Bimetal thermometer

Type series FA….

Application area

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

Features

- High quality case with bajonet ring NS 100/160, degree of protection IP 66
- Nominal ranges -40 °C…600 °C, further nominal ranges from -110 °C...600 °C upon request
- Case and wetted parts of stainless steel
- Different connections can be supplied
- Accuracy class 1 as per EN 13190
- Adjusting pointer for indication correction

Options

- Approvals/Certificates
  - Explosion protection (ATEX/UKEX) for mechanical devices
  - Calibration certificate as per EN 10204
- As per UKCA regulations
- Case with liquid filling
- Connection to zone 0 with thermowells (upon request)

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. Suitable thermowells see product group T5.

Technical data

Constructional design / case

Design:	High quality case with bajonet ring, material: stainless steel mat.-no. 1.4301 (304)
Nominal size:	NS 100 or NS 160
Degree of protection per EN 60529:	IP 66
Filling:	For damping the whole measuring system. Depending on measuring range: Labofin (from -40 °C...100 °C) or silicone oil (from -110 °C...250 °C)
Case seal:	Material gasket: NBR
Window:	Non-splintering laminated glass. Option: Non-splintering plastic (Macrolon)
Pointer shaft:	Stainless steel mat.-no. 1.4571 (316Ti), with plastic bearing With highly flexible joint helix for thermometers with adjustable angel stem
Scale:	Pure aluminium, white with black inscription
Pointer:	Pure aluminium, black with adjustment for zero point correction

Weights:

Bottom connection

NS 100:	
without filling:	approx. 0.4 kg
with filling:	approx. 0.6 kg
NS 160:	
without filling:	approx. 0.8 kg
with filling:	approx. 1.5 kg

Centre back connection

NS 100:	
without filling:	approx. 0.4 kg
with filling:	approx. 0.5 kg
NS 160:	
without filling:	approx. 0.8 kg
with filling:	approx. 0.9 kg

Adjustable angel stem

NS 100:	
without filling:	approx. 0.6 kg
with filling:	approx. 0.7 kg
NS 160:	
without filling:	approx. 0.9 kg
with filling:	approx. 1.0 kg

Process connection

Design:

- rigid temperature detecting element, bottom connection
- rigid temperature detecting element, centre back connection
- rigid temperature detecting element, adjustable angle stem (90°)

Various process connections can be supplied (see order details).

Measuring element

Measuring element:	Helix from thermostatic bimetal per DIN 1715, with good adjusting force and fast acting, thermally aged. Base and connecting piece laser welded.

Temperature sensor

Temperature-detecting element:	Diameter 6 or 8 mm, standard lengths available. See order details, further sizes upon request. Material: stainless steel mat.-no. 1.4571 (316 Ti)

Nominal range

Nominal range (EN 13190):	-40 °C…500 °C (with restrictions also 600 °C), see order details. Further nominal ranges from -110 °C up to 600 °C (no normal range) upon request.

Accuracy

Accuracy class:	1.0 per EN 13190 For devices with adjustable angle stem: The accuracy class does 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 re-adjusting with the adjustable pointer.

Temperature ranges

Ambient:	Per EN 13190. Ambient temperatures that deviate from EN are to be specified.
Storage and transport:	-20…60 °C Further temperature ranges upon request.

Tests and certificates

Explosion protection:	Ex-protection (ATEX/UKEX) for mechanical devices ⟨Ex⟩ II 2G Ex h IIC T1...T6 Gb X ⟨Ex⟩ II 2D Ex h IIIC Txx°C Db X

Further details and temperature limits see Ex Instruction XA_005.

Instructions for use

The loading capacity of the temperature detecting element depends on the following parameters:

- Media
- Media pressure
- Media temperature
- Flow velocity
- Insertion length
- Material

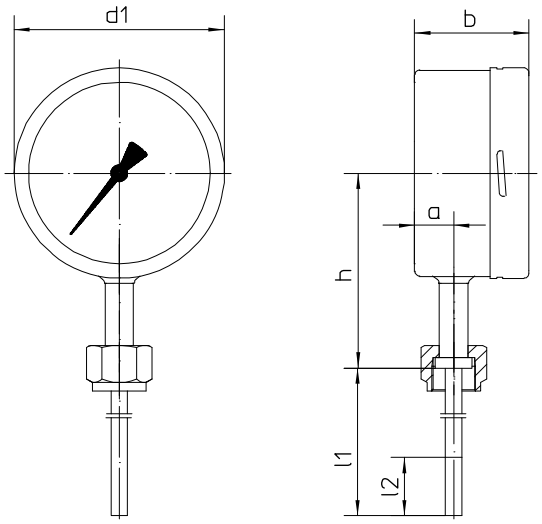
A technical examination might be necessary as well as the use of a separate thermowell (Product group D5).

Information on other models see order details or upon request.

Further information to mounting and operation see Operating Instruction BA_017.

Dimensions

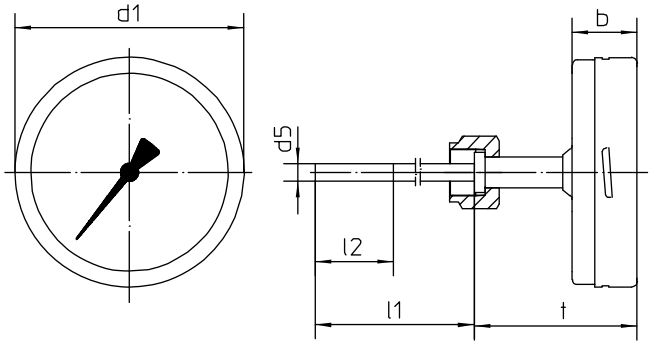
Dimensions bottom connection



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

Dimensions (mm)										
					h (up to sensor) see order details					for nominal range >300°C the necktubes (dimension h) are extended by 36 mm.
case	d1	A	b	l2	D1001	D1107/1109/1122	D1207	D2007	D2009	
NS 100	100	15	60	65	97	79	97	97	97	
NS 160	161	15	60	65	127	109	97	97	97	

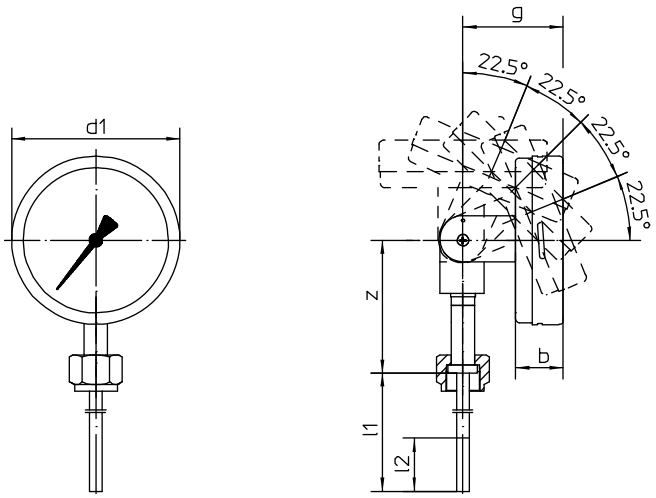
Dimensions centre back connection



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

Dimensions (mm)									
				t (up to sensor) see order details					for nominal range >300°C the necktubes (dimension t) are extended by 36 mm.
case	d1	b	l2	D1001	D1107/1109/1122	D1207	D2007	D2009	
NS 100	100	27	65	73	56	73	73	73	
NS 160	161	29	65	74	57	74	74	74	

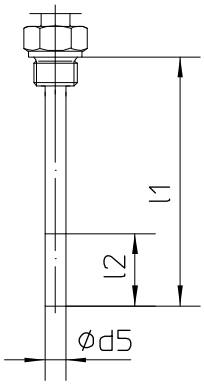
Dimensions adjustable angle stem



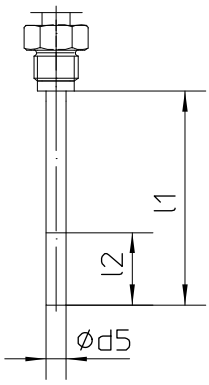
The sensitive portion l2 shall reach the media temperature completely.
The insertion length l1 should have adequate size.

Dimensions (mm)										
					z (up to sensor) see order details					for nominal range >300°C dimension z increases by 36 mm.
case	d1	b	g	l2	D1001	D1107/1109/1122	D1207	D2007	D2009	
NS 100	100	27	60	65	76	60	80.5	80.5	80.5	
NS 160	161	29	60	65	76	60	80.5	80.5	80.5	

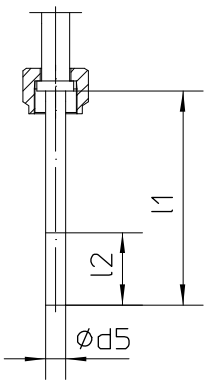
Dimensional drawing of process connections for bottom connection, centre back connection and adjustable angle stem



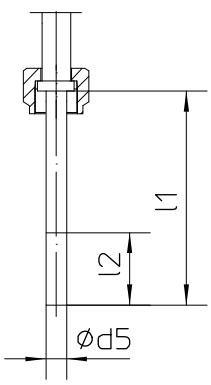
shanks, fixed
G1/2B, G3/4B,
1/2" NPT
D1107/1109/1122



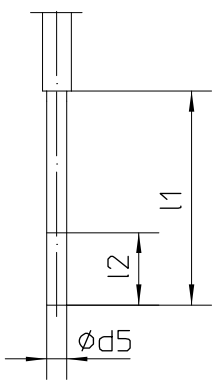
shanks
rotating,
G1/2B
D1207



union nut
G1/2
D2007



union nut
G3/4
D2009



without
screwing
D1001

Order details

Bimetal thermometer
Type series FA….

Order details FA….				
FA2400	case design degree of protection IP 66	bottom connection	NS 100	without liquid filling
FA3400			NS 160	
FA2600			NS 100	with liquid filling
FA3600			NS 160	
FA2300		centre back connection	NS 100	without liquid filling
FA3300			NS 160	
FA2500			NS 100	with liquid filling
FA3500			NS 160	
FA2310		adjustable angel stem	NS 100	without liquid filling
FA3310			NS 160	
FA2510			NS 100	with liquid filling
FA3510			NS 160	

		nominal ranges	**measuring ranges**
A2340	standard ranges [°C], accuracy class 1 per EN 13190	-20...40	-10...30
A2346		-20...60	-10...50
A2322		-30...50	-20...40
A2220		-40...40	-30...30
A2222		-40...60	-30...50
A2520		0...60	10...50
A2522		0...80	10...70
A2524		0...100	10...90
A2540		0...120	20...100
A2544		0...160	20...140
A2548		0...200	20...180
A2560		0...250	30...220
A2565		0...300 [1]	30...270 [1]
A2625		0...350 [1]	30...320 [1]
A2627		0...400 [1]	50...350 [1]
A2630		0...500 [1]	50...450 [1]
A2640		0...600 [1]	100...500[1]
D1107	process connection	shanks, fixed	G1/2 B
D1109			G3/4 B
D1122			1/2 NPT
D1207		shanks, rotating	G1/2 B
D2007		union nut	G1/2
D2009			G3/4
D1001		without screwing	

F6	temperature detecting element Ø d5	6 mm				
F8		8 mm				
	insertion lenght l1 (mm) [2]	**D11..** shanks fixed	**D1207** shanks rotating G1/2 B	**D2007** union nut G1/2	**D2009** union nut G3/4	**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	-
999		deviating lengths; please specify				

Additional features (to be indecated if required)		
S30	Ex-protection (ATEX/UKEX) for mechanical devices [3]	II 2G Ex h IIC T1...T6 Gb X
		II 2D Ex h IIIC Txx°C Db X
R13	window	macrolon with adjustable reference pointer[4]
T2	marking	on scale (please specify)
W1204	calibration certificate	per EN 10204-3.1, 3 measuring points
W1201		per EN 10204-3.1, 5 measuring points
W2660	as per UKCA regulations	

Order code (example): FA2300 - A2524 - D1107 - F6 - ...

[1] nominal range or measuring range not available with case filling
[2] standard insertion length to be specified in order code, e.g. Ø d5= 6 mm, l1 = 100 mm: order code F6100
[3] within the temperature limits according to Ex instruction XA_005
[4] not for devices with Ex-protection