WIKA
Standard product portfolio

Pressure | Temperature | Level | Force | Flow | Calibration technology
As a family-run business acting globally, with over 9,300 highly qualified employees, the WIKA group of companies is a worldwide leader in pressure and temperature measurement. The company also sets the standard in the measurement of level, force and flow, and in calibration technology.

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

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

With numerous wholly owned subsidiaries and partners, WIKA competently and reliably supports its customers worldwide. Our experienced engineers and sales experts are your competent and dependable contacts locally.
In this brochure you will find standard products from all WIKA product lines.

### Contents

- **Pressure**
  - Display
  - Transmit
  - Switch
  - Additional products and accessories

- **Temperature**
  - Display
  - Transmit + Record
  - Switch
  - Additional products and accessories

- **Level**
  - Display
  - Transmit
  - Switch
  - Additional products and accessories

- **Force**
  - Force transducers
  - Load cells

- **Flow**
  - Primary flow elements
  - Flow switches

- **Calibration**
  - Pressure
  - Temperature
  - Additional products and accessories

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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
- SF₆ lifecycle 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 EN 837-1 (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.

111.10, 111.12
Standard version

Plastic case, liquid filling

Nominal size 27, 40, 50, 63, 80, 100, 160 mm
Scale range
- NS 27: 0…4 to 0…25 bar and
- NS 40…100: 0…100 to 0…400 bar
- NS 160: 0…40 bar
Accuracy class 2.5, 1.6 optional
NS 27: 4.0
Data sheet PM 01.01, PM 01.17

111.11
Welding gauge ISO 5171

Nominal size 40, 50, 63 mm
Scale range 0…0.6 to 0…400 bar
Accuracy class 2.5
Data sheet PM 01.03

111.16, 111.26
Panel mounting series

Nominal size 40, 50, 63 mm, model 111.26 also 80 mm
Scale range
- 0…1 to 0…400 bar
Accuracy class 2.5
NS 27: 4.0
Data sheet PM 01.10, PM 01.15

113.13

Nominal size 40, 50, 63 mm
Scale range 0…0.6 to 0…400 bar
Accuracy class 2.5
Data sheet PM 01.04

214.11
Edgewise panel design

Nominal size 96 x 96, 72 x 72
Scale range
- NS 96: 0…0.6 to 0…1,000 bar
- NS 72: 0…0.6 to 0…400 bar
Accuracy class 1.6, 1.0
Data sheet PM 02.07

116.15
DirectDrive, spiral tube

Nominal size 36, 41 mm
Scale range 0…185 to 0…450 bar
Accuracy class 4.0
Data sheet PM 01.16
212.20
Stainless steel case

<table>
<thead>
<tr>
<th>Specification</th>
<th>113.53, 213.53</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>100, 160 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>0 ... 600 bar</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>1.0</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PM 02.01</td>
</tr>
</tbody>
</table>

213.40
Heavy-duty version, liquid filling

<table>
<thead>
<tr>
<th>Specification</th>
<th>100.02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>63, 80 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>0 ... 16 bar</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>2.5 °C</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PM 01.23</td>
</tr>
</tbody>
</table>

113.53, 213.53
Stainless steel case, liquid filling

<table>
<thead>
<tr>
<th>Specification</th>
<th>PM 01.24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>63, 80 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>0 ... 16 bar</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>2.5 °C</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PM 01.24</td>
</tr>
</tbody>
</table>

Thermomanometers

MFT
With capillaries, for pressure and temperature measurement

<table>
<thead>
<tr>
<th>Specification</th>
<th>PM 01.20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>40, 42, 52 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>Pressure 0 ... 4 bar, Temperature 0 ... 120 °C</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>Pressure 2.5 (EN 837-1), Temperature 2.5</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PM 01.20</td>
</tr>
</tbody>
</table>

THM10
Eco version, for pressure and temperature measurement

<table>
<thead>
<tr>
<th>Specification</th>
<th>PM 01.24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>63, 80 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>Pressure 0 ... 4 bar, Temperature 0 ... 120 °C</td>
</tr>
<tr>
<td>Connection location</td>
<td>Lower mount or back mount</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>Pressure 2.5 (EN 837-1), Temperature 2.5 (EN 13190)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PM 01.24</td>
</tr>
</tbody>
</table>

100.02
For pressure and temperature measurement

<table>
<thead>
<tr>
<th>Specification</th>
<th>PM 01.23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>63, 80 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>Pressure 0 ... 16 bar, Temperature 0 ... 150 °C</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>Pressure 2.5 (EN 837-1), Temperature 2.5 °C</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PM 01.23</td>
</tr>
</tbody>
</table>

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

Stainless steel

The application areas for these pressure gauges, manufactured entirely in stainless steel, are 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 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.

<table>
<thead>
<tr>
<th>131.11</th>
<th>Compact version</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>NS 40, 50: 0 ... 1 to 0 ... 600 bar</td>
</tr>
<tr>
<td><strong>NS 63: 0 ... 1 to 0 ... 1,000 bar</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Accuracy class</strong></td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Ingress protection</strong></td>
<td>IP65</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>PM 01.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>232.50, 233.50</th>
<th>For the process industry, standard version</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal size</strong></td>
<td>63, 100, 160 mm</td>
</tr>
<tr>
<td><strong>Scale range</strong></td>
<td>NS 63: 0 ... 1 to 0 ... 1,000 bar</td>
</tr>
<tr>
<td><strong>NS 100: 0 ... 0.6 to 0 ... 1,000 bar</strong></td>
<td></td>
</tr>
<tr>
<td><strong>NS 160: 0 ... 0.6 to 0 ... 1,600 bar</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Accuracy class</strong></td>
<td>1.0 (NS 100, 160), 1.6 (NS 63)</td>
</tr>
<tr>
<td><strong>Ingress protection</strong></td>
<td>IP65</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>PM 02.02</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>232.30, 233.30</th>
<th>For the process industry, safety version</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal size</strong></td>
<td>63, 100, 160 mm</td>
</tr>
<tr>
<td><strong>Scale range</strong></td>
<td>NS 63: 0 ... 1 to 0 ... 1,000 bar</td>
</tr>
<tr>
<td><strong>NS 100: 0 ... 0.6 to 0 ... 1,000 bar</strong></td>
<td></td>
</tr>
<tr>
<td><strong>NS 160: 0 ... 0.6 to 0 ... 1,600 bar</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Accuracy class</strong></td>
<td>1.0 (NS 100, 160), 1.6 (NS 63)</td>
</tr>
<tr>
<td><strong>Ingress protection</strong></td>
<td>IP65</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>PM 02.04</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>232.36, 233.36</th>
<th>High overload safety up to the 4-fold full scale value, safety version</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal size</strong></td>
<td>100, 160 mm</td>
</tr>
<tr>
<td><strong>Scale range</strong></td>
<td>0 ... 0.6 to 0 ... 40 bar</td>
</tr>
<tr>
<td><strong>Overload safety</strong></td>
<td>Up to 4 times the measuring range</td>
</tr>
<tr>
<td><strong>Accuracy class</strong></td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>PM 02.15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>222.30, 223.30</th>
<th>For highest pressure applications to 7,000 bar, safety version</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal size</strong></td>
<td>160 mm</td>
</tr>
<tr>
<td><strong>Scale range</strong></td>
<td>0 ... 2,500 to 0 ... 7,000 bar</td>
</tr>
<tr>
<td><strong>Accuracy class</strong></td>
<td>1.0</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>PM 02.09</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>232.34, 233.34</th>
<th>Process Gauge, safety version per ASME B40.100</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal size</strong></td>
<td>4 1/4”</td>
</tr>
<tr>
<td><strong>Scale range</strong></td>
<td>0 ... 0.6 bar to 0 ... 1,000 bar</td>
</tr>
<tr>
<td><strong>Accuracy class</strong></td>
<td>Grade 2A</td>
</tr>
<tr>
<td><strong>Ingress protection</strong></td>
<td>IP54 per EN 60529 / IEC 529 (with liquid filling IP65)</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>PM 02.10</td>
</tr>
</tbody>
</table>
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 gauges specified here, a DKD/DAkkS certificate can be provided.

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Accuracy class</th>
<th>Nominal size</th>
<th>Scale range</th>
<th>Ingress protection</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>312.20</td>
<td>Copper alloy, class 0.6</td>
<td>0.6</td>
<td>160 mm</td>
<td>0 … 0.6 to 0 … 600 bar</td>
<td>IP54</td>
<td>PM 03.01</td>
</tr>
<tr>
<td>332.50</td>
<td>Stainless steel, standard version, class 0.6</td>
<td>0.6</td>
<td>160 mm</td>
<td>0 … 0.6 to 0 … 1,600 bar</td>
<td>IP65</td>
<td>PM 03.06</td>
</tr>
<tr>
<td>332.30</td>
<td>Stainless steel, safety version, class 0.6</td>
<td>0.6</td>
<td>160 mm</td>
<td>0 … 0.6 to 0 … 1,600 bar</td>
<td>IP65</td>
<td>PM 03.05</td>
</tr>
<tr>
<td>342.11</td>
<td>Class 0.1, with transport case and acceptance test certificate</td>
<td>0.1</td>
<td>250 mm</td>
<td>0 … 1 to 0 … 1,600 bar</td>
<td>IP54</td>
<td>PM 03.03</td>
</tr>
<tr>
<td>610.20</td>
<td>For low pressure ranges to 600 mbar, class 0.6</td>
<td>0.6</td>
<td>160 mm</td>
<td>0 … 10 to 0 … 600 mbar</td>
<td>IP54</td>
<td>PM 06.09</td>
</tr>
</tbody>
</table>
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
Heavy-duty version, 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 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.

611.10
Standard version

Nominal size 50, 63 mm
Scale range 0 … 25 to 0 … 600 mbar
Accuracy class 1.6
Ingress protection IP54
Data sheet PM 06.01

611.13
Plastic case

Nominal size 50, 63 mm
Scale range 0 … 60 to 0 … 600 mbar
Accuracy class 2.5
Ingress protection IP53
Data sheet PM 06.12

612.20
Stainless steel case

Nominal size 63, 100, 160 mm
Scale range 0 … 6 to 0 … 600 mbar
Accuracy class 1.6
Ingress protection IP54
Data sheet PM 06.02

614.11, 634.11
Edgewise panel design

Nominal size 72 x 72, 96 x 96, 144 x 144, 144 x 72 mm
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
Accuracy class 1.6
Data sheet PM 06.05

632.50
For the process industry

Nominal size 63, 100, 160 mm
Scale range
- NS 63: 0 … 40 to 0 … 600 mbar
- NS 100: 0 … 16 to 0 … 600 mbar
- NS 160: 0 … 2.5 to 0 … 600 mbar
Accuracy class 1.6
Ingress protection IP54, with liquid filling IP65
Data sheet PM 06.03

632.51
For the process industry, high overload safety

Nominal size 100, 160 mm
Scale range 0 … 2.5 mbar to 0 … 100 mbar
Accuracy class 1.6
Ingress protection IP54
Data sheet 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 tanks
- the overpressure in clean rooms
- the flow of gaseous and liquid media
- and they control pumping plants

### 700.01, 700.02

**With magnetic piston or with magnetic piston and separating diaphragm**

- **Nominal size:** 80 mm
- **Scale range:**
  - 700.01: 0 … 400 mbar to 0 … 10 bar
  - 700.02: 0 … 160 mbar to 0 … 2.5 bar
- **Accuracy class:** 700.01: ±3 %, 700.02: ±5 % with increasing differential pressure
- **Ingress protection:** IP54
- **Data sheet:** PM 07.14

### 711.12, 731.12

**With parallel entry, copper alloy or stainless steel**

- **Nominal size:** 100, 160 mm
- **Scale range:**
  - 0 … 0.6 to 0 … 1,000 bar
- **Accuracy class:** 1.6
- **Ingress protection:** IP65
- **Data sheet:** PM 07.02

### DPG40

**With integrated working pressure indication (DELTA-plus)**

- **Nominal size:** 100 mm
- **Scale range:**
  - 0 … 0.16 to 0 … 10 bar
- **Accuracy class:** 2.5
- **Ingress protection:** IP65
- **Data sheet:** PM 07.20

### 716.11, 736.11

**For very low differential pressures from 2.5 mbar, copper alloy or stainless steel**

- **Nominal size:** 100, 160 mm
- **Scale range:**
  - NS 100: 0 … 10 to 0 … 250 mbar
  - NS 160: 0 … 2.5 to 0 … 250 mbar
- **Accuracy class:** 1.6
- **Ingress protection:** IP66
- **Data sheet:** PM 07.07

### 732.14

**For the process industry, high overload safety to 40, 100, 250 or 400 bar**

- **Nominal size:** 100, 160 mm
- **Scale range:**
  - 732.14: 0 … 60 to 0 … 250 mbar (measuring cell DN 140)
  - 0 … 0.25 to 0 … 40 bar (measuring cell DN 82)
- **Accuracy class:** 1.6
- **Ingress protection:** IP54, with liquid filling IP65
- **Data sheet:** PM 07.05

### 732.51

**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, with liquid filling IP65
- **Data sheet:** PM 07.05
Absolute pressure gauge

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.

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.

532.52, 532.53, 532.54

High overload safety

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>100, 150 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 ... 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>

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>DG-10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy</strong> (%) of span</td>
<td>≤ 0.5 ± 1 digit</td>
</tr>
<tr>
<td><strong>Measuring range</strong></td>
<td>0 … 5 bar to 0 … 600 bar</td>
</tr>
<tr>
<td></td>
<td>-1 … +5 bar to -1 … +10 bar</td>
</tr>
<tr>
<td><strong>Special feature</strong></td>
<td>Robust stainless steel case, nominal size 80 mm</td>
</tr>
<tr>
<td></td>
<td>Multi-functional display</td>
</tr>
<tr>
<td></td>
<td>Efficient energy management</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>PE 81.66</td>
</tr>
</tbody>
</table>

### CPG500

Digital pressure gauge

<table>
<thead>
<tr>
<th>Feature</th>
<th>CPG500</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy</strong> (%) of span</td>
<td>0.25 ± 1 digit</td>
</tr>
<tr>
<td><strong>Measuring range</strong></td>
<td>0 … 60 to 0 … 1,000 bar</td>
</tr>
<tr>
<td></td>
<td>-1 … +20 to -1 … +40 bar</td>
</tr>
<tr>
<td><strong>Special feature</strong></td>
<td>Robust case with protective rubber cap</td>
</tr>
<tr>
<td></td>
<td>Simple operation using four buttons</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>CT 09.01</td>
</tr>
</tbody>
</table>

### CPG1500

Precision digital pressure gauge

<table>
<thead>
<tr>
<th>Feature</th>
<th>CPG1500</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accuracy</strong> (%) of span</td>
<td>Up to 0.05 % FS</td>
</tr>
<tr>
<td><strong>Measuring range</strong></td>
<td>-1 … +1,000 bar</td>
</tr>
<tr>
<td><strong>Special feature</strong></td>
<td>Integrated data logger</td>
</tr>
<tr>
<td></td>
<td>WIKA-Cal compatible</td>
</tr>
<tr>
<td></td>
<td>Data transfer via WIKA-Wireless</td>
</tr>
<tr>
<td></td>
<td>Robust case IP65</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>CT 10.51</td>
</tr>
</tbody>
</table>
Process 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 ... 1,000 bar
  - 0 ... 1.6 to 0 ... 60 bar abs.
  - -0.2 ... +0.2 to -1 ... +40 bar
- **Special feature**
  - Multi-functional display
  - Freely scalable measuring range
  - Conductive plastic case or stainless steel case
  - Large LC display, rotatable

**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 (turndown to 30:1)
  - Static load 160 bar, 420 bar optional
  - Case from plastic, aluminium or stainless steel
  - With integrated display and instrument mounting bracket for wall/pipe mounting (optional)

**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**
  - Multi-functional display (optional)
  - Freely scalable measuring range
  - Simple menu navigation
  - Case from plastic, aluminium or stainless steel in hygienic design
  - Large LC display, rotatable

**IPT-10, IPT-11**
Process pressure transmitter, intrinsically safe or with flame-proof enclosure

- **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 ... 60 bar abs.
  - -1 ... 0 to -1 ... +60 bar
- **Special feature**
  - Freely scalable measuring ranges (turndown to 30:1)
  - Case from plastic, aluminium or stainless steel
  - Flush process connection (optional)
  - With integrated display and instrument mounting bracket for wall/pipe mounting (optional)

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-11
Flush diaphragm

Non-linearity

± % of span ≤ 0.25 or 0.5 BFSL

Measuring range

■ 0 … 0.1 to 0 … 25 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

S-20
For superior industrial applications

Non-linearity

± % of span ≤ 0.125, 0.25 or 0.5 BFSL

Measuring range

■ 0 … 0.4 to 0 … 1,600 bar
■ 0 … 0.4 to 0 … 40 bar abs.
■ -1 … 0 to -1 … +59 bar

Special feature

■ Extreme operating conditions
■ Customer-specific variants
■ Free test report

Data sheet

PE 81.61

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)

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 … 1,000 bar
■ 0 … 0.4 to 0 … 16 bar abs.
■ -1 … 0 to -1 … +25 bar

Special feature

■ Low-power version
■ For sour gas applications (NACE)
■ Further worldwide Ex approvals

Data sheet

PE 81.27
### HP-2

**For highest pressure applications to 15,000 bar**

- **Accuracy** (± % of span): ≤ 0.25 or 0.5
- **Measuring range**: 0 ... 1,600 to 0 ... 15,000 bar
- **Special feature**: Very high long-term stability, Excellent load cycle stability, Cavitation protection (optional)
- **Data sheet**: PE 81.53

### M-10, M-11

**Spanner width 19**

- **Non-linearity** (± % of span): ≤ 0.2 BFSL
- **Measuring range**: 0 ... 6 to 0 ... 1,000 bar
- **Special feature**: Small spanner width 19 mm, Flush connection G ¼ available
- **Data sheet**: PE 81.25

### P-30, P-31

**For precision measurements**

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

### MHC-1

**For mobile working machines, CANopen® or J1939**

- **Accuracy** (± % of span): ≤ 1 or 0.5
- **Measuring range**: 0 ... 60 to 0 ... 1,000 bar
- **Special feature**: Tested for harsh environmental conditions, Robust instrument design, Version with integrated Y-connector
- **Data sheet**: PE 81.49

Further information at www.wika.com
OEM pressure sensors

**O-10**
For industrial applications

- Non-linearity: ≤ 0.5 BFSL
- Measuring range: 0 ... 6 to 0 ... 600 bar
- Special feature: For OEM quantities, Customer-specific variants, Special version for applications with water as medium

Data sheet: PE 81.65

**MH-3**
For mobile working machines

- Accuracy: ≤ 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: ≤ 2
- Measuring range: 0 ... 6 to 0 ... 160 bar
- Special feature: Special case design for the best possible condensation tightness, Resistant to all common refrigerants

Data sheet: PE 81.45

**C-2**
For air compressors

- Accuracy: ≤ 1 or 2
- Measuring range: 0 ... 6 to 0 ... 60 bar
- Special feature: Robust design, Compact design, Long service life and high reliability

Data sheet: PE 81.47

**MG-1**
For medical gases

- Accuracy: ≤ 2
- Measuring range: 0 ... 6 to 0 ... 400 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!

**TTF-1**
Metal thin-film sensor assembly

- Non-linearity (± % of span) ≤ 0.1 ... 0.5
- Measuring range 0 ... 10 to 0 ... 1,000 bar
- Special feature
  - Excellent resistance to media
  - Very good pressure spike and burst pressure safety
- Signal mV/V
- Data sheet PE 81.16

**SCT-1**
Ceramic sensor assembly

- Non-linearity (± % of span) ≤ 0.25 ... 0.5
- Measuring range 0 ... 2 to 0 ... 100 bar
- Special feature
  - Excellent resistance to media
- Signal mV/V
- Data sheet PE 81.40

**SPR-2, TPR-2**
Piezo sensor element and sensor assembly

- Non-linearity (± % of span) ≤ 0.3
- Measuring range 0 ... 0.4 to 0 ... 25 bar
- Special feature
  - Gauge and absolute pressure measurement
  - High output signal
  - High overload safety
- Signal mV/V
- Data sheet PE 81.62

**TI-1**
Piezo or metal thin-film sensor module

- Accuracy (± % of span) ≤ 0.25
- Measuring range 0 ... 0.4 to 0 ... 1,000 bar
- Special feature
  - Processed signal
  - High variance in process connections
- Signal Analogue and digital
- Data sheet PE 81.57
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 sensors. 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 of the instruments can be delivered in accordance with ATEX Ex ia.

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 to the 10-fold full scale value, max. 40 bar
- Nominal size: 100, 160 mm
- Scale range: 2.5 … 100 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: 2.5 … 100 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**

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>100, 160 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>0 ... 16 mbar to 0 ... 25 bar</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>1.6</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP54, filled IP65</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 17.05</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>100, 160 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>0 ... 60 mbar to 0 ... 40 bar</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>1.6</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP54, filled IP65</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 17.13</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>100 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>0 ... 0.16 to 0 ... 10 bar</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>2.5 (1.6 optional)</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP65</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 17.19</td>
</tr>
</tbody>
</table>

### APGT43
**Absolute pressure, for the process industry**

<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>2.5</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP54, with liquid filling IP65</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 15.02</td>
</tr>
</tbody>
</table>
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 830E, 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 IP54, IP65
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 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>100, 160 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>0 … 25 mbar to 0 … 40 bar</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>1.6</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP54, with liquid filling IP65</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 24.07</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>100, 160 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>0 … 25 mbar to 0 … 25 bar abs.</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>1.6</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP54, with liquid filling IP65</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 25.02</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>100, 160 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>0 … 2.5 to 0 … 100 mbar</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>1.6</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP54</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 26.06</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>100 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>0 … 0.25 to 0 … 10 bar</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>2.5 (1.6 optional)</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP65</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 27.20</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>100, 160 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>0 … 0.16 mbar to 0 … 25 bar</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>1.6</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP54, filled IP65</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 27.05</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>100, 160 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>0 … 60 mbar to 0 … 40 bar</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>1.6</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP54, filled IP65</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 27.13</td>
</tr>
</tbody>
</table>

Further information at www.wika.com
Pressure switches

Electronic pressure switches

**PSD-30, PSD-31**
Electronic pressure switch with display

<table>
<thead>
<tr>
<th>Accuracy (± % of span)</th>
<th>≤ 1</th>
</tr>
</thead>
</table>
| Measuring range         | ■ 0 ... 0.6 to 0 ... 1,000 bar  
                          | ■ 0 ... 1 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  
                          | ■ Flush process connection (optional) |
| Data sheet              | PE 81.67 |

**PSA-31**
Electronic pressure switch with display for sanitary applications

<table>
<thead>
<tr>
<th>Accuracy (± % of span)</th>
<th>≤ 1</th>
</tr>
</thead>
</table>
| Measuring range         | ■ 0 ... 1 to 0 ... 25 bar  
                          | ■ 0 ... 1 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  |
| Data sheet              | PE 81.85 |

**PSM01**
OEM compact pressure switch, standard version

| Setting range           | -0.85 ... -0.15 bar  
                          | 0.2 ... 2 bar to 40 ... 400 bar |
| Switching function      | Change-over contact (SPDT) |
| Material                | Galvanised steel, stainless steel |
| Switching power         | 1A/4A, AC 48 V  
                          | 0.5A/2A, DC 24 V |
| Data sheet              | PV 34.81 |

**PSM02**
OEM compact pressure switch, with settable hysteresis

| Setting range           | -0.85 ... -0.15 bar  
                          | 0.2 ... 2 bar to 40 ... 400 bar |
| Switching function      | Change-over contact (SPDT) |
| Material                | Galvanised steel, stainless steel |
| Switching power         | 1A/4A, AC 250 V  
                          | 0.5A/2A, DC 24 V |
| Data sheet              | PV 34.82 |

**PSM03**
OEM compact pressure switch, in block design

| Setting range           | 0.2 ... 2 to 40 ... 400 bar |
| Switching function      | Change-over contact (SPDT) |
| Material                | Zinc diecast, aluminium |
| Switching power         | 1A/4A, AC 250 V  
                          | 0.5A/2A, DC 24 V |
| Data sheet              | PV 34.83 |

Mechanical pressure switches for industrial applications
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.

### Mechanical pressure switches for the process industry

**PXS, PXA**

**Mini pressure switch**

<table>
<thead>
<tr>
<th>Setting range</th>
<th>1 … 2.5 to 50 … 400 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignition protection type</td>
<td>Ex ia or Ex d</td>
</tr>
<tr>
<td>Switch</td>
<td>1 x SPDT</td>
</tr>
<tr>
<td>Switching power</td>
<td>AC 250 V / 5 A</td>
</tr>
<tr>
<td>DC 24 V / 5 A</td>
<td></td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 34.36, PV 34.38</td>
</tr>
</tbody>
</table>

**PCS, PCA**

**Compact pressure switch**

<table>
<thead>
<tr>
<th>Setting range</th>
<th>-0.2 … 1.2 to 100 … 600 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignition protection type</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</td>
</tr>
<tr>
<td>DC 24 V / 2 A</td>
<td></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 type</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</td>
</tr>
<tr>
<td>DC 24 V / 2 A</td>
<td></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 type</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</td>
</tr>
<tr>
<td>DC 24 V / 2 A</td>
<td></td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 32.20, PV 32.22</td>
</tr>
</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 type</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</td>
</tr>
<tr>
<td>DC 24 V / 2 A</td>
<td></td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 35.42, PV 35.43</td>
</tr>
</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 type</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</td>
</tr>
<tr>
<td>DC 24 V / 2 A</td>
<td></td>
</tr>
<tr>
<td>Data sheet</td>
<td>PV 35.49, PV 35.48</td>
</tr>
</tbody>
</table>
Diaphragm seal systems

Combinations of diaphragm seals and mechanical or electronic pressure measuring instruments

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.

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 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.

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>
Diaphragm seals

With flange connection

**990.27**
**Flush diaphragm**
- Application: Process and petrochemical industries with high measuring requirements
- PN: 10 ... 250 (400) bar (class 150 ... 2,500)
- Data sheet: DS 99.27

**990.28**
**Cell-type**
- Application: Process and petrochemical industries with high measuring requirements
- PN: 10 ... 100 (400) bar (class 150 ... 2,500)
- Data sheet: DS 99.28

**990.12**
**Internal diaphragm, threaded design**
- Application: General applications in the process industry; for small flange connections (< DN 25/1”) and pressures 2-40 bar
- PN: 10 ... 250 bar (class 150 ... 2,500)
- Data sheet: DS 99.31

With threaded connection

**990.10**
**Threaded design**
- Application: General applications in the process industry
- PN: 25, 100 or 250 bar
- Data sheet: DS 99.01

**990.31**
**Plastic body, threaded design**
- Application: Chemical engineering with plastic pipework, electroplating; particularly for wastewater and agricultural fertilisers
- PN max: 10 bar
- Data sheet: DS 99.02

**990.36**
**Small diaphragm seal with flush diaphragm**
- Application: Particularly for highly viscous and crystallising media
- PN max: 600 bar
- Data sheet: DS 99.03
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 pressure at extreme temperatures (-130 … +400 °C) and with a wide variety of media, thus enabling pressure measurements under extreme conditions. The optimal diaphragm seal designs, materials, filling media and accessories are available for each application. The diaphragm seals can be supplied with test certificates and approvals for special applications.

### 910.19, 910.23
Block flange, standard version and for double-jacket pipes

- **Process connection**: For welding into the product pipeline
  - DN 15 … 150
- **Perm. temperature**: Max. 250 °C
- **PN max**: 910.19: 195 bar
  - 910.23: 240 bar
- **Data sheet**: AC 91.01

### 910.20
Saddle flange

- **Process connection**: For welding onto the product pipeline
  - DN 65 … 150
  - DN 2 ½” … 6”
- **Perm. temperature**: Max. 300 °C
- **Data sheet**: AC 91.01

### 910.27
Flushing ring for flanges per EN 1092-1 and ASME B 16.5

- **Process connection**: DN 50, 80, 100, 125 or PN 16 … 100
  - DN 2", 3", 4", 5" or class 150 … 600
- **PN max**: PN 600 bar
  - Class 150 … 600
- **Data sheet**: AC 91.05

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

Valves

910.10, 910.11, 910.81
Stopcocks and shut-off valves

Application: For applications with threaded connection
Version: 910.10 and 910.11: Per DIN 16270, DIN 16271, DIN 16272
910.81: Single block valve, 3-way valve, block and bleed valve
Material: Brass, steel, stainless steel
Nominal pressure: 910.10: to 25 bar
910.11: to 400 bar
910.81: to 700 bar (10,000 psi)
Data sheet: AC 09.01, AC 09.02, AC 09.18

910.80
Monoflange

Application: For applications with flange connection
Version: U-form, trumpet form, compact form, standard
Material: Steel, stainless steel
Nominal pressure: To 160 bar
Data sheet: AC 09.17

910.25
Valve manifold for pressure measuring instruments

Application: For isolating, pressure compensating as well as purging and venting differential pressure instruments
Version: Three-way and five-way valves
Material: Stainless steel
Nominal pressure: To 400 bar
Data sheet: AC 09.11

Protective devices

910.12, 910.13
Snubbers and overpressure protectors

Application: For the protection of pressure measuring instruments from pressure surges and pulsations or overpressures
Version: 910.12: Version with LH-RH union or fixed bushing
910.13: Version with LH-RH union or fixed bushing
Material: Brass, steel, stainless steel
Nominal pressure: 910.12: to 400 bar
910.13: to 600 bar (overload safety up to 1,000 bar)
Data sheet: AC 09.03, 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

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
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

A-AS-1
LED attachable indicator with switching outputs, 38 x 29 mm
Input: 4 ... 20 mA, 2-wire
Power supply: DC 0 ... 5 V, 3-wire
Data sheet: AC 80.09

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
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

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Nominal Size</th>
<th>Scale Range</th>
<th>Permissible Operating Pressure at Thermowell/Stem</th>
<th>Wetted Parts</th>
<th>Data Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>A43</td>
<td>Heating technology</td>
<td>63, 80, 100 mm</td>
<td>-30 ... +120 °C</td>
<td>Max. 6 bar</td>
<td>Copper alloy</td>
<td>TM 43.01</td>
</tr>
<tr>
<td>A48</td>
<td>Refrigeration and air-conditioning technology</td>
<td>63, 80, 100, 160 mm</td>
<td>-30 ... +120 °C</td>
<td></td>
<td>Copper alloy</td>
<td>TM 48.01</td>
</tr>
<tr>
<td>A51</td>
<td>Heating technology, high-quality version</td>
<td>63, 80, 100 mm</td>
<td>-30 ... +250 °C</td>
<td></td>
<td>Copper alloy</td>
<td>TM 51.01</td>
</tr>
<tr>
<td>52</td>
<td>Industrial series, axial and radial</td>
<td>25, 33, 40, 50, 63, 80, 100, 160 mm</td>
<td>-30 ... +50 to 0 ... +600 °C</td>
<td>Max. 25 bar</td>
<td>Stainless steel</td>
<td>TM 52.01</td>
</tr>
<tr>
<td>53</td>
<td>Industrial series, axial, adjustable stem and dial</td>
<td>3&quot;, 5&quot;</td>
<td>-70 ... +70 to 0 ... +600 °C</td>
<td></td>
<td>Stainless steel</td>
<td>Liquid damping to max. 250 °C (case and probe)</td>
</tr>
<tr>
<td>54</td>
<td>Heavy-duty version, axial and radial, adjustable stem and dial</td>
<td>63, 80, 100, 160 mm</td>
<td>-70 ... +70 to 0 ... +600 °C</td>
<td></td>
<td>Stainless steel</td>
<td>Liquid damping to max. 250 °C (case and probe)</td>
</tr>
</tbody>
</table>
Bimetal thermometer

55
High-quality process version to EN 13190

- Nominal size: 63, 100, 160 mm
- Scale range: -70 ... +70 to 0 ... +600 °C
- Wetted parts: Stainless steel
- Option: Liquid damping to max. 250 °C (case and probe)
- Data sheet: TM 55.01

Option:
- Liquid damping to max. 250 °C (case and probe)
- Vertical arrangement
- Special scales
- Other case materials

Machine glass thermometer

32
V shape

- Nominal size: 110, 150, 200 mm
- Scale range: -30 ... +200 °C
- Wetted parts: Copper alloy
- 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

- Nominal size: 58 x 25 mm, 62 x 11 mm
- Scale range: -50 ... 250 °C
- Wetted parts: Copper alloy
- Option:
  - Vertical arrangement
  - Special scales
  - Other case materials
- Data sheet: TM 80.02

IFT
With capillary, standard version

- Nominal size: 52, 60, 80, 100 mm
- Scale range: -100 ... +400 °C
- Wetted parts: Copper alloy
- Option:
  - Square case version
  - Other case materials
  - With micro switch
- 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>100, 160 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>-200 ... +50 to 0 ... +700 °C</td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Option</td>
<td>Liquid damping (case)</td>
</tr>
<tr>
<td></td>
<td>Contact bulb</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TM 73.01</td>
</tr>
</tbody>
</table>

### F73

With capillary

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>100, 160 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>-200 ... +50 to 0 ... +700 °C</td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Option</td>
<td>Armoured or coated capillary (PVC coating)</td>
</tr>
<tr>
<td></td>
<td>Liquid damping (case)</td>
</tr>
<tr>
<td></td>
<td>Contact bulb</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TM 73.01</td>
</tr>
</tbody>
</table>

### 75

Highly vibration resistant

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>100 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>0 ... +700 or -50 ... +650 °C</td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Option</td>
<td>Various neck-tube and insertion lengths</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TM 75.01</td>
</tr>
</tbody>
</table>

## Thermomanometers

### MFT

With capillaries, for pressure and temperature measurement

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>40, 42, 52 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>Pressure 0 ... 4 bar</td>
</tr>
<tr>
<td></td>
<td>Temperature 0 ... 120 °C</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>Pressure 2.5 (EN 837-1)</td>
</tr>
<tr>
<td></td>
<td>Temperature 2.5</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PM 01.20</td>
</tr>
</tbody>
</table>

### THM10

Eco version, for pressure and temperature measurement

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>63, 80 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>Pressure 0 ... 4 to 0 ... 10 bar</td>
</tr>
<tr>
<td></td>
<td>Temperature 0 ... 120 °C</td>
</tr>
<tr>
<td>Connection location</td>
<td>Lower mount or back mount</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>Pressure 2.5 (EN 837-1)</td>
</tr>
<tr>
<td></td>
<td>Temperature 2 (EN 13190)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PM 01.24</td>
</tr>
</tbody>
</table>

### 100.02

For pressure and temperature measurement

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size</td>
<td>63, 80 mm</td>
</tr>
<tr>
<td>Scale range</td>
<td>Pressure 0 ... 1 to 0 ... 16 bar</td>
</tr>
<tr>
<td></td>
<td>Temperature 0 ... 100 to 0 ... 150 °C</td>
</tr>
<tr>
<td>Accuracy class</td>
<td>Pressure 2.5 (EN 837-1)</td>
</tr>
<tr>
<td></td>
<td>Temperature 2.5 °C</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PM 01.23</td>
</tr>
</tbody>
</table>
## Dial thermometers with output signal

### TGT70

**Expansion thermometers with output signal**

<table>
<thead>
<tr>
<th>EAC</th>
<th>Nominal size</th>
<th>63, 100 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>-40 ... +60 °C to 0 ... 250 °C</td>
<td></td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>Option</td>
<td>Capillary, Output signals 4 ... 20 mA or 0.5 ... 4.5 V, Other connection designs</td>
<td></td>
</tr>
<tr>
<td>Data sheet</td>
<td>TV 18.01</td>
<td></td>
</tr>
</tbody>
</table>

### TGT73

**Gas-actuated thermometer with output signal**

<table>
<thead>
<tr>
<th>EAC</th>
<th>Nominal size</th>
<th>100, 160 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale range</td>
<td>-200 ... +100 °C to 0 ... 700 °C</td>
<td></td>
</tr>
<tr>
<td>Wetted parts</td>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>Option</td>
<td>Capillary, Liquid damping (case), Output signal 4 ... 20 mA or 0 ... 10 V</td>
<td></td>
</tr>
<tr>
<td>Data sheet</td>
<td>TV 17.10</td>
<td></td>
</tr>
</tbody>
</table>

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

**DI10**
For panel mounting, current loop display, 96 x 48 mm
- **Input**: 4 ... 20 mA, 2-wire
- **Alarm output**: 2 electronic contacts (optional)
- **Special feature**: Wall-mounting case (optional)
- **Power supply**: from the 4 ... 20 mA current loop
- **Data sheet**: AC 80.06

**DI25**
For panel mounting, 96 x 48 mm
- **Input**: Multi-function input for resistance thermometers, thermocouples and standard signals
- **Alarm output**: 3 relays
- **Special feature**: Wall-mounting case (optional)
- **Power supply**: AC 100 ... 240 V
- **Data sheet**: AC 80.02

**DI30**
For panel mounting, 96 x 96 mm
- **Input**: Standard signals
- **Alarm output**: 2 relays
- **Special feature**: Integrated transmitter power supply
- **Power supply**: AC 230 V or AC 115 V
- **Data sheet**: AC 80.05

**DI32-1**
For panel mounting, 48 x 24 mm
- **Input**: Multi-function input for resistance thermometers, thermocouples and standard signals
- **Alarm output**: DC 9 ... 29 V
- **Power supply**: DC 9 ... 29 V
- **Data sheet**: AC 80.13

**DI35**
For panel mounting, 96 x 48 mm
- **Input**: Multi-function input for resistance thermometers, thermocouples and standard signals
- **Alarm output**: 2 or 4 relays (optional)
- **Special feature**: Integrated transmitter power supply
- **Power supply**: AC 10 ... 40 V, AC 18 ... 30 V
- **Data sheet**: AC 80.03
### 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**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>150 x 127 x 127 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>Aluminium, stainless steel</td>
</tr>
</tbody>
</table>
| 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 per ATEX  
                 - Flameproof enclosure |
| Data sheet | AC 80.10  |

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

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-40 … +120 °C</th>
</tr>
</thead>
</table>
| Feature         | - Dust and waterproof case, IP68  
                 - Battery or solar powered  
                 - Extremely long service life |
| Data sheet      | TE 85.01    |
Thermocouples

Thermocouples generate a voltage directly dependent on temperature. They are particularly suitable for high temperatures to 1,700 °C and for very high oscillating stresses. For thermocouples, the accuracy classes 1 and 2 apply (standard and special). They are available with a tolerance value in accordance with IEC 60584-4 / ASTM E230.

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.

---

**TC10-A**
**Measuring insert**

- Sensor element: Type K, J, E, N or T
- Measuring range: -200 ... +200 °C
- Measuring point: Ungrounded or grounded
- Data sheet: TE 65.01

---

**TC10-B**
**For additional thermowell**

- Sensor element: Type K, J, E, N or T
- Measuring range: -200 ... +200 °C
- Measuring point: Ungrounded or grounded
- Data sheet: TE 65.02

---

**TC10-C**
**Threaded, with fabricated thermowell**

- Sensor element: Type K, J, E, N or T
- Measuring range: -200 ... +600 °C
- Measuring point: Ungrounded or grounded
- Process connection: Mounting thread
- Data sheet: TE 65.03

---

**TC10-D**
**Threaded, miniature design**

- Sensor element: Type K, J, E, N or T
- Measuring range: -200 ... +600 °C
- Measuring point: Ungrounded or grounded
- Process connection: Mounting thread
- Data sheet: TE 65.04

---

**TC10-F**
**Flanged thermocouple, with fabricated thermowell**

- Sensor element: Type K, J, E, N or T
- Measuring range: -200 ... +600 °C
- Measuring point: Ungrounded or grounded
- Process connection: Flange
- Data sheet: TE 65.06

---

**TC10-H**
**Without thermowell**

- Sensor element: Type K, J, E, N or T
- Measuring range: -200 ... +1,200 °C
- Measuring point: Ungrounded or grounded
- Process connection: Mounting thread
- Data sheet: TE 65.08
**TC10-K**

**Measuring insert, for installation in TC10-L**

- Sensor element: Type K, J, E, N or T
- Measuring range: -200 ... +1,200 °C
- Measuring point: Ungrounded or grounded
- Data sheet: TE 65.11

**TC10-L**

**Flameproof enclosure, for additional thermowell**

- Sensor element: Type K, J, E, N or T
- Measuring range: -200 ... +1,200 °C
- Measuring point: Ungrounded or grounded
- Data sheet: TE 65.12

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**TC12-A**

**Measuring insert for process thermocouple**

- Sensor element: Type K, J, N or T
- Measuring range: -200 ... +1,200 °C
- Measuring point: Ungrounded or grounded
- Data sheet: TE 65.16

---

**TC12-B**

**Process thermocouple, for additional thermowell**

- Sensor element: Type K, J, E, N or T
- Measuring range: -200 ... +1,200 °C
- Measuring point: Ungrounded or grounded
- Option: Ex i, Ex d
- Data sheet: TE 65.17

---

**TC12-M**

**Process thermocouple, basic module**

- Sensor element: Type K, J, E, N or T
- Measuring range: -200 ... +1,200 °C
- Measuring point: Ungrounded or grounded
- Option: Ex i, Ex d
- Data sheet: TE 65.17
## Thermocouples

### TC40
**Cable thermocouple**
- **Sensor element**: Type K, J, E, N or T
- **Measuring range**: -200 ... +1,260 °C
- **Measuring point**: Ungrounded or grounded
- **Cable**: PVC, silicone, PTFE, glass fibre
- **Data sheet**: TE 65.40

### TC46
**Hot runner thermocouple**
- **Sensor element**: Type J or K
- **Measuring range**: -25 ... +400 °C
- **Measuring point**: Ungrounded or grounded
- **Feature**:
  - Probe diameter 0.5 ... 3.0 mm
  - Plastic-moulded transition
- **Data sheet**: TE 65.46

### TC47
**Plastics machinery thermocouple**
- **Measuring range**: -25 ... +400 °C
- **Measuring element**: Type J or K
- **Measuring point**: Ungrounded or grounded
- **Feature**:
  - Various process connections
  - Connection lead glass fibre with stainless steel braid
- **Data sheet**: TE 67.20

### TC50
**Surface thermocouple**
- **Sensor element**: Type K, J, E, N or T
- **Measuring range**: -200 ... +400 °C
- **Measuring point**: Ungrounded or grounded
- **Process connection**: Surface mounting
- **Data sheet**: TE 65.50

### TC53
**Bayonet thermocouple**
- **Measuring element**: Model K, J, N, E or T
- **Measuring range**: 0 ... +1,200 °C
- **Measuring point**: Ungrounded or grounded
- **Feature**:
  - Single and dual thermocouple
  - Explosion-protected versions
- **Data sheet**: TE 65.56 - TE 65.59

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

- **Sensor element**: Type S, R, B, K, N or J
- **Measuring range**: 0 … 1,700 °C
- **Measuring point**: Ungrounded
- **Process connection**: Stop flange, threaded bushing
- **Data sheet**: TE 65.80

### TC81
#### For flue gas temperature measurements

- **Sensor element**: Type K, N or J
- **Measuring range**: 0 … 1,200 °C
- **Measuring point**: Ungrounded or grounded
- **Process connection**: Stop flange, threaded bushing
- **Data sheet**: TE 65.81

### TC84
#### Sapphire-design thermocouple

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

### TC90
#### High-pressure thermocouple

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

### TC95
#### Multipoint thermocouple in band design

- **Thermocouples**: 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

- **Thermocouples**: 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 -200 … +600 °C (dependent on instrument model, sensor element, accuracy class and materials coming into contact with the medium).

Accuracy classes AA, A and B apply to all resistance thermometers. They are available with a tolerance value to IEC 60751.

### TR10-A
Measuring insert, MI cable

- **Sensor element**: 1 x Pt100, 2 x Pt100
- **Measuring range**: -200 … +600 °C
- **Connection method**: 2-, 3- and 4-wire
- **Design**: MI cable
- **Data sheet**: TE 60.01

### TR10-B
For additional thermowell

- **Sensor element**: 1 x Pt100, 2 x Pt100
- **Measuring range**: -200 … +600 °C
- **Connection method**: 2-, 3- and 4-wire
- **Measuring insert**: MI cable
- **Data sheet**: TE 60.02

### TR10-C
Threaded, with fabricated thermowell

- **Sensor element**: 1 x Pt100, 2 x Pt100
- **Measuring range**: -200 … +600 °C
- **Connection method**: 2-, 3- and 4-wire
- **Process connection**: Mounting thread
- **Data sheet**: TE 60.03

### TR10-D
Threaded, miniature design

- **Sensor element**: 1 x Pt100, 2 x Pt100
- **Measuring range**: -200 … +500 °C
- **Connection method**: 2-, 3- and 4-wire
- **Process connection**: Mounting thread
- **Data sheet**: TE 60.04

### TR10-F
Flanged resistance thermometer, with fabricated thermowell

- **Sensor element**: 1 x Pt100, 2 x Pt100
- **Measuring range**: -200 … +600 °C
- **Connection method**: 2-, 3- and 4-wire
- **Process connection**: Flange
- **Data sheet**: TE 60.06

### TR10-H
Without thermowell

- **Sensor element**: 1 x Pt100, 2 x Pt100
- **Measuring range**: -200 … +600 °C
- **Connection method**: 2-, 3- and 4-wire
- **Process connection**: Mounting thread
- **Data sheet**: TE 60.08
**TR10-J**
Threaded, with perforated thermowell

- **Sensor element**: 1 x Pt100, 2 x Pt100
- **Measuring range**: -200 ... +600 °C
- **Connection method**: 2-, 3- and 4-wire
- **Process connection**: Mounting thread
- **Data sheet**: TE 60.10

**TR10-K**
Measuring insert, for installation in TR10-L

- **Sensor element**: 1 x Pt100, 2 x Pt100
- **Measuring range**: -200 ... +600 °C
- **Connection method**: 2-, 3- and 4-wire
- **Data sheet**: TE 60.11

**TR10-L**
Flameproof enclosure, for additional thermowell

- **Sensor element**: 1 x Pt100, 2 x Pt100
- **Measuring range**: -200 ... +600 °C
- **Connection method**: 2-, 3- and 4-wire
- **Data sheet**: TE 60.12

**TR11-A**
Measuring insert, tubular design

- **Sensor element**: 1 x Pt100, 2 x Pt100
- **Measuring range**: -50 ... +250 °C
- **Design**: Tubular design
- **Data sheet**: TE 60.13

**TR12-A**
Measuring insert for process resistance thermometer TR12-B

- **Sensor element**: 1 x Pt100, 2 x Pt100
- **Measuring range**: -200 ... +600 °C
- **Connection method**: 2-, 3- and 4-wire
- **Data sheet**: TE 60.16

**TR12-B**
Process resistance thermometer, for additional thermowell

- **Sensor element**: 1 x Pt100, 2 x Pt100
- **Measuring range**: -200 ... +600 °C
- **Connection method**: 2-, 3- and 4-wire
- **Option**: Ex i, Ex d
- **Data sheet**: TE 60.17

**TR12-M**
Process resistance thermometer, basic module

- **Sensor element**: 1 x Pt100, 2 x Pt100
- **Measuring range**: -200 ... +600 °C
- **Connection method**: 2-, 3- and 4-wire
- **Option**: Ex i, Ex d
- **Data sheet**: TE 60.17

Further information at www.wika.com
Resistance thermometers

**TR30**
**Compact version**
- Sensor element: 1 x Pt100
- Measuring range: -50 ... +250 °C
- 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
- Output: Pt100, Pt1000, 4 ... 20 mA
- Data sheet: TE 60.31

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

**TR34**
**Miniature design, explosion-protected**
- Sensor element: 1 x Pt100, 1 x Pt1000
- Measuring range: -50 ... +250 °C
- 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: -200 ... +600 °C
- Connection method: 2-, 3- and 4-wire
- Cable: PVC, silicone, PTFE
- Process connection: Surface mounting
- Data sheet: TE 60.40

**TR50**
**Surface resistance thermometer**
- Sensor element: 1 x Pt100, 2 x Pt100
- Measuring range: -50 ... +250 °C
- Connection method: 2-, 3- and 4-wire
- Process connection: Surface mounting
- Data sheet: TE 60.50
**TR53**
Bayonet resistance thermometer

- Sensor element: 1 x Pt100, 2 x Pt100
- Measuring range: -50 … +400 °C
- Connection method: 2-, 3- and 4-wire
- Process connection: Bayonet
- Data sheet: TE 60.53

---

**TR55**
With spring-loaded tip

- Sensor element: 1 x Pt100, 2 x Pt100
- Measuring range: -50 … +450 °C
- Connection method: 2-, 3- and 4-wire
- Process connection: Compression fitting
- Data sheet: TE 60.55

---

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

- Sensor element: 1 x Pt100
- Measuring range: -20 … +150 °C
- Connection method: Pt100 3-wire, 4 … 20 mA
- Data sheet: TE 60.57

---

**TR60**
Indoor and outdoor resistance thermometer

- Sensor element: 1 x Pt100, 2 x Pt100
- Measuring range: -50 … +400 °C
- Connection method: 2-, 3- and 4-wire
- Process connection: Wall mounting
- Data sheet: TE 60.60

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**TR75**
DiwiTherm® with digital indicator

- Measuring range: -40.0 … +199.9 °C/+200 … +450 °C with automated changing between ranges (autorange)
- Power supply: Battery operation
- Data sheet: TE 60.75

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**TR81**
For flue gas temperature measurements

- Sensor element: 1 x Pt100, 2 x Pt100
- Measuring range: -200 … +600 °C
- Connection method: 2-, 3- and 4-wire
- Thermowell: Metal
- Data sheet: TE 60.81

---

**TR95**
Multipoint resistance thermometer in band design

- Sensor: Pt100
- Measuring range: -200 … +600 °C, -328 … +1,112 °F
- Connection method: 2-, 3- and 4-wire
- Process connection: Various process connections
- Data sheet: TE 70.01

Further information at www.wika.com
Resistance thermometers

**TF37**
Screw-in thermometer with connection lead

- Measuring range: -50 ... +260 °C
- Sensor element: Pt100, Pt1000, NTC, KTY, Ni1000
- Feature:
  - High vibration resistance
  - Connection lead from PVC, silicone, PTFE
  - Brass or stainless steel thermowell
- Data sheet: TE 67.12

**TF40**
Duct thermometer

- Measuring range: -50 ... +200 °C
- Measuring element: Pt100, Pt1000, NTC
- Feature:
  - Smallest case design, UV-resistant
  - Protected against dust and water jets, IP65
  - Plastic mounting flange
- Data sheet: TE 67.16

**TF41**
Outdoor thermometer

- Measuring range: -40 ... +100 °C
- Measuring element: Pt100, Pt1000, NTC
- Feature:
  - Smallest case design, UV-resistant
  - Protected against dust and water jets, IP65
  - Clip-on sun protector
- Data sheet: TE 67.17

**TF43**
OEM insertion thermometer for refrigeration technology

- Measuring range: -50 ... +105 °C
- Sensor element: Pt100, Pt1000, NTC
- Feature:
  - High vibration resistance
  - Connection lead from PVC, silicone, PTFE
  - Brass or stainless steel thermowell
- Data sheet: TE 67.13

**TF44**
Strap-on thermometer with connection lead

- Measuring range: -50 ... +200 °C
- Measuring element: Pt100, Pt1000, NTC
- Feature:
  - Connection lead from PVC, silicone
  - Aluminium probe sleeve
  - Protected against dust and water jets, IP65
  - With quick-mounting clip
- Data sheet: TE 67.14

**TF45**
OEM insertion thermometer with connection lead

- Measuring range: -50 ... +250 °C
- Measuring element: Pt100, Pt1000, NTC, KTY, Ni1000
- Feature:
  - Connection lead from PVC, silicone, PTFE
  - Probe sleeve from stainless steel
  - Protected against dust and water jets, IP65
- Data sheet: TE 67.15
# Temperature transmitters

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Input</th>
<th>Accuracy</th>
<th>Output</th>
<th>Special feature</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>T15</td>
<td>Digital temperature transmitter for resistance sensors</td>
<td>Resistance thermometers, potentiometers</td>
<td>&lt; 0.1 %</td>
<td>4 ... 20 mA</td>
<td>The fastest and simplest configuration on the market</td>
<td>TE 15.01</td>
</tr>
<tr>
<td>T16</td>
<td>Digital temperature transmitter for thermocouples</td>
<td>All commercially available thermocouples</td>
<td>Typical &lt; 2 K</td>
<td>4 ... 20 mA</td>
<td>The fastest and simplest configuration on the market</td>
<td>TE 16.01</td>
</tr>
<tr>
<td>T32</td>
<td>HART® temperature transmitter</td>
<td>Resistance thermometers, thermocouples, potentiometers</td>
<td>&lt; 0.1 %</td>
<td>4 ... 20 mA, HART® protocol</td>
<td>TÜV certified SIL version (full assessment)</td>
<td>TE 32.04</td>
</tr>
<tr>
<td>T53</td>
<td>FOUNDATION™ Fieldbus and PROFIBUS® PA transmitter</td>
<td>Resistance thermometers, thermocouples, potentiometers</td>
<td>&lt; 0.1 %</td>
<td>4 ... 20 mA</td>
<td>PC configurable</td>
<td>TE 53.01</td>
</tr>
<tr>
<td>T91</td>
<td>Analogue temperature transmitter 3-wire, 0 ... 10 V</td>
<td>Resistance thermometers, thermocouples</td>
<td>&lt; 0.5 or &lt; 1 %</td>
<td>0 ... 10 V, 0 ... 5 V</td>
<td>Fixed measuring range</td>
<td>TE 91.01, TE 91.02</td>
</tr>
<tr>
<td>TIF50, TIF52</td>
<td>HART® field temperature transmitter</td>
<td>Resistance thermometers, thermocouples</td>
<td>&lt; 0.1 %</td>
<td>4 ... 20 mA, HART® protocol</td>
<td>PC configurable</td>
<td>TE 62.01</td>
</tr>
</tbody>
</table>

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
- Output:
  - Switching outputs PNP or NPN
  - 4 ... 20 mA
  - 0 ... 10 V
  - IO-Link 1.1
- Data sheet: TE 67.16

<table>
<thead>
<tr>
<th>TFS35</th>
<th>Bimetal temperature switch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range: 50 ... 200 °C, fixed</td>
<td></td>
</tr>
<tr>
<td>Features:</td>
<td></td>
</tr>
</tbody>
</table>
  - Compact design
  - Automatic reset
  - No capillary needed |
| Data sheet: TV 35.01 |

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
- Switch: 1 x SPDT
- Switching power: AC 220 V / 5 A, DC 24 V / 5 A
- Data sheet: TV 31.70, TV 31.72 (Ex)

**TCS, TCA**
Compact temperature switches

- Setting range: -30 ... +10 to +160 ... +250 °C
- Ignition protection type: Ex ia or Ex d
- Switch: 1 x SPDT or 1 x DPDT
- Switching power: AC 250 V / 15 A, DC 24 V / 2 A
- Data sheet: TV 31.64, TV 31.65 (Ex)

**TWG, TAG**
Heavy-duty version

- Setting range: -30 ... +70 to 0 ... 600 °C
- Ignition protection type: Ex ia or Ex d
- Switch: 1 or 2 SPDT or 1 x DPDT
- Switching power: AC 250 V / 20 A, DC 24 V / 2 A
- Data sheet: TV 31.60, TV 31.61
Thermometers with switch contacts

**SC15**
Expansion thermometer with micro switch, indicating temperature controller

- **Nominal size**: 60, 80, 100 mm
  - 45 x 45, 72 x 72, 96 x 96 mm
- **Scale range**: -100 ... +400 °C
- **Wetted parts**: Stainless steel
- **Option**: Liquid damping to max. 250 °C (case and probe)
- **Data sheet**: TV 28.02

**SW15**
Expansion thermometer with micro switch, safety temperature controller

- **Nominal size**: 60, 80, 100 mm
  - 72 x 72, 96 x 96 mm
- **Scale range**: 0 ... 250 °C
- **Wetted parts**: Stainless steel
- **Option**: Sheet steel version
- **Data sheet**: TV 28.04

**SB15**
Expansion thermometer with micro switch, safety temperature limiter

- **Nominal size**: 60, 80, 100 mm
  - 72 x 72, 96 x 96 mm
- **Scale range**: 0 ... 250 °C
- **Wetted parts**: Stainless steel
- **Option**: Sheet steel version
- **Data sheet**: TV 28.03

**55 with 8xx**
Bimetal thermometer, stainless steel version

- **Nominal size**: 100, 160 mm
  - 45 x 45, 72 x 72, 96 x 96 mm
- **Scale range**: -70 ... +30 to 0 ... 600 °C
- **Wetted parts**: Stainless steel
- **Option**: Sheet steel version
- **Data sheet**: TV 25.01

**70 with 8xx**
Expansion thermometer with micro switch

- **Nominal size**: 100 mm
- **Scale range**: -60 ... +40 to 0 ... 250 °C
- **Wetted parts**: Stainless steel
- **Option**: Various contact versions
- **Data sheet**: TV 28.01

**73 with 8xx**
Gas-actuated thermometer, stainless steel version

- **Nominal size**: 100, 160, 144 x 144 mm
- **Scale range**: -80 ... +60 to 0 ... 700 °C
- **Wetted parts**: Stainless steel
- **Option**:
  - Capillary
  - Liquid damping (case)
- **Data sheet**: TV 27.01

Further information at www.wika.com
Temperature controllers

**CS4M**
For panel mounting, 48 x 24 mm
- **Input**: Multi-function input for resistance thermometers, thermocouples and standard signals
- **Control mode**: PID, PI, PD, P, ON/OFF (configurable)
- **Monitoring output**: Relay 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
- **Power supply**: AC 100 … 240 V, AC/DC 24 V
- **Data sheet**: AC 85.06

**CS4R**
For rail mounting, 22.5 x 75 mm
- **Input**: Multi-function input for resistance thermometers, thermocouples and standard signals
- **Control mode**: PID, PI, PD, P, ON/OFF (configurable)
- **Monitoring output**: Relay or logic level DC 0/12 V to control an electronic switch relay (SSR) or analogue current signal 4 … 20 mA
- **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
- **Input**: Multi-function input for resistance thermometers, thermocouples and standard signals
- **Control mode**: PID, PI, PD, P, ON/OFF (configurable)
- **Monitoring output**: Relay 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
- **Power supply**: AC 100 … 240 V, AC/DC 24 V
- **Data sheet**: AC 85.08

**SC58**
For panel mounting, 62 x 28 mm
- **Input**: Pt100 or PTC
- **Control mode**: Simple 2-point controller
- **Monitoring output**: Relay switching output 12 A, 250 V
- **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
- **Input**: Pt100 or PTC
- **Control mode**: Simple 2-point controller
- **Monitoring output**: Relay switching output 16 A, 250 V
- **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.

### TW10
Solid-machined with flange

<table>
<thead>
<tr>
<th>Thermowell form</th>
<th>Tapered, straight or stepped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal width</td>
<td>ASME 1 ... 4 inch DIN/EN</td>
</tr>
<tr>
<td>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>

### TW15
Solid-machined to screw in

<table>
<thead>
<tr>
<th>Thermowell form</th>
<th>Tapered, straight or stepped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head version</td>
<td>Hexagon, round with hexagon, or round with spanner flats</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>
# Thermowells

**TW20**

**Socket weld (solid-machined)**

<table>
<thead>
<tr>
<th>Thermowell form</th>
<th>Tapered, straight or stepped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welding diameter</td>
<td>1.050, 1.315 or 1.900 inch</td>
</tr>
<tr>
<td></td>
<td>(26.7, 33.4 or 48.3 mm)</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>

**TW25**

**Weld-in (solid-machined)**

<table>
<thead>
<tr>
<th>Thermowell form</th>
<th>Tapered, straight or stepped</th>
</tr>
</thead>
<tbody>
<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>

**TW30**

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

<table>
<thead>
<tr>
<th>Thermowell form</th>
<th>Tapered, straight or stepped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal width</td>
<td>ASME 1, 1½ or 2 inch</td>
</tr>
<tr>
<td>Pressure rating</td>
<td>ASME up to 2,500 psi</td>
</tr>
<tr>
<td>Data sheet</td>
<td>TW 95.30</td>
</tr>
</tbody>
</table>

**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 1,500 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
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 of 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
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, 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 system-specific production
- Operating limits: □ Operating temperature: $T = -196 \ldots +450 \, ^\circ C$
  □ Operating pressure: $P = \text{vacuum to } 400 \, \text{bar}$
  □ 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

BNA
Stainless steel version

<table>
<thead>
<tr>
<th>Material</th>
<th>Austenitic steels, 6Mo, Hastelloy, titanium, Monel, Inconel, Incoloy, Duplex, Super Duplex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process connection</td>
<td>Flange DIN, ANSI, EN</td>
</tr>
<tr>
<td>Thread</td>
<td></td>
</tr>
<tr>
<td>Weld stub</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>$-196 \ldots +450 , ^\circ C$</td>
</tr>
<tr>
<td>Density</td>
<td>$\geq 340 , \text{kg/m}^3$</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 10.01</td>
</tr>
</tbody>
</table>

BNA-P
Plastic version

<table>
<thead>
<tr>
<th>Material</th>
<th>PVDF, PP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process connection</td>
<td>Flange DIN, ANSI, EN</td>
</tr>
<tr>
<td>Pressure</td>
<td>PVDF 6 bar, PP 4 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>$-25 \ldots +80 , ^\circ C$</td>
</tr>
<tr>
<td>Density</td>
<td>$\geq 800 , \text{kg/m}^3$</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 10.01</td>
</tr>
</tbody>
</table>
Sight glass level indicator

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 system-specific production
- Operating limits: Operating temperature: \( T = -196 \text{ °C} \ldots +374 \text{ °C} \) \(^1\)
- 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>Material</th>
<th>Forged steel, heat-resistant C-steel, stainless steel, Monel, Hastelloy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version</td>
<td>Available as welded, glass tube, reflection, transparent and refraction indicators</td>
</tr>
<tr>
<td>Pressure</td>
<td>Vacuum to 250 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>(-196 \text{ °C} \ldots +374 \text{ °C})</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 33.01</td>
</tr>
</tbody>
</table>

Further information at www.wika.com
Submersible pressure sensors

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

LW-1
For water and wastewater

<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>
<tr>
<td>Special feature</td>
<td>Temperature output 10 ... 50 °C (optional)</td>
</tr>
<tr>
<td></td>
<td>Explosion protection per ATEX (optional) and IECEx (optional)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 40.03</td>
</tr>
</tbody>
</table>

LF-1
For oils and fuels

<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>Special feature</td>
<td>Temperature output -40 ... +80 °C (optional)</td>
</tr>
<tr>
<td></td>
<td>Explosion protection per ATEX (optional) and IECEx (optional)</td>
</tr>
<tr>
<td></td>
<td>Hastelloy sensor and FEP cable for especially high resistance (optional)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 40.04</td>
</tr>
</tbody>
</table>

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>
<tr>
<td>Data sheet</td>
<td>PE 81.55</td>
</tr>
</tbody>
</table>

LH-20
High performance

<table>
<thead>
<tr>
<th>Non-linearity (± % 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>
<tr>
<td>Output signal</td>
<td>4 ... 20 mA (2-wire)</td>
</tr>
<tr>
<td>Special feature</td>
<td>Slimline design</td>
</tr>
<tr>
<td></td>
<td>HART® (optional)</td>
</tr>
<tr>
<td></td>
<td>Drinking water compliant per KTW and ACS</td>
</tr>
<tr>
<td></td>
<td>Reliable and secure by double-sealed design</td>
</tr>
<tr>
<td></td>
<td>Titanium case and FEP cable for especially high resistance (optional)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>PE 81.56</td>
</tr>
</tbody>
</table>
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
- Measuring principle: Reed-chain technology
- Accuracy, resolution: 12, 10, 6 or 3 mm

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
- Measuring principle: Reed-chain technology
- Accuracy, resolution: 12, 10, 6 or 3 mm

RLT-1000
Stainless steel version

Accuracy: 12, 10, 6 or 3 mm
Output signal: Resistance signal or 4 ... 20 mA
Temperature: -30 ... +80 °C
Guide tube length: 150 ... 1,500 mm
Data sheet: LM 50.02

RLT-2000
Plastic version

Accuracy: 12, 10, 6 or 3 mm
Output signal: Resistance signal or 4 ... 20 mA
Temperature: -10 ... +80 °C
(-30 ... +120 °C optional)
Guide tube length: 150 ... 1,500 mm
Data sheet: LM 50.01

RLT-3000
Stainless steel version with temperature output signal

Accuracy: 12, 10, 6 or 3 mm
Level output signal: 4 ... 20 mA
Output signal: 4 ... 20 mA, Pt100 or Pt1000
Temperature: -30 ... 100 °C
Guide tube length: 150 ... 1,500 mm
Data sheet: LM 50.05

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, 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: $T = -90 \ldots +400 \, ^\circ C$
  - Operating pressure: $P = \text{vacuum to 100 bar}$
  - Limit density: $\rho \geq 400 \, \text{kg/m}^3$
- Resolution $< 0.1 \, \text{mm}$
- 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 \ldots 200 bar
- Temperature: $-90 \ldots +450 \, ^\circ C$
- Density: $\geq 400 \, \text{kg/m}^3$
- 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 \ldots 16 bar
- Temperature: $-10 \ldots +100 \, ^\circ C$
- Density: $\geq 800 \, \text{kg/m}^3$
- Data sheet: LM 20.01
With reed measuring chain

Applications
- Level measurement for almost all liquid media
- Chemical, petrochemical, 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 … +200 °C
  - Operating pressure: P = vacuum to 80 bar
  - Limit density: p ≥ 400 kg/m³
- Wide variety of different electrical connections, process connections and materials
- Optionally with programmable and configurable head-mounted transmitter for 4 … 20 mA field signals, HART®, PROFIBUS® PA and FOUNDATION™ Fieldbus
- Explosion-protected versions

---

**FLR-S**

<table>
<thead>
<tr>
<th>Stainless steel version</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process connection</strong></td>
</tr>
<tr>
<td>Mounting thread</td>
</tr>
<tr>
<td>Flange DIN, ANSI, EN</td>
</tr>
<tr>
<td><strong>Guide tube length</strong></td>
</tr>
<tr>
<td><strong>Pressure</strong></td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
</tr>
<tr>
<td><strong>Density</strong></td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
</tr>
</tbody>
</table>

**FLR-P**

<table>
<thead>
<tr>
<th>Plastic version, PP, PVDF, PP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process connection</strong></td>
</tr>
<tr>
<td>Mounting thread</td>
</tr>
<tr>
<td>Flange DIN, ANSI, EN</td>
</tr>
<tr>
<td><strong>Guide tube length</strong></td>
</tr>
<tr>
<td><strong>Pressure</strong></td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
</tr>
<tr>
<td><strong>Density</strong></td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
</tr>
</tbody>
</table>
Float switches for industrial applications

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

<table>
<thead>
<tr>
<th>RLS-1000</th>
<th>RLS-2000</th>
<th>RLS-3000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stainless steel version</strong></td>
<td><strong>Plastic version</strong></td>
<td><strong>Stainless steel version, with temperature output signal</strong></td>
</tr>
<tr>
<td>Switch points</td>
<td>Switch points</td>
<td>Switch points</td>
</tr>
<tr>
<td>Up to 4 (normally closed, normally open, change-over contact)</td>
<td>Up to 4 (normally closed, normally open, change-over contact)</td>
<td>Up to 3 (normally closed, normally open, change-over contact)</td>
</tr>
<tr>
<td><strong>Medium temperature</strong></td>
<td><strong>Medium temperature</strong></td>
<td><strong>Temperature output</strong></td>
</tr>
<tr>
<td>-30 … +80 °C</td>
<td>-30 … +80 °C</td>
<td>Normally closed, normally open, Pt100, PH100</td>
</tr>
<tr>
<td>-30 … +150 °C optional</td>
<td>-30 … +120 °C optional</td>
<td>(-30 … +150 °C optional)</td>
</tr>
<tr>
<td><strong>Guide tube length</strong></td>
<td><strong>Guide tube length</strong></td>
<td><strong>Guide tube length</strong></td>
</tr>
<tr>
<td>60 … 1,500 mm</td>
<td>100 … 1,500 mm</td>
<td>60 … 1,500 mm</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td><strong>Data sheet</strong></td>
<td><strong>Data sheet</strong></td>
</tr>
<tr>
<td>LM 50.03</td>
<td>LM 50.04</td>
<td>LM 50.06</td>
</tr>
</tbody>
</table>
## RLS-4000
For applications in hazardous areas

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch points</td>
<td>Up to 4 (normally closed, normally open, change-over contact)</td>
</tr>
<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 ... 1,500 mm</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 50.07</td>
</tr>
</tbody>
</table>

## RLS-5000
For applications in shipbuilding (bilge water tanks)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Stainless steel 1.4571</td>
</tr>
<tr>
<td>Switching output</td>
<td>Normally closed, normally open, change-over contact</td>
</tr>
<tr>
<td>Medium temperature</td>
<td>-40 ... +80 °C</td>
</tr>
<tr>
<td>Electrical output</td>
<td>Marine cable, IP68 (8 m)</td>
</tr>
<tr>
<td>Test device</td>
<td>optional</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 50.08</td>
</tr>
</tbody>
</table>

## RLS-6000
For water and wastewater technology

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching output</td>
<td>Normally closed, normally open, change-over contact</td>
</tr>
<tr>
<td>Medium density</td>
<td>≥1,000 kg/m³</td>
</tr>
<tr>
<td>Medium temperature</td>
<td>-10 ... +60 °C</td>
</tr>
<tr>
<td>Guide tube length</td>
<td>150 ... 1,000 mm</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 50.09</td>
</tr>
</tbody>
</table>

## LSD-30
Electronic level switch, with display

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range</td>
<td>Probe length 250, 370, 410, 520, 730 mm</td>
</tr>
<tr>
<td>Density</td>
<td>≥ 0.7 g/cm³ (NBR float)</td>
</tr>
<tr>
<td>Output signal</td>
<td>1 or 2 switching outputs (PNP or NPN), Analogue output (optional)</td>
</tr>
<tr>
<td>Process connection</td>
<td>G ½ A, ½ NPT</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 40.01</td>
</tr>
</tbody>
</table>

## HLS-M1
Plastic version, with cable outlet

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process connection</td>
<td>½&quot; NPT (installation in the tank from outside), G ¼&quot; (installation in the tank from inside)</td>
</tr>
<tr>
<td>Pressure</td>
<td>1 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>-10 ... +80 °C</td>
</tr>
<tr>
<td>Material</td>
<td>PP</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>Cable</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 30.06</td>
</tr>
</tbody>
</table>

## HLS-M2
Stainless steel version, with cable outlet

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process connection</td>
<td>½&quot; NPT (installation in the tank from outside), G ¼&quot; (installation in the tank from inside)</td>
</tr>
<tr>
<td>Pressure</td>
<td>5 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>-40 ... +120 °C</td>
</tr>
<tr>
<td>Material</td>
<td>Stainless steel 1.4301</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>Cable or connector</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 30.06</td>
</tr>
</tbody>
</table>
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, 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: $T = -196 \ldots +350 \, ^\circ\mathrm{C}$
  - Operating pressure: $P = \text{vacuum to 40 bar}$
  - Limit density: $\rho \geq 300 \, \text{kg/m}^3$
- Wide variety of different electrical connections, process connections and materials
- Explosion-protected versions

<table>
<thead>
<tr>
<th>FLS-S</th>
<th>FLS-P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stainless steel version, for vertical installation</strong></td>
<td><strong>Plastic version, for vertical installation</strong></td>
</tr>
<tr>
<td>Switch points</td>
<td>Max. 8 switch points</td>
</tr>
<tr>
<td>Process connection</td>
<td>■ Mounting thread</td>
</tr>
<tr>
<td></td>
<td>■ Flange DIN, ANSI, EN</td>
</tr>
<tr>
<td>Guide tube length</td>
<td>Max. 6,000 mm</td>
</tr>
<tr>
<td>Pressure</td>
<td>0 ... 100 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>$-196 \ldots +300 , ^\circ\mathrm{C}$</td>
</tr>
<tr>
<td>Density</td>
<td>$\geq 390 , \text{kg/m}^3$</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 30.01</td>
</tr>
</tbody>
</table>

| 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 | $-10 \ldots +100 \, ^\circ\mathrm{C}$ |
| Density | $\geq 400 \, \text{kg/m}^3$ |
| Data sheet | LM 30.01 |
### ELS

**For lateral mounting**

<table>
<thead>
<tr>
<th>External chamber</th>
<th>Aluminium, red bronze, stainless steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process connection</td>
<td>Threaded pipe connection GE10-LR galvanised steel</td>
</tr>
<tr>
<td>Pressure</td>
<td>To 6 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>-30 … +300 °C</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 30.03</td>
</tr>
</tbody>
</table>

### HLS-S

**Stainless steel version, for horizontal installation**

<table>
<thead>
<tr>
<th>Process connection</th>
<th>Flange DIN, ANSI, EN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure</td>
<td>0 … 232 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>-196 … +350 °C</td>
</tr>
<tr>
<td>Density</td>
<td>≥ 600 kg/m³</td>
</tr>
<tr>
<td>Material</td>
<td>Stainless steel, titanium</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 30.02</td>
</tr>
</tbody>
</table>

### HLS-P

**Plastic version, for horizontal installation**

<table>
<thead>
<tr>
<th>Process connection</th>
<th>Flange DIN, ANSI, EN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure</td>
<td>0 … 3 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>-10 … +80 °C</td>
</tr>
<tr>
<td>Density</td>
<td>≥ 750 kg/m³</td>
</tr>
<tr>
<td>Material</td>
<td>PP</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 30.02</td>
</tr>
</tbody>
</table>
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>
<tbody>
<tr>
<td>Process connection</td>
<td>G ½ A&lt;br&gt;½ NPT</td>
</tr>
<tr>
<td>Pressure</td>
<td>0 … 500 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>-269 … +400 °C</td>
</tr>
<tr>
<td>Approval</td>
<td>Ex i</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 31.01</td>
</tr>
</tbody>
</table>

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

| Output           | 1 signal relay, 1 failure relay                                        |
| Function         | High or low alarm                                                      |
| Time delay       | To 8 s                                                                 |
| Voltage supply   | AC 24V/115V/120V/230V, DC 24V                                          |
| 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>
<tbody>
<tr>
<td>Process connection</td>
<td>M16 x 1.5&lt;br&gt;G ½ A&lt;br&gt;½ NPT</td>
</tr>
<tr>
<td>Pressure</td>
<td>0 … 50 bar</td>
</tr>
<tr>
<td>Temperature</td>
<td>-30 … +135 °C</td>
</tr>
<tr>
<td>Insertion length</td>
<td>24 mm</td>
</tr>
<tr>
<td>Data sheet</td>
<td>LM 31.02</td>
</tr>
</tbody>
</table>
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 ±0.2 mm
- No moving components

Optoelectronic level switches – for general applications in machine building

OLS-C01
OEM 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
OEM level switch, with selectable switch length

- Material: Stainless steel, borosilicate glass
- Process connection: G ½"
- 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
OEM level switch, high-temperature version

- Material: Stainless steel, borosilicate glass
- Process connection: G ½"
- Pressure: Max. 25 bar
- Temperature: -40 ... +150 °C
- Switching output: 1 x PNP
- Data sheet: LM 31.33

Optoelectronic level switches – application specialists

OLS-C51
For applications in hazardous areas

- Material: Stainless steel, borosilicate glass
- Process connection: G ½"
- 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 and air-conditioning applications

- Material: Steel, nickel-plated; glass
- Process connection: G ½", 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: G ½" or M18 x 1.5 (male)
- 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

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

Special features
- Compact design
- Only 2 process connections required
- Absolute measuring redundancy possible
- Visual level measurement constantly given
- Up to 3 independent measuring principles possible
- Customer-specific designs
- Output signals/communication
- 2- and 4-wire technology, 4 ... 20 mA, HART®, PROFIBUS® PA,
- FOUNDATION™ Fieldbus/DTM/FDT (PACTware™)

KOplus
Coaxial: 2 sensors, 1 external chamber

Material: Stainless steel, 6Mo, Hastelloy, titanium, Monel, Inconel, Incoloy, Duplex, Super Duplex
Pressure: 0 ... 40 bar
Temperature: -200 ... +400 °C
Density: ≥ 400 kg/m³

DUplus
Dual: 2 external chambers

Material: Stainless steel, 6Mo, Hastelloy, titanium, Monel, Inconel, Incoloy, Duplex, Super Duplex
Pressure: 0 ... 400 bar
Temperature: -200 ... +400 °C
Density: ≥ 400 kg/m³

SIplus
Single: 1 external chamber

Material: Stainless steel, 6Mo, Hastelloy, titanium, Monel, Inconel, Incoloy, Duplex, Super Duplex
Pressure: 0 ... 400 bar
Temperature: -200 ... +400 °C
Density: ≥ 400 kg/m³
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**

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

### 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**

- Input: Multi-function input for resistance thermometers, thermocouples and standard signals
- Alarm output: 2 or 4 relays (optional)
- Special feature: Integrated transmitter power supply
- Power supply: AC/DC 100 ... 240 V
- Data sheet: AC 80.03

### DI32-1
**Digital indicator for panel mounting, 48 x 24 mm**

- Input: Multi-function input for resistance thermometers, thermocouples and standard signals
- Alarm output: 2 electronic contacts
- Power supply: DC 9 ... 28 V
- Data sheet: AC 80.13

Further information at www.wika.com
Force transducers from WIKA can be delivered with affixed strain gauges or thin-film sensors. The strain gauge technology offers a large geometrical variety and high accuracy, and it is well suited for detecting even the smallest forces.

The span of the measuring ranges that can be delivered stretches from 0.5 N to over 10,000 kN. Force transducers with thin-film sensors are very cost-effective for customer-specific solutions or OEM applications and also for safety-related applications.
### F2301, F23C1, F23S1
**Tensile/compression force transducer with thin-film technology to 500 kN**

<table>
<thead>
<tr>
<th>Nominal force $F_{\text{nom}}$</th>
<th>0 ... 1 to 0 ... 500 kN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative linearity error</td>
<td>$\pm 0.2 % F_{\text{nom}}$</td>
</tr>
<tr>
<td>Output signal</td>
<td>4 ... 20 mA, 2-wire/3-wire, 2 x 4 ... 20 mA redundant, 0 ... 10 V, 3-wire</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP67 (IP69k optional)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FO 51.17</td>
</tr>
</tbody>
</table>

### F6210
**Ring force transducer to 500 kN**

<table>
<thead>
<tr>
<th>Nominal force $F_{\text{nom}}$</th>
<th>0 ... 15 to 0 ... 500 kN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative linearity error</td>
<td>$\leq \pm 1 % F_{\text{nom}}$ for compressive force measurement, $3 % F_{\text{nom}}$ forpreload force measurement</td>
</tr>
<tr>
<td>Output signal</td>
<td>0.8 ... 1.2 mV/V</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP65</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FO 51.20</td>
</tr>
</tbody>
</table>

### F6212
**Ring force transducer to 100 kN**

<table>
<thead>
<tr>
<th>Nominal force $F_{\text{nom}}$</th>
<th>0 ... 2 to 0 ... 100 kN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative linearity error</td>
<td>$\pm 0.2 % F_{\text{nom}}$</td>
</tr>
<tr>
<td>Output signal</td>
<td>0.8 ... 1.2 mV/V</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP65</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FO 51.27</td>
</tr>
</tbody>
</table>

### F5301, F53C1, F53S1
**Load pin with thin-film technology to 500 kN**

<table>
<thead>
<tr>
<th>Nominal force $F_{\text{nom}}$</th>
<th>0 ... 10 to 0 ... 70 kN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative linearity error</td>
<td>$\pm 1 / \pm 1.5 % F_{\text{nom}}$</td>
</tr>
<tr>
<td>Output signal</td>
<td>4 ... 20 mA, 2-wire/3-wire, CANopen®, 2 x 4 ... 20 mA redundant, CANopen®, 0 ... 10 V, 3-wire, CANopen®</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP67, IP69k (optional)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FO 51.18</td>
</tr>
</tbody>
</table>

### F3831
**Shear beam to 10 t**

<table>
<thead>
<tr>
<th>Nominal force $F_{\text{nom}}$</th>
<th>0 ... 500 to 0 ... 10,000 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative linearity error</td>
<td>$0.03 % F_{\text{nom}}$</td>
</tr>
<tr>
<td>Output signal</td>
<td>2.0 ± 1 % mV/V, 3.0 ± 1 % mV/V (option)</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP65 (&lt; 500 kg), IP67 (500 kg)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FO 51.21</td>
</tr>
</tbody>
</table>

### F3833
**Bending beam to 500 kg**

<table>
<thead>
<tr>
<th>Nominal force $F_{\text{nom}}$</th>
<th>0 ... 20 to 0 ... 500 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative linearity error</td>
<td>$0.02 % F_{\text{nom}}$</td>
</tr>
<tr>
<td>Output signal</td>
<td>2.0 ± 1 % mV/V</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP65</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FO 51.22</td>
</tr>
</tbody>
</table>

Further information at www.wika.com
### Force transducers

#### F5302

**Load measuring shackle, measuring ranges to 15 t**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal force $F_{nom}$</td>
<td>1.5 % for rated loads from 0.5 ... 5 t&lt;br&gt;1 % for rated loads from 7.5 t</td>
</tr>
<tr>
<td>Relative linearity error</td>
<td>$\pm 1 % F_{nom}$</td>
</tr>
<tr>
<td>Output signal</td>
<td>4 ... 20 mA, 2-wire, CANopen®&lt;br&gt;0 ... DC 10 V, 3-wire, CANopen®</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP67</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FO 51.23</td>
</tr>
</tbody>
</table>

#### F9204

**Cable force transducer to 15 t**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal force $F_{nom}$</td>
<td>0 ... 1 to 0 ... 15 t</td>
</tr>
<tr>
<td>Relative linearity error</td>
<td>$\pm 3 % F_{nom}$</td>
</tr>
<tr>
<td>Output signal</td>
<td>4 ... 20 mA, 2-wire</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP66</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FO 51.25</td>
</tr>
</tbody>
</table>

#### F9302

**Strain transducer to 1,000 με**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal force $F_{nom}$</td>
<td>0 ... ±200, 0 ... ±500, 0 ... ±1,000 με</td>
</tr>
<tr>
<td>Relative linearity error</td>
<td>$\pm 1 % F_{nom}$</td>
</tr>
<tr>
<td>Output signal</td>
<td>4 ... 20 mA</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP67&lt;br&gt;IP69k (optional)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FO 54.10</td>
</tr>
</tbody>
</table>

#### F1119, F1136

**Hydraulic compression force transducer to 500 kN**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal force $F_{nom}$</td>
<td>0 ... 320 N to 0 ... 500 kN</td>
</tr>
<tr>
<td>Relative linearity error</td>
<td>Analogue $\pm 1.6 % F_{nom}$&lt;br&gt;Digital $\pm 0.5 % F_{nom}$</td>
</tr>
<tr>
<td>Output signal</td>
<td>Analogue&lt;br&gt;Digital display</td>
</tr>
<tr>
<td>Ingress protection</td>
<td>IP65 analogue display&lt;br&gt;IP65 digital display</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FO 52.10</td>
</tr>
</tbody>
</table>
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 % FS. Typical and widely used load cell geometries are platform 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 assemblies and complete weighing modules available.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Nominal Force $F_{nom}$</th>
<th>Relative Linearity Error</th>
<th>Output Signal</th>
<th>Ingress Protection</th>
<th>Data Sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>F4817</td>
<td>Load cell to 2.000 kg</td>
<td>0 … 100 to 0 … 2,000 kg</td>
<td>0.02 % $F_{nom}$</td>
<td>2.0 ± 10 % mV/V</td>
<td>IP65</td>
<td>FO 53.12</td>
</tr>
<tr>
<td>F4801</td>
<td>Single-point load cell to 250 kg</td>
<td>0 … 3 to 0 … 250 kg</td>
<td>0.02 % $F_{nom}$</td>
<td>2.0 ± 10 % mV/V</td>
<td>IP65</td>
<td>FO 53.10</td>
</tr>
<tr>
<td>F4812</td>
<td>Single-point load cell to 650 kg</td>
<td>0 … 50 to 0 … 650 kg</td>
<td>0.02 % $F_{nom}$</td>
<td>2.0 ± 10 % mV/V</td>
<td>IP65</td>
<td>FO 53.11</td>
</tr>
</tbody>
</table>
Primary flow elements
The most common way to measure flow is differential-pressure flow measurement. This measuring 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
\( \beta = \frac{d}{D} = 0.65 \)
% of unrecovered pressure loss = 58 %
Unrecovered 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>Square edge</td>
<td>Quarter circle</td>
<td>Conical entrance</td>
<td>Eccentric</td>
</tr>
<tr>
<td>Gas</td>
<td>Clean</td>
<td>++</td>
<td>–</td>
</tr>
<tr>
<td>Dirty</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Liquid</td>
<td>Clean</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Viscous</td>
<td>–</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Dirty</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Corrosive</td>
<td>+</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>

++ Preferred + Suitable – Not suitable

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 and assemblies

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

**FLC-OP**

**Orifice plate**

- Standards: ISO 5167-2, ASME MFC3M
- Pipe size: ≥ 2", ≥ 50 mm
- β: Depending on version
- Accuracy: Uncalibrated ±0.5 … 2.5 %
- Data sheet: FL 10.01

**FLC-CO**

**Compact orifice plate for the direct mounting of differential pressure transmitters**

- Standards: ISO 5167-2, ANSI/ASME B16.5
- Pipe size: 2", 14", DN 50 … 350
- β: Depending on version
- Accuracy: ±0.5 %
- Data sheet: FL 10.10

**Versions**

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

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

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

- **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.

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&quot;</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>

---

**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&quot;</td>
</tr>
<tr>
<td>β</td>
<td>≥ 50 mm</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Depending on version</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)
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

<table>
<thead>
<tr>
<th>Pipe size</th>
<th>2&quot;, 3&quot;, 4&quot;, 6&quot; or 8&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>β and pipe length</td>
<td>0.75 or 0.40</td>
</tr>
<tr>
<td>Special feature</td>
<td>No need for straight upstream and downstream pipes</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FL 10.07</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Pipe size</th>
<th>3&quot; ... 24&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>β and pipe length</td>
<td>0.75 or 0.40</td>
</tr>
<tr>
<td>Special feature</td>
<td>No need for straight upstream and downstream pipes</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FL 10.09</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Pipe size</th>
<th>½&quot; ... 24&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>H/D ratios</td>
<td>0.2 / 0.3 / 0.4 / 0.5</td>
</tr>
<tr>
<td>Special features</td>
<td>Low maintenance through robust design</td>
</tr>
<tr>
<td></td>
<td>For very high and very low Reynolds numbers</td>
</tr>
<tr>
<td></td>
<td>Bidirectional measurement possible</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FL 10.08</td>
</tr>
</tbody>
</table>
Flow measurement | Primary flow elements

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.

---

**FLC-FN-PIP**
Flow nozzle for in-pipe installation

- Pipe size
  - ≥ 2 in
  - ≥ 50 mm
- β
  - 0.2 … 0.8
- Accuracy
  - Uncalibrated ±2 %
- Data sheet
  - FL 10.03

**FLC-FN-FLN**
Flow nozzle for flange assembly

- Pipe size
  - ≥ 2 in
  - ≥ 50 mm
- β
  - 0.2 … 0.8
- Accuracy
  - Uncalibrated ±0.8 %
- Data sheet
  - FL 10.03

**FLC-VN**
Venturi nozzle

- Pipe size
  - ≥ 2 in
  - ≥ 50 mm
- β
  - 0.2 … 0.8
- Accuracy
  - Uncalibrated ±1 %
- Data sheet
  - FL 10.03

Note: The actual measuring deviation is specified during the engineering phase.
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>50 … 250 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>β</td>
<td>0.4 … 0.75</td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>Uncalibrated ±1.25 %</td>
<td></td>
</tr>
<tr>
<td>Data sheet</td>
<td>F1 10.04</td>
<td></td>
</tr>
</tbody>
</table>

**FLC-VT-WS**  
Venturi tube, welded sheet

<table>
<thead>
<tr>
<th>Pipe size</th>
<th>≥ 14 in</th>
<th>200 … 1,200 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>β</td>
<td>0.4 … 0.7</td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>Uncalibrated ±1.5 %</td>
<td></td>
</tr>
<tr>
<td>Data sheet</td>
<td>F1 10.04</td>
<td></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 unrecovered 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.

Vortex generation

<table>
<thead>
<tr>
<th>FLC-APT-E</th>
<th>FLC-APT-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>FloTec, extractable</td>
<td>FloTec, fixed</td>
</tr>
<tr>
<td>Pipe size</td>
<td>≥ 3 in</td>
</tr>
<tr>
<td></td>
<td>n.a.</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

**FLC-RO-ST**
Single-step restriction orifice

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>½&quot; … 24&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special features</td>
<td>Suitable for liquids, gases and steam</td>
</tr>
<tr>
<td></td>
<td>Single-step version</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FL 10.06</td>
</tr>
</tbody>
</table>

**FLC-RO-MS**
Multi-step restriction orifice

<table>
<thead>
<tr>
<th>Nominal size</th>
<th>½&quot; … 24&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special features</td>
<td>Suitable for liquids, gases and steam</td>
</tr>
<tr>
<td></td>
<td>Single-step version</td>
</tr>
<tr>
<td>Data sheet</td>
<td>FL 10.06</td>
</tr>
</tbody>
</table>
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

- **Material**: Stainless steel, brass
- **Process connection**: G ¼ ... G 1½
- **Flow range**:
  - 0.005 ... 250 l/min (water)
  - 0.2 ... 1,450 NL/min (air)
- **Output**:
  - Optionally pointer, sight glass, reed contact
- **Data sheet**: LM 31.31

**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 ¼ A, G ½ A
  - ¼ 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.

### CPG500
Digital pressure gauge

- **Measuring range**: -1 … +16 to 0 … 1,000 bar
- **Accuracy**: 0.25 %
- **Special feature**:
  - Simple operation using 4 buttons
  - Robust case with protective rubber cap, IP67
- **Data sheet**: CT 08.01

### CPG1500
Precision digital pressure gauge

- **Measuring range**: -1 … 10,000 bar
- **Accuracy** (% of span): up to 0.05 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 CPP-700H hand pump (hydraulic Pmax. 700 bar) or CPP-1000H (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 CPP-30 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 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
Hand-helds, calibrators

Hand-helds 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 8,000 bar available for the instruments. Through this, hand-helds 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.

CPH6200
Hand-held pressure indicator

Measuring range: 0 ... 0.025 to 0 ... 1,000 bar
Accuracy: 0.2 %, 0.1 % (optional)
Special feature:
- Integrated data logger
- Differential pressure measurement (optional)
Data sheet: CT 11.01

CPH5610
Intrinsically safe hand-held pressure calibrator

Measuring range: -1 ... +700 bar
Accuracy: 0.025 % FS
Special feature:
- 2 internal reference sensors
- Differential pressure measurement from 4 ... 20 mA
- Pressure switch function
- Temperature measurement with Pt100 probe
Data sheet: CT 14.51

CPH6300
Hand-held pressure indicator

Measuring range: 0 ... 0.025 to 0 ... 1,000 bar
Accuracy: 0.2 %, 0.1 % (optional)
Special feature:
- Integrated data logger
- Differential pressure measurement (optional)
Data sheet: CT 12.01

CPH6400
Precision hand-held pressure indicator

Measuring range: 0 ... 0.25 to 0 ... 6,000 bar
Accuracy: 0.025 %
Special feature:
- Integrated data logger
- Temperature measurement (optional)
Data sheet: CT 14.01

CPH6000
ProcessCalibrator

Measuring range: 0 ... 0.25 to 0 ... 8,000 bar
Accuracy: 0.025 %
Special feature:
- Calibration function
- Pressure switch test
- Transmitter supply
Data sheet: CT 15.01

Complete test and service cases

These cases can be assembled exactly to your requirements. Thus you will be fully equipped on site!
**Hand-helds, calibrators**

### CPH7000
**Portable process calibrator**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-1 ... 25 bar (-1 ... 1,000 bar with CPT7000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>0.025 % FS</td>
</tr>
<tr>
<td>Special feature</td>
<td>■ Integrated pressure generation</td>
</tr>
<tr>
<td></td>
<td>■ Measurement of pressure, temperature, current, voltage, ambient conditions</td>
</tr>
<tr>
<td></td>
<td>■ Supply of pressure, current and voltage</td>
</tr>
<tr>
<td></td>
<td>■ Calibration function/data logger/switch test</td>
</tr>
</tbody>
</table>

| Data sheet                  | CT 15.51                                       |

### Pascal ET
**Hand-held multi-function calibrator**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>0 ... 100 mA, 0 ... 80 V, 5 ... 10,000 Ω</th>
</tr>
</thead>
<tbody>
<tr>
<td>-190 ... +1,200 °C (type J)</td>
<td></td>
</tr>
<tr>
<td>-200 ... +850 °C (Pt100)</td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.025 % FS</td>
</tr>
<tr>
<td>Special feature</td>
<td>■ Large display with touchscreen</td>
</tr>
<tr>
<td></td>
<td>■ Integrated data logger and calibration function</td>
</tr>
<tr>
<td></td>
<td>■ Measurement and simulation of temperature, current, voltage, resistance, frequency, pressure</td>
</tr>
<tr>
<td></td>
<td>■ HART® communication</td>
</tr>
</tbody>
</table>

| Data sheet                  | CT 18.02                                     |

### Pascal100
**Hand-held multi-function calibrator**

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-1 ... 100 bar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 ... 50 kHz</td>
</tr>
<tr>
<td></td>
<td>0 ... 10 kOhm</td>
</tr>
<tr>
<td></td>
<td>-100 ... +100 mA</td>
</tr>
<tr>
<td></td>
<td>-100 ... +100 mV</td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.025 % FS</td>
</tr>
<tr>
<td>Special feature</td>
<td>■ Large display with touchscreen</td>
</tr>
<tr>
<td></td>
<td>■ Internal pressure/vacuum generation</td>
</tr>
<tr>
<td></td>
<td>■ Integrated data logger and calibration function</td>
</tr>
<tr>
<td></td>
<td>■ Measurement and simulation of pressure, current, voltage, resistance, frequency, temperature and pulses</td>
</tr>
<tr>
<td></td>
<td>■ HART® communication</td>
</tr>
</tbody>
</table>

| Data sheet                  | CT 18.01                                     |

### 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 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                                     |
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.

### CPT2500
**USB pressure transmitter**

- **Measuring range**: 0 ... 0.025 to 0 ... 1,000 bar
- **Accuracy**: 0.2 %, 0.1 % (optional)
- **Special feature**:
  - Recording interval adjustable from 1 ms ... 10 s
  - No external voltage supply required
  - Data storage and evaluation directly via PC
- **Data sheet**: CT 05.01

### CPT61x0
**Precision pressure sensor**

- **Measuring range**: 0 ... 0.025 to 0 ... 400 bar
- **Accuracy**: 0.01 %
- **Special feature**:
  - RS-232 or RS-485 connection
  - Analogue output (optional)
- **Data sheet**: CT 25.10

### CPG2500
**Precision pressure indicator**

- **Measuring range**: 0 ... 0.025 to 0 ... 2,890 bar
- **Accuracy**: 0.01 %
- **Medium**: Non-corrosive gases, > 1 bar liquids
- **Special feature**:
  - Up to 2 internal sensors and 1 external sensor
  - Barometric reference (optional)
- **Data sheet**: CT 25.02

### CPA2501
**Precision air data test indicator**

- **Measuring range**:
  - Altitudes to 100,000 ft
  - Speeds to 1,150 knots
- **Accuracy**: Down to 0.01 % FS
- **Special feature**:
  - RVSM compliant
  - Ps, Qc, Ps/Pt or Ps/Qc configuration
- **Data sheet**: CT 29.02

### WIKA-Cal
**Calibration software, accessories for precision measuring instruments**

- 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
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.

**Wika pressure controllers: Always the right calibration solution**

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Measuring range</th>
<th>Accuracy</th>
<th>Medium</th>
<th>Special feature</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPC2000</td>
<td>Low-pressure version</td>
<td>0 ... 1 to 0 ... 1,000 mbar</td>
<td>0.1/0.3 % (for 0 ... 1 mbar)</td>
<td>Ambient air</td>
<td>Integrated pressure generation</td>
<td>CT 27.51</td>
</tr>
<tr>
<td>CPC4000</td>
<td>Industrial pressure controller</td>
<td>0 ... 0.35 to 0 ... 210 bar</td>
<td>0.02 %</td>
<td>Dry clean air or nitrogen</td>
<td>Up to 2 sensors</td>
<td>CT 27.40</td>
</tr>
<tr>
<td>CPC6050</td>
<td>Modular pressure controller</td>
<td>0 ... 0.025 to 0 ... 210 bar</td>
<td>0.01 %</td>
<td>Dry clean air or nitrogen</td>
<td>Up to 2 control/measuring channels with 2 sensors each</td>
<td>CT 27.62</td>
</tr>
</tbody>
</table>
### Pneumatic high-pressure controllers

#### CPC8000
- **Precision version**
- **Measuring range:** 0 ... 0.025 to 0 ... 400 bar
- **Accuracy:** 0.01 ... 0.008 %
- **Medium:** Dry clean air or nitrogen
- **Special feature:**
  - Robust and low-wear valve technology with long-term stability
  - Up to three interchangeable sensors
- **Data sheet:** CT 28.01

#### CPC7000
- **Pneumatic high-pressure controller**
- **Measuring range:** 0 ... 100 bar to 0 ... 700 bar
- **Accuracy:** 0.01 %
- **Medium:** Nitrogen
- **Special feature:**
  - Robust and low-wear valve technology with long-term stability
  - Up to three interchangeable sensors
- **Data sheet:** CT 27.63

#### CPC8000-H
- **High-pressure version**
- **Measuring range:** 0 ... 700 to 0 ... 1,600 bar
- **Accuracy:** 0.01 %
- **Medium:** Hydraulic oil or water
- **Special feature:**
  - High stability, also for large volumes
  - Up to two interchangeable reference sensors
- **Data sheet:** CT 28.05

### For aviation

#### CPA8001
- **Air data test set**
- **Measuring range:**
  - Altitudes to 100,000 ft
  - Speeds to 1,150 knots
- **Accuracy:** 0.009 %
- **Medium:** Dry clean air or nitrogen
- **Special feature:**
  - Excellent control stability, even with rate control
  - Overshoot-free control
- **Data sheet:** CT 28.01

### 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

### An air data test set

An air data test set is 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.

Further information at www.wika.com
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 measuring principle, they are also specifically suited to on-site applications.

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Measuring range</th>
<th>Accuracy</th>
<th>Medium</th>
<th>Special feature</th>
<th>Data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CPB3500</strong></td>
<td>Pneumatic compact version</td>
<td>0.015 … 1 to 1 … 120 bar</td>
<td>0.015 … 0.006 %</td>
<td>Non-corrosive gases</td>
<td>Compact dimensions and low weight&lt;br&gt;1 bar piston can be used for positive and negative overpressure</td>
<td>CT 31.22</td>
</tr>
<tr>
<td><strong>CPB3800</strong></td>
<td>Hydraulic compact version</td>
<td>1 … 120 to 10 … 1,200 bar</td>
<td>0.05 … 0.025 %</td>
<td>Special oil</td>
<td>Compact dimensions and low weight&lt;br&gt;Instrument base can now also be combined with the CPB3800 piston-cylinder systems</td>
<td>CT 31.06</td>
</tr>
<tr>
<td><strong>CPB3800HP</strong></td>
<td>Compact, high-pressure version with dual-range piston-cylinder system</td>
<td>1 … 2,600 bar</td>
<td>0.025 … 0.007 %</td>
<td>Special oil or others on request</td>
<td>Dual-range piston-cylinder systems with fully automated changing between ranges&lt;br&gt;Compact dimensions and low weight</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.

### CPB5000

**Pneumatic version**

- **Measuring range**: -0.03 ... -1 to 0.4 ... 100 bar
- **Accuracy**: 0.015 ... 0.008 %
- **Medium**: Non-corrosive gases
- **Special feature**: Patent system for fast piston-cylinder exchange
- **Data sheet**: CT 31.01

### CPB5000HP

**High-pressure version**

- **Measuring range**: 25 ... 2,500 to 25 ... 5,000 bar
- **Accuracy**: 0.025 ... 0.02 %
- **Medium**: Special oil
- **Special feature**: Robust instrument base with integrated high-pressure generation
- **Data sheet**: CT 31.51

### CPB5800

**Hydraulic version with dual-range piston-cylinder systems**

- **Measuring range**: 1 ... 120 to 1 ... 1,400 bar
- **Accuracy**: 0.015 ... 0.006 %
- **Medium**: Special oil or others on request
- **Special feature**: Dual-range piston-cylinder systems with fully automated changing between ranges
  - Instrument base can now also be combined with the CPB5800 piston-cylinder systems
- **Data sheet**: CT 31.11

### CPB5600DP

**Differential pressure version**

- **Measuring range**: 0.03 ... 2 to 25 ... 1,600 bar
- **Accuracy**: 0.015 ... 0.008 %
- **Medium**: Non-corrosive gases or special oil
- **Special feature**: Two complete pressure balances within one case for real differential pressure measurements under static pressure
- **Data sheet**: CT 31.56

### CPS5000

**Hydraulic single-range piston-cylinder systems**

- **Special feature**: For the highest demands on accuracy and performance
  - Can be combined with the CPB5800 instrument base
- **Data sheet**: CT 31.01

Further information at www.wika.com
Pressure balances

High-end version

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

The direct measurement of the pressure (p = 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: 0.0005 ... 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

**CPB8000**

Automatic primary standard

- Measuring range: 500 ... 5,000 bar
- Accuracy: 0.005 ... 0.003 %
- Medium: Sebacate oil
- Special feature: Automated calibration of the highest-accuracy pressure sensors, integrated pressure generation
- Data sheet: CT 32.03

**Accessories for pressure balances**

**CPD8000**

Digital pressure balance

- Measuring range: 1 ... 500 bar (abs. and rel.)
- Accuracy: 0.005 ... 0.002 %
- Medium: Non-corrosive, dry gases
- Special feature: Unique operating principle, ideal for automatic calibrations, no mass handling needed
- Data sheet: CT 32.04

**CPU6000 series**

CalibratorUnit

- Determination of the required mass loads or the reference pressure for calibration with pressure balances
- Recording of certificate-relevant data
- Calibration of gauge pressure measuring instruments with absolute pressure references and vice versa
- Easy calibration of pressure transmitters through the voltage supply and multimeter function
- Data sheet: CT 35.02

**WIKACal**

Calibration software, accessories for pressure balances

- 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
Portable pressure generation

Simple manual pressure generation

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

- Measuring range: -850 mbar ... +7 bar
- Medium: Ambient air
- Special feature: Pressure and vacuum generation switchable, Compact dimensions
- Data sheet: CT 91.04

CPP30
Pneumatic hand test pump

- Measuring range: -950 mbar ... +35 bar
- Medium: Ambient air
- Special feature: Pressure and vacuum generation switchable
- Data sheet: CT 91.06

CPP700-H, CPP1000-H
Hydraulic hand test pump

- Measuring range: 0 ... 700 or 0 ... 1,000 bar
- Medium: Oil or water
- Special feature: Integrated medium reservoir, Ergonomic handling
- Data sheet: CT 91.07

CPP1000-M, CPP1000-L
Hydraulic hand spindle pump

- Measuring range: 0 ... 1,000 bar
- Medium: Oil or water
- Special feature: Smooth-running internal precision spindle, Compact dimensions
- Data sheet: CT 91.05

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
- Data sheet: CT 91.03

CPPxx00-X
Hydraulic comparison test pump

- Measuring range: 0 ... 1,000 to 0 ... 7,000 bar
- Medium: Oil or water
- Special feature: Integrated tank, Robust laboratory version with priming pump, Dual-area spindle pump
- Data sheet: CT 91.05, CT 91.08 and CT 91.09

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>Data sheet</td>
<td>CT 61.10</td>
</tr>
</tbody>
</table>

### CTP5000
Reference thermometer

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-196 ... +660 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probe type</td>
<td>Pt100, Pt25</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Depending on version</td>
</tr>
<tr>
<td>Special feature</td>
<td>Flying leads</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 61.20</td>
</tr>
</tbody>
</table>

### CTP5000-T25
Reference thermometer

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-189 ... +660 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probe type</td>
<td>Pt25</td>
</tr>
<tr>
<td>Dimensions</td>
<td>d = 7 mm, l = 480 mm</td>
</tr>
<tr>
<td>Special feature</td>
<td>Flying leads</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 61.25</td>
</tr>
</tbody>
</table>

### CTP9000
Thermocouple

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>0 ... 1,300 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermocouple</td>
<td>Type S per IEC 584, class 1</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Ø 7 mm, l = 600 mm (incl. handle)</td>
</tr>
<tr>
<td>Special feature</td>
<td>Cold junction optional</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 61.10</td>
</tr>
</tbody>
</table>

Data sheet CT 61.10
Hand-helds 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-helds 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.
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**

- Measuring range: -35 ... +255 °C
- Accuracy: 0.2 ... 0.3 K
- Stability: ±0.05 K
- Special feature:
  - Short heating and cooling times
  - Easy to use
- Data sheet: CT 46.30

**CTM9100-150**

**Multi-function calibrator**

- Measuring range: -35 ... +165 °C depending on the application
- Accuracy: 0.3 ... 1 K depending on the application
- Immersion depth: 150 mm
- Special feature:
  - Use as a dry-well calibrator, micro calibration bath, infrared calibrator and surface calibrator
- Data sheet: CT 41.40

**CTB9400**

**Calibration bath, medium measuring range**

- Measuring range: 28 ... 300 °C
- Stability: 0.02 K
- Immersion depth: 200 mm
- Medium: Water, oil or similar media
- Data sheet: CT 46.20

**CTB9500**

**Calibration bath, low measuring range**

- Measuring range: -45 ... +200 °C
- Stability: 0.02 K
- Immersion depth: 200 mm
- Medium: Water, oil or similar media
- Data sheet: CT 46.20
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.

### Portable Temperature Calibrators

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</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</td>
<td>-35 … +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>CTM9100-150</td>
<td>Multi-function</td>
<td>200 … 1,100 °C</td>
<td>3 K</td>
<td>0.3 K</td>
<td>220 mm, bore depth 155 mm</td>
<td>CT 41.29</td>
</tr>
<tr>
<td>CTD9100-375</td>
<td>Compact temperature</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>CTD9100</td>
<td>Infrared</td>
<td>50 … 500 °C</td>
<td>0.1 … 0.4 K</td>
<td>0.1 … 0.4 K</td>
<td></td>
<td>CT 41.42</td>
</tr>
<tr>
<td>CTI5000</td>
<td></td>
<td>-35 … +165 °C depending on the application</td>
<td>0.3 … 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>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.

CTR2000
Precision thermometer

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-200 ... +850 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±0.01 K (4-wire), ±0.03 K (3-wire)</td>
</tr>
<tr>
<td>Probe type</td>
<td>Pt100, Pt25</td>
</tr>
<tr>
<td>Special feature</td>
<td>3-wire measurement (optional)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 60.10</td>
</tr>
</tbody>
</table>

CTR3000
Multi-functional precision thermometer

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-210 ... +1,820 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±0.005 K (4-wire), ±0.03 K (3-wire), ±0.004 % + 2 µV for thermocouples</td>
</tr>
<tr>
<td>Probe type</td>
<td>Pt100, Pt25</td>
</tr>
<tr>
<td>Special feature</td>
<td>Versatile applications by measuring thermocouples and resistance thermometers</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 60.15</td>
</tr>
</tbody>
</table>

CTR5000
Precision thermometer

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-200 ... +962 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±0.01 K, ±0.005 K optional</td>
</tr>
<tr>
<td>Probe type</td>
<td>Pt100, Pt25</td>
</tr>
<tr>
<td>Special feature</td>
<td>Integrated data logger (optional)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 60.20</td>
</tr>
</tbody>
</table>

CTR6000
DC resistance thermometry bridge

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-200 ... +962 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±3 mK (full range)</td>
</tr>
<tr>
<td>Probe type</td>
<td>PRT, thermistors or fixed resistors</td>
</tr>
<tr>
<td>Special feature</td>
<td>Expandable to up to 60 channels (optional)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 60.30</td>
</tr>
</tbody>
</table>

CTR6500
AC resistance thermometry bridge

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>-200 ... +962 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>0.1 ... 1.25 mK depending on resistance ratio</td>
</tr>
<tr>
<td>Probe type</td>
<td>SPRT, PRT or fixed resistors</td>
</tr>
<tr>
<td>Special feature</td>
<td>Expandable to up to 60 channels (optional)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 60.40</td>
</tr>
</tbody>
</table>

CTR9000
Primary-standard resistance thermometry bridge

<table>
<thead>
<tr>
<th>Measuring range</th>
<th>0 ... 260 Ω</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±0.01 K, ±0.005 K optional</td>
</tr>
<tr>
<td>Probe type</td>
<td>SPRT, PRT or fixed resistors</td>
</tr>
<tr>
<td>Special feature</td>
<td>Expandable to up to 60 channels (optional)</td>
</tr>
<tr>
<td>Data sheet</td>
<td>CT 60.80</td>
</tr>
</tbody>
</table>
Standard reference resistors, AC/DC

Electrical comparison standard

Reference resisters 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.

<table>
<thead>
<tr>
<th></th>
<th>CER6000-RR</th>
<th>CER6000-RW</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reference resistor</strong></td>
<td><img src="image1" alt="CER6000-RR" /></td>
<td><img src="image2" alt="CER6000-RW" /></td>
</tr>
<tr>
<td><strong>Resistance value</strong></td>
<td>1, 10, 25, 100, 300, 400, 500, 1,000 and 10,000 Ω</td>
<td>1, 10, 25, 100, 300, 400, 500, 1,000 and 10,000 Ω</td>
</tr>
<tr>
<td><strong>Long-term stability</strong></td>
<td>&lt; ±5 ppm per year</td>
<td>2 ppm per year (HS version 0.5 ppm per year)</td>
</tr>
<tr>
<td><strong>Special feature</strong></td>
<td>Low temperature coefficient, Rugged stainless steel construction</td>
<td>Low temperature coefficient, Rugged stainless steel construction</td>
</tr>
<tr>
<td><strong>Data sheet</strong></td>
<td>CT 70.30</td>
<td>CT 70.30</td>
</tr>
</tbody>
</table>

Connections of the reference resistor, model CER6000-RR

Reference resistor, model CER6000-RR with different resistance range

Reference resistor, model CER6000-RR with 100 Ω
Electrical calibration instruments are used for calibration in industry (laboratories, production, workshops), in calibration service companies and in quality assurance. They are portable and mobile and are particularly notable for their low measurement uncertainty and high scope of operation. For the electrical calibration, the multi-function calibrators CPH7000, Pascal ET and Pascal 100 can also be used.

### CEP3000
**Hand-held temperature calibrator**

| Measuring range      | -10 ... +75 mA, 5 ... 3,200 Ω  
|                      | 0 ... -900 °C (type J)  
|                      | -200 ... +800 °C (Pt100)  
| Accuracy             | 0.4 °C (type J), 0.33 °C (Pt100)  
| Special feature      | Measurement and simulation of thermocouples and resistance thermometers  
| Data sheet           | CT 82.01  

### CEP6000
**Hand-held multi-function calibrator**

| Measuring range      | 0 ... 24 mA, 0 ... 30 V, 5 ... 4,000 Ω  
|                      | 2 CPM ... 10 kHz  
|                      | 0 ... +800 °C (type J)  
|                      | -200 ... +800 °C (Pt100)  
| Accuracy             | 0.015 %  
| Special feature      | Measurement and simulation of thermocouples, resistance thermometers, resistance, current, voltage, frequency, pulse and pressure  
| Data sheet           | CT 83.01  

### CED7000
**High-precision process calibrator**

| Measuring range      | 0 ... 100 mA, 0 ... 100 V, 5 ... 4,000 Ω  
|                      | -210 ... +1,200 °C (type J)  
|                      | -200 ... +800 °C (Pt100)  
| Accuracy             | 0.003 %  
| Special feature      | High-precision measurement and simulation of thermocouples and resistance thermometers, resistance, current, voltage and pressure  
| Data sheet           | CT 85.51  

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**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 cases**

![Pressure supply cases](image)

**Pressure and vacuum supply packages**

![Pressure and vacuum supply packages](image)

**Connection components**

![Connection components](image)

**Pressure control**

![Pressure control](image)

**Calibration and adjustment tools**

![Calibration and adjustment tools](image)

**Temperature accessories**

![Temperature accessories](image)

---

Further information at www.wika.com
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 starting point for resolving your test requirements, even though they are only one component of a high-performance calibration system. From our extensive product range, we can design you 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.

#### Adjustment and calibration benches

| Measuring range   | 1 ... 400 bar pneumatic  
|                   | 10 ... 1,600 bar hydraulic |
| Accuracy          | Depending on the measuring devices used |
| Medium            | Compressed air, nitrogen, oil or water |
| Special feature   | Provision of pressure in workshops and laboratories |

#### Mobile calibration benches

| Measuring range   | Customer-specific |
| Accuracy          | Down to 0.008 % |
| Medium            | Compressed air, nitrogen, oil or water |
| Special feature   | Self-contained, mobile calibration system for workshops and on-site service |

#### Test systems

| Measuring range   | Customer-specific |
| Accuracy          | Down to 0.008 % |
| Medium            | Compressed air, nitrogen, oil or water |
| Special feature   | Measurement parameters pressure, temperature and electrical measurands |

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.

The use of high-quality proven components, ergonomic usability and a cost-effective overall concept with high customer benefit are made a priority. Take advantage of our experience and the proven operation of such systems in WIKA's own accredited laboratories and manufacturing facilities.

### Automated pressure calibration systems

| Measuring range   | Customer-specific |
| Accuracy          | Down to 0.008 % |
| Medium            | Compressed air, nitrogen, oil or water |
| Special feature   | Complete turnkey system |

### Automated temperature calibration systems

| Measuring range   | Customer-specific |
| Stability         | Up to 0.001 K |
| Medium            | Water, alcohol, silicone oil or salt |
| Special feature   | Complete turnkey system |

### Complete setup of laboratories

| Measuring range   | Customer-specific |
| Accuracy          | Measurand pressure up to 0.008 % |
| Stability         | Measurand temperature up to 0.001 K |
| Medium            | Complete solutions from one source - from factory calibration laboratories through calibration vehicles up to national laboratories |
| Special feature   | Complete turnkey system |
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 through to fully automated test systems in production lines - for the following applications:

**Calibration and adjustment of**
- Pressure sensors
- Pressure transmitters
- 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 variety of expansion stages incl. tempering units, workpiece transport systems, workpiece fixtures and electrical and pressure-side contacting. Furthermore, there is also the possibility of integrating mounting or labelling operations on the test components into the overall concept. You can be assured of our capabilities.

<table>
<thead>
<tr>
<th>19” test and calibration racks for pressure sensors</th>
<th>Batch testing systems for pressure sensors</th>
<th>Inline calibration systems for pressure sensors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measuring range</strong></td>
<td><strong>Measuring range</strong></td>
<td><strong>Measuring range</strong></td>
</tr>
<tr>
<td>Customer-specific</td>
<td>Customer-specific</td>
<td>Customer-specific</td>
</tr>
<tr>
<td>■ To 400 bar pneumatic</td>
<td>■ To 1,050 bar pneumatic</td>
<td>■ To 1,050 bar pneumatic</td>
</tr>
<tr>
<td>■ To 1,600 bar hydraulic</td>
<td>■ To 6,000 bar hydraulic</td>
<td>■ To 6,000 bar hydraulic</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td><strong>Accuracy</strong></td>
<td><strong>Accuracy</strong></td>
</tr>
<tr>
<td>Down to 0.008 %</td>
<td>Down to 0.008 %</td>
<td>Down to 0.008 %</td>
</tr>
<tr>
<td><strong>Special feature</strong></td>
<td><strong>Special feature</strong></td>
<td><strong>Special feature</strong></td>
</tr>
<tr>
<td>Compact units with CPC series pressure controllers, working pressure supply, electrical supply and signal evaluation for the test items</td>
<td>With retractable tempering chamber, workpiece carrier for up to 200 pressure sensors, electrical and pressure-side contacting</td>
<td>Integration into customer’s production line, linking multiple tempering chambers, automatic changeover of electrical and pressure-side contacts</td>
</tr>
<tr>
<td><strong>Temperature range</strong></td>
<td><strong>Temperature range</strong></td>
<td><strong>Temperature range</strong></td>
</tr>
<tr>
<td>-40 … +140 °C</td>
<td>-40 … +140 °C</td>
<td>-40 … +140 °C</td>
</tr>
</tbody>
</table>
Calibration technology

Calibration services

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.

-1 bar … +8,000 bar
using high-accuracy reference standards
(pressure balances) and working standards
(precise electrical pressure measuring instruments)
with an accuracy of 0.003 % … 0.01 % of reading
in accordance with the directives DIN EN 837, DAkkS-DKD-R 6-1, EURAMET cg-3 or EURAMET cg-17

ISO 9001 certified
DKD/DAkkS accredited (in accordance with DIN EN ISO/IEC 17025)
Co-operation 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

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

<table>
<thead>
<tr>
<th>Pressure</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1 bar … +8,000 bar</td>
<td>-196 °C … +1,200 °C</td>
</tr>
<tr>
<td>using high-accuracy reference standards (pressure balances) and working standards (precise electrical pressure measuring instruments)</td>
<td>in calibration baths and tube furnaces using appropriate reference thermometers</td>
</tr>
<tr>
<td>with an accuracy of 0.003 % … 0.01 % of reading</td>
<td>with an accuracy of 2 mK … 1.5 K or with various fixed-point cells (e.g. water, gallium, zinc, tin and aluminium)</td>
</tr>
<tr>
<td>in accordance with the directives DIN EN 837, DAkkS-DKD-R 6-1, EURAMET cg-3 or EURAMET cg-17</td>
<td>in accordance with the appropriate DKD/DAkkS and EURAMET directives</td>
</tr>
</tbody>
</table>

Electrical measurands

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

On site (pressure and temperature)

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

- in our calibration van or on your workbench
- with a DAkkS accreditation for pressure
  - from -1 bar … +8,000 bar
  - with accuracies between 0.025 % and 0.1 % of full scale for the standard used
- with a DAkkS accreditation for temperature from -55 … +1,100 °C

ISO 9001 certified
DKD/DAkkS accredited (in accordance with DIN EN ISO/IEC 17025)
Co-operation 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
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 lifecycle solutions**

**High Purity & Ultra High Purity**