

Gas-actuated thermometer

Stainless steel version

Model 73

WIKA data sheet TM 73.01



for further approvals
see page 8

Applications

- General process instrumentation in the chemical and petrochemical industries, oil and gas industries, energy and water/wastewater industries
- Universally suitable for machine building, plant, tank, apparatus construction and food industry
- Temperature measurement without any contact to the medium
- Mounting in instrument boards, control cabinets, control panels

Special features

- Scale ranges from -200 ... +700 °C
- Fast response behaviour
- Case and stem from stainless steel
- Various connection and case mounting designs

Description

The model 73 gas-actuated thermometer has been developed and is manufactured in accordance with the EN 13190 standard. The high-quality thermometer has been designed especially for the requirements of the process industry. Especially in the chemical and petrochemical, oil and gas, and power engineering industries, the thermometer completely manufactured from stainless steel is used successfully.

The stem, the process connection and the case of the instrument are made from stainless steel. To allow optimum fitting to the process, individual insertion lengths and process connections are available. The thermometers have a high ingress protection of IP65 and can be used in outdoor applications even at negative temperatures. With liquid damping operation under high vibration conditions is possible. Due to the wide variety of possible designs, the model 73 gas-actuated thermometers can be perfectly adapted to any process connection or location.



Fig. left: lower mount (radial), model R73.100

Fig. centre: with capillary and instrument mounting bracket, model F73.100

Fig. right: adjustable stem and dial version, model S73.100

With the adjustable stem and dial version, the case can be adjusted precisely to the desired viewing angle. With the contact bulb version, temperature measurements are possible without any contact with the medium, even when the pipe diameter is extremely small. The contact bulb is intended for external mounting on pipes and tanks. When mounting this thermometer version, it must be ensured that the contact bulb is in contact with the measuring point over its complete length.

Specifications

| Gas-actuated thermometer, model 73 | |
|--|---|
| Measuring element | Gas-pressure inert gas filling, physiologically safe |
| Nominal size in mm | <ul style="list-style-type: none"> ■ 100 ■ 160 |
| Connection location | <ul style="list-style-type: none"> ■ A73.100 NS 100 Back mount (axial) ■ A73.160 NS 160 Back mount (axial) ■ R73.100 NS 100 Lower mount (radial) ■ R73.160 NS 160 Lower mount (radial) ■ S73.100 NS 100 Back mount, adjustable stem and dial ■ S73.160 NS 160 Back mount, adjustable stem and dial ■ F73.100 NS 100 Version with capillary ■ F73.160 NS 160 Version with capillary |
| Connection design | <ul style="list-style-type: none"> ■ S, Standard (male threaded connection) ¹⁾ ■ 1, Plain stem (without thread) ■ 2, Male nut ■ 3, Union nut ■ 4, Compression fitting (sliding on stem) ■ 5, Union nut and loose threaded connection ■ 6, Compression fitting (can be adjusted on either capillary or spiral protective sleeve) ■ 7, Compression fitting at the case ¹⁾ |
| Unit (scale range) | °C Option: <ul style="list-style-type: none"> ■ °F ■ °C/°F (dual scale) |
| Process connection | <ul style="list-style-type: none"> ■ Plain, without thread ■ G ½ B ■ ½ NPT ■ G ½ female ■ ½ NPT female ■ M20 x 1.5 ■ M24 x 1.5 female others on request |
| Accuracy class | Class 1 per EN 13190 at 23 °C ±10 °C ambient temperature |
| Stem diameter | 8 mm Option: <ul style="list-style-type: none"> ■ 6 mm ■ 10 mm ■ 12 mm |
| Working range | |
| Continuous load (1 year) | Measuring range (EN 13190) |
| Short time (max. 24 h) | Scale range (EN 13190) |
| Rated operating ranges and conditions | EN 13190 |
| Window | Laminated safety glass |
| Contact bulb | 120 x 22 x 12 mm Stainless steel 1.4571 |
| Adjustable stem and dial | Stainless steel swivelling 90° rotatable 360° |

1) Not applicable to version with capillary

| Gas-actuated thermometer, model 73 | |
|--|--|
| Capillary | <p>Ø 2 mm, stainless steel 1.4571, bending radius no less than 6 mm</p> <p>Capillary without spiral protective sleeve: 6 mm</p> <p>Capillary with spiral protective sleeve: 20 mm</p> <p>Capillary with spiral protective sleeve and PVC-coated: 30 mm</p> <p>Length to customer specification</p> <p>Option: Armoured coating for capillary (Ø 7 mm spiral protective sleeve, flexible or PVC-coated)</p> |
| Mounting types for instruments with capillary | <ul style="list-style-type: none"> ■ Surface mounting flange, stainless steel ■ Instrument mounting bracket, aluminium die-casting ■ Panel mounting flange, stainless steel ■ Triangular bezel with clamp, stainless steel |
| Dampening (option) | <ul style="list-style-type: none"> ■ With liquid dampening ■ With food-compatible liquid damping |
| Wetted materials | |
| Stem, process connection | Stainless steel 316SS |
| Non-wetted materials | |
| Movement | Brass and stainless steel Option: Entirely from stainless steel |
| Case, ring | Stainless steel 1.4301 |
| Dial | Aluminium, white, black lettering |
| Pointer | Aluminium, black, micro adjustment |
| Ingress protection per IEC/EN 60529 | IP65 Option: IP66 |
| Permissible temperatures | |
| Ambient | -40 ... +60 °C [-40 ... +140 °F] Option: -50 ... +60 °C [-58 ... +140 °F] |
| Storage and transport | |
| Without liquid dampening | -50 ... +70 °C [-58 ... +158 °F] |
| With liquid dampening | -40 ... +70 °C [-40 ... +158 °F] |
| Permissible operating pressure at the stem | max. 25 bar, static |

Scale ranges, measuring ranges ¹⁾, error limits (EN 13190)

Scale graduation per WIKA standard

| Scale range in °C | Measuring range in °C | Scale spacing in °C | Error limit ±°C |
|-------------------|-----------------------|---------------------|-----------------|
| -200 ... +50 | -170 ... +20 | 5 | 5 |
| -200 ... +100 | -170 ... +70 | 5 | 5 |
| -80 ... +60 | -60 ... +40 | 2 | 2 |
| -60 ... +40 | -50 ... +30 | 1 | 1 |
| -40 ... +60 | -30 ... +50 | 1 | 1 |
| -30 ... +50 | -20 ... +40 | 1 | 1 |
| -20 ... +60 | -10 ... +50 | 1 | 1 |
| -20 ... +80 | -10 ... +70 | 1 | 1 |
| 0 ... 60 | 10 ... 50 | 1 | 1 |
| 0 ... 80 | 10 ... 70 | 1 | 1 |
| 0 ... 100 | 10 ... 90 | 1 | 1 |
| 0 ... 120 | 10 ... 110 | 2 | 2 |
| 0 ... 160 | 20 ... 140 | 2 | 2 |
| 0 ... 200 | 20 ... 180 | 2 | 2 |
| 0 ... 250 | 30 ... 220 | 5 | 2.5 |
| 0 ... 300 | 30 ... 270 | 5 | 5 |
| 0 ... 400 | 50 ... 350 | 5 | 5 |
| 0 ... 500 | 50 ... 450 | 5 | 5 |
| 0 ... 600 | 100 ... 500 | 10 | 10 |
| 0 ... 700 | 100 ... 600 | 10 | 10 |

1) The measuring range is indicated on the dial by two triangular marks.
Only within this range is the stated error limit valid per EN 13190.

Minimum insertion lengths in mm

Models A73 (back mount) and R73 (lower mount)

| Design | 1 | | | 2 and 3 | | | 4 and 5 | | | S | | |
|---------------------|-----|-----|------|---------|-----|------|---------|-----|------|-----|-----|------|
| Stem diameter in mm | 6 | 8 | ≥ 10 | 6 | 8 | ≥ 10 | 6 | 8 | ≥ 10 | 6 | 8 | ≥ 10 |
| Scale range in °C | | | | | | | | | | | | |
| -200 ... +50 | 80 | 80 | 80 | 70 | 70 | 70 | 60 | 60 | 60 | 75 | 75 | 75 |
| -200 ... +100 | 80 | 80 | 80 | 70 | 70 | 70 | 60 | 60 | 60 | 75 | 75 | 75 |
| -80 ... +60 | 95 | 60 | 60 | 95 | 60 | 60 | 90 | 60 | 60 | 110 | 75 | 75 |
| -60 ... +40 | 105 | 70 | 60 | 105 | 70 | 60 | 100 | 65 | 60 | 120 | 85 | 75 |
| -40 ... +60 | 105 | 70 | 60 | 105 | 70 | 60 | 100 | 65 | 60 | 120 | 85 | 75 |
| -30 ... +50 | 125 | 75 | 60 | 125 | 75 | 60 | 120 | 70 | 60 | 140 | 90 | 75 |
| -20 ... +60 | 125 | 85 | 60 | 125 | 85 | 60 | 120 | 80 | 60 | 140 | 100 | 75 |
| -20 ... +80 | 105 | 70 | 60 | 105 | 70 | 60 | 100 | 65 | 60 | 120 | 85 | 75 |
| 0 ... 60 | 155 | 95 | 75 | 155 | 95 | 75 | 150 | 90 | 70 | 170 | 110 | 90 |
| 0 ... 80 | 125 | 85 | 60 | 125 | 85 | 60 | 120 | 80 | 60 | 140 | 100 | 75 |
| 0 ... 100 | 115 | 75 | 60 | 115 | 75 | 60 | 110 | 70 | 60 | 130 | 90 | 75 |
| 0 ... 120 | 95 | 70 | 60 | 95 | 70 | 60 | 90 | 65 | 60 | 110 | 85 | 75 |
| 0 ... 160 | 95 | 60 | 60 | 95 | 60 | 60 | 90 | 60 | 60 | 110 | 75 | 75 |
| 0 ... 200 | 95 | 60 | 60 | 95 | 60 | 60 | 90 | 60 | 60 | 110 | 75 | 75 |
| 0 ... 250 | 75 | 60 | 60 | 75 | 60 | 60 | 70 | 60 | 60 | 90 | 75 | 75 |
| 0 ... 300 | 105 | 90 | 90 | 95 | 80 | 80 | 70 | 60 | 60 | 90 | 75 | 75 |
| 0 ... 400 | 105 | 90 | 90 | 95 | 80 | 80 | 70 | 60 | 60 | 90 | 75 | 75 |
| 0 ... 500 | 165 | 130 | 130 | 155 | 120 | 120 | 125 | 90 | 90 | 150 | 115 | 115 |
| 0 ... 600 | 145 | 130 | 130 | 135 | 120 | 120 | 105 | 90 | 90 | 130 | 115 | 115 |
| 0 ... 700 | 165 | 145 | 130 | 155 | 135 | 120 | 125 | 105 | 90 | 150 | 130 | 115 |

Typ S73 (Anschlusslage rückseitig, dreh- und schwenkbar)

| Design | 1 | | | 2 and 3 | | | 4 and 5 | | | S | | |
|---------------------|-----|-----|------|---------|-----|------|---------|----|------|-----|-----|------|
| Stem diameter in mm | 6 | 8 | ≥ 10 | 6 | 8 | ≥ 10 | 6 | 8 | ≥ 10 | 6 | 8 | ≥ 10 |
| Scale range in °C | | | | | | | | | | | | |
| -200 ... +50 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 65 | 65 | 65 |
| -200 ... +100 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 65 | 65 | 65 |
| -80 ... +60 | 80 | 60 | 60 | 80 | 60 | 60 | 90 | 60 | 60 | 100 | 65 | 65 |
| -60 ... +40 | 90 | 60 | 60 | 90 | 60 | 60 | 100 | 65 | 60 | 110 | 75 | 65 |
| -40 ... +60 | 90 | 60 | 60 | 90 | 60 | 60 | 100 | 65 | 60 | 110 | 75 | 65 |
| -30 ... +50 | 110 | 60 | 60 | 110 | 60 | 60 | 120 | 70 | 60 | 130 | 80 | 65 |
| -20 ... +60 | 110 | 70 | 60 | 110 | 70 | 60 | 120 | 80 | 60 | 130 | 90 | 65 |
| -20 ... +80 | 90 | 60 | 60 | 90 | 60 | 60 | 100 | 65 | 60 | 110 | 75 | 65 |
| 0 ... 60 | 140 | 80 | 60 | 140 | 80 | 60 | 150 | 90 | 70 | 160 | 100 | 80 |
| 0 ... 80 | 110 | 70 | 60 | 110 | 70 | 60 | 120 | 80 | 60 | 130 | 90 | 65 |
| 0 ... 100 | 100 | 60 | 60 | 100 | 60 | 60 | 110 | 70 | 60 | 120 | 80 | 65 |
| 0 ... 120 | 80 | 60 | 60 | 80 | 60 | 60 | 90 | 65 | 60 | 100 | 75 | 65 |
| 0 ... 160 | 80 | 60 | 60 | 80 | 60 | 60 | 90 | 60 | 60 | 100 | 65 | 65 |
| 0 ... 200 | 80 | 60 | 60 | 80 | 60 | 60 | 90 | 60 | 60 | 100 | 65 | 65 |
| 0 ... 250 | 60 | 60 | 60 | 60 | 60 | 60 | 70 | 60 | 60 | 80 | 65 | 65 |
| 0 ... 300 | 60 | 60 | 60 | 60 | 60 | 60 | 70 | 60 | 60 | 80 | 65 | 65 |
| 0 ... 400 | 60 | 60 | 60 | 60 | 60 | 60 | 70 | 60 | 60 | 80 | 65 | 65 |
| 0 ... 500 | 120 | 85 | 85 | 120 | 85 | 85 | 90 | 60 | 60 | 135 | 100 | 100 |
| 0 ... 600 | 100 | 85 | 85 | 100 | 85 | 85 | 70 | 60 | 60 | 115 | 100 | 100 |
| 0 ... 700 | 120 | 100 | 85 | 120 | 100 | 85 | 90 | 70 | 60 | 135 | 115 | 100 |

Model F73 (version with capillary)

■ Capillary ≤ 5 m

| Design | 1 | | | 2 and 3 | | | 4 and 5 | | |
|---------------------|-----|-----|------|---------|-----|------|---------|-----|------|
| Stem diameter in mm | 6 | 8 | ≥ 10 | 6 | 8 | ≥ 10 | 6 | 8 | ≥ 10 |
| Scale range in °C | | | | | | | | | |
| -200 ... +50 | 95 | 70 | 70 | 90 | 65 | 65 | 80 | 60 | 60 |
| -200 ... +100 | 95 | 70 | 70 | 90 | 65 | 65 | 80 | 60 | 60 |
| -80 ... +60 | 115 | 80 | 70 | 110 | 75 | 65 | 100 | 65 | 60 |
| -60 ... +40 | 135 | 95 | 70 | 130 | 90 | 65 | 120 | 80 | 60 |
| -40 ... +60 | 135 | 95 | 70 | 130 | 90 | 65 | 120 | 80 | 60 |
| -30 ... +50 | 145 | 105 | 75 | 140 | 100 | 70 | 130 | 90 | 60 |
| -20 ... +60 | 145 | 105 | 75 | 140 | 100 | 70 | 130 | 90 | 60 |
| -20 ... +80 | 135 | 95 | 70 | 130 | 90 | 65 | 120 | 80 | 60 |
| 0 ... 60 | 165 | 115 | 85 | 160 | 110 | 80 | 150 | 100 | 70 |
| 0 ... 80 | 155 | 105 | 75 | 150 | 100 | 70 | 140 | 90 | 60 |
| 0 ... 100 | 135 | 95 | 70 | 130 | 90 | 65 | 120 | 80 | 60 |
| 0 ... 120 | 125 | 85 | 70 | 120 | 80 | 65 | 110 | 70 | 60 |
| 0 ... 160 | 115 | 80 | 70 | 110 | 75 | 65 | 100 | 65 | 60 |
| 0 ... 200 | 105 | 80 | 70 | 100 | 75 | 65 | 90 | 65 | 60 |
| 0 ... 250 | 105 | 70 | 70 | 100 | 65 | 65 | 90 | 60 | 60 |
| 0 ... 300 | 95 | 70 | 70 | 90 | 65 | 65 | 80 | 60 | 60 |
| 0 ... 400 | 95 | 70 | 70 | 90 | 65 | 65 | 80 | 60 | 60 |
| 0 ... 500 | 115 | 70 | 70 | 110 | 65 | 65 | 100 | 60 | 60 |
| 0 ... 600 | 95 | 70 | 70 | 90 | 65 | 65 | 80 | 60 | 60 |
| 0 ... 700 | 115 | 80 | 70 | 110 | 75 | 65 | 100 | 65 | 60 |

■ Capillary > 5 ... 10 m







| Design | 1 | | | 2 and 3 | | | 4 and 5 | | |
|---------------------|-----|-----|------|---------|-----|------|---------|-----|------|
| Stem diameter in mm | 6 | 8 | ≥ 10 | 6 | 8 | ≥ 10 | 6 | 8 | ≥ 10 |
| Scale range in °C | | | | | | | | | |
| -200 ... +50 | 115 | 80 | 70 | 110 | 75 | 65 | 100 | 65 | 60 |
| -200 ... +100 | 115 | 80 | 70 | 110 | 75 | 65 | 100 | 65 | 60 |
| -80 ... +60 | 135 | 95 | 70 | 130 | 90 | 65 | 120 | 80 | 60 |
| -60 ... +40 | 155 | 105 | 75 | 150 | 100 | 70 | 140 | 90 | 60 |
| -40 ... +60 | 155 | 105 | 75 | 150 | 100 | 70 | 140 | 90 | 60 |
| -30 ... +50 | 165 | 115 | 85 | 160 | 110 | 80 | 150 | 100 | 70 |
| -20 ... +60 | 175 | 115 | 85 | 170 | 110 | 80 | 160 | 100 | 70 |
| -20 ... +80 | 155 | 105 | 75 | 150 | 100 | 70 | 140 | 90 | 60 |
| 0 ... 60 | 185 | 125 | 95 | 180 | 120 | 90 | 170 | 110 | 80 |
| 0 ... 80 | 175 | 115 | 85 | 170 | 110 | 80 | 160 | 100 | 70 |
| 0 ... 100 | 155 | 105 | 85 | 150 | 100 | 80 | 140 | 90 | 70 |
| 0 ... 120 | 145 | 105 | 75 | 140 | 100 | 70 | 130 | 90 | 60 |
| 0 ... 160 | 135 | 95 | 70 | 130 | 90 | 65 | 120 | 80 | 60 |
| 0 ... 200 | 125 | 85 | 70 | 120 | 80 | 65 | 110 | 70 | 60 |
| 0 ... 250 | 125 | 85 | 70 | 120 | 80 | 65 | 110 | 70 | 60 |
| 0 ... 300 | 115 | 80 | 70 | 110 | 75 | 65 | 100 | 65 | 60 |
| 0 ... 400 | 115 | 80 | 70 | 110 | 75 | 65 | 100 | 65 | 60 |
| 0 ... 500 | 135 | 95 | 70 | 130 | 90 | 65 | 120 | 80 | 60 |
| 0 ... 600 | 115 | 80 | 70 | 110 | 75 | 65 | 100 | 65 | 60 |
| 0 ... 700 | 145 | 95 | 70 | 140 | 90 | 65 | 130 | 80 | 60 |

■ Capillary > 10 ... 15 m

| Design | 1 | | | 2 and 3 | | | 4 and 5 | | |
|---------------------|-----|-----|------|---------|-----|------|---------|-----|------|
| Stem diameter in mm | 6 | 8 | ≥ 10 | 6 | 8 | ≥ 10 | 6 | 8 | ≥ 10 |
| Scale range in °C | | | | | | | | | |
| -200 ... +50 | 135 | 95 | 70 | 130 | 90 | 65 | 120 | 80 | 60 |
| -200 ... +100 | 135 | 95 | 70 | 130 | 90 | 65 | 120 | 80 | 60 |
| -80 ... +60 | 155 | 105 | 85 | 150 | 100 | 80 | 140 | 90 | 70 |
| -60 ... +40 | 175 | 115 | 85 | 170 | 110 | 80 | 160 | 100 | 70 |
| -40 ... +60 | 175 | 115 | 85 | 170 | 110 | 80 | 160 | 100 | 70 |
| -30 ... +50 | 185 | 125 | 95 | 180 | 120 | 90 | 170 | 110 | 80 |
| -20 ... +60 | 185 | 125 | 95 | 180 | 120 | 90 | 170 | 110 | 80 |
| -20 ... +80 | 175 | 115 | 85 | 170 | 110 | 80 | 160 | 100 | 70 |
| 0 ... 60 | 205 | 135 | 95 | 200 | 130 | 90 | 190 | 120 | 80 |
| 0 ... 80 | 195 | 125 | 95 | 190 | 120 | 90 | 180 | 110 | 80 |
| 0 ... 100 | 175 | 115 | 85 | 170 | 110 | 80 | 160 | 100 | 70 |
| 0 ... 120 | 165 | 115 | 85 | 160 | 110 | 80 | 150 | 100 | 70 |
| 0 ... 160 | 155 | 105 | 85 | 150 | 100 | 80 | 140 | 90 | 70 |
| 0 ... 200 | 145 | 105 | 75 | 140 | 100 | 70 | 130 | 90 | 60 |
| 0 ... 250 | 145 | 95 | 75 | 140 | 90 | 70 | 130 | 80 | 60 |
| 0 ... 300 | 135 | 95 | 70 | 130 | 90 | 65 | 120 | 80 | 60 |
| 0 ... 400 | 135 | 95 | 70 | 130 | 90 | 65 | 120 | 80 | 60 |
| 0 ... 500 | 135 | 95 | 70 | 130 | 90 | 65 | 120 | 80 | 60 |
| 0 ... 600 | 135 | 95 | 70 | 130 | 90 | 65 | 120 | 80 | 60 |
| 0 ... 700 | 175 | 105 | 75 | 170 | 100 | 70 | 160 | 90 | 60 |

The technical feasibility of minimum insertion lengths in conjunction with capillary > 15 m should be tested beforehand.

Approvals

| Logo | Description | Country |
|---|--|-----------------------------|
|  | EU declaration of conformity ATEX directive (option) Hazardous areas Zone 1 gas [II 2G Ex h IIC T6 ... T1 Gb X] Zone 21 dust [II 2D Ex h IIIC T85 ... T450 °C Db X] | European Union |
|  | EAC (option) ■ Import certificate ■ EMC directive ■ Hazardous areas Zone 1 gas [II Gb c T* X] Zone 21 dust [III Db c T* X IP66] | Eurasian Economic Community |
|  | GOST (option) Metrology, measurement technology | Russia |
|  | KazInMetr (option) Metrology, measurement technology | Kazakhstan |
| - | MTSCHS (option) Permission for commissioning | Kazakhstan |
|  | BelGIM (option) Metrology, measurement technology | Belarus |
|  | Uzstandard (option) Metrology, measurement technology | Uzbekistan |
| - | CRN (option) Safety (e.g. electr. safety, overpressure, ...) | Canada |

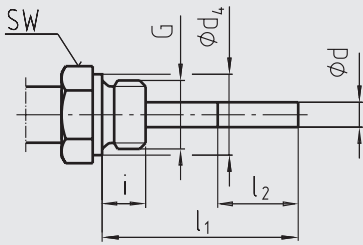
Certificates (option)

- 2.2 test report
- 3.1 inspection certificate
- DKD/DAkkS calibration certificate

Approvals and certificates, see website

Connection designs

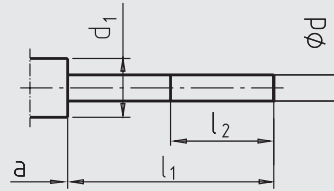
Standard design (male threaded connection) ¹⁾



Standard insertion length $l_1 = 63, 100, 160, 200, 250$ mm

| Nominal size | Process connection | | Dimensions in mm | | | |
|--------------|--------------------|-------|------------------|----|-------|-----------------|
| | NS | G | i | SW | d_4 | $\varnothing d$ |
| 100, 160 | | G ½ B | 14 | 27 | 26 | 8 |
| | | G ¾ B | 16 | 32 | 32 | 8 |
| | | ½ NPT | 19 | 22 | - | 8 |
| | | ¾ NPT | 20 | 30 | - | 8 |

Design 1, plain stem (without thread)

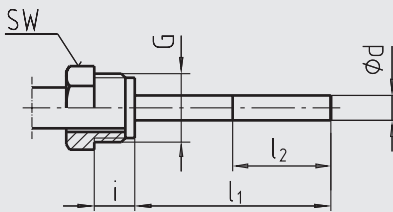


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Standard insertion length $l_1 = 100, 140, 200, 240, 290$ mm
Basis for design 4, compression fitting

| Nominal size | Dimensions in mm | | | | |
|--------------|------------------|---------------------|-----------------|-------------|--------------------------------|
| | NS | d_1 ¹⁾ | $\varnothing d$ | a for axial | a for adjustable stem and dial |
| 100, 160 | 18 | 8 | 15 | 25 | |

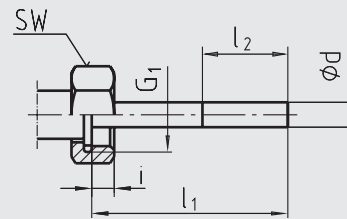
Design 2, male nut



Standard insertion length $l_1 = 80, 140, 180, 230$ mm

| Nominal size | Process connection | | Dimensions in mm | | |
|--------------|--------------------|-----------|------------------|----|-----------------|
| | NS | G | i | SW | $\varnothing d$ |
| 100, 160 | | G ½ B | 20 | 27 | 8 |
| | | M20 x 1.5 | 15 | 22 | 8 |

Design 3, union nut

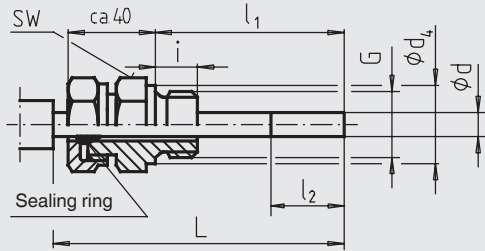


Standard insertion length $l_1 = 89, 126, 186, 226, 276$ mm

| Nominal size | Process connection | | Dimensions in mm | | |
|--------------|--------------------|-----------|------------------|----|-----------------|
| | NS | G | i | SW | $\varnothing d$ |
| 100, 160 | | G ½ B | 8.5 | 27 | 8 |
| | | G ¾ B | 10.5 | 32 | 8 |
| | | M24 x 1.5 | 13.5 | 32 | 8 |

1) Not applicable to version with capillary

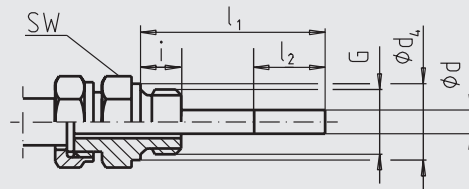
Design 4, compression fitting (sliding on stem)



Insertion length l_1 = variable
 Length $L = l_1 + 40$ mm

| Nominal size | Process connection | | Dimensions in mm | | |
|--------------|--------------------|----|------------------|----------------|-----|
| | G | i | SW | d ₄ | Ø d |
| NS | | | | | |
| 100, 160 | G ½ B | 14 | 27 | 26 | 8 |
| | G ¾ B | 16 | 32 | 32 | 8 |
| | M18 x 1.5 | 12 | 24 | 23 | 8 |
| | ½ NPT | 19 | 22 | - | 8 |
| | ¾ NPT | 20 | 30 | - | 8 |

Design 5, union nut and loose threaded connection



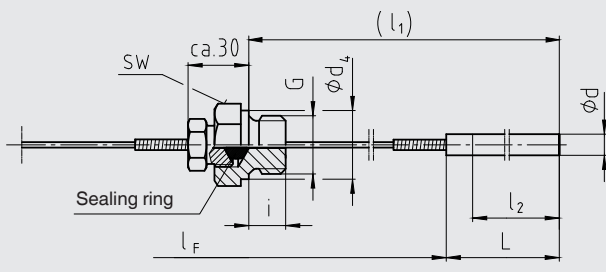
Standard insertion length $l_1 = 63, 100, 160, 200, 250$ mm

| Nominal size | Process connection | | Dimensions in mm | | |
|--------------|--------------------|----|------------------|----------------|-----|
| | G | i | SW | d ₄ | Ø d |
| NS | | | | | |
| 100, 160 | G ½ B | 14 | 27 | 26 | 8 |
| | G ¾ B | 16 | 32 | 32 | 8 |
| | M18 x 1.5 | 12 | 24 | 23 | 8 |
| | ½ NPT | 19 | 22 | - | 8 |
| | ¾ NPT | 20 | 30 | - | 8 |

Option: Connection with union nut M24 x 1.5
 and loose threaded connection M18 x 1.5

| Nominal size | Process connection | | Dimensions in mm | | |
|--------------|--------------------|----|------------------|----------------|-----|
| | G | i | SW | d ₄ | Ø d |
| NS | | | | | |
| 100, 160 | M18 x 1.5 | 12 | 32 | 23 | 8 |

Design 6.1, compression fitting sliding on capillary (compression fitting is leak-proof)

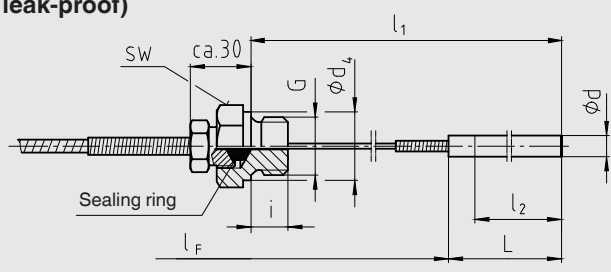


Insertion length l_1 = variable
 Probe length L: Standard 200 mm with Ø d = 6 mm
 Standard 170 mm with Ø d = 8 mm
 Standard 100 mm with Ø d ≥ 10 mm

| Nominal size | Process connection | | Dimensions in mm | | |
|--------------|--------------------|----|------------------|----------------|-----|
| | G | i | SW | d ₄ | Ø d |
| NS | | | | | |
| 100, 160 | G ½ B | 14 | 27 | 26 | 8 |
| | G ¾ B | 16 | 32 | 32 | 8 |
| | ½ NPT | 19 | 22 | - | 8 |
| | ¾ NPT | 20 | 30 | - | 8 |

For stem diameter 6 mm no bend protection spring will be fitted at the probe.

Design 6.2, compression fitting sliding on capillary with spiral protective sleeve (compression fitting is leak-proof)

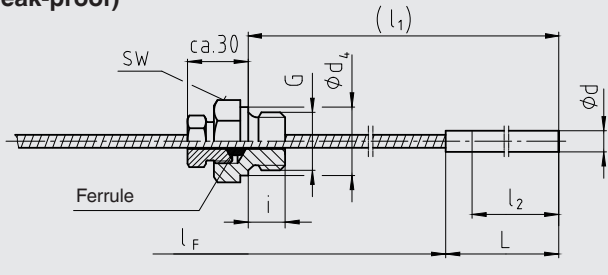


Insertion length l_1 : ≥ 300 mm with Ø d = 6 or 8 mm
 ≥ 200 mm with Ø d ≥ 10 mm
 Probe length L: Standard 200 mm with Ø d = 6 mm
 Standard 170 mm with Ø d = 8 mm
 Standard 100 mm with Ø d ≥ 10 mm

| Nominal size | Process connection | | Dimensions in mm | | |
|--------------|--------------------|----|------------------|----------------|-----|
| | G | i | SW | d ₄ | Ø d |
| NS | | | | | |
| 100, 160 | G ½ B | 14 | 27 | 26 | 8 |
| | G ¾ B | 16 | 32 | 32 | 8 |
| | ½ NPT | 19 | 22 | - | 8 |
| | ¾ NPT | 20 | 30 | - | 8 |

For stem diameter 6 mm no bend protection spring will be fitted at the probe.

Design 6.3, compression fitting sliding on spiral protective sleeve (compression fitting is not leak-proof)

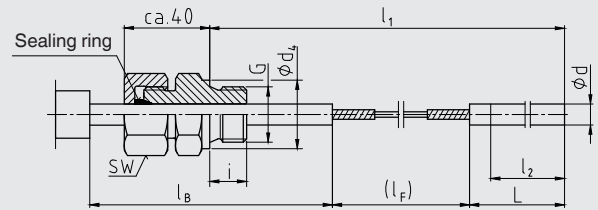


Insertion length l_1 = variable

Probe length L: Standard 200 mm with $\varnothing d = 6$ mm
 Standard 170 mm with $\varnothing d = 8$ mm
 Standard 100 mm with $\varnothing d \geq 10$ mm

| Nominal size | Process connection | | Dimensions in mm | | |
|--------------|--------------------|----|------------------|-------|-----------------|
| | G | i | SW | d_4 | $\varnothing d$ |
| 100, 160 | G 1/2 B | 14 | 27 | 26 | 8 |
| | G 3/4 B | 16 | 32 | 32 | 8 |
| | 1/2 NPT | 19 | 22 | - | 8 |
| | 3/4 NPT | 20 | 30 | - | 8 |

Design 7, compression fitting at the case



Insertion length l_1 : ≥ 400 mm

Probe length L: Standard 200 mm with $\varnothing d = 6$ mm
 Standard 170 mm with $\varnothing d = 8$ mm
 Standard 100 mm with $\varnothing d \geq 10$ mm

l_B = standard 100 mm (others on request)

| Nominal size | Process connection | | Dimensions in mm | | |
|--------------|--------------------|----|------------------|-------|-----------------|
| | G | i | SW | d_4 | $\varnothing d$ |
| 100, 160 | G 1/2 B | 14 | 27 | 26 | 8 |
| | G 3/4 B | 16 | 32 | 32 | 8 |
| | 1/2 NPT | 19 | 22 | - | 8 |
| | 3/4 NPT | 20 | 30 | - | 8 |

For stem diameter 6 mm no bend protection spring will be fitted at the probe.

Note for designs 6.1, 6.2, 6.3 and 7:

With some combinations, the active length l_2 can correspond to the probe length L.

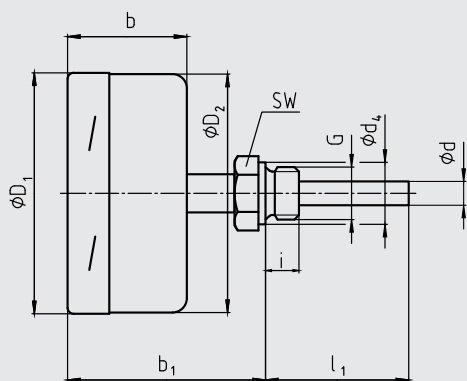
If an additional compression fitting is desired, the probe length L increases by at least 60 mm.

Legend:

- G Male thread
- G₁ Female thread
- i Thread length (incl. collar)
- a Distance to the case/articulated joint
- $\varnothing d_4$ Diameter of the sealing collar
- SW Spanner width
- $\varnothing d$ Stem diameter
- l_1 Insertion length
- l_2 Active length

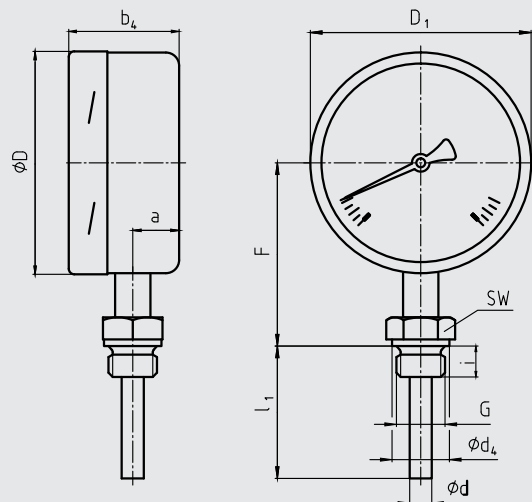
Dimensions in mm

Model A73, back mount



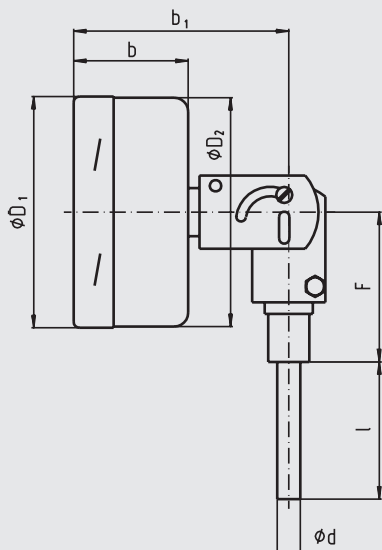
3073068.01

Model R73, lower mount



3073076.01

Model S73, back mount, adjustable stem and dial



3073254.01

Table of dimensions for models A73 and R73

| Nominal size | Dimensions in mm | | | | | | | | | | Weight in kg |
|--------------|------------------|------------------------------|-----------------|----------------|----------------|----------------|-----------------|----|-------|----|--------------|
| | b | b ₁ ¹⁾ | d | d ₄ | D ₁ | D ₂ | F ¹⁾ | i | G | SW | |
| 100 | 50 | 83 | 8 ²⁾ | 26 | 101 | 99 | 83 | 14 | G ½ B | 27 | 1.1 |
| 160 | 50 | 83 | 8 ²⁾ | 26 | 161 | 159 | 113 | 14 | G ½ B | 27 | 1.4 |

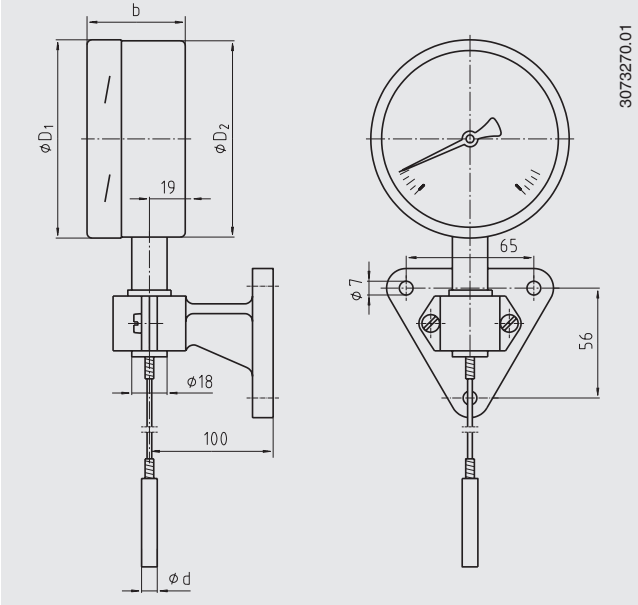
Table of dimensions for model S73

| Nominal size | Dimensions in mm | | | | | | Weight in kg |
|--------------|------------------|----------------|-----------------|----------------|----------------|----|--------------|
| | b | b ₁ | d | D ₁ | D ₂ | F | |
| 100 | 50 | 93 | 8 ²⁾ | 101 | 99 | 68 | 1.3 |
| 160 | 50 | 93 | 8 ²⁾ | 161 | 159 | 68 | 1.6 |

1) With scale ranges $\geq 0 \dots 300 \text{ }^\circ\text{C}$, $-200 \dots +50 \text{ }^\circ\text{C}$ or $-200 \dots +100 \text{ }^\circ\text{C}$ the dimensions increase by 40 mm

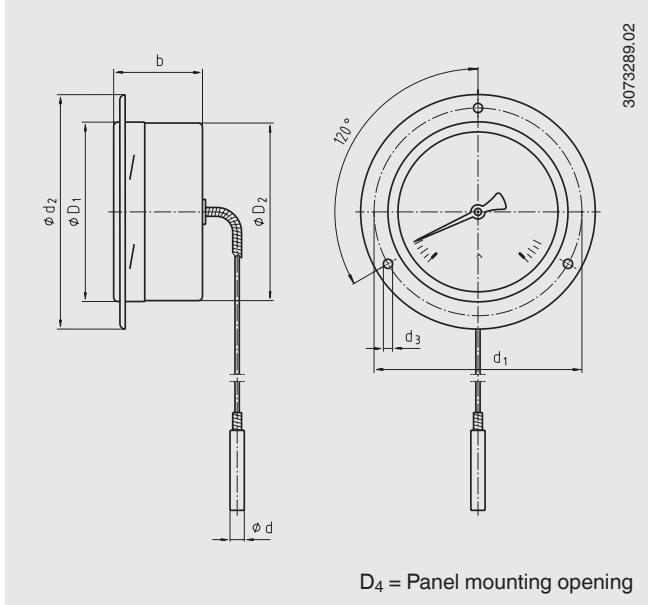
2) Option: stem diameter 6, 10, 12 mm

Model F73, with capillary and instrument mounting bracket



3073270.01

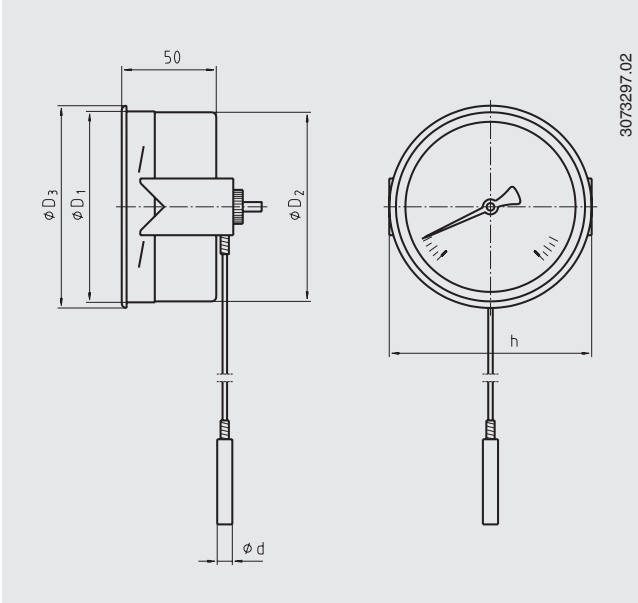
Model F73, with capillary and panel mounting flange



3073289.02

D₄ = Panel mounting opening

Model F73, with capillary and triangular bezel with clamp

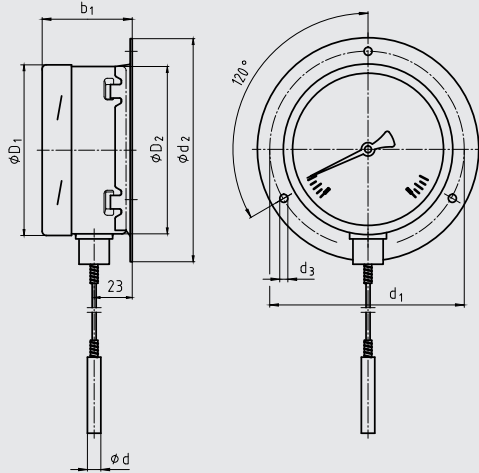


3073297.02

| Nominal size | Dimensions in mm | | | | | | | | | | Weight in kg |
|--------------|------------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----|--------------|
| NS | b | d | d ₁ | d ₂ | d ₃ | D ₁ | D ₂ | D ₃ | D ₄ | h | |
| 100 | 50 | 8 ²⁾ | 116 | 132 | 4.8 | 101 | 99 | 107 | 104 | 110 | 1.4 |
| 160 | 50 | 8 ²⁾ | 178 | 196 | 4.8 | 161 | 159 | 166 | 164 | 173 | 1.8 |

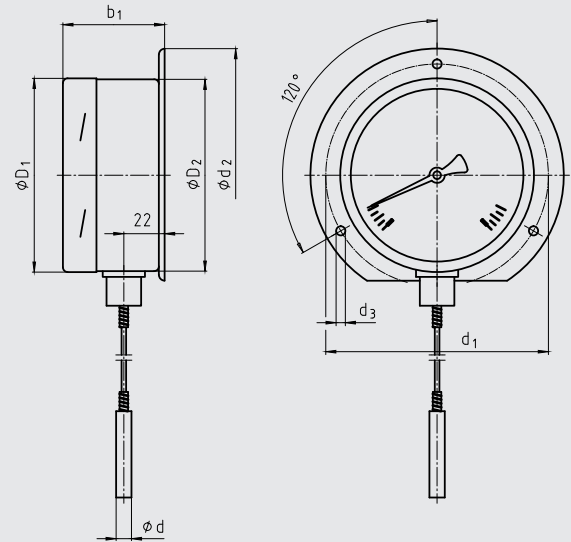
2) Option: Stem diameter 6, 10, 12 mm

Model F73.100, with capillary and surface mounting flange



14126562.01

Model F73.160, with capillary and surface mounting flange

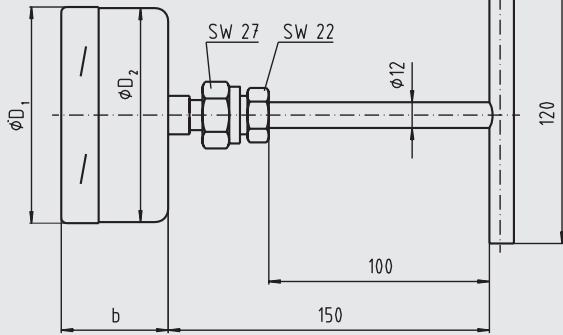


3073165.03

| Nominal size | Dimensions in mm | | | | | | | Weight in kg | |
|--------------|------------------|-------|-----------------|-------|-------|-------|-------|--------------|-------|
| | NS | b_1 | d | d_1 | d_2 | d_3 | D_1 | | D_2 |
| 100 | | 54 | 8 | 117 | 132 | 4.8 | 101 | 99 | 1.4 |
| 160 | | 53 | 8 ²⁾ | 178 | 196 | 4.8 | 161 | 159 | 1.8 |

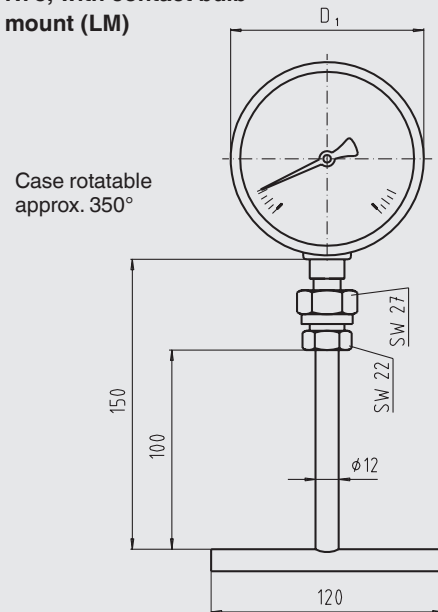
2) Option: Stem diameter 6, 10, 12 mm

Model A73, with contact bulb
Back mount (BM)



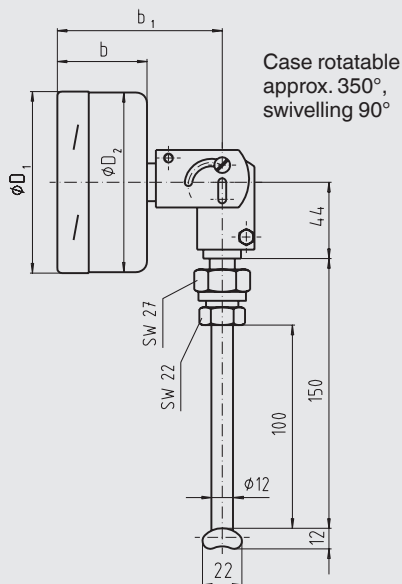
3107884.01

Model R73, with contact bulb
Lower mount (LM)



3107892.01

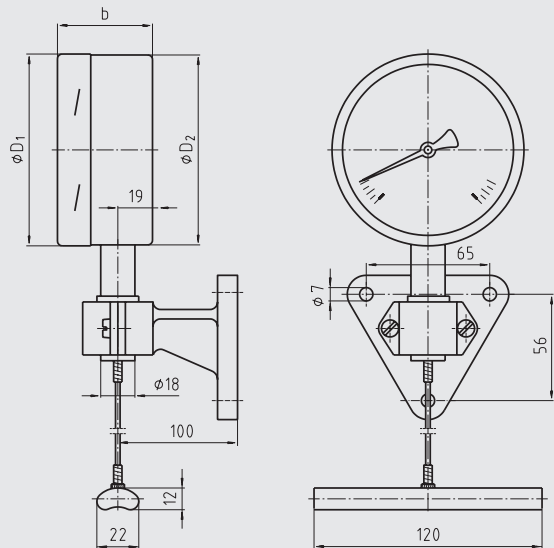
Model S73, with contact bulb
Back mount, adjustable stem and dial



3107906.01

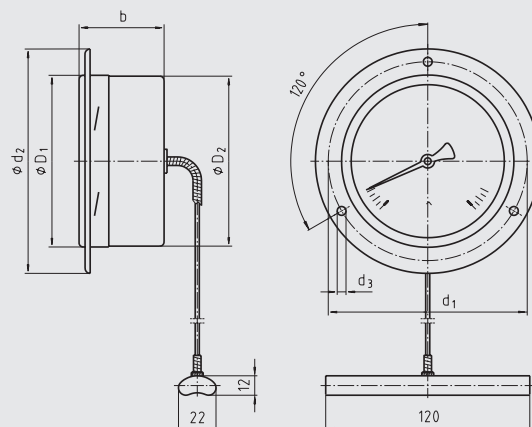
| Model | Nominal size | Dimensions in mm | | | | Weight in kg |
|---------|--------------|------------------|----------------|----------------|----------------|--------------|
| | NS | b | b ₁ | D ₁ | D ₂ | |
| A73.100 | 100 | 50 | - | 101 | 99 | 0.8 |
| A73.160 | 160 | 50 | - | 161 | 159 | 0.9 |
| R73.100 | 100 | 50 | - | 101 | 99 | 0.8 |
| R73.160 | 160 | 50 | - | 161 | 159 | 0.9 |
| S73.100 | 100 | 50 | 93 | 101 | 99 | 0.9 |
| S73.160 | 160 | 50 | 93 | 161 | 159 | 1.0 |

Model F73, with contact bulb
Capillary and instrument mounting bracket



3107957.01

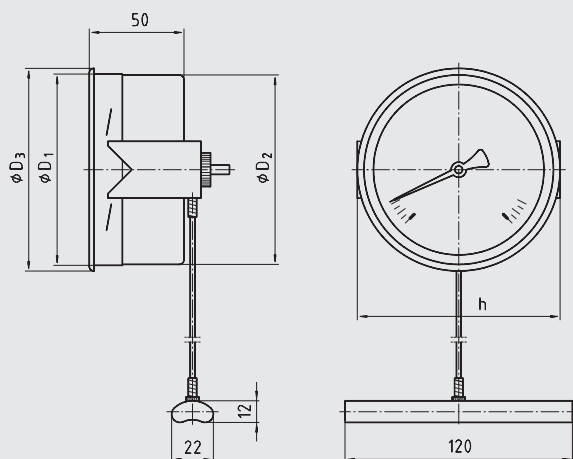
Model F73, with contact bulb
Capillary and panel mounting flange



3107965.01

D_4 = Panel mounting opening

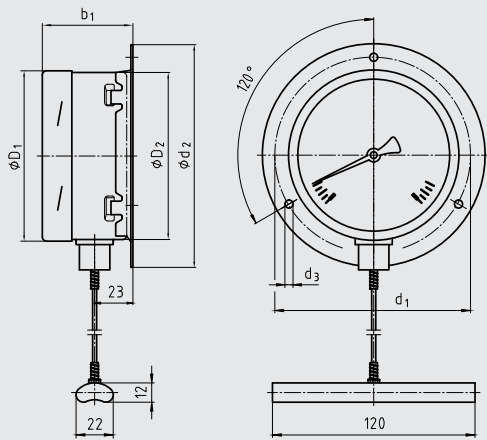
Model F73, with contact bulb
Capillary and triangular bezel with clamp



3107973.01

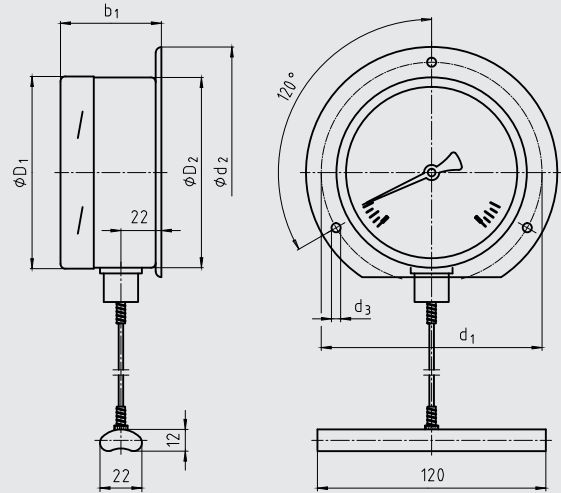
| Nominal size | Dimensions in mm | | | | | | | | | | Weight in kg |
|--------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----|-----|--------------|
| | b | d ₁ | d ₂ | d ₃ | D ₁ | D ₂ | D ₃ | D ₄ | h | | |
| 100 | 50 | 116 | 132 | 4.8 | 101 | 99 | 107 | 104 | 110 | 1.4 | |
| 160 | 50 | 178 | 196 | 5.8 | 161 | 159 | 166 | 164 | 173 | 1.8 | |

Model F73.100, with contact bulb
Capillary and surface mounting flange



14126563.01

Model F73.160, with contact bulb
Capillary and surface mounting flange



3107949.02

| Nominal size | Dimensions in mm | | | | | | Weight in kg |
|--------------|------------------|----------------|----------------|----------------|----------------|----------------|--------------|
| | NS | b ₁ | d ₁ | d ₂ | d ₃ | D ₁ | |
| 100 | 54 | 117 | 132 | 4.8 | 101 | 99 | 1.4 |
| 160 | 53 | 178 | 196 | 5.8 | 161 | 159 | 1.8 |

Mounting instructions for contact bulb

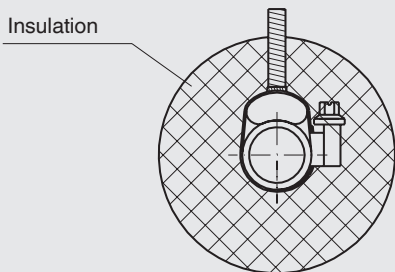
General information

The contact bulb has been designed for mounting on pipes or tanks. When mounting this thermometer version, it must be ensured that the contact bulb is in contact with the measuring point over its complete length. The basic requirements to ensure a perfect measurement result is to retain good thermal contact between the skin mounted contact bulb and the outside wall of the pipe or tank with minimal heat loss to the environment from the skin mounted contact bulb and measuring point.

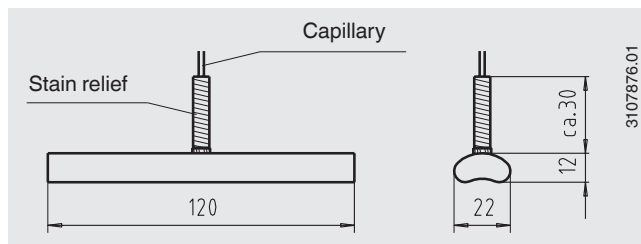
■ Mounting on pipes

The geometry of the contact bulb has been designed for pipes with external diameters between 20 and 160 mm. For fixing the contact bulb to the pipe, pipe clamps are sufficient. The contact bulb should have direct metallic contact with the measuring point and have firm contact with the surface of the pipe. Where temperatures under 200 °C are expected, a heat conductive paste can be used to optimise the heat transmission between contact bulb and pipe. Insulation must be applied at the mounting point to avoid error due to heat loss. This insulation must have sufficient temperature resistance and is not included in the scope of delivery.

Pipe clamp mounting



3107922.01

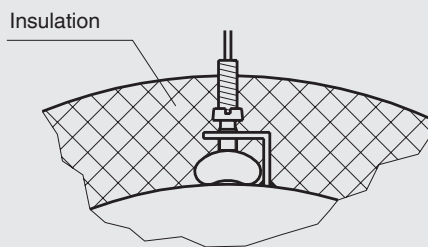


■ Mounting on tanks

The geometry of the contact bulb has been designed for tanks with an external radius up to 80 mm. If the mounting point of the skin mounting contact bulb on the tank has an external radius greater than 80 mm, we recommend the use of an intermediate piece designed for the respective tank diameter, made of a material with good thermal conductivity. The contact bulb can be fastened to the tank by means of an angle bracket with clamping screws, or any similar method. The contact bulb should have direct metallic contact with the measuring point and have firm contact with the surface of the tank.

A heat conductive paste can be used to optimise the heat transmission between contact bulb and tank, if temperatures under 200 °C are expected. Insulation must be applied at the mounting point to avoid error due to heat loss. This insulation must have sufficient temperature resistance and is not included in the scope of delivery.

Angle bracket mounting



3107930.01

Thermowell

In principle, the operation of a mechanical thermometer without a thermowell is possible with low process-side loading (low pressure, low viscosity and low flow velocities).

However, in order to enable exchanging the thermometer during operation (e.g. instrument replacement or calibration) and to ensure a better protection of the instrument and also the plant and the environment, it is advisable to use a thermowell from the extensive WIKA thermowell portfolio.

For further information on the calculation of the thermowell, see Technical information IN 00.15.

Ordering information

Model / Nominal size / Scale range / Connection design / Process connection / Length l_1 / Capillary length l_F / Options

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