labom
MEASUREMENT TECHNOLOGY

# BIMETAL THERMOMETER
## WITH ADJUSTABLE JOINT STEM

## TYPE SERIES FA ....

### Design Features

- Case with medium-contacting parts from stainless steel
- Different connections can be supplied
- Accuracy class 1 as per EN 13190
- Micro adjusting pointer for indication correction
- Indicator damping

### Application

These thermometers are suitable for use outdoors and in aggressive environments. The devices can also be supplied with additional liquid damping for use in extreme conditions. The temperature detecting element is susceptible to bending, therefore, fitting with thermowell is recommended. See data sheet no. T5-025 for suitable thermowells.

### Design and Function

The bimetal thermometer consists mainly of a temperature detecting element with bimetal helix welded into it and an indicating unit fixed to it. The 270° rotation motion of the bimetal helix is directly transmitted to the pointer via a shaft with a flat spiral spring coupling. Unless otherwise specified, the minimum immersion depth is the lower edge of the screwing.

### Technical Data

**Case**
stainless steel material no. 1.4301, nominal size 100 and 160 mm

**Process connection**
rigid temperature detecting element, centrally protruding at rear, with fitted 90° pivoted joint stem. Different connections can be supplied, see order details

**Case design**
degree of protection IP 66 per EN 60529, alternatively with liquid filling

**Measuring element**
helix from thermostatic bimetal per DIN 1715, with good adjusting power and fast acting, thermally aged, base and connection piece laser welded

**Pointer shaft**
stainless steel material no. 1.4571, with multiple bearings, with highly flexible joint helix

**Temperature detecting element**
stainless steel material no. 1.4571, diameter 8 or 6 mm, can be supplied in standard lengths, see order details, other sizes upon request

**Scale**
aluminium, white with black inscription

**Pointer**
aluminium, black with micro adjusting device for zero-point correction

**Window**
instrument glass, alternatively macrolon

**Case seal**
Buna N

**Measuring system damping**
indicator damping as standard
additionally liquid filling for damping the whole system can be supplied optional for nominal ranges -40 °C up to 160 °C

**Nominal ranges**
per EN 13190 from -40...+500 °C (with restrictions also 600 °C), other values upon request. For nominal ranges above 400 °C, we recommend the use of a thermowell per DIN 43772

**Accuracy**
per EN 13190, class 1. The classes do not take into account a possible error, which can be caused by altering the position of the joint. However, this possible error can be compensated for by re-adjusting with the adjustable pointer

**Storage or transport temperature**
max. -20...+60 °C, other values upon request

**Weights**

| | |
|---|---|
| DN 100: | approx. 0.6 kg |
| DN 160: | approx. 0.9 kg |

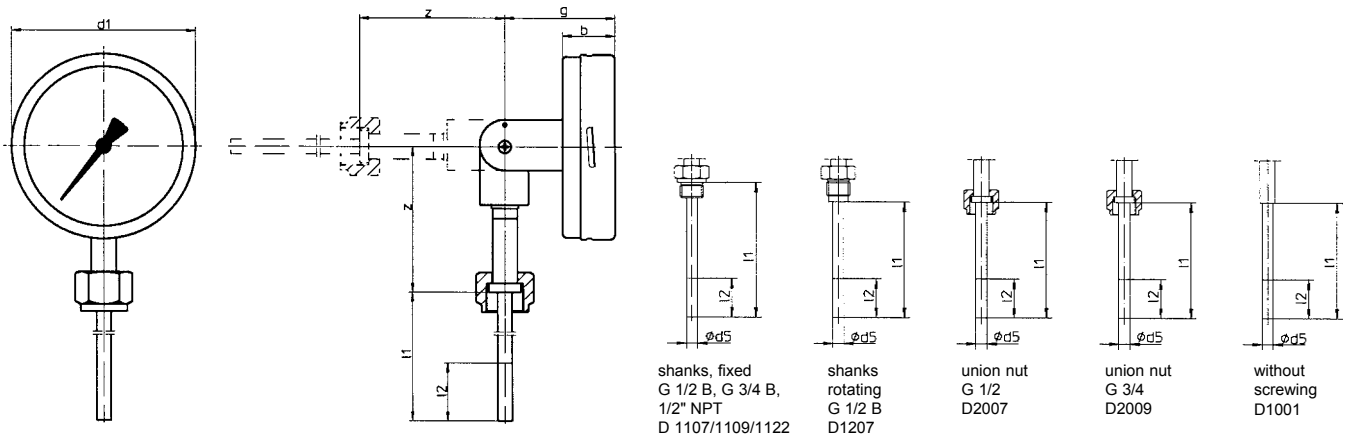
**Special design**
- with construction type approval for connection to zone 0 with thermowells per DIN 43772 upon request
- marking on scale
- design without screwing (D1001) also available with sliding screwing

**Instructions for use**
the loading capacity of the temperature detecting element depends on the following parameters:
1. measured medium
2. measured medium pressure
3. measured medium temperature
4. flow velocity
5. immersion length
6. material

A technical test is neccessary where required.

**Information on other models upon request or see order details**

## Dimensions




**The sensitive portion l2 shall reach the process temperature completely. The insertion length l1 should have adequate size.**

| Dimensions (mm) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | z (up to sensor) | | | | | dimensions z increases by |
| case | d1 | b | g | l2 | D1001 | D1107/1109/1122 | D1207 | D2007 | D2009 | 40 mm for nominal range |
| DN 100 | 101 | 28 | 60 | 60 ± 5 | 76 | 60 | 80,5 | 80,5 | 80,5 | > 300 °C |
| DN 160 | 161 | 29 | 60 | 60 ± 5 | 76 | 60 | 80,5 | 80,5 | 80,5 | |

## Order Details

- please give additional specifications for models not listed -

| Bimetall thermometer with adjustable joint stem | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| case | · DN 100 | | | | | | | FA2 | | | | | | | | |
| | · DN 160 | | | | | | | FA3 | | | | | | | | |
| case design | · IP 66 | | | | | | | 310 | | | | | | | | |
| | · IP 66 with liquid filling | | | | | | | 510 | | | | | | | | |
| accuracy measuring range | · standard class 1 (full range) | | | | | | | | A2 | | | | | | | |
| | · per table | | | | | | | | ... | | | | | | | |
| process connection | · shanks, fixed G 1/2 B | | | | | | | | | D1107 | | | | | | |
| | · shanks, fixed G 3/4 B | | | | | | | | | D1109 | | | | | | |
| | · shanks, fixed 1/2 NPT | | | | | | | | | D1122 | | | | | | |
| | · shanks, rotating G 1/2 B | | | | | | | | | D1207 | | | | | | |
| | · union nut G 1/2 | | | | | | | | | D2007 | | | | | | |
| | · union nut G 3/4 | | | | | | | | | D2009 | | | | | | |
| | · without screwing | | | | | | | | | D1001 | | | | | | |
| temperature detecting element Ø d5 | · 6 mm | | | | | | | | | | F6 | | | | | |
| | · 8 mm | | | | | | | | | | F8 | | | | | |
| immersion length l1 (mm) ³ | D 11.. shanks fixed | D1207 shanks rotating G1/2B | D2007 union nut G 1/2 | D2009 union nut G 3/4 | D1001 without screwing | | | | | | | | | | | |
| | 100 | 080 | 089 | 093 | 100 | | | | | | . . . | | | | | |
| | 160 | 140 | 126 | 130 | 160 | | | | | | . . . | | | | | |
| | 250 | 230 | 186 | 190 | 250 | | | | | | . . . | | | | | |
| | 400 | 380 | 276 | 280 | 400 | | | | | | . . . | | | | | |
| | -- | -- | 426 | 430 | -- | | | | | | . . . | | | | | |
| | deviating length: pls specify | | | | | | | | | | 999 | | | | | |
| **additional features (to be indicated in case of need, only)** | | | | | | | | | | | | | | | | |
| window | · macrolon with adjustable reference pointer | | | | | | | | | | | | | R13 | | |
| marking | · on scale (pls specifiy) | | | | | | | | | | | | | | T2 | |
| **Order code (example):** | | | | | | | | FA2310 | A2222 | D1109 | F8100 | | | | | |

standard measuring and nominal ranges °C, per EN 13190

| nominal range °C | meas. range °C | order code |
|---|---|---|
| -20...+40 ² | -10...+30 | 340 |
| -20...+60 ² | -10...+50 | 346 |
| -30...+50 ² | -20...+40 | 322 |
| -40...+40 ² | -30...+30 | 220 |
| -40...+60 ² | -30...+50 | 222 |
| 0...60 | 10...50 | 520 |
| 0...80 | 10...70 | 522 |
| 0...100 | 10...90 | 524 |
| 0...120 | 20...100 | 540 |
| 0...160 | 20...140 | 544 |
| 0...200 ¹ | 20...180 ¹ | 548 |
| 0...250 ¹ | 30...220 ¹ | 560 |
| 0...300 ¹ | 30...270 ¹ | 565 |
| 0...400 ¹ | 50...350 ¹ | 627 |
| 0...500 ¹ | 50...450 ¹ | 630 |
| 0...600 ¹ | 100...500 ¹ | 640 |

¹ measuring range without case filling, only
² with liquid filling, only
³ standard immersion length to be specified in order code, e.g. l1 80 mm: order code 080



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