# WIKA

## Standard product portfolio

Pressure | Temperature | Level | Force | Flow | Calibration

WIKA

Part of your business

Alexander Wiegand,
Chairman and CEO, WIKA

# About us

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

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

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.

# Contents

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



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

- Sanitary applications
- Ventilation and air-conditioning
- Innovative $SF_6$ solutions
- High purity & ultra high purity

# Bourdon tube pressure gauges

## Copper alloy

These pressure gauges are suitable for liquid and gaseous media, so long as they are not highly viscous or crystallising and do not attack copper alloy parts. The scale ranges cover pressures from 0.6 ... 1,000 bar. These instruments are manufactured in accordance with the European standard EN837-1 (except for model 111.11 and 111.12 in NS 27).

### 111.10, 111.12

**Standard version**

| | |
|---|---|
| Nominal size | 27, 40, 50, 63, 80, 100, 160 mm |
| Scale range | -1 … 0 to 0 … 400 bar |
| Accuracy class | 2.5, 1.6 optional<br>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 | -1 … 0 to 0 … 400 bar |
| Accuracy class | 2.5 |
| Data sheet | PM 01.10 |

### 113.13

**Plastic case, liquid filling**

| | |
|---|---|
| Nominal size | 40, 50, 63 mm |
| Scale range | -1 … 0 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 x 96: 0 … 0.6 to 0 … 1,000 bar<br>■ NS 72 x 72: 0 … 0.6 to 0 … 400 bar |
| Accuracy class | 1.6, 1.0 |
| Data sheet | PM 02.07 |

## 212.20

### Stainless steel case

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

## 213.40

### Heavy-duty version, case filling

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

## 113.53, 213.53

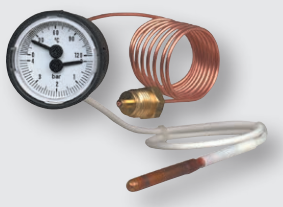
### Stainless steel case, case filling

| | |
|---|---|
| Nominal size | 113.53: 40, 80, 100 mm<br>213.53: 50, 63, 100 mm |
| Scale range | -1 … 0 to 0 … 1,000 bar |
| Accuracy class | 113.53: 2.5<br>213.53: 1.0 (NS 100), 1.6 (NS 50, 63) |
| Data sheet | PM 01.08, PM 02.12 |

## Thermomanometers

## MFT

### With capillaries, for pressure and temperature measurement



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

## THM10

### Eco version, for pressure and temperature measurement

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

## 100.02

### For pressure and temperature measurement

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

# Bourdon tube pressure gauges

## Stainless steel

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

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

### 131.11

**Compact version**

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

### 232.50, 233.50

**For the process industry, standard version**

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

### 232.30, 233.30

**For the process industry, safety version**

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

### 232.36, 233.36

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

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | 0 … 0.6 to 0 … 40 bar |
| Overload safety | Up to 4 times the measuring range |
| Accuracy class | 1.0 |
| Data sheet | PM 02.15 |

### 232.34, 233.34

**Process Gauge, safety version per ASME B40.100**

| | |
|---|---|
| Nominal size | 4 ½" |
| Scale range | 0 … 0.6 bar to 0 … 1,000 bar |
| Accuracy class | Grade 2A |
| Ingress protection | IP54, with liquid filling IP65 |
| Data sheet | PM 02.10 |

# Test gauges

## For highest accuracy

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

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

### 312.20

**Copper alloy, class 0.6**

| | |
|---|---|
| Nominal size | 160 mm |
| Scale range | 0 … 0.6 to 0 … 600 bar |
| Accuracy class | 0.6 |
| Ingress protection | IP54 |
| Data sheet | PM 03.01 |

### 332.50, 333.50

**Stainless steel, standard version, class 0.6**

| | |
|---|---|
| Nominal size | 160 mm |
| Scale range | 0 … 0.6 to 0 … 1,600 bar |
| Accuracy class | 0.6 |
| Ingress protection | IP65 |
| Data sheet | PM 03.06 |

### 332.30, 333.30

**Stainless steel, safety version, class 0.6**

| | |
|---|---|
| Nominal size | 160 mm |
| Scale range | 0 … 0.6 to 0 … 1,600 bar |
| Accuracy class | 0.6 |
| Ingress protection | IP65 |
| Data sheet | PM 03.05 |

### 342.11

**From class 0.1, with transport case and acceptance test certificate**

| | |
|---|---|
| Nominal size | 250 mm |
| Scale range | 0 … 1 to 0 … 1,600 bar |
| Accuracy class | 0.1 for scale ranges < 400 bar<br>0.25 for scale ranges ≥ 400 bar |
| Ingress protection | IP54 |
| Data sheet | PM 03.03 |

### 610.20, 630.20

**For low pressure ranges from 10 mbar, class 0.6**

| | |
|---|---|
| Nominal size | 160 mm |
| Scale range | 0 … 10 to 0 … 600 mbar |
| Accuracy class | 0.6 |
| Ingress protection | IP54 |
| Data sheet | PM 06.09 |

# Diaphragm pressure gauges

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

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

## 422.12, 423.12

**Grey cast iron case**

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | 0 … 16 mbar to 0 … 40 bar |
| Accuracy class | 1.6 |
| Ingress protection | IP54, with liquid filling IP65 |
| Data sheet | PM 04.02 |

## 432.50, 433.50

**For the process industry, high overload safety up to the 10-fold full scale value, max. 40 bar**

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | 0 … 16 mbar to 0 … 25 bar |
| Accuracy class | 1.6 |
| Ingress protection | IP54, with liquid filling IP65 |
| Data sheet | PM 04.03 |

## 432.36, 432.56

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

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | 0 … 16 mbar to 0 … 40 bar |
| Accuracy class | 1.6 |
| Ingress protection | IP54, with liquid filling IP65 |
| Data sheet | PM 04.07 |

# Capsule pressure gauges

## For very low pressures

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

These capsule pressure gauges are used mainly within medical, vacuum, environmental and laboratory technology for contents measurement and filter monitoring.

### 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<br>■ NS 96 x 96: 0 … 10 to 0 … 600 mbar<br>■ NS 144 x 144: 0 … 6 to 0 … 600 mbar<br>■ 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<br>■ NS 100: 0 … 16 to 0 … 600 mbar<br>■ 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 |

# Differential pressure gauges

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

These measuring instruments monitor

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

## 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<br>700.02: 0 … 160 mbar to 0 … 2.5 bar |
| Accuracy class | 700.01: ±3 %<br>700.02: ±5 %<br>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 | IP33 |
| 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<br>NS 160: 0 … 2.5 to 0 … 250 mbar |
| Accuracy class | 1.6 |
| Ingress protection | IP66 |
| Data sheet | PM 07.07 |

## 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 |

## 732.14

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

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | ■ 0 ... 60 to 0 ... 250 mbar (measuring cell DN 140)<br>■ 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 07.13 |

# Absolute pressure gauges

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

Applications for these high-precision measuring instruments are, for example, monitoring of vacuum pumps and vacuum packaging 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

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | 0 … 25 mbar to 0 … 25 bar abs., high overload safety |
| Accuracy class | 1.0 or 1.6 or 2.5 |
| Ingress protection | IP54, with liquid filling IP65 |
| Data sheet | PM 05.02 |

# Digital pressure gauges

## DG-10

### Digital pressure gauge for general industrial applications

| | |
|---|---|
| Measuring range | ■ 0 … 5 to 0 … 700 bar<br>■ -1 … +5 to -1 … +10 bar |
| Accuracy (% of span) | ≤ 0.5 % FS ±1 digit |
| Special feature | ■ Robust stainless steel case, nominal size 80 mm<br>■ Battery operation (2 x 1.5 V AA cell)<br>■ Option: Rotatable instrument head, backlighting |
| Data sheet | PE 81.66 |

## CPG500

### Digital pressure gauge

| | |
|---|---|
| Measuring range | -1 … +16 to 0 … 1,000 bar |
| Accuracy | 0.25 % |
| Special feature | ■ Simple operation using 4 buttons<br>■ Robust case with protective rubber cap, IP67 |
| Data sheet | CT 09.01 |

## CPG1500

### Precision digital pressure gauge

App „myWIKA device“
Play Store

| | |
|---|---|
| Measuring range | -1 … 10,000 bar |
| Accuracy | to 0.025 % FS |
| Special feature | ■ Integrated data logger<br>■ WIKA-Cal compatible<br>■ Data transfer via WIKA-Wireless<br>■ Password protection possible<br>■ Robust case IP65 |
| Data sheet | CT 10.51 |

# 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 … 4,000 bar<br>■ 0 … 1.6 to 0 … 40 bar abs.<br>■ -0.2 … +0.2 to -1 … +40 bar |
| Special feature | ■ Multi-functional display<br>■ Freely scalable measuring range<br>■ Simple menu navigation<br>■ Conductive plastic case or stainless steel case<br>■ Large LC display, rotatable |
| Data sheet | PE 86.05 |

## UPT-21

### Universal process transmitter with flush process connection

| | |
|---|---|
| Non-linearity (% of span) | ≤ 0.1 |
| Output signal | 4 … 20 mA, HART® |
| Measuring range | ■ 0 … 0.4 to 0 … 600 bar<br>■ 0 … 1.6 to 0 … 40 bar abs.<br>■ -0.2 … +0.2 to -1 … +40 bar |
| Special feature | ■ Hygienic process connections in different designs<br>■ Electropolished stainless steel case for hygienic applications<br>■ Freely scalable measuring range<br>■ Conductive plastic case or stainless steel case<br>■ Large LC display, rotatable |
| Data sheet | PE 86.05 |

## IPT-20, IPT-21

### Process pressure transmitter with welded metal measuring cell

| | |
|---|---|
| Non-linearity (% of span) | ≤ 0.075 … 0.1 |
| Output signal | 4 … 20 mA, HART® protocol (optional), PROFIBUS® PA, FOUNDATION™ Fieldbus |
| Measuring range | ■ 0 … 0.1 to 0 … 4,000 bar<br>■ 0 … 0.1 to 0 … 40 bar abs.<br>■ -1 … 0 to -1 … +40 bar |
| Special feature | ■ Freely scalable measuring ranges<br>■ Case from plastic, aluminium or stainless steel<br>■ Flush process connection (optional)<br>■ With integrated display and instrument mounting bracket for wall/pipe mounting (optional)<br>■ Process temperature ranges to 200 °C |
| Data sheet | PE 86.06 |

## CPT-20, CPT-21

### Process pressure transmitter with capacitive ceramic measuring cell

| | |
|---|---|
| Non-linearity (% of span) | ≤ 0.05 |
| Output signal | 4 … 20 mA, HART® protocol (optional), PROFIBUS® PA, FOUNDATION™ Fieldbus |
| Measuring range | ■ 0 … 0.025 to 0 … 100 bar abs.<br>■ -1 … 0 to -1 … +100 bar |
| Special feature | ■ Particularly robust, ceramic measuring cell<br>■ Dry ceramic measuring cell with variable sealing concept<br>■ Freely scalable measuring ranges<br>■ Case from plastic, aluminium or stainless steel<br>■ Flush process connection (optional) |
| Data sheet | PE 86.07 |

## DPT-10

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

| | |
|---|---|
| Non-linearity (% of span) | ≤ 0.075 … 0.15 |
| Output signal | 4 … 20 mA, HART® protocol (optional), PROFIBUS® PA |
| Measuring range | 0 … 10 mbar to 0 … 40 bar |
| Special feature | ■ Freely scalable measuring ranges<br>■ Static load 160 bar, optionally 420 bar<br>■ Case from plastic, aluminium or stainless steel<br>■ With integrated display and instrument mounting bracket for wall/pipe mounting (optional)<br>■ 3- or 5-way valve optional |
| Data sheet | PE 86.21 |

# 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<br>■ 0 … 0.1 to 0 … 25 bar abs.<br>■ -0.05 … 0 to -1 … +24 bar |
| Special feature | ■ Compact design<br>■ Free test report<br>■ 2 million possible variants |
| Data sheet | PE 81.60 |

## S-20

### For superior industrial applications

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

## S-11

### Flush diaphragm

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

## IS-3

### Intrinsic safety Ex i

| | |
|---|---|
| Non-linearity (± % of span) | ≤ 0.2 BFSL |
| Measuring range | ■ 0 … 0.1 to 0 … 6,000 bar<br>■ 0 … 0.25 to 0 … 25 bar abs.<br>■ -1 … 0 to -1 … +24 bar |
| Special feature | ■ Further worldwide Ex approvals<br>■ High-pressure version (optional)<br>■ Flush process connection (optional) |
| Data sheet | PE 81.58 |

## E-10, E-11

### Flameproof enclosure Ex d

| | |
|---|---|
| Non-linearity (± % of span) | ≤ 0.5 BFSL |
| Measuring range | ■ 0 … 0.4 to 0 … 1,000 bar<br>■ 0 … 0.4 to 0 … 16 bar abs.<br>■ -1 … 0 to -1 … +25 bar |
| Special feature | ■ Low-power version<br>■ For sour gas applications (NACE)<br>■ Flush process connection (optional)<br>■ Further worldwide Ex approvals |
| Data sheet | PE 81.27 |

## A-1200

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

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

## 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<br>■ Excellent load cycle stability<br>■ Cavitation protection (optional) |
| Data sheet | PE 81.53 |

## M-10, M-11

### Spanner width 19 mm

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

## P-30, P-31

### For precision measurements

| | |
|---|---|
| Non-linearity (± % of span) | ≤ 0.04 BFSL |
| Measuring range | ■ 0 … 0.25 to 0 … 1,000 bar<br>■ 0 … 0.25 to 0 … 25 bar abs.<br>■ -1 … 0 to -1 … +15 bar |
| Special feature | ■ No additional temperature error in the range 10 ... 60 °C<br>■ Flush process connection (optional)<br>■ 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<br>■ Robust instrument design<br>■ Version with integrated Y-connector |
| Data sheet | PE 81.49 |

# OEM pressure sensors

## O-10

### For industrial applications

| | |
|---|---|
| Non-linearity (± % of span) | ≤ 0.5 BFSL |
| Measuring range | ■ 0 … 6 to 0 … 600 bar<br>■ -1 … +5 to -1 … +59 bar |
| Special feature | ■ For OEM quantities<br>■ Customer-specific variants<br>■ Special version for applications with water as medium<br>■ 5-fold overload safety |
| Data sheet | PE 81.65 |

## MH-4

### For mobile working machines

| | |
|---|---|
| Non-linearity (per IEC 61298-2) | ≤ ±0.25 % of span (BFSL) |
| Measuring range | 0 … 40 to 0 … 1,000 bar |
| Special feature | ■ Developed for the extreme operating conditions in mobile working machines<br>■ Reliability and highest accuracy over the entire life cycle<br>■ Customer-specific adaptations and individualisation<br>■ High production capacities |
| Data sheet | PE 81.63 |

## MH-3-HY

### For mobile hydrogen applications

| | |
|---|---|
| Accuracy (± % of span) | ≤ 1 |
| Measuring range | ■ 0 … 20 to 0 … 600 bar |
| Special feature | ■ Approval per EC79/2009<br>■ Compact and robust design<br>■ Diagnostic function (optional) |
| Data sheet | PE 81.59 |

## MG-1

### For medical gases

| | |
|---|---|
| Non-linearity (± % of span) | ≤ 0.5 BFSL |
| Measuring range | ■ 0 … 6 to 0 … 400 bar |
| Special feature | Cleaned, packed and labelled for oxygen per international standards |
| Data sheet | PE 81.44 |

## R-1

### For refrigeration and air-conditioning applications

| | |
|---|---|
| Accuracy (± % of span) | ≤ 2 |
| Measuring range | ■ 0 … 6 to 0 … 160 bar<br>■ -1 … +7 to -1 … +45 bar |
| Special feature | ■ Special case design for the best possible condensation tightness<br>■ Resistant to all common refrigerants<br>■ Wetted parts from stainless steel |
| Data sheet | PE 81.45 |

# Pressure 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 pressure sensor assembly**

| | |
|---|---|
| Non-linearity (± % of span) | ≤ 0.5 |
| Measuring range | 0 … 10 to 0 … 1,000 bar |
| Special feature | ■ Excellent resistance to media<br>■ Welded measuring cell |
| Signal | mV/V |
| Data sheet | PE 81.16 |

### SCT-1

**Ceramic pressure sensor element**

| | |
|---|---|
| Non-linearity (± % of span) | ≤ 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 pressure sensor element and pressure sensor assembly**

| | |
|---|---|
| Non-linearity (± % of span) | ≤ 0.3 |
| Measuring range | 0 … 0.4 to 0 … 16 bar<br>0 … 0.4 to 0 … 16 bar abs. |
| Special feature | ■ Gauge and absolute pressure measurement<br>■ High output signal<br>■ High overload safety |
| Signal | mV/V |
| Data sheet | PE 81.62 |

### TI-1

**Piezo or metal thin-film pressure sensor module**

| | |
|---|---|
| Non-linearity (± % of span) | ≤ 0.125 BFSL |
| Measuring range | 0 … 0.4 to 0 … 1,600 bar<br>0 … 0.4 to 0 … 40 bar abs.<br>-1 … 0 to -1 … +59 bar |
| Special feature | ■ Processed signal<br>■ High variance in process connections |
| Signal | Analogue and digital |
| Data sheet | PE 81.57 |

### MPR-1

**Pressure sensor module**


| | |
|---|---|
| Non-linearity (± % of span) | ≤ 0.125 or 0.25 |
| Measuring range | 0 … 0.4 to 0 … 25 bar<br>0 … 0.4 to 0 … 25 bar abs. |
| Special feature | ■ 19 mm spanner width for limited mounting space<br>■ No calibration necessary, due to compensated output signal |
| Signal | Analogue and digital |
| Data sheet | PE 81.64 |

*Further information at www.wika.com*

# Pressure gauges with output signal

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

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

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

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

## PGT21

**Bourdon tube, stainless steel case**

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

## PGT23.063

**Bourdon tube, for the process industry, safety version**

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

## PGT23.100, PGT23.160

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

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

## PGT43

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

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

## PGT43HP

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

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

## PGT63HP

**Capsule element, for the process industry, high overload safety**

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | 2.5 … 100 mbar |
| Accuracy class | 1.6 |
| Ingress protection | IP54 |
| Data sheet | PV 16.06 |

intelliGAUGE®

## DPGT43

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

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

## DPGT43HP

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

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

## DPGT40

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

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

## APGT43

**Absolute pressure, for the process industry**

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

*Further information at www.wika.com*

# Contact pressure gauges

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

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

Depending on the model the following contacts are built-in:

- Magnetic snap-action contact, e.g. model 821, for general applications
- Inductive contact model 831, for hazardous areas
- Electronic contact model 830 E, for PLC
- Reed contact model 851, for general applications and PLC
- Micro switch model 850
- Transistor output NPN or PNP

## PGS21

### Bourdon tube, stainless steel case

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

## PGS25

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

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

## PGS21.100, PGS21.160

### Bourdon tube, stainless steel case

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

## PGS23.100, PGS23.160

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

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

## PGS23.063

### Bourdon tube, for the process industry, safety version

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

## PGS43.100, PGS43.160

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

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | 0 … 25 mbar to 0 … 25 bar |
| Accuracy class | 1.6 |
| Ingress protection | IP54, with liquid filling IP65 |
| Data sheet | PV 24.03 |

## 432.36, 432.56 with 8xx

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

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | 0 … 25 mbar to 0 … 40 bar |
| Accuracy class | 1.6 |
| Ingress protection | IP54, with liquid filling IP65 |
| Data sheet | PV 24.07 |

## 532.53 with 8xx

### Absolute pressure, for the process industry, high overload safety

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | 0 … 25 mbar to 0 … 25 bar abs. |
| Accuracy class | 1.6 |
| Ingress protection | IP54, with liquid filling IP65 |
| Data sheet | PV 25.02 |

## 632.51 with 8xx

### Capsule element, for the process industry, high overload safety

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | 0 … 2.5 to 0 … 100 mbar |
| Accuracy class | 1.6 |
| Ingress protection | IP54 |
| Data sheet | PV 26.06 |

## DPGS40

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

| | |
|---|---|
| Nominal size | 100 mm |
| Scale range | 0 … 0.25 to 0 … 10 bar |
| Accuracy class | 2.5 (1.6 optional) |
| Ingress protection | IP65 |
| Data sheet | PV 27.20 |

## DPGS43

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

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | 0 … 16 mbar to 0 … 25 bar |
| Accuracy class | 1.6 |
| Ingress protection | IP54, filled IP65 |
| Data sheet | PV 27.05 |

## DPGS43HP

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

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | 0 … 60 mbar to 0 … 40 bar |
| Accuracy class | 1.6 |
| Ingress protection | IP54, filled IP65 |
| Data sheet | PV 27.13 |

# Pressure switches

## Electronic pressure switches

### PSD-4

**Electronic pressure switch with display**

IO-Link

| | |
|---|---|
| Accuracy (± % of span) | ≤ 0.5 |
| Measuring range | ■ 0 … 0.4 to 0 … 1,000 bar<br>■ 0 … 0.4 to 0 … 25 bar abs.<br>■ -1 … 0 to -1 … +24 bar |
| Special feature | ■ Intuitive and fast setup<br>■ Flexibly configurable and scalable output signals (NPN/PNP, mA/VDC)<br>■ Turndown, analogue output 5 : 1 |
| Data sheet | PE 81.86 |

### PSD-4-ECO

**Electronic pressure switch with display**

IO-Link

| | |
|---|---|
| Accuracy (± % of span) | ≤ 1.0 |
| Measuring range | ■ 0 … 0.4 to 0 … 1,000 bar<br>■ 0 … 0.4 to 0 … 25 bar abs.<br>■ -1 … 0 to -1 … +24 bar |
| Special feature | ■ Good/bad indication through parameterisable digital display (red/green)<br>■ Compact size enables easy installation in confined spaces<br>■ Optimised design makes OEM machine integration easier<br>■ Designed for rough demands of up to 50 g shock and -40 … +125 °C [-40 … +257 °F] |
| Data sheet | PE 81.69 |

### A-1200

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

IO-Link

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

## Mechanical pressure switches for industrial applications

### PSM01

**Compact pressure switch**

| | |
|---|---|
| Setting range | -0.85 … -0.15 bar<br>0.2 … 2 bar to 30 … 320 bar |
| Switching function | Normally open, normally closed, change-over contact |
| Material | Galvanised steel or stainless steel |
| Switching power | 2 A, AC 48 V<br>1 A / 2 A, DC 24 V |
| Data sheet | PV 34.81 |

### PSM02

**Compact pressure switch, settable hysteresis**

| | |
|---|---|
| Setting range | -0.85 … -0.15 bar<br>0.2 … 2 bar to 30 … 320 bar |
| Switching function | Normally open, normally closed, change-over contact |
| Material | Galvanised steel or stainless steel |
| Switching power | 2 A / 4 A, AC 250 V<br>2 A / 4 A, DC 24 V |
| Data sheet | PV 34.82 |

### PSM-520

**Pressure switch, adjustable hysteresis**

| | |
|---|---|
| Setting range | -0.4 … +7 bar<br>0 … 5 bar to 6 … 30 bar |
| Switching function | Normally open, normally closed, change-over contact |
| Material | ■ Bellow: Copper alloy CuSn6 per EN 1652<br>■ Process connection: Free cutting steel EN1A per EN 10277-3, tin-plated |
| Switching power | 10 A / 6 A, AC 230 V |
| Data sheet | PV 35.01 |

### PSM-550

**Pressure switch, for superior industrial applications**

| | |
|---|---|
| Setting range | -1 … 0 and -0.8 … +5 bar<br>0 … 300 mbar<br>0.1 … 1.1 bar to 10 … 30 bar |
| Switching function | Change-over contact (SPDT) |
| Material | ■ Bellow/Process connection: Copper alloy CuSn6 per EN 1652 or stainless steel 1.4401<br>■ With NBR diaphragm: Process connection: Free cutting steel EN1A per EN 10277-3, tin-plated |
| Switching power | 4 A / 10 A, AC 230 V |
| Data sheet | PV 35.03 |

### PSM-700

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

| | |
|---|---|
| Setting range | -1 … 1.5 bar<br>0.2 … 1.6 bar, 7 … 35 bar |
| Switching function | Change-over contact (SPDT and DPDT) |
| Material | ■ Measuring element: Stainless steel 316L<br>■ Process connection: Stainless steel 316L<br>■ Case: Aluminum |
| Switching power | Up to AC 250 V/15 |
| Data sheet | PV 35.05 |

## Mechanical pressure switches for the process industry

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.

### PXS, PXA

**Mini pressure switch**

| | |
|---|---|
| Setting range | 1 … 2.5 to 200 … 1,000 bar |
| Ignition protection type | Ex ia or Ex d |
| Switch | 1 x SPDT or DPDT |
| Switching power | AC 250 V/5 A<br>DC 24 V/5 A |
| Data sheet | PV 34.36, PV 34.38 |

### PCS, PCA

**Compact pressure switch**

| | |
|---|---|
| Setting range | -1 … -0.2 to 200 … 1,000 bar |
| Ignition protection type | Ex ia or Ex d |
| Switch | 1 x SPDT or DPDT |
| Switching power | AC 250 V/15 A<br>DC 24 V/2 A |
| Data sheet | PV 33.30, PV 33.31 |

### MW, MA

**Diaphragm pressure switch**

| | |
|---|---|
| Setting range | 0 … 16 mbar to 30 … 600 bar |
| Ignition protection type | Ex ia or Ex d |
| Switch | 1 or 2 x SPDT or 1 x DPDT |
| Switching power | AC 250 V/20 A<br>DC 24 V/2 A |
| Data sheet | PV 31.10, PV 31.11 |

### BWX, BA

**Bourdon tube pressure switch**

| | |
|---|---|
| Setting range | 0 … 2.5 to 0 … 1,000 bar |
| Ignition protection type | Ex ia or Ex d |
| Switch | 1 or 2 x SPDT or 1 x DPDT |
| Switching power | AC 250 V/20 A<br>DC 24 V/2 A |
| Data sheet | PV 32.20, PV 32.22 |

### DW, DA

**Differential pressure switch**

| | |
|---|---|
| Setting range | 0 … 16 mbar to 0 … 40 bar,<br>static pressure to 160 bar |
| Ignition protection type | Ex ia or Ex d |
| Switch | 1 or 2 x SPDT or 1 x DPDT |
| Switching power | AC 250 V/20 A<br>DC 24 V/2 A |
| Data sheet | PV 35.42, PV 35.43, PV 35.50 |

### APW, APA

**Absolute pressure switch**

| | |
|---|---|
| Setting range | 0 … 25 mbar to 0 … 1.5 bar abs. |
| Proof pressure | 11 bar abs. |
| Ignition protection type | Ex ia or Ex d |
| Switch | 1 or 2 x SPDT or 1 x DPDT |
| Data sheet | PV 35.49, PV 35.48 |

# Diaphragm seal systems

These combinations of diaphragm seals and pressure gauges or pressure sensors feature fast availability. They are particularly suitable for demanding measuring tasks in the pharmaceutical and biotechnology industries, food and beverage industries, and through to the oil & gas, chemical, petrochemical and semiconductor industries.
The diaphragm seal systems can be used for processes with gases, compressed air or vapour, with liquid, pasty, 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 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 |

## With threaded connection

### DSS34M

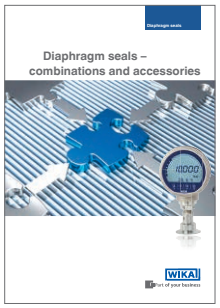
**With pressure gauge per EN 837-1, welded design**

| | |
|---|---|
| Applications with high requirements in the chemical, petrochemical and water treatment industries | |
| PN max. | 60 bar |
| System fill fluid | KN2 for general applications |
| Data sheet | DS 95.15 |

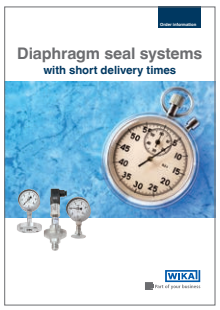
### DSS34T

**With high-quality pressure sensor, welded design**

| | |
|---|---|
| Applications with high requirements in the chemical, petrochemical and water treatment industries | |
| PN max. | 60 bar |
| System fill fluid | KN2 for general applications |
| Data sheet | DS 95.16 |




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




Extensive information can be found in our brochure “Diaphragm seal systems with short delivery times” at www.wika.de.

# Electrical accessories

## A-AI-1, A-IAI-1

### LCD attachable indicator, 50 x 50 mm


| | |
|---|---|
| Input | 4 … 20 mA, 2-wire |
| Supply voltage | From the 4 … 20 mA current loop |
| Special feature | Model A-IAI-1 intrinsically safe per ATEX |
| Data sheet | AC 80.07 |

## M12 x 1 cable

### Cable assemblies M12 x 1

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

## IS Barrier

### Intrinsically safe repeater power supply

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

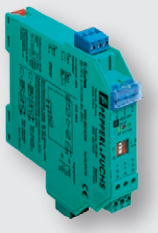
## 905

### Contact protection relay for model 821 switch contacts


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

## 904

### Control unit for inductive contacts model 831



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

# Valves and mounting accessories

## IV1x, IV2x, IV3x, IV5x

### Instrumentation valve

| | |
|---|---|
| Application | For the shutting off, pressure compensation and venting of pressure measuring instruments |
| Version | Needle valve and multiport valve |
| Material | Stainless steel |
| Nominal pressure | To PN 420 (6,000 psi)<br>Option: To PN 680 (10,000 psi) |
| Data sheet | AC 09.19, AC 09.22, AC 09.23 |

## BV

### Ball valve

| | |
|---|---|
| Application | First shut-off valve for pressure tap to local instrument installation, media distribution, drain or vent in pipelines |
| Version | Process and instrument version |
| Material | Stainless steel 316L |
| Nominal pressure | To PN 420 (6,000 psi)<br>Option: To PN 680 (10,000 psi) |
| Data sheet | AC 09.28 |

## IVM

### Monoflange

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

## Mounting accessories

## IBF2, IBF3

### Monoblock

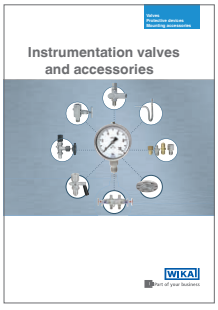
| | |
|---|---|
| Application | For mounting to level indicators or differential pressure instruments in level measurement |
| Version | Per ASME or EN |
| Material | Stainless steel |
| Nominal pressure | To PN 690 bar (10,000 psi) |
| Data sheet | AC 09.25 |

## 910.14, 910.16, 910.17

### Connection adapters, instrument mounting brackets and sealings

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

Extensive information can be found in our brochure “Instrumentation valves and accessories” at www.wika.de.



# 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 remote capillaries are particularly versatile. All thermometers are suited for operation in a thermowell if necessary.

## Bimetal thermometers

### A43

**Heating technology**

| | |
|---|---|
| Nominal size | 63, 80, 100 mm |
| Scale range | -30 … +120 °C |
| Permissible operating pressure at thermowell/stem | Max. 6 bar |
| Wetted parts | Copper alloy |
| Data sheet | TM 43.01 |

### A48

**Refrigeration and air-conditioning technology**

| | |
|---|---|
| Nominal size | 63, 80, 100, 160 mm |
| Scale range | -30 … +120 °C |
| Wetted parts | Copper alloy |
| Data sheet | TM 48.01 |

### A50

**Standard version**

| | |
|---|---|
| Nominal size | 63, 80, 100, 160 mm |
| Scale range | -30 … +200 °C |
| Connection | Removable thermowell with retainer screw |
| Wetted parts | Copper alloy |
| Data sheet | TM 50.03 |

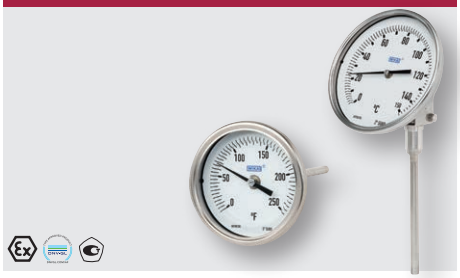
### A52, R52

**Industrial series, axial and radial**

| | |
|---|---|
| Nominal size | 25, 33, 40, 50, 63, 80, 100, 160 mm |
| Scale range | -30 … +50 to 0 … +500 °C |
| Permissible operating pressure at thermowell/stem | Max. 25 bar |
| Wetted parts | Stainless steel |
| Data sheet | TM 52.01 |

### TG53

**Process version per ASME B40.200**



| | |
|---|---|
| Nominal size | 3, 4, 5, 6" |
| Scale range | -70 … +70 to 0 … +600 °C |
| Wetted parts | Stainless steel |
| Option | Liquid dampening to max. 250 °C (case and probe) |
| Data sheet | TM 53.02 |

### TG54

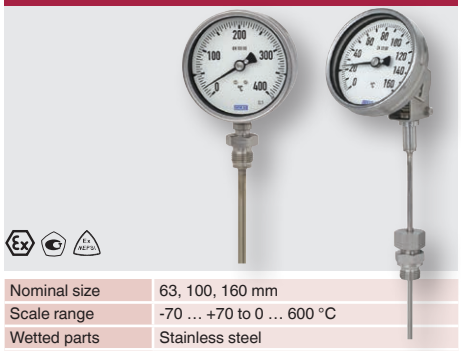
**Process version per EN 13190**

| | |
|---|---|
| Nominal size | 63, 80, 100, 160 mm |
| Scale range | -70 … +70 to 0 … +600 °C |
| Wetted parts | Stainless steel |
| Option | Liquid dampening to max. 250 °C (case and probe) |
| Data sheet | TM 54.02 |

## Bimetal thermometer

### 55

**High-quality process version per EN 13190**



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

## 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<br>■ 2 variants: straight and 90° |
| 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<br>■ Special scales |
| Data sheet | TM 80.02 |

### 70

**With capillary, stainless steel version**

| | |
|---|---|
| Nominal size | 63, 100, 160 mm |
| Scale range | -60 … +400 °C |
| Wetted parts | Stainless steel |
| Option | ■ Liquid dampening (case)<br>■ Indication accuracy class 1 |
| Data sheet | TM 81.01 |

### IFC

**With capillary, standard version**

| | |
|---|---|
| Nominal size | 52, 60, 80, 100 mm<br>48 x 48, 72 x 72, 96 x 96 mm |
| Scale range | -100 … +400 °C |
| Wetted parts | Copper alloy |
| Option | ■ Square case version<br>■ Other case materials |
| Data sheet | TM 80.01 |

# Dial thermometers

## Gas-actuated thermometers

### R73, S73, A73

**Axial and radial, adjustable stem and dial**

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | -200 … +100 to 0 … +700 °C |
| Wetted parts | Stainless steel |
| Option | ■ Liquid dampening (case)<br>■ Contact bulb |
| Data sheet | TM 73.01 |

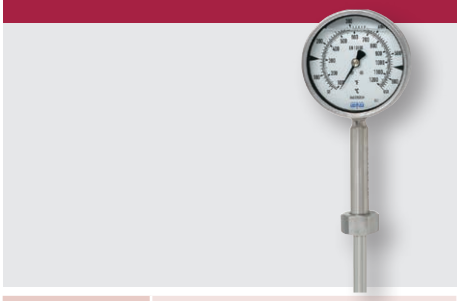
### F73

**With capillary**

| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | -200 … +100 to 0 … +700 °C |
| Wetted parts | Stainless steel |
| Option | ■ Armoured or coated capillary (PVC coating)<br>■ Liquid dampening (case)<br>■ Contact bulb |
| Data sheet | TM 73.01 |

### 75

**Highly vibration resistant**



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

## Thermomanometers

### MFT

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

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

### THM10

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

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

### 100.02

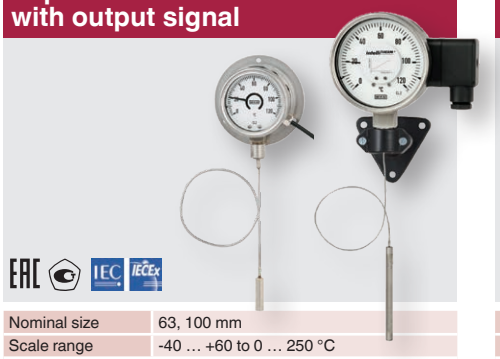
**For pressure and temperature measurement**

| | |
|---|---|
| Nominal size | 63, 80 mm |
| Scale range | ■ Pressure: 0 … 1 to 0 … 16 bar<br>■ Temperature: 0 … 100 to 0 … 150 °C |
| Accuracy class | ■ Pressure: 2.5 (EN 837-1)<br>■ Temperature: 2.5 °C |
| Data sheet | PM 01.23 |

## Dial thermometers with output signal

### TGT70

**Expansion thermometer with output signal**



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

### TGT73

**Gas-actuated thermometer with output signal**

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

# 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) |
| Supply voltage | 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<br>■ 2 relays for instruments with integrated transmitter power supply DC 24 V |
| Supply voltage | ■ AC 100 … 240 V<br>■ AC/DC 24 V |
| Special feature | Analogue output signal |
| 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<br>■ Wall-mounting case (optional) |
| Supply voltage | 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 | 2 electronic contacts |
| Supply voltage | DC 9 … 28 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<br>■ Alternatively double input for standard signals with calculation function (+ - x /) for two transmitters |
| Alarm output | 2 or 4 relays (optional) |
| Special feature | ■ Integrated transmitter power supply<br>■ Analogue output signal (optional) |
| Supply voltage | ■ AC/DC 100 … 240 V<br>■ DC 10 … 40 V, AC 18 … 30 V |
| Data sheet | AC 80.03 |

## DIH10

### Connection head with digital indicator

| | |
|---|---|
| Input | 4 … 20 mA |
| Supply voltage | From the 4 ... 20 mA current loop |
| Data sheet | AC 80.11 |

## DIH50, DIH52

### For current loops with HART® communication

| | |
|---|---|
| Dimensions | 150 x 127 x 127 mm |
| Case | Aluminium, stainless steel |
| Special feature | ■ Adjustment of indication range and unit via HART® communication<br>■ Model DIH52 additionally suitable for multidrop operation and with local master function |
| Approval | ■ Intrinsically safe<br>■ Flameproof enclosure |
| Data sheet | AC 80.10 |

## TF-LCD

### Longlife digital thermometer


| | |
|---|---|
| Measuring range | -40 … +120 °C |
| Special feature | ■ Dust and waterproof case, IP68<br>■ Battery or solar powered<br>■ 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 (3,092 °F) and for very high oscillating stresses. For thermocouples, the accuracy classes per IEC 60584-1 and ASTM E230 apply.

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 | Types K, J, E, N or T |
| Measuring range | -40 … +1,200 °C, -40 … +2,192 °F |
| Measuring location | Ungrounded or grounded |
| Data sheet | TE 65.01 |

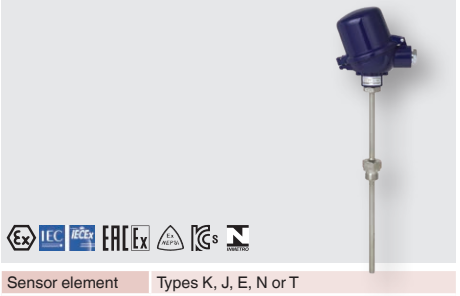
## TC10-B

### For additional thermowell

| | |
|---|---|
| Sensor element | Types K, J, E, N or T |
| Measuring range | -40 … +1,200 °C, -40 … +2,192 °F |
| Measuring location | Ungrounded or grounded |
| Data sheet | TE 65.02 |

## TC10-C

### Threaded, with fabricated thermowell



| | |
|---|---|
| Sensor element | Types K, J, E, N or T |
| Measuring range | -40 … +1,200 °C, -40 … +2,192 °F |
| Measuring location | Ungrounded or grounded |
| Process connection | Mounting thread |
| Data sheet | TE 65.03 |

## TC10-D

### Threaded, miniature design

| | |
|---|---|
| Sensor element | Types K, J, E, N or T |
| Measuring range | -40 … +600 °C, -40 … +1,112 °F |
| Measuring location | Ungrounded or grounded |
| Process connection | Mounting thread |
| Data sheet | TE 65.04 |

## TC10-F

### Flanged thermocouple, with fabricated thermowell

| | |
|---|---|
| Sensor element | Types K, J, E, N or T |
| Measuring range | -40 … +1,200 °C, -40 … +2,192 °F |
| Measuring location | Ungrounded or grounded |
| Process connection | Flange |
| Data sheet | TE 65.06 |

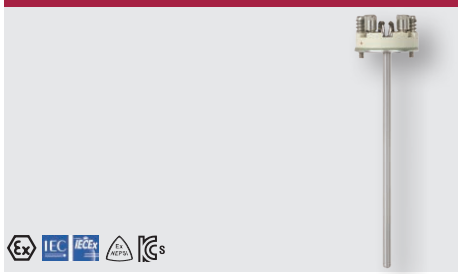
## TC10-H

### Without thermowell

| | |
|---|---|
| Sensor element | Types K, J, E, N or T |
| Measuring range | -40 … +1,200 °C, -40 … +2,192 °F |
| Measuring location | Ungrounded or grounded |
| Process connection | Mounting thread |
| Data sheet | TE 65.08 |

## TC10-K

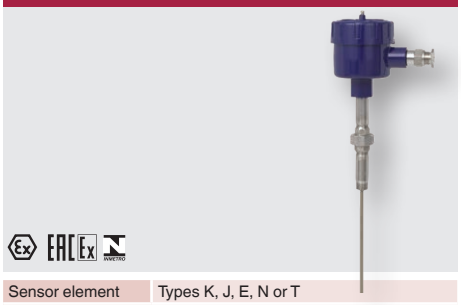
### Measuring insert, for installation in TC10-L



| | |
|---|---|
| Sensor element | Types K, J, E, N or T |
| Measuring range | -40 … +1,200 °C, -40 … +2,192 °F |
| Measuring location | Ungrounded or grounded |
| Data sheet | TE 65.11 |

## TC10-L

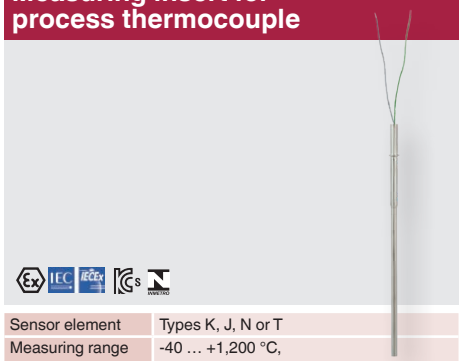
### Flameproof enclosure, for additional thermowell



| | |
|---|---|
| Sensor element | Types K, J, E, N or T |
| Measuring range | -40 … +1,200 °C, -40 … +2,192 °F |
| Measuring location | Ungrounded or grounded |
| Data sheet | TE 65.12 |

## TC12-A

### Measuring insert for process thermocouple



| | |
|---|---|
| Sensor element | Types K, J, N or T |
| Measuring range | -40 … +1,200 °C,<br>-40 … +2,192 °F |
| Measuring location | Ungrounded or grounded |
| Data sheet | TE 65.16 |

## TC12-B

### Process thermocouple, for additional thermowell

| | |
|---|---|
| Sensor element | Types K, J, E, N or T |
| Measuring range | -40 … +1,200 °C, -40 … +2,192 °F |
| Measuring location | Ungrounded or grounded |
| Option | Ex i, Ex d |
| Data sheet | TE 65.17 |

## TC12-M

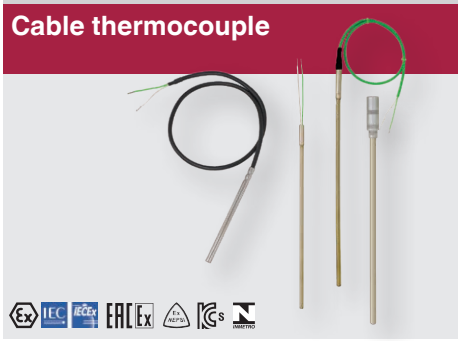
### Process thermocouple, basic module

| | |
|---|---|
| Sensor element | Types K, J, E, N or T |
| Measuring range | -40 … +1,200 °C, -40 … +2,192 °F |
| Measuring location | Ungrounded or grounded |
| Option | Ex i, Ex d |
| Data sheet | TE 65.17 |

# Thermocouples

## TC40

### Cable thermocouple



| | |
|---|---|
| Sensor element | Types K, J, E, N or T |
| Measuring range | -40 … +1,200 °C, -40 … +2,192 °F |
| Measuring location | Ungrounded or grounded |
| Cable | Silicone, PTFE, fibreglass, PVC |
| Data sheet | TE 65.40 |

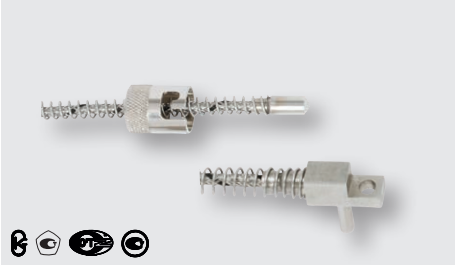
## TC46

### Hot runner thermocouple

| | |
|---|---|
| Sensor element | Type J or K |
| Measuring range | -25 … +400 °C, -13 … +752 °F |
| Measuring location | Ungrounded or grounded |
| Special feature | ■ Probe diameter 0.5 … 3.0 mm<br>■ Plastic-moulded transition |
| Data sheet | TE 65.46 |

## TC47

### Thermocouple for plastics machinery



| | |
|---|---|
| Sensor element | Types J or K |
| Measuring range | -25 … +400 °C, -13 … + 752 °F |
| Measuring location | Ungrounded or grounded |
| Special feature | ■ Various process connections<br>■ Connection lead fibreglass with stainless steel braid |
| Data sheet | TE 67.20 |

## TC50

### Surface thermocouple

| | |
|---|---|
| Sensor element | Types K, J, E, N or T |
| Measuring range | -40 … +1,200 °C, -40 … +2,192 °F |
| Measuring location | Ungrounded or grounded |
| Process connection | Surface mounting |
| Data sheet | TE 65.50 |

## TC53

### Bayonet thermocouple

| | |
|---|---|
| Sensor element | Types K, J, N, E or T |
| Measuring range | -40 … +1,200 °C, -40 … +2,192 °F |
| Measuring location | Ungrounded or grounded |
| Special feature | ■ Single and dual thermocouple<br>■ Explosion-protected versions |
| Data sheet | TE 65.53 |

## TC59

### Tubeskin thermocouple


| | |
|---|---|
| Sensor element | Type K or N |
| Measuring range | 0 … 1,200 °C, 32 … 2,192 °F |
| Measuring location | Welded or exchangeable |
| Process connection | Surface mounting |
| Data sheet | TE 65.56 … TE 65.59 |

## TC80

### High-temperature thermocouple

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

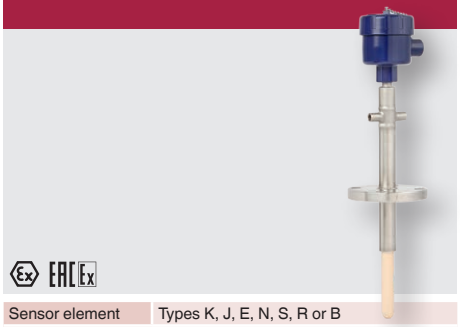
## TC81

### For flue gas temperature measure-ments

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

## TC82

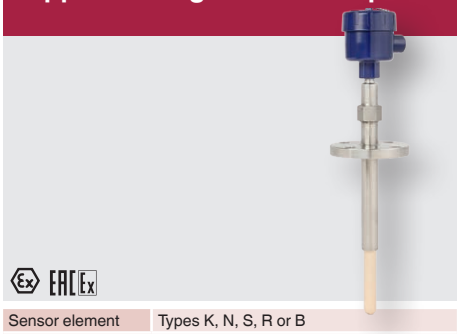
### High-temperature thermocouple



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

## TC83

### Sapphire-design thermocouple



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

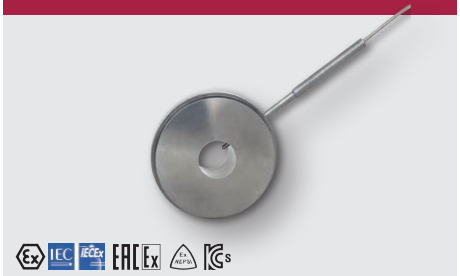
## TC84

### Sapphire-design thermocouple

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

## TC90

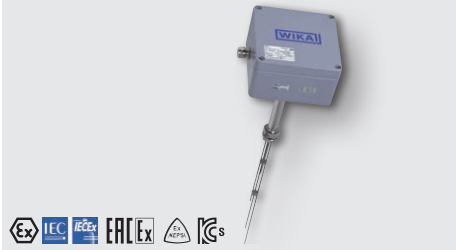
### High-pressure thermocouple



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

## TC95

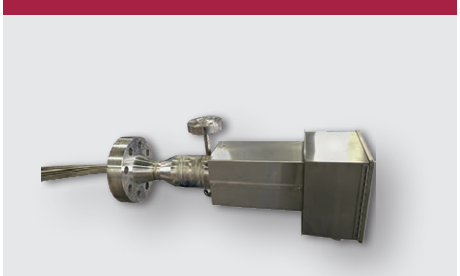
### Multipoint thermocouple in band design




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

## TC96-R

### Flexible multipoint thermometer



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

# Resistance thermometers

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

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

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

## TR10-A

### Measuring insert, MI cable

| | |
|---|---|
| Sensor element | 1 x Pt100, 2 x Pt100 |
| Measuring range | -196 … +600 °C, -320 … +1,112 °F |
| Connection method | 2-, 3- and 4-wire |
| Measuring insert | MI cable |
| Data sheet | TE 60.01 |

## TR10-B

### For additional thermowell

| | |
|---|---|
| Sensor element | 1 x Pt100, 2 x Pt100 |
| Measuring range | -196 … +600 °C, -320 … +1,112 °F |
| 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 | -196 … +600 °C, -320 … +1,112 °F |
| 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 | -196 … +500 °C, -320 … +932 °F |
| 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 | -196 … +600 °C, -320 … +1,112 °F |
| 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 | -196 … +600 °C, -320 … +1,112 °F |
| Connection method | 2-, 3- and 4-wire |
| Process connection | Mounting thread |
| Measuring insert | MI cable |
| Data sheet | TE 60.08 |

## TR10-J

### Threaded, with perforated thermowell

| | |
|---|---|
| Sensor element | 1 x Pt100, 2 x Pt100 |
| Measuring range | -196 … +600 °C, -320 … +1,112 °F |
| Connection method | 2-, 3- and 4-wire |
| Measuring insert | MI cable |
| Process connection | Mounting thread |
| Data sheet | TE 60.10 |

## TR11-A

### Measuring insert, tubular design

| | |
|---|---|
| Sensor element | 1 x Pt100, 2 x Pt100 |
| Measuring range | -50 … +250 °C, -58 … +482 °F |
| Connection method | 2-, 3- and 4-wire |
| Measuring insert | Tubular design |
| Data sheet | TE 60.13 |

## TR10-K

### Measuring insert, for installation in TR10-L

| | |
|---|---|
| Sensor element | 1 x Pt100, 2 x Pt100 |
| Measuring range | -196 … +600 °C, -320 … +1,112 °F |
| Connection method | 2-, 3- and 4-wire |
| Measuring insert | MI cable |
| Data sheet | TE 60.11 |

## TR10-L

### Flameproof enclosure, for additional thermowell

| | |
|---|---|
| Sensor element | 1 x Pt100, 2 x Pt100 |
| Measuring range | -196 … +600 °C, -320 … +1,112 °F |
| Connection method | 2-, 3- and 4-wire |
| Measuring insert | MI cable |
| Data sheet | TE 60.12 |

## TR12-A

### Measuring insert for process resistance thermometer TR12-B

| | |
|---|---|
| Sensor element | 1 x Pt100, 2 x Pt100 |
| Measuring range | -196 … +600 °C, -320 … +1,112 °F |
| Connection method | 2-, 3- and 4-wire |
| Measuring insert | MI cable |
| Data sheet | TE 60.16 |

## TR12-B

### Process resistance thermometer, for additional thermowell

| | |
|---|---|
| Sensor element | 1 x Pt100, 2 x Pt100 |
| Measuring range | -196 … +600 °C, -320…+1,112 °F |
| Connection method | 2-, 3- and 4-wire |
| Measuring insert | MI cable |
| 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 | -196 … +600 °C, -320 … +1,112 °F |
| Connection method | 2-, 3- and 4-wire |
| Measuring insert | MI cable |
| Option | Ex i, Ex d |
| Data sheet | TE 60.17 |

# Resistance thermometers

## TFT35

### Threaded thermometer with integrated transmitter

| | |
|---|---|
| Measuring range | -50 … +200 °C |
| Special feature | ■ Output signal 4 … 20 mA, 0 … 10 V, 0.5 … 4.5 V<br>■ Factory configured<br>■ Measuring insert exchangeable<br>■ Electr. connection via plug connection |
| Data sheet | TE 76.18 |

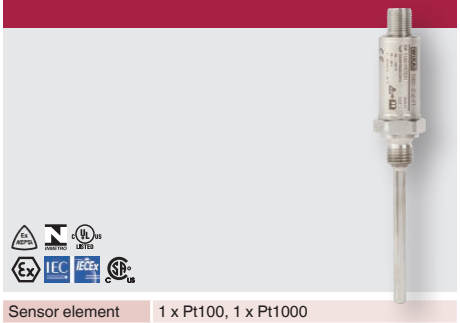
## TR30

### Compact version

| | |
|---|---|
| Sensor element | 1 x Pt100 |
| Measuring range | -50 … +250 °C, -58 … +482 °F |
| Output | Pt100, 4 … 20 mA |
| Data sheet | TE 60.30 |

## TR31

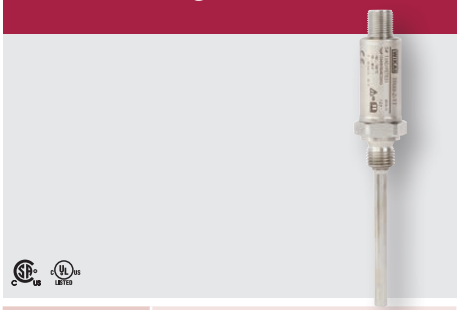
### OEM miniature design



| | |
|---|---|
| Sensor element | 1 x Pt100, 1 x Pt1000 |
| Measuring range | -50 … +250 °C, -58 … +482 °F |
| Output | Pt100, Pt1000, 4 … 20 mA |
| CSA | Ordinary and hazardous locations |
| Data sheet | TE 60.31 |

## TR33

### Miniature design, standard version



| | |
|---|---|
| Sensor element | 1 x Pt100, 1 x Pt1000 |
| Measuring range | -50 … +250 °C, -58 … +482 °F |
| Output | Pt100, Pt1000, 4 … 20 mA |
| CSA | Ordinary locations |
| Data sheet | TE 60.33 |

## TR34

### Miniature design, explosion-protected

| | |
|---|---|
| Sensor element | 1 x Pt100, 1 x Pt1000 |
| Measuring range | -50 … +250 °C, -58 … +482 °F |
| Output | Pt100, Pt1000, 4 … 20 mA |
| CSA | Hazardous locations |
| Data sheet | TE 60.34 |

## TR40

### Cable resistance thermometer

| | |
|---|---|
| Sensor element | 1 x Pt100, 2 x Pt100 |
| Measuring range | -196 … +600 °C, -320 … +1,112 °F |
| Connection method | 2-, 3- and 4-wire |
| Cable | Silicone, PTFE, PVC |
| Data sheet | TE 60.40 |

## TR50

### Surface resistance thermometer

| | |
|---|---|
| Sensor element | 1 x Pt100, 2 x Pt100 |
| Measuring range | -196 … +600 °C, -320 … +1,112 °F |
| Connection method | 2-, 3- and 4-wire |
| Process connection | Surface mounting |
| Data sheet | TE 60.50 |

## TR53

### Bayonet resistance thermometer

| | |
|---|---|
| Sensor element | 1 x Pt100, 2 x Pt100 |
| Measuring range | -196 … +400 °C, -320 … +752 °F |
| 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 | -196 … +500 °C, -320 … +932 °F |
| 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, -4 … +302 °F |
| 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 | -40 … +80 °C, -40 … +176 °F |
| Connection method | 2-, 3- and 4-wire |
| Process connection | Wall mounting |
| Data sheet | TE 60.60 |

## TR75

### DiwiTherm® with digital indicator

| | |
|---|---|
| Measuring range | -40.0 … +199.9 °C, +200 … +450 °C with automatic measuring range changeover (autorange) |
| Power supply | Battery operation |
| Data sheet | TE 60.75 |

## TR81

### For flue gas temperature measurements

| | |
|---|---|
| Sensor element | 1 x Pt100, 2 x Pt100 |
| Measuring range | -196 … +600 °C, -320 … +1,112 °F |
| 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 | -196 … +600 °C, -320 … +1,112 °F |
| Connection method | 2-, 3- and 4-wire |
| Process connection | Various process connections |
| Data sheet | TE 70.01 |

# Resistance thermometers

## TF35

### OEM threaded thermometer, with plug connection

| | |
|---|---|
| Measuring range | -50 … +200 °C |
| Measuring element | Pt100, Pt1000, NTC, KTY, Ni1000 |
| Feature | ■ Compact design<br>■ Very high vibration resistance<br>■ Ingress protection of IP54 to IP69K, depending on the connector<br>■ Brass or stainless steel thermowell |
| Data sheet | TE 67.10 |

## TF37

### Threaded thermometer with connection lead

| | |
|---|---|
| Measuring range | -50 … +260 °C |
| Measuring element | Pt100, Pt1000, NTC, KTY, Ni1000 |
| Special feature | ■ High vibration resistance<br>■ Connection lead from PVC, silicone, PTFE<br>■ Brass or stainless steel thermowell |
| Data sheet | TE 67.12 |

## TF40

### Duct thermometer

| | |
|---|---|
| Measuring range | -50 … +200 °C |
| Measuring element | Pt100, Pt1000, NTC |
| Special feature | ■ Smallest case design, UV-resistant<br>■ Protected against dust and water jets, IP65<br>■ Mounting flange from plastic |
| Data sheet | TE 67.16 |

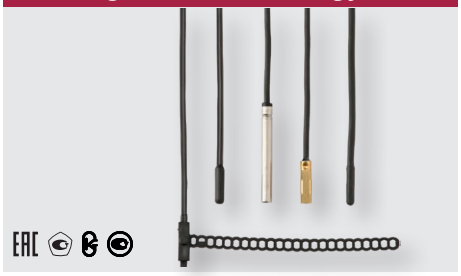
## TF41

### Outdoor thermometer

| | |
|---|---|
| Measuring range | -40 … +100 °C |
| Measuring element | Pt100, Pt1000, NTC |
| Special feature | ■ Smallest case design, UV-resistant<br>■ Protected against dust and water jets, IP65<br>■ Clip-on sun protector |
| Data sheet | TE 67.17 |

## TF43

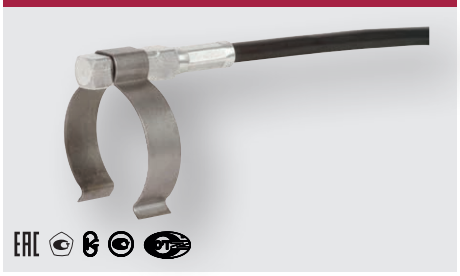
### OEM insertion thermometer for refrigeration technology



| | |
|---|---|
| Measuring range | -50 … +105 °C |
| Measuring element | Pt100, Pt1000, NTC |
| Special feature | ■ Plastic-moulded measuring element<br>■ Waterproof<br>■ Compatible with market-standard refrigeration controllers |
| Data sheet | TE 67.13 |

## TF44

### Strap-on thermometer with connection lead



| | |
|---|---|
| Measuring range | -50 … +200 °C |
| Measuring element | Pt100, Pt1000, NTC, KTY |
| Special feature | ■ Connection lead from PVC, silicone<br>■ Aluminium probe sleeve<br>■ Protected against dust and water jets, IP65<br>■ With quick-mounting clip |
| Data sheet | TE 67.14 |

## TF45

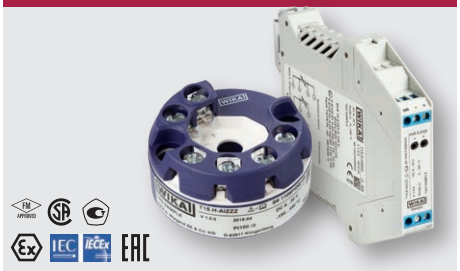
### OEM insertion thermometer with connection lead

| | |
|---|---|
| Measuring range | -50 … +260 °C |
| Measuring element | Pt100, Pt1000, NTC, KTY, Ni1000 |
| Special feature | ■ Connection lead from PVC, silicone, PTFE<br>■ Probe sleeve from stainless steel<br>■ Protected against dust and water jets, IP65 |
| Data sheet | TE 67.15 |

# Temperature transmitters

## T15

### Digital temperature transmitter for resistance sensors



| | |
|---|---|
| Input | Resistance thermometers, potentiometers |
| Accuracy | < 0.1 % |
| Output | 4 … 20 mA |
| Special feature | The fastest and simplest configuration on the market |
| Data sheet | TE 15.01 |

## T16

### Digital temperature transmitter for thermocouples

| | |
|---|---|
| Input | All commercially available thermocouples |
| Accuracy | Typical < 2 K |
| Output | 4 … 20 mA |
| Special feature | The fastest and simplest configuration on the market |
| Data sheet | TE 16.01 |

## T32

### HART® temperature transmitter

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

## T91

### Analogue temperature transmitter 3-wire, 0 … 10 V


| | |
|---|---|
| Input | Resistance thermometers, thermocouples |
| Accuracy | < 0.5 or < 1 % |
| Output | 0 … 10 V, 0 … 5 V |
| Special feature | Fixed measuring range |
| Data sheet | TE 91.01, TE 91.02 |

## TIF50, TIF52

### HART® field temperature transmitter

| | |
|---|---|
| Input | Resistance thermometers, thermocouples, potentiometers |
| Accuracy | < 0.1 % |
| Output | 4 … 20 mA, HART® protocol |
| Special feature | PC configurable |
| Data sheet | TE 62.01 |

# Temperature switches

## Temperature switches for industrial applications

### TSD-30

**Electronic temperature switch with display**

| | |
|---|---|
| Measuring range | -20 … +80 °C, -20 … +120 °C,<br>0 … 150 °C |
| Output | ■ Switching outputs PNP or NPN<br>■ 4 … 20 mA<br>■ 0 … 10 V<br>■ IO-Link 1.1 |
| Data sheet | TE 67.03 |

### TFS35

**Bimetal temperature switch**

| | |
|---|---|
| Switching temperature | 50 … 155 °C, fixed |
| Special feature | ■ Switching voltage to AC 48 V, DC 24 V<br>■ Compact version: Normally closed (NC), normally open (NO)<br>■ Electr. connection via plug connection |
| Data sheet | TV 35.01 |

### TFS135

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

| | |
|---|---|
| Switching temperature | 50 … 130 °C, fixed |
| Special feature | ■ Switching voltages up to AC 250 V<br>■ Contact version normally closed (NC)<br>■ Electr. connection via plug connection<br>■ 1 or 2 switch contacts<br>■ Option: With measuring element Pt1000 / Pt100 |
| Data sheet | TV 35.02 |

## Temperature switches for the process industry

### TXS, TXA

**Mini temperature switches**

| | |
|---|---|
| Setting range | -15 … +20 to 180 … 250 °C |
| Ignition protection type | Ex ia or Ex d |
| Switch | 1 x SPDT |
| Switching power | AC 220 V/5 A<br>DC 24 V/5 A |
| Data sheet | TV 31.70, TV 31.72 |

### TCS, TCA

**Compact temperature switches**

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

### TWG, TAG

**Heavy-duty version**

| | |
|---|---|
| Setting range | -30 … +70 to 0 … 600 °C |
| Ignition protection type | Ex ia or Ex d |
| Switch | 1 or 2 SPDT or 1x DPDT |
| Switching power | AC 250 V/20 A<br>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<br>45 x 45, 72 x 72, 96 x 96 mm |
| Scale range | -100 … +400 °C |
| Wetted parts | Copper alloy |
| Option | Sheet steel version |
| Data sheet | TV 28.02 |

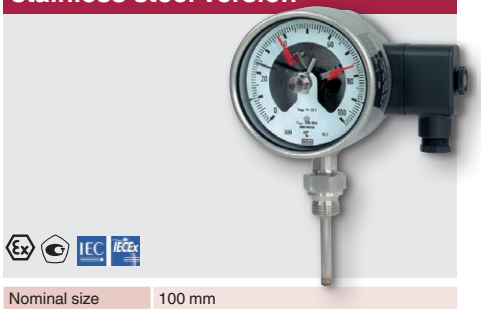
## SB15

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

| | |
|---|---|
| Nominal size | 60, 80, 100 mm<br>72 x 72, 96 x 96 mm |
| Scale range | 0 … 400 °C |
| Wetted parts | Copper alloy |
| Option | ■ Sheet steel version |
| Data sheet | TV 28.03 |

## TGS55

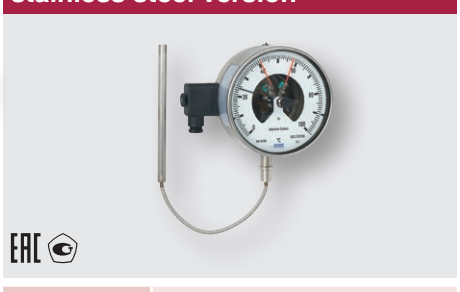
### Bimetal thermometer, stainless steel version



| | |
|---|---|
| Nominal size | 100 mm |
| Scale range | -70 … +30 to 0 … 600 °C |
| Wetted parts | Stainless steel |
| Option | Liquid dampening to max. 250 °C (case and probe) |
| Data sheet | TV 25.01 |

## TGS73

### Gas-actuated thermometer, stainless steel version



| | |
|---|---|
| Nominal size | 100, 160 mm |
| Scale range | -200 … +100 to 0 … 700 °C |
| Wetted parts | Stainless steel |
| Option | ■ Capillary<br>■ Liquid dampening (case) |
| Data sheet | TV 27.01 |

## 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 |

# Temperature controllers

## 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 |
| Supply voltage | ■ AC 100 … 240 V<br>■ 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 (AC 250 V, 3A, (R) or 1A (L)) or logic level DC 0/12 V for 3-point control to control an electronic switch relay (SSR) or analogue current signal 4 … 20 mA |
| Supply voltage | ■ AC 100 … 240 V<br>■ 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 |
| Supply voltage | ■ AC 230 V<br>■ 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 |
| Supply voltage | ■ AC 230 V<br>■ 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

| | |
|---|---|
| Thermowell form | Tapered, straight or stepped |
| Nominal width | ASME 1 … 4 inch<br>DIN/EN DN 25 … 100 |
| Pressure rating | ASME to 2,500 lbs (DIN/EN to PN 100) |
| Data sheet | TW 95.10, TW 95.11, TW 95.12 |

## TW15

### Threaded (solid-machined)

| | |
|---|---|
| Thermowell form | Tapered, straight or stepped |
| Head version | Hexagon, round with hexagon, or round with spanner flats |
| Process connection | ½, ¾ or 1 NPT |
| Data sheet | TW 95.15 |

## TW20

### Socket weld (solid-machined)

| | |
|---|---|
| Thermowell form | Tapered, straight or stepped |
| Welding diameter | 1.050, 1.315 or 1.900 inch<br>(26.7, 33.4 or 48.3 mm) |
| Pressure rating | 3,000 or 6,000 psi |
| Data sheet | TW 95.20 |

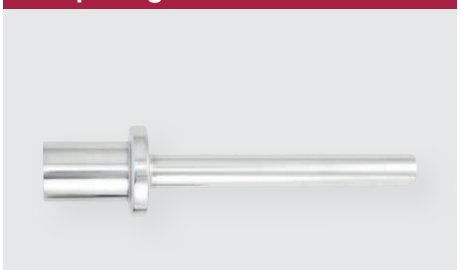
## TW25

### Weld–in (solid-machined)

| | |
|---|---|
| Thermowell form | Tapered, straight or stepped |
| Bar diameter | Up to 2 inch (50.8 mm) |
| Data sheet | TW 95.25 |

## TW30

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



| | |
|---|---|
| Thermowell form | Tapered, straight or stepped |
| Nominal width | ASME 1, 1½ or 2 inch |
| Pressure rating | ASME up to 2,500 lbs |
| Data sheet | TW 95.30 |

## TW31

### Vanstone design in accordance with petrochemical standard

| | |
|---|---|
| Thermowell form | In accordance with Shell drawings S38.113 and S38.114 |
| Material | Stainless steel, special alloys |
| Flange | Slip-on flanges per ASME B16.5 |
| Data sheet | TW 95.31 |

# Thermowells

## ScrutonWell®

### Thermowells in ScrutonWell® design

| | |
|---|---|
| Thermowell form | Solid-body material or with welded-on helix |
| Process connection | Flange, threaded or weld-in |
| Material | Stainless steel or special materials |
| Data sheet | SP 05.16 |

## 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<br>ASME 1 … 2 inch |
| Pressure rating | DIN/EN up to PN 100<br>(ASME up to 1,500 psig) |
| Data sheet | TW 95.40 |

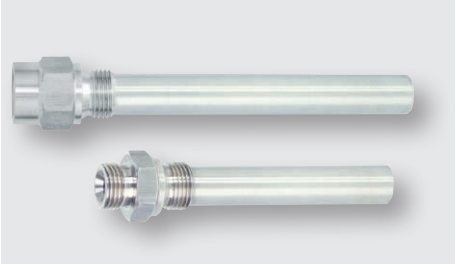
## TW45

### 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<br>ASME 1 … 2 inch |
| Pressure rating | DIN/EN up to PN 100<br>(ASME up to 2,500 psig) |
| Data sheet | TW 95.55 |

## STW52G

### Thermowell for model 52 and model 73

| | |
|---|---|
| Connection to thermometer | Suitable for thermometers with smooth connection (without thread), collar Ø 18 mm, stem 8 and 13 mm |
| Thermowell material | Copper alloy, St35 [2] or stainless steel |
| Process connection | G ½ B thread |
| Max. process temperature, process pressure | ■ 160 °C with copper alloy as thermowell material (6 bar stat.)<br>■ 500 °C with St35 stainless steel thermowell material (25 bar stat.) |
| Data sheet | TW 90.11 |

[2] Thermowell stem material: Stainless steel

# Accessories

## PP82

### Purge-gas control panel


- Heavy-duty stainless steel version
- High mechanical stability through side protection
- For wall and pipe mounting, 2"
- Pressure gauge with liquid dampening
- Data sheet AC 80.19

## PU-548

### Programming unit for temperature transmitters

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

## magWIK

### Magnetic quick connector


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

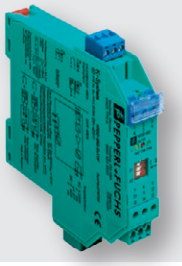
## 905

### Contact protection relay for model 821 switch contacts


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

## 904

### Control unit for inductive contacts



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

## Coupler connectors

## Fittings

## Wires & cables

# Bypass level indicators

## Continuous level measurement via visual indication of the level without supply voltage

### Applications

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

### Special features

- Process- and procedure-specific production
- Operating limits: □ Operating temperature: T = -196 … +450 °C
  □ Operating pressure: P = vacuum to 400 bar [1)]
  □ Limit density: ρ ≥ 340 kg/m$^3$
- Wide variety of different process connections and materials
- Mounting of level transmitters and magnetic switches possible as an option
- Explosion-protected versions

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

## BNA-S

### Standard version

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

## BNA-H

### High-pressure version

| | |
|---|---|
| Chamber | Ø 60.3 x 3.91 mm<br>Ø 60.3 x 5.54 mm<br>73 x 7.01 mm<br>76.1 x 5 mm<br>71 x 7.5 mm<br>76 x 1 mm |
| Material | ■ 1.4571/316Ti<br>■ 1.4404 (316L) |
| Process connection | ■ Flange DIN, ANSI, EN<br>■ Thread<br>■ Weld stub |
| Pressure | Max. 400 bar |
| Temperature | -196 … +400 °C |
| Data sheet | LM 10.01 |

## BNA-X

### Special materials

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

## BNA-P

### Plastic version

| | |
|---|---|
| Chamber | Ø 60.3 x 3 mm |
| Material | ■ PVDF<br>■ PP |
| Process connection | ■ Flange DIN, ANSI, EN |
| Pressure | Max. 6 bar |
| Temperature | -10 … +100 °C |
| Data sheet | LM 10.01 |

## BNA-L

### Liquid/KO*plus* version

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

## BNA-SD, BNA-HD DU*plus*

### Standard/high-pressure version

| | |
|---|---|
| Chamber | ■ BNA-SD: Ø 60.3 x 2 mm<br>Ø 60.3 x 2.77 mm<br>■ BNA-HD: Ø 60.3 x 3.91 mm |
| Material | ■ 1.4571/316TI<br>■ 1.4404/316L |
| Process connection | ■ Flange DIN, ANSI, EN<br>■ Thread<br>■ Weld stub |
| Pressure | ■ BNA-SD: max. 64 bar<br>■ BNA-HD: max. 160 bar |
| Temperature | -196 … +450 °C |
| Data sheet | LM 10.01 |

# Accessories for bypass level indicators

## BLR

### Reed level transmitter

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

## BMD

### Magnetic display

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

## BFT

### Float

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

# Accessories for bypass

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

### BLM-SI, BLM-SD

**Magnetostrictive level transmitter, intrinsically safe (Ex i)**

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

### BLM-SF-FM

**Magnetostrictive level transmitter with FM approval**

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

### UTN

**Top-mounted level indicator**

| | |
|---|---|
| Chamber | ■ Ø 42.4 x 2 mm (standard)<br>■ Ø 42.2 x 2.77 mm<br>■ Ø 60.3 x 2 mm<br>■ Ø 60.3 x 2.77 mm |
| Material | ■ Stainless steel 1.4571/316Ti<br>■ Stainless steel 1.4401/1.4404 (316/316L) |
| Process connection | ■ Flange DIN, ANSI, EN |
| Pressure | Max. 40 bar |
| Temperature | -196 … +300 °C |
| Data sheet | LM 11.02 |

# External chambers

The external chamber model BZG consists of an external chamber vessel that is mounted laterally to a vessel using at least 2 process connections (flange, thread or weld stub). Through this type of arrangement, the level in the external chamber vessel corresponds to the level in the vessel. The level is measured by a measuring instrument inserted additionally in the external chamber vessel, for example model FLR or FLS, or by a guided wave radar.

**Applications**

- Level detection for almost all liquid media
- Individual design and corrosion-resistant materials make the products suitable for a broad range of applications
- Chemical industry, petrochemical industry, oil and natural gas extraction (on- and offshore), shipbuilding, machine building, power generating equipment, power plants

**Special features**

Process- and procedure-specific production

Operating limits: □ Operating temperature: T = -196 … +450 °C
□ Operating pressure: P = Vacuum to 400 bar [1)]

- Wide variety of different process connections and materials
- Mounting of level transmitters and guided wave radars possible as an option

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

## BZG-S

**External chamber, standard version**

| | |
|---|---|
| Material | Stainless steel 1.4571 (316Ti), stainless steel 1.4401/1.4404 (316/316L) |
| Process connection | Flange<br>■ DIN EN 1092-1 DN 10 … DN 100, PN 6 … PN 63<br>■ DIN DN 10 … DN 100, PN 6 … PN 64<br>■ ANSI B 16.5 ½" … 4", class 150 … 600 |
| Pressure | 64 bar |
| Temperature | -196 … +450 °C |
| Data sheet | LM 11.01 |

## BZG-H

**External chamber, high-pressure version**

| | |
|---|---|
| Material | Stainless steel 1.4571 (316Ti), stainless steel 1.4401/1.4404 (316/316L) |
| Process connection | Flange<br>■ DIN EN 1092-1 DN 10 … DN 100, PN 100 … PN 400<br>■ DIN DN 10 … DN 100, PN 100 … PN 400<br>■ ANSI B 16.5 ½" … 4", class 600 … 2,500 |
| Pressure | 400 bar |
| Temperature | -196 … +450 °C |
| Data sheet | LM 11.01 |

## BZG-K

**External chamber, steel version**

| | |
|---|---|
| Material | Steel 1.0345/1.0460, steel 1.5415 (16Mo3), A105/A106 Gr. B, A350 LF2/A333 Gr. 6 |
| Process connection | Flange<br>■ DIN EN 1092-1 DN 10 … DN 50, PN 16 … PN 400<br>■ DIN DN 10 … DN 50, PN 16 … PN 400<br>■ ANSI B 16.5 ½" … 4", class 150 … 2,500 |
| Pressure | Max. 255 bar (material-dependent) |
| Temperature | -10 … +425 °C (material-dependent) |
| Data sheet | LM 11.01 |

## BZG-X

**External chamber, special material version**

| | |
|---|---|
| Material | Stainless steel 6Mo 1.4547 (UNS S31254)<br>Stainless steel 1.4306 (304L)<br>Duplex 1.4462 (UNS S31803)<br>Super Duplex 1.4410 (UNS S3850)<br>Titanium 3.7035 (grade 2)<br>Hastelloy C276 (2.4819) |
| Process connection | Flange<br>■ DIN EN 1092-1 DN 10 … DN 100, PN 63 … PN 400<br>■ DIN DN 10 … DN 100, PN 64 … PN 400<br>■ ANSI B 16.5 ½" … 4", class 600 … 2,500 |
| Pressure | Max. 430 bar (material-dependent) |
| Temperature | -196 … +450 °C (material-dependent) |
| Data sheet | LM 11.01 |

# Glass level gauges

## Direct level indication without supply voltage

### Applications

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

### Special features

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

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

## LGG-E

### Compact version

| | |
|---|---|
| Display type | Reflex |
| Material | ■ Steel 1.0460<br>■ A105, 1.0570 |
| Process connection | Flange DIN, ANSI, EN |
| Pressure | Max. 40 bar |
| Temperature | -10 … +243 °C (steam) |
| Glass size | 2 … 11 |
| Number of segments | 1 … 3 |
| Data sheet | LM 33.01 |

## LGG-RP, LGG-TP

### Carbon-Line version

| | |
|---|---|
| Display type | Reflex/transparent |
| Material | Steel A350 LF2 |
| Process connection | ■ Flange DIN, ANSI, EN<br>■ Male thread ½" NPT, ¾" NPT<br>■ Weld stub ½", ¾" |
| Pressure | Max. 100 bar |
| Temperature | ■ -40 … +243 °C (steam)<br>■ -40 … +300 °C |
| Glass size | 4 … 9 |
| Number of segments | 1 … 5 |
| Data sheet | LM 33.01 |

## LGG-RE, LGG-TE

### Standard version

| | |
|---|---|
| Display type | Reflex/transparent |
| Material | ■ Steel 1.0570, A350 LF2<br>■ Stainless steel 1.4404/316L |
| Process connection | ■ Flange DIN, ANSI, EN<br>■ Male thread ½" NPT, ¾" NPT<br>■ Weld stub ½", ¾" |
| Pressure | Max. 160 bar |
| Temperature | ■ -196 … +243 °C (steam)<br>■ -196 … +300 °C |
| Glass size | 2 … 11 |
| Number of segments | 1 … 5 (others on request) |
| Data sheet | LM 33.01 |

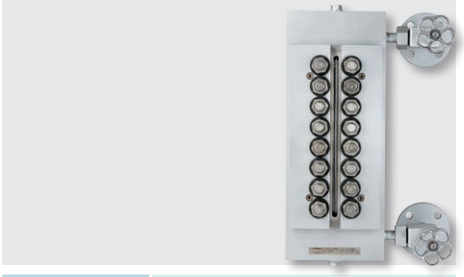
## LGG-RI, LGG-TI

### High-pressure version

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

## LGG-M

### Refraction version



| | |
|---|---|
| Display type | Refraction |
| Material | Steel 1.5415 |
| Process connection | ■ Flange DIN, ANSI, EN<br>■ Male thread G ½, G ¾, ½" NPT, ¾" NPT<br>■ Weld stub ½", ¾" |
| Pressure | Max. 250 bar |
| Temperature | -10 … +374 °C |
| Glass size | 2 … 11 |
| Number of segments | 1 … 9 |
| Data sheet | LM 33.01 |

# Submersible pressure sensors

## Hydrostatic level measurement

### Applications

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

### Special features

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

## LS-10

### For general applications

| | |
|---|---|
| Accuracy (± % of span) | ≤ 0.5 |
| Measuring range | 0 … 0.25 to 0 … 10 bar |
| Output signal | 4 … 20 mA (2-wire) |
| Data sheet | PE 81.55 |

## LF-1

### For superior applications

| | |
|---|---|
| Accuracy (± % of span) | ≤ 0.5 or ≤ 1 |
| Measuring range | 0 … 0.1 to 0 … 6 bar<br>0 … 1.6 to 0 … 6 bar abs. |
| Output signal | ■ 4 … 20 mA (2-wire)<br>■ 4 … 20 mA + HART® (2-wire)<br>■ DC 0.1 … 2.5 V (3-wire) |
| Special feature | ■ Suitable for measurements in contaminated and aggressive media<br>■ An optimised discharge behaviour and a large pressure port prevent the instrument from clogging and ensure a minimum maintenance effort<br>■ Can be used in explosion-protected areas<br>■ Developed for wireless applications |
| Data sheet | LM 40.04 |

## LH-20

### High-performance

| | |
|---|---|
| Accuracy (± % of span) | ≤ 0.2 or 0.1 |
| Measuring range | ■ 0 … 0.1 to 0 … 25 bar<br>■ 0 … 1.6 to 0 … 25 bar abs. |
| Special feature | ■ Scalable measuring range (optional)<br>■ Resistant against the harshest environmental conditions<br>■ Reliable and secure by double-sealed design<br>■ Titanium case for especially high resistance (optional) |
| Output signal | ■ 4 … 20 mA (2-wire)<br>■ 4 … 20 mA (2-wire) + HART® + PT100 |
| Data sheet | PE 81.56 |

# Continuous measurement with float for industrial applications

## With reed measuring chain

**Applications**

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

**Special features**

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

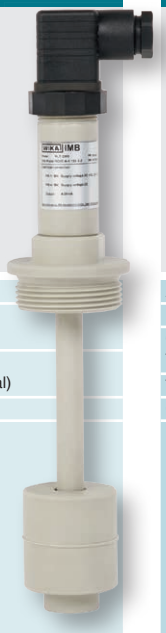
### RLT-1000

**Stainless steel version**

| | |
|---|---|
| Accuracy | 24, 12, 10, 6 or 3 mm |
| Output signal | Resistance signal or 4 … 20 mA |
| Temperature | -30 … +80 °C (-30 … +120 °C optional) |
| Guide tube length | 150 … 1,500 mm |
| Data sheet | LM 50.02 |

### RLT-2000

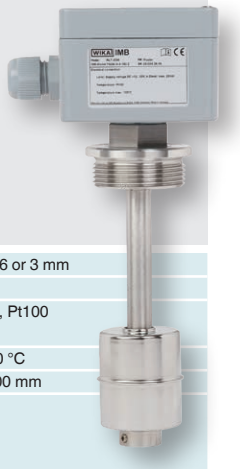
**Plastic version**



| | |
|---|---|
| Accuracy | 24, 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 | 24, 12, 10, 6 or 3 mm |
| Level output signal | 4 … 20 mA |
| Output signal Temperature | 4 … 20 mA, Pt100 or Pt1000 |
| Temperature | -30 … +100 °C |
| Guide tube length | 150 … 1,500 mm |
| Data sheet | LM 50.05 |

# Continuous measurement with float for the process industry

## Magnetostrictive

**Applications**

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

**Special features**

- Process- and procedure-specific solutions possible
- Operating limits:
  - □ Operating temperature: T = -90 … +450 °C
  - □ Operating pressure: P = vacuum to 100 bar
  - □ Limit density: ρ ≥ 400 kg/m³
- Resolution < 0.1 mm
- Wide variety of different electrical connections, process connections and materials
- Explosion-protected versions

### FLM-CA

**Compact version for process applications**

| | |
|---|---|
| Process connection | ■ Mounting thread downwards<br>- G ½" … G 2"<br>- NPT ½" … NPT 2"<br>■ Mounting flange<br>- ANSI ½" … 2 ½", class 150 … 600<br>- EN DN 20 … DN 65, PN 6 … PN 100<br>- DIN DN 20 … DN 65, PN 6 … PN 100 |
| Guide tube length | 100 … 1,000 mm (Ø 6 mm guide tube)<br>100 … 3,000 mm (Ø 12 mm guide tube) |
| Pressure | Vacuum to 40 bar |
| Temperature | -40 … +250 °C |
| Density | ≥ 580 kg/m³ |
| Data sheet | LM 20.04 |

### FLM-CM

**Compact version for industrial applications**

| | |
|---|---|
| Process connection | ■ Mounting thread downwards<br>- G ½" … G 2"<br>- NPT ½" … NPT 2" |
| Guide tube length | 100 … 1,000 mm (Ø 6 mm guide tube) |
| Pressure | Vacuum to 40 bar |
| Temperature | -40 … +125 °C |
| Density | ≥ 680 kg/m³ |
| Data sheet | LM 20.05 |

### FLM-S

**Stainless steel version**

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

### FLM-SP

**Plastic version**

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

### FLM-H

**Hygienic version, for sanitary applications**

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

## With reed measuring chain

### Applications

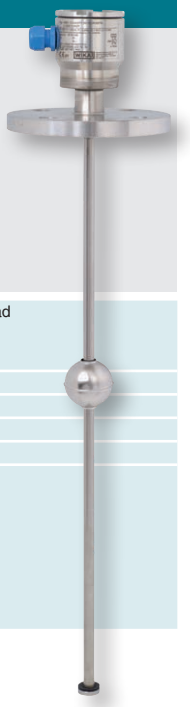
- Level detection for almost all liquid media
- Chemical, petrochemical industry, natural gas, offshore, shipbuilding, machine building, power generating equipment, power plants
- Process water and drinking water treatment, food and beverage industry, pharmaceutical industry

### Special features

- Process- and procedure-specific solutions possible
- Operating limits: □ Operating temperature: T = -80 … +200 °C
  □ Operating pressure: P = vacuum to 80 bar
  □ Limit density: ρ ≥ 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-SA, FLR-SB

### Stainless steel version



| | |
|---|---|
| Process connection | ■ Mounting thread<br>■ Flange DIN, ANSI, EN |
| Guide tube length | Max. 6,000 mm |
| Pressure | 0 … 100 bar |
| Temperature | -80 … +200 °C |
| Density | ≥ 400 kg/m³ |
| Data sheet | LM 20.02 |

## FLR-PA, FLR-PB

### Plastic version, PP, PVDF, PP

| | |
|---|---|
| Process connection | ■ Mounting thread<br>■ Flange DIN, ANSI, EN |
| Guide tube length | Max. 5,000 mm |
| Pressure | 0 … 3 bar |
| Temperature | -10 … +100 °C |
| Density | ≥ 800 kg/m³ |
| Data sheet | LM 20.02 |

## FLR-HA3

### Hygienic version, for sanitary applications

| | |
|---|---|
| Process connection | ■ Clamp ISO 2852<br>■ Clamp DIN 32767<br>■ Aseptic thread DIN 11864-1<br>■ Aseptic liner DIN 11864-1<br>■ Aseptic flange DIN 11864-2<br>■ Aseptic clamp DIN 11864-3<br>■ VARIVENT®<br>■ BioConnect® |
| Material | 1.4435 (316L) or 1.4404 (316L) |
| Guide tube length | Max. 6,000 mm |
| Pressure | 10 bar |
| Temperature | -40 … +250 °C |
| Density | ≥ 770 kg/m³ |
| Data sheet | LM 20.02 |

VARIVENT® is a registered trademark of the company GEA
BioConnect® is a registered trademark of the company NEUMO

# 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

## RLS-1000

### Stainless steel version

| | |
|---|---|
| Switching output | Up to 4 (normally closed, normally open, change-over contact) |
| Medium temperature | -30 … +80 °C (-30 … +150 °C optional) |
| Guide tube length | 60 … 1,500 mm |
| Data sheet | LM 50.03 |

## RLS-2000

### Plastic version

| | |
|---|---|
| Switching output | Up to 4 (normally closed, normally open, change-over contact) |
| Medium temperature | -10 … +80 °C (-30 … +120 °C optional) |
| Guide tube length | 70 … 1,500 mm |
| Data sheet | LM 50.04 |

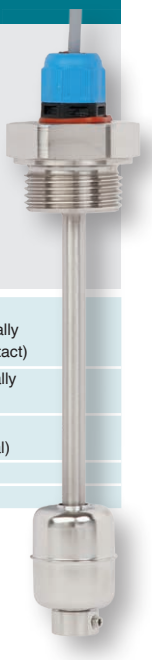
## RLS-3000

### Stainless steel version, with temperature output signal

| | |
|---|---|
| Switching output | Up to 3 (normally closed, normally open, change-over contact) |
| Temperature output | Normally closed, normally open, Pt100, Pt1000 |
| Medium temperature | -30 … +80 °C (-30 … +150 °C optional) |
| Guide tube length | 60 … 1,500 mm |
| Data sheet | LM 50.06 |

## RLS-4000

### Intrinsic safety Ex i



| | |
|---|---|
| Switching output | Up to 4 (normally closed, normally open, change-over contact) |
| Temperature output (optional) | Normally closed, normally open, Pt100, Pt1000 |
| Medium temperature | -30 … +80 °C (-30 … +150 °C optional) |
| Guide tube length | 60 … 1,500 mm |
| Data sheet | LM 50.07 |

## RLS-5000

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

| | |
|---|---|
| Switching output | Normally closed, normally open, change-over contact |
| Medium temperature | -40 … +80 °C |
| Electrical output | Marine cable, IP68 |
| Test device | optional |
| Data sheet | LM 50.08 |

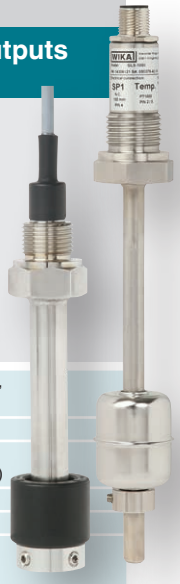
## RLS-6000

### For water and wastewater

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

## GLS-1000

### PNP or NPN switching outputs



| | |
|---|---|
| Switching output | Up to 4 (normally closed, normally open) |
| Temperature output | Pt100, Pt1000 |
| Medium temperature | -40 … +80 °C (-40 … +110 °C optional) |
| Guide tube length | 60 … 1,000 mm |
| Accuracy | ≤ 1 mm |
| Data sheet | LM 50.10 |

# Float switches for the process industry

## Robust switches for liquid media

**Applications**

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

**Special features**

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

### FLS-SA, FLS-SB

**Stainless steel version, for vertical installation**

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

### FLS-PA, FLS-PB

**Plastic version, for vertical installation**

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

VARIVENT® is a registered trademark of the company GEA
BioConnect® is a registered trademark of the company NEUMO

## ELS-S

### For lateral mounting with external chamber

| | |
|---|---|
| External chamber | Stainless steel |
| Process connection | Threaded pipe connection GE10-LR galvanised steel |
| Pressure | To 6 bar |
| Temperature | -30 … +300 °C |
| Data sheet | LM 30.03 |

## ELS-A

### For lateral mounting with external chamber

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

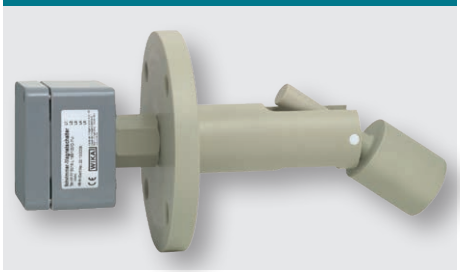
## HLS-M1, HLS-M2

### Plastic or stainless steel version, with cable outlet

| | |
|---|---|
| Process connection | ■ ½" NPT (installation in the tank from outside)<br>■ G ¼" (installation in the tank from inside) |
| Pressure | HLS-M1: 1 bar<br>HLS-M2: 5 bar |
| Temperature | HLS-M1: -10 … +80 °C<br>HLS-M2: -40 … +120 °C |
| Material | HLS-M1: PP<br>HLS-M2: Stainless steel 1.4301 |
| Electrical connection | HLS-M1: Cable<br>HLS-M2: Cable or connector |
| Data sheet | LM 30.06 |

## HLS-P

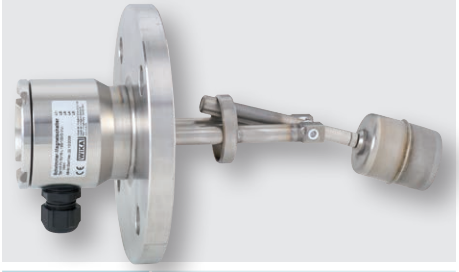
### Plastic version, for horizontal installation



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

## HLS-S

### Stainless steel version, for horizontal installation



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

## HLS-S Ex i

### Intrinsically safe stainless steel version for horizontal installation

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

# 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

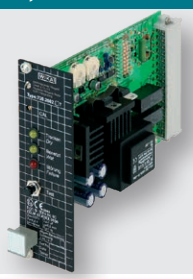
### OLS-S, OLS-H

**Standard and high-pressure version**

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

### OSA-S

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



| | |
|---|---|
| Output | 1 signal relay, 1 failure relay |
| Function | High or low alarm |
| Time delay | To 8 s |
| Voltage supply | AC 24/115/120/230 V<br>DC 24 V |
| Approval | Ex i |
| Data sheet | LM 31.01 |

### OLS-C20

**Compact design, high-pressure version**

| | |
|---|---|
| Material | Stainless steel, quartz glass |
| Process connection | ■ M16 x 1.5<br>■ G ½ A<br>■ ½ NPT |
| Insertion length | 24 mm |
| Pressure | 0 … 50 bar |
| Temperature | -30 … +135 °C |
| Data sheet | LM 31.02 |

# Optoelectronic level switches for industrial applications

**Applications**

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

**Special features**

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

## Optoelectronic limit level switches – for general applications in machine building

### OLS-C01

**Standard version**

| | |
|---|---|
| Material | Stainless steel, borosilicate glass |
| Process connection | G ⅜", 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

**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

**High-temperature version**

| | |
|---|---|
| Material | Stainless steel, borosilicate glass |
| Process connection | G ½" |
| Pressure | Max. 25 bar |
| Temperature | -40 … +170 °C |
| Switching output | 1 x PNP |
| Data sheet | LM 31.33 |

# Optoelectronic level switches for industrial applications

## Optoelectronic limit level switches – application specialists

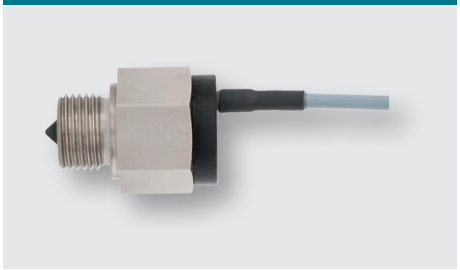
### OLS-C51

**Intrinsic safety Ex i**

| | |
|---|---|
| Material | Stainless steel, borosilicate glass |
| Process connection | G ½" |
| Pressure | Max. 40 bar |
| Temperature | -30 … +135 °C |
| Output signal | 4 … 20 mA low/high as switching output |
| Data sheet | LM 31.04 |

### OLS-C04

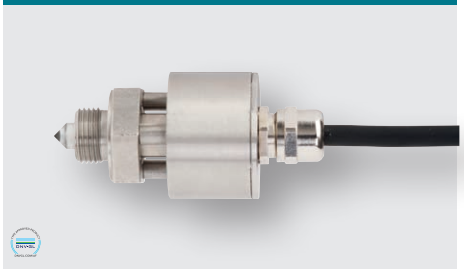
**For refrigeration technology**



| | |
|---|---|
| Material | Steel, nickel-plated; melted 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**



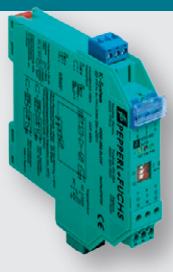
| | |
|---|---|
| Material | Stainless steel, borosilicate glass |
| Process connection | Male thread G ½" or M18 x 1.5 |
| Pressure | Max. 25 bar |
| Temperature | -40 … +130 °C |
| Switching output | 1 x PNP |
| Vibration resistance | 10 … 5,000 Hz, 0 … 60 g |
| Data sheet | LM 31.06 |

# 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

### Digital indicator for panel mounting, 96 x 48 mm


| | |
|---|---|
| Input | ■ Multi-function input for resistance thermometers, thermocouples and standard signals<br>■ Alternatively double input for standard signals with calculation function (+ - x /) for two transmitters |
| Alarm output | 2 or 4 relays (optional) |
| Special feature | ■ Integrated transmitter power supply<br>■ Analogue output signal |
| Supply voltage | ■ AC/DC 100 … 240 V<br>■ DC 10 … 40 V, AC 18 … 30 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 |
| Supply voltage | DC 9 … 28 V |
| Data sheet | AC 80.13 |

# Compression force transducers

Compression force transducers are designed for determining compression forces and are suitable for static and dynamic measurements in the direct force flow. WIKA force transducers are manufactured from stainless steel and other high-quality materials, are robust and are notable for their reliability and high quality even in complex applications. Our compression force transducers are available in different rated loads.

They cover a wide range of application areas: For instance, these force sensors are employed in machine building or in the automation of plants to determine the pressing and joining forces, as well as for detecting weight in many industrial applications. You can select the pertinent technical and regional approvals as options.

## F1119

### Hydraulic compression force transducer, clamping force test instrument to 120 kN

| | |
|---|---|
| Measuring range | 0 … 320 N to 0 … 120 kN |
| Relative linearity error | ■ Analogue ≤ ±1.6 % $F_{nom}$<br>■ Digital ≤ ±0.5 % $F_{nom}$ |
| Output signal | ■ Analogue: Display<br>■ Digital: 4 … 20 mA, 3-wire |
| Ingress protection | ■ Analogue: IP65<br>■ Digital: IP67 |
| Data sheet | FO 52.10 |

## F1136

### Hydraulic compression force transducer, clamping force test instrument to 500 kN

| | |
|---|---|
| Measuring range | 0 … 1.2 kN to 0 … 500 kN |
| Relative linearity error | ■ Analogue ≤ ±1.6 % $F_{nom}$<br>■ Digital ≤ ±0.5 % $F_{nom}$ |
| Output signal | ■ Analogue: Display<br>■ Digital: 4 … 20 mA, 3-wire |
| Ingress protection | ■ Analogue: IP65<br>■ Digital: IP67 |
| Data sheet | FO 52.27 |

## F1211

### Compression force transducer to 1,000 kN

| | |
|---|---|
| Rated force $F_{nom}$ | 0 … 1 to 0 … 1,000 kN |
| Relative linearity error | ±0.3 % $F_{nom}$ (≤ ±0.1 % $F_{nom}$ optional) |
| Output signal | 2 mV/V |
| Ingress protection | IP67 |
| Data sheet | FO 51.10 |

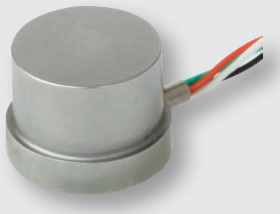
## F1222

### Miniature compression force transducer from 10 N

| | |
|---|---|
| Rated force $F_{nom}$ | 0 … 10 N to 0 … 5,000 N |
| Relative linearity error | ±1 % $F_{nom}$ |
| Output signal | 1.0 mV/V (10 N)<br>2.0 mV/V (20 N to 5 kN) |
| Ingress protection | IP65 |
| Data sheet | FO 51.11 |

## F1224

### Miniature compression force transducer from 1 kN



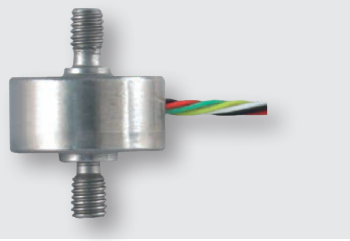
| | |
|---|---|
| Rated force $F_{nom}$ | 0 … 1 to 0 … 500 kN |
| Relative linearity error | ±1.0 % $F_{nom}$ |
| Output signal | 1.5 mV/V |
| Ingress protection | IP65 |
| Data sheet | FO 51.12 |

# Tension/compression force transducer

WIKA offers tension/compression force transducers in different designs and versions. They are available in miniature designs, as traditional s-type, as transducers with different thread forms or as low-profile force transducers. Transducers in miniature design are used for small mounting spaces and also for detecting small forces. The s-type with female thread, which is very well suited for this purpose, features a particularly high accuracy and is used in rated load ranges of up to 50 kN. For measuring high forces, tension/compression force transducers in compact design are the first choice. For low-profile force transducers, the force is transmitted via the centrical female thread. They are highly dynamic and possess a high fatigue strength.

## F2220

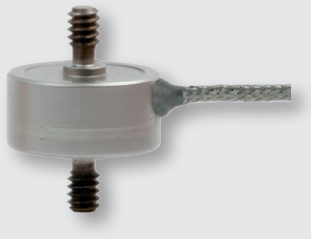
### Miniature tension/compression force transducer, from 10 N



| | |
|---|---|
| Rated force $F_{nom}$ | 0 … 10 N to 0 … 5,000 N |
| Relative linearity error | ±0.5 % $F_{nom}$ |
| Output signal | 2 mV/V (10 N 1.5 mV/V) |
| Ingress protection | IP65 |
| Data sheet | FO 51.16 |

## F2221

### Tension/compression force transducer from 10 N



| | |
|---|---|
| Rated force $F_{nom}$ | 0 … 10 to 0 … 50,000 N |
| Relative linearity error | ±0.2 % $F_{nom}$ |
| Output signal | 2 mV/V (to 10 N 1.5 mV/V) |
| Ingress protection | IP65 |
| Data sheet | FO 51.26 |

## F2222

### Tension/compression force transducer up to 2,200 kN

| | |
|---|---|
| Rated force $F_{nom}$ | 0 … 22 N up to 0 … 2,200 kN |
| Relative linearity error | ±0.1 % $F_{nom}$ |
| Output signal | ■ ≤ 25 lbs: 2 mV/V<br>■ > 50 lbs: 3 mV/V |
| Ingress protection | IP66 |
| Data sheet | FO 51.29 |

## F2226

### Tension/compression force transducer, male thread to 3,300 kN

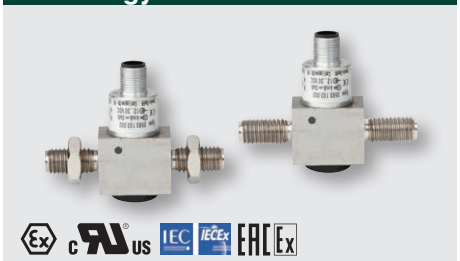
| | |
|---|---|
| Rated force $F_{nom}$ | 0 …10 kN to 0 … 3,300 kN |
| Relative linearity error | ■ ≤ ±0.15 % $F_{nom}$ (≤ 200 kN)<br>■ ≤ ±0.20 % $F_{nom}$ (> 200 kN) |
| Output signal | 2 mV/V |
| Ingress protection | IP66 |
| Data sheet | FO 51.51 |

*Further information at www.wika.com*

# Tension/compression force transducers

## F2301, F23C1, F23S1

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



| | |
|---|---|
| Rated force $F_{nom}$ | 0 … 1 to 0 … 500 kN |
| Relative linearity error | ±0.5 % $F_{nom}$ |
| Output signal | ■ 4 … 20 mA, 2-wire/3-wire<br>■ 0 … 10 V, 3-wire<br>■ CANopen®<br>■ Redundant versions available |
| Ingress protection | IP67 (IP69k optional) |
| Data sheet | FO 51.17 |

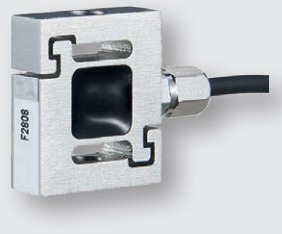
## F2802

### Tension/compression force transducer, s-type to 50 kN

| | |
|---|---|
| Rated force $F_{nom}$ | 0 … 0.5 kN to 0 … 50 kN |
| Relative linearity error dlin | ■ Steel ±0.03 % $F_{nom}$<br>■ Stainless steel ±0.05 % $F_{nom}$ |
| Output signal | 2.0 ±5 % mV/V |
| Ingress protection | IP65 (< 5 kN), IP67 (≥ 5 kN) |
| Data sheet | FO 51.48 |

## F2808

### Tension/compression force transducer from 5 N




| | |
|---|---|
| Rated force $F_{nom}$ | 0 … 5 N to 0 … 2,000 N |
| Relative linearity error | ±0.15 % $F_{nom}$ |
| Output signal | 2.0 ±10 % mV/V |
| Ingress protection | IP66 |
| Data sheet | FO 51.68 |

# Bending/shear beams

Bending beams and shear beams are used for the determination of (shear) forces and are suitable for both static (weighing technology) and dynamic (machine building) measurement projects. To determine how strong the force is in the application, strain gauges or thin-film sensors are used, which are attached on or in the measuring body.

The fields of application of the bending beam and shear beam are many and varied. Thus, these load cells are very often used in industrial weighing technology as well as in the areas of special machine building, factory automation and stage construction. In addition, they are used in the laboratory and process industry for the indirect determination of torques.

## F3831

### Shear beam to 10 t

| | |
|---|---|
| Rated load $F_{nom}$ | 0 … 500 to 0 … 10,000 kg |
| Relative linearity error | Steel: ±0.03 % $F_{nom}$<br>Stainless steel: ±0.05 % $F_{nom}$ |
| Output signal | ■ 2.0 ±1 % mV/V<br>■ 3.0 ±1 % mV/V (optional) |
| Ingress protection | IP65 (< 500 kg), IP67 (500 kg) |
| Data sheet | FO 51.21 |

## F3833

### Bending beam to 500 kg

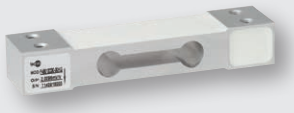

| | |
|---|---|
| Rated load $F_{nom}$ | 0 … 5 kg to 0 … 500 kg |
| Relative linearity error | 0.02 % $F_{nom}$ |
| Output signal | 2.0 ±1 % mV/V |
| Ingress protection | IP68 |
| Data sheet | FO 51.22 |

# Load cells

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

## F4801

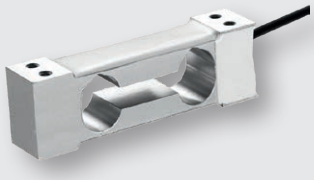
### Single point load cell to 250 kg



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

## F4802

### Single point load cell to 10 kg



| | |
|---|---|
| Rated load $F_{nom}$ | 0 … 0.3 kg to 0 … 10 kg |
| Relative linearity error | 0.02 % $F_{nom}$ |
| Output signal | 1.0 ±10 % mV/V (0.3 - 0.5 kg)<br>2.0 ±10 % mV/V (1 - 10 kg) |
| Ingress protection | IP65 |
| Data sheet | FO 53.13 |

## F4818

### Single point load cell to 500 kg

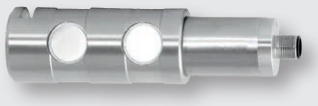
| | |
|---|---|
| Rated load $F_{nom}$ | 0 … 20 kg to 0 … 500 kg |
| Relative linearity error | 0.02 % $F_{nom}$ |
| Output signal | 2.0 ±10 % mV/V |
| Ingress protection | IP65 |
| Data sheet | FO 53.14 |

# Load pins

Load pins represent one of the most important components for measuring forces. Existing retention bolts can easily be replaced by these products in existing applications. The application areas range from construction machinery and cranes to stage construction. These force transducers are often used by designers, because, due to their design, they can be directly integrated into the force flow, without taking up space. Since the design requirements for the use of load pins are very individual, the exact layout is important. With WIKA, you will have specialists by your side who already have lots of experience in force measurement.

## F5301, F53C1, F53S1

### Load pin with thin-film technology to 200 kN



| | |
|---|---|
| Rated force $F_{nom}$ | 0 … 5 kN to 0 … 200 kN |
| Relative linearity error | ±1 % $F_{nom}$/±1.5 % $F_{nom}$/±2 % $F_{nom}$ |
| Output signal | ■ 4 … 20 mA, 2-wire/3-wire<br>■ 0 … 10 V, 3-wire<br>■ CANopen®<br>redundant versions available |
| Ingress protection | IP67, IP69k (optional) |
| Data sheet | FO 51.18 |

# Ring force transducers

These force transducers are extremely robust and are suitable for the detection of very high (static) forces. Furthermore, they are suitable for many installation situations. The ring geometry is used in force measurement for a wide variety of spatial conditions. The main fields of application are found in spindle presses, in screw force measurement or even in geotechnology.

WIKA offers electrical and hydraulic ring force transducers in diameters from 12 millimetres up to 430 millimetres as well as in various installation heights. Discover our portfolio now.

## F6212

### Ring force transducer to 100 kN

| | |
|---|---|
| Rated force $F_{nom}$ | 0 … 2 to 0 … 100 kN |
| Relative linearity error | ≤ 0.5 % $F_{nom}$ |
| Output signal | 0.8 … 1.2 mV/V |
| Ingress protection | IP65 |
| Data sheet | FO 51.27 |

## F6215

### Ring force transducer to 1,500 kN

| | |
|---|---|
| Rated force $F_{nom}$ | 0 … 15 to 0 … 1,500 kN |
| Relative linearity error | ≤ ±1 % $F_{nom}$ |
| Output signal | 0.8 … 1.2 mV/V |
| Ingress protection | IP65 |
| Data sheet | FO 51.28 |

# Special force transducers

We refer to force transducers that do not fit into any standard design as special force transducers. Due to the specification of the requirement, in some cases design-engineered solutions must be considered. As a long-standing manufacturer of force measurement technology, WIKA brings this expertise into play and can find the best and, at the same time, most economical solution for the customer.

Among our special force transducers are, for example, force sensors for determining the weight of containers (twistlock sensors) or for checking rope tension (wire rope force transducers). The applications in which special force transducers are used are wide-ranging and always require great experience in their engineering. You can count on this when you trust in the right solution from WIKA.

## F9204

### Wire rope force transducer to 40 t

| | |
|---|---|
| Rated load $F_{nom}$ | 0 … 1 to 0 … 40 t |
| Relative linearity error | ±3 % $F_{nom}$ |
| Output signal | 4 … 20 mA, 2-wire |
| Ingress protection | IP66 |
| Data sheet | FO 51.25 |

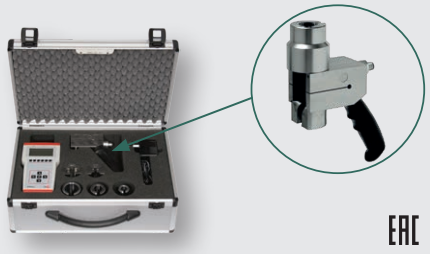
## F9302

### Strain transducer to 1,000 µε

| | |
|---|---|
| Strain $F_{nom}$ | 0 … ±200, 0 … ±500, 0 … ±1,000 µε |
| Relative linearity error | ≤ ±1 % $F_{nom}$ |
| Output signal | 4 … 20 mA, 3-wire |
| Ingress protection | IP67 |
| Data sheet | FO 54.10 |

## FRKPS

### Chain hoist test set for checking friction clutches



| | |
|---|---|
| Rated force $F_{nom}$ | 40 … 3,500 kg |
| Relative linearity error | 0.5 % $F_{nom}$ |
| Output signal | 4 … 20 mA |
| Ingress protection | ■ Force transducer IP67<br>■ Display instrument IP40 |
| Data sheet | FO 51.69 |

# Inclination sensors

In order to determine the inclination of machines or machine parts precisely, WIKA now offers a wide range of inclination sensors. The sensors contain a dielectric medium whose surface, as in a spirit level, always aligns horizontally due to gravity.

Typical application areas of inclination sensors are cranes, aerial platforms, wind turbines or mobile working machines. Application in offshore installations for oil and gas extraction is also possible.

## N1101

### Inclination sensor, single-axis, 1-channel

| | |
|---|---|
| Measuring range | 0 … 360°<br>(other measuring ranges on request) |
| Relative linearity error | ■ < 100° - < 0.1°<br>■ > 100° - < 0.1 % of FS |
| Output signal | 4 … 20 mA, 3-wire |
| Ingress protection | IP67 |
| Data sheet | FO 59.01 |

## N131C

### Ex inclination sensor, redundant

| | |
|---|---|
| Measuring range | 0 … 90°, 0 … 180° or 0 … 360°<br>(other measuring ranges on request) |
| Relative linearity error | ■ < 100° - < 0.1°<br>■ > 100° - < 0.1 % of FS |
| Output signal | 2 x 4 … 20 mA, 3-wire |
| Ingress protection | IP67 |
| Data sheet | FO 59.02 |

# Electronics

Many force measurement applications can be complemented by electronic components. To ensure that all system-relevant components come from a single source, WIKA continuously expands its product range with useful electronics. WIKA offers controllers, amplifiers, limit switches, hand-held measuring instruments, digital indicators and electronic accessories that ensure trouble-free operation. With the help of electronics matched to the measuring components, set limit values are maintained and checked with the reading instruments. Amplifiers are available with analogue and digital output signals. The LED display or LCD are available with 4 or 6 digits.

## EZE09

### Analogue cable amplifier for strain gauge resistance thermometry bridges

| | |
|---|---|
| Input | Resistance thermometry bridge, 4- or 6-wire |
| Output | 0 /4 … 20 mA, DC 0 … 10 V |
| Special feature | ■ High accuracy<br>■ Cable length between amplifier and read-out unit: up to 100 m are possible<br>■ Compact design<br>■ Zero point and span adjustable |
| Supply voltage | DC 12 … 28 V |
| Data sheet | AC 50.03 |

## ELMS1

### Safety electronics PLe in accordance with DIN EN ISO 13849-1

| | |
|---|---|
| Input | ■ 8 safe 4 … 20 mA analogue inputs<br>■ 8 safe digital inputs<br>■ Fieldbus: Optionally PROFIBUS® PA, ProfiNet®, EtherCat® and CANopen® |
| Output | ■ 2 safe relay outputs<br>■ 6 safe, positive-switching semiconductor outputs<br>■ Fieldbus: Optionally PROFIBUS® PA, ProfiNet®, EtherCat® and CANopen® |
| Special feature | ■ Certified safety electronics, certified in accordance with DIN EN ISO 13849-1, PLe<br>■ Certified system solution incl. force measurement, certified in accordance with DIN EN 13849-1 cat. 3, PLd<br>■ Complex functionality, easy to configure via PC<br>■ Complete system available in a control cabinet |
| Supply voltage | DC 24 V |
| Data sheet | AC 50.06 |

## EGS80

### Digital limit switch

| | |
|---|---|
| Input | ■ 0/4 … 20 mA |
| Output | ■ Two potential-free relay contacts (change-over) with status LED<br>■ One freely programmable analogue output (0 … 20 mA) |
| Special feature | ■ Galvanic isolation, line break (LB) and short-circuit (SC) monitoring<br>■ Easy setting of extensive functions on the instrument or via PC software<br>■ Up to SIL 2 in accordance with IEC 61508 |
| Supply voltage | ■ DC 20 … 90 V<br>■ AC 48 … 253 V |
| Data sheet | AC 50.01 |

# Orifice plates and assemblies

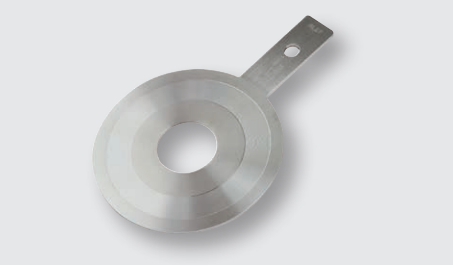
Orifice plates represent the most common primary flow elements in the world due to their proven technology and ease of installation and maintenance.

**Main characteristics**

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

## FLC-OP

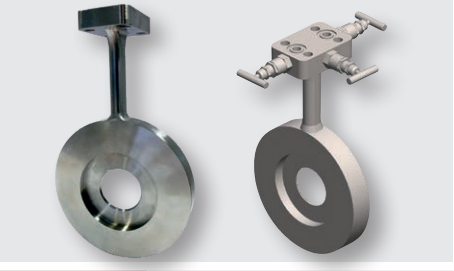
### Orifice plate



| | |
|---|---|
| Standards | ■ ISO 5167-2<br>■ ASME MFC3M |
| Pipe size | ■ ≥ 2"<br>■ ≥ 50 mm |
| β | Depending on version |
| Accuracy [1] | Uncalibrated ±0.5 … 2.5 % |
| Data sheet | FL 10.01 |

## FLC-CO

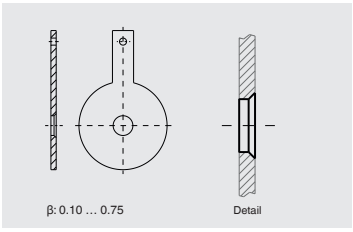
### Compact orifice plate for the direct mounting of differential pressure transmitters



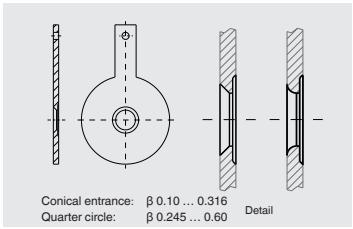
| | |
|---|---|
| Standards | ■ ISO 5167-2<br>■ ANSI/ASME B16.5 |
| Pipe size | ■ 2 … 14"<br>■ DN 50 … 350 |
| β | Depending on version |
| Accuracy | ≤ ±0.5 % |
| Data sheet | FL 10.10 |

## Versions

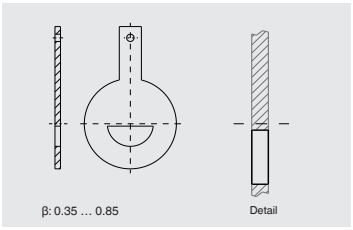
- **Square edge orifice plates** (standard version)
  This design is intended for general applications in clean liquids and gases.



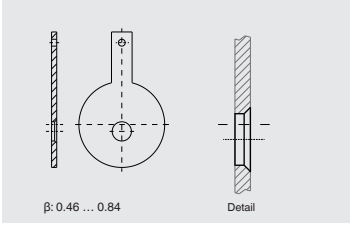

- **Quarter circle and conical entrance orifice plates**
  The best choice for measurement of liquids with low Reynolds number.




- **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

## FLC-FL

### Orifice flanges

| | |
|---|---|
| Standards | ISO 5167-2 |
| Pipe size | ■ ≥ 2"<br>■ ≥ 50 mm |
| β | Depending on version |
| Accuracy [1)] | Uncalibrated ±0.5 … 2.5 % |
| Data sheet | FL 10.01 |

## FLC-AC

### Annular chambers

| | |
|---|---|
| Standards | ISO 5167-2 |
| Pipe size | ■ ≥ 2"<br>■ ≥ 50 mm |
| β | Depending on version |
| Accuracy [1)] | Uncalibrated ±0.5 … 2.5 % |
| Data sheet | FL 10.01 |

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.

**Main characteristics**

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

# Meter runs

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.

## FLC-MR

### Meter run

| | |
|---|---|
| Standards | ISO 5167-2 |
| Pipe size | ■ ½ … 1½ in<br>■ 12 … 40 mm |
| β | 0.2 … 0.75 |
| Accuracy | Uncalibrated ±1 … 2 % |
| Data sheet | FL 10.02 |

# Special assemblies

## FLC-HHR-PP

### HHR ProPak™ flow meter for oil and gas

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

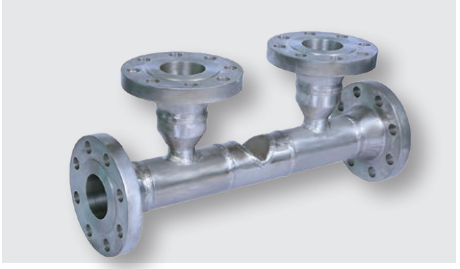
## FLC-HHR-FP

### HHR FlowPak® flow meter

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

## FLC-WG

### Wedge flow meter for slurries and highly viscous media



| | |
|---|---|
| Pipe size | ½ … 24" |
| H/D ratios | 0.2/0.3/0.4/0.5 |
| Special feature | ■ Low maintenance through robust design<br>■ For very high and very low Reynolds numbers<br>■ Bidirectional measurement possible |
| Data sheet | FL 10.08 |

# Flow nozzles

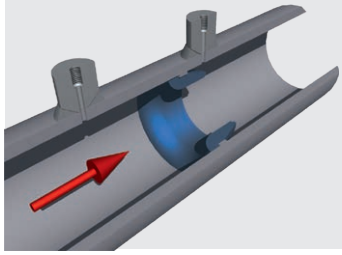
A flow nozzle consists of a convergent section with a rounded profile and a cylindrical throat. This design is generally selected for steam flow measurement at high velocity.

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

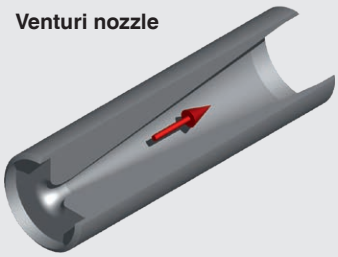
**Main characteristics**

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

**Flow nozzle for in-pipe installation**



**Venturi nozzle**



## FLC-FN-PIP

### Flow nozzle for in-pipe installation

| | |
|---|---|
| Pipe size | ■ ≥ 2 in<br>■ ≥ 50 mm |
| β | 0.2 … 0.8 |
| Accuracy [1] | Uncalibrated ±2 % |
| Data sheet | FL 10.03 |

## FLC-FN-FLN

### Flow nozzle for flange assembly

| | |
|---|---|
| Pipe size | ■ ≥ 2 in<br>■ ≥ 50 mm |
| β | 0.3 … 0.8 |
| Accuracy [1] | Uncalibrated ±0.8 % |
| Data sheet | FL 10.03 |

## FLC-VN

### Venturi nozzle

| | |
|---|---|
| Pipe size | ■ ≥ 2 in<br>■ ≥ 50 mm |
| β | 0.2 … 0.8 |
| Accuracy [1] | Uncalibrated ±1 % |
| Data sheet | FL 10.03 |

[1] The actual measuring deviation is specified during the engineering phase

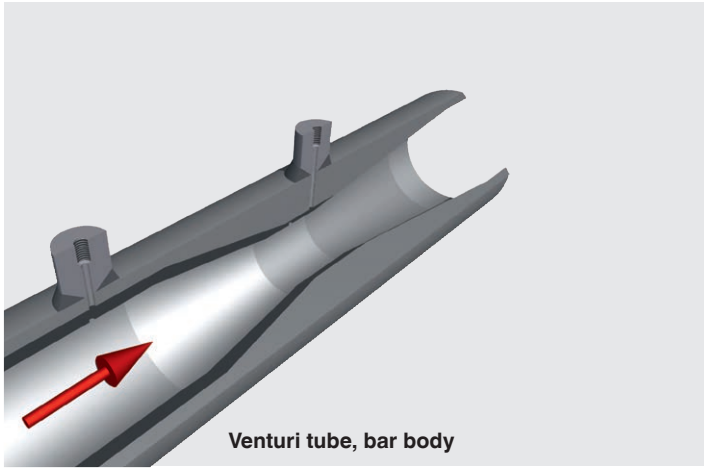
# Venturi tubes

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

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

**Main characteristics**

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



**Venturi tube, bar body**

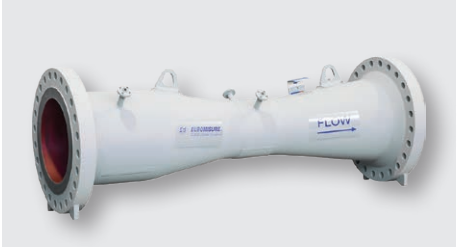
## FLC-VT-BAR

### Venturi tube, bar body


| | |
|---|---|
| Pipe size | ■ 2 … 32 in<br>■ 50 … 250 mm |
| β | 0.4 … 0.75 |
| Accuracy [1] | Uncalibrated ±1.25 % |
| Data sheet | FL 10.04 |

## FLC-VT-WS

### Venturi tube, welded sheet




| | |
|---|---|
| Pipe size | ■ ≥ 14 in<br>■ 200 … 1,200 mm |
| β | 0.4 … 0.7 |
| Accuracy [1] | Uncalibrated ±1.5 % |
| Data sheet | FL 10.04 |

[1] The actual measuring deviation is specified during the engineering phase

# FloTec (averaging pitot tubes)

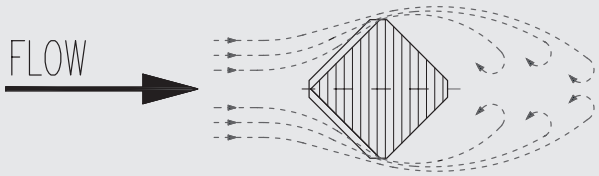
FloTec (a multi-port, averaging pitot tube) measures the difference between the static pressure and the dynamic pressure of the media in the pipe. The volumetric flow is calculated from that difference using Bernoulli's principle and taking into account the pipe inner diameter. Using four dynamic ports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

**Main characteristics**

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

**Vortex shedding frequency**

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

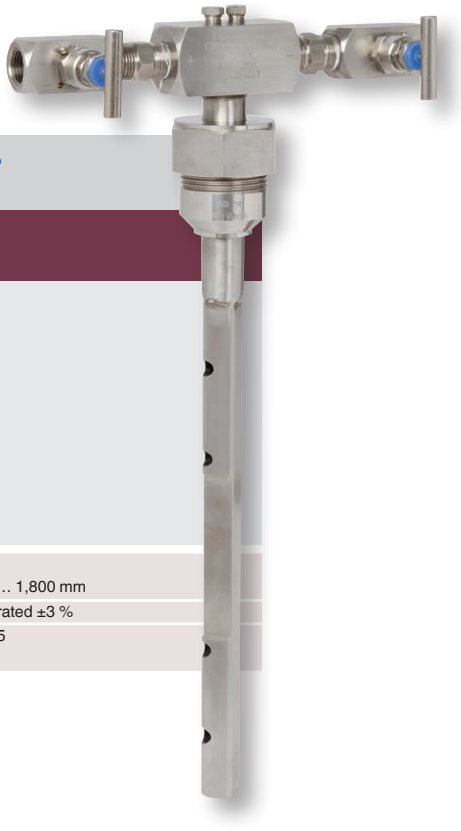



**Vortex generation**

## FLC-APT-E

**FloTec, extractable**

| | |
|---|---|
| Pipe size | ■ ≥ 3 in<br>■ ≥ 50 … 1,800 mm |
| Accuracy | Uncalibrated ±3 % |
| Data sheet | FL 10.05 |



## FLC-APT-F

**FloTec, fixed**

| | |
|---|---|
| Pipe size | ■ ≥ 3 in<br>■ ≥ 50 … 1,800 mm |
| Accuracy | Uncalibrated ±3 % |
| Data sheet | FL 10.05 |

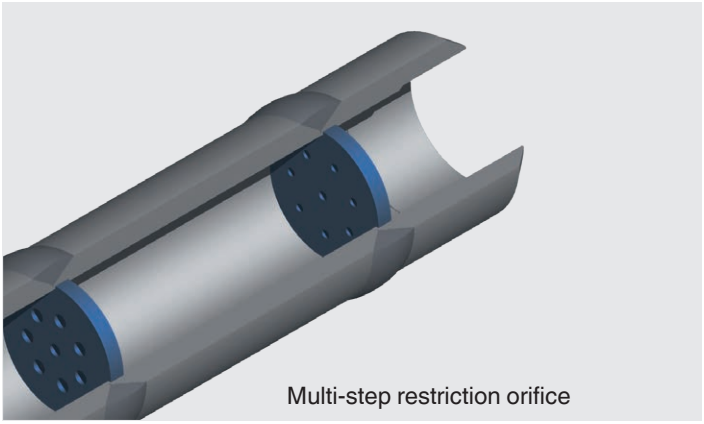
# Restriction orifices

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



Multi-step restriction orifice

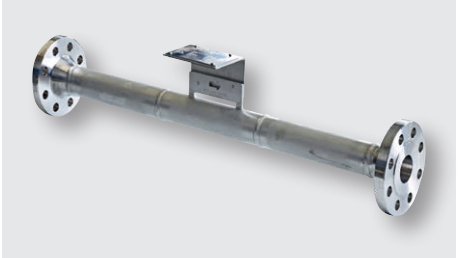
## FLC-RO-ST

### Single-step restriction orifice

| | |
|---|---|
| Nominal size | ½ … 24" |
| Special feature | ■ Suitable for liquids, gases and steam<br>■ Single-step version |
| Data sheet | FL 10.06 |

## FLC-RO-MS

### Multi-step restriction orifice



| | |
|---|---|
| Nominal size | ½ … 24" |
| Special feature | ■ Suitable for liquids, gases and steam<br>■ Single-step version |
| Data sheet | FL 10.06 |

# Flow switches

## For each flow monitoring the right flow switch

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

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

### FSD-3

**For liquid media**

| | |
|---|---|
| Measuring range | 3 … 300 cm/s |
| Output signal | For flow and temperature<br>■ PNP or NPN<br>■ Analogue output (optional) |
| Process connection | ■ G ¼ A, G ½ A<br>■ ¼ NPT, ½ NPT<br>■ M18 x 1.5 |
| Data sheet | FL 80.01 |

# Digital pressure gauges

## High-quality digital pressure gauges from WIKA

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

### DG-10

**Digital pressure gauge for general industrial applications**

| | |
|---|---|
| Measuring range | ■ 0 … 5 to 0 … 700 bar<br>■ -1 … +5 to -1 … +10 bar |
| Accuracy (% of span) | ≤ 0.5 % FS ±1 digit |
| Special feature | ■ Robust stainless steel case, nominal size 80 mm<br>■ Battery operation (2 x 1.5 V AA cell)<br>■ Option: Rotatable instrument head, backlighting |
| Data sheet | PE 81.66 |

### CPG500

**Digital pressure gauge**

| | |
|---|---|
| Measuring range | -1 … +16 to 0 … 1,000 bar |
| Accuracy | 0.25 % |
| Special feature | ■ Simple operation using 4 buttons<br>■ Robust case with protective rubber cap, IP67 |
| Data sheet | CT 09.01 |

### CPG1500

**Precision digital pressure gauge**

App „myWIKA device“ Play Store

| | |
|---|---|
| Measuring range | -1 … 10,000 bar |
| Accuracy | to 0.025 % FS |
| Special feature | ■ Integrated data logger<br>■ WIKA-Cal compatible<br>■ Data transfer via WIKA-Wireless<br>■ Password protection possible<br>■ Robust case IP65 |
| Data sheet | CT 10.51 |

### CPG-KITH

**Hydraulic service kit**

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

### CPG-KITP

**Pneumatic service kit**

- Simple testing and adjustment of pressure measuring instruments
- Kit consists of a CPG1500 reference instrument and a CPP30 hand pump (pneumatic, $P_{max}$ 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 10,000 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 are later read on a PC. Optionally, a calibration certificate can be generated with our calibration software WIKA-Cal.

## CPH6200, CPH62I0

### Hand-held pressure indicator

| | |
|---|---|
| Measuring range | -0.025 … 0.025 to -1 … 1,000 bar |
| Accuracy | 0.2 %, 0.1 % (optional) |
| Special feature | ■ Integrated data logger<br>■ Differential pressure measurement (optional)<br>■ Ex version: Model CPH62I0 (optional) |
| Data sheet | CT 11.01, CT 11.02 |

## CPH6300

### Hand-held pressure indicator

| | |
|---|---|
| Measuring range | -0.025 … 0.025 to -1 … 1,000 bar |
| Accuracy | 0.2 %, 0.1 % (optional) |
| Special feature | ■ Robust and waterproof case with IP65, IP67<br>■ Integrated data logger<br>■ Differential pressure measurement (optional) |
| Data sheet | CT 12.01 |

## CPH6400

### Precision hand-held pressure indicator

| | |
|---|---|
| Measuring range | 0 … 0.25 to -1 … 6,000 bar |
| Accuracy | 0.025 % |
| Special feature | ■ Integrated data logger<br>■ Temperature measurement (optional) |
| Data sheet | CT 14.01 |

## CPH6000

### ProcessCalibrator

| | |
|---|---|
| Measuring range | 0 … 0.25 to -1 … 6,000 bar |
| Accuracy | 0.025 % |
| Special feature | ■ Calibration function<br>■ Pressure switch test<br>■ 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, CPH7000-Ex

### Portable process calibrator

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

## Pascal ET

### Hand-held multi-function calibrator

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

## Pascal100

### Hand-held multi-function calibrator

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

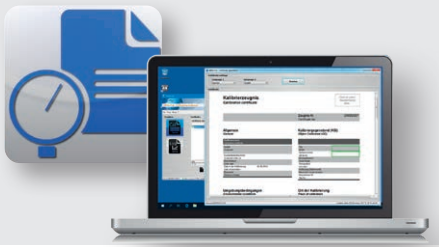
## CPH7650

### Portable pressure calibrator

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

## WIKA-Cal

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



■ Creation of calibration certificates for mechanical and electronic pressure measuring instruments

■ Fully automatic calibration with pressure controllers

■ For the recording of certificate-relevant data in combination with the 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

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 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<br>■ No external voltage supply required<br>■ Data storage and evaluation directly via PC |
| Data sheet | CT 05.01 |

## CPT6030

### Analogue pressure transducer

| | |
|---|---|
| Measuring range | 0 … 0.025 to 0 … 1,000 bar |
| Accuracy | 0.025 % |
| Medium | Non-corrosive gases, liquids > 350 mbar |
| Special feature | ■ Comp. temperature range -20 … +75 °C<br>■ 4 … 20 mA<br>■ DC 15 … 28 V<br>■ Ingress protection IP67 |
| Data sheet | CT 25.14 |

## CPT61x0

### Precision pressure sensor, standard version

| | |
|---|---|
| Measuring range | 0 … 0.025 to 0 … 400 bar |
| Accuracy | 0.01 %, 0.025 % (for CPT6140) |
| Medium | Non-corrosive gases, liquids > 1 bar |
| Special feature | ■ RS-232 or RS-485 connection<br>■ Analogue output (optional)<br>■ Barometric measuring range: 552 … 1,172 mbar abs., 0.01 % of reading<br>■ Measuring rate of 4 ms at CPT6140 |
| Data sheet | CT 25.10, CT 25.11 |

## CPT9000, CPT6020

### Precision pressure sensor

| | |
|---|---|
| Measuring range | 0 … 0.025 to 0 … 1,000 bar |
| Accuracy | CPT9000: 0.008 %<br>CPT6020: 0.02 % |
| Medium | Non-corrosive gases, liquids > 350 mbar |
| Special feature | ■ Comp. temperature range 0 … 50 °C<br>■ RS-232 or RS-485<br>■ Measuring rate 20 ms<br>■ Barometric measuring range: 552 … 1,172 mbar abs., 0.008 % of reading<br>■ Resolution 100 ppb or better |
| Data sheet | CPT9000: CT 25.12<br>CPT6020: CT 25.13 |

## CPG2500

### Precision pressure indicator


| | |
|---|---|
| Measuring range | 0 … 0.025 to 0 … 2,890 bar |
| Accuracy | 0.014 %, 0.01 % and 0.008 % |
| Medium | Non-corrosive gases, liquids > 1 bar |
| Special feature | ■ Up to 2 exchangeable, internal sensors and 1 external sensor of model CPT9000 or CPT6100<br>■ Barometric reference (optional)<br>■ Delta and leak test available |
| Data sheet | CT 25.02 |

## CPA2501

### Precision air data test indicator


| | |
|---|---|
| Measuring range | ■ Altitudes to 100,000 ft<br>■ Speeds to 1,150 knots |
| Accuracy | 0.01 %, 0.009 % |
| Special feature | ■ RVSM-compliant<br>■ Ps, Qc, Ps/Pt or Ps/Qc configuration with virtual channels<br>■ Altitude and airspeed rate indication |
| Data sheet | CT 29.02 |

*Further information at www.wika.com*

# Pressure controllers

## WIKA pressure controllers: Always the right calibration solution

Pressure controllers are electronic controllers which quickly and automatically provide a stable pressure reference. 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.

With pneumatic ranges from 1 mbar to 700 bar and hydraulic ranges up to 1,600 bar, the pressure controllers cover a wide range.
Each controller represents a breakthrough in control and measurement technology to provide first-class measurement accuracy and highly stable pressure control.

### CPC2000

**Low-pressure version**

| | |
|---|---|
| Measuring range | 0 … 1 to 0 … 1,000 mbar |
| Accuracy | 0.1/0.3 % (for 0 … 1 mbar) |
| Medium | Ambient air |
| Special feature | ■ Integrated pressure generation<br>■ Integrated rechargeable battery |
| Data sheet | CT 27.51 |

### CPC4000

**Industrial series**

| | |
|---|---|
| Measuring range | 0 … 0.35 to 0 … 210 bar |
| Accuracy | 0.02 % |
| Control stability | 0.005 % |
| Medium | Dry, clean air or nitrogen |
| Special feature | ■ Up to 2 sensors<br>■ Fast control speed<br>■ Leak test function<br>■ Automatic contamination protection (optional)<br>■ Up to 24 internal programmable sequences |
| Data sheet | CT 27.40 |

### CPC6050

**Modular version**

| | |
|---|---|
| Measuring range | 0 … 0.025 to 0 … 210 bar |
| Accuracy | 0.01 % |
| Control stability | 0.003 % |
| Medium | Dry, clean air or nitrogen |
| Special feature | ■ Up to 2 control/measuring channels with 2 sensors each<br>■ Sensors exchangeable<br>■ Switch test function<br>■ Auto-channel for both controllers<br>■ Automatic contamination protection (optional) |
| Data sheet | CT 27.62 |

## Pneumatic pressure controllers

### CPC8000

**Premium version**

| | |
|---|---|
| Measuring range | 0 … 0.35 to 0 … 400 bar |
| Accuracy | 0.01 … 0.008 % |
| Control stability | 0.002 % |
| Medium | Dry, clean air or nitrogen |
| Special feature | ■ Excellent control stability and pressure control without overshooting<br>■ Up to three interchangeable sensors<br>■ Optional barometer for automatic conversion of the pressure type<br>■ Control performance can be matched to application |
| Data sheet | CT 28.01 |

### CPC7000

**High-pressure version**

| | |
|---|---|
| Measuring range | 0 … 100 bar to 0 … 700 bar |
| Accuracy | 0.01 % |
| Control stability | 0.008 % |
| Medium | Nitrogen |
| Special feature | ■ Robust and low-wear valve technology with long-term stability<br>■ Up to three interchangeable sensors<br>■ 6 x digital I/O<br>■ High-pressure safety |
| Data sheet | CT 27.63 |

## Hydraulic pressure controller

### CPC8000-H

**High-pressure version**

| | |
|---|---|
| Measuring range | 0 … 100 to 0 … 1,600 bar |
| Accuracy | 0.014 % … 0.01 % |
| Control stability | 0.005 % |
| Medium | Hydraulic oil or water |
| Special feature | ■ High stability<br>■ Up to two interchangeable reference sensors<br>■ Automatic flooding<br>■ Hydraulic liquids available, e.g. Sebacate, Shell Tellus 22, Krytox, FC77 |
| Data sheet | CT 28.05 |

## For aviation

### 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

### CPA8001

**Air data test set**

| | |
|---|---|
| Measuring range | ■ Altitudes to 100,000 ft<br>■ Speeds to 1,150 knots |
| Accuracy | 0.01 % … 0.009 % |
| Control stability | 0.002 % |
| Medium | Dry, clean air or nitrogen |
| Special feature | ■ Excellent control stability, even with rate control<br>■ Overshoot-free control<br>■ RVSM compatible<br>■ Configurations Ps/Pt, Ps/Qc |
| Data sheet | CT 29.01 |

**An air data test set is a an electronic controller which provides a pressure at a variable and adjustable rate.**

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

# Pressure balances

## Industrial series

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

### CPB3500

**Pneumatic compact version**


| | |
|---|---|
| Measuring range | 0.015 … 1 to 1 … 120 bar |
| Accuracy | 0.015 … 0.006 % |
| Medium | Non-corrosive gases |
| Special feature | ■ Compact dimensions and low weight<br>■ 1 bar piston can be used for positive and negative overpressure |
| Data sheet | CT 31.22 |

### CPB3800

**Hydraulic compact version**

| | |
|---|---|
| Measuring range | 1 … 120 to 10 … 1,200 bar |
| Accuracy | 0.05 … 0.025 % |
| Medium | Special oil |
| Special feature | ■ Compact dimensions and low weight<br>■ Instrument base can now also be combined with the CPB5800 piston-cylinder systems |
| Data sheet | CT 31.06 |

### CPB3800HP

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

| | |
|---|---|
| Measuring range | 1 … 2,600 bar |
| Accuracy | 0.025 … 0.007 % |
| Medium | Special oil or others on request |
| Special feature | ■ Dual-range piston-cylinder systems with fully automated changing between ranges<br>■ Compact dimensions and low weight |
| Data sheet | CT 31.07 |

## Laboratory version

**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 | Patented system for fast piston-cylinder exchange |
| Data sheet | CT 31.01 |

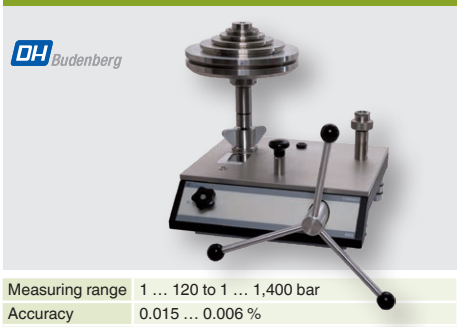
### CPB5000HP

**High-pressure version**

| | |
|---|---|
| Measuring range | 25 … 2,500 to 25 … 6,000 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<br>■ Instrument base can now also be combined with the CPS5000 piston-cylinder systems |
| Data sheet | CT 31.11 |

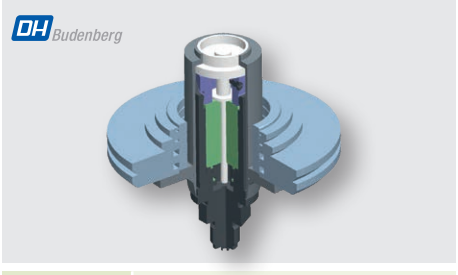
### CPB5600DP

**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<br>■ Can be combined with the CPB5800 instrument base |
| Data sheet | CT 31.01 |

## Calibration software

### 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

# Pressure balances

## High-end version

**High-accuracy and high-performance primary standards with excellent operating characteristics, based on the physical principle of Pressure = Force/Area**
The direct measurement of the pressure (p = 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 automatic calibration. The pressure balance has therefore been used for years in factory and calibration laboratories in industry, national institutes and research laboratories, and also in production by sensor and transmitter manufacturers.

### CPB6000

**Highest-accuracy primary standard**

| | |
|---|---|
| Measuring range | 4 … 5,000 bar |
| Accuracy | 0.0035 … 0.0015 % |
| Medium | Dry, clean air, nitrogen or special oil |
| Special feature | Different instrument variants for the highest demands |
| Data sheet | CT 32.01 |

### CPB6000DP

**Primary standard for differential pressure**

| | |
|---|---|
| Measuring range | 30 … 800 bar |
| Accuracy | 0.005 … 0.002 % |
| Medium | Non-corrosive gases |
| Special feature | For differential pressure measurements from 10 Pa to 800 bar |
| Data sheet | CT 32.02 |

### CPD8500

**Digital pressure balance**

| | |
|---|---|
| Measuring range | 1 … 500 bar (abs. and gauge) |
| Accuracy | 0.005 … 0.0035 % |
| Medium | Non-corrosive, dry gases |
| Special feature | ■ Unique principle of operation based on SI units<br>■ Intuitive operator interface<br>■ Automatic calibrations, no mass handling needed<br>■ Automatic compensation of the environmental conditions |
| Data sheet | CT 32.05 |

# Calibration software

## WIKA-Cal

### 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

**Easy and fast creation of a high-quality calibration certificate**

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

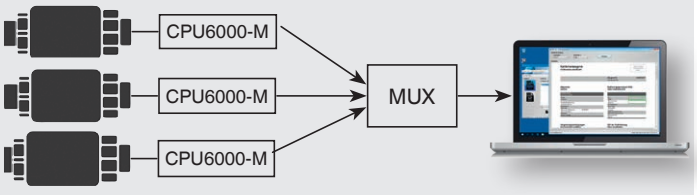
In order to switch from the demo version to a full version of the respective template, a USB key with a licence upgrade has to be purchased. The pre-installed demo version automatically changes to the selected full version when the USB key is inserted and is available as long as the USB key is connected to the computer.

**Three WIKA-Cal licences are available together with a precision pressure indicator.**
The WIKA-Cal calibration software is available for online calibrations together with a PC. The scope of software functions depends on the selected licence. Several licences can be combined on one USB dongle.

| Cal-Template (light version) | Cal-Template (full version) | Log-Template (full version) |
|---|---|---|
| ■ Semi-automatic calibration | ■ Fully automatic calibration | ■ Live measurement recording for a certain period of time with selectable interval, duration and start time<br>■ Creation of logger protocols with graphic and/or tabular representation of the measuring results in PDF format<br>■ Possibility of exporting measuring results as a CSV file |
| ■ Creation of calibration certificates 3.1 per DIN EN 10204<br>■ Calibration reports can be exported to Excel® template or XML file<br>■ Calibration of gauge pressure measuring instruments with absolute pressure references and vice versa<br>■ Generation of calibration certificates with no limitations on measuring points | | |
| **Ordering information for your enquiry for a single license** | | |
| WIKA-CAL-LZ-Z-Z | WIKA-CAL-CZ-Z-Z | WIKA-CAL-ZZ-L-Z |
| **Ordering information for your enquiry for a pair license** | | |
| Cal-Template (light version) together with Log-Template (full version) | | WIKA-CAL-LZ-L-Z |
| Cal-Template (full version) together with Log-Template (full version) | | WIKA-CAL-CZ-L-Z |

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

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




**Pressure sensors, model CPU6000-M multimeter, multiplexer and PC with WIKA-Cal software**

# Pressure generation

## Portable pressure generation

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

### CPP7-H

**Pneumatic hand test pump**

| | |
|---|---|
| Measuring range | -850 mbar … +7 bar |
| Medium | Ambient air |
| Special feature | ■ Pressure and vacuum generation switchable<br>■ Low weight<br>■ 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<br>■ Compact dimensions |
| Data sheet | CT 91.06 |

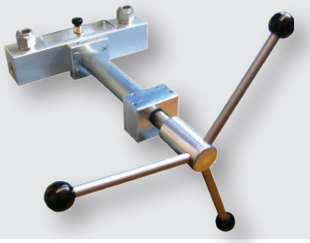
### CPP700-H, CPP1000-H

**Hydraulic hand test pump**

| | |
|---|---|
| Measuring range | 0 … 700 or 0 … 1,000 bar |
| Medium | Oil or water |
| Special feature | ■ Integrated medium reservoir<br>■ 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, internally operating precision spindle<br>■ Compact dimensions |
| Data sheet | CT 91.05 |

## Laboratory version

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

### CPP120-X

**Pneumatic comparison test pump**


| | |
|---|---|
| Measuring range | 0 … 120 bar |
| Medium | Clean, dry, non-corrosive gases |
| Special feature | ■ Accurate pressure setting<br>■ Robust industrial series<br>■ External initial pressure supply necessary |
| Data sheet | CT 91.03 |

### CPP1200-X

**Hydraulic comparison test pump**

| | |
|---|---|
| Measuring range | 0 … 1,200 bar |
| Medium | Oil or water |
| Special feature | ■ Integrated tank<br>■ Dual-area spindle pump<br>■ Robust industrial series |
| Data sheet | CT 91.08 |

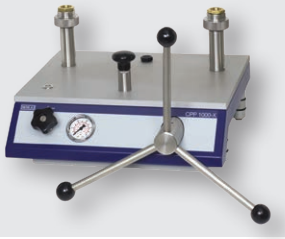
### CPP4000-X

**Hydraulic comparison test pump**

| | |
|---|---|
| Measuring range | 0 … 1,200 bar |
| Medium | Oil or water |
| Special feature | ■ Integrated tank<br>■ Dual-area spindle pump<br>■ Robust industrial series |
| Data sheet | CT 91.09 |

### CPP1000-X, CPP1600-X

**Hydraulic comparison test pump**



| | |
|---|---|
| Measuring range | 0 … 1,000 to 0 … 1,600 bar |
| Medium | Oil or water |
| Special feature | ■ Integrated tank<br>■ Robust laboratory version with priming pump<br>■ Compact industrial series with priming pump |
| Data sheet | CT 91.12 |

### CPP7000-X

**Hydraulic comparison test pump**

| | |
|---|---|
| Measuring range | 0 … 7,000 bar |
| Medium | Sebacate oil |
| Special feature | ■ Integrated tank<br>■ Robust laboratory version with priming pump |
| Data sheet | CT 91.13 |

# 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**

| | |
|---|---|
| Measuring range | -200 … +450 °C |
| Stability | < 50 mK after 100 h at 450 °C |
| Dimensions | Ø 4 mm, l = 500 mm |
| Special feature | ■ 4-wire connection<br>■ Ends with 4 mm banana plugs |
| Data sheet | CT 61.10 |

### CTP5000

**Reference thermometer**

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

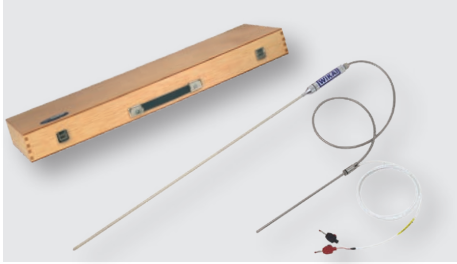
### CTP5000-T25

**Reference thermometer**

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

### CTP9000

**Thermocouple**



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

# Hand-helds

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 are later read on a PC. Optionally, a calibration certificate can be generated with our calibration software WIKA-Cal.

## CTH6200

### Hand-held thermometer

| | |
|---|---|
| Measuring range | -50 … +250 °C |
| Accuracy | < 0.2 |
| Probe type | Pt100 |
| Special feature | Integrated data logger |
| Data sheet | CT 51.01 |

## CTH6300, CTH63I0

### Hand-held thermometer

| | |
|---|---|
| Measuring range | -200 … +1,500 °C |
| Accuracy | 0.1 … 1 K |
| Probe type | Pt100, TC |
| Special feature | ■ 2 channels (optional)<br>■ Ex version: Model CTH63I0 |
| Data sheet | CT 51.05 |

## CTH6500, CTH65I0

### Hand-held thermometer

| | |
|---|---|
| Measuring range | -200 … +1,500 °C |
| Accuracy | 0.03 … 0.2 K |
| Probe type | Pt100, TC |
| Special feature | ■ Integrated data logger (optional)<br>Ex version: Model CTH65I0 |
| Data sheet | CT 55.10 |

## CTH7000

### Hand-held thermometer

| | |
|---|---|
| Measuring range | -200 … +962 °C |
| Accuracy | 0.015 K |
| Probe type | Pt100, Pt25 and NTC |
| Special feature | Integrated data logger |
| Data sheet | CT 55.50 |

## CTR1000

### Infrared hand-held thermometer

| | |
|---|---|
| Measuring range | -60 … +1,000 °C |
| Accuracy | 2 K or 2 % of reading |
| Special feature | Thermocouple connection (optional) |
| Data sheet | CT 55.21 |

# Calibration baths

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<br>■ 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 K … 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

## Efficient calibration with temperature calibrators from WIKA

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.

### CTD9100

**Temperature dry-well calibrator**

| | |
|---|---|
| Measuring range | -55 … +650 °C |
| Accuracy | ±0.15 … 0.8 K |
| Stability | ±0.01 … 0.05 K |
| Immersion depth | 150 mm |
| Data sheet | CT 41.28 |

### CTD4000

**Temperature dry-well calibrator**

| | |
|---|---|
| Measuring range | -24 … 650 °C |
| Accuracy | 0.25 … 0.5 K |
| Stability | 0.1 … 0.3 K |
| Immersion depth | 104 mm/150 mm |
| Data sheet | CT 41.10 |

### CTD9100-1100

**High-temperature dry-well calibrator**

| | |
|---|---|
| Measuring range | 200 … 1,100 °C |
| Accuracy | ±3 K |
| Stability | ±0.3 K |
| Immersion depth | 220 mm, bore depth 155 mm |
| Data sheet | CT 41.29 |

### CTD9300

**Temperature dry-well calibrator**

| | |
|---|---|
| Measuring range | -35 … +650 °C |
| Accuracy | ±0.1 … 0.65 K |
| Stability | ±0.01 … 0.1 K |
| Immersion depth | 150 mm |
| Data sheet | CT 41.38 |

### CTD9100-375

**Compact temperature dry-well calibrator**

| | |
|---|---|
| Measuring range | $t_{amb}$ … 375 °C |
| Accuracy | ±0.5 … 0.8 K |
| Stability | ±0.05 K |
| Immersion depth | 100 mm |
| Data sheet | CT 41.32 |

### CTI5000

**Infrared calibrator**

| | |
|---|---|
| Measuring range | 50 … 500 °C |
| Stability | ±0.1 … 0.4 K |
| Special feature | Large diameter of measuring surface |
| Data sheet | CT 41.42 |

### CTM9100-150

**Multi-function calibrator**

| | |
|---|---|
| Measuring range | -35 … +165 °C depending on the application |
| Accuracy | ±0.3 K … 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 |

# 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

| | |
|---|---|
| Measuring range | -200 … +850 °C |
| Accuracy | 0.01 K (4-wire), 0.03 K (3-wire) |
| Probe type | Pt100, Pt25 |
| Special feature | ■ 3-wire measurement (optional)<br>■ Up to 8 channels integrated in the instrument (optional) |
| Data sheet | CT 60.10 |

## CTR3000

### Multi-functional precision thermometer

| | |
|---|---|
| Measuring range | -210 … +1,820 °C |
| Accuracy | ■ ±0.005 K (4-wire)<br>■ ±0.03 K (3-wire)<br>■ ±0.004 % + 2 µV for thermocouples |
| Probe type | Pt100, Pt25, thermocouples |
| Special feature | ■ Versatile applications by measuring thermocouples and resistance thermometers<br>■ Logger and scan functions<br>■ Up to 44 channels possible |
| Data sheet | CT 60.15 |

## CTS3000

### Multiplexer

| | |
|---|---|
| Measuring range | -210 … +1,820 °C |
| Accuracy | ■ ±0.005 K (4-wire)<br>■ ±0.03 K (3-wire)<br>■ ±0.004 % + 2 µV for thermocouples |
| Probe type | Pt100, Pt25, thermocouples |
| Special feature | ■ No loss of accuracy<br>■ Various coupler connector connectable<br>■ Complete automatic calibration routines controllable |
| Data sheet | AC 87.01 |

## CTR6000

### DC resistance thermometry bridge

| | |
|---|---|
| Measuring range | -200 … +962 °C |
| Accuracy | ±3 mK (full range) |
| Probe type | PRT, thermistors or fixed resistors |
| Special feature | ■ Expendable to up to 60 channels (optional)<br>■ Internal resistors 25 Ω, 100 Ω, 10 kΩ, 100 kΩ |
| Data sheet | CT 60.30 |

## CTR6500

### AC resistance thermometry bridge

| | |
|---|---|
| Measuring range | -200 … +962 °C |
| Accuracy | 0.1 … 1.25 mK depending on resistance ratio |
| Probe type | SPRT, PRT or fixed resistors |
| Special feature | ■ Expendable to up to 60 channels (optional)<br>■ Internal resistors 25 Ω, 100 Ω<br>■ AC technology |
| Data sheet | CT 60.40 |

## CTR9000

### Primary-standard resistance thermometry bridge

| | |
|---|---|
| Measuring range | 0 … 260 Ω |
| Accuracy | 0.01 K, optional 0.005 K |
| Probe type | SPRT, PRT or fixed resistors |
| Special feature | ■ Expendable to up to 60 channels (optional)<br>■ 4 selectable standby currents possible (optional)<br>■ AC technology |
| Data sheet | CT 60.80 |

# Standard reference resistors, AC/DC

## Electrical comparison standard

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

### CER6000-RR

**Reference resistor**

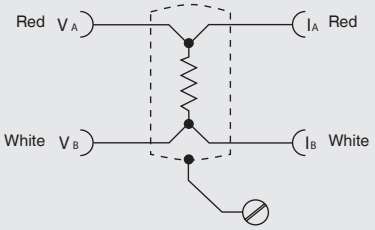
| | |
|---|---|
| Resistance value | 1, 10, 25, 100, 300, 400, 500, 1,000 and 10,000 Ω |
| Long-term stability | < ±5 ppm per year |
| Special feature | ■ Low temperature coefficient<br>■ Rugged stainless steel construction |
| Data sheet | CT 70.30 |

### CER6000-RW

**Standard reference resistor**

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

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




Model CER6000-RR reference resistor with 100 Ω

Reference resistor, model CER6000-RR with different resistance range

# Accessories

## From individual components ... to complete turnkey kits

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

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

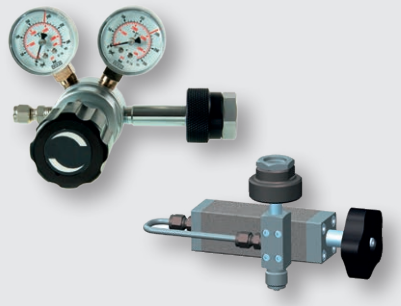
You can find a detailed description in our catalogue “Accessories for calibration technology”.


### Pressure supply case

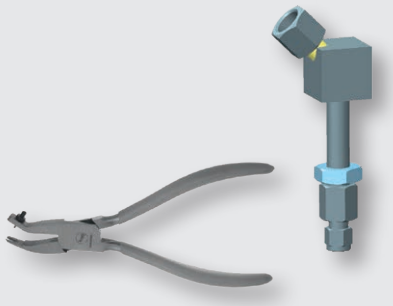
### Pressure and vacuum supply packages

### Connection components

## Pressure control



## Calibration and adjustment tools



## Temperature accessories

# Engineered solutions

## Test and calibration systems for workshops and laboratories

For the fitting-out of calibration laboratories, we offer individually designed test workstations. Here we integrate proven calibration systems from our extensive product range into ergonomic workstations. These can be individually equipped with the following components:

- 19" calibration racks in modular design for pressure sensors
- Connection columns with quick-release fasteners for test items and references with exchangeable threaded inserts
- Electric and pneumatic power strips with 230-V voltage supply and compressed air with air blow gun connection including pressure regulator
- Work panel for setting the operating pressure with inlet pressure gauge, outlet pressure gauge and alternative pressure supply
- PC workstations

## Test and calibration systems for production

The complete solutions are available in the widest range of automation levels incl. tempering units, workpiece transport systems, workpiece fixtures and electrical and pressure-side contacting.

The focus is on the precise interaction of measurement technology, testing system mechanics and control components. In addition, the actual testing and adjustment processes can also be combined with mounting and labelling processes.

## Leak and pressure function test systems for production

We offer individual and turnkey solutions in various degrees of automation for a wide variety of applications, from simple test equipment through semi-automatic test benches to fully automated testing systems.
The testing processes can also be combined with assembly processes, laser marking, automated parts handling (infeed/outfeed) - in addition, the chaining of several stations is possible.

**Pneumatic or helium leak testing**
on fittings, valves, hoses, coolers, pumps, filters and many other test parts.

**Pressure function tests or setting procedures**
among other things for
Control pressure of pressure reducers or thermostat control valves

- The cracking pressure of safety relief valves
- Switch points of pressure switches and control valves
- Pressure containment of different components

**Test methods**

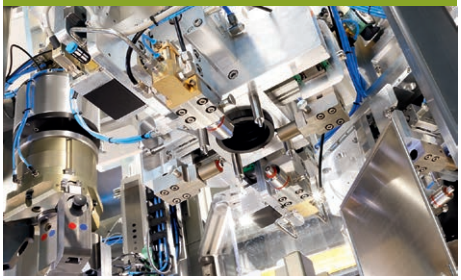
- Integral vacuum methods
- Accumulation methods (under atmosphere)
- Sniffing test

## Service for customer-specific systems

### Immediate help in case of failures/ malfunctions

For the shortest response times and efficient problem analysis we offer a remote service via smart glasses. Using smart glasses, our specialists can efficiently analyse the problem and take quick targeted corrective action, so you benefit from reduced downtime and costs.

### Preventive maintenance



Through regular system maintenance, premature wear can be prevented and the risk of system downtime can be minimised. We are happy to advise you regarding the ideal maintenance intervals and to design an individual maintenance package for you.

**Service hotline: +49 9372 132 5049**

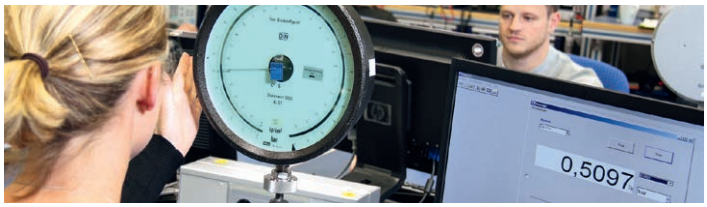
# Calibration service

Our calibration laboratory has been accredited for pressure for almost 40 years and for temperature for almost 30 years. Since 2014, our calibration laboratory has also been accredited for the electrical measurands DC current, DC voltage and DC resistance. Since 2020, our calibration laboratory at tecsis has been accredited for force.

- Certified to ISO 9001 and ISO 14001
- DAkkS accredited (in accordance with DIN EN ISO/IEC 17025)
- Cooperation in the DKD 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 ...

### Pressure




- -1 bar … +10,000 bar
- Calibration using working standards (precise electrical pressure measuring instruments) or high-accuracy reference standards (pressure balances)
- With an accuracy down to 0.003 % of reading for the standard used
- In accordance with the directives DIN EN 837, DKD-R 6-1 or EURAMET cg-3

### Temperature

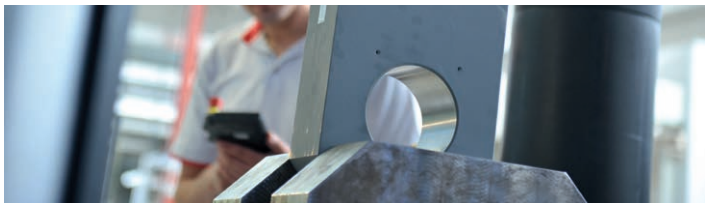
- -196 … +1,200 °C (to +1,600 °C possible with factory calibration)
- Comparative calibration in calibration baths with an accuracy down to 10 mK
- Comparative calibration in tube furnaces with an accuracy down to 100 mK
- Calibration at fixed points of ITS90 with an accuracy down to 2 mK
  - Triple point of mercury (-38.8344 °C)
  - Triple point of water (0.01 °C)
  - Melting point of gallium (29.7646 °C)
  - Solidification point of tin (231.928 °C)
  - Solidification point of zinc (419.527 °C)
  - Solidification point of aluminium (660.323 °C)
- In accordance with the appropriate DKD directives

Further information on our services and the contact details can be found here.

## Current, voltage, resistance

- 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

## Force



- 1 kN … 200 kN with a measurement uncertainty of 0.1 % in tension and compression force direction in accordance with DIN EN ISO 376 (calibration certificate per ISO 17025)
- 500 N ... 6 MN with a system accuracy of 0.5 % in tension and compression force direction (3.1 inspection certificate in accordance with DIN EN 10204)

## Length

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

## Mobile and 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, in the mobile calibration laboratory and on-site.

- In our calibration van or on your workbench
- With a DAkkS accreditation for pressure
  - from -1 bar … +8,000 bar
  - with accuracies down to 0.01 % of full scale for the standard used
- With a DAkkS accreditation for temperature from -55 °C … +1,100 °C

# Service for diaphragm seal systems

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

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

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

**Services covered**

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

**Your benefits**

- Cost and time saving
- Functional test of a process transmitter
- Current material certificate
- New calibration of the entire system

# Field service for temperature applications

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

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

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


**Mobile service team**

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

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


**Signal transmission and functional testing**

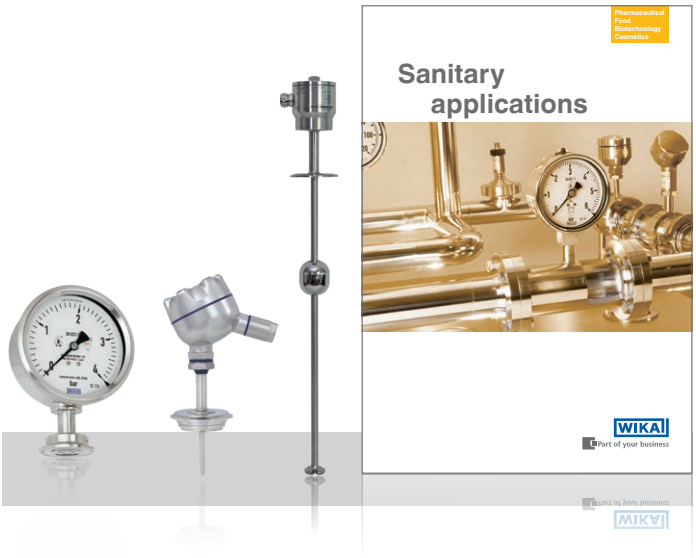
**Your benefits**

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

In our segment brochures, you will find the entire product families for the areas of “ventilation and air-conditioning”, “sanitary applications”, “$SF_6$ lifecycle solutions” and “high purity & ultra high purity” and also their technical distinctions.

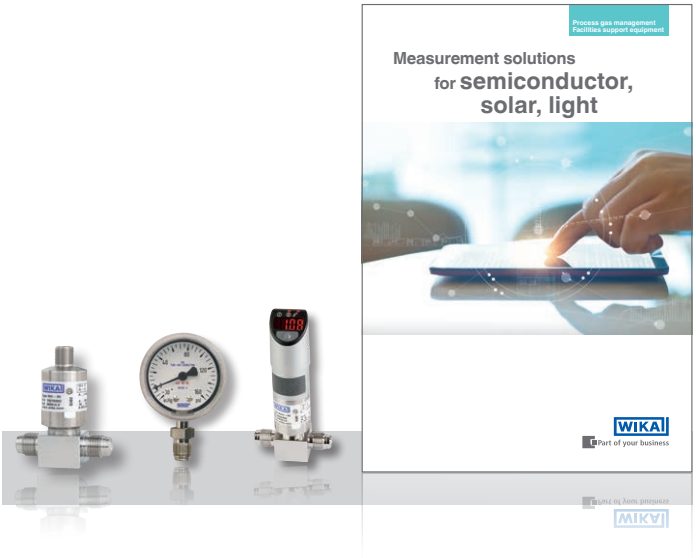
## Ventilation and air-conditioning


## Sanitary applications




## $SF_6$ solutions


## High purity & ultra high purity

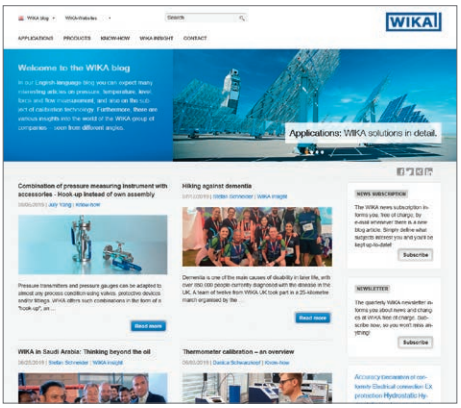


Visit us on our website and on our social media channels.

## WIKA website

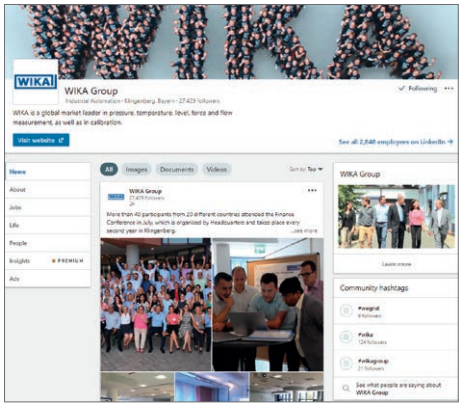

Find out about our wide range of measurement technology and services, or market sectors. Download 3D drawings, technical documents or informative brochures.
And please register for our free newsletter!

## WIKA blog



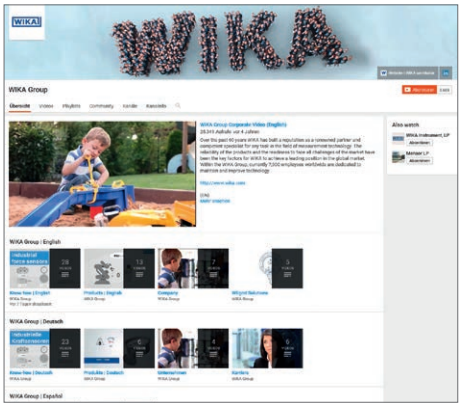

In our blog, you can expect many interesting articles on the theme of measurement technology. Furthermore, there are various insights into the world of the WIKA Group.

## WIKA on LinkedIn




Follow us on LinkedIn. Don't just follow our news on products and applications, but also on important events within the WIKA Group.

## WIKA YouTube channel




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

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12393852 10/2020 EN