

Bimetal thermometer with switch contact radial bottom or centre back connection Type Series FP



Application area

- Chemical and petrochemical industry
- Machinery construction
- General process technology
- Shipping

Features

- Case and wetted parts of stainless steel
- Different connections can be supplied
- Accuracy class 1 or 2 per DIN 16196, depending on range
- Micro adjustment pointer for indication correction
- Switch contacts (electrical contact devices) per DIN 16196:
 - slow acting contact
 - magnetic snap contact
 - inductive contact

Options

- Explosion protection
- Material certificate per EN 10204
- Connection to Zone 0 with thermowells upon request

Application

These thermometers with switch function (integrated contact device) are suitable for use outdoors and in aggressive environments. The temperature detecting element is susceptible to bending, therefore, fitting with thermowell is recommended. Further information on mounting see operating instructions BA_066.

Technical Data

Case

high quality bayonet ring case NS 100
material: st. steel mat.-no. 1.4301 (304)

Degree of protection (EN 60529)
IP 66

Measuring element

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

Temperature detecting element

stainless steel mat. no. 1.4571 (316Ti). Diameter 6 and 8 mm. Can be supplied in standard lengths, see order details; other sizes upon request.

Process connection

rigid temperature detecting element, vertical resp. axial protruding at rear. Different connections available, see order details

Pointer shaft

stainless steel mat.-no. 1.4571 (316Ti), with multiple bearings

Scale

pure aluminium, white with black inscription

RoIntecy

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

Window

non-splintering glass, alternatively macrolon with contact lock

Case seal

sealing ring: Perbunan

Nominal ranges

per EN 13190
see order details. Special ranges upon request

Accuracy

see table on side 2.

Ambient temperature

per EN 13190
ambient temperatures that deviate from EN are to be specified

Storage and transport temperature

per EN 13190
max. -20...+60 °C

Electrical connection

connection plug with cable gland M 20 x 1.5 and removable test cover, mat. Macrolon

Switch contacts

Touch contacts or inductive contacts see order code.
Further technical details see operating instructions BA_066 and TA_039.

Explosion protection

magnetic snap contact

Simple electrical apparatus per IEC/DIN EN 60079-11 suitable for intrinsically safe circuits Ex IIC TX.

inductive contact

contact device suitable for intrinsically safe circuits

Ex II 2G Ex ia IIC T4/T5/T6 Gb

Reg.-no.: PTB 99 ATEX 2219X

PTB 00 ATEX 2049X

Ex-protection (ATEX) for mechanical measuring devices:

Ex II 2G Ex h IIC T1...T6 Gb X

Ex II 2D Ex h IIIC Txx°C Db X

Further details see operating instructions BA_066 and Ex Instructions XA_005, XA_013, XA_014 and XA_021.

Weight

NS 100: approx. 0.6 kg

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 necessary where required.

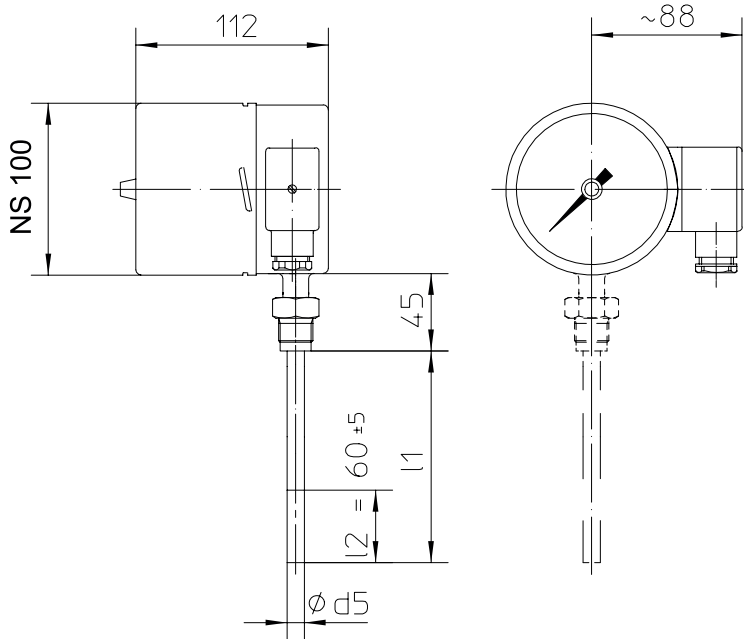
Information on other models upon request or see order details

| nominal size | temperature detecting element | type of contact | | | | | |
|--------------|-------------------------------|---------------------|---------|-----------------------|-----------|--------------------|---------|
| | | touch contacts | | | | inductive contacts | |
| | | slow acting contact | | magnetic snap contact | | single | double |
| single | double | single | double | | | | |
| NS 100 | Ø 8 | class 1 | class 2 | class 2 | class 2* | class 1 | class 2 |
| | Ø 6 | class 2 | class 2 | class 2 | > class 2 | class 2 | class 2 |

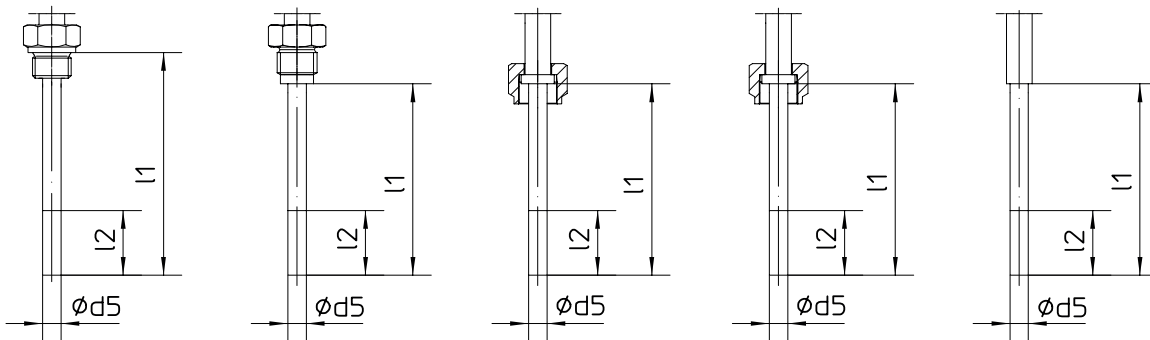
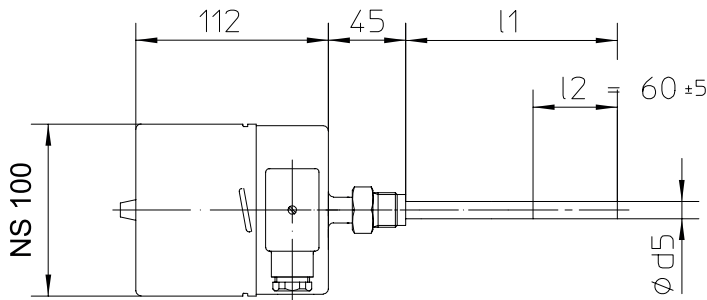
* pls indicate switch point, if no switch points are specified, the vendor will set 30 % or 70 % of the measuring range.

Dimensions

process connection radial vertical



process connection axial at rear



shanks, fixed
G1/2B, G3/4B,
1/2" NPT
D1107/1109/1122

shanks
rotating,
G1/2B
D1207

union nut
G1/2
D2007

union nut
G3/4
D2009

without
screwing
D1001

Order details

| Bimetal thermometer with switch contact, radial bottom or centre back connection | | | | | | | | | | | |
|--|--|--------|-------------------------------------|------------|-----------------------------|---------|---------------------------|--------|------------------------------|-------|--|
| case design | NS 100 IP 66 | | · process connection axial | | | FP230 . | | | | | |
| | | | · process connection vertical | | | FP240 . | | | | | |
| design | · standard | | | | | 0 | | | | | |
| | · ex-protection | | | | | 1 | | | | | |
| nominal range | · see table | | | | | A2... | | | | | |
| process connection | · shanks fixed | | | · G 1/2 B | | D1107 | | | | | |
| | | | | · G 3/4 B | | D1109 | | | | | |
| | | | | · 1/2" NPT | | D1122 | | | | | |
| | · shanks rotating | | | · G 1/2 B | | D1207 | | | | | |
| | · union nut | | | · G 1/2 | | D2007 | | | | | |
| | · without screwing | | | · G 3/4 | | D2009 | | | | | |
| temperature detecting element Ø d5 | · 6 mm (l2 ~ 60 mm) ³ | | | | | F6 ... | | | | | |
| | · 8 mm (l2 ~ 60 mm) ³ | | | | | F8 ... | | | | | |
| immersion length l1 (mm) ⁴ | D 11.. shanks fixed | | D1207 shanks rotating G 1/2 B | | D2007 union nut G 1/2 | | D2009 union nut 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 | | | | | | | | | | | |
| contact | <i>touch contact</i> | | | | | | | | | | |
| | · slow acting contact | | | | | | | L2 ... | | | |
| | · magnetic snap contact | | | | | | | L4 ... | | | |
| | · slow acting contact, separated circuits | | | | | | | M2 ... | | | |
| | · magnetic snap contact, separated circuits | | | | | | | M4 ... | | | |
| | <i>inductive contact</i> | | | | | | | | | | |
| | · standard initiator (N) | | | | | | | N4 ... | | | |
| | · safety initiator (SN) | | | | | | | N1 ... | | | |
| | · safety initiator invers (S1N) ² | | | | | | | N2 ... | | | |
| | · with integrated switching amplifier ¹ | | | | | | | N6 ... | | | |
| switch function | · single contact (1st figure per table) | | | | | | | .00 | | | |
| | · double contact (1st + 2nd figure per table) | | | | | | | .0 | | | |
| additional features (to be indicated in case of need, only): | | | | | | | | | | | |
| window | · macrolon ¹ | | | | | | | R11 | | | |
| marking | · on scale (pls. specify) | | | | | | | T2 | | | |
| Order code (example): | | | | | | | | | | | |
| | | FP2400 | | A2540 | | D1109 | | F8100 | | N4100 | |

| standard measuring and nominal ranges °C per EN 13190 | | |
|---|----------------|------------|
| nominal range °C | meas. range °C | order code |
| -20...+40 | -10...+30 | 340 |
| -20...+60 | -10...+50 | 346 |
| -30...+50 | -20...+40 | 322 |
| -40...+40 | -30...+30 | 220 |
| -40...+60 | -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 | 20...180 | 548 |
| 0...250 | 30...220 | 560 |
| 0...300 | 30...270 | 565 |
| 0...400 | 50...350 | 627 |
| 0...500 | 50...450 | 630 |
| 0...600 | 100...500 | 640 |

| switch function | fig. |
|---|------|
| · increasing temperature makes contact | 1 |
| · increasing temperature breaks contact | 2 |
| · decreasing temperature makes contact | 4 |
| · decreasing temperature breaks contact | 5 |

¹ not with ex-protection
² with NS 100: one contact device, only
³ the active length l2 must completely reach the process temperature that is to be measured. The depth of immersion length l1 should be increased accordingly.
⁴ standard immersion length to be specified in order code, e.g. l1 100 mm: order code 100