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.
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:

1. 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)
<table>
<thead>
<tr>
<th>Temperature</th>
<th>Temperature</th>
<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bimetal thermometer</strong> A43, A50, A51, A52</td>
<td><strong>Cable thermocouple</strong> TC40</td>
<td><strong>Pressure gauge</strong> 111</td>
</tr>
<tr>
<td>Page 32</td>
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</tr>
<tr>
<td><strong>Expansion thermometer</strong> IFC</td>
<td><strong>Outdoor thermometer</strong> TF41</td>
<td><strong>Compact pressure switch</strong> PSM</td>
</tr>
<tr>
<td>Page 32</td>
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<tr>
<td><strong>Expansion thermometers</strong> TF58, TF59</td>
<td><strong>Strap-on thermometer</strong> TF44</td>
<td><strong>Differential pressure gauges</strong></td>
</tr>
<tr>
<td>Page 33</td>
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</tr>
<tr>
<td><strong>Bimetal thermomanometer</strong> THM10</td>
<td><strong>OEM insertion thermometer</strong> TF45 with connection lead</td>
<td><strong>Accessories</strong></td>
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<td>Page 33</td>
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<tr>
<td><strong>Safety temperature limiter</strong> SB15</td>
<td><strong>Universal controller for panel mounting</strong> CS6x</td>
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<td>Page 31</td>
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<tr>
<td><strong>Cable resistance thermometer</strong> TR40</td>
<td><strong>Bimetal thermometer</strong> A46</td>
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<td>Page 28</td>
<td>Page 32</td>
<td></td>
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</tbody>
</table>
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).
<table>
<thead>
<tr>
<th>Temperature</th>
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<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Bimetal thermometer A43, A50, A51, A52" /></td>
<td><img src="image" alt="Outdoor thermometer TF41" /></td>
<td><img src="image" alt="Pressure gauge 111" /></td>
</tr>
<tr>
<td><img src="image" alt="Expansion thermometer IFC" /></td>
<td><img src="image" alt="Cable thermocouple TC40" /></td>
<td><img src="image" alt="Compact pressure switch PSM" /></td>
</tr>
<tr>
<td><img src="image" alt="Expansion thermometers TF58, TF59" /></td>
<td><img src="image" alt="Strap-on thermometer TF44" /></td>
<td><img src="image" alt="Contact pressure gauge PGS, PGT" /></td>
</tr>
<tr>
<td><img src="image" alt="Bimetal thermomanometer THM10" /></td>
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<td><img src="image" alt="Accessories" /></td>
</tr>
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<tr>
<td><img src="image" alt="Cable resistance thermometer TR40" /></td>
<td><img src="image" alt="Bimetal thermometer A46" /></td>
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</tr>
</tbody>
</table>
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)
2. Coolant circuit (temperature)
3. Coolant circuit (pressure)
4. Cylinder head (temperature)
5. Exhaust gas (temperature)
6. Engine oil (pressure)
7. Engine oil (level)
8. Heating circuit (temperature, flow/return)
9. Heating circuit (pressure, flow/return)
10. Environment, outside of the building (temperature)
11. Gas supply line (pressure)
### Temperature

1. **Bimetal thermometer**
   - A43, A50, A51, A52
   - Page 32

2. **Safety temperature limiter**
   - SB15
   - Page 31

3. **Cable thermocouple**
   - TC40
   - Page 28

4. **OEM screw-in thermometer**
   - TF35
   - with plug connection
   - Page 28

5. **Outdoor thermometer**
   - TF41
   - Page 29

6. **Strap-on thermometer**
   - TF44
   - Page 29

7. **OEM insertion thermometer**
   - TF45
   - with connection lead
   - Page 29

### Resistance thermometer

8. **Resistance thermometer**
   - TR10-B
   - Page 29

9. **Resistance thermometer**
   - TR33
   - Miniature design
   - Page 29

### Pressure

10. **Contact pressure gauge**
    - PGS, PGT
    - with switch contact or electrical signal
    - Page 22-23

11. **Differential pressure gauge**
    - Page 26

12. **Pressure sensor**
    - A-10, S-20
    - Page 20

13. **Pressure gauge**
    - 111, 212.20, 232.50, 213.53
    - Page 24-25

14. **Capsule pressure gauge**
    - 611.10, 611.13, 612.20
    - Page 23

15. **Compact pressure switch**
    - PSM
    - Page 21

### Level

16. **Optoelectronic OEM level switch**
    - OLS-C01
    - Page 27

17. **Float switch**
    - for industrial applications
    - RLS-1000, RLS-2000
    - Page 27

### Accessories

18. **Universal controller**
    - for panel mounting
    - CS6x
    - Page 30

19. **Temperature controller with digital indicator**
    - SC58, SC64
    - Page 30

20. **Temperature switch**
    - PSM
    - Page 21

21. **Compact pressure switch**
    - PSM
    - Page 21
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)
4 Suction gas (temperature)
5 Low-pressure line (pressure)
6 Heating circuit (temperature)
7 Collector circuit (pressure)
8 Collector circuit (temperature)
9 Environment, outside of the building (temperature)
### Temperature

<table>
<thead>
<tr>
<th>Image</th>
<th>Product Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OEM screw-in thermo-meter TF35 with connector</td>
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</tr>
<tr>
<td>2</td>
<td>Outdoor thermometer TF41</td>
<td>29</td>
</tr>
<tr>
<td>3</td>
<td>Insertion thermometer TF43 with injection-moulded plastic measuring element and cable</td>
<td>29</td>
</tr>
<tr>
<td>4</td>
<td>Strap-on thermometer TF44</td>
<td>29</td>
</tr>
<tr>
<td>5</td>
<td>OEM insertion thermometer TF45 with cable</td>
<td>29</td>
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<tr>
<td>6</td>
<td>Resistance thermometer TR33 Miniature design</td>
<td>29</td>
</tr>
<tr>
<td>7</td>
<td>Cable resistance thermometer TR40</td>
<td>28</td>
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</tbody>
</table>

### Pressure

<table>
<thead>
<tr>
<th>Image</th>
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<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Contact pressure gauge PGS, PGT with switch contact or electrical signal</td>
<td>22-23</td>
</tr>
<tr>
<td>2</td>
<td>Pressure sensor R-1</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>Pressure measuring instruments 101.00, 101.12 with capillary</td>
<td>24-25</td>
</tr>
<tr>
<td>4</td>
<td>Pressure measuring instrument PGS05 with electronic switch and capillary</td>
<td>23</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Image</th>
<th>Product Description</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>5</td>
<td>Pressure measuring instruments 101.00, 101.12 with capillary</td>
<td>24-25</td>
</tr>
<tr>
<td>6</td>
<td>Pressure measuring instrument PGS05 with electronic switch and capillary</td>
<td>23</td>
</tr>
</tbody>
</table>

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**Page 34-35**
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)
4 Heating circuit (pressure)
<table>
<thead>
<tr>
<th>Temperature</th>
<th>Pressure</th>
<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expansion thermometer IFC</td>
<td>Pressure measuring instruments 101.00, 101.12 with capillary</td>
<td>Contact pressure gauge PGS05 with electronic switch and capillary</td>
</tr>
<tr>
<td>Thermomanometer MFT with remote line and capillary</td>
<td>Compact pressure switch PSM</td>
<td></td>
</tr>
<tr>
<td>Bimetal thermomanometer THM10</td>
<td></td>
<td>Accessories</td>
</tr>
</tbody>
</table>
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.
### Temperature

<table>
<thead>
<tr>
<th>1</th>
<th>Bimetal thermometer A43, A50, A51, A52</th>
<th>Page 32</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>OEM screw-in thermometer TF35 with plug connection</td>
<td>Page 28</td>
</tr>
<tr>
<td>3</td>
<td>Expansion thermometer IFC</td>
<td>Page 32</td>
</tr>
<tr>
<td>4</td>
<td>Outdoor thermometer TF41</td>
<td>Page 29</td>
</tr>
<tr>
<td>5</td>
<td>Expansion thermometers TF58, TF59</td>
<td>Page 33</td>
</tr>
<tr>
<td>6</td>
<td>Strap-on thermometer TF44</td>
<td>Page 29</td>
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<tr>
<td>7</td>
<td>Machine glass thermometer 32</td>
<td>Page 33</td>
</tr>
<tr>
<td>8</td>
<td>OEM insertion thermometer TF45 with connection lead</td>
<td>Page 29</td>
</tr>
<tr>
<td>9</td>
<td>Bimetal theromanometer 100.12</td>
<td>Page 33</td>
</tr>
<tr>
<td>10</td>
<td>Miniature resistance thermometer TR33</td>
<td>Page 29</td>
</tr>
<tr>
<td>11</td>
<td>Safety temperature controller/limiter SW15, SB15</td>
<td>Page 31</td>
</tr>
<tr>
<td>12</td>
<td>Expansion thermometer 70</td>
<td>Page 33</td>
</tr>
<tr>
<td>13</td>
<td>Cable resistance thermometer TR40</td>
<td>Page 28</td>
</tr>
</tbody>
</table>

### Pressure

| 1 | Pressure gauge 111, 212.20, 232.50, 213.53 | Page 24-25 |
| 2 | Compact pressure switch PSM | Page 21 |
| 3 | Contact pressure gauge PGS, PGT with switch contact or electrical signal | Page 22-23 |
| 4 | Differential pressure gauge | Page 24 |
| 5 | Pressure sensors A-10, S-20 | Page 20 |
| 6 | Accessories | Page 34-35 |
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.
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.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Non-linearity</th>
<th>Measuring range</th>
<th>Special feature</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-10</td>
<td>Pressure sensor for common demands</td>
<td>≤ 0.25 or 0.5 BFSL (± % of span)</td>
<td>0 … 0.05 to 0 … 1,000 bar</td>
<td>Compact design, Free test report, 2 million possible variants</td>
<td>PE 81.60</td>
</tr>
<tr>
<td>S-20</td>
<td>Pressure sensor for superior demands</td>
<td>≤ 0.125, 0.25 or 0.5 BFSL (± % of span)</td>
<td>0 … 0.4 to 0 … 1,600 bar</td>
<td>Extreme operating conditions, Customer-specific variants, Free test report</td>
<td>PE 81.61</td>
</tr>
<tr>
<td>R-1</td>
<td>Pressure sensor for refrigeration and air-conditioning applications</td>
<td>≤ 2 (± % of span)</td>
<td>0 … 0.4 to 0 … 160 bar, -1 … 0 to -1 … +45 bar</td>
<td>Special case design for the best possible condensation tightness, Resistant to all common refrigerants</td>
<td>PE 81.45</td>
</tr>
</tbody>
</table>
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.

PSM01
Standard version

- Setting range: -0.85 … -0.15 bar, 0.2 … 2 to 30 … 320 bar
- Material: Galvanised steel, stainless steel
- Switching power: 2 A or 4 A / DC 24 V
- Switching cycles: 1 x 10⁶
- Data sheet: PV 34.81

PSM02
With settable hysteresis

- Setting range: -0.85 … -0.15 bar, 0.2 … 2 to 30 … 320 bar
- Material: Galvanised steel, stainless steel
- Switching power: 2 A or 4 A / DC 24 V
- Switching cycles: 2 x 10⁶
- 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.

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**PGT21**

With electrical output signal, stainless steel case, IP65

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

**PGT01**

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

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
<td>Nominal size</td>
<td>40 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>0 ... 2.5 to 0 ... 10 bar</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>2.5</td>
</tr>
<tr>
<td>Signal type</td>
<td>■ 0.5 ... 2.5 V ratiometric @ DC 5 V</td>
</tr>
<tr>
<td>■ 0.5 ... 3.5 V ratiometric @ DC 5 V</td>
<td></td>
</tr>
<tr>
<td>■ 0.5 ... 4.5 V ratiometric @ DC 5 V</td>
<td></td>
</tr>
<tr>
<td>Special feature</td>
<td>■ Low-cost</td>
</tr>
<tr>
<td>■ Wear-free sensor</td>
<td></td>
</tr>
<tr>
<td>■ Process connection: plastic</td>
<td></td>
</tr>
<tr>
<td>■ 5-pin connector, Tyco AMP Duoplug</td>
<td></td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 11.01</td>
</tr>
</tbody>
</table>
Pressure measurement

### 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

### 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**:
  - Wear-free sensor
  - Robust design
  - Leak-tight case
- **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**:
  - Optional: Special equipment (per EN 12828) such as red mark pointer and adjustable green segment
  - Optional: Accuracy class 1.6
- **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**:
  - Long service life, robust
  - Cost-effective and reliable
  - Scale ranges up to 0 ... 1,000 bar
- **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**:
  - Plastic capillary: Flexible and break-proof
  - Small footprint through compact design
  - Plastic capillary: Maximum flexibility during routing
- **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**:
  - Plastic capillary: Flexible and break-proof
  - Very simple to install with lateral locating lugs
  - Plastic capillary: Maximum flexibility during routing
- **Data sheet**: PM 01.22
### 611.10
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 | ■ Overpressure or vacuum safety with scale ranges < 40 mbar: 3 x full scale value scale ranges ≥ 40 mbar: 10 x full scale value ■ Zero point setting in front |
| Data sheet   | PM 06.01 |

### 611.13
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 |

### 612.20
Capsule pressure gauge, industrial version

| 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 | ■ Overload or vacuum safety with scale ranges > 25 mbar: 10 x full scale value scale ranges ≤ 25 mbar: 3 x full scale value ■ Zero point setting in front |
| 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 | 100 mm |
| Scale range  | 0 ... 0.16 to 0 ... 10 bar |
| Accuracy class| 2.5 (optional 1.6) |
| Ingress protection | IP65 (optional IP65) |
| Special feature | Differential pressure gauge with integrated working pressure indication |
| Data sheet | PM 07.20 |

### 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  | Single change-over contact 850.3 |
| Ingress protection | IP65 |
| Special feature | Differential pressure gauge with integrated working pressure indication and micro switch |
| Data sheet | PV 27.20 |

### DELTA-switch, differential pressure switch

| Nominal size | 100 mm |
| Scale range  | 0 ... 0.16 to 0 ... 10 bar |
| Accuracy class| 1.6 |
| Signal type  | Single change-over contact 850.3 |
| Ingress protection | IP54 (optional IP65) |
| Special feature | Differential pressure switch with one or two adjustable micro switches |
| Data sheet | PV 27.21 |

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

| Nominal size | 100 mm |
| Scale range  | 0 ... 0.25 to 0 ... 10 bar |
| Accuracy class| 2.5 (optional 1.6) |
| Signal type  | 4 ... 20 mA, 2-wire, passive, per NAMUR NE 43 |
| Ingress protection | IP54 (optional IP65) |
| Special feature | Differential pressure transmitter with integrated differential pressure and working pressure indication |
| 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.

### RLS-1000

**Float switches for industrial applications**
**Stainless steel version**

<table>
<thead>
<tr>
<th>Switch points</th>
<th>Up to 4 (normally closed, normally open, change-over contact)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium temperature</td>
<td>-30 ... +80 °C, -30 ... +150 °C optional</td>
</tr>
<tr>
<td>Guide tube length</td>
<td>60 ... 1,500 mm</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 50.03</td>
</tr>
</tbody>
</table>

### RLS-2000

**Float switches for industrial applications**
**Plastic version**

<table>
<thead>
<tr>
<th>Switch points</th>
<th>Up to 4 (normally closed, normally open, change-over contact)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium temperature</td>
<td>-30 ... +80 °C, -30 ... +120 °C optional</td>
</tr>
<tr>
<td>Guide tube length</td>
<td>100 ... 1,500 mm</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 50.04</td>
</tr>
</tbody>
</table>

### OLS-C01

**Optoelectronic OEM level switch, standard version**

<table>
<thead>
<tr>
<th>Material</th>
<th>Stainless steel, borosilicate glass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process connection</td>
<td>G ⅜&quot;, G ½&quot; or M12 x 1</td>
</tr>
<tr>
<td>Pressure</td>
<td>Max. 25 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>-30 ... +100 °C</td>
</tr>
<tr>
<td>Switching output</td>
<td>1 x PNP</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 31.31</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>TR40</th>
<th>Cable resistance thermometer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor element</td>
<td>1 x Pt100, 2 x Pt100</td>
</tr>
<tr>
<td>Measuring range</td>
<td>-200 ... +600 °C</td>
</tr>
<tr>
<td>Connection method</td>
<td>2-, 3- and 4-wire</td>
</tr>
<tr>
<td>Cable</td>
<td>PVC, silicone, PTFE</td>
</tr>
</tbody>
</table>
| 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 60.40 |

<table>
<thead>
<tr>
<th>TC40</th>
<th>Cable thermocouple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor element</td>
<td>Type K, J, E, N or T</td>
</tr>
<tr>
<td>Measuring range</td>
<td>-40 ... +1,200 °C</td>
</tr>
<tr>
<td>Measuring point</td>
<td>Ungrounded or grounded</td>
</tr>
<tr>
<td>Cable</td>
<td>PVC, silicone, PTFE, fibreglass</td>
</tr>
</tbody>
</table>
| 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 |

<table>
<thead>
<tr>
<th>TF35</th>
<th>OEM screw-in thermometer with plug connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-50 ... +250 °C</td>
</tr>
<tr>
<td>Measuring element</td>
<td>PT100, Pt1000, NTC, KTY</td>
</tr>
<tr>
<td>Dimensions</td>
<td>See data sheet</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP66, IP67, IP69K</td>
</tr>
<tr>
<td>Accessories</td>
<td>Matting connector</td>
</tr>
</tbody>
</table>
| Special feature | ■ High vibration resistance  
 ■ Compact design  
 ■ Thermowells (brass, stainless steel)  
 ■ Electrical connection via plug connection |
| Data sheet | TE 67.10 |
TF41
Outdoor thermometer

- Measuring range: -40 ... +100 °C
- Measuring element: Pt100, Pt1000, NTC, KTY
- Dimensions: 44 x 32 x 30 mm
- Ingress protection: IP65
- Accessories:
  - Protective sun cover
  - Wall-mounting kit
- Special features:
  - Smallest case design
  - Clip-on sun protector
  - UV-resistant
  - Proof against dust and jets of water (IP65)
- Data sheet: TE 67.17

TF44
Strap-on thermometer with connection lead

- Measuring range: -50 ... +200 °C
- Measuring element: Pt100, Pt1000, NTC, KTY
- Dimensions: Ø 6 x 6 x 35 mm
- Ingress protection: IP65
- Accessories:
  - Quick-mounting bracket
  - Worm-drive hose clip
- Special features:
  - Pipeline system remains sealed
  - Medium to be measured is not affected
  - Good heat transfer through aluminium sleeve
- Data sheet: TE 67.14

TF45
OEM insertion thermometer with connection lead

- Measuring range: -50 ... +200 °C
- Measuring element: Pt100, Pt1000, NTC, KTY
- Dimensions: Ø 6 x 6 x 35 mm
- Ingress protection: IP65
- Accessories:
  - Quick-mounting bracket
  - Worm-drive hose clip
- Special features:
  - Connection lead from PVC, silicone, PTFE
  - Probe sleeve from stainless steel
- Data sheet: TE 67.15

TR10-B
Resistance thermometer for additional thermowell

- Measuring range: -200 ... +650 °C
- Sensor element: 1 x Pt100, 2 x Pt100
- Connection method: 2-, 3- and 4-wire
- Data sheet: TE 60.02

TR33
Miniature resistance thermometer

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Measuring range</th>
<th>Input</th>
<th>Dimensions</th>
<th>Ingress protection</th>
<th>Accessories</th>
<th>Special feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC58</td>
<td>Two-point controller for panel mounting, 62 × 28 mm</td>
<td>-80 … 400 °C</td>
<td>Suitable for Pt100, PTC</td>
<td>62 × 28 × 78 mm</td>
<td>Front: IP50</td>
<td>Clamping elements bolted to sides (included in delivery)</td>
<td>Temperature controller and digital indicator in a single instrument, Snap-in fixture for panel mounting, High switching power, up to 12 A, 13 mm LED display</td>
</tr>
<tr>
<td>SC64</td>
<td>Two-point controller for panel mounting, Ø 64 mm</td>
<td>-80 … 400 °C</td>
<td>Suitable for Pt100, PTC</td>
<td>Ø 64 × 44 mm</td>
<td>Front: IP65</td>
<td>Instrument mounting bracket (included in delivery)</td>
<td>Temperature controller and digital indicator in a single instrument, Panel mounting, High switching power, up to 16 A, 13 mm LED display</td>
</tr>
<tr>
<td>CS6S, CS6H, CS6L</td>
<td>Universal controller for panel mounting</td>
<td>-2,000 … + 10,000 °C</td>
<td>Pt100, JPt100, 3-wire, thermocouples, standard signals (e.g. 4 … 20 mA)</td>
<td>48 x 48 (CS6S), 96 x 48 (CS6H), 96 x 96 (CS6L), insertion depth: 60 mm</td>
<td>Front: IP66</td>
<td>Terminal cover, Programming cable, Current transformer (CT 20 and 100 A)</td>
<td>Control mode configurable: PID, PI, PD, P, ON/OFF, Programmable 9-step control program (approx. 100 h), 5-digit LED display, Integrated auto-tuning</td>
</tr>
</tbody>
</table>

Data sheet
- SC58: AC 85.24
- SC64: AC 85.25
- CS6S, CS6H, CS6L: 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.

### SB15

**Expansion thermometer with micro switch, safety temperature limiter**

- **Nominal size**: 60, 80, 100, 72 x 72, 96 x 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

### SW15

**Expansion thermometer with micro switch, safety temperature controller**

- **Nominal size**: 60, 80, 100, 72 x 72, 96 x 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.

A43
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 ½ B, copper alloy
Special feature ■ Indication accuracy class 2 (EN 13190)
■ Thermowell included in delivery
Data sheet TM 43.01

A50
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 ½ B, copper alloy
Special feature ■ Thermowell with retainer screw
Data sheet TM 50.03

A51
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 ■ Indication accuracy class 1 (EN 13190) for thermowell variant
■ Large scale range
Data sheet TM 51.01

A46.11
Bimetal contact thermometer

Nominal size 63, 80 mm
Scale range 0 ... +120 °C
Case Stainless steel
Connection Attachment plate with mounting clip for pipe diameters 1” ... 2”
Special feature ■ The pipeline system remains sealed
■ Medium to be measured is not affected
■ Quick and simple mounting
Data sheet TM 46.02

52
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 ■ Accessories: Thermowells made of different materials
■ 5 different connection designs
Data sheet TM 52.01

IFC
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, RoHS-compliant
Connection Smooth, rotatable with loose threaded connection
Special feature ■ Temperature display independent of the measuring point
■ For panel mounting
Data sheet TM 80.01
### Temperature Measurement

**TF58, TF59**

**Expansion thermometer with capillary**

| Nominal size | TF58, edgewise panel design 58 x 25 mm  
| Case | Plastic  
| Connection | Smooth  
| Special feature | Temperature display independent of the measuring point  
| Data sheet | TM 80.02 |

**TF59, edgewise panel design 62 x 11 mm**

| Scale range | TF58: -60 ... +250 °C  
| TF59: -40 ... +200 °C  
| Case | Plastic  
| Connection | Smooth  
| Special feature | Temperature display independent of the measuring point  
| Data sheet | TM 80.02 |

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**70**

**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 | Temperature display independent of the measuring point  
| Data sheet | TM 81.01 |

**32**

**Machine glass thermometer, V-form**

| Nominal size | 110, 150, 200 mm  
| Scale range | -30 ... +200 °C  
| Case | Aluminium, anodised, plastic, black  
| Connection | G ½ B, M20 x 1.5  
| Special feature | Vibration resistant  
| Data sheet | TM 32.02 |

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**MFT**

**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  
| Case | Plastic, black, with front flange and lateral snap-in mounting for panel mounting  
| Process connection | Copper alloy, back mount  
| Data sheet | PM 01.20 |

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**THM10**

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

| Nominal size | 63, 80 mm  
| Scale range | 0 ... +4 bar  
| Case | Steel, black lacquered  
| Process connection | Centre back mount  
| Special feature | Connection valve included in delivery  
| Data sheet | PM 01.23 |

---

**100.12**

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

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

---

**THM10**

**Bimetal thermomanometer Eco, for pressure and temperature measurement**

| Nominal size | 63, 80 mm  
| Scale range | 0 ... 4 to 0 ... 10 bar  
| Case | Plastic, black  
| Connection | Copper alloy  
| Special feature | 2 measurands: Pressure/temperature  
| Data sheet | PM 01.24 |
## Accessories

### Accessories for pressure gauges

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<td>Shut-off valves</td>
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<td>Push button cock</td>
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<td>Adapters</td>
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# Accessories for temperature measuring instruments

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<td>Worm-drive hose clip for TF44</td>
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<tr>
<td>Hand-held thermometer CTH6300</td>
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</table>

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