labom
MEASUREMENT TECHNOLOGY

GAS EXPANSION THERMOMETER WITH ADJUSTABLE JOINT STEM HIGH-QUALITY CHEMICAL DESIGN

DATA SHEET FN..10

Design Features

- Chemical design
- Case, measuring system and medium-contacting parts from stainless steel
- Temperature detecting element diameter 6, 8 and ≥ 10 mm
- Different connections can be supplied
- Short immersion lengths may be used
- Accuracy class 1 per EN 13190
- Micro adjusting pointer for indication correction
- Latching-joint design

Application

These thermometers are suitable for use outdoors and in aggressive environments. Because of the robust design, these thermometers have been successfully used in the chemical industry, in petrochemistry, in ocean shipping, and in process engineering. The devices can also be supplied with additional liquid damping for use in extreme conditions. Further information on mounting these devices is to be found in data sheet no. T1-027. Suitable thermowells upon request.

Design and Function

The gas expansion thermometer with adjustable joint stem consists mainly of a temperature detecting element with integrated pressure chamber (active part) in the bottom section and an indicating unit with bourdon tube fixed to it. Ambient temperatures, which influence the indicating unit, are reduced with a compensation. Unless otherwise specified, the minimum immersion depth is the lower edge of the screwing.

Technical Data

Case
bayonet-ring case of stainless steel material no. 1.4301, nominal size 100 and 160 mm

Process connection, axial
rigid temperature detecting element, centrically at rear protruding below with mounted joint stem, latching every 20°
Different connections can be supplied, see order details

Case design
degree of protection IP 66 per EN 60529, liquid filling optional

Measuring element
bourdon tube dead zone free with noble gas filling

Temperature detecting element
stainless steel material no. 1.4404.
Diameter 6, 8 and ≥ 10 mm. See order details for standard lengths and active lengths, other values upon request

Movement
stainless steel with compensation

Scale
aluminium, white with black inscription. Alternatively with marking resp. fixed reference pointer.
Scale may be positioned as required, at the factory.

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

Window
safety glass, alternatively macrolon with adjustable reference pointer

Case seal
Buna N

Measuring system damping
liquid filling for damping vibrations

Nominal ranges
per EN 13190
max. -100...700 °C, measuring spans ≥ 60 °C

Accuracy
per EN 13190, class 1

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

Weights (without screwing and temperature detecting element)
DN 100, without filling: approx. 1.0 kg
DN 100, with filling: approx. 1.2 kg
DN 160, without filling: approx. 1.4 kg
DN 160, with filling: approx. 2.0 kg

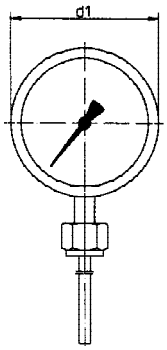
Special design
- with construction type approval for connection to zone 0 with thermowells per DIN 43772 upon request
- design without screwing (D1001) also available with sliding screwing, see data-sheet M6-025
- with certification on material testing per EN 10204 (DIN 50049)

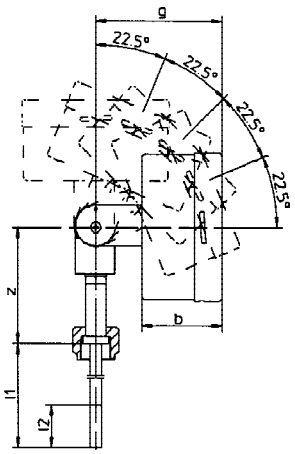
Instructions for use
The loading capacity of the temperature detecting element depends on the following parameters:
1. measured medium
2. measured medium pressure
3. measured medium temperature
4. flow velocity
5. immersion length
6. material

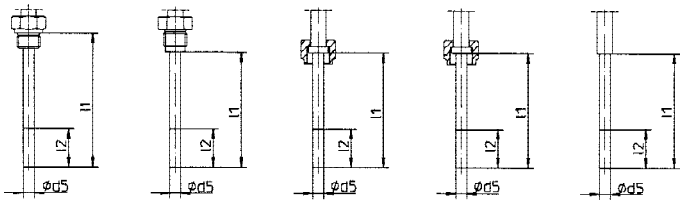
A technical test is neccessary where required

Information on other models upon request or see order details

Dimensions







shanks, fixed G 1/2 B, G 3/4 B, 1/2" NPT D 1107/1109/1122 | 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 diameter d5, immersion length l1and active length l2 see order details

Dimensions (mm)

				z *				
case	d1	b	g	D1001	D1107/1109/1122	D1207	D2007	D2009
DN 100	100	60	92	83	68	83	83	83
DN 160	160	60	92	83	68	83	83	83

* dimension increases by 40 mm for nominal ranges > 160 °C

Order Details

- please give additional specifications for models not listed -

Gas expansion thermometer with adjustable joint stem, high-quality chemical design

case	· DN 100						FN2							
	· DN 160						FN3							
case design	· IP 66						310							
	· IP 66 with filling						510							
accuracy [1]	· standard class 1 (full range)							A2						
measuring range	· 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 (l2 ≥ 180 mm) [2]									F6				
	· 8 mm (l2 ≥ 80 mm) [2]									F8				
	· 10 mm (l2 ≥ 50 mm) [2]									F10				
immersion length l1 (mm) [3]	D 11.. shanks fixed	D1207 shanks rotating G 1/2 B	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)														
front glass	· macrolon with adjustable reference pointer										R13			
marking	· on scale (pls specify)											T2		
	· fast reference pointer (pls specify)											T3		
Order code (example):							FN3310	A2222	D1109	F8100				

standard measuring and nominal ranges °C per EN 13190, class 1		
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**
0...700	100...600	**650**

[1] ambient temperatures that deviate from EN pls specify

[2] the active length l2 must completely reach the process temperature that is to be measured. The depth of immersion lengthl1 should be increased accordingly.

[3] standard immersion length to be specified in order code, e.g. l1 100 mm: order code 100

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