tested SW15 safety temperature controller.



Legend - Measuring points:

- Primary heating circuit (temperature)
- 2 Primary heating circuit (pressure)
- Secondary heating circuit (temperature)
- (4) Secondary heating circuit (pressure)
- (5) Environment, outside of the building (temperature)

## **Temperature**

## **Temperature**

## **Pressure**



Bimetal thermometer A43, A50, A51, A52



thermometer TF35

**OEM screw-in** 

with plug connection



Pressure gauge 111, 212.20, 232.50, 213.53



**Expansion thermo**meter **IFC** 



Outdoor thermometer TF41



**Compact pressure** switch **PSM** 



**Expansion thermo**meters TF58, TF59



Strap-on thermometer 2 TF44



**Contact pressure** gauge PGS, PGT

with switch contact or electrical



Machine glass thermometer 32



**OEM** insertion thermometer TF45 with connection lead



**Differential pressure** gauge



**Bimetal** thermomanometer 100.12



Miniature resistance thermometer TR33



**Pressure sensors** A-10, S-20



Safety temperature controller/limiter SW15, SB15



**Expansion thermo**meter 70



**Accessories** 



Cable resistance thermometer TR40



## **Components and systems**

The decision for investment in a heating system is generally a decision for the next 20 ... 30 years. If you want to ensure that your rooms are reliably supplied with heat and hot water during this time, then you should also pay attention to quality when selecting the peripheral equipment. In particular for the installer, who must answer for the quality of his work in front of the end customer, this is a crucial feature in deciding which components to choose.

Whether you provide entire systems or individual components for the heating trade, in our product portfolio all established measuring instruments for pressure and temperature measurement are available. You can also choose whether you will receive the instruments in practical, bulk packaging for further processing or in individual packaging for use as accessories.

#### Pump assembly with two WIKA thermometers



#### Safety valve with WIKA pressure gauge



#### Safety assembly with WIKA pressure gauge



## **Temperature**



Bimetal thermometer A43, A50, A51, A52





**Bimetal** thermomanometer THM10

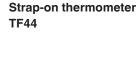
## **Temperature**



**Outdoor thermometer** 









**OEM** insertion thermometer

with connection lead

## **Pressure**



Pressure gauge 111, 213.53

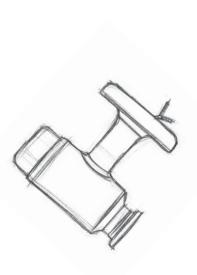


**Contact pressure** gauge PGS, PGT with switch contact or electrical signal

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## From idea to completed implementation

From idea to completed implementation: Benefit from our experienced development and design-engineering staff in order to break new ground. Together with us, develop your concept for measurement technology so that it fits perfectly into your future system solutions. Regardless of whether you are modifying an existing measuring system with us or developing a new measuring instrument from the ground up, you can benefit from our many years of practical experience and our knowledge of the key aspects of your market segment.





## **Pressure sensors**

## Long service life and precise

A pressure sensor converts the physical parameter of pressure into a standardised electrical output signal. That provides a pressure-proportional signal for further processing in open-loop and closed-loop control units.

WIKA pressure sensors have been designed for a wide selection of measuring tasks and satisfy demanding requirements in terms of long service life and accuracy. Depending on the operating conditions, there are different versions to choose from.



## Pressure sensor for common demands

Non-linearity	≤ 0.25 or 0.5 BFSL (± % of span)
Measuring range	■ 0 0.05 to 01,000 bar ■ 0 0.1 to 0 25 bar abs. ■ -0.025 +0.025 to -1 +24 bar
Special feature	<ul><li>Compact design</li><li>Free test report</li><li>2 million possible variants</li></ul>
Data sheet	PE 81.60



## Pressure sensor for refrigeration and air-conditioning applications

Non-linearity	≤ 2 (± % of span)
Measuring range	■ 0 6 to 0 160 bar ■ -1 +7 to -1 +45 bar
Special feature	<ul> <li>Special case design for the best possible condensation tightness</li> <li>Resistant to all common refrigerants</li> </ul>
Data sheet	PE 81.45



## Pressure sensor for superior demands

Non-linearity	≤ 0.125, 0.25 or 0.5 BFSL
	(± % of span)
Measuring range	■ 0 0.4 to 0 1,600 bar
	■ 0 0.4 to 0 40 bar abs.
	■ -1 0 to -1 +59 bar
Special feature	■ Extreme operating conditions
	■ Customer-specific variants
	■ Free test report
Data sheet	PE 81.61



## **Pressure switch**

## Small, compact, reliable

Mechanical pressure switches open or close a circuit, depending on whether the pressure is falling or rising. When a pressure switch is pressurised, the pressure in the medium flows through the pressure connection to the diaphragm. The diaphragm transmits the pressure of the medium to the switch contact. Once the working pressure reaches the switch point, the switch contact is closed.

These pressure switches are used to protect against water shortage, among other applications. There is a choice of switching functions – normally closed (NC), normally open (NO) and change-over contact (CO). "Small and compact" describes all instruments of the PSM series.



#### Standard version

Setting range	-0.850.15 bar
	0.2 2 to 30 320 bar
Material	Galvanised steel, stainless steel
Switching power	2 A or 4 A / DC 24 V
	2 A or 4 A / AC 250 V
Switching cycles	1 x 10 <sup>6</sup>
Data sheet	PV 34.81



#### With settable hysteresis

Setting range	-0.850.15 bar 0.2 2 to 30 320 bar
Material	Galvanised steel, stainless steel
Switching power	2 A or 4 A / DC 24 V 2 A or 4 A / AC 250 V
Switching cycles	2 x 10 <sup>6</sup>
Data sheet	PV 34.82

# Pressure gauges with electronic pressure switch or output signal

#### One measuring instrument – two functions

These pressure measuring instruments are based on the proven Bourdon tube measuring system. The electrical function is performed by an electronic angle encoder. Based on the variety of output signals available these measuring instruments can be easily integrated into any plant concept.

Modern heating technology works with open-loop and closed-loop control systems that electronically monitor the heating circuit. The pressure gauges listed here are superbly well suited to function as signal sensors while at the same time offering current-independent on-site display.



With electrical output signal, stainless steel case, IP65

Nominal size	50, 63 mm
Scale range	0 1.6 to 0 400 bar
Accuracy class	1.6 or 2.5
Signal type	■ 0.5 4.5 V ratiometric @ DC 5 V ■ 0.5 4.5 V @ DC 12 32 V ■ 4 20 mA, 2-wire
Special feature	<ul> <li>On-site display needing no external power</li> <li>Wear-free sensor</li> <li>Robust design</li> <li>Leak-tight case</li> </ul>
Data sheet	PV 11.03



With electrical output signal, plastic case, IP40, Tyco AMP Duoplug

Nominal size	40 mm
Scale range	0 2.5 to 0 10 bar
Accuracy class	2.5
Signal type	■ 0.5 2.5 V ratiometric @ DC 5 V ■ 0.5 3.5 V ratiometric @ DC 5 V ■ 0.5 4.5 V ratiometric @ DC 5 V others on request
Special feature	<ul> <li>Low-cost</li> <li>Wear-free sensor</li> <li>Process connection: plastic</li> <li>5-pin connector, Tyco AMP Duoplug</li> </ul>
Data sheet	PV 11.01





## PGS05

# With electronic switch, plastic case, IP40, for panel mounting, with capillary

Nominal size	40 mm
Scale range	0 2.5 to 0 10 bar
Accuracy class	2.5
Signal type	NPN or PNP @ DC 12 32 V (switching current max. 300 mA short-circuit-proof)
Special feature	■ Wear-free sensor ■ Very simple to install with lateral locating lugs ■ Process connection: Capillary
Data sheet	PV 21.03

## switch<sup>GAUGE</sup>

PGS25



## With electronic pressure switch, stainless steel case, IP65

Nominal size	50, 63 mm
Scale range	0 1.6 to 0 400 bar
Accuracy class	1.6 or 2.5
Ingress protection	IP65
Signal type	NPN or PNP switching outputs
Special feature	<ul><li>Wear-free sensor</li><li>Robust design</li><li>Leak-tight case</li></ul>
Data sheet	PV 21.04



## Pressure gauges

#### Simply measure and display

The spring-biased pressure elements used in these pressure gauges are based on the Bourdon tube or capsule spring measuring principle. The Bourdon tube measuring principle uses the fact that a pipe bent into a circular shape gets distorted in direct proportion to the prevailing pressure level. This relatively slight distortion (tube travel) is converted by a movement into a pointer deflection.

To record lower pressures down to 600 mbar a capsule element is used as the pressure element. Here too, tube travel is converted by a movement into a pointer deflection proportional to prevailing pressure level. For measuring points with high dynamic loadings, e.g. rapid load cycles or severe vibration, liquid-filled damped versions are available.



#### Standard version

Nominal size	40, 50, 63, 80, 100, 160 mm
Scale range	-1 0 to 0 400 bar (NS 160: max. 40 bar)
Accuracy class	2.5
Case	Plastic, steel (optionally stainless steel)
Process connection	Copper alloy
Special feature	<ul> <li>Optional: Special equipment (per EN 12828) such as red mark pointer and adjustable green segment</li> <li>Optional: Accuracy class 1.6</li> </ul>
Data sheet	PM 01.01



#### Industrial version

Nominal size	100, 160 mm
Scale range	-1 0 to 0 1,000 bar
Accuracy class	1.0
Case	Stainless steel
Process connection	Copper alloy
Special feature	<ul> <li>■ Long service life, robust</li> <li>■ Cost-effective and reliable</li> <li>■ Scale ranges up to 0 1,000 bar</li> </ul>
Data sheet	PM 02.01



## Stainless steel case, with liquid filling

Nominal size	50, 63, 100 mm
Scale range	NS 50: -1 0 to 0 400 bar
	NS 63, 100: -1 0 to 0 1,000 bar
Accuracy class	NS 50, NS 63: 1.6
	NS 100: 1.0
Case	Stainless steel
Process connection	Copper alloy
Special feature	■ Liquid-filled
	■ Vibration and shock-resistant
	■ Especially robust design
	■ Scale ranges up to 0 1,000 bar
Data sheet	PM 02.12



#### Stainless steel version

Nominal size	63, 100, 160 mm
Scale range	NS 63, 100: -1 0 to 0 1,000 bar NS 160: -1 0 to 0 1,600 bar
Accuracy class	NS 63: 1.6 NS 100, 160: 1.0
Case	Stainless steel
Process connection	Stainless steel
Special feature	■ Excellent load-cycle stability and shock resistance ■ Scale ranges up to 0 1,600 bar
Data sheet	PM 02.02



## Plastic case with capillary

Nominal size	27 mm
Scale range	0 4 bar 0 6 bar
Accuracy class	4
Case	Plastic
Process connection	Optionally with copper or plastic capillary
Special feature	<ul> <li>Plastic capillary:         Flexible and break-proof</li> <li>Small footprint through compact design</li> <li>Plastic capillary:         Maximum flexibility during routing</li> </ul>
Data sheet	PM 01.22



## Plastic case with locating lugs for mounting, with capillary

Nominal size	40 mm
Scale range	0 4 bar 0 6 bar
Accuracy class	2.5
Case	Plastic
Process connection	Optionally with copper or plastic capillary
Special feature	<ul> <li>Plastic capillary:         Flexible and break-proof</li> <li>Very simple to install with lateral locating lugs</li> <li>Plastic capillary:         Maximum flexibility during routing</li> </ul>
Data sheet	PM 01.22



#### Capsule pressure gauge, standard version

Nominal size	50, 63 mm
Scale range	0 25 to 0 600 mbar
Accuracy class	1.6
Case	Steel, black
Process connection	Copper alloy
Special feature	<ul> <li>Overpressure or vacuum safety with scale ranges &lt; 40 mbar:</li> <li>3 x full scale value scale ranges ≥ 40 mbar:</li> <li>10 x full scale value</li> <li>Zero point setting in front</li> </ul>
Data sheet	PM 06.01



## Capsule pressure gauge, plastic version

Nominal size	50, 63 mm
Scale range	0 60 to 0 600 mbar
Accuracy class	2.5
Case	Plastic
Process connection	Copper alloy
Special feature	Pressure element: Copper beryllium alloy (CuBe)
Data sheet	PM 06.12



#### Capsule pressure gauge, industrial version

**P** G

Nominal size	63, 100, 160 mm
Scale range	0 6 to 0 600 mbar
Accuracy class	1.6
Case	Stainless steel
Process connection	Copper alloy
Special feature	<ul> <li>Overload or vacuum safety with scale ranges &gt; 25 mbar:</li> <li>10 x full scale value scale ranges ≤ 25 mbar:</li> <li>3 x full scale value</li> <li>Zero point setting in front</li> </ul>
Data sheet	PM 06.02



## Differential pressure gauge

#### Monitor optically or electronically

Differential pressure gauges are used to monitor filters in heating systems to indicate the degree of pollution. The differential pressure gauges of the DELTA-line product family are primarily used for the monitoring of low differential pressures where there are high requirements in terms of one-sided overpressure and static pressure. Alongside the differential pressure indication, the instruments also feature an integrated working pressure indication.

Thus, an additional measurement and sealing point is avoided. Thanks to the large mechanical differential pressure indicator with 100 mm diameter, a user-friendly and precise readability of the measured value is ensured. In the case of differential pressure gauges with a Bourdon tube measuring system and a moving dial, both prevailing overpressures can be read off the dial, independently of each other. Furthermore, the built-in moving dial displays the differential pressure between the two lines.



Bourdon tube, with parallel entry

Nominal size	100, 160 mm
Scale range	0 0.6 to 0 1,000 bar
Accuracy class	1.6
Ingress protection	IP33
Special feature	Differential pressure with moving dial
Data sheet	PM 07.02



## DELTA-plus, with integrated working pressure indication

Nominal size Scale range	100 mm 0 0.16 to 0 10 bar
Accuracy class	2.5 (optional 1.6)
Ingress protection	IP54 (optional IP65)
Special feature	Differential pressure gauge with integrated working pressure indication
Data sheet	PM 07.20



## DPGS40

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

Nominal size	100 mm
Scale range	0 0.25 to 0 10 bar
Accuracy class	2.5 (optional 1.6)
Signal type	<ul> <li>Single change-over contact 850.3</li> <li>Double change-over contact 850.3.3</li> <li>AC: 250 V, 5 A, 250 VA</li> <li>DC: 30V, 0.4A, 10W</li> </ul>
Ingress protection	IP65
Special feature	Differential pressure gauge with integrated working pressure
	indication and micro switch



## DELTA-switch, differential pressure switch

Nominal size	100 mm
Scale range	0 0.25 to 0 10 bar
Accuracy class	1.6
Signal type	<ul> <li>Single change-over contact 850.3</li> <li>Double change-over contact 850.3.3</li> <li>AC: 250 V, 5 A, 250 VA</li> <li>DC: 30V, 0.4A, 10W</li> </ul>
Ingress protection	IP54 (optional IP65)
	ii o+ (optional ii oo)
Special feature	Differential pressure switch with one or two adjustable micro switches



#### DPGT40

## DELTA-trans with integrated differential pressure and working pressure indication

Nominal size	100 mm
Scale range	0 0.16 to 0 10 bar
Accuracy class	2.5 (optional 1.6)
Signal type	■ 4 20 mA, 2-wire, passive, per NAMUR NE 43 ■ 0 20 mA, 3-wire ■ 0 10 V, 3-wire
Ingress protection	IP54 (optional IP65)
Special feature	<ul> <li>Differential pressure transmitter with integrated differential pressure and working pressure indication</li> <li>Transmission of process values to the control room (e.g. 4 20 mA)</li> </ul>
Data sheet	PV 17.19

## Level switches

#### If a high level is called for

Level measuring can be performed by magnetic float switches or by optoelectronic switches.

A float switch with a permanent magnet moves reliably, along with the liquid level, in a guide tube in which there is a reed contact which is energised by the approach of the float magnet. The switching operation is contact-free, free from wear and needs no power supply. The contacts are potential-free.

The optoelectronic level switch consists of an infrared LED and a light receiver. The light from the LED is directed at a prism which forms the tip of the sensor. So long as the tip is not immersed in liquid, the light is reflected within the prism to the receiver. When the liquid rises within the vessel and surrounds the tip, the light beam is refracted by the liquid, so that the receiver is no longer or only weakly reached by the light and reacts to this change by triggering a switching operation.



# Resistance thermometers and thermocouples

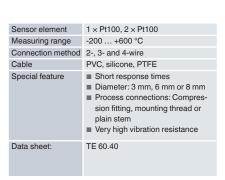
Electrical temperature probes record temperatures and provide the signal to a controller unit. Two common principles used in temperature measurement involve the resistance thermometer and the thermocouple.

In resistance thermometers, with so-called negative temperature coefficient thermistor or positive temperature coefficient thermistor, respectively (NTC, PTC) the electrical resistance value changes in response to the temperature. This change is evaluated in a controller and the system is then set perfectly. For this, all commonly used measuring elements are available.

With thermocouples, two wires made of different metals or alloys are connected to form a single thermocouple. The difference in thermal power of these wires causes a thermal tension to develop at the cold end of the thermocouples. If the temperature at the measuring point changes, the voltage created alters to the same extent. By evaluating the thermoelectric voltage, the prevailing temperature can be determined and used for open-loop and closed-loop control tasks.



Cable resistance thermometer





Cable thermocouple

Sensor element	Type K, J, E, N or T
Measuring range	-40 +1,200 °C
Measuring point	Ungrounded or grounded
Cable	PVC, silicone, PTFE, fibreglass
Special feature	Short response times Diameter: 3 mm, 6 mm or 8 mm Process connections: Compression fitting, mounting thread or plain stem Very high vibration resistance
Data sheet	TE 65.40



OEM screw-in thermometer with plug connection

Measuring range	-50 +250 °C
Measuring element	Pt100, Pt1000, NTC, KTY
Dimensions	See data sheet
Ingress protection	IP66, IP67, IP69K
Accessories	Mating connector
Special feature	<ul> <li>High vibration resistance</li> <li>Compact design</li> <li>Thermowells (brass, stainless steel)</li> <li>Electrical connection</li> <li>via plug connection</li> </ul>
Data sheet	TE 67.10



#### **Outdoor thermometer**

Measuring range	-40 +100 °C
Measuring element	Pt100, Pt1000, NTC, KTY
Dimensions	$44 \times 32 \times 30 \text{ mm}$
Ingress protection	IP65
Accessories	<ul><li>■ Protective sun cover</li><li>■ Wall-mounting kit</li></ul>
Special feature	<ul> <li>Smallest case design</li> <li>Clip-on sun protector</li> <li>UV-resistant</li> <li>Proof against dust and jets of water (IP65)</li> </ul>
Data sheet	TE 67.17



## TF44

## Strap-on thermometer with connection lead

Measuring range	-50 +200 °C
Measuring element	Pt100, Pt1000, NTC, KTY
Dimensions	6 × 6 × 35 mm
Ingress protection	IP65
Accessories	<ul><li>Quick-mounting bracket</li><li>Worm-drive hose clip</li></ul>
Special feature	<ul> <li>Pipeline system remains sealed</li> <li>Medium to be measured is not affected</li> <li>Quick and simple mounting</li> <li>Good heat transfer through aluminium sleeve</li> </ul>
Data sheet	TE 67.14



#### Miniature resistance thermometer

Managemina	-50 +250 °C
Measuring range	-50 +250 °C
Sensor element	1 × Pt100, 1 × Pt1000
Output	Pt100, Pt1000, 4 20 mA
Data sheet	TE 60.33



## Insertion thermometer with plastic-moulded measuring element

Measuring range	-50 +105 °C
Measuring element	NTC, Pt100, Pt1000
Dimensions	Ø 5 × length 20 mm
Ingress protection	IP68
Special feature	<ul><li>Plastic-moulded measuring element</li><li>Waterproof</li></ul>
Data sheet	TE 67.13

## TF45

## OEM insertion thermometer with connection lead

Measuring range	-50 +200 °C
Measuring element	Pt100, Pt1000, NTC, KTY
Dimensions	Ø 4 / Ø 5 / Ø 6 × length 50 mm
Ingress protection	IP65
Accessories	Thermowell (brass), G1/2
Special feature	<ul><li>■ Connection lead from PVC, silicone, PTFE</li><li>■ Probe sleeve from stainless steel</li></ul>
Data sheet	TE 67.15



## Resistance thermometer for additional thermowell

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

## **Temperature controllers**

#### Display, control and monitor

The models SC58 and SC64 are temperature controllers for simple thermostat applications. They are characterised by their ease of use and high switching power ratings. These 2-point controllers are used when non-constant regulation is required. The controller derives a manipulated variable from the difference between control and reference variables, which changes between two switch statuses in case of a 2-point closed-loop control circuit (e.g. On/Off). The compact universal controllers of the CS6x series are particularly notable for their versatility.

Due to their configurable multi-function input, not only resistance thermometers and thermocouples, but also standard industrial signals (mA, V) can be used as input parameters. The monitoring output can be set either as relay, as logic level for the control of electronic solid state relays or as a continuous 4 ... 20 mA output. The controllers can also be used for realising small control functions. For this purpose up to 9 programming steps can be programmed over a program execution time of approx. 100 hours.



## Two-point controller for panel mounting, 62 × 28 mm

Measuring range	-80 400 °C
Input	Suitable for Pt100, PTC
Dimensions	62 × 28 × 78 mm
Ingress protection	Front: IP50
Accessories	Clamping elements bolted to sides (included in delivery)
Special feature	<ul> <li>Temperature controller and digital indicator in a single instrument</li> <li>Snap-in fixture for panel mounting</li> <li>High switching power, up to 12 A</li> <li>13 mm LED display</li> </ul>
Data sheet	AC 85.24



## Two-point controller for panel mounting, Ø 64 mm

Measuring range	-80 400 °C
Input	Suitable for Pt100, PTC
Dimensions	Ø 64 × 44 mm
Ingress protection	Front: IP65
Accessories	Instrument mounting bracket (included in delivery)
Special feature	<ul> <li>Temperature controller and digital indicator in a single instrument</li> <li>Panel mounting</li> <li>High switching power, up to 16 A</li> <li>13 mm LED display</li> </ul>
Data sheet	AC 85.25



## Universal controller for panel mounting

Measuring range	- 2,000 + 10,000 °C
Input	Pt100, JPt100, 3-wire, ther- mocouples, standard signals (e.g. 4 20 mA)
Dimensions	48 x 48 (CS6S), 96 x 48 (CS6H), 96 x 96 (CS6L), insertion depth: 60 mm
Ingress protection	Front: IP66
Accessories	<ul> <li>Terminal cover</li> <li>Programming cable</li> <li>Current transformer</li> <li>(CT 20 and 100 A)</li> </ul>
Special feature	<ul> <li>Control mode configurable: PID, PI, PD, P, ON/OFF</li> <li>Programmable 9-step control program (approx. 100 h)</li> <li>5-digit LED display</li> <li>Integrated auto-tuning</li> </ul>
Data sheet	AC 85.08

## Thermometers with switch contacts

## One measuring instrument – two functions

Wherever the process temperature has to be indicated locally and, at the same time, limit values must be monitored, thermometers with switch contacts find their application. The switch contacts make or break the circuit dependent upon the pointer position of the indicating measuring instrument.

If the reading is significantly above or below a set value, they trigger an alarm, hence also the term "alarm contact". The instruments are also suitable for starting, stopping or switching processes.



## Expansion thermometer with micro switch, safety temperature limiter

Nominal size	60, 80, 100, 72 × 72, 96 × 96 mm
Scale range	0 +400 °C
Signal type	Micro switch (1 fixed change-over contact), 5 A non-inductive at max. 250 V, 10 A non-inductive at max. 250 V
Case	Plastic, black
Connection	Smooth with thread
Special feature	Safety temperature limiter with reset function Temperature controller and indicator Switch-off after measuring line breakage Type-tested per DIN EN 14597 and DGRL 97/23/EG/VdTÜV High switching reliability and long service life UL approval per UL 873
Data sheet	TV 28.03



## Expansion thermometer with micro switch, safety temperature controller

Nominal size	60, 80, 100, 72 × 72, 96 × 96 mm
Scale range	0 +400 °C
Signal type	Micro switch (1 fixed change-over contact), 5 A non-inductive at max. 250 V, 10 A non-inductive at max. 250 V
Case	Plastic, steel
Connection	Smooth with thread
Special feature	Safety temperature controller with automatic resetting     Temperature controller and indicator     Switch-off after measuring line breakage     Type-tested per DIN EN 14597 and DGRL 97/23/EG/VdTÜV     High switching reliability and long service life     UL approval per UL 873
Data sheet	TV 28.04

## **Dial thermometers**

#### Simply measure and display

Technology tried and tested more than a million times is central to these temperature measuring instruments. They operate on the bimetal or expansion principle. This enables scale ranges of -100 to +500 °C in different accuracy classes, response times and materials. Diverse connection designs, stem diameters and individual stem lengths enable a flexible measuring point design.

Dial thermometers with capillaries are particularly versatile and flexible. All thermometers are suited for operation in a thermowell if necessary.

We can offer you a combination of pressure and temperature measuring instrument known as a thermomanometer with a choice between models 100.12, MFT and THM10.



#### **Bimetal thermometer**

Nominal size	63, 80, 100 mm
Scale range	-30 +120 °C
Case	Model A43.10: Aluminium Model A43.20: Steel, galvanised Model A43.30: Plastic, black
Connection	Thermowell G 1/2 B, copper alloy
Special feature	<ul><li>■ Indication accuracy class 2 (EN 13190)</li><li>■ Thermowell included in delivery</li></ul>
Data sheet	TM 43.01



## Bimetal thermometer with thermowell, up to +200 °C

Nominal size	63, 80, 100 mm
Scale range	-30 +200 °C
Case	Aluminium, galvanised steel
Connection	Thermowell G 1/2 B, copper alloy
Special feature	Thermowell with retainer screw
Data sheet	TM 50.03



## Bimetal thermometer, high-quality version

Nominal size	63, 80, 100 mm
Scale range	-30 +250 °C
Case	Steel, galvanised
Connection	Air-conditioning and ventilation:  ■ Smooth, with surface mounting flange ■ Smooth, with sliding plastic flange Liquid media: ■ Smooth, with 18 mm collar Ø for thermowell mounting
Special feature	<ul> <li>■ Indication accuracy class 1 (EN 13190) for thermowell variant</li> <li>■ Large scale range</li> </ul>
Data sheet	TM 51.01



## Bimetal thermometer with axial and radial process connection, up to +500 °C, stainless steel version

,	
Nominal size	25, 33, 40, 50, 63, 80, 100, 160 mm
Scale range	-30 +500 °C
Case	Stainless steel
Connection	Stainless steel
Special feature	<ul> <li>Accessories: Thermowells made of different materials</li> <li>5 different connection designs</li> </ul>
Data sheet	TM 52.01



#### **Bimetal contact thermometer**

A46.11

Nominal size	63, 80 mm
Scale range	0 +120 °C
Case	Aluminium
Connection	Attachment plate with mounting clip for pipe diameters 1" 2"
Special feature	<ul> <li>The pipeline system remains sealed</li> <li>Medium to be measured is not affected</li> <li>Quick and simple mounting</li> </ul>
Data sheet	TM 46.02



## Expansion thermometer with capillary

Nominal size	52, 60, 80, 100, 48 × 48, 72 × 72, 96 × 96 mm
Scale range	-100 +400 °C
Case	Plastic, steel, chromatised, Ro- HS-compliant
Connection	Smooth, rotatable with loose threaded connection
Special feature	<ul> <li>Temperature display independent of the measuring point</li> <li>For panel mounting</li> </ul>
Data sheet	TM 80.01



## Expansion thermometer with capillary

Nominal size	TF58, edgewise panel design 58 × 25 mm TF59, edgewise panel design 62 × 11 mm
Scale range	TF58: -50 +250 °C TF59: -40 +200 °C
Case	Plastic
Connection	Smooth
Special feature	<ul><li>Temperature display independent of the measuring point</li><li>For panel mounting</li></ul>
Data sheet	TM 80.02



## Expansion thermometer with capillary, stainless steel version

Nominal size	63, 100, 160 mm
Scale range	-60 +400 °C
Case	Stainless steel
Connection	Smooth with thread
Special feature	<ul> <li>Temperature display independent of the measuring point</li> <li>Liquid-filled version (vibration- resistant)</li> </ul>
	<ul><li>Ingress protection IP65</li><li>Version available for panel mounting</li></ul>
Data sheet	TM 81.01



#### Machine glass thermometer, V-form

32

Nominal size	110, 150, 200 mm
Scale range	-30 +200 °C
Case	Aluminium, anodised, plastic, black
Connection	■ G ½ B, M20 × 1.5 ■ G ¾ B, M27 × 2
Special feature	<ul> <li>Vibration resistant</li> <li>Free from wear</li> <li>Long service life</li> <li>3 variants: straight, 90° and 135°</li> </ul>
Data sheet	TM 32.02



# Thermomanometer with remote line and capillary, temperature and pressure measurement in a single instrument

Nominal size	40, 42, 52 mm
Scale range	0 +120 °C 0 4 bar
Case	Plastic, black, with front flange and lateral snap-in mounting for panel mounting
Process connection	Copper alloy, back mount Pressure: G 1/4 B male (rotatable) with capillary Temperature: Capillary (plastic- sheathed), with probe Ø 6
Data sheet	PM 01.20



## 100.12

## Bimetal thermomanometer, temperature and pressure measurement in a single instrument

Nominal size	63, 80 mm
Scale range	0 +150 °C
	0 16 bar
Case	Steel, black lacquered
Process connection	Centre back mount
Special feature	Connection valve included in delivery
Data sheet	PM 01.23



## Bimetal thermomanometer Eco, for pressure and temperature measurement

Nominal size	63, 80 mm
Scale range	0 +120 °C
	0 4 to 0 10 bar
Case	Plastic, black
Connection	Copper alloy
Special feature	<ul><li>2 measurands: Pressure/temperature</li><li>Shut-off valve included in delivery</li></ul>
Data sheet	PM 01.24

## **Accessories**

## **Accessories for pressure gauges**



Stopcocks

Model 910.10



**Shut-off valves** 

Model 910.11



Push button cock

Article number 14088893



**Adapters** 

Model 910.14



Sealings

Model 910.17



Snubbers

Model 910.12



#### Instrument mounting bracket

Model 910.16



Pressure gauge in-line filters

Model 910.22



## Overpressure protectors

Model 910.13



#### **Syphons**

Model 910.15



## **Accessories for temperature measuring instruments**



#### **Thermowells**

See data sheet TW 90.11



#### Thermowells for TF45

See data sheet TE 67.15



#### **Protective sun cover for TF41**

See data sheet TE 67.17

Further accessories can be found online at www.wika.com.



## Quick-mounting bracket for TF44

See data sheet TE 67.14



## Worm-drive hose clip for TF44

See data sheet TE 67.14



## Hand-held thermometer CTH6300



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