

Gas filled thermometers for chemical applications



- For chemical, process engineering and food industry applications
- High measuring accuracy
- Fast response



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Application For corrosive media. Meets the most exacting measuring demands, e.g. in process engineering as well as chemical and food industry applications.

Technical specifications

Type
D4

Nominal size
100 – 160

Measuring principle
Pressurised gas filling

Accuracy class
1 (EN 13190)

Ranges °C
-20/+60, 0/60, 0/120, 0/160,
0/200, 0/300, 0/400, 0/500

Standard version

Connection
Stem stainless steel 321,
100 x 10 mm, plain

Mounting position
Centre back or bottom or with joint

Dial
Aluminium, white
Dial marking black

Pointer
Aluminium, black

Application area

Continuous: Full scale value
Short-term: 1.1 x full scale value

Operating pressure at thermowell
Max. 10 bar (up to 300 °C)

Degree of protection
IP 65 (EN 60529)

Zero correction
At side of housing

Movement
Brass

Housing
Stainless steel 304

Bayonet type bezel
Stainless steel 304

Window
Instrument glass

- Options**
- Every angle version
 - Grooved nut connection as per DIN 11851
 - Other connection designs
 - Other nominal sizes
 - Other ranges
 - Special scales

- Glycerine filling (type D8)
- 3-hole fixing, panel mounting bezel
- Back flange
- Capillary (stainless steel 321)
- Special materials
- Electrical contacts

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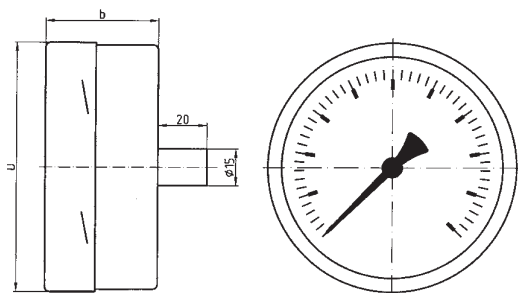
See page 278 for prices
and page 283 for
thermowells.

Gas filled thermometers for chemical applications

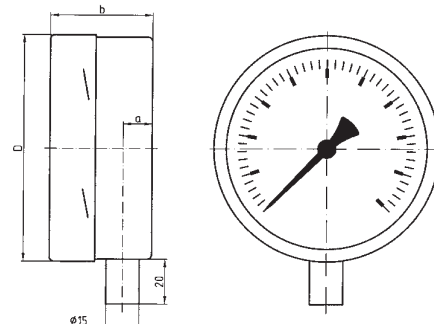
Type D4 – NG 100 / 160

Housing types and dimensions (mm)

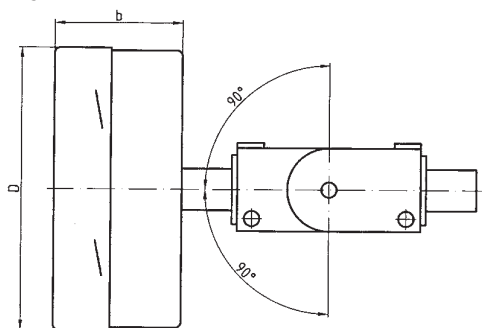
Centre back connection



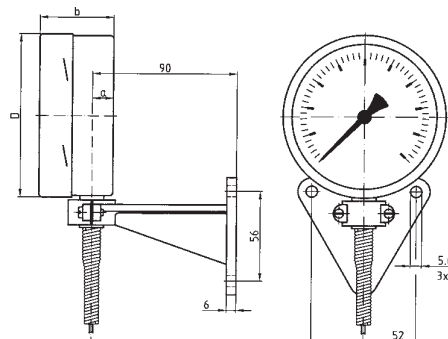
Bottom connection



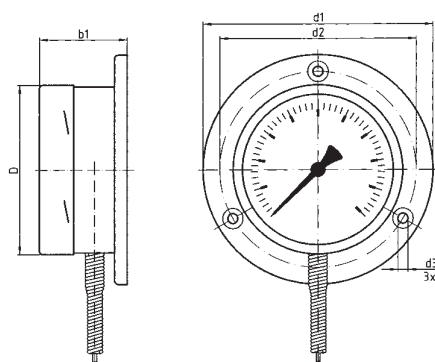
Every angle version



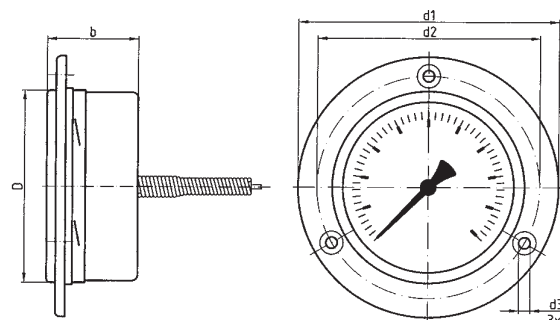
Version with capillary and wall bracket



Version with capillary and back flange



Version with capillary and 3-hole fixing, panel mounting bezel



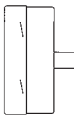



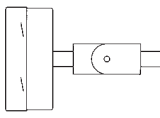
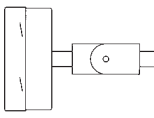
Dimensions (mm)

Nominal size	a	b	b ₁	Ø D	Ø d ₁	Ø d ₂	Ø d ₃
100	13	45	51	101	132	116	5.5
160	13	45	51	161	196	178	6
250	13	55	57	252	285	270	6

Gas filled thermometers for chemical applications

DG: H, PG: 3

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Type	FTh 100 Ch D412	FTh 160 Ch D412	FTh 100 Ch D402	FTh 160 Ch D402	FTh 100 Ch D482	FTh 160 Ch D482
Version						
Housing Ø	100	160	100	160	100	160
Housing	Stainless steel 304 with bayonet bezel, instrument glass window					
Stem	Stainless steel 321, 100 x 10 mm					
Connection	Plain stem (without thermowell)					
Filling	Pressurised gas filling					
Accuracy class	Class 1 as per EN 13190					
						Every angle version
Range	-20/+60 °C	-20/+60 °C	-20/+60 °C	-20/+60 °C	-20/+60 °C	-20/+60 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64341412	64343412	64341402	64343402	64341482	64343482
Range	0/60 °C	0/60 °C	0/60 °C	0/60 °C	0/60 °C	0/60 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64361412	64363412	64361402	64363402	64361482	64363482
Range	0/120 °C	0/120 °C	0/120 °C	0/120 °C	0/120 °C	0/120 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64373412	64375412	64373402	64375402	64373482	64375482
Range	0/160 °C	0/160 °C	0/160 °C	0/160 °C	0/160 °C	0/160 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64377412	64379412	64377402	64379402	64377482	64379482
Range	0/200 °C	0/200 °C	0/200 °C	0/200 °C	0/200 °C	0/200 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64381412	64383412	64381402	64383402	64381482	64383482
Range	0/300 °C	0/300 °C	0/300 °C	0/300 °C	0/300 °C	0/300 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64389412	64391412	64389402	64391402	64389482	64391482
Range	0/400 °C	0/400 °C	0/400 °C	0/400 °C	0/400 °C	0/400 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64397412	64399412	64397402	64399402	64397482	64399482
Range	0/500 °C	0/500 °C	0/500 °C	0/500 °C	0/500 °C	0/500 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64401412	64403412	64401402	64403402	64401482	64403482

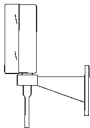
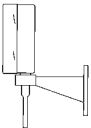

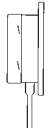
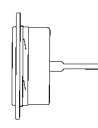
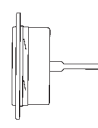
Blue part no. = in-stock items



* See page 281 for other connection types, options/extra charges.

Gas filled thermometers for chemical applications

DG: H, PG: 3

Type	FTh 100 Ch D442	FTh 160 Ch D442	FTh 100 Ch D472	FTh 160 Ch D472	FTh 100 Ch D432	FTh 160 Ch D432
Version						
Housing Ø	100	160	100	160	100	160
Housing	Stainless steel 304 with bayonet bezel, instrument glass window					
Stem	Stainless steel 321, 100 x 10 mm					
Connection	Plain stem (without thermowell)					
Filling	Pressurised gas filling					
Capillary	Stainless steel 321, 1 metre					
Mounting	Wall bracket		Back flange		3-hole fixing, panel mounting bezel, 304	
Accuracy class	Class 1 as per EN 13190					
Range	-20/+60 °C	-20/+60 °C	-20/+60 °C	-20/+60 °C	-20/+60 °C	-20/+60 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64341442	64343442	64341472	64343472	64341432	64343432
Range	0/60 °C	0/60 °C	0/60 °C	0/60 °C	0/60 °C	0/60 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64361442	64363442	64361472	64363472	64361432	64363432
Range	0/120 °C	0/120 °C	0/120 °C	0/120 °C	0/120 °C	0/120 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64373442	64375442	64373472	64375472	64373432	64375432
Range	0/160 °C	0/160 °C	0/160 °C	0/160 °C	0/160 °C	0/160 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64377442	64379442	64377472	64379472	64377432	64379432
Range	0/200 °C	0/200 °C	0/200 °C	0/200 °C	0/200 °C	0/200 °C
	Price € Part no.	Price € Part no.€	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64381442	64383442	64381472	64383472	64381432	64383432
Range	0/300 °C	0/300 °C	0/300 °C	0/300 °C	0/300 °C	0/300 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64389442	64391442	64389472	64391472	64389432	64391432
Range	0/400 °C	0/400 °C	0/400 °C	0/400 °C	0/400 °C	0/400 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64397442	64399442	64397472	64399472	64397432	64399432
Range	0/500 °C	0/500 °C	0/500 °C	0/500 °C	0/500 °C	0/500 °C
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
	64401442	64403442	64401472	64403472	64401432	64403432

Blue part no. = in-stock items

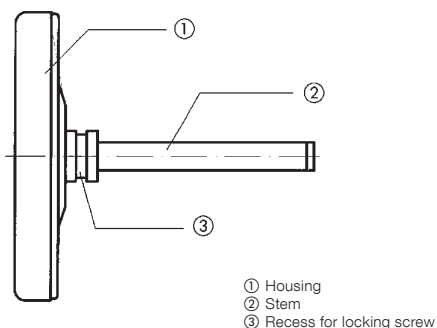


* See page 281 for other connection types, options/extra charges.

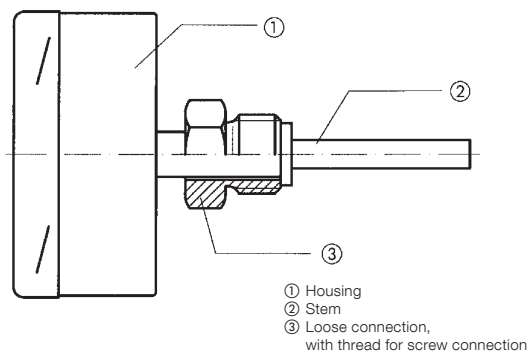
Connection types for bimetal and gas filled thermometers (industrial, stainless steel and chemical versions)

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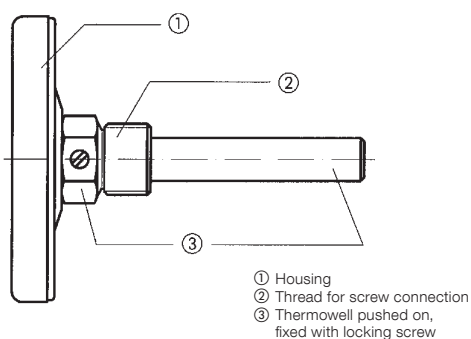
Plain



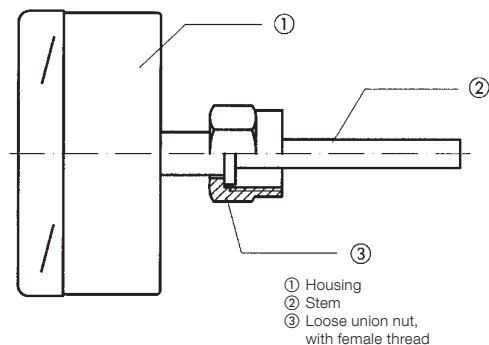
Loose male connection



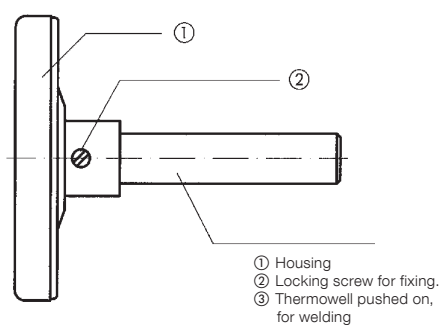
Separate screw-in thermowell (with locking screw)



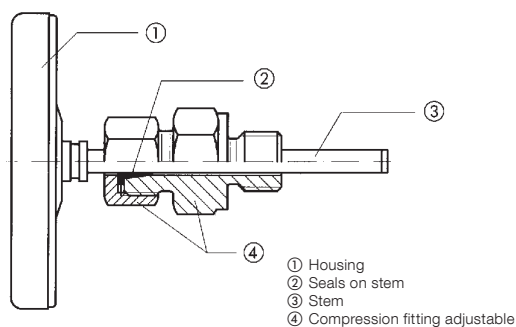
Loose union nut



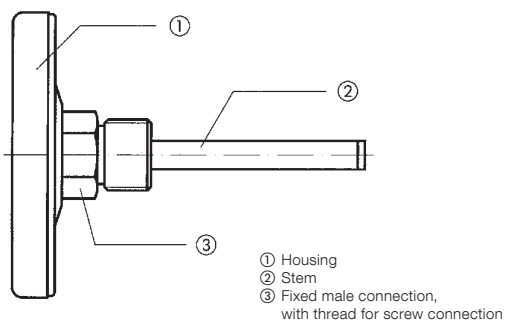
Separate weld-in thermowell (with locking screw)



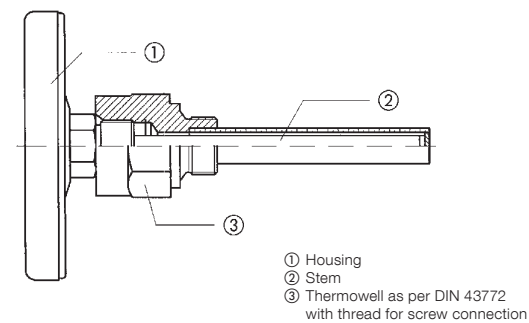
Compression fitting, adjustable on stem



Fixed male connection



DIN thermowell



Extra charges – connection types for bimetal and gas filled thermometers (industrial, stainless steel and chemical versions)

DG: H

Type		Bimetal thermometers			Gas filled thermometers
Material		Brass	Steel	Stainless steel 316 ss	Stainless steel
PG		2	3	3	3
	Stem length mm	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
Separate screw-in thermowell (with locking screw). G $\frac{1}{2}$ B for stem up to Ø 8 mm for BiTh Ø 10 mm for FTh	45	64506	64511	64501	---
	63	64507	64512	64502	---
	100	64508	64513	64503	64463
	150	64509	64514	64504	---
	200	64510	64515	64505	---
	250	64722	---	64660	---
	300	64723	---	64721	---
Separate weld-in thermowell (with locking screw) for stem up to Ø 8 mm for BiTh Ø 10 mm for FTh	63	---	64517	64521	---
	100	---	64450	64453	64435
	150	---	64518	64522	---
	200	---	64519	64523	---
Stem extension per 100 mm ¹⁾		64524	---	64526	64527
Thermowell extension per 100 mm		64528	---	64530	64531
Fixed male connection G $\frac{1}{4}$ B		---	---	On request 64534	---
Fixed male connection G $\frac{1}{2}$ B		---	---	64454	64460
Loose male connection G $\frac{1}{4}$ B		---	---	64541	---
Loose male connection G $\frac{1}{2}$ B		---	---	64544	64545
Loose union nut G $\frac{1}{2}$. female		---	---	64455	On request 64461
Loose union nut G $\frac{3}{4}$. female		---	---	64553	On request 64554
Compression fitting adjustable G $\frac{1}{2}$ B		---	---	On request 64556	64557
Compression fitting adjustable G $\frac{3}{4}$ B		---	---	On request 64558	64559
Capillary per metre Stainless steel		---	---	---	64464
Stem Ø 6 mm ²⁾		On request	---	---	---

1) Only applies to standard lengths 200/250/300 mm – extra charge for special lengths: €.

Blue part no. = in-stock items

2) Only for centre back connection. limited measuring ranges (0–120° C. 0–300° C. 0–500° C).

Extra charges for bimetal thermometers and gas filled thermometers (industrial, stainless steel, chemical application versions)

DG: H

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	Bimetal thermometers			Gas filled thermometers	
Housing diameter (mm)	< 100	100	160	100	160
	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.	Price € Part no.
Red mark on dial	64465	64470	64478	64487	64492
1 reference pointer red, external rotary knob adjustment (window = plastic) T _{max} 160 °C only for instruments without filling	64467	64471	---	On request 64488	On request 64493
Maximum pointer, external rotary knob adjustment (Window: BiTh 63, 100 = instrument glass; BiTh 160 = plastic; FTh 100, 160 = plastic) T _{max} 160 °C, only for gauges without filling and gauges with bayonet bezel housing	64468	64473	64481	64489	64494
Glycerine filling (only for instruments with bayonet bezel housing)	---	64475	64483	64490	64495
Silicone oil filling (only for instruments with bayonet bezel housing)	---	64476	64484	64491	64496
Other ranges for bimetal thermometers (extra charge as compared to version 0/120 °C)	Minimum stem length centre back (in mm)*	Minimum stem length bottom (in mm)*	Price €		
-20/+40 °C	63	100		---	
-20/+60 °C	63	63		---	
-30/+50 °C	63	63		---	
-40/+40 °C	63	63		---	
-40/+60 °C	63	63		---	
0/60 °C	63	100		---	
0/80 °C	63	63		---	
0/100 °C	63	63		---	
0/200 °C	63	63	On request	---	
0/250 °C	100	100	On request	---	
0/300 °C	75	63	On request	---	
0/400 °C	75	75	On request	---	
0/500 °C	63	63	On request	---	
0/600 °C	75	175	On request	---	

* For version with separate thermowell.

Blue part no. = in-stock items

Electrical contacts (only for gas filled thermometers)

DG: H, PG: 3

Design			Magnetic spring contact		Inductive contact	
Code			MK 1	MK 2	IK 1	IK 2
Number of contacts			1	2	1	2
Switching function: 1 = closes, 2 = opens (pointer moves clockwise)			1 2	11, 12 21, 22	1 2	11, 12 21, 22
The extra charges indicated include mounting, thermometer not included						
Version	Nominal size	Housing	Price €	Price €	Price €	Price €
Gas filled thermometers for chemical applica- tions	100	No filling	On request	On request	On request	On request
	100	With filling	On request	On request	On request	On request
	160	No filling	On request	On request	On request	On request
	160	With filling	On request	On request	On request	On request



See page 119 for contact protection relays
and isolating switching amplifiers.