WIKA
Standard product portfolio

Pressure | Temperature | Level | Force | Flow | Calibration technology
About us

As a family-run business acting globally, with 10,000 highly qualified employees, the WIKA group of companies is a worldwide leader in pressure and temperature measurement. The company also sets the standard in the measurement of level, force and flow, and in calibration technology.

Founded in 1946, WIKA is today a strong and reliable partner for all the requirements of industrial measurement technology, thanks to a broad portfolio of high-precision instruments and comprehensive services.

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.
In this brochure you will find standard products from all WIKA product lines.

You can find our industry-specific products with a lot of additional information in our segment brochures at www.wika.com.

- Sanitary applications
- Ventilation and air-conditioning
- Innovative SF6 solutions
- High purity & ultra high purity
Bourdon tube pressure gauges

Copper alloy

These pressure gauges are suitable for liquid and gaseous media, so long as they are not highly viscous or crystallising and do not attack copper alloy parts. The scale ranges cover pressures from 0.6 ... 1,000 bar. These instruments are manufactured in accordance with the European standard EN837-1 (except for model 116.15 and 111.12 in NS 27).

For the individual models, various approvals such as EAC, GL and KBA exist. For measuring points with high dynamic loads, such as fast load cycles or vibrations, a liquid-filled design should be used.

<table>
<thead>
<tr>
<th>111.10, 111.12</th>
<th>Standard version</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal size</strong></td>
<td>27, 40, 50, 63, 80, 100, 160 mm</td>
</tr>
<tr>
<td><strong>Scale range</strong></td>
<td>-1 ... 0 to 0 ... 400 bar</td>
</tr>
<tr>
<td><strong>Accuracy class</strong></td>
<td>2.5, 1.6 optional</td>
</tr>
<tr>
<td><strong>NS 27:</strong></td>
<td>4.0</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>PM 01.01, PM 01.17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>111.11</th>
<th>Welding gauge ISO 5171</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal size</strong></td>
<td>40, 50, 63 mm</td>
</tr>
<tr>
<td><strong>Scale range</strong></td>
<td>0 ... 0.6 to 0 ... 400 bar</td>
</tr>
<tr>
<td><strong>Accuracy class</strong></td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>PM 01.03</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>111.16, 111.26</th>
<th>Panel mounting series</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal size</strong></td>
<td>40, 50, 63 mm, model 111.26 also 80 mm</td>
</tr>
<tr>
<td><strong>Scale range</strong></td>
<td>-1 ... 0 to 0 ... 400 bar</td>
</tr>
<tr>
<td><strong>Accuracy class</strong></td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>PM 01.10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>113.13</th>
<th>Plastic case, liquid filling</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal size</strong></td>
<td>40, 50, 63 mm</td>
</tr>
<tr>
<td><strong>Scale range</strong></td>
<td>-1 ... 0 to 0 ... 400 bar</td>
</tr>
<tr>
<td><strong>Accuracy class</strong></td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>PM 01.04</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>214.11</th>
<th>Edgewise panel design</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal size</strong></td>
<td>96 x 96, 72 x 72</td>
</tr>
<tr>
<td><strong>Scale range</strong></td>
<td>NS 96 x 96: 0 ... 0.6 to 0 ... 1,000 bar</td>
</tr>
<tr>
<td><strong>Accuracy class</strong></td>
<td>1.6, 1.0</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>PM 02.07</td>
</tr>
</tbody>
</table>
**212.20**
Stainless steel case

Nominal size 100, 160 mm  
Scale range 0 ... 0.6 to 0 ... 1,000 bar  
Accuracy class 1.0  
Data sheet PM 02.01

**213.40**
Heavy-duty version, liquid filling

Nominal size 63, 80, 100 mm  
Scale range -1 ... 0 to 0 ... 1,000 bar  
Accuracy class 1.0 (NS 100), 1.6 (NS 63 and 80)  
Data sheet PM 02.06

**113.53, 213.53**
Stainless steel case, liquid filling

Nominal size 113.53: 40, 80 mm  
113.53: 50, 63, 100 mm  
Scale range -1 ... 0 to 0 ... 1,000 bar  
Accuracy class 113.53: 1.6 (NS 80), 2.5 (NS 40)  
113.53: 1.0 (NS 100), 1.6 (NS 50, 63)  
Data sheet PM 01.08, PM 02.12

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**Thermomanometers**

**MFT**
With capillaries, for pressure and temperature measurement

Nominal size 40, 42, 52 mm  
Scale range  
- Pressure: 0 ... 4 bar  
- Temperature: 0 ... 120 °C  
Accuracy class  
- Pressure: 2.5 (EN 837-1)  
- Temperature: 2.5  
Data sheet PM 01.20

**THM10**
Eco version, for pressure and temperature measurement

Nominal size 63, 80 mm  
Scale range  
- Pressure: 0 ... 4 to 0 ... 10 bar  
- Temperature: 0 ... 120 °C  
Connection location Lower mount or back mount  
Accuracy class  
- Pressure: 2.5 (EN 837-1)  
- Temperature: 2 (EN 13190)  
Data sheet PM 01.24

**100.02**
For pressure and temperature measurement

Nominal size 63, 80 mm  
Scale range  
- Pressure: 0 ... 1 to 0 ... 16 bar  
- Temperature: 0 ... 100 to 0 ... 150 °C  
Connection location Lower mount or back mount  
Accuracy class  
- Pressure: 2.5 (EN 837-1)  
- Temperature: ±2.5  
Data sheet PM 01.23

Further information at www.wika.com
Bourdon tube pressure gauges

Stainless steel

The wetted parts of these pressure gauges are manufactured entirely from stainless steel. Thus they are suitable for gaseous and liquid aggressive media that are not highly viscous or crystallising, also in aggressive environments. They are suitable for scale ranges from 0 ... 0.6 to 0 ... 7,000 bar.

Dependant upon the pressure range and the instrument model, overload safety of up to a maximum of 5 x full scale value is possible. To this point, the measurement accuracy is maintained. Liquid filling the case ensures a precise instrument display, even with high dynamic pressure loads and vibrations.

131.11 Compact version

Nominal size 40, 50, 63 mm
Scale range
- NS 40, 50: 0 ... 1 to 0 ... 600 bar
- NS 63: 0 ... 1 to 0 ... 1,000 bar
Accuracy class 2.5
Ingress protection IP65
Data sheet PM 01.05

232.50, 233.50 For the process industry, standard version

Nominal size 63, 100, 160 mm
Scale range
- NS 63: 0 ... 1 to 0 ... 1,000 bar
- NS 100: 0 ... 0.6 to 0 ... 1,000 bar
- NS 160: 0 ... 0.6 to 0 ... 1,600 bar
Accuracy class 1.0 (NS 100, 160), 1.6 (NS 63)
Ingress protection IP65
Data sheet PM 02.02

232.30, 233.30 For the process industry, safety version

Nominal size 63, 100, 160 mm
Scale range
- NS 63: 0 ... 1 to 0 ... 1,000 bar
- NS 100: 0 ... 0.6 to 0 ... 1,000 bar
- NS 160: 0 ... 0.6 to 0 ... 1,600 bar
Accuracy class 1.0 (NS 100, 160), 1.6 (NS 63)
Ingress protection IP65
Data sheet PM 02.04

232.36, 233.36 High overload safety up to the 4-fold full scale value, safety version

Nominal size 100, 160 mm
Scale range 0 ... 0.6 bar to 0 ... 1,000 bar
Accuracy class 1.0
Ingress protection IP65
Data sheet PM 02.15

232.34, 233.34 Process Gauge, safety version per ASME B40.100

Nominal size 4 ½”
Scale range 0 ... 0.6 bar to 0 ... 1,000 bar
Accuracy class Grade 2A
Ingress protection IP54 with liquid filling IP65
Data sheet PM 02.10
Test gauges

For highest accuracy

Depending upon the instrument model, accuracies of 0.1, 0.25 or 0.6 % of full scale value can be measured.

The pressure ranges cover from 0 … 6 mbar to 0 … max. 1,600 bar and are suitable for calibration tasks. For each of the pressure gauges specified here, a DKD/DAkkS certificate can be provided.

### 312.20
Copper alloy, class 0.6

<table>
<thead>
<tr>
<th>EAC</th>
<th>Nominal size</th>
<th>Scale range</th>
<th>Accuracy class</th>
<th>Ingress protection</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>160 mm</td>
<td>0 ... 0.6 to 0 ... 600 bar</td>
<td>0.6</td>
<td>IP54</td>
<td>PM 03.01</td>
</tr>
</tbody>
</table>

### 332.50, 333.50
Stainless steel, standard version, class 0.6

<table>
<thead>
<tr>
<th>EAC</th>
<th>Nominal size</th>
<th>Scale range</th>
<th>Accuracy class</th>
<th>Ingress protection</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>160 mm</td>
<td>0 ... 0.6 to 0 ... 1,600 bar</td>
<td>0.6</td>
<td>IP65</td>
<td>PM 03.06</td>
</tr>
</tbody>
</table>

### 332.30, 333.30
Stainless steel, safety version, class 0.6

<table>
<thead>
<tr>
<th>EAC S</th>
<th>Nominal size</th>
<th>Scale range</th>
<th>Accuracy class</th>
<th>Ingress protection</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>160 mm</td>
<td>0 ... 0.6 to 0 ... 1,600 bar</td>
<td>0.6</td>
<td>IP65</td>
<td>PM 03.05</td>
</tr>
</tbody>
</table>

### 332.50, 333.50
Stainless steel, standard version, class 0.6

<table>
<thead>
<tr>
<th>EAC</th>
<th>Nominal size</th>
<th>Scale range</th>
<th>Accuracy class</th>
<th>Ingress protection</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>160 mm</td>
<td>0 ... 0.6 to 0 ... 1,600 bar</td>
<td>0.6</td>
<td>IP65</td>
<td>PM 03.06</td>
</tr>
</tbody>
</table>

### 332.30, 333.30
Stainless steel, safety version, class 0.6

<table>
<thead>
<tr>
<th>EAC S</th>
<th>Nominal size</th>
<th>Scale range</th>
<th>Accuracy class</th>
<th>Ingress protection</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>160 mm</td>
<td>0 ... 0.6 to 0 ... 1,600 bar</td>
<td>0.6</td>
<td>IP65</td>
<td>PM 03.05</td>
</tr>
</tbody>
</table>

### 342.11
From class 0.1, with transport case and acceptance test certificate

<table>
<thead>
<tr>
<th>EAC</th>
<th>Nominal size</th>
<th>Scale range</th>
<th>Accuracy class</th>
<th>Ingress protection</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>250 mm</td>
<td>0 ... 1 to 0 ... 1,600 bar</td>
<td>0.1 for scale ranges &lt; 400 bar</td>
<td>IP54</td>
<td>PM 03.03</td>
</tr>
</tbody>
</table>

### 610.20, 630.20
For low pressure ranges from 10 mbar, class 0.6

<table>
<thead>
<tr>
<th>EAC</th>
<th>Nominal size</th>
<th>Scale range</th>
<th>Accuracy class</th>
<th>Ingress protection</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>160 mm</td>
<td>0 ... 10 to 0 ... 600 mbar</td>
<td>0.6</td>
<td>IP54</td>
<td>PM 06.09</td>
</tr>
</tbody>
</table>

Further information at www.wika.com
Diaphragm pressure gauges

The application areas for diaphragm pressure gauges are very versatile. They are the specialists in the process industry when it comes to critical measuring tasks such as with highly corrosive or viscous media or when it comes to low pressures and high overload. The scale ranges are from as low as 0 … 16 mbar to typically 0 … 25 to 0 … 40 bar. Dependant upon the pressure range and the instrument model, overload safety of 3 x or 5 x full scale value is possible as standard.

For special designs, an overload safety of up to 400 bar is possible, with the measurement accuracy maintained. Diaphragm pressure gauges are even suitable for highly viscous or contaminated media by using an open connecting flange (per DIN/ASME). For measuring particularly aggressive media, the complete wetted surface can be lined with a large selection of special materials (e.g. PTFE, Hastelloy, tantalum, and many more).

422.12, 423.12
Grey cast iron case
Nominal size 100, 160 mm
Scale range 0 … 16 mbar to 0 … 40 bar
Accuracy class 1.6
Ingress protection IP54, with liquid filling IP65
Data sheet PM 04.02

432.50, 433.50
For the process industry, high overload safety up to the 10-fold full scale value, max. 40 bar
Nominal size 100, 160 mm
Scale range 0 … 16 mbar to 0 … 25 bar
Accuracy class 1.6
Ingress protection IP54, with liquid filling IP65
Data sheet PM 04.03

432.36, 432.56
For the process industry, high overload safety to 40, 100 or 400 bar
Nominal size 100, 160 mm
Scale range 0 … 16 mbar to 0 … 40 bar
Accuracy class 1.6
Ingress protection IP54, with liquid filling IP65
Data sheet PM 04.07
Capsule pressure gauges

For very low pressures

These measuring instruments are particularly suited to gaseous media. The scale ranges are between 0 … 2.5 mbar and 0 … 1,000 mbar in accuracy classes from 0.1 to 2.5. Capsule pressure gauges consist of two circular, corrugated diaphragms, joined together around the edge with a pressure-tight seal. Overload protection is possible in certain cases.

<table>
<thead>
<tr>
<th>611.10</th>
<th>611.13</th>
<th>612.20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard version</strong></td>
<td><strong>Plastic case</strong></td>
<td><strong>Stainless steel case</strong></td>
</tr>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td><strong>Nominal size</strong></td>
<td>50, 63 mm</td>
<td>50, 63 mm</td>
</tr>
<tr>
<td><strong>Scale range</strong></td>
<td>0 … 25 to 0 … 600 mbar</td>
<td>0 … 60 to 0 … 600 mbar</td>
</tr>
<tr>
<td><strong>Accuracy class</strong></td>
<td>1.6</td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Ingress protection</strong></td>
<td>IP54</td>
<td>IP53</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>PM 06.01</td>
<td>PM 06.12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>614.11, 634.11</th>
<th>632.50</th>
<th>632.51</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Edgewise panel design</strong></td>
<td><strong>For the process industry</strong></td>
<td><strong>For the process industry, high overload safety</strong></td>
</tr>
<tr>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
<td><img src="image6.png" alt="Image" /></td>
</tr>
<tr>
<td><strong>Nominal size</strong></td>
<td>72 x 72, 96 x 96, 144 x 144, 144 x 72 mm</td>
<td>63, 100, 160 mm</td>
</tr>
</tbody>
</table>
| **Scale range** | • NS 72 x 72: 0 … 25 to 0 … 600 mbar  
• NS 96 x 96: 0 … 10 to 0 … 600 mbar  
• NS 144 x 144: 0 … 6 to 0 … 600 mbar  
• NS 144 x 72: 0 … 4 to 0 … 600 mbar | 0 … 40 to 0 … 600 mbar  
0 … 16 to 0 … 600 mbar  
0 … 2.5 to 0 … 600 mbar |
| **Accuracy class** | 1.6 | 1.6 |
| **Ingress protection** | IP54 | IP54 |
| **Data sheet** | PM 06.05 | PM 06.03 | PM 06.06 |

Further information at www.wika.com
Differential pressure gauges work with a wide range of pressure elements. With this variety, measuring ranges from 0 ... 0.5 mbar to 0 ... 1,000 bar and static overlay pressures up to 400 bar are possible.

These measuring instruments monitor:
- the pollution degree in filter systems
- the level in closed vessels
- the overpressure in clean rooms
- the flow of gaseous and liquid media
- and they control pumping plants

### Differential Pressure Gauges

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Nominal Size</th>
<th>Scale Range</th>
<th>Accuracy Class</th>
<th>Ingress Protection</th>
<th>Data Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>700.01, 700.02</td>
<td>With magnetic piston or with magnetic piston and separating diaphragm</td>
<td>80 mm</td>
<td>700.01: 0 ... 400 mbar to 0 ... 10 bar, 700.02: 0 ... 160 mbar to 0 ... 2.5 bar</td>
<td>700.01: ±3 %, 700.02: ±5 % with increasing differential pressure</td>
<td>IP54</td>
<td>PM 07.14</td>
</tr>
<tr>
<td>711.12, 731.12</td>
<td>With parallel entry, copper alloy or stainless steel</td>
<td>100, 160 mm</td>
<td>0 ... 0.6 to 0 ... 1,000 bar</td>
<td>1.6</td>
<td>IP53</td>
<td>PM 07.02</td>
</tr>
<tr>
<td>716.11, 736.11</td>
<td>For very low differential pressures from 2.5 mbar, copper alloy or stainless steel</td>
<td>100, 160 mm</td>
<td>■ 0 ... 60 to 0 ... 250 mbar (measuring cell DN 140), ■ 0 ... 0.25 to 0 ... 40 bar (measuring cell DN 82)</td>
<td>1.6</td>
<td>IP54, with liquid filling IP65</td>
<td>PM 07.07</td>
</tr>
<tr>
<td>DPG40</td>
<td>With integrated working pressure indication (DELTA-plus)</td>
<td>100 mm</td>
<td>0 ... 0.16 to 0 ... 10 bar</td>
<td>2.5</td>
<td>IP65</td>
<td>PM 07.20</td>
</tr>
<tr>
<td>732.14</td>
<td>For the process industry, high overload safety to 40, 100, 250 or 400 bar</td>
<td>100, 160 mm</td>
<td>0 ... 16 mbar to 0 ... 25 bar</td>
<td>1.6</td>
<td>IP54, with liquid filling IP65</td>
<td>PM 07.13</td>
</tr>
</tbody>
</table>
Absolute pressure gauges

Absolute pressure gauges are used when measured pressures are independent of the natural fluctuations in atmospheric pressure. The pressure of the measured media is determined against a reference pressure, which corresponds to the absolute pressure zero point. For this, the reference chamber is completely evacuated, so that there is a near-perfect vacuum in it.

**532.52, 532.53, 532.54**

**High overload safety**

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>100, 160 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>0 ... 25 mbar to 0 ... 25 bar abs.</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>1.0 or 1.6 or 2.5</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP54, with liquid filling IP65</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PM 05.02</td>
</tr>
</tbody>
</table>

Applications for these high-precision measuring instruments are, for example, monitoring of vacuum pumps and vacuum packing machines. They are also used in laboratories, in order to monitor condensation pressures or to determine the vapour pressure of liquids.

Further information at www.wika.com
## Digital pressure gauges

### DG-10
**Digital pressure gauge for general industrial applications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-0 ... 5 to 0 ... 700 bar</td>
</tr>
<tr>
<td></td>
<td>-1 ... +5 to -1 ... +10 bar</td>
</tr>
<tr>
<td>Accuracy (% of span)</td>
<td>≤ 0.5 % FS ±1 digit</td>
</tr>
<tr>
<td>Special feature</td>
<td>Robust stainless steel case, nominal size 80 mm</td>
</tr>
<tr>
<td></td>
<td>Battery operation (2 x 1.5 V AA cell)</td>
</tr>
<tr>
<td></td>
<td>Option: Rotatable instrument head, backlighting</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PE 81.66</td>
</tr>
</tbody>
</table>

### CPG500
**Digital pressure gauge**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-1 ... +16 to 0 ... 1,000 bar</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.25 %</td>
</tr>
<tr>
<td>Special feature</td>
<td>Simple operation using 4 buttons</td>
</tr>
<tr>
<td></td>
<td>Robust case with protective rubber cap, IP67</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 09.01</td>
</tr>
</tbody>
</table>

### CPG1500
**Precision digital pressure gauge**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-1 ... 10,000 bar</td>
</tr>
<tr>
<td>Accuracy</td>
<td>≤ 0.025 % FS ±1 digit</td>
</tr>
<tr>
<td>Special feature</td>
<td>Integrated data logger</td>
</tr>
<tr>
<td></td>
<td>WKA-Cal compatible</td>
</tr>
<tr>
<td></td>
<td>Data transfer via WKA-Wireless</td>
</tr>
<tr>
<td></td>
<td>Password protection possible</td>
</tr>
<tr>
<td></td>
<td>Robust case IP65</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 10.51</td>
</tr>
</tbody>
</table>

App „myWIKA device“

Play Store
### Pressure Transmitters

#### UPT-20
**Universal process transmitter with standard connection, Ex intrinsically safe**

- **Non-linearity** (% of span) ≤ 0.1
- **Output signal** 4 ... 20 mA, HART®
- **Measuring range**
  - 0 ... 0.4 to 0 ... 4,000 bar
  - 0 ... 1.6 to 0 ... 40 bar abs.
  - -0.2 ... +0.2 to -1 ... +40 bar
- **Special feature**
  - Multi-functional display
  - Freely scalable measuring range
  - Simple menu navigation
  - Conductive plastic case or stainless steel case
  - Large LC display, rotatable

**Data sheet** PE 86.05

#### UPT-21
**Universal process transmitter with flush process connection**

- **Non-linearity** (% of span) ≤ 0.1
- **Output signal** 4 ... 20 mA, HART®
- **Measuring range**
  - 0 ... 0.4 to 0 ... 600 bar
  - 0 ... 1.6 to 0 ... 40 bar abs.
  - -0.2 ... +0.2 to -1 ... +40 bar
- **Special feature**
  - Hygienic process connections in different designs from ½" to 2"
  - Electropolished stainless steel case for hygienic applications
  - Freely scalable measuring range
  - Conductive plastic case or stainless steel case
  - Large LC display, rotatable

**Data sheet** PE 86.05

#### IPT-20, IPT-21
**Process pressure transmitter with welded metal measuring cell**

- **Non-linearity** (% of span) ≤ 0.075 ... 0.1
- **Output signal** 4 ... 20 mA, HART® protocol (optional), PROFIBUS® PA, FOUNDATION™ Fieldbus
- **Measuring range**
  - 0 ... 0.1 to 0 ... 4,000 bar
  - 0 ... 0.1 to 0 ... 40 bar abs.
  - -1 ... 0 to -1 ... +40 bar
- **Special feature**
  - Freely scalable measuring ranges
  - Case from plastic, aluminium or stainless steel
  - Flush process connection (optional)
  - With integrated display and instrument mounting bracket for wall/pipe mounting (optional)
  - Process temperature ranges to 200 °C

**Data sheet** PE 86.06

#### CPT-20, CPT-21
**Process pressure transmitter with capacitive ceramic measuring cell**

- **Non-linearity** (% of span) < 0.05
- **Output signal** 4 ... 20 mA, HART® protocol (optional), PROFIBUS® PA, FOUNDATION™ Fieldbus
- **Measuring range**
  - 0 ... 0.025 to 0 ... 100 bar abs.
  - -1 ... 0 to -1 ... +100 bar
- **Special feature**
  - Particularly robust, ceramic measuring cell
  - Dry ceramic measuring cell with variable sealing concept
  - Freely scalable measuring ranges
  - Case from plastic, aluminium or stainless steel
  - Flush process connection (optional)

**Data sheet** PE 86.07

#### DPT-10
**Differential pressure transmitter, intrinsically safe or with flame-proof enclosure**

- **Non-linearity** (% of span) ≤ 0.075 ... 0.15
- **Output signal** 4 ... 20 mA, HART® protocol (optional), PROFIBUS® PA
- **Measuring range** 0 ... 10 mbar to 0 ... 40 bar
- **Special feature**
  - Freely scalable measuring ranges
  - Static load 160 bar, optionally 420 bar
  - Case from plastic, aluminium or stainless steel
  - With integrated display and instrument mounting bracket for wall/pipe mounting (optional)
  - 3- or 5-way valve optional

**Data sheet** PE 86.21

Further information at www.wika.com
**Pressure sensors**

**A-10**

**For industrial applications**

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

**S-20**

**For superior industrial applications**

- **Non-linearity (±% of span):** ≤ 0.125, 0.25 or 0.5 BFSL
- **Measuring range:**
  - 0 ... 0.1 to 0 ... 600 bar
  - 0 ... 0.25 to 0 ... 16 bar abs.
  - -1 ... 0 to -1 ... +24 bar
- **Special feature:** Extreme operating conditions, Customer-specific variants, Free test report
- **Data sheet:** PE 81.61

**S-11**

**Flush diaphragm**

- **Non-linearity (±% of span):** ≤ 0.2 BFSL
- **Measuring range:**
  - 0 ... 0.1 to 0 ... 600 bar
  - 0 ... 0.25 to 0 ... 16 bar abs.
  - -1 ... 0 to -1 ... +24 bar
- **Special feature:** Flush process connection, Medium temperature to 150 °C, Comprehensive stocks
- **Data sheet:** PE 81.02

**IS-3**

**Intrinsic safety Ex i**

- **Accuracy (±% of span):** ≤ 0.5
- **Measuring range:**
  - 0 ... 0.1 to 0 ... 6,000 bar
  - 0 ... 0.25 to 0 ... 25 bar abs.
  - -1 ... 0 to -1 ... +24 bar
- **Special feature:** Further worldwide Ex approvals, High-pressure version (optional), Flush process connection (optional), Suitable for SIL 2 per IEC 61508/IEC 61511
- **Data sheet:** PE 81.58

**E-10, E-11**

**Flameproof enclosure Ex d**

- **Accuracy (±% of span):** ≤ 0.5
- **Measuring range:**
  - 0 ... 0.4 to 0 ... 1,600 bar
  - 0 ... 0.4 to 0 ... 16 bar abs.
  - -1 ... 0 to -1 ... +59 bar
- **Special feature:** Low-power version, For sour gas applications (NACE), Flush process connection (optional), Worldwide Ex approvals
- **Data sheet:** PE 81.27

**A-1200**

**With IO-Link, PNP or NPN switching output**

- **Accuracy (±% of span):** ≤ 1 or ≤ 0.5
- **Measuring range:**
  - 0 ... 0.4 to 0 ... 1,000 bar
  - 0 ... 0.4 to 0 ... 25 bar abs.
  - -1 ... 0 to -1 ... +24 bar
- **Special feature:** IO-Link version 1.1, Medium temperature to +125°C, Multicolour 360° LED status display
- **Data sheet:** PE 81.90
### HP-2

For highest pressure applications to 15,000 bar

<table>
<thead>
<tr>
<th>Accuracy (± % of span)</th>
<th>≤ 0.25 or 0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>0 ... 1,600 to 0 ... 15,000 bar</td>
</tr>
<tr>
<td>Special feature</td>
<td>Very high long-term stability, Excellent load cycle stability, Cavitation protection (optional)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PE 81.53</td>
</tr>
</tbody>
</table>

### M-10, M-11

Spanner width 19 mm

<table>
<thead>
<tr>
<th>Non-linearity (± % of span)</th>
<th>≤ 0.2 BFSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>0 ... 6 to 0 ... 1,000 bar</td>
</tr>
<tr>
<td>Special feature</td>
<td>Small spanner width 19 mm, Flush connection G ½ available</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PE 81.25</td>
</tr>
</tbody>
</table>

### P-30, P-31

For precision measurements

<table>
<thead>
<tr>
<th>Accuracy (± % of span)</th>
<th>≤ 0.1 or 0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>0 ... 0.25 to 0 ... 1,000 bar, 0 ... 0.25 to 0 ... 25 bar abs., -1 ... 0 to -1 ... +15 bar</td>
</tr>
<tr>
<td>Special feature</td>
<td>No additional temperature error in the range 10 ... 60 °C, Flush process connection (optional), Analogue, CANopen® or USB</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PE 81.54</td>
</tr>
</tbody>
</table>

### MHC-1

For mobile working machines, CANopen® or J1939

<table>
<thead>
<tr>
<th>Accuracy (± % of span)</th>
<th>≤ 1 or 0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>0 ... 60 to 0 ... 1,000 bar</td>
</tr>
<tr>
<td>Special feature</td>
<td>Tested for harsh environmental conditions, Robust instrument design, Version with integrated Y-connector</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PE 81.49</td>
</tr>
</tbody>
</table>
OEM pressure sensors

O-10
For industrial applications

- Non-linearity (±% of span) ≤ 0.5 BFSL
- Measuring range
  - 0 ... 6 to 0 ... 600 bar
  - -1 ... +5 to -1 ... +59 bar
- Special feature
  - For OEM quantities
  - Customer-specific variants
  - Special version for applications with water as medium
  - 5-fold overpressure

Data sheet PE 81.65

MH-3
For mobile working machines

- Accuracy (±% of span) ≤ 1
- Measuring range
  - 0 ... 6 to 0 ... 600 bar
- Special feature
  - For extreme operating conditions
  - Compact and robust design
  - Diagnostic function (optional)
  - Signal clamping (optional)
  - Customer-specific adaptations possible

Data sheet PE 81.59

R-1
For refrigeration and air-conditioning applications

- Accuracy (±% of span) ≤ 2
- Measuring range
  - 0 ... 6 to 0 ... 160 bar
  - -1 ... +7 to -1 ... +45 bar
- Special feature
  - Special case design for the best possible condensation tightness
  - Resistant to all common refrigerants
  - Wetted parts made of stainless steel

Data sheet PE 81.45

MG-1
For medical gases

- Accuracy (±% of span) ≤ 2
- Measuring range
  - 0 ... 6 to 0 ... 400 bar
  - -1 ... +6 bar
- Special feature
  - Cleaned, packed and labelled for oxygen per international standards
- Data sheet PE 81.44
# Sensor assemblies and modules

## Customer-specific electronic pressure measurement solutions

We see ourselves not only as a provider of top quality measurement technology, but also as a highly competent partner that is able to create individually designed solutions together with you. We are ready to develop products for you that are tailor made to cater for your individual needs. Create your perfect pressure sensor solution together with us. Here, the experience from a multitude of completed projects is incorporated - thus we can refer back to numerous proven solutions and components. As required, we will adapt our systems to your individual application or develop new ones.

Talk to us – we are happy to provide you with advice!

<table>
<thead>
<tr>
<th>TTF-1</th>
<th>SCT-1</th>
<th>SPR-2, TPR-2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metal thin-film sensor assembly</strong></td>
<td><strong>Ceramic sensor assembly</strong></td>
<td><strong>Piezo sensor element and sensor assembly</strong></td>
</tr>
<tr>
<td>Non-linearity (± % of span)</td>
<td>≤ 0.12 ... 0.5</td>
<td>≤ 0.12 ... 0.5</td>
</tr>
<tr>
<td>Measuring range</td>
<td>0 ... 10 to 0 ... 1,000 bar</td>
<td>0 ... 2 to 0 ... 100 bar</td>
</tr>
<tr>
<td>Special feature</td>
<td>Excellent resistance to media</td>
<td>Excellent resistance to media</td>
</tr>
<tr>
<td>Signal</td>
<td>mV/V</td>
<td>mV/V</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PE 81.16</td>
<td>PE 81.40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TI-1</th>
<th>MPR-1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Piezo or metal thin-film sensor module</strong></td>
<td><strong>Sensor module</strong></td>
</tr>
<tr>
<td>Accuracy (± % of span)</td>
<td>≤ 0.25</td>
</tr>
<tr>
<td>Measuring range</td>
<td>0 ... 0.4 to 0 ... 1,000 bar</td>
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<tr>
<td>Special feature</td>
<td>Processed signal</td>
</tr>
<tr>
<td>Signal</td>
<td>Analogue and digital</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PE 81.57</td>
</tr>
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</table>

<p>| | | |</p>
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</table>

Further information at www.wika.com
Pressure gauges with output signal

The multi-functional intelliGAUGEs present a cost-effective and, at the same time, reliable solution for nearly all pressure measurement applications. They combine the analogue indication of a mechanical pressure gauge, needing no external power, with the electrical output signal of a pressure sensor. These hybrid instruments are available with all commonly used electrical signals. The sensor works in a non-contact way, without any influence on the measuring signal. Many instruments are available in versions for use in hazardous areas.

Depending on the pressure gauge, the following electrical output signals are possible:

- 0.5 ... 4.5 V ratiometric
- 4 ... 20 mA, 2-wire
- 4 ... 20 mA, 2-wire with Ex approvals
- 0 ... 20 mA, 3-wire
- 0 ... 10 V, 3-wire

For pressure gauges with nominal sizes 100 and 160 mm, the electrical output signals can also be combined with switch contacts.

**PGT21**

Bourdon tube, stainless steel case

- Nominal size: 50, 63 mm
- Scale range: 0 ... 1.6 to 0 ... 400 bar
- Accuracy class: 2.5
- Ingress protection: IP65, IP67 optional
- Data sheet: PV 11.03

**PGT23.063**

Bourdon tube, for the process industry, safety version

- Nominal size: 63 mm
- Scale range: 0 ... 1 to 0 ... 1,000 bar
- Accuracy class: 1.6
- Ingress protection: IP54, filled IP65
- Data sheet: PV 12.03

**PGT23.100, PGT23.160**

Bourdon tube, for the process industry, standard or safety version

- Nominal size: 100, 160 mm
- Scale range: 0 ... 0.6 to 0 ... 1,600 bar
- Accuracy class: 1.0
- Ingress protection: IP54, filled IP65
- Data sheet: PV 12.04

**PGT43**

Diaphragm element, for the process industry, high overload safety up to the 10-fold full scale value, max. 40 bar

- Nominal size: 100, 160 mm
- Scale range: 0 ... 16 mbar to 0 ... 25 bar
- Accuracy class: 1.6
- Ingress protection: IP54, with liquid filling IP65
- Data sheet: PV 14.03

**PGT43HP**

Diaphragm element, for the process industry, high overload safety to 40, 100 or 400 bar

- Nominal size: 100, 160 mm
- Scale range: 0 ... 16 mbar to 0 ... 40 bar
- Accuracy class: 1.6
- Ingress protection: IP54, with liquid filling IP65
- Data sheet: PV 14.07

**PGT63HP**

Capsule element, for the process industry, high overload safety

- Nominal size: 100, 160 mm
- Scale range: 2.5 ... 100 mbar
- Accuracy class: 1.6
- Ingress protection: IP54
- Data sheet: PV 16.06
DPGT43
Differential pressure, for the process industry, all-metal media chamber

Nominal size: 100, 160 mm
Scale range: 0 ... 16 mbar to 0 ... 25 bar
Accuracy class: 1.6
Ingress protection: IP54, filled IP65
Data sheet: PV 17.05

DPGT43HP
Differential pressure, for the process industry, high overload safety to 40, 100, 250 or 400 bar

Nominal size: 100, 160 mm
Scale range: 0 ... 60 mbar to 0 ... 40 bar
Accuracy class: 1.6
Ingress protection: IP54, filled IP65
Data sheet: PV 17.13

DPGT40
Differential pressure, with integrated working pressure indication (DELTA-trans)

Nominal size: 100 mm
Scale range: 0 ... 0.16 to 0 ... 10 bar
Accuracy class: 2.5 (1.6 optional)
Ingress protection: IP65
Data sheet: PV 17.19

APGT43
Absolute pressure, for the process industry

Nominal size: 100, 160 mm
Scale range: 0 ... 25 mbar to 0 ... 25 bar abs.
Accuracy class: 2.5
Ingress protection: IP54, with liquid filling IP65
Data sheet: PV 15.02

Further information at www.wika.com
Control systems are gaining more and more importance in industrial applications. Consequently, mere pressure indication on the measuring instrument itself is no longer sufficient, rather the measured value must be transferred to the control system via an electrical signal, e.g. by closing or opening of a circuit. WIKA is focusing on its contact pressure gauges in order to satisfy this trend.

All instruments with inductive contacts are certified in accordance with ATEX Ex ia.

Depending on the model the following contacts are built-in:
- Magnetic snap-action contact, e.g. model 821, for general applications
- Inductive contact model 831, for hazardous areas
- Electronic contact model 830 E, for PLC
- Reed contact model 851, for general applications and PLC
- Micro switch model 850
- Transistor output NPN or PNP

### PGS21
Bourdon tube, stainless steel case

- Nominal size: 40, 50, 63 mm
- Scale range: 0 … 2.5 to 0 … 400 bar
- Accuracy class: 2.5
- Ingress protection: IP65
- Special feature: NS 50: Version with VdS or LPCB approval possible
- Data sheet: PV 21.02

### PGS25
Bourdon tube, with electronic pressure switch, stainless steel case

- Nominal size: 50, 63 mm
- Scale range: 0 … 1.6 to 0 … 400 bar
- Accuracy class: 2.5
- Ingress protection: IP65
- Data sheet: PV 21.04

### PGS21.100, PGS21.160
Bourdon tube, stainless steel case

- Nominal size: 100, 160 mm
- Scale range: 0 … 0.6 to 0 … 600 bar
- Accuracy class: 1.0
- Ingress protection: IP54
- Data sheet: PV 22.01

### PGS23.100, PGS23.160
Bourdon tube, for the process industry, standard or safety version

- Nominal size: 100, 160 mm
- Scale range: 0 … 0.6 to 0 … 1,600 bar
- Accuracy class: 1.0
- Ingress protection: IP65 or IP66
- Data sheet: PV 22.02

### PGS23.063
Bourdon tube, for the process industry, safety version

- Nominal size: 63 mm
- Scale range: 0 … 4 to 0 … 400 bar
- Accuracy class: 1.6
- Ingress protection: IP54
- Data sheet: PV 22.03

### PGS43.100, PGS43.160
Diaphragm element, for the process industry, high overload safety up to the 10-fold full scale value, max. 40 bar

- Nominal size: 100, 160 mm
- Scale range: 0 … 25 mbar to 0 … 25 bar
- Accuracy class: 1.6
- Ingress protection: IP54, with liquid filling IP65
- Data sheet: PV 24.03
432.36, 432.56 with 8xx
Diaphragm element, for the process industry, high overload safety to 100 or 400 bar

532.53 with 8xx
Absolute pressure, for the process industry, high overload safety

632.51 with 8xx
Capsule element, for the process industry, high overload safety

DPGS40
Differential pressure, with micro switches, with integrated working pressure indication (DELTA-comb)

DPGS43
Differential pressure, for the process industry, all-metal media chamber

DPGS43HP
Differential pressure, for the process industry, high overload safety to 400 bar

Further information at www.wika.com
# Pressure switches

## Electronic pressure switches

### PSD-4

**Electronic pressure switch with display**

- **Accuracy** (± % of span) ≤ 0.5
- **Measuring range**
  - 0 ... 0.4 to 0 ... 1,000 bar
  - 0 ... 0.4 to 0 ... 25 bar abs.
  - -1 ... 0 to -1 ... 24 bar
- **Special feature**
  - Easily readable, robust display
  - Intuitive and fast setup
  - Easy and flexible mounting configurations
  - Flexibly configurable and scalable output signals
- **Data sheet** PE 81.86

### PSD-4-ECO

**Electronic pressure switch with display**

- **Accuracy** (± % of span) ≤ 1.0
- **Measuring range**
  - 0 ... 0.4 to 0 ... 1,000 bar
  - 0 ... 0.4 to 0 ... 25 bar abs.
  - -1 ... 0 to -1 ... 24 bar
- **Special feature**
  - Good/bad indication through parameterizable digital display (red/green)
  - Compact size enables easy installation in narrow spaces
  - Optimised design makes OEM machine integration easier
  - Designed for rough demands of up to 55 g shock and -40 ... +257 °F
- **Data sheet** PE 81.69

## Mechanical pressure switches for industrial applications

### PSM01

**Compact pressure switch, or with settable hysteresis**

- **Setting range**
  - -0.85 ... 0.15 bar
  - 0.2 ... 2 bar to 30 ... 320 bar
- **Switching function** Change-over contact (SPDT)
- **Material** Stainless steel, zinc-nickel coating
- **Switching power**
  - PSM01: 2 A, AC 48 V
  - 1 A / 2 A, DC 24 V
  - PSM02: 2 A / 4 A, AC 250 V
  - 2 A / 4 A, DC 24 V
- **Data sheet** PV 34.81, PV 34.82

### PSM02

**Pressure switch, adjustable switch differential**

- **Setting range**
  - 0 ... 4 bar to 0 ... 10 bar
- **Switching function** Change-over contact (SPDT)
- **Material**
  - Bellow: Copper alloy CuSn6 per EN 1652
  - Process connection: Free cutting steel EN1A per EN 10277-3, tin-plated
- **Switching power**
  - 10 A / 6 A, AC 230 V
- **Data sheet** PV 35.01

### PSM-520

**Pressure switch, adjustable switch differential**

- **Setting range**
  - 0 ... 4 ... >7 bar
  - 0 ... 5 bar to 6 ... 30 bar
- **Switching function** Change-over contact (SPDT)
- **Material**
  - Bellow: Copper alloy CuSn6 per EN 1652
  - Process connection: Free cutting steel EN1A per EN 10277-3, tin-plated
- **Switching power**
  - 10 A / 6 A, AC 230 V
- **Data sheet** PV 35.01

### PSM-550

**Pressure switch, for superior industrial applications**

- **Setting range**
  - -0.8 ... 0 bar and -0.8 ... +5 bar
  - 0 ... 300 mbar, 0.1 ... 1.1 bar to 10 ... 30 bar
- **Switching function** Change-over contact (SPDT)
- **Material**
  - Bellow/Process connection: Copper alloy CuSn6 per EN 1652 or stainless steel 1.4401
  - With NBR diaphragm: Process connection: free cutting steel EN1A per EN 10277-3, tin-plated
- **Switching power**
  - 4 A / 10 A, AC 230 V
- **Data sheet** PV 35.03

### PSM-700

**Pressure switch, high adjustability of the switch differential**

- **Setting range**
  - -1 ... 1.5 bar
  - 0.2 ... 1.6 bar, 7 ... 35 bar
- **Switching function** Change-over contact (SPDT and DPDT)
- **Material**
  - Measuring element: stainless steel 316L
  - Process connection: 316L stainless steel
  - Case: aluminium
- **Switching power**
  - Up to AC 250 V/15
- **Data sheet** PV 35.05
Due to the use of high-quality micro switches, the mechanical pressure switches are notable for their high precision and long-term stability. Furthermore, the direct switching of electrical loads up to AC 250 V/20 A is enabled, while simultaneously ensuring a high switch point reproducibility.

The instruments come with a SIL certificate and are thus particularly suited for safety-critical applications. In addition, with their ‘intrinsically safe’ and ‘flameproof enclosure’ ignition protection types the pressure switches are ideally suited for permanent use in hazardous environments. All mechanical pressure switches for the process industry are available with EAC certificate and technical passport.

### PWX, PXA
#### Mini pressure switch

<table>
<thead>
<tr>
<th>Setting range</th>
<th>1...2.5 to 200 ... 1,000 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignition protection</td>
<td>Ex ia or Ex d</td>
</tr>
<tr>
<td>Switch</td>
<td>1 x SPDT or DPDT</td>
</tr>
<tr>
<td>Switching power</td>
<td>AC 250 V/5 A, DC 24 V/5 A</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 34.36, PV 34.38</td>
</tr>
</tbody>
</table>

### PWCS, PCA
#### Compact pressure switch

<table>
<thead>
<tr>
<th>Setting range</th>
<th>-1...-0.2 to 200 ... 1,000 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignition protection</td>
<td>Ex ia or Ex d</td>
</tr>
<tr>
<td>Switch</td>
<td>1 x SPDT or DPDT</td>
</tr>
<tr>
<td>Switching power</td>
<td>AC 250 V/15 A, DC 24 V/2 A</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 33.30, PV 33.31</td>
</tr>
</tbody>
</table>

### MW, MA
#### Diaphragm pressure switch

<table>
<thead>
<tr>
<th>Setting range</th>
<th>0 ... 16 mbar to 30 ... 600 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignition protection</td>
<td>Ex ia or Ex d</td>
</tr>
<tr>
<td>Switch</td>
<td>1 or 2 x SPDT or 1 x DPDT</td>
</tr>
<tr>
<td>Switching power</td>
<td>AC 250 V/20 A, DC 24 V/2 A</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 31.10, PV 31.11</td>
</tr>
</tbody>
</table>

### BWX, BA
#### Bourdon tube pressure switch

<table>
<thead>
<tr>
<th>Setting range</th>
<th>0 ... 2.5 to 0 ... 1,000 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignition protection</td>
<td>Ex ia or Ex d</td>
</tr>
<tr>
<td>Switch</td>
<td>1 or 2 x SPDT or 1 x DPDT</td>
</tr>
<tr>
<td>Switching power</td>
<td>AC 250 V/20 A, DC 24 V/2 A</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 32.20, PV 32.22</td>
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</tbody>
</table>

### DW, DA
#### Differential pressure switch

<table>
<thead>
<tr>
<th>Setting range</th>
<th>0 ... 16 mbar to 0 ... 40 bar, static pressure to 160 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignition protection</td>
<td>Ex ia or Ex d</td>
</tr>
<tr>
<td>Switch</td>
<td>1 or 2 x SPDT or 1 x DPDT</td>
</tr>
<tr>
<td>Switching power</td>
<td>AC 250 V/20 A, DC 24 V/2 A</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 35.42, PV 35.43, PV 35.50</td>
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</tbody>
</table>

### APW, APA
#### Absolute pressure switch

<table>
<thead>
<tr>
<th>Setting range</th>
<th>0 ... 25 mbar to 0 ... 1.5 bar abs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proof pressure</td>
<td>11 bar abs.</td>
</tr>
<tr>
<td>Ignition protection</td>
<td>Ex ia or Ex d</td>
</tr>
<tr>
<td>Switch</td>
<td>1 or 2 x SPDT or 1 x DPDT</td>
</tr>
<tr>
<td>Switching power</td>
<td>AC 250 V/20 A, DC 24 V/2 A</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 35.49, PV 35.48</td>
</tr>
</tbody>
</table>

Further information at www.wika.com
Diaphragm seal systems

These combinations of diaphragm seals and pressure gauges or pressure sensors feature fast availability. They are particularly suitable for demanding measuring tasks in the pharmaceutical and biotechnology industries, food and beverage industries, and through to the oil & gas, chemical, petrochemical and semiconductor industries.

The diaphragm seal systems can be used for processes with gases, compressed air or vapour, with liquid, paste-like, powdery and crystallising media and also with aggressive, adhesive, corrosive, highly viscous, environmentally hazardous or toxic media.

With flange connection

**DSS26M**
**With pressure gauge per EN 837-1, internal diaphragm**

- Applications with small flange process connections in the process industry
- PN max: 40 bar
- System fill fluid: KN2
- Data sheet: DS 95.09

**DSS26T**
**With high-quality pressure sensor, internal diaphragm**

- Applications with small flange process connections in the process industry
- PN max: 40 bar
- System fill fluid: KN2
- Data sheet: DS 95.10

**DSS27M**
**With pressure gauge per EN 837-1, flush diaphragm**

- Applications with high requirements in the process industry, in machine building and in plant construction
- PN max: 40 bar
- System fill fluid: KN2
- Data sheet: DS 95.12

**DSS27T**
**With high-quality pressure sensor, flush diaphragm**

- Applications with high requirements in the process industry, in machine building and in plant construction
- PN max: 40 bar
- System fill fluid: KN2
- Data sheet: DS 95.13

The diaphragm seal is directly welded to the pressure gauge or pressure sensor. The diaphragm made of stainless steel provides for the separation from the medium. The pressure is transmitted to the measuring instrument via the system fill fluid which is inside the diaphragm seal system.
## With threaded connection

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Applications</th>
<th>PN max</th>
<th>System fill fluid</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSS10M</td>
<td>With pressure gauge per EN 837-1, threaded design</td>
<td>General applications in the process industry</td>
<td>60 bar</td>
<td>KN2 for general applications</td>
<td>DS 95.01</td>
</tr>
<tr>
<td>DSS10T</td>
<td>With high-quality pressure sensor, threaded design</td>
<td>General applications in the process industry</td>
<td>60 bar</td>
<td>KN2 for general applications</td>
<td>DS 95.02</td>
</tr>
<tr>
<td>DSS34M</td>
<td>With pressure gauge per EN 837-1, welded design</td>
<td>Applications with high requirements in the chemical, petrochemical and water treatment industries</td>
<td>60 bar</td>
<td>KN2 for general applications</td>
<td>DS 95.15</td>
</tr>
<tr>
<td>DSS34T</td>
<td>With high-quality pressure sensor, welded design</td>
<td>Applications with high requirements in the chemical, petrochemical and water treatment industries</td>
<td>60 bar</td>
<td>KN2 for general applications</td>
<td>DS 95.16</td>
</tr>
</tbody>
</table>

Further information at www.wika.com
Diaphragm seals – combinations and accessories

Wika diaphragm seals can be connected to almost all pressure gauges, process transmitters, pressure switches or pressure sensors. Mounting may be made via a direct connection, a cooling element or a corresponding capillary. The combined systems can therefore withstand a pressure of 10 mbar up to 3,600 bar at extreme temperatures (-130 … +400 °C) and with a wide variety of media, thus enabling accurate pressure measurements under extreme conditions. The optimal diaphragm seal designs, materials, system fill fluids and accessories are available for each application. The diaphragm seals can be supplied with test certificates and approvals for special applications.

Accessories

- Flushing rings
- Block and saddle flanges
- Plug screws
- Valves
- Instrument mounting brackets and adapters
- Union nuts
- Transition pieces
- Connection adapters, e.g. VARIVENT®, clamp, aseptic, welding sleeves, weld stubs

Extensive information can be found in our brochure “Diaphragm seals – combinations and accessories” at www.wika.de.
Electrical accessories

A-Al-1, A-IAI-1

LCD attachable indicator, 50 x 50 mm

- Input: 4 ... 20 mA, 2-wire
- Power supply: From the 4 ... 20 mA current loop
- Special feature: Model A-Al-1 intrinsically safe per ATEX
- Data sheet: AC 80.07

M12 x 1 cable

Cable assemblies M12 x 1

- Circular connector M12 x 1, 4- and 5-pin
- Straight and angled version
- 2, 5 or 10 m cable
- Ingress protection IP67

IS Barrier

Intrinsically safe repeater power supply

- 1-channel input 0/4 ... 20 mA
- Intrinsically safe [Ex ia], supplying and non-supplying
- Galvanic isolation
- Bidirectional HART® signal transmission
- Suitable for SIL 2 per IEC 61508/IEC 61511
- Data sheet: AC 80.14

905

Contact protection relay for model 821 switch contacts

- Application: For optimal contact protection and highest switching reliability
- Data sheet: AC 08.01

904

Control unit for inductive contacts model 831

- Application: For operating measuring instruments with inductive switch contacts
- Data sheet: AC 08.01

Further information at www.wika.com
Valves and protective devices

### Valves

#### 910.10, 910.11
Stopcock and DIN shut-off valve

- **Application**: For shutting off pressure measuring instruments with threaded connection
- **Version**: 910.10: per DIN 16261, DIN 16262, DIN 16263
  910.11: per DIN 16270, DIN 16271, DIN 16272
- **Material**: Brass, steel, stainless steel
- **Nominal pressure**: 910.10: to 25 bar
  910.11: to 400 bar
- **Data sheet**: AC 09.01, AC 09.02

#### IV10, IV11
Needle valve and multiport valve

- **Application**: For shutting off pressure measuring instruments with threaded connection
- **Version**: Needle valve and multiport valve
- **Material**: Stainless steel
- **Nominal pressure**: To PN 420 (6,000 psi)
  Option: To PN 680 (10,000 psi)
- **Data sheet**: AC 09.22

#### IV20, IV21
Block-and-bleed valve, square or flat form

- **Application**: For shutting off and venting pressure measuring instruments with threaded connection
- **Version**: Block-and-bleed valve
- **Material**: Stainless steel
- **Nominal pressure**: To PN 420 (6,000 psi)
  Option: To PN 680 (10,000 psi)
- **Data sheet**: AC 09.19

#### IV30, IV31, IV50, IV51
Valve manifold for differential pressure measuring instruments

- **Application**: For shutting off, pressure compensating as well as purging and venting differential pressure measuring instruments
- **Version**: Three-way and five-way valves
- **Material**: Stainless steel
- **Nominal pressure**: To PN 420 (6,000 psi)
  Option: To PN 680 (10,000 psi)
- **Data sheet**: AC 09.23

#### IVM
Monoflanges

- **Application**: For shutting off and venting pressure measuring instruments with flange connection
- **Version**: Flange connection per ASMI or EN
- **Material**: Stainless steel
- **Nominal pressure**: To PN 420 (6,000 psi)
- **Data sheet**: AC 09.17
Protective devices

910.12
Snubbers protector

Application: For the protection of pressure measuring instruments from pressure surges and pulsations
Material: Brass, steel, stainless steel
Nominal pressure: To 400 bar
Data sheet: AC 09.03

910.13
Overpressure protector

Application: For the protection of pressure measuring instruments from overpressures
Material: Brass, steel, stainless steel
Nominal pressure: To 600 bar (overload safety to 1,000 bar)
Data sheet: AC 09.04

910.15
Syphons

Application: For the protection of pressure measuring instruments from excessive pulsation and heat
Version: U-form, trumpet form, compact form, standard
Material: Steel, stainless steel
Nominal pressure: To 160 bar
Data sheet: AC 09.06

Mounting accessories

910.14, 910.16, 910.17
Adapters, instrument mounting brackets and sealings

Application: For mounting and sealing pressure gauges
Data sheet: AC 09.05, AC 09.07, AC 09.08

Further information at www.wika.com
Dial thermometers

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

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

Bimetal thermometers

**A43**
Heating technology

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>63, 80, 100 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>-30 ... +120 °C</td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Copper alloy</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TM 43.01</td>
</tr>
</tbody>
</table>

**A48**
Refrigeration and air-conditioning technology

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>63, 80, 100, 160 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>-30 ... +120 °C</td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Copper alloy</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TM 48.01</td>
</tr>
</tbody>
</table>

**A50**
Standard version

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>63, 80, 100, 160 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>-30 ... +200 °C</td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Copper alloy</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TM 50.03</td>
</tr>
</tbody>
</table>

**A52, R52**
Industrial series, axial and radial

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>25, 33, 40, 50, 63, 80, 100, 160 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>-30 ... +50 to 0 ... +600 °C</td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TM 52.01</td>
</tr>
</tbody>
</table>

**TG53**
Process version per ASME B40.200

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>3, 4, 5, 6”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>-70 ... +70 to 0 ... +600 °C</td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Option</td>
<td>Liquid damping to max. 250 °C (case and probe)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TM 53.02</td>
</tr>
</tbody>
</table>

**TG54**
Process version per EN 13190

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>63, 80, 100, 160 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>-70 ... +70 to 0 ... +600 °C</td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Option</td>
<td>Liquid damping to max. 250 °C (case and probe)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TM 54.02</td>
</tr>
</tbody>
</table>
## Bimetal thermometer

**55**

High-quality process version to EN 13190

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>63, 100, 160 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>-70 … +70 to 0 … 600 °C</td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Option</td>
<td>Liquid damping to max. 250 °C (case and probe)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TM 55.01</td>
</tr>
</tbody>
</table>

## Machine glass thermometer

**32**

V shape

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>110, 150, 200 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>-30 … +200 °C</td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Copper alloy</td>
</tr>
</tbody>
</table>
| Option        | ■ Dual scale °F/°C  
                ■ 3 variants straight, 90° and 135° |
| Data sheet    | TM 32.02 |

## Expansion thermometers

**TF58, TF59**

With capillary, edgewise panel design

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>58 x 25 mm, 62 x 11 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>-50 … 250 °C</td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Copper alloy</td>
</tr>
</tbody>
</table>
| Option        | ■ Vertical arrangement  
                ■ Special scales |
| Data sheet    | TM 80.02 |

**70**

With capillary, stainless steel version

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>63, 100, 160 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>-60 … +400 °C</td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Stainless steel</td>
</tr>
</tbody>
</table>
| Option        | ■ Liquid damping (case)  
                ■ Indication accuracy class 1 |
| Data sheet    | TM 81.01 |

**IFC**

With capillary, standard version

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>52, 60, 80, 100 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>-100 … +400 °C</td>
</tr>
</tbody>
</table>
| Wetted parts  | Copper alloy  
                ■ Square case version  
                ■ Other case materials |
| Data sheet    | TM 80.01 |

Further information at www.wika.com
Dial thermometers

Gas-actuated thermometers

**R73, S73, A73**
Axial and radial, adjustable stem and dial

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

**F73**
With capillary

- **Nominal size:** 100, 160 mm
- **Scale range:** -200 ... +100 to 0 ... +700 °C
- **Wetted parts:** Stainless steel
- **Option:**
  - Armoured or coated capillary (PVC coating)
  - Liquid damping (case)
  - Contact bulb
- **Data sheet:** TM 73.01

**75**
Highly vibration resistant

- **Nominal size:** 100 mm
- **Scale range:** 0 ... +700 or -50 ... +650 °C
- **Wetted parts:** Stainless steel
- **Option:** Various neck tube and insertion lengths
- **Data sheet:** TM 75.01

Thermomanometers

**MFT**
With capillaries, for pressure and temperature measurement

- **Nominal size:** 40, 42, 52 mm
- **Scale range:**
  - Pressure 0 ... 4 bar
  - Temperature 0 ... 120 °C
- **Accuracy class:**
  - Pressure 2.5 (EN 837-1)
  - Temperature 2.5
- **Data sheet:** PM 01.20

**THM10**
Eco version, for pressure and temperature measurement

- **Nominal size:** 63, 80 mm
- **Scale range:**
  - Pressure 0 ... 4 to 0 ... 10 bar
  - Temperature 0 ... 120 °C
- **Connection location:** Lower mount or back mount
- **Accuracy class:**
  - Pressure 2.5 (EN 837-1)
  - Temperature 2 (EN 13190)
- **Data sheet:** PM 01.24

**100.02**
For pressure and temperature measurement

- **Nominal size:** 63, 80 mm
- **Scale range:**
  - Pressure 0 ... 1 to 0 ... 16 bar
  - Temperature 0 ... 100 to 0 ... 150 °C
- **Accuracy class:**
  - Pressure 2.5 (EN 837-1)
  - Temperature 2.5
- **Data sheet:** PM 01.23
Dial thermometers with output signal

**TGT70**
Expansion thermometer with output signal

- **Nominal size**: 63, 100 mm
- **Scale range**: -40 … +60 to 0 … +250 °C
- **Wetted parts**: Stainless steel
- **Option**
  - Capillary
  - Output signals 4 … 20 mA or 0.5 … 4.5 V
  - Other connection designs
- **Data sheet**: TV 18.01

**TGT73**
Gas-actuated thermometer with output signal

- **Nominal size**: 100, 160 mm
- **Scale range**: -200 … +100 to 0 … +700 °C
- **Wetted parts**: Stainless steel
- **Option**
  - Capillary
  - Liquid damping (case)
  - Output signal 4 … 20 mA or 0 … 10 V
- **Data sheet**: TV 17.10

Further information at www.wika.com
## Digital indicators

### DI10
**For panel mounting, current loop display, 96 x 48 mm**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>4 ... 20 mA, 2-wire</td>
</tr>
<tr>
<td>Alarm output</td>
<td>2 electronic contacts (optional)</td>
</tr>
<tr>
<td>Special feature</td>
<td>Wall-mounting case (optional)</td>
</tr>
<tr>
<td>Power supply</td>
<td>From the 4 ... 20 mA current loop</td>
</tr>
<tr>
<td>Data sheet</td>
<td>AC 80.06</td>
</tr>
</tbody>
</table>

### DI25
**For panel mounting, 96 x 48 mm**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>Multi-function input for resistance thermometers, thermocouples and standard signals</td>
</tr>
<tr>
<td>Alarm output</td>
<td>3 relays</td>
</tr>
<tr>
<td>Special feature</td>
<td>2 relays for instruments with integrated transmitter power supply DC 24 V</td>
</tr>
<tr>
<td>Power supply</td>
<td>AC 100 ... 240 V</td>
</tr>
<tr>
<td>Special feature</td>
<td>Analogue output signal</td>
</tr>
<tr>
<td>Data sheet</td>
<td>AC 80.02</td>
</tr>
</tbody>
</table>

### DI30
**For panel mounting, 96 x 96 mm**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>Standard signals</td>
</tr>
<tr>
<td>Alarm output</td>
<td>2 relays</td>
</tr>
<tr>
<td>Special feature</td>
<td>Integrated transmitter power supply</td>
</tr>
<tr>
<td>Power supply</td>
<td>AC 230 V or AC 115 V</td>
</tr>
<tr>
<td>Data sheet</td>
<td>AC 80.05</td>
</tr>
</tbody>
</table>

### DI32-1
**For panel mounting, 48 x 24 mm**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>Multi-function input for resistance thermometers, thermocouples and standard signals</td>
</tr>
<tr>
<td>Alarm output</td>
<td>2 electronic contacts</td>
</tr>
<tr>
<td>Power supply</td>
<td>DC 9 ... 28 V</td>
</tr>
<tr>
<td>Data sheet</td>
<td>AC 80.13</td>
</tr>
</tbody>
</table>

### DI35
**For panel mounting, 96 x 48 mm**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>Multi-function input for resistance thermometers, thermocouples and standard signals</td>
</tr>
<tr>
<td>Alarm output</td>
<td>2 or 4 relays (optional)</td>
</tr>
<tr>
<td>Special feature</td>
<td>Integrated transmitter power supply</td>
</tr>
<tr>
<td>Power supply</td>
<td>AC/DC 100 ... 240 V</td>
</tr>
<tr>
<td>Data sheet</td>
<td>AC 80.03</td>
</tr>
</tbody>
</table>
### DIH10
**Connection head with digital indicator**

<table>
<thead>
<tr>
<th>Input</th>
<th>4 ... 20 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>from the 4 ... 20 mA current loop</td>
</tr>
<tr>
<td>Data sheet</td>
<td>AC 80.11</td>
</tr>
</tbody>
</table>

### DIH50, DIH52
**For current loops with HART® communication**

**Dimensions**
150 x 127 x 127 mm

**Case**
Aluminium, stainless steel

**Special feature**
- Adjustment of indication range and unit via HART® communication
- Model DIH52 additionally suitable for multidrop operation and with local master function

**Approval**
- Intrinsically safe
- Flameproof enclosure

**Data sheet**
AC 80.10

### TF-LCD
**Longlife digital thermometer**

**Measuring range**
-40 ... +120 °C

**Special feature**
- Dust and waterproof case, IP68
- Battery or solar powered
- Extremely long service life

**Data sheet**
TE 85.01

---

Further information at www.wika.com
## Thermocouples

Thermocouples directly supply a temperature-dependent voltage. They are particularly suitable for high temperatures up to 1,700 °C (3,092 °F) and very high vibration loads. For thermocouples, the accuracy classes in accordance with IEC 60584-1 or ASTM E230 apply.

<table>
<thead>
<tr>
<th>TC10-A</th>
<th>TC10-B</th>
<th>TC10-C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measuring insert</strong></td>
<td><strong>For additional thermowell</strong></td>
<td><strong>Threaded, with fabricated thermowell</strong></td>
</tr>
<tr>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td><strong>Sensor element</strong></td>
<td>Types K, J, E, N or T</td>
<td>Types K, J, E, N or T</td>
</tr>
<tr>
<td><strong>Measuring range</strong></td>
<td>-40 ... +1,200 °C, -40 ... +2,192 °F</td>
<td>-40 ... +1,200 °C, -40 ... +2,192 °F</td>
</tr>
<tr>
<td><strong>Measuring point</strong></td>
<td>Ungrounded or grounded</td>
<td>Ungrounded or grounded</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>TE 65.01</td>
<td>TE 65.02</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TC10-D</th>
<th>TC10-F</th>
<th>TC10-H</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Threaded, miniature design</strong></td>
<td><strong>Flanged thermocouple, with fabricated thermowell</strong></td>
<td><strong>Without thermowell</strong></td>
</tr>
<tr>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td><strong>Sensor element</strong></td>
<td>Types K, J, E, N or T</td>
<td>Types K, J, E, N or T</td>
</tr>
<tr>
<td><strong>Measuring range</strong></td>
<td>-40 ... +600 °C, -40 ... +1,112 °F</td>
<td>-40 ... +1,200 °C, -40 ... +2,192 °F</td>
</tr>
<tr>
<td><strong>Measuring point</strong></td>
<td>Ungrounded or grounded</td>
<td>Ungrounded or grounded</td>
</tr>
<tr>
<td><strong>Process connection</strong></td>
<td>Mounting thread</td>
<td>Flange</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>TE 65.04</td>
<td>TE 65.06</td>
</tr>
</tbody>
</table>

In our range of products you will find all market-standard instrument versions. If required, a temperature transmitter can be installed in the connection head.
<table>
<thead>
<tr>
<th><strong>TC10-K</strong></th>
<th><strong>TC10-L</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring insert, for installation in TC10-L</td>
<td>Flameproof enclosure, for additional thermowell</td>
</tr>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>Sensor element: Types K, J, E, N or T</td>
<td>Sensor element: Types K, J, E, N or T</td>
</tr>
<tr>
<td>Measuring range: (-40 \ldots +1,200 ^\circ C), (-40 \ldots +2,192 ^\circ F)</td>
<td>Measuring range: (-40 \ldots +1,200 ^\circ C), (-40 \ldots +2,192 ^\circ F)</td>
</tr>
<tr>
<td>Measuring point: Ungrounded or grounded</td>
<td>Measuring point: Ungrounded or grounded</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>TC12-A</strong></th>
<th><strong>TC12-B</strong></th>
<th><strong>TC12-M</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring insert for process thermocouple</td>
<td>Process thermocouple, for additional thermowell</td>
<td>Process thermocouple, basic module</td>
</tr>
<tr>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
</tr>
<tr>
<td>Sensor element: Types K, J, N or T</td>
<td>Sensor element: Types K, J, E, N or T</td>
<td>Sensor element: Types K, J, E, N or T</td>
</tr>
<tr>
<td>Measuring range: (-40 \ldots +1,200 ^\circ C), (-40 \ldots +2,192 ^\circ F)</td>
<td>Measuring range: (-40 \ldots +1,200 ^\circ C), (-40 \ldots +2,192 ^\circ F)</td>
<td>Measuring range: (-40 \ldots +1,200 ^\circ C), (-40 \ldots +2,192 ^\circ F)</td>
</tr>
<tr>
<td>Measuring point: Ungrounded or grounded</td>
<td>Measuring point: Ungrounded or grounded</td>
<td>Measuring point: Ungrounded or grounded</td>
</tr>
<tr>
<td>Option: Ex i, Ex d</td>
<td>Option: Ex i, Ex d</td>
<td>Option: Ex i, Ex d</td>
</tr>
</tbody>
</table>

Further information at www.wika.com
### Thermocouples

**TC40**
- **Cable thermocouple**
- Sensor element: Types K, J, E, N or T
- Measuring range: -40...+1,200 °C, -40...+2,192 °F
- Measuring point: Ungrounded or grounded
- Cable: Silicone, PTFE, fiberglass, PVC
- Data sheet: TE 65.40

**TC46**
- **Hot runner thermocouple**
- Sensor element: Type J or K
- Measuring range: -25...+400 °C, -13...+752 °F
- Measuring point: Ungrounded or grounded
- Special feature:
  - Probe diameter 0.5...3.0 mm
  - Plastic-moulded transition
- Data sheet: TE 66.46

**TC47**
- **Thermocouple for plastics machinery**
- Sensor element: Types J or K
- Measuring range: -25...+400 °C, -13...+752 °F
- Measuring point: Ungrounded or grounded
- Special feature:
  - Various process connections
  - Connection lead fiberglass with stainless steel braid
- Data sheet: TE 67.20

**TC50**
- **Surface thermocouple**
- Sensor element: Types K, J, E, N or T
- Measuring range: -40...+1,200 °C, -40...+2,192 °F
- Measuring point: Ungrounded or grounded
- Process connection: Surface mounting
- Data sheet: TE 65.50

**TC53**
- **Bayonet thermocouple**
- Sensor element: Types K, J, E, N or T
- Measuring range: -40...+1,200 °C, -40...+2,192 °F
- Measuring point: Ungrounded or grounded
- Special feature:
  - Single and dual thermocouple
  - Explosion-protected versions
- Data sheet: TE 65.53

**TC59**
- ** Tubeskin thermocouple**
- Sensor element: Type K or N
- Measuring range: 0...+1,200 °C, 32...+2,192 °F
- Measuring point: Welded or exchangeable
- Process connection: Surface mounting
- Data sheet: TE 65.56...TE 65.59
TC80
High-temperature thermocouple

- Sensor element: Types S, R, B, K, N or J
- Measuring range: 0 … 1,700 °C, 32 … 3,092 °F
- Process connection: Stop flange, threaded bushing
- Data sheet: TE 65.80

TC81
For flue gas temperature measurements

- Sensor element: Types K, N or J
- Measuring range: 0 … 1,200 °C, 32 … 2,192 °F
- Process connection: Stop flange, threaded bushing
- Data sheet: TE 65.81

TC82
High-temperature thermocouple

- Sensor element: Types K, J, E, N, S, R or B
- Measuring range: 0 … 1,700 °C, 32 … 3,092 °F
- Thermowell: C610, C799
- Data sheet: TE 65.82

TC83
Sapphire-design thermocouple

- Sensor element: Types K, N, S, R or B
- Measuring range: 0 … 1,700 °C, 32 … 3,092 °F
- Thermowell: Sapphire (monocrystalline)
- Data sheet: TE 65.83

TC84
Sapphire-design thermocouple

- Sensor element: Types S, R, B
- Measuring range: 0 … 1,700 °C, 32 … 3,092 °F
- Thermowell: Sapphire (monocrystalline)
- Case: Highest safety thanks to 2-chamber system
- Data sheet: TE 65.84

TC90
High-pressure thermocouple

- Sensor element: Types K, J, or E
- Measuring range: 0 … 350 °C, 32 … 662 °F
- Tip: Ungrounded or grounded
- Process connection: Various high-pressure connections
- Data sheet: TE 65.90

TC95
Multipoint thermocouple in band design

- Sensor element: Types K, J, E, N or T
- Measuring range: 0 … 1,200 °C, 32 … 2,192 °F
- Tip: Ungrounded or grounded
- Process connection: Various process connections
- Data sheet: TE 70.01

TC96-R
Flexible multipoint thermometer

- Sensor element: Types K, J, E or N
- Measuring range: 0 … 1,200 °C, 32 … 2,192 °F
- Tip: Ungrounded or grounded
- Process connection: Various process connections
- Data sheet: TE 70.10

Further information at www.wika.com
Resistance thermometers

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

Resistance thermometers are suitable for applications between -196 ... +600 °C, -320 ... +1,112 °F (dependent on instrument model, sensor element, accuracy class and materials coming into contact with the medium).

Resistance thermometers are available in classes AA, A and B in accordance with IEC 60751.

TR10-A
Measuring insert, MI cable

TR10-B
For additional thermowell

TR10-C
Threaded, with fabricated thermowell

TR10-D
Threaded, miniature design

TR10-F
Flanged resistance thermometer, with fabricated thermowell

TR10-H
Without thermowell
**TR10-J**

Threaded, with perforated thermowell

<table>
<thead>
<tr>
<th>Sensor element</th>
<th>1 x Pt100, 2 x Pt100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-196 ... +600 °C, -320 ... +1,112 °F</td>
</tr>
<tr>
<td>Connection method</td>
<td>2-, 3- and 4-wire</td>
</tr>
<tr>
<td>Measuring insert</td>
<td>MI cable</td>
</tr>
<tr>
<td>Process connection</td>
<td>Mounting thread</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TE 60.10</td>
</tr>
</tbody>
</table>

**TR10-K**

Measuring insert, for installation in TR10-L

<table>
<thead>
<tr>
<th>Sensor element</th>
<th>1 x Pt100, 2 x Pt100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-196 ... +600 °C, -320 ... +1,112 °F</td>
</tr>
<tr>
<td>Connection method</td>
<td>2-, 3- and 4-wire</td>
</tr>
<tr>
<td>Measuring insert</td>
<td>MI cable</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TE 60.11</td>
</tr>
</tbody>
</table>

**TR10-L**

Flameproof enclosure, for additional thermowell

<table>
<thead>
<tr>
<th>Sensor element</th>
<th>1 x Pt100, 2 x Pt100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-196 ... +600 °C, -320 ... +1,112 °F</td>
</tr>
<tr>
<td>Connection method</td>
<td>2-, 3- and 4-wire</td>
</tr>
<tr>
<td>Measuring insert</td>
<td>MI cable</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TE 60.12</td>
</tr>
</tbody>
</table>

**TR11-A**

Measuring insert, tubular design

<table>
<thead>
<tr>
<th>Sensor element</th>
<th>1 x Pt100, 2 x Pt100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-50 ... +250 °C, -58 ... +482 °F</td>
</tr>
<tr>
<td>Connection method</td>
<td>2-, 3- and 4-wire</td>
</tr>
<tr>
<td>Measuring insert</td>
<td>Tubular design</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TE 60.13</td>
</tr>
</tbody>
</table>

**TR12-A**

Measuring insert for process resistance thermometer TR12-B

<table>
<thead>
<tr>
<th>Sensor element</th>
<th>1 x Pt100, 2 x Pt100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-196 ... +600 °C, -320 ... +1,112 °F</td>
</tr>
<tr>
<td>Connection method</td>
<td>2-, 3- and 4-wire</td>
</tr>
<tr>
<td>Measuring insert</td>
<td>MI cable</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TE 60.16</td>
</tr>
</tbody>
</table>

**TR12-B**

Process resistance thermometer, for additional thermowell

<table>
<thead>
<tr>
<th>Sensor element</th>
<th>1 x Pt100, 2 x Pt100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-196 ... +600 °C, -320 ... +1,112 °F</td>
</tr>
<tr>
<td>Connection method</td>
<td>2-, 3- and 4-wire</td>
</tr>
<tr>
<td>Measuring insert</td>
<td>MI cable</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TE 60.17</td>
</tr>
</tbody>
</table>

**TR12-M**

Process resistance thermometer, basic module

<table>
<thead>
<tr>
<th>Sensor element</th>
<th>1 x Pt100, 2 x Pt100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-196 ... +600 °C, -320 ... +1,112 °F</td>
</tr>
<tr>
<td>Connection method</td>
<td>2-, 3- and 4-wire</td>
</tr>
<tr>
<td>Measuring insert</td>
<td>MI cable</td>
</tr>
<tr>
<td>Option</td>
<td>Ex i, Ex d</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TE 60.17</td>
</tr>
</tbody>
</table>
Resistance thermometers

TFT35
Threaded thermometer with integrated transmitter
- Measuring range: -50 ... +200 °C
- Special feature:
  - Output signal 4 ... 20 mA, 0 ... 10 V, 0.5 ... 4.5 V
  - Factory configured
  - Measuring insert exchangeable
  - Electric connection via plug connection
- Data sheet: TE 76.18

TR30
Compact version
- Sensor element: 1 x Pt100
- Measuring range: -50 ... +250 °C, -58 ... +482 °F
- Output: Pt100, 4 ... 20 mA
- Data sheet: TE 60.30

TR31
OEM miniature design
- Sensor element: 1 x Pt100, 1 x Pt1000
- Measuring range: -50 ... +250 °C, -58 ... +482 °F
- Output: Pt100, Pt1000, 4 ... 20 mA
- CSA: Ordinary and hazardous locations
- Data sheet: TE 60.31

TR33
Miniature design, standard version
- Sensor element: 1 x Pt100, 1 x Pt1000
- Measuring range: -50 ... +250 °C, -58 ... +482 °F
- Output: Pt100, Pt1000, 4 ... 20 mA
- CSA: Ordinary locations
- Data sheet: TE 60.33

TR34
Miniature design, explosion-protected
- Sensor element: 1 x Pt100, 1 x Pt1000
- Measuring range: -50 ... +250 °C, -58 ... +482 °F
- Output: Pt100, Pt1000, 4 ... 20 mA
- CSA: Hazardous locations
- Data sheet: TE 60.34

TR40
Cable resistance thermometer
- Sensor element: 1 x Pt100, 2 x Pt100
- Measuring range: -196 ... +600 °C, -320 ... +1,112 °F
- Connection method: 2-, 3- and 4-wire
- Cable: Silicone, PTFE, PVC
- Process connection: Surface mounting
- Data sheet: TE 60.40

TR50
Surface resistance thermometer
- Sensor element: 1 x Pt100, 2 x Pt100
- Measuring range: -196 ... +600 °C, -320 ... +1,112 °F
- Connection method: 2-, 3- and 4-wire
- Process connection: Surface mounting
- Data sheet: TE 60.50
### TR53
Bayonet resistance thermometer

<table>
<thead>
<tr>
<th>Sensor element</th>
<th>1 x Pt100, 2 x Pt100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-196 ... +400 °C, -320 ... +752 °F</td>
</tr>
<tr>
<td>Connection method</td>
<td>2-, 3- and 4-wire</td>
</tr>
<tr>
<td>Process connection</td>
<td>Bayonet</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TE 60.53</td>
</tr>
</tbody>
</table>

### TR55
With spring-loaded tip

<table>
<thead>
<tr>
<th>Sensor element</th>
<th>1 x Pt100, 2 x Pt100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-196 ... +500 °C, -320 ... +932 °F</td>
</tr>
<tr>
<td>Connection method</td>
<td>2-, 3- and 4-wire</td>
</tr>
<tr>
<td>Process connection</td>
<td>Compression fitting</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TE 60.55</td>
</tr>
</tbody>
</table>

### TR57-M
Pipe surface resistance thermometer, for clamping

<table>
<thead>
<tr>
<th>Sensor element</th>
<th>1 x Pt100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-20 ... +150 °C, -4 ... +302 °F</td>
</tr>
<tr>
<td>Connection method</td>
<td>Pt100 3-wire, 4 ... 20 mA</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TE 60.57</td>
</tr>
</tbody>
</table>

### TR60
Indoor and outdoor resistance thermometer

<table>
<thead>
<tr>
<th>Sensor element</th>
<th>1 x Pt100, 2 x Pt100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-40 ... +80 °C, -40 ... +176 °F</td>
</tr>
<tr>
<td>Connection method</td>
<td>2-, 3- and 4-wire</td>
</tr>
<tr>
<td>Process connection</td>
<td>Wall mounting</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TE 60.60</td>
</tr>
</tbody>
</table>

### TR75
DiwiTherm® with digital indicator

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-40.0 ... +199.9 °C, +200 ... +450 °C with automatic measuring range changeover (autorange)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td>Battery operation</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TE 60.75</td>
</tr>
</tbody>
</table>

### TR81
For flue gas temperature measurements

<table>
<thead>
<tr>
<th>Sensor element</th>
<th>1 x Pt100, 2 x Pt100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-196 ... +600 °C, -320 ... +1,112 °F</td>
</tr>
<tr>
<td>Connection method</td>
<td>2-, 3- and 4-wire</td>
</tr>
<tr>
<td>Thermowell</td>
<td>Metal</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TE 60.81</td>
</tr>
</tbody>
</table>

### TR95
Multipoint resistance thermometer in band design

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Pt100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>-196 ... +600 °C, -320 ... +1,112 °F</td>
</tr>
<tr>
<td>Connection method</td>
<td>2-, 3- and 4-wire</td>
</tr>
<tr>
<td>Process connection</td>
<td>Various process connections</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TE 70.01</td>
</tr>
</tbody>
</table>

Further information at www.wika.com
Resistance thermometers

TF35
OEM threaded thermometer, with plug connection

TF40
Duct thermometer

TF41
Outdoor thermometer

TF37
Threaded thermometer with connection lead

TF43
OEM insertion thermometer for refrigeration technology

TF44
Strap-on thermometer with connection lead

TF45
OEM insertion thermometer with connection lead
# Temperature transmitters

## T15
**Digital temperature transmitter for resistance sensors**
- **Input:** Resistance thermometers, potentiometers
- **Accuracy:** < 0.1 %
- **Output:** 4 … 20 mA
- **Special feature:** The fastest and simplest configuration on the market
- **Data sheet:** TE 15.01

## T16
**Digital temperature transmitter for thermocouples**
- **Input:** All commercially available thermocouples
- **Accuracy:** Typical < 2 K
- **Output:** 4 … 20 mA
- **Special feature:** The fastest and simplest configuration on the market
- **Data sheet:** TE 16.01

## T32
**HART® temperature transmitter**
- **Input:** Resistance thermometers, thermocouples, potentiometers
- **Accuracy:** < 0.1 %
- **Output:** 4 … 20 mA, HART® protocol
- **Special feature:** TÜV certified SIL version (full assessment)
- **Data sheet:** TE 32.04

## T53
**FOUNDATION™ Fieldbus and PROFIBUS® PA transmitter**
- **Input:** Resistance thermometers, thermocouples, potentiometers
- **Accuracy:** < 0.1 %
- **Special feature:** PC configurable
- **Data sheet:** TE 53.01

## T91
**Analogue temperature transmitter 3-wire, 0 … 10 V**
- **Input:** Resistance thermometers, thermocouples
- **Accuracy:** < 0.5 or < 1 %
- **Output:** 0 … 10 V, 0 … 5 V
- **Special feature:** Fixed measuring range
- **Data sheet:** TE 91.01, TE 91.02

## TIF50, TIF52
**HART® field temperature transmitter**
- **Input:** Resistance thermometers, thermocouples, potentiometers
- **Accuracy:** < 0.1 %
- **Output:** 4 … 20 mA, HART® protocol
- **Special feature:** PC configurable
- **Data sheet:** TE 62.01

---

Further information at www.wika.com
Temperature switches

**Temperature switches for industrial applications**

**TSD-30**
Electronic temperature switch with display

- Measuring range: -20 ... +80 °C, -20 ... +120 °C, 0 ... 150 °C
- Output: Switching outputs PNP or NPN, 4 ... 20 mA, 0 ... 10 V, IO-Link 1.1
- Data sheet: TE 67.16

**TFS35**
Bimetal temperature switch

- Switching temperature: 50 ... 200 °C, fixed
- Special feature: Switching voltage to AC 48 V, DC 24 V
- Data sheet: TV 35.01

**TFS135**
Bimetal temperature switch for voltages to AC 250 V

- Switching temperature: 50 ... 130 °C, fixed
- Special feature: Switching voltages up to AC 250 V, Contact version normally open (NO)
- Data sheet: TV 35.02

**Temperature switches for the process industry**

**TXS, TXA**
Mini temperature switches

- Setting range: -15 ... +20 to 180 ... 250 °C
- Ignition protection type: Ex ia or Ex d
- Switching power: AC 220 V/5 A, DC 24 V/5 A
- Data sheet: TV 31.70, TV 31.72

**TCS, TCA**
Compact temperature switches

- Setting range: -30 ... +10 to 160 ... 250 °C
- Ignition protection type: Ex ia or Ex d
- Switching power: AC 250 V/15 A, DC 24 V/2 A
- Data sheet: TV 31.64, TV 31.65

**TWG, TAG**
Heavy-duty version

- Setting range: -30 ... +70 to 0 ... 600 °C
- Ignition protection type: Ex ia or Ex d
- Switching power: AC 250 V/20 A, DC 24 V/2 A
- Data sheet: TV 31.60, TV 31.61
## Thermometers with switch contacts

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Nominal size</th>
<th>Scale range</th>
<th>Wetted parts</th>
<th>Option</th>
<th>Data sheet</th>
</tr>
</thead>
</table>
| SC15   | Expansion thermometer with micro switch, indicating temperature controller | 60, 80, 100 mm  
45 x 45, 72 x 72, 96 x 96 mm | -100 ... +400 °C | Stainless steel | Sheet steel version | TV 28.02 |
| SW15   | Expansion thermometer with micro switch, safety temperature controller | 60, 80, 100 mm  
72 x 72, 96 x 96 mm | 0 ... 400 °C | Stainless steel | Type examination certificate per pressure equipment directive, EN 14597 | TV 28.04 |
| SB15   | Expansion thermometer with micro switch, safety temperature limiter | 60, 80, 100 mm  
72 x 72, 96 x 96 mm | 0 ... 400 °C | Stainless steel | Sheet steel version, Type examination certificate per pressure equipment directive, EN 14597 | TV 28.03 |
| TGS55  | Bimetal thermometer, stainless steel version | 100 mm | -70 ... +30 to 0 ... 600 °C | Stainless steel | Liquid damping to max. 250 °C (case and probe) | TV 25.01 |
| 70 with 8xx | Expansion thermometer with micro switch | 100 mm | -60 ... +40 to 0 ... 250 °C | Stainless steel | Various contact versions | TV 28.01 |
| TGS73  | Gas-actuated thermometer, stainless steel version | 100, 160 mm | -200 ... +100 to 0 ... 700 °C | Stainless steel | Capillary, Liquid damping (case) | TV 27.01 |

Further information at www.wika.com
## Temperature controllers

### CS4R

*For rail mounting, 22.5 x 75 mm*

<table>
<thead>
<tr>
<th>Input</th>
<th>Multi-function input for resistance thermometers, thermocouples and standard signals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control mode</td>
<td>PID, PI, PD, P, ON/OFF (configurable)</td>
</tr>
<tr>
<td>Monitoring output</td>
<td>Relay or logic level DC 0/12 V to control an electronic switch relay (SSR) or analogue current signal 4...20 mA</td>
</tr>
</tbody>
</table>
| Power supply                 | ■ AC 100 ... 240 V
■ AC/DC 24 V                  |
| Data sheet                   | AC 85.05                                                                             |

### CS6S, CS6H, CS6L

*For panel mounting, 48 x 48, 48 x 96, 96 x 96 mm*

<table>
<thead>
<tr>
<th>Input</th>
<th>Multi-function input for resistance thermometers, thermocouples and standard signals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control mode</td>
<td>PID, PI, PD, P, ON/OFF (configurable)</td>
</tr>
<tr>
<td>Monitoring output</td>
<td>Relay (AC 250 V, 3A, (R) or 1A (L)) or logic level DC 0/12 V for 3-point control to control an electronic switch relay (SSR) or analogue current signal 4...20 mA</td>
</tr>
</tbody>
</table>
| Power supply                 | ■ AC 100 ... 240 V
■ AC/DC 24 V                  |
| Data sheet                   | AC 85.08                                                                             |

### SC58

*For panel mounting, 62 x 28 mm*

<table>
<thead>
<tr>
<th>Input</th>
<th>Pt100 or PTC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control mode</td>
<td>Simple 2-point controller</td>
</tr>
<tr>
<td>Monitoring output</td>
<td>Relay switching output 12 A, 250 V</td>
</tr>
</tbody>
</table>
| Power supply                 | ■ AC 230 V
■ AC 12 ... 24 V or DC 16 ... 32 V                                                    |
| Data sheet                   | AC 85.24                                                                             |

### SC64

*For panel mounting, 64 mm, round*

<table>
<thead>
<tr>
<th>Input</th>
<th>Pt100 or PTC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control mode</td>
<td>Simple 2-point controller</td>
</tr>
<tr>
<td>Monitoring output</td>
<td>Relay switching output 16 A, 250 V</td>
</tr>
</tbody>
</table>
| Power supply                 | ■ AC 230 V
■ AC 12 ... 24 V or DC 16 ... 32 V                                                    |
| Data sheet                   | AC 85.25                                                                             |
Thermowells

Whether in aggressive or abrasive process media, whether in high- or low-temperature ranges: For electrical or mechanical thermometers, to prevent direct exposure of their temperature probes to the medium, thermowells that suit each application are available. Thermowells can be machined from solid-body material or assembled from tube sections and can either be screw-, weld- or flange-fitted.

They are offered in standard and special materials such as stainless steel 1.4571, 316L, Hastelloy® or titanium. Each version, depending on its construction type and its mounting to the process, has certain advantages and drawbacks with respect to its load limits and the special materials that can be used.

In order to manufacture thermowells for flange mounting at low cost from special materials, the designs used differ from standard thermowells in accordance with DIN 43772. Thus, only the wetted parts of the thermowell are manufactured from special materials, whereas the non-wetted flange is made of stainless steel and is welded to the special material.

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

<table>
<thead>
<tr>
<th>TW10</th>
<th>Solid-machined with flange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermowell form</td>
<td>Tapered, straight or stepped</td>
</tr>
<tr>
<td>Nominal width</td>
<td>ASME 1 ... 4 inch</td>
</tr>
<tr>
<td>DIN/EN DN 25 ... 100</td>
<td></td>
</tr>
<tr>
<td>Pressure rating</td>
<td>ASME to 2,500 lbs (DIN/EN to PN 100)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TW 95.10, TW 95.11, TW 95.12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TW15</th>
<th>Threaded (solid-machined)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermowell form</td>
<td>Tapered, straight or stepped</td>
</tr>
<tr>
<td>Head version</td>
<td>Hexagon, round with hexagon, or</td>
</tr>
<tr>
<td>round with spanner flats</td>
<td></td>
</tr>
<tr>
<td>Process connection</td>
<td>½, ¾ or 1 NPT</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TW 95.15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TW20</th>
<th>Socket weld (solid-machined)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermowell form</td>
<td>Tapered, straight or stepped</td>
</tr>
<tr>
<td>Welding diameter</td>
<td>1.050, 1.315 or 1.900 inch</td>
</tr>
<tr>
<td>(26.7, 33.4 or 48.3 mm)</td>
<td></td>
</tr>
<tr>
<td>Pressure rating</td>
<td>3,000 or 6,000 psi</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TW 95.20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TW25</th>
<th>Weld-in (solid-machined)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermowell form</td>
<td>Tapered, straight or stepped</td>
</tr>
<tr>
<td>Head diameter</td>
<td>Up to 2 inch (50.8 mm)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TW 95.25</td>
</tr>
</tbody>
</table>

Further information at www.wika.com
Thermowells

**TW30**
Vanstone (solid-machined) for lap flanges

- Thermowell form: Tapered, straight or slotted
- Nominal width: ASME 1 1/2 or 2 inch
- Pressure rating: ASME up to 2,500 lbs
- Data sheet: TW 95.30

**TW35**
Threaded (fabricated) (DIN 43772 form 2, 2G, 3, 3G)

- Thermowell form: Form 2, 2G, 3 or 3G
- Material: Stainless steel
- Connection to thermometer: M24 x 1.5 rotatable
- Data sheet: TW 95.35

**TW40**
Fabricated with flange (DIN 43772 form 2F, 3F)

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

**TW45**
Threaded (fabricated, DIN 43772 form 5, 8)

- Thermowell form: Form 5 or 8
- Material: Stainless steel or copper alloy
- Data sheet: TW 95.45

**TW50**
Threaded (solid-machined, DIN 43772 form 6, 7, 9)

- Thermowell form: Form 6, 7 or 9
- Data sheet: TW 95.50

**TW55**
Solid-machined for weld-in or with flange (DIN 43772 form 4, 4F)

- Thermowell form: Form 4 or 4F
- Nominal width: DIN/EN DN 25 … 50
  ASME 1 … 2 inch
- Pressure rating: DIN/EN up to PN 100
  (ASME up to 2,500 psig)
- Data sheet: TW 95.55

**STW52G**
Thermowell for model 52 and model 73

- Connection to thermometer: Suitable for thermometers with smooth connection (without thread), collar Ø 18 mm, stem 8 and 13 mm
- Thermowell material: Copper alloy, S35 or stainless steel
- Process connection: G ½ B thread
- Max. process temperature, process pressure:
  - 160 °C with copper alloy as thermowell material (6 bar stat.)
  - 500 °C with S35 stainless steel thermowell material (25 bar stat.)
- Data sheet: TW 90.11

Thermowell stem material: Stainless steel
Accessories

PU-548
Programming unit for temperature transmitters

- LED status display
- Compact design
- No further voltage supply needed, neither for the programming unit nor for the transmitter
- Due to the magWIK quick connector, fast connection to the transmitter possible
- Data sheet AC 80.18

magWIK
Magnetic quick connector

- For accelerated connection for all configuration and calibration processes
- Connection of 2-mm plug contacts or 4-mm plug contacts with adapter
- Data sheet AC 80.15

905
Contact protection relay for model 821 switch contacts

Application: For optimal contact protection and highest switching reliability
Data sheet: AC 08.01

904
Control unit for inductive contacts

Application: For operating measuring instruments with inductive contacts
Data sheet: AC 08.01

Coupler connector

Fittings

Wires & cables

Further information at www.wika.com
Bypass level indicators

Continuous level measurement via visual indication of the level without power supply

Applications
- Continuous level indication without power supply
- Indication of the level proportional to height
- Individual design and corrosion-resistant materials make the products suitable for a broad range of applications
- Chemical industry, petrochemical industry, oil and natural gas extraction (on- and offshore), shipbuilding, machine building, power generating equipment, power plants
- Process water and drinking water treatment, food and beverage industry, pharmaceutical industry

Special features
- Process- and procedure-specific production
- Operating limits:
  - Operating temperature: T = -196 … +450 °C
  - Operating pressure: P = vacuum to 400 bar ¹)
  - Limit density: \( \rho \geq 340 \text{ kg/m}^3 \)
- Wide variety of different process connections and materials
- Mounting of level sensors and magnetic switches possible as an option
- Explosion-protected versions

¹) Individual limit values. For application limits, the joint consideration of temperature and pressure is required.

---

### BNA-S

**Standard version**

- **Chamber**: Ø 60.3 x 2 mm
- **Chamber**: Ø 60.3 x 2.77 mm
- **Material**: Stainless steel 1.4571/316TI
- **Material**: 1.4404/316L
- **Process connection**: Flange DIN, ANSI, EN
- **Process connection**: Thread
- **Process connection**: Weld stub
- **Pressure**: Max. 64 bar
- **Temperature**: -196 … +450 °C
- **Data sheet**: LM 10.01

### BNA-P

**Plastic version**

- **Chamber**: Ø 60.3 x 3 mm
- **Material**: PVDF
- **Material**: PP
- **Process connection**: Flange DIN, ANSI, EN
- **Pressure**: Max. 6 bar
- **Temperature**: -10 … +100 °C
- **Data sheet**: LM 10.01
Accessories for bypass

Combines the tried-and-trusted bypass with further independent measurement principles

**BNA-SD, BNA-HD DUplus**
Standard/high-pressure version

- **Chamber**
  - BNA-SD: Ø 60.3 x 2 mm
  - BNA-HD: Ø 60.3 x 2.77 mm
- **Material**
  - 1.4571/316TI
  - 1.4404/316L
- **Process connection**
  - Flange DIN, ANSI, EN
  - Thread
  - Weld stub
- **Pressure**
  - BNA-SD: max. 64 bar
  - BNA-HD: max. 160 bar
- **Temperature**
  - -196 ... +450 °C
- **Data sheet**
  - LM 10.01

**BNA-L**
Liquid/KOplus version

- **Chamber**
  - Ø 88.9 x 2 mm
  - Ø 88.9 x 2.9 mm
- **Material**
  - Stainless steel 1.4404/316L
- **Process connection**
  - Flange DIN, ANSI, EN
  - Thread
  - Weld stub
- **Pressure**
  - Max. 64 bar
- **Temperature**
  - -196 ... +300 °C
- **Data sheet**
  - LM 10.01

**BNA-X**
Special materials

- **Chamber**
  - Ø 60.3 x 2 mm
  - Ø 60.3 x 2.77 mm
  - Ø 60.3 x 3.91 mm
  - Ø 60.3 x 5.54 mm
- **Material**
  - Titanium 3.7035
  - Hastelloy C276
  - 6Mo 14547
  - Monel
  - Inconel
- **Process connection**
  - Flange DIN, ANSI, EN
  - Thread
  - Weld stub
- **Pressure**
  - Max. 250 bar
- **Temperature**
  - -196 ... +450 °C
- **Data sheet**
  - LM 10.01

**BLM-SI, BLM-SD**
Magnetostrictive sensor, intrinsically safe (Ex-i)

- **Material**
  - Stainless steel 1.4404
- **Guide tube length**
  - Max. 5,800 mm
- **Temperature**
  - -60 ... +185 °C
- **Output signal**
  - 4 ... 20 mA, HART®
- **Data sheet**
  - LM 10.05

**BLM-SF-FM**
Magnetostrictive sensor, FM version

- **Material**
  - Stainless steel
- **Guide tube length**
  - Max. 4,000 mm
- **Temperature**
  - -200 ... +180 °C
- **Output signal**
  - 4 ... 20 mA, HART®
- **Data sheet**
  - LM 10.05

**BZG**
External chamber

- **Material**
  - Stainless steel, C-steel, Duplex, Superduplex, 6Mo, Hastelloy
- **Process connection**
  - Flange EN, ANSI, DIN, threads, weld stub
- **Pressure**
  - Max. 400 bar
- **Temperature**
  - -196 ... +450 °C
- **Data sheet**
  - LM 11.01

Further information at www.wika.com
Sight glass level indicators

Direct level indication without power supply

Applications
- Continuous level indication without power supply
- Direct indication of the level
- Individual design and corrosion-resistant materials make the products suitable for a broad range of applications
- Chemical, petrochemical industry, oil and natural gas extraction (on- and offshore), shipbuilding, machine building, power generating equipment, power plants
- Oil and gas, heat transfer and refrigeration systems, plants for cryogenics

Special features
- Process- and procedure-specific production
- Operating limits: □ Operating temperature: T = -196 … +374 °C 1)
□ Operating pressure: Vacuum to 250 bar 1)
- Wide variety of different process connections and materials
- Illumination optional
- Heating and/or insulation optional

1) Individual limit values. For application limits, the joint consideration of temperature and pressure is required.

<table>
<thead>
<tr>
<th>LGG-E</th>
<th>LGG-RP, LGG-TP</th>
<th>LGG-RE, LGG-TE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Compact version</strong></td>
<td><strong>Carbon-Line version</strong></td>
<td><strong>Standard version</strong></td>
</tr>
<tr>
<td>Display type</td>
<td>Reflex/transparent</td>
<td>Reflex/transparent</td>
</tr>
<tr>
<td>Material</td>
<td>Steel 1.0460, A105, 1.0570</td>
<td>Steel A350 LF2</td>
</tr>
<tr>
<td>Process connection</td>
<td>Flange DIN, ANSI, EN</td>
<td>Flange DIN, ANSI, EN</td>
</tr>
<tr>
<td>Pressure</td>
<td>Max. 40 bar</td>
<td>Max. 100 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>-196 to +243 °C (steam)</td>
<td>-40 to +300 °C</td>
</tr>
<tr>
<td>Glass size</td>
<td>2 … 11</td>
<td>4 … 9</td>
</tr>
<tr>
<td>Number of segments</td>
<td>1 … 3</td>
<td>1 … 5</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 33.01</td>
<td>LM 33.01</td>
</tr>
</tbody>
</table>
### LGG-RI, LGG-TI

**High-pressure version**

<table>
<thead>
<tr>
<th>Display type</th>
<th>Reflex/transparent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Steel 1.5415</td>
</tr>
<tr>
<td></td>
<td>Stainless steel 1.4404/316L</td>
</tr>
<tr>
<td>Process connection</td>
<td>Flange DIN, ANSI, EN</td>
</tr>
<tr>
<td></td>
<td>Male thread ½” NPT, ¾” NPT</td>
</tr>
<tr>
<td></td>
<td>Weld stub ½”, ¾”</td>
</tr>
<tr>
<td>Pressure</td>
<td>Max. 250 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>-196 ... +100 °C</td>
</tr>
<tr>
<td>Glass size</td>
<td>2 ... 9</td>
</tr>
<tr>
<td>Number of segments</td>
<td>1 ... 5</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 33.01</td>
</tr>
</tbody>
</table>

### LGG-M

**Refraction version**

<table>
<thead>
<tr>
<th>Display type</th>
<th>Refraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Steel 1.5415</td>
</tr>
<tr>
<td>Process connection</td>
<td>Flange DIN, ANSI, EN</td>
</tr>
<tr>
<td></td>
<td>Male thread G ½, G ¾, ½” NPT, ¾” NPT</td>
</tr>
<tr>
<td></td>
<td>Weld stub ½”, ¾”</td>
</tr>
<tr>
<td>Pressure</td>
<td>Max. 250 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>-10 ... +374 °C</td>
</tr>
<tr>
<td>Glass size</td>
<td>2 ... 11</td>
</tr>
<tr>
<td>Number of segments</td>
<td>1 ... 9</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 33.01</td>
</tr>
</tbody>
</table>
Submersible pressure sensors

Hydrostatic level measurement

Applications
- Level measurement in rivers and lakes
- Control of sewage lift and pumping stations
- Monitoring of sewage, settling and rainwater retention basins
- Level measurement in vessel and storage systems for oils and fuels

Special features
- Slimline and hermetically sealed design up to 300 m water column
- Highly resistant versions available
- Explosion protection per ATEX, IECEx, FM and CSA
- Drinking water conformity per KTW and ACS
- Temperature output, HART® and low-power output signal for battery operation

LF-1
For superior applications

<table>
<thead>
<tr>
<th>Accuracy (± % of span)</th>
<th>≤ 0.5 or ≤ 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>0 … 0.1 to 0 … 6 bar</td>
</tr>
<tr>
<td>Output signal</td>
<td>4 … 20 mA (2-wire)</td>
</tr>
<tr>
<td></td>
<td>4 … 20 mA + HART® (2-wire)</td>
</tr>
<tr>
<td></td>
<td>DC 0.1 … 2.5 V (3-wire)</td>
</tr>
</tbody>
</table>

Special feature
- Suitable for measurements in contaminated and aggressive media
- An optimised discharge behaviour and a large pressure port prevent the instrument from clogging and ensure a minimum maintenance effort
- Can be used in explosion-protected areas
- Developed for wireless applications

Data sheet LM 40.04

LS-10
Standard version

<table>
<thead>
<tr>
<th>Accuracy (± % of span)</th>
<th>≤ 0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>0 … 0.25 to 0 … 10 bar</td>
</tr>
<tr>
<td>Output signal</td>
<td>4 … 20 mA (2-wire)</td>
</tr>
</tbody>
</table>

Data sheet PE 81.55

LH-20
High-performance

<table>
<thead>
<tr>
<th>Accuracy (± % of span)</th>
<th>≤ 0.2 or 0.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>0 … 0.1 to 0 … 25 bar</td>
</tr>
<tr>
<td></td>
<td>0 … 1.6 to 0 … 25 bar abs.</td>
</tr>
</tbody>
</table>

Special feature
- Scalable measuring range (optional)
- Resistant against the harshest environmental conditions
- Reliable and secure by double-sealed design
- Titanium case for especially high resistance (optional)

Output signal
- 4 … 20 mA (2-wire)
- 4 … 20 mA (2-wire) + HART® + Pt100

Data sheet PE 81.56
Continuous measurement with float for industrial applications

With reed measuring chain

**Applications**
- Level measurement of liquids in machine building
- Control and monitoring tasks for hydraulic power packs, compressors and cooling systems

**Special features**
- Media compatibility: Oil, water, diesel, refrigerants and other liquids
- Permissible medium temperature: -30 … +120 °C
- Output signals for level and temperature (optional) as resistance output signal or 4 … 20 mA current output
- Accuracy, resolution: 24, 12, 10, 6 or 3 mm

### RLT-1000
**Stainless steel version**

<table>
<thead>
<tr>
<th>Accuracy</th>
<th>24, 12, 10, 6 or 3 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output signal</td>
<td>Resistance signal or 4 ... 20 mA</td>
</tr>
<tr>
<td>Temperature</td>
<td>-30 ... +80 °C (±120 °C optional)</td>
</tr>
<tr>
<td>Guide tube length</td>
<td>150 ... 1,500 mm</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 50.02</td>
</tr>
</tbody>
</table>

### RLT-2000
**Plastic version**

<table>
<thead>
<tr>
<th>Accuracy</th>
<th>24, 12, 10, 6 or 3 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output signal</td>
<td>Resistance signal or 4 ... 20 mA</td>
</tr>
<tr>
<td>Temperature</td>
<td>-10 ... +80 °C (±30 ... +120 °C optional)</td>
</tr>
<tr>
<td>Guide tube length</td>
<td>150 ... 1,500 mm</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 50.01</td>
</tr>
</tbody>
</table>

### RLT-3000
**Stainless steel version with temperature output signal**

<table>
<thead>
<tr>
<th>Accuracy</th>
<th>24, 12, 10, 6 or 3 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output signal</td>
<td>Resistance signal or 4 ... 20 mA</td>
</tr>
<tr>
<td>Temperature</td>
<td>4 ... 20 mA, Pt100 or Pt1000</td>
</tr>
<tr>
<td>Guide tube length</td>
<td>150 ... 1,500 mm</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 50.05</td>
</tr>
</tbody>
</table>

Further information at www.wika.com
Continuous measurement with float for the process industry

Magnetostrictive

Applications
- High-accuracy level measurement for almost all liquid media
- Chemical, petrochemical industry, natural gas, offshore, shipbuilding, machine building, power generating equipment, power plants
- Process water and drinking water treatment, food and beverage industry, pharmaceutical industry

Special features
- Process- and system-specific solutions possible
- Operating limits:
  - Operating temperature: T = -90 ... +400 °C
  - Operating pressure: P = vacuum to 100 bar
  - Limit density: ρ ≥ 400 kg/m³
- Resolution < 0.1 mm
- Wide variety of different electrical connections, process connections and materials
- Explosion-protected versions

**FLM-S**

Stainless steel version

- Process connection: Mounting thread, Flange: DIN, ANSI
- Guide tube length: Max. 6,000 mm
- Pressure: 0 ... 200 bar
- Temperature: -90 ... +450 °C
- Density: ≥ 400 kg/m³
- Data sheet: LM 20.01

**FLM-SP**

Plastic version

- Process connection: Mounting thread, Flange DIN, ANSI
- Guide tube length: Max. 5,000 mm
- Pressure: 0 ... 16 bar
- Temperature: -10 ... +100 °C
- Density: ≥ 800 kg/m³
- Data sheet: LM 20.01

**FLM-H**

Hygienic version, for sanitary applications

- Process connection: Clamp ISO 2852, Clamp DIN 32767, Aseptic thread DIN 11864-1, Aseptic liner DIN 11864-1, Aseptic flange DIN 11864-2, Aseptic clamp DIN 11864-3, VARIVENT®, BioConnect®
- Material: 1.4435 (316L) or 1.4404 (316L)
- Guide tube length: Max. 6,000 mm
- Pressure: 10 bar
- Temperature: -40 ... +250 °C
- Density: ≥ 770 kg/m³
- Data sheet: LM 20.01

 VARIVENT® is a registered trademark of the company GEA
 BioConnect® is a registered trademark of the company NEUMO
With reed measuring chain

Applications
- Level detection for almost all liquid media
- Chemical, petrochemical industry, natural gas, offshore, shipbuilding, machine building, power generating equipment, power plants
- Process water and drinking water treatment, food and beverage industry, pharmaceutical industry

Special features
- Process- and system-specific solutions possible
- Operating limits: Operating temperature: \( T = -80 \ldots +200 ^\circ C \)
  - Operating pressure: \( P = \text{vacuum to 80 bar} \)
  - Limit density: \( \rho \geq 400 \text{ kg/m}^3 \)
- Wide variety of different electrical connections, process connections and materials
- Optionally with programmable and configurable head-mounted transmitter for 4 \ldots 20 mA field signals, HART®, PROFIBUS® PA and FOUNDATION™ Fieldbus
- Explosion-protected versions

FLR-SA, FLR-SB
Stainless steel version

- Guide tube length: Max. 6,000 mm
- Pressure: 0 \ldots 100 bar
- Temperature: -80 \ldots +200 °C
- Density: \( \geq 400 \text{ kg/m}^3 \)
- Data sheet: LM 20.02

FLR-PA, FLR-PB
Plastic version, PP, PVDF, PP

- Guide tube length: Max. 5,000 mm
- Pressure: 0 \ldots 3 bar
- Temperature: -10 \ldots +100 °C
- Density: \( \geq 800 \text{ kg/m}^3 \)
- Data sheet: LM 20.02

FLR-HA3
Hygienic version, for sanitary applications

- Guide tube length: Max. 6,000 mm
- Pressure: 10 bar
- Temperature: -40 \ldots +250 °C
- Density: \( \geq 770 \text{ kg/m}^3 \)
- Data sheet: LM 20.02

Further information at www.wika.com

VARIVENT® is a registered trademark of the company GEA
BioConnect® is a registered trademark of the company NEUMO
Applications
- Level measurement of liquids in machine building
- Control and monitoring tasks for hydraulic power packs, compressors and cooling systems

Special features
- Media compatibility: Oil, water, diesel, refrigerants and other liquids
- Permissible medium temperature range: -30 ... +150 °C
- Up to 4 switching outputs freely definable as normally open, normally closed or change-over contact
- Optional temperature output signal, selectable as preconfigured bimetal switch or either Pt100 or Pt1000

### RLS-1000
**Stainless steel version**
- Switch points: Up to 4 (normally closed, normally open, change-over contact)
- Medium temperature: -30 ... +80 °C (optional -30 ... +150 °C)
- Guide tube length: 60 ... 1,500 mm
- Data sheet: LM 50.03

### RLS-2000
**Plastic version**
- Switch points: Up to 4 (normally closed, normally open, change-over contact)
- Medium temperature: -10 ... +80 °C (optional -30 ... +120 °C)
- Guide tube length: 100 ... 1,500 mm
- Data sheet: LM 50.04

### RLS-3000
**Stainless steel version, with temperature output signal**
- Switch points: Up to 3 (normally closed, normally open, change-over contact)
- Temperature output: Normally closed, normally open, Pt100, Pt1000
- Medium temperature: -30 ... +80 °C (-30 ... +150 °C optional)
- Guide tube length: 60 ... 1,500 mm
- Data sheet: LM 50.06

Float switches for industrial applications
### GLS-1000

**PNP or NPN switching outputs**

<table>
<thead>
<tr>
<th>Switch points</th>
<th>Up to 4 (normally closed, normally open)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature output (optional)</td>
<td>Pt100, Pt1000</td>
</tr>
<tr>
<td>Medium temperature</td>
<td>-40 ... +80 °C; (-40 ... +110 °C optional)</td>
</tr>
<tr>
<td>Guide tube length</td>
<td>60 ... 1,500 mm</td>
</tr>
<tr>
<td>Accuracy</td>
<td>≤ 1 mm</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 50.10</td>
</tr>
</tbody>
</table>

### RLS-4000

**Intrinsic safety Ex i**

<table>
<thead>
<tr>
<th>Switch points</th>
<th>Up to 4 (normally closed, normally open, change-over contact)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature output (optional)</td>
<td>Normally closed, normally open, Pt100, Pt1000</td>
</tr>
<tr>
<td>Medium temperature</td>
<td>-30 ... +80 °C; (-30 ... +150 °C optional)</td>
</tr>
<tr>
<td>Guide tube length</td>
<td>60 ... 1,000 mm</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 50.07</td>
</tr>
</tbody>
</table>

### RLS-5000

**For the shipbuilding industry (bilge water tanks)**

| Material | Stainless steel 1.4571 |
| Switching output | Normally closed, normally open, change-over contact |
| Medium temperature | -40 ... +80 °C |
| Electrical output | Marine cable, IP68 |
| Test device | Optional |
| Data sheet | LM 50.08 |

### RLS-6000

**For water and wastewater**

| Switching output | Normally closed, normally open, change-over contact |
| Density | ≥ 1,000 kg/m³ |
| Medium temperature | -10 ... +60 °C |
| Guide tube length | 150 ... 1,000 mm |
| Data sheet | LM 50.09 |

Further information at www.wika.com
Float switches for the process industry

Robust switches for liquid media

Applications
- Level measurement for almost all liquid media
- Pump and level control and monitoring of distinct filling levels
- Chemical, petrochemical industry, natural gas, offshore, shipbuilding, machine building, power generating equipment, power plants
- Process water and drinking water treatment, food and beverage industry

Special features
- Large range of application due to the simple, proven functional principle
- For harsh operating conditions, long service life
- Operating limits: □ Operating temperature: T = -196 … +350 °C
  □ Operating pressure: P = vacuum to 40 bar
  □ Limit density: ρ ≥ 300 kg/m³
- Wide variety of different electrical connections, process connections and materials
- Explosion-protected versions

**FLS-SA, FLS-SB**
Stainless steel version, for vertical installation

- Switch points: Max. 8 switch points
- Process connection:
  - Mounting thread
  - Flange DIN, ANSI, EN
- Guide tube length: Max. 6,000 mm
- Pressure: 0 … 100 bar
- Temperature: -196 … +300 °C
- Density: ≥ 390 kg/m³
- Data sheet: LM 30.01

**FLS-PA, FLS-PB**
Plastic version, for vertical installation

- Switch points: Max. 8 switch points
- Process connection:
  - Mounting thread
  - Flange DIN, ANSI, EN
- Guide tube length: Max. 5,000 mm
- Pressure: 0 … 3 bar
- Temperature: -10 … +100 °C
- Density: ≥ 400 kg/m³
- Data sheet: LM 30.01

VARIVENT® is a registered trademark of the company GEA
BioConnect® is a registered trademark of the company NEUMO
**ELS-S**
For lateral mounting with external chamber

- **External chamber:** Stainless steel
- **Process connection:** Threaded pipe connection GE10-LR galvanised steel
- **Pressure:** Up to 6 bar
- **Temperature:** -30 ... +300 °C
- **Data sheet:** LM 30.03

**ELS-A**
For lateral mounting with external chamber

- **External chamber:** Aluminium
- **Process connection:** Threaded pipe connection GE10-LR galvanised steel
- **Pressure:** Max. 1 bar
- **Temperature:** -30 ... +150 °C
- **Data sheet:** LM 30.03

**HLS-S**
Stainless steel version, for horizontal installation

- **Process connection:** Flange DIN, ANSI, EN
- **Pressure:** 0 ... 232 bar
- **Temperature:** -196 ... +350 °C
- **Density:** ≥ 600 kg/m³
- **Material:** Stainless steel, titanium
- **Data sheet:** LM 30.02

**HLS-P**
Plastic version, for horizontal installation

- **Process connection:** Flange DIN, ANSI, EN
- **Pressure:** 0 ... 3 bar
- **Temperature:** -10 ... +80 °C
- **Density:** ≥ 750 kg/m³
- **Material:** PP
- **Data sheet:** LM 30.02

**HLS-M1, HLS-M2**
Plastic or stainless steel version, with cable outlet

- **Process connection:** ■ ½" NPT (installation in the tank from outside)
  ■ G ¼" (installation in the tank from inside)
- **Pressure:** HLS-M1: 1 bar
  HLS-M2: 5 bar
- **Temperature:** HLS-M1: -40 ... +120 °C
  HLS-M2: -40 ... +120 °C
- **Material:** HLS-M1: PP
  HLS-M2: Stainless steel 1.4301
- **Electrical connection:** HLS-M1: Cable
  HLS-M2: Cable or connector
- **Data sheet:** LM 30.06

**HLS-S Ex i**
Intrinsically safe stainless steel version for horizontal installation

- **Process connection:** ■ Mounting flange:
  - DIN DN 50 ... DN 100, PN 6 ... 160
  - EN 1092 DN 50 ... DN 100, PN 6 ... PN 160
  - ANSI 2" ... 4", class 150 ... 900
  ■ Square flange:
  - DN 80 and DN 92
  (other flanges on request)
- **Pressure:** Max. 6 bar
- **Temperature class:** T2 T3 T4 T5 T6
- **Process temperature:** 180 °C 190 °C 108 °C 80 °C 65 °C
- **Ambient temperature at case:** 80 °C
- **Density:** 600 kg/m³
- **Material:** Stainless steel 1.4571
- **Data sheet:** LM 30.02

Further information at www.wika.com
Optoelectronic switches for the process industry

For applications with limited mounting space

Applications
- Chemical, petrochemical, natural gas, offshore industries
- Shipbuilding, machine building, refrigerator units
- Power generating equipment, power plants
- Process water and drinking water treatment
- Wastewater and environmental engineering

Special features
- Temperature ranges from -269 ... +400 °C
- Versions for pressure ranges from vacuum to 500 bar
- Special versions: High pressure, interface measurement
- Explosion-protected versions
- Signal processing is made using a separate model OSA-S switching amplifier

**OLS-S, OLS-H**

Standard and high-pressure version

<table>
<thead>
<tr>
<th>Material</th>
<th>Stainless steel, Hastelloy, KM-glass, quartz glass, sapphire, graphite</th>
</tr>
</thead>
</table>
| Process connection | ■ G ½ A  
                             ■ ½ NPT                                                                 |
| Pressure       | 0 ... 500 bar                                                           |
| Temperature    | -269 ... +400 °C                                                       |
| Approval       | Ex i                                                                   |
| Data sheet     | LM 31.01                                                               |

**OSA-S**

Switching amplifier, for models OLS-S, OLS-H

<table>
<thead>
<tr>
<th>Output</th>
<th>1 signal relay, 1 failure relay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
<td>High or low alarm</td>
</tr>
<tr>
<td>Time delay</td>
<td>Up to 8 s</td>
</tr>
</tbody>
</table>
| Voltage supply  | AC 24/115/120/230 V  
                             DC 24 V                 |
| Approval        | Ex i                          |
| Data sheet      | LM 31.01                      |

**OLS-C20**

Compact design, high-pressure version

<table>
<thead>
<tr>
<th>Material</th>
<th>Stainless steel, quartz glass</th>
</tr>
</thead>
</table>
| Process connection | ■ M16 x 1.5  
                             ■ G ½ A  
                             ■ ½ NPT |
| Pressure       | 0 ... 50 bar                  |
| Temperature    | -30 ... +135 °C               |
| Insertion length | 24 mm                      |
| Data sheet     | LM 31.02                     |
Optoelectronic switches for industrial applications

Applications
- Limit detection of liquids
- Machine tools
- Hydraulics
- Machine building
- Water technology

Special features
- For liquids such as oils, water, distilled water, aqueous media
- Compact design
- Mounting position as required
- Accuracy ±2 mm
- No moving components

Optoelectronic limit level switches – for general applications in machine building

OLS-C01
Level switch, standard version

Material: Stainless steel, borosilicate glass
Process connection: G ¼", G ½" or M12 x 1
Pressure: Max. 25 bar
Temperature: -30 ... +100 °C
Switching output: 1 x PNP
Data sheet: LM 31.31

OLS-C02
Level switch, with selectable switch length

Material: Stainless steel, borosilicate glass
Process connection: G ¼"
Pressure: Max. 25 bar
Temperature: -30 ... +100 °C
Switch length: 65 ... 1,500 mm
Switching output: 1 x PNP
Data sheet: LM 31.32

OLS-C05
Level switch, high-temperature version

Material: Stainless steel, borosilicate glass
Process connection: G ¼"
Pressure: Max. 25 bar
Temperature: -40 ... +170 °C
Switching output: 1 x PNP
Data sheet: LM 31.33

Optoelectronic limit level switches – application specialists

OLS-C51
Intrinsic safety Ex i

Material: Stainless steel, borosilicate glass
Process connection: G ¼"
Pressure: Max. 40 bar
Temperature: -30 ... +135 °C
Approval: Ex i
Output signal: 4 ... 20 mA low/high
Data sheet: LM 31.04

OLS-C04
For refrigeration technology

Material: Steel, nickel-plated; glass
Process connection: G ¼", ½ NPT
Pressure: Max. 40 bar
Temperature: -40 ... +100 °C
Switching output: 1 x PNP
Data sheet: LM 31.34

OLS-5200
For the shipbuilding industry

Material: Stainless steel, borosilicate glass
Process connection: Male thread G ½" or M18 x 1.5
Pressure: Max. 25 bar
Temperature: -40 ... +130 °C
Switching output: 1 x PNP
Vibration resistance: 10 ... 5,000 Hz, 0 ... 60 g
Data sheet: LM 31.06

Further information at www.wika.com
## Accessories for bypass level indicators

### BLR

**Reed sensor**

- **Material**: Stainless steel
- **Motor run**: Max. 6,000 mm
- **Temperature**: -100 … +350 °C depending on version
- **Output signal**: 4 … 20 mA, HART®, Profibus® PA or Foundation™ Fieldbus
- **Data sheet**: LM 10.03

### BMD

**Magnetic display**

- **Material**: Aluminium, anodised, stainless steel
- **Display elements**: Plastic rollers, stainless steel flaps
- **Cover**: Polycarbonate, glass
- **Length**: 180 … 6,000 mm
- **Temperature**: -200 … +450 °C
- **Data sheet**: LM 10.03

### BFT

**Float**

- **Material**: Stainless steel, titanium, various special materials
- **Pressure**: To 450 bar
- **Temperature**: -200 … +450 °C
- **Density**: > 340 kg/m³
- **Data sheet**: LM 10.02
## Accessories

The comprehensive accessory programme includes a wide variety of electronic equipment required for the evaluation and indication of our sensors.

### 904

**Control unit for inductive contacts**

<table>
<thead>
<tr>
<th>Application</th>
<th>For operating measuring instruments with inductive contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data sheet</td>
<td>AC 08.01</td>
</tr>
</tbody>
</table>

### IS Barrier

**Intrinsically safe repeater power supply**

- 1-channel input 0/4 ... 20 mA
- Intrinsically safe [Ex ia], supplying and non-supplying
- Galvanic isolation
- Bidirectional HART® signal transmission
- Suitable for SIL 2 per IEC 61508/IEC 61511
- Data sheet AC 80.14

### DI35

**For panel mounting, 96 x 48 mm**

<table>
<thead>
<tr>
<th>Input</th>
<th>Multi-function input for resistance thermometers, thermocouples and standard signals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alternatively double input for standard signals with calculation function (+ - x /) for two transmitters</td>
</tr>
<tr>
<td>Alarm output</td>
<td>2 or 4 relays (optional)</td>
</tr>
<tr>
<td>Special feature</td>
<td>Integrated transmitter power supply</td>
</tr>
<tr>
<td></td>
<td>Analogue output signal</td>
</tr>
<tr>
<td>Power supply</td>
<td>AC/DC 100 ... 240 V</td>
</tr>
<tr>
<td></td>
<td>DC 10 ... 40 V, AC 18 ... 30 V</td>
</tr>
<tr>
<td>Data sheet</td>
<td>AC 80.03</td>
</tr>
</tbody>
</table>

### DI32-1

**Digital indicator for panel mounting, 48 x 24 mm**

<table>
<thead>
<tr>
<th>Input</th>
<th>Multi-function input for resistance thermometers, thermocouples and standard signals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm output</td>
<td>2 electronic contacts</td>
</tr>
<tr>
<td>Power supply</td>
<td>DC 9 ... 28 V</td>
</tr>
<tr>
<td>Data sheet</td>
<td>AC 80.13</td>
</tr>
</tbody>
</table>
Force transducers from WIKA can be delivered with affixed strain gauges or thin-film sensors. The span of the measuring ranges that can be delivered stretches from 0.5 N to over 10,000 kN. The strain gauge technology offers a large geometrical variety and high accuracy, and it is well suited for detecting even the smallest forces. Force transducers with thin-film sensors are very cost-effective for customer-specific solutions or OEM applications and also for safety-related use. They are particularly characterised by their long-term and temperature behaviour.

**F1222**
Miniature compression force transducer from 0.5 N

- Rated force $F_{nom}$: 0 ... 0.5 to 0 ... 5,000 N
- Relative linearity error: ±1 % $F_{nom}$
- Output signal: 1 ... 10 mV/V/N
- Ingress protection: IP65
- Data sheet: FO 51.11

**F1224**
Miniature compression force transducer from 1 kN

- Rated force $F_{nom}$: 0 ... 1 to 0 ... 500 kN
- Relative linearity error: ±1.0 % $F_{nom}$
- Output signal: 1.5 mV/V
- Ingress protection: IP65
- Data sheet: FO 51.12

**F2202**
Tension/compression force transducer, S-type to 50 kN

- Rated force $F_{nom}$: 0 ... 0.5 kN to 0 ... 50 kN
- Relative linearity error: ±0.5 % $F_{nom}$
- Output signal: 2.0 mV/V
- Ingress protection: IP65 (≤ 5 kN), IP67 (> 5 kN)
- Data sheet: FO 51.48

**F2220**
Miniature tension/compression force transducer, from 1.5 N

- Rated force $F_{nom}$: 0 ... 1.5 to 0 ... 5,000 N
- Relative linearity error: ±0.5 % $F_{nom}$
- Output signal: 2 mV/V (to 5 N 15 mV/V)
- Ingress protection: IP65
- Data sheet: FO 51.16

**F2221**
Tension/compression force transducer from 0.01 kN

- Rated force $F_{nom}$: 0 ... 0.01 to 0 ... 50 kN
- Relative linearity error: ±0.2 % $F_{nom}$
- Output signal: 2 mV/V
- Ingress protection: IP65
- Data sheet: FO 51.26
**F2301, F23C1, F23S1**

Tension/compression force transducer with thin-film technology to 500 kN

- **Rated force** $F_{\text{nom}}$: 0 ... 1 to 0 ... 500 kN
- **Relative linearity error**: ±0.2 % $F_{\text{nom}}$
- **Output signal**
  - 4 ... 20 mA, 2-wire/3-wire
  - 2 x 4 ... 20 mA redundant
  - 0 ... 10 V, 3-wire
  - 2 x 0 ... 10 V redundant
- **Ingress protection**: IP67 (IP69k optional)
- **Data sheet**: FO 51.17

---

**F6215**

Ring force transducer to 1,500 kN

- **Rated force** $F_{\text{nom}}$: 0 ... 15 to 0 ... 1,500 kN
- **Relative linearity error**
  - ±0.2 % $F_{\text{nom}}$ for compression force measurement
  - 3 % $F_{\text{nom}}$ for preload force measurement
- **Output signal**: 0.8 ... 1.2 mV/V
- **Ingress protection**: IP65
- **Data sheet**: FO 51.28

---

**F6212**

Ring force transducer to 100 kN

- **Rated force** $F_{\text{nom}}$: 0 ... 2 to 0 ... 100 kN
- **Relative linearity error**: ±0.2 % $F_{\text{nom}}$
- **Output signal**: 0.8 ... 1.2 mV/V
- **Ingress protection**: IP65
- **Data sheet**: FO 51.27

---

**F5301, F53C1, F53S1**

Load pin with thin-film technology to 70 kN

- **Rated force** $F_{\text{nom}}$: 0 ... 10 to 0 ... 70 kN
- **Relative linearity error**
  - ±1 % $F_{\text{nom}}$/±1.5 % $F_{\text{nom}}$/±2 % $F_{\text{nom}}$
- **Output signal**
  - 4 ... 20 mA, 2-wire/3-wire
  - 2 x 4 ... 20 mA redundant
  - 0 ... 10 V, 3-wire
  - 2 x 0 ... 10 V redundant
- **Ingress protection**: IP67, IP69k (optional)
- **Data sheet**: FO 51.18

---

**F3831**

Shear beam to 10 t

- **Rated load** $F_{\text{nom}}$: 0 ... 500 to 0 ... 10,000 kg
- **Relative linearity error**: 0.03 % $F_{\text{nom}}$
- **Output signal**
  - 2.0 ±1 % mV/V
  - 3.0 ±1 % mV/V (optional)
- **Ingress protection**: IP67 (< 500 kg), IP67 (500 kg)
- **Data sheet**: FO 51.21

---

**F3833**

Bending beam to 500 kg

- **Rated load** $F_{\text{nom}}$: 0 ... 20 to 0 ... 500 kg
- **Relative linearity error**: 0.02 % $F_{\text{nom}}$
- **Output signal**: 2.0 ±1 % mV/V
- **Ingress protection**: IP68
- **Data sheet**: FO 51.22

---

Further information at [www.wika.com](http://www.wika.com)
Force transducers

**F2222**

**Tension/compression force transducer to 200,000 lbs**

- Rated force \( F_{\text{nom}} \): 5 lbs ... 500 klbs (22 N ... 2,200 kN)
- Relative linearity error: \( \pm 0.1 \% F_{\text{nom}} \)
- Output signal:
  - \( \leq 25 \) lbs: 2 mV/V
  - > 50 lbs: 3 mV/V
- Ingress protection: IP65
- Data sheet: FO 51.29

**F2808**

**Tension/compression force transducer from 0.01 kN**

- Rated force \( F_{\text{nom}} \): 0 ... 0.01 to 0 ... 50 kN
- Relative linearity error: \( \pm 0.15 \% F_{\text{nom}} \)
- Output signal: 2.0 \( \pm 10 \) mV/V
- Ingress protection: IP66
- Data sheet: FO 51.65

**F9302**

**Strain transducer to 1,000 \( \mu \)e**

- Strain \( F_{\text{nom}} \): 0 ... \( \pm 200 \), 0 ... \( \pm 500 \), 0 ... \( \pm 1,000 \) \( \mu \)e
- Relative linearity error:
  - Analogue: \( \pm 1.6 \% F_{\text{nom}} \)
  - Digital: \( \pm 0.5 \% F_{\text{nom}} \)
- Output signal:
  - Analogue or digital display
- Ingress protection:
  - Analogue display: IP65
  - Digital display: IP69 (optional)
- Data sheet: FO 54.10

**F9204**

**Wire rope force transducer to 40 t**

- Rated load \( F_{\text{nom}} \): 0 ... 1 to 0 ... 15 t
- Relative linearity error: \( \pm 3 \% F_{\text{nom}} \)
- Output signal: 4 ... 20 mA, 2-wire
- Ingress protection: IP66
- Data sheet: FO 51.25

**F1119, F1136**

**Hydraulic compression force transducer to 500 kN**

- Rated force \( F_{\text{nom}} \): 0 ... 300 N to 0 ... 500 kN
- Relative linearity error:
  - Analogue: \( \pm 1.6 \% F_{\text{nom}} \)
  - Digital: \( \pm 0.5 \% F_{\text{nom}} \)
- Output signal:
  - Analogue or digital display
- Ingress protection:
  - Analogue display: IP65
  - Digital display: Force transducer IP67
- Data sheet: FO 52.10

**FRKPS**

**Chain hoist test set for checking friction clutches**

- Rated force \( F_{\text{nom}} \): 40 ... 3,500 kg
- Relative linearity error: 0.5 \% \( F_{\text{nom}} \)
- Output signal: 4 ... 20 mA
- Ingress protection:
  - Force transducer IP67
  - Display instrument IP40
- Data sheet: FO 51.69
Load cells

Load cells are designed as a special form of force transducers for use in weighing equipment. They enable very high measurement accuracies between 0.01 % and 0.05 % $F_{\text{nom}}$. Typical and widely used load cell geometries are single-point load cells, bending and shear beam load cells, S-type load cells, pendulum load cells and compression force load cells. In addition, there are corresponding mounting kits and complete weighing modules available.

**F4801**

- **Single-point load cell to 250 kg**
- Rated load $F_{\text{nom}}$: 0 … 3 to 0 … 250 kg
- Relative linearity error: 0.02 % $F_{\text{nom}}$
- Output signal: 2.0 ± 10 % mV/V
- Ingress protection: IP65
- Data sheet: FO 53.10

**F4802**

- **Single-point load cell to 10 kg**
- Rated load $F_{\text{nom}}$: 0 … 0.3 kg to 0 … 10 kg
- Relative linearity error: 0.02 % $F_{\text{nom}}$
- Output signal: 1.0 ± 10 % mV/V (0.3 - 0.5 kg), 2.0 ± 10 % mV/V (1 - 10 kg)
- Ingress protection: IP65
- Data sheet: FO 53.13

**F4818**

- **Single-point load cell to 500 kg**
- Rated load $F_{\text{nom}}$: 0 … 20 kg to 0 … 500 kg
- Relative linearity error: 0.02 % $F_{\text{nom}}$
- Output signal: 2.0 ± 10 % mV/V
- Ingress protection: IP65
- Data sheet: FO 53.14

Inclination sensors

To precisely determine the inclination of machines or machine parts, WIKA now offers a wide range of inclination sensors. The sensors work with a dielectric fluid, the surface of which is like that of a spirit level, always aligning horizontally due to gravity. Typical applications for the inclination sensors are cranes, aerial platforms, wind turbines or mobile machines. The use for oil and gas production is also possible.

**N1101**

- **Inclination sensor, one axis, 1-channel**
- Measuring range: 0 … 360° (other measuring ranges on request)
- Relative linearity error: 0.1 %
- Output signal: 4 … 20 mA, 3-wire
- Ingress protection: IP67
- Data sheet: FO 59.01

**N131C**

- **EX Inclination sensor redundant**
- Measuring range: 0 … 90°, 0 … 180° or 0 … 360° (other measuring ranges on request)
- Relative linearity error: 0.1 %
- Output signal: 4 … 20 mA, 3-wire
- Ingress protection: IP67
- Data sheet: FO 59.02

Further information at www.wika.com
Primary flow elements
The most common way to measure flow is differential-pressure flow measurement. This measurement principle has proven itself over many years and is applicable for all common types of media.

Our portfolio of primary flow elements includes orifice plates, orifice assemblies, meter runs, flow nozzles, Venturi tubes and averaging pitot tubes.

Restriction orifices
When the process requires a pressure drop, a restriction orifice can be installed in the line. The design must take into consideration the flow conditions, and the differential pressure required to avoid issues (cavitation, choking and noise).

Single- or multi-step restriction orifice solutions are selected depending on the differential pressure and medium. Single-bore or multi-bore options must be selected to ensure an acceptable noise level.

Pressure drop
When using a differential pressure flow meter a permanent pressure drop is always generated. The graph shows a comparison between the different types of differential-pressure flow measurement instruments. Pressure loss is shown as a percentage of the measured differential pressure.

The graph can assist in the selection of the best instrument for your application.

Example:
Orifice plate
Differential pressure at full scale 1,000 mbar
β = d/D = 0.65
% of permanent pressure loss = 58 %
Permanent pressure loss = 580 mbar
Medium characteristics

Not all instruments can be used in all applications. The type of medium (gas, liquid or steam) and its conditions must be taken into account when selecting the right instrument for your medium condition.

The following selection chart will assist in choosing the right instrument:

<table>
<thead>
<tr>
<th>Orifice plate and related assemblies (Orifice flange / Meter run / Annular chambers)</th>
<th>Flow nozzle</th>
<th>Venturi tube</th>
<th>Averaging pilot tube</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Square edge</td>
<td>Quarter circle</td>
<td>Conical entrance</td>
</tr>
<tr>
<td>Gas</td>
<td>Clean</td>
<td>++</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Dirty</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Liquid</td>
<td>Clean</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td></td>
<td>Viscous</td>
<td>--</td>
<td>++</td>
</tr>
<tr>
<td></td>
<td>Dirty</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Corrosive</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Steam</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Page</td>
<td>6 ... 8</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

Reynolds number

It is difficult to evaluate the many variables affecting the velocity profile for all flow meters and for all pipeline conditions. To combine medium properties (density and viscosity), flow rate and geometrical aspects the Reynolds number is used.

The table shows you the smallest possible Reynolds number that can be used with each instrument.
Orifice plates represent the most common primary flow elements in the world due to their proven technology and ease of installation and maintenance.

**Main characteristics**
- Maximum operating temperature up to 800 °C
- Maximum operating pressure up to 400 bar
- Suitable for liquid, gas and steam flow measurement
- Accuracy: Uncalibrated ±0.5 … 2.5 %
- Repeatability of measurement 0.1 %

**Versions**
- **Square edge orifice plates** (standard version)
  This design is intended for general applications in clean liquids and gases.

[Diagram of Square Edge Orifice Plate]

- **Quarter circle and conical entrance orifice plates**
  The best choice for measurement of liquids with low Reynolds number.

[Diagram of Quarter Circle and Conical Entrance Orifice Plate]

- **Segmental orifice plates**
  For measurements with two-phase, dirty and particle-laden media.

[Diagram of Segmental Orifice Plate]

- **Eccentric orifice plates**
  The application areas are similar to the segmental version. However, an eccentric orifice plate is the better solution for smaller pipe diameters.

[Diagram of Eccentric Orifice Plate]

---

1) The actual measuring deviation is specified during the engineering phase.
Orifice flanges are intended for use instead of standard pipe flanges when an orifice plate or flow nozzle must be installed. Pairs of pressure tappings are machined into the orifice flange, making separate orifice carriers or tappings in the pipe wall unnecessary.

**Main characteristics**
- Wide range of materials available
- The number and type of pressure tapping (flange tap or corner tap) can be manufactured to customer requirements
- Special assemblies can be designed on request

Annular chambers are designed to be mounted between standard pipe flanges. Versions are available to suit all common flange standards, including DIN and ANSI B16.5.

---

**FLC-FL**

**Orifice flanges**

<table>
<thead>
<tr>
<th>Standards</th>
<th>ISO 5167-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe size</td>
<td>≥ 2”</td>
</tr>
<tr>
<td></td>
<td>≥ 50 mm</td>
</tr>
<tr>
<td>β</td>
<td>Depending on version</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Uncalibrated ±0.5 ... 2.5 %</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FL 10.01</td>
</tr>
</tbody>
</table>

**Main characteristics**
- Standard material is 316/316L stainless steel, but a wide range of alternative materials is available
- Gaskets are included in the scope of delivery (as standard, 4.4 mm thick spiral-wound gasket 316/graphite filler, unless requested otherwise)

---

**FLC-AC**

**Annular chambers**

<table>
<thead>
<tr>
<th>Standards</th>
<th>ISO 5167-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe size</td>
<td>≥ 2”</td>
</tr>
<tr>
<td></td>
<td>≥ 50 mm</td>
</tr>
<tr>
<td>β</td>
<td>Depending on version</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Uncalibrated ±0.5 ... 2.5 %</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FL 10.01</td>
</tr>
</tbody>
</table>

---
To ensure high accuracy in the flow measurement of liquids, gases and steam the primary flow element is supplied as an assembly incorporating the upstream and downstream pipe sections required by ISO 5167-1:2003. This assembly is known as a “meter run”.

Main characteristics
- Nominal width < 1 ½"
- Nominal pressure rating 300 … 2,500 depending on model/version
- Wide range of materials available

A calibration of the instrument can be performed if higher accuracy is required.

An integral orifice plate is normally selected when the pipe diameter is 1 ½” or smaller and the medium is clean. An extremely compact installation can be ensured as the pressure sensor can be mounted directly onto the meter run. Without a calibration, an accuracy of ±1 … 2 % can be expected, the actual values will be confirmed during the engineering phase.

---

Special assemblies

**FLC-HHR-PP**
ProPak flow meter for oil and gas

- **Pipe size**: 2", 3", 4", 6" or 8"
- **β and pipe length**: 0.75 or 0.40
- **Special feature**: No need for straight upstream and downstream pipes
- **Data sheet**: FL 10.07

**FLC-HHR-FP**
FlowPak flow meter

- **Pipe size**: 3" … 24"
- **β and pipe length**: 0.75 or 0.40
- **Special feature**: No need for straight upstream and downstream pipes
- **Data sheet**: FL 10.09

**FLC-WG**
Wedge flow meter for slurries and highly viscous media

- **Pipe size**: ½" … 24"
- **H/D ratios**: 0.2/0.3/0.4/0.5
- **Special feature**: Low maintenance through robust design
- **Data sheet**: FL 10.08
Flow nozzles

A flow nozzle consists of a convergent section with a rounded profile and a cylindrical throat. This design is generally selected for steam flow measurement at high velocity.

To reduce pressure loss an axisymmetric solution, called a Venturi nozzle, can be offered. It combines the standard features of a flow nozzle with a divergent section.

Main characteristics

- Suitable for liquid, gas and steam flow measurement
- Optimum solution for measuring the flow of steam
- Accuracy: Uncalibrated ±0.8 … 2 %
- Repeatability of measurement 0.1 %
- Ensure a lower pressure loss compared to orifice plate family.

Flow nozzle for in-pipe installation

FLC-FN-FLN
Flow nozzle for flange assembly

FLC-VN
Venturi nozzle

<table>
<thead>
<tr>
<th>Pipe size</th>
<th>≥ 2 in</th>
<th>≥ 50 mm</th>
<th>0.2 … 0.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>Uncalibrated ±2 %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data sheet</td>
<td>FL 10.03</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) The actual measuring deviation is specified during the engineering phase
Venturi tubes

A Venturi tube is a reliable and easily-managed and maintained instrument that can measure a wide range of clean liquids and gases.

The main advantage of a Venturi tube over other differential pressure flow measuring instruments is the higher pressure recovery and the lower upstream and downstream straight tube length requirements.

Main characteristics
- In accordance with ISO 5167-4 & ASME MFC-3M standards
- Fabricated from plate or machined from bar/forgings
- Flanged or weld-in construction
- Wide range of materials available
- Pipe sizes from 50 ... 1,200 mm
- Wide variety of pressure tappings available
- Calibration possible on request
- Accuracy: Uncalibrated ±1 … 1.5 %

FLC-VT-BAR
Venturi tube, bar body

<table>
<thead>
<tr>
<th>Pipe size</th>
<th>2 … 32 in</th>
<th>≥ 14 in</th>
</tr>
</thead>
<tbody>
<tr>
<td>β</td>
<td>0.4 … 0.75</td>
<td>0.4 … 0.7</td>
</tr>
<tr>
<td>Accuracy 1)</td>
<td>Uncalibrated ±1.25 %</td>
<td>Uncalibrated ±1.5 %</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FL 10.04</td>
<td>FL 10.04</td>
</tr>
</tbody>
</table>

1) The actual measuring deviation is specified during the engineering phase.
FloTec (averaging pitot tubes)

FloTec (a multi-port, averaging pitot tube) measures the difference between the static pressure and the dynamic pressure of the media in the pipe. The volumetric flow is calculated from that difference using Bernoulli’s principle and taking into account the pipe inner diameter. Using four dynamic ports this instrument is able to evaluate a better velocity profile inside the pipe. This ensures a higher accuracy in the flow measurement.

Main characteristics
- Low installation costs
- Long-term accuracy
- Minimal permanent pressure loss
- Fixed and extractable versions available

Vortex shedding frequency
Depending on the inner diameter, the medium characteristics and the Reynolds number, a vortex will be generated around the pitot tube. A support mounted on the opposite side of the pipe can be supplied should the natural frequency of the pitot coincide with the vortex shedding frequency. The necessity test is performed during the design phase.

<table>
<thead>
<tr>
<th>FLC-APT-E</th>
<th>FloTec, extractable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe size</td>
<td>≥ 3 in, ≥ 50 … 1,800 mm</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Uncalibrated ±3 %</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FL 10.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FLC-APT-F</th>
<th>FloTec, fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe size</td>
<td>≥ 3 in, ≥ 50 … 1,800 mm</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Uncalibrated ±3 %</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FL 10.05</td>
</tr>
</tbody>
</table>
When a reduction of pressure or a limitation of the flow rate is required, a restriction orifice must be inserted into the pipeline. Our technical department will produce the correct design for the restriction orifice, depending on customer requirements and flow conditions.

If high differential pressures, a change in phase or sonic issues can occur, a more-complex design will be required. The solution in these cases is to decrease the differential pressure in several steps, avoiding all the issues created by these factors. This solution is called multi-step restriction orifice.

**Main characteristics**
- Multi-step restriction orifices to reduce the pressure by more than 50% of the inlet value
- Multi-bore designs to reduce the noise level
Flow switches

For each flow monitoring the right flow switch

Flow switches are used for the display and monitoring of the flow of liquid and gaseous media. The instruments feature a high switching accuracy and functional safety, low switch hysteresis and continuous switch point setting by the operator.

The wide selection of WIKA flow switches also includes viscosity-compensated models and ATEX-certified instruments for use in hazardous environments.

FWS
For liquid and gaseous media

<table>
<thead>
<tr>
<th>Material</th>
<th>Stainless steel, brass</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process connection</td>
<td>G ¼ ... G 1½</td>
</tr>
<tr>
<td>Flow range</td>
<td>0.005 ... 250 l/min (water)</td>
</tr>
<tr>
<td></td>
<td>0.2 ... 1,450 NL/min (air)</td>
</tr>
<tr>
<td>Output</td>
<td>Optionally pointer, sight glass, reed contact</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 31.31</td>
</tr>
</tbody>
</table>

FSD-3
For liquid media

| Measuring range   | Water: 5 ... 150 cm/s |
|                   | Oil: 3 ... 300 cm/s   |
| Output signal     | For flow and temperature |
|                   | PNP or NPN |
|                   | Analogue output (optional) |
| Process connection| G ½ A, G ½ A |
|                | ¾ NPT, ½ NPT |
|                | M18 x 1.5 |
| Data sheet       | FL 80.01 |
Digital pressure gauges

High-quality digital pressure gauges from WIKA

Precision digital pressure gauges are suitable for stationary and also mobile measurement and display of pressures. In addition, a digital pressure gauge can be used as a pressure reference and enables the easy testing, adjustment and calibration of other pressure measuring equipment directly on site. Through efficient measuring cells with electronic linearisation of the characteristic curve, a high accuracy is achieved.

DG-10
Digital pressure gauge for general industrial applications

- Measuring range: 0 ... 5 to 0 ... 700 bar
- Accuracy (% of span): ≤ 0.5 % FS ± 1 digit
- Special feature: Robust stainless steel case, nominal size 80 mm
- Data sheet: PE 81.66

CPG500
Digital pressure gauge

- Measuring range: -1 ... +16 to 0 ... 1,000 bar
- Accuracy: 0.25 %
- Special feature: Simple operation using 4 buttons
- Data sheet: CT 09.01

CPG1500
Precision digital pressure gauge

- Measuring range: -1 ... 10,000 bar
- Accuracy: ≤ 0.025 % FS
- Special feature: Integrated data logger, WIKA-Cal compatible, Data transfer via WIKA-Wireless, Password protection possible, Robust case IP65
- Data sheet: CT 10.51

CPG-KITH
Hydraulic service kit

- Simple testing and adjustment of pressure measuring instruments
- Kit consists of a CPG1500 reference instrument and a CPP700-H hand pump (hydraulic, Pmax 700 bar) or CPP1000-H (hydraulic, Pmax 1,000 bar)

CPG-KITP
Pneumatic service kit

- Simple testing and adjustment of pressure measuring instruments
- Kit consists of a CPG1500 reference instrument and a CPP30 hand pump (pneumatic, Pmax 30 bar)

WIKA-Cal
Calibration software, accessories for digital pressure gauges

- Creation of calibration certificates for mechanical and electronic pressure measuring instruments
- Fully automatic calibration with pressure controllers
- For the recording of certificate-relevant data in combination with the Calibrators of the CPU6000 series
- Determination of the required mass loads for pressure balances
- Calibration of gauge pressure measuring instruments with absolute pressure references and vice versa
- Data sheet: CT 95.10

App "myWIKA device"
Play Store
Hand-holds, calibrators

Hand-holds are portable calibration instruments for mobile use for the accurate measurement and recording of pressure profiles. There are interchangeable pressure sensors with measuring ranges of up to 10,000 bar available for the instruments. Through this, hand-holds are particularly suitable as test instruments for a large variety of applications in the widest range of industries. Data recorded in the hand-held can be evaluated via PC software, some instruments document calibrations in the internal memory, which can later be read on a PC. Optionally, a calibration certificate can be generated with our calibration software WIKA-Cal.

<table>
<thead>
<tr>
<th></th>
<th>CPH6200, CPH6210</th>
<th>CPH6300</th>
<th>CPH6400</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hand-held pressure indicator</strong></td>
<td><strong>Hand-held pressure indicator</strong></td>
<td><strong>Precision hand-held pressure indicator</strong></td>
<td></td>
</tr>
<tr>
<td>Measuring range</td>
<td>0.025 ... 0.025 to -1 ... 1,000 bar</td>
<td>0.025 ... 0.025 to -1 ... 1,000 bar</td>
<td>0 ... 0.25 to -1 ... 6,000 bar</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.2 %, 0.1 % (optional)</td>
<td>0.2 %, 0.1 % (optional)</td>
<td>0.025 %</td>
</tr>
<tr>
<td>Special feature</td>
<td>Integrated data logger, Differential pressure measurement (optional)</td>
<td>Robust and waterproof case with IP65, IP67, Integrated data logger, Differential pressure measurement (optional)</td>
<td>Integrated data logger, Temperature measurement (optional)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 11.01, CT 11.02</td>
<td>CT 12.01</td>
<td>CT 14.01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPH6000</th>
<th>ProcessCalibrator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>0 ... 0.25 to -1 ... 6,000 bar</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.025 %</td>
</tr>
<tr>
<td>Special feature</td>
<td>Calibration function, Pressure switch test, Transmitter supply</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 15.01</td>
</tr>
</tbody>
</table>

**Complete test and service cases**

These cases can be assembled exactly to your requirements. Thus you will be fully equipped on site!

Further information at www.wika.com
# Hand-helds, calibrators

## CPH7000, CPH7000-Ex

**Portable process calibrator**

- **Measuring range**
  - -1 … 25 bar
  - (-1 … 10,000 bar with CPT7000)
- **Accuracy** 0.025 % FS
- **Special feature**
  - Integrated pressure generation
  - Measurement of pressure, temperature, current, voltage, ambient conditions
  - Supply of pressure, current and voltage
  - Calibration function, data logger, switch test
- **Data sheet** CT 15.51

## Pascal ET

**Hand-held multi-function calibrator**

- **Measuring range**
  - 0 … 100 mA, 0 … 80 V, 5 … 10,000 Ω
  - 0 … 50 kHz
  - -190 … +1,200 °C (type J)
  - -200 … +850 °C (Pt100)
- **Accuracy** 0.025 % FS
- **Special feature**
  - Large display with touchscreen
  - Integrated data logger and calibration function
  - Measurement and simulation of temperature, current, voltage, resistance, frequency, pressure
  - HART® communication
- **Data sheet** CT 18.02

## Pascal100

**Hand-held multi-function calibrator**

- **Measuring range**
  - -1 … 100 bar
  - 0 … 50 kHz
  - 0 … 10 kΩ
  - -100 … +100 mA
  - -100 … +100 mV
- **Accuracy** 0.025 % FS
- **Special feature**
  - Large display with touchscreen
  - Internal pressure/vacuum generation
  - Integrated data logger and calibration function
  - Measurement and simulation of pressure, current, voltage, resistance, frequency, temperature and pulses
  - HART® communication
- **Data sheet** CT 18.01

## CPH7650

**Portable pressure calibrator**

- **Measuring range**
  - -1 … 6,000 bar with CPT6000
  - Supply elec. pump: -0.85 … +20 bar
- **Accuracy** 0.025 % FS
- **Special feature**
  - Calibration function
  - Generation/measurement of 4 … 20 mA and DC 24 V voltage supply for transmitters
  - Interchangeable reference sensors CPT6000
  - High-performance electric pump
- **Data sheet** CT 17.02

## WIKA-Cal

**Calibration software, accessories for hand-helds/calibrators**

- Creation of calibration certificates for mechanical and electronic pressure measuring instruments
- Fully automatic calibration with pressure controllers
- For the recording of certificate-relevant data in combination with the Calibrator/Units of the CPU6000 series
- Determination of the required mass loads for pressure balances
- Calibration of gauge pressure measuring instruments with absolute pressure references and vice versa
- Data sheet: CT 95.10
Precision pressure measuring instruments

Precision pressure measuring instruments are electrical measuring systems which convert pressure into an electrical signal and optionally visualise it. Precise pressure transmitters and process transmitters are used for the monitoring and control of particularly sensitive processes. Due to the low, DKD/DAkkS certified measurement uncertainty of down to 0.008 % of the entire measuring chain, the particularly accurate instruments find their primary applications as a factory/working standard for testing and/or calibrating a variety of pressure measuring instruments.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Measuring range</th>
<th>Accuracy</th>
<th>Special feature</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPT2500</td>
<td>USB pressure transmitter</td>
<td>0 ... 0.025 to 0 ... 1,000 bar</td>
<td>0.2 %, 0.1 % (optional)</td>
<td>Recording interval adjustable from 1 ms ... 10 s, No external voltage supply required, Data storage and evaluation directly via PC</td>
<td>CT 05.01</td>
</tr>
<tr>
<td>CPT6020</td>
<td>Precision pressure sensor, basic version</td>
<td>0 ... 0.025 to 0 ... 1,000 bar</td>
<td>0.02 %</td>
<td>Comp. temperature range 0 ... 50 °C, RS-232 or RS-485, Measuring rate 20 ms, Resolution 6 digits, Barometric measuring range: 552 ... 1,172 mbar abs., 0.02 % of reading</td>
<td>CT 25.13</td>
</tr>
<tr>
<td>CPT61x0</td>
<td>Precision pressure sensor, standard version</td>
<td>0 ... 0.025 to 0 ... 400 bar</td>
<td>0.025 % (for CPT6140)</td>
<td>RS-232 or RS-485 connection, Analogue output (optional), Barometric measuring range: 552 ... 1,172 mbar abs., 0.01 % of reading, Measuring rate of 4 ms at CPT6140</td>
<td>CT 25.10, CT 25.11</td>
</tr>
<tr>
<td>CPT9000</td>
<td>Precision pressure sensor, premium version</td>
<td>0 ... 0.025 to 0 ... 1,000 bar</td>
<td>0.008 %</td>
<td>Comp. temperature range 0 ... 50 °C, RS-232 or RS-485, Measuring rate 20 ms, Barometric measuring range: 552 ... 1,172 mbar abs., 0.008 % of reading</td>
<td>CT 25.12</td>
</tr>
<tr>
<td>CPG2500</td>
<td>Precision air data test indicator</td>
<td>-</td>
<td>0.01 %, 0.009 %</td>
<td>RVSM-compliant, Configurations height (Ps), speed, Ps/Pl, Ps/Qc</td>
<td>CT 25.02</td>
</tr>
<tr>
<td>CPA2501</td>
<td></td>
<td>-</td>
<td>0.01 %, 0.009 %</td>
<td></td>
<td>CT 29.02</td>
</tr>
</tbody>
</table>

Further information at www.wika.com
Pressure controllers

Pressure controllers are electronic controllers which quickly and automatically provide a pressure based on a supply pressure. Due to the high accuracy and control stability, pressure controllers are especially suitable as references for production lines and laboratories, in order to carry out automatic testing and/or calibration of all types of sensors.

CPC2000
Low-pressure version

- Measuring range: 0 ... 1 to 0 ... 1,000 mbar
- Accuracy: 0.1/0.3 % (for 0 ... 1 mbar)
- Medium: Ambient air
- Special feature: Integrated pressure generation, Integrated rechargeable battery
- Data sheet: CT 27.51

CPC4000
Industrial series

- Measuring range: 0 ... 0.35 to 0 ... 210 bar
- Accuracy: 0.02 %
- Medium: Dry, clean air or nitrogen
- Special feature: Up to 2 sensors, Fast control speed, Leak test function, Automatic contamination protection (optional)
- Data sheet: CT 27.40

CPC6050
Modular version

- Measuring range: 0 ... 0.025 to 0 ... 210 bar
- Accuracy: 0.01 %
- Medium: Dry, clean air or nitrogen
- Special feature: Up to 2 control/measuring channels with 2 sensors each, Sensors exchangeable, Switch test function, Auto-channel for both controllers, Automatic contamination protection (optional)
- Data sheet: CT 27.62
### Pneumatic pressure controllers

<table>
<thead>
<tr>
<th>Model</th>
<th>Version</th>
<th>Measuring range</th>
<th>Accuracy</th>
<th>Medium</th>
<th>Special feature</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPC7000</td>
<td></td>
<td>0 ... 100 bar to 0 ... 700 bar</td>
<td>0.01 %</td>
<td>Nitrogen</td>
<td>Robust and low-wear valve technology with long-term stability</td>
<td>CT 27.63</td>
</tr>
<tr>
<td>CPC8000-H</td>
<td>High-pressure</td>
<td>0 ... 100 to 0 ... 1,600 bar</td>
<td>0.014 % ... 0.01 %</td>
<td>Hydraulic oil or water</td>
<td>High stability, also for large volumes</td>
<td>CT 28.05</td>
</tr>
</tbody>
</table>

### CPC8000

**Premium version**

Measuring range 0 ... 0.035 to 0 ... 400 bar
Accuracy 0.01 ... 0.008 %
Medium Dry, clean air or nitrogen

**Special feature**
- Excellent control stability and pressure control without overshooting
- Up to three interchangeable sensors
- Optional barometer for automatic conversion of the pressure type
- Control performance can be matched to application

Data sheet CT 28.01

### CPC8000-H

**High-pressure version**

Measuring range 0 ... 0 ... 1,600 bar
Accuracy 0.014 % ... 0.01 %
Medium Hydraulic oil or water

**Special feature**
- High stability, also for large volumes
- Up to two interchangeable reference sensors
- Automatic flooding
- Hydraulic liquids available, e.g. Sebacate, Shell Tellus 22, Krytox, FC77

Data sheet CT 28.05

### CPA8001

**Air data test set**

Measuring range
- Altitudes to 100,000 ft
- Speeds to 1,150 knots
Accuracy 0.01 % ... 0.009 %
Medium Dry, clean air or nitrogen

**Special feature**
- Excellent control stability, even with rate control
- Overshoot-free control
- RVSM compatible
- Configurations Ps/Pt, Ps/Qc

Data sheet CT 29.01

### WIKA-Cal

**Calibration software, accessories for pressure controllers**

- Creation of calibration certificates for mechanical and electronic pressure measuring instruments
- Fully automatic calibration with pressure controllers
- For the recording of certificate-relevant data in combination with the CalibratorUnits of the CPU6000 series
- Determination of the required mass loads for pressure balances
- Calibration of gauge pressure measuring instruments with absolute pressure references and vice versa

Data sheet: CT 95.10

### Hydraulic pressure controller

<table>
<thead>
<tr>
<th>Model</th>
<th>Version</th>
<th>Measuring range</th>
<th>Accuracy</th>
<th>Medium</th>
<th>Special feature</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPC8000</td>
<td></td>
<td></td>
<td>0.01 %</td>
<td>Nitrogen</td>
<td>High pneumatic safety</td>
<td>CT 27.63</td>
</tr>
<tr>
<td>CPC8000-H</td>
<td>High-pressure</td>
<td></td>
<td>0.014 % ... 0.01 %</td>
<td>Hydraulic oil or water</td>
<td>High performance</td>
<td>CT 28.05</td>
</tr>
</tbody>
</table>

### For aviation

An air data test set is a an electronic controller which, based on a supply pressure, provides a pressure at a variable and adjustable rate.

Air data test sets are specifically developed to convert the pressure to be controlled into a height or rate of climb and velocity. As a result of the high accuracy, control stability and ability to simulate altitude and velocity, an air data test set is particularly suitable as a reference for aircraft workshops and also for instrument manufacturers and calibration laboratories in the aviation industry, in order to make calibrations on sensors and displays.
Pressure balances

Industrial series

Compact and competitively priced dead-weight testers for use on site or for maintenance and service

The compact dimensions and low weight are key features of these dead-weight testers for their daily use in service and maintenance. With their integrated pressure generation and purely mechanical measurement principle, they are also specifically suited to on-site applications.

### CPB3500

**Pneumatic compact version**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>0.015 ... 1 to 1 ... 120 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>0.015 ... 0.006 %</td>
</tr>
<tr>
<td>Medium</td>
<td>Non-corrosive gases</td>
</tr>
<tr>
<td>Special feature</td>
<td>Compact dimensions and low weight</td>
</tr>
<tr>
<td></td>
<td>1 bar piston can be used for positive and negative overpressure</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 31.22</td>
</tr>
</tbody>
</table>

### CPB3800

**Hydraulic compact version**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>1 ... 120 to 10 ... 1,200 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>0.05 ... 0.025 %</td>
</tr>
<tr>
<td>Medium</td>
<td>Special oil</td>
</tr>
<tr>
<td>Special feature</td>
<td>Compact dimensions and low weight</td>
</tr>
<tr>
<td></td>
<td>Instrument base can now also be combined with the CPB38000 piston-cylinder systems</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 31.06</td>
</tr>
</tbody>
</table>

### CPB3800HP

**Compact, high-pressure version with dual-range piston-cylinder system**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>1 ... 2,600 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>0.025 ... 0.007 %</td>
</tr>
<tr>
<td>Medium</td>
<td>Special oil or others on request</td>
</tr>
<tr>
<td>Special feature</td>
<td>Dual-range piston-cylinder systems with fully automated changing between ranges</td>
</tr>
<tr>
<td></td>
<td>Compact dimensions and low weight</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 31.07</td>
</tr>
</tbody>
</table>
High-performance primary standards with excellent running characteristics for use in calibration laboratories

Through modern instrument design with excellent equipment features, the highest demands of operator convenience and performance are fulfilled. The selection of dual-range piston-cylinder systems with automated changing between ranges can ensure this measurement uncertainty over a large pressure range, even with a single measuring system.

Laboratory version

<table>
<thead>
<tr>
<th>CPB5000</th>
<th>CPB5000HP</th>
<th>CPB5800</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pneumatic version</strong></td>
<td><strong>High-pressure version</strong></td>
<td><strong>Hydraulic version with dual-range piston-cylinder systems</strong></td>
</tr>
<tr>
<td>Measuring range</td>
<td>0.03 … -1 to 0.4 … 100 bar</td>
<td>25 … 2,500 to 25 … 6,000 bar</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.015 … 0.008 %</td>
<td>0.025 … 0.02 %</td>
</tr>
<tr>
<td>Medium</td>
<td>Non-corrosive gases</td>
<td>Special oil</td>
</tr>
<tr>
<td>Special feature</td>
<td>Patented system for fast piston-cylinder exchange</td>
<td>Robust instrument base with integrated high-pressure generation</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 31.01</td>
<td>CT 31.51</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CPB5600DP</th>
<th>CPS5000</th>
<th>CPU6000 series</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Differential pressure version</strong></td>
<td><strong>Hydraulic single-range piston-cylinder systems</strong></td>
<td><strong>CalibratorUnit</strong></td>
</tr>
<tr>
<td>Measuring range</td>
<td>0.03 … 2 to 25 … 1,600 bar</td>
<td>Special feature</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.015 … 0.008 %</td>
<td>■ For the highest demands on accuracy and performance</td>
</tr>
<tr>
<td>Medium</td>
<td>Non-corrosive gases or special oil</td>
<td>■ Can be combined with the CPB5800 instrument base</td>
</tr>
<tr>
<td>Special feature</td>
<td>Two complete pressure balances within one case for real differential pressure measurements under static pressure</td>
<td>■ Easy calibration of pressure transmitters through the voltage supply and multimeter function</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 31.56</td>
<td>Data sheet: CT 31.01</td>
</tr>
</tbody>
</table>

Further information at www.wika.com
Pressure balances

High-end version

High-accuracy and high-performance primary standards with excellent operating characteristics, based on the physical principle of Pressure = Force/Area

The direct measurement of the pressure \( p = \frac{F}{A} \), as well as the use of high-quality materials enable this small measurement uncertainty, in conjunction with an excellent long-term stability (recommended recalibration interval of five years in accordance with the German Calibration Service DKD/DAkkS). Furthermore, an automatic mass handling system and pressure generation ensure fully automated calibration. The pressure balance has therefore been used for years in factory and calibration laboratories in industry, national institutes and research laboratories, and also in production by sensor and transmitter manufacturers.

**CPB6000**

**Highest-accuracy primary standard**

Measuring range: 4 … 5,000 bar
Accuracy: 0.0035 … 0.0015 %
Medium: Dry, clean air, nitrogen or special oil
Special feature: Different instrument variants for the highest demands

Data sheet: CT 32.01

**CPB6000DP**

**Primary standard for differential pressure**

Measuring range: 30 … 800 bar
Accuracy: 0.005 … 0.002 %
Medium: Non-corrosive gases
Special feature: For differential pressure measurements from 10 Pa to 800 bar

Data sheet: CT 32.02

**CPD8500**

**Digital pressure balance**

Measuring range: 1 … 500 bar (abs. and rel.)
Accuracy: 0.005 % … 0.0035 %
Medium: Non-corrosive, dry gases
Special feature: Unique principle of operation based on SI units, Intuitive operator interface, Automatic calibrations, no mass handling needed, Automatic compensation of the environmental conditions

Data sheet: CT 32.05
Calibration software

Easy and fast creation of a high-quality calibration certificate

The WIKA-Cal calibration software is used for generating calibration certificates or logger protocols for pressure measuring instruments and is available as a demo version for a cost-free download on the website. A template helps the user and guides him through the creation process of a document. Calibration certificates can be created with the Cal-Template and logger protocols can be created with the Log-Template.

Cal Demo
Generation of calibration certificates limited to 2 measuring points, with automatic initiation of pressures via a pressure controller.

Cal Light
Generation of calibration certificates with no limitations on measuring points, without automatic initiation of pressures via a pressure controller.

Cal
Generation of calibration certificates with no limitations on measuring points, with automatic initiation of pressures via a pressure controller.

Log Demo
Creation of data logger test reports, limited to 5 measured values.

Log
Creation of data logger test reports without limiting the measured values.

Multicalibration
The additionally charged “Multicalibration” licence can be ordered in addition to Cal Light or Cal. With this, it is possible to calibrate, incl. documentation, up to 16 test items simultaneously. The prerequisite is that the test items are of the same instrument model, measuring range and accuracy. During the parallel calibration, the measuring window for each test item can be viewed via a table view.

For pressure sensors, it is possible to use either several multimeters (such as model CPU6000-M, for example) or a multiplexer to which all multimeters will be connected. As multiplexers, Agilent 34970A and Netscanner 9816 are supported. The correct cabling is the responsibility of the operator.
Pressure generation

Portable pressure generation

Hand test pumps serve as pressure generators for the testing, adjustment and calibration of mechanical and electronic pressure measuring instruments through comparative measurements. These pressure tests can take place in the laboratory or workshop, or on site at the measuring point.

### CPP7-H

**Pneumatic hand test pump**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-850 mbar ... +7 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>Ambient air</td>
</tr>
<tr>
<td>Special feature</td>
<td>Pressure and vacuum generation switchable</td>
</tr>
<tr>
<td></td>
<td>Low weight</td>
</tr>
<tr>
<td></td>
<td>Compact dimensions</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 91.04</td>
</tr>
</tbody>
</table>

### CPP30

**Pneumatic hand test pump**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-950 mbar ... +35 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>Ambient air</td>
</tr>
<tr>
<td>Special feature</td>
<td>Pressure and vacuum generation switchable</td>
</tr>
<tr>
<td></td>
<td>Compact dimensions</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 91.06</td>
</tr>
</tbody>
</table>

### CPP700-H, CPP1000-H

**Hydraulic hand test pump**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>0 ... 700 or 0 ... 1,000 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>Oil or water</td>
</tr>
<tr>
<td>Special feature</td>
<td>Integrated medium reservoir</td>
</tr>
<tr>
<td></td>
<td>Ergonomic handling</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 91.07</td>
</tr>
</tbody>
</table>

### CPP1000-M, CPP1000-L

**Hydraulic hand spindle pump**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>0 ... 1,000 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medium</td>
<td>Oil or water</td>
</tr>
<tr>
<td>Special feature</td>
<td>Smooth-running internal precision spindle</td>
</tr>
<tr>
<td></td>
<td>Compact dimensions</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 91.05</td>
</tr>
</tbody>
</table>
Laboratory version

Comparison test pumps serve as pressure generators or controllers for the testing, adjustment and calibration of mechanical and electronic pressure measuring instruments. Due to their stable case, these test pumps are particularly suitable for stationary use in laboratories or workshops.

### CPP120-X
**Pneumatic comparison test pump**
- Measuring range: 0 ... 120 bar
- Medium: Clean, dry, non-corrosive gases
- Special feature:
  - Accurate pressure setting
  - Robust industrial series
  - External pressure supply required
- Data sheet: CT 91.03

### CPP1200-X
**Hydraulic comparison test pump**
- Measuring range: 0 ... 1,200 bar
- Medium: Oil or water
- Special feature:
  - Integrated tank
  - Dual-area spindle pump
  - Robust industrial series
- Data sheet: CT 91.08

### CPP4000-X
**Hydraulic comparison test pump**
- Measuring range: 0 ... 1,200 bar
- Medium: Oil or water
- Special feature:
  - Integrated tank
  - Dual-area spindle pump
  - Robust industrial series
- Data sheet: CT 91.09

### CPP1000-X, CPP1600-X
**Hydraulic comparison test pump**
- Measuring range: 0 ... 1,000 to 0 ... 1,600 bar
- Medium: Oil or water
- Special feature:
  - Integrated tank
  - Robust laboratory version with priming pump
  - Compact industrial series with priming pump
- Data sheet: CT 91.12

### CPP7000-X
**Hydraulic comparison test pump**
- Measuring range: 0 ... 7,000 bar
- Medium: Sebacate oil
- Special feature:
  - Integrated tank
  - Robust laboratory version with priming pump
- Data sheet: CT 91.13

Further information at www.wika.com
Reference thermometers

Highly accurate temperature measurement with reference thermometers

Reference thermometers (standard thermometers) are, due to their excellent stability and their geometrical adaptations, ideally suited for applications in industrial laboratories. They enable easy comparative calibration in baths, in tube furnaces and in dry-well calibrators. The advantage of reference thermometers is the wide temperature range, and with this, their flexible operation. Furthermore, with their low drift, a long service life is ensured.

**CTP2000**
Platinum resistance thermometer

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-200 ... +450 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability</td>
<td>&lt; 50 mK after 100 h at 450 °C</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Ø 4 mm, l = 500 mm</td>
</tr>
<tr>
<td>Special feature</td>
<td>■ 4-wire connection</td>
</tr>
<tr>
<td></td>
<td>■ Ends with 4 mm banana plugs</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 61.10</td>
</tr>
</tbody>
</table>

**CTP5000**
Reference thermometer

| Measuring range       | -196 ... +660 °C       |
| Probe type            | Pt100, Pt25            |
| Dimensions            | Depending on version   |
| Special feature       | ■ Flying leads         |
|                       | ■ DIN or SMART connector |
| Data sheet            | CT 61.20               |

**CTP5000-T25**
Reference thermometer

| Measuring range       | -189 ... +660 °C       |
| Probe type            | Pt25                   |
| Dimensions            | d = 7 mm, l = 480 mm   |
| Special feature       | ■ Flying leads         |
|                       | ■ DIN or SMART connector |
| Data sheet            | CT 61.25               |

**CTP9000**
Thermocouple

| Measuring range       | 0 ... 1,300 °C         |
| Thermocouple          | Type S per IEC 584, class 1 |
| Dimensions            | Ø 7 mm, l = 620 mm     |
| Special feature       | ■ Cold junction optional |
|                       | ■ 2,000 mm cable       |
| Data sheet            | CT 61.10               |

**CTP9000**
Thermocouple

| Measuring range       | 0 ... 1,300 °C         |
| Thermocouple          | Type S per IEC 584, class 1 |
| Dimensions            | Ø 7 mm, l = 620 mm     |
| Special feature       | ■ Cold junction optional |
|                       | ■ 2,000 mm cable       |
| Data sheet            | CT 61.10               |
Hand-holds

Hand-holds are portable calibration instruments for mobile use for the accurate measurement and recording of temperature profiles. For the instruments there are various designs of thermometers available. Through this, hand-holds are particularly suitable as test instruments for a large variety of applications in the widest range of industries. Data recorded in the hand-held can be evaluated via PC software, some instruments document calibrations in the internal memory, which can later be read on a PC. Optionally, a calibration certificate can be generated with our calibration software WIKA-Cal.

**CTR1000**  
Infrared hand-held thermometer
- Measuring range: -60 ... +1,000 °C
- Accuracy: ±2 K or ±2 % of reading
- Special feature: Thermocouple connection (optional)
- Data sheet: CT 55.21

**CTH6200**  
Hand-held thermometer
- Measuring range: -50 ... +250 °C
- Accuracy: < 0.2
- Probe type: Pt100
- Special feature: Integrated data logger
- Data sheet: CT 51.01

**CTH6300, CTH63I0**  
Hand-held thermometer
- Measuring range: -200 ... +1,500 °C
- Accuracy: ±0.1 ... ±1 K
- Probe type: Pt100, TC
- Special feature: 2 channels (optional), Ex version: Model CTH63I0
- Data sheet: CT 51.05

**CTH6500, CTH65I0**  
Hand-held thermometer
- Measuring range: -200 ... +1,500 °C
- Accuracy: ±0.03 ... ±0.2 K
- Probe type: Pt100, TC
- Special feature: Integrated data logger (optional), Ex version: Model CTH65I0
- Data sheet: CT 55.10

**CTH7000**  
Hand-held thermometer
- Measuring range: -200 ... +962 °C
- Accuracy: ±0.015 K
- Probe type: Pt100, Pt25 and NTC
- Special feature: Integrated data logger
- Data sheet: CT 55.50

Further information at www.wika.com
Calibration baths are electronic controllers which automatically, quickly and with the help of a liquid supply a temperature. Due to the high reliability, accuracy and exceptional homogeneity in the measuring chamber, calibration baths are particularly suitable as a factory/working standard for the automatic testing and/or calibration of the widest range of temperature probes - independent of diameter. A special micro calibration bath design enables on-site applications.

### CTB9100
**Micro calibration bath**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-35 ... +255 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±0.2 ... 0.3 K</td>
</tr>
<tr>
<td>Stability</td>
<td>±0.05 K</td>
</tr>
<tr>
<td>Special feature</td>
<td>Short heating and cooling times, Easy to use</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 46.30</td>
</tr>
</tbody>
</table>

### CTM9100-150
**Multi-function calibrator**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-35 ... +165 °C depending on the application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±0.3 K ... 1 K depending on the application</td>
</tr>
<tr>
<td>Stability</td>
<td>±0.02 K</td>
</tr>
<tr>
<td>Immersion depth</td>
<td>150 mm</td>
</tr>
<tr>
<td>Special feature</td>
<td>Use as a dry-well calibrator, micro calibration bath, infrared calibrator and surface calibrator</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 41.40</td>
</tr>
</tbody>
</table>

### CTB9400
**Calibration bath, medium measuring range**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>28 ... 300 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability</td>
<td>±0.02 K</td>
</tr>
<tr>
<td>Immersion depth</td>
<td>200 mm</td>
</tr>
<tr>
<td>Medium</td>
<td>Water, oil or similar media</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 46.20</td>
</tr>
</tbody>
</table>

### CTB9500
**Calibration bath, low measuring range**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-45 ... +200 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability</td>
<td>±0.02 K</td>
</tr>
<tr>
<td>Immersion depth</td>
<td>200 mm</td>
</tr>
<tr>
<td>Medium</td>
<td>Water, oil or similar media</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 46.20</td>
</tr>
</tbody>
</table>
Portable temperature calibrators (dry-well calibrators) are electronic controllers which automatically, quickly and dryly supply a temperature. Due to the high reliability, accuracy and simple operation, portable temperature calibrators are particularly suitable as a factory/working standard for the automatic testing and/or calibration of temperature measuring instruments of all types.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Measuring range</th>
<th>Accuracy</th>
<th>Stability</th>
<th>Immersion depth</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTD9100</td>
<td>Temperature dry-well calibrator</td>
<td>-55 … +650 °C</td>
<td>±0.15 … 0.8 K</td>
<td>±0.01 … 0.05 K</td>
<td>150 mm</td>
<td>CT 41.28</td>
</tr>
<tr>
<td>CTD9100-1100</td>
<td>High-temperature dry-well calibrator</td>
<td>200 … 1,100 °C</td>
<td>±0.3 K</td>
<td>±0.01 … 0.1 K</td>
<td>220 mm, bore depth 155 mm</td>
<td>CT 41.29</td>
</tr>
<tr>
<td>CTD9300</td>
<td>Temperature dry-well calibrator</td>
<td>-35 … +650 °C</td>
<td>±0.1 … 0.85 K</td>
<td>±0.01 … 0.1 K</td>
<td>150 mm</td>
<td>CT 41.38</td>
</tr>
<tr>
<td>CTD9100-375</td>
<td>Compact temperature dry-well calibrator</td>
<td>50 … 375 °C</td>
<td>±0.5 … 0.8 K</td>
<td>±0.05 K</td>
<td>100 mm</td>
<td>CT 41.32</td>
</tr>
<tr>
<td>CTI5000</td>
<td>Infrared calibrator</td>
<td>50 … 500 °C</td>
<td>±0.1 … 0.4 K</td>
<td>Large diameter of measuring surface</td>
<td>Data sheet CT 41.42</td>
<td></td>
</tr>
<tr>
<td>CTM9100-150</td>
<td>Multi-function calibrator</td>
<td>-35 … +165 °C depending on the application</td>
<td>±0.3 K … 1 K depending on the application</td>
<td>150 mm</td>
<td>Use as a dry-well calibrator, micro calibration bath, infrared calibrator and surface calibrator</td>
<td>Data sheet CT 41.40</td>
</tr>
</tbody>
</table>

Further information at www.wika.com
Resistance thermometry bridges

By using built-in or external standard resistors, resistance thermometry bridges measure resistance ratios with high accuracy, which are indicative of the temperature, among other things. These instruments are not only used in the field of temperature measurement, but – due to their high accuracy – also in electrical laboratories.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Type</th>
<th>Measuring range</th>
<th>Accuracy</th>
<th>Probe type</th>
<th>Special feature</th>
<th>Data sheet</th>
</tr>
</thead>
</table>
| CTR2000          | Precision thermometer              | -200 … +850 °C          | 0.01 K (4-wire), 0.03 K (3-wire)               | Pt100, Pt25         | ■ 3-wire measurement (optional)  
|                  |                                    |                         |                                               |                     | ■ Up to 8 channels integrated in the instrument (optional)                      | CT 60.10  |
| CTR3000          | Multi-functional precision         | -210 … +1,820 °C        | ±0.005 K (4-wire)                            | Pt100, Pt25,       | ■ Versatile applications by measuring thermocouples and resistance thermometers  | CT 60.15  |
|                  | thermometer                        |                         | ±0.03 K (3-wire)                             | thermocouples       | ■ Logger and scan functions  
|                  |                                    |                         | ±0.004 % + 2 µV for thermocouples             |                     | ■ Up to 44 channels possible                                                   |            |
| CTS3000          | Multiplexer                        | -210 … +1,820 °C        | ±0.005 K (4-wire)                            | Pt100, Pt25,       | ■ CTR3000 does not lose an input channel  
|                  |                                    |                         | ±0.03 K (3-wire)                             | Thermocouple        | ■ Various coupler connectors connectable  
|                  |                                    |                         | ±0.004 % + 2 µV for thermocouples             |                     | ■ Complete automatic calibration routines controllable                        |            |
| CTR6000          | DC resistance thermometry bridge   | -200 … +962 °C          | ±3 mK (full range)                           | PRT, thermistors    | ■ Expendable to up to 60 channels (optional)  
|                  |                                    |                         |                                               | fixed resistors     | ■ Internal resistors 25 Ω, 100 Ω, 10 kΩ, 100 kΩ                            | CT 60.30  |
| CTR6500          | AC resistance thermometry bridge   | -200 … +962 °C          | 0.1 … 1.25 mK depending on resistance ratio   | SPRT, PRT or fixed | ■ Expendable to up to 60 channels (optional)  
|                  |                                    |                         |                                               | resistors           | ■ Internal resistors 25 Ω, 100 Ω                                          | CT 60.40  |
| CTR9000          | Primary-standard resistance         | 0 … 260 Ω               | 0.01 K, optional 0.005 K                     | SPRT, PRT or fixed  | ■ Expendable to up to 60 channels (optional)  
|                  | thermometry bridge                 |                         |                                               | resistors           | ■ 4 selectable standby currents possible (optional)                           |          |

CTR3000 does not lose an input channel.  
Various coupler connectors connectable.  
Complete automatic calibration routines controllable.
Calibration | Temperature

Standard reference resistors, AC/DC

**Electrical comparison standard**

Reference resistors with high-accuracy, fixed resistance values, which are used in connection with resistance thermometry bridges. They are also used as standards in accredited electrical laboratories.

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**CER6000-RR**

**Reference resistor**

- **Resistance value**: 1, 10, 25, 100, 300, 400, 500, 1,000 and 10,000 Ω
- **Long-term stability**: < ±5 ppm per year
- **Special feature**: - Low temperature coefficient  
  - Rugged stainless steel construction
- **Data sheet**: CT 70.30

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**CER6000-RW**

**Standard reference resistor**

- **Resistance value**: 1, 10, 25, 100, 300, 400, 500, 1,000 and 10,000 Ω
- **Long-term stability**: ±2 ppm per year  
  (HS version 0.5 ppm per year)
- **Special feature**: - Low temperature coefficient  
  - Rugged stainless steel construction
- **Data sheet**: CT 70.30

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**Connections of the reference resistor, model CER6000-RR**

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Further information at www.wika.com
Accessories

From individual components ... to complete turnkey kits

The following accessory components are the ideal complement to the individual calibration instruments. Thus a complete solution is not only quickly and easily configured, but can also be installed in the same manner. The various packages complete the product programme for calibration technology and can be used in many different applications.

Customer-specific drilled inserts, silicone oil suited for calibration in micro calibration baths and interface cables complete the product portfolio for temperature.

You can find a detailed description in our catalogue “Accessories for calibration technology”.

Pressure supply case
Pressure and vacuum supply packages
Connection components
Pressure control

Calibration and adjustment tools

Temperature accessories
Engineered solutions

Test and calibration systems for workshops and laboratories

Turnkey customer-specific systems for adjustment and calibration of pressure and temperature measuring instruments

Precise calibration instruments are the basis for your test requirements, even though they are only one component of a high-performance calibration system. From our extensive product range, we can design a complete and individual solution with adaptability for test items, pressure and vacuum supply, components for pressure control and fine adjustment, through to voltage supply and multimeters for the calibration of electrical test items.

Whether built-in to test benches, mobile test carts or 19" racks and supplemented with user-friendly calibration software, you will get a complete system, tailored to your requirements with the desired level of automation. Benefit from our many years of practical experience in WIKA’s own accredited laboratories.
Test stands and calibration systems for production

From consultation through design to implementation - all from one source.
Our particular strength lies in the project planning, development and the building of complete, individual, application-specific systems – from simple manual work stations to fully automated test systems in production lines for the calibration and adjustment of pressure sensors and process transmitters.

The precise interaction of measurement technology, test system mechanics and control components is a top priority here. The complete solutions are available in the widest range of automation levels incl. tempering units, workpiece transport systems, workpiece fixtures and electrical and pressure-side contacting. Furthermore, there is the possibility of integrating mounting or labelling operations on the test components into the overall concept.

<table>
<thead>
<tr>
<th>19&quot; test and calibration racks for pressure sensors</th>
<th>Batch test systems</th>
<th>Inline calibration systems for pressure sensors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>Customer-specific</td>
<td>Measuring range</td>
</tr>
<tr>
<td></td>
<td>Up to 700 bar pneumatic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Up to 1,600 bar hydraulic</td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>Down to 0.008 %</td>
<td>Accuracy</td>
</tr>
<tr>
<td>Special feature</td>
<td>Compact units with CPC series pressure controllers, working pressure supply, electrical supply and signal evaluation for the test items</td>
<td>Special feature</td>
</tr>
</tbody>
</table>

Quadregulators and cylinder pressure controllers

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<th>Customer-specific</th>
<th>Measuring range</th>
<th>Customer-specific</th>
<th>Measuring range</th>
<th>Customer-specific</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Up to 400 bar pneumatic</td>
<td></td>
<td>Up to 1,050 bar pneumatic</td>
<td></td>
<td>Up to 1,050 bar pneumatic</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Down to 0.008 %</td>
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<tr>
<td>Special feature</td>
<td>Compact units with pressure accumulators in combination with CPC series pressure controllers, for fast and precise pressure control, even in large test volumes, opti- nally including operating pressure supply</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

Further information at www.wika.com
Leak and pressure function test systems for production

The selection of a suitable test method and the use of proven measurement and valve technology are the basic prerequisites for a reliable and cost-effective testing in series production. Only the perfect interaction of all systems involved in the testing process ensures a safe and efficient quality inspection.

We offer individual and turnkey solutions in various degrees of automation for a wide variety of applications, from simple test equipment through semi-automatic test benches to fully automated testing systems.

The testing processes can also be combined with assembly processes, laser marking, automated parts handling (infeed/outfeed) - in addition, the chaining of several stations is possible.

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### Test benches for safety and control valves

For regular functional and safety testing of valves. Each system also includes a leak test and a clear and user-friendly control system.

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### Pneumatic leak test systems

Test method:
- Pressure drop methods
- Pressure rise methods
- Differential pressure methods

Detection limit: Typically up to $10^{-3}$ mbar * l/s

Special feature: Stable and quick measurement using sensor technology with higher resolution and measurement accuracy, proven valve technology, dead-volume optimised equipment design

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### Helium leak test systems

Test method:
- Integral vacuum methods
- Accumulation methods (under atmosphere)
- Sniff test methods

Detection limit: Typically up to $10^{-8}$ mbar * l/s

Special feature: High detection limit with temperature-independent testing, even for high test pressures up to 600 bar

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### Test benches for safety valves

Valve sizes: From ½” ANSI … 16” ANSI

Jointing type:
- Screw connection from ½” ... 2" NPT/BSP
- Flange connection from ½” ... 14” RF

Test pressures:
- Pneumatic up to 300 bar
- Hydraulic up to 700 bar

Design of the clamping device:
- Manually for threaded or flange connections up to 6”
- Hydraulic clamping with adjustable torque and clamping force for nominal sizes up to 16”

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### Test benches for control valves

Valve sizes: From ¼” ANSI … 24” ANSI, maximum clamping force 300 tons

Jointing type:
- Screw connection from ½” ... 2” NPT/BSP
- Flange connection from ½” ... 14” RF

Test pressures:
- ANSI 300 up to ANSI 2500

Design of the clamping device:
- Manually for threaded or flange connections up to 6”
- Hydraulic clamping with adjustable torque and clamping force for nominal sizes up to 24”

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### Pneumatic or helium leak testing

- on fittings, valves, hoses, coolers, pumps, filters and many other test parts.

### Pressure function tests or setting procedures

- e.g. for
  - control pressure of pressure reducers or thermostat control valves
  - the opening pressure of safety relief valves
  - switch points of pressure switches and control valves
  - pressure containment of different components
Service for customer-specific systems

We are also happy to support you with service activities!

After the consultation, conceptual design and realisation of the tailor-made complete solution, naturally, we also support you with our equipment service. With our many years of experience in service, we remain by your side as a competent partner. Commission us to carry out preventive maintenance to minimise unplanned breakdowns.

You’ll benefit from individually tailored spare parts package. We always keep a wide selection of spare parts on stock. Manufacturer-independent calibrations can also - in parallel with maintenance - be carried out in one of our mobile laboratories, directly in your plant. Thus, downtime is reduced to a minimum.

Mobile calibration service

The measurement technology integrated into the plant can be recalibrated on-site. For pressure measuring instruments, a recalibration from -1 … +8,000 bar can be carried out, and for temperature measuring instruments, from -55 … +1,100 °C. Maintenance and service activities through our on-site calibration service ensure short downtimes.

Preventive maintenance

Regular and comprehensive system maintenance of mechanical components can prevent premature wear. Furthermore, the risk of unforeseen equipment downtime can be minimised. We are happy to advise you regarding the ideal maintenance intervals.

Spare parts packages

For a quick response to unforeseen component failures, we can assemble system-specific spare parts packages for you. Thus a quick reaction is possible in the event of wear. Furthermore, we always keep a wide selection of spare parts on stock.

Service training

In addition to the commissioning training for the operating personnel, we also offer system-specific service training for various levels of maintenance. These can be tailored to your individual needs with regard to your system configuration.

Support in the event of failures

If an unscheduled failure does occur, our service hotline is available during business hours. Your request will be dealt with quickly in a standardised process and trained service technicians will take over the troubleshooting.

Service hotline: +49 9372 132 5049

Further information at www.wika.com
Our calibration laboratories have been calibrated for pressure and temperature for over 30 years. Since 2014, our calibration laboratory has also been accredited for the electrical measurands DC current, DC voltage and DC resistance. Recently, factory calibration for force and length measuring instruments has been expanding our portfolio.

Manufacturer-independent calibration - fast and precise for ...

### Pressure
- -1 bar ... +10,000 bar
- Calibration using working standards (precise electrical pressure measuring instruments) or high-accuracy reference standards (pressure balances)
- With an accuracy of 0.003 % ... 0.01 % of reading
- In accordance with the directives DIN EN 837, DAkkS-DKD-R 6-1 or EURAMET cg-3

### Temperature
- -196 °C ... +1,200 °C (to +1,600 bar possible with factory calibration)
- Comparative calibration in calibration baths and tube furnaces with an accuracy of down to 1.5 mK
- Calibration at fixed points of ITS90 with the smallest possible measurement uncertainties
  - Triple point of mercury (-38.8344 °C)
  - Triple point of water (0.01 °C)
  - Melting point of gallium (29.7646 °C)
  - Solidification point of tin (231.928 °C)
  - Solidification point of zinc (419.527 °C)
  - Solidification point of aluminium (660.323 °C)
- In accordance with the appropriate DKD/DAkkS directives

ISO 9001 certified
- DKD/DAkkS accredited
  (in accordance with DIN EN ISO/IEC 17025)
- Cooperation in the DKD/DAkkS working groups
- Over 60 years of experience in pressure and temperature measurement
- Highly qualified, individually trained personnel
- Latest reference instruments with the highest accuracy

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

In our calibration van or on your workbench

- Factory calibration
- Replacement of the measuring device if required
- Calibration of special-purpose gauges in accordance with customer drawings
- Calibratable measuring devices
  - Caliper gauges to 800 mm
  - Testing pins to 100 mm
  - Ring gauges and plug gauges to 150 mm
  - Tapered thread gauges to 150 mm
  - Gauge blocks to 170 mm
  - (also possible as a set)
  - others on request

Calibratable measuring devices
- DC current from 0 mA ... 100 mA
- DC voltage from 0 V ... 100 V
- DC resistance from 0 Ω ... 10 kΩ
- In accordance with the directives VDI/VDE/DGQ/DKD 2622

In accordance with the directive DIN EN 10204

Factory calibration

- 50 N ... 6 MN
- With a system accuracy from 0.5 % in tension and compression force direction
- In accordance with the directive DIN EN 10204

On site (pressure and temperature)

- Current, voltage, resistance
- Length
- Force
- Calibratable measuring devices
  - Caliper gauges to 800 mm
  - Testing pins to 100 mm
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Service for diaphragm seal systems

Diaphragm seal systems are used for demanding measuring requirements with extreme medium temperatures of -90 °C up to +400 °C in the process industry. The diaphragm seal assemblies protect the measuring instrument from aggressive, corrosive, heterogeneous, abrasive, highly viscous or toxic media.

With this service, the total costs of the diaphragm seal system can be clearly lowered. In this way, the service life of the measuring instrument can be fully utilised and only the diaphragm seal assembly needs replacement or repair, preventatively or after failure.

With a preventative repair, scheduled in line with planned shutdowns to your plant, you can reduce downtimes.

Services covered
- Replacement service for diaphragm seal systems with process transmitters or mechanical measuring instruments
- Repair of the defective parts
- Optimisation of the existing diaphragm seal system

Your benefits
- Cost and time saving
- Functional test of a process transmitter
- Current material certificate
- New calibration of the entire system
Field service for temperature measurements

Supervision, installation, welding work, troubleshooting, repair, analysis & inspection

Our qualified personnel support you with the on-site installation and commissioning of your instrumentation, as well as being a competent and available service partner.

We are the right contact for both new projects and maintenance measures for shutdown, as well as in the event of an unplanned failure.

Our practically experienced service team ensures that your processes can be operated safely and efficiently and thus meet the demands on you.

Through our local experts, we can be reached worldwide, quickly available and tuned to individual circumstances.

Your benefits
- Short downtimes
- Fast commissioning
- Ensuring process safety
- Extended warranty possible
- Compliance with local safety instructions
- Environmentally conscious handling

Mobile service team

Signal transmission and functional testing
In our segment brochures, you will find the entire product families for the areas of “ventilation and air-conditioning”, “sanitary applications”, “SF₆ lifecycle solutions” and “high purity & ultra high purity” and also their technical distinctions.

**Ventilation and air-conditioning**

**Sanitary applications**

**SF₆ solutions**

**High purity & ultra high purity**
Visit us on our website and on our social media channels.

Find out about our wide range of measurement technology and services, or market sectors. Download 3D drawings, technical documents or informative brochures. And please register for our free newsletter!

In our blog, you can expect many interesting articles on the theme of measurement technology. Furthermore, there are various insights into the world of the WIKA Group.

Follow us on LinkedIn. Stay up-to-date with our news on products and applications, but also on important events within the WIKA Group.

We are also happy to welcome you to our YouTube channel. Here we don’t just promote our company, but also present complex technical contents, explained in a simple and understandable way.