

**414-100L****414-100B****414-100E**

Application

- ✓ Outdoor application in oil & gas industry
- ✓ Harsh environments demanding greater ingress protection
- ✓ Chemical & Petrochemical plants

Special Features

- ✓ Measuring the wide ranges between -40 to + 600 °C
- ✓ Flexible choice of stem length and connection designs
- ✓ Ingress Protection: IP65
- ✓ Rigid Construction to endure harsh environments

Description

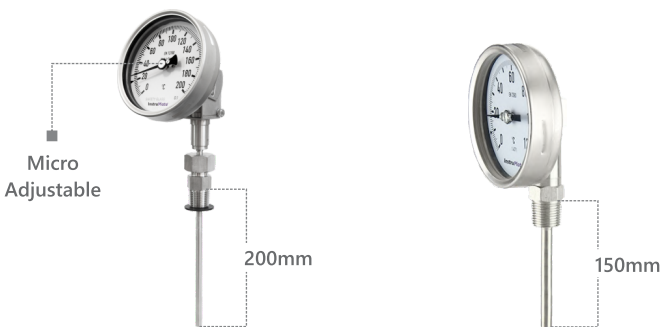
The model 414 superior bi-metal thermometers are specifically made for temperature measurement in harsh environments. It is available in horizontal, vertical and every angle designs. The insertion lengths have standard values but also they can be made according to customer requirements for their very specific needs. The Ingress protection of IP65 allows them to be suitable for many industrial applications. In addition, they have the option of filled version for places with extensive vibration cycles.

InstruMate model 414 has a fast reaction to temperature increase thanks to its high quality bimetal sensor and due to its case design, the option of external adjusting screw is available. The tempered glass used in InstruMate 414 thermometers ends worrisome about instrument window.

Default Specification

Design	Nominal sizes mm
EN 13190	63, 80, 100, 150
Scale Ranges in °C	Standard insertion lengths in mm
-40...+40, -30...+50, -30...+60, -30...+70, -20...+120, 0...60, 0...80, 0...100, 0...120, 0...160 0...200, 0...250C, 0...300, 0...400, 0...500, 0...600	50, 100, 150, 200, 300, 400, 500, 600, 700, 800, 900, 1000 ¹
Working Range	Stem
According to measuring ranges per EN 13190	Material: SS316 Diameter: 6mm ²
Case	Ingress protection
Stainless Steel	IP65
Pointer	Accuracy
Aluminum, adjustable pointer	Class 1
Window	Dial
Tempered Glass	Aluminum
Temperature Element	Pressure limitation at stem
Bi-metal sensor	Max. 20bar
Storage & Transport temperature	Temperature units
-20°C...+60°C	°C (centigrade)

1. Insertion length includes the threads.
2. Stem diameter 8mm available as option.



Options

- ✓ External adjusting screw on case
 - ✓ Supplying suitable thermowell per customer request
 - ✓ Other wetted parts (SS304, SS316L)
- ✓ Other temperature units (F) or dual scale (C/F) and other scale ranges
 - ✓ Fillable version (with silicon oil)

Measuring Range & Maximum Permissible Errors

InstruMate Superior bi-metal thermometers Model 414 follow Class 1 accuracy according to EN 13190 standard.

Temperature Range °C	Measuring Range °C	Limits of Error ±°C
-40...+40	-30...+30	1
-30...+50	-20...+40	1
-30...+60	-20...+50	1
-30...+70	-20...+60	1
-20...+120	-10...+110	2
0...60	+10...+50	1
0...80	+10...+70	1
0...100	+10...+90	1
0...120	+10...+110	2
0...160	+20...+140	2
0...200	+20...+180	2
0...250	+30...+220	2.5
0...300	+30...+270	5
0...400	+50...+350	5
0...500	+50...+450	5
0+600	+100...+500	10

* All InstruMate 414 thermometers perform equal to or better than the limits of error presented in above table.

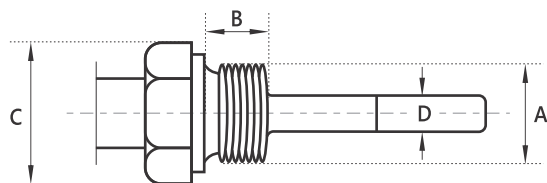
* The measuring range limit is indicated on dial by the use of two triangular marks.

Connection Designs

1. Fixed male thread connection

Minimum insertion length: 63mm for bottom connection

50mm for back connection

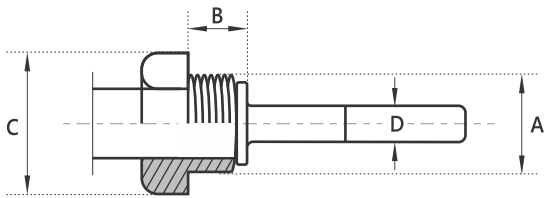


A: Male thread
B: Thread length
C: Spanner width
D: Stem diameter

Nominal Size	Process connection		Dimensions (in mm)	
	A	B	C	D
63, 100, 160	G 1/4 B	12	19	6 or 8
	G 1/2 B	14	27	6 or 8
	M18 x 1.5	12	24	6 or 8
	1/2 NPT	19	24	6 or 8

2. Male Nut (turning connection)

Minimum insertion length: 80mm

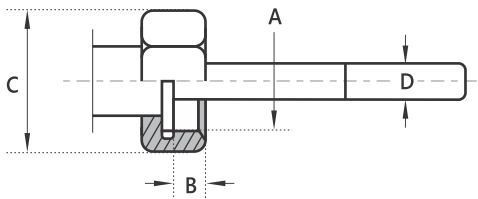


- A: Male thread
- B: Thread length incl. collar
- C: Spanner width
- D: Stem diameter

Nominal Size	Process connection		Dimensions (in mm)	
	A	B	C	D
63, 100,160	G 1/2 B	20	27	6 or 8
	M18 x 1.5	17	22	6 or 8

3. Union Nut (female connection)

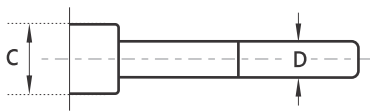
Minimum insertion length: 89mm



- A: Female thread
- B: Thread length
- C: Spanner width
- D: Stem diameter

Nominal Size	Process connection		Dimensions (in mm)	
	A	B	C	D
63, 100,160	G 1/2	8.5	27	6 or 8
	G 3/4	9.5	32	6 or 8

4. Stem without thread



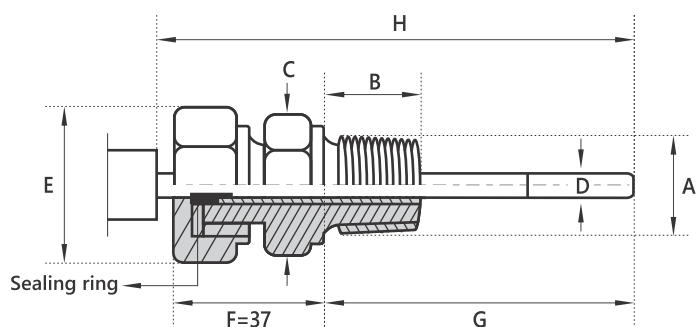
- C: Plain diameter
- D: Stem diameter

Nominal Size	Dimensions (in mm)	
	C	D
63, 100,160	18	6 or 8

5. Compression Fitting (Sliding Connection)

Insertion length G = variable

Length H = G + 37 mm

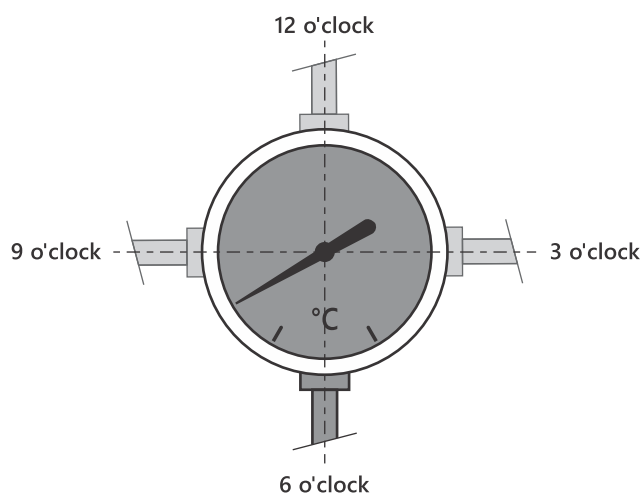


A: Male thread
B: Thread length
C: Spanner width
D: Stem diameter

Nominal Size	Process connection		Dimensions (in mm)		
	A	B	C	D	E
63, 100, 160	G 1/4 B	8	22	6 or 8	27
	G 1/2 B	14	27	6 or 8	27
	M18 x 1.5	12	24	6 or 8	27
	1/2 NPT	19	22	6 or 8	27
	G 3/4 B	16	32	6 or 8	27
	3/4 NPT	20	30	6 or 8	27

Special dial positions in relation with stem (only for bottom connection)

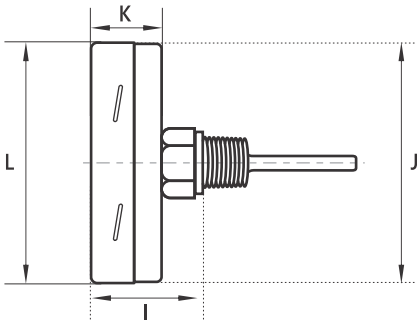
Dial positioning can be chosen as required by the customer. In standard version 6 o'clock position is shipped. For special positions please specify 3, 9, or 12 o'clock for example.



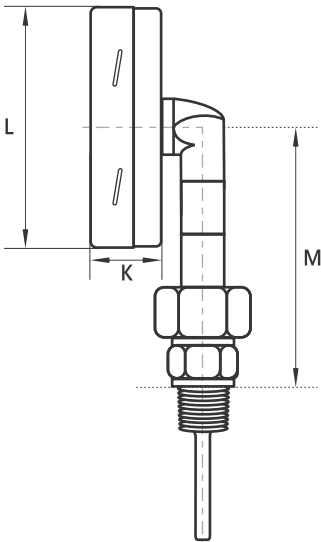
Dimention (in mm)

Center Back connection

Nominal Size	I	J	K	L
63	35	62	23	63.5
80	38	78	26	80
100	40	99	28	100
150	42	146	30	150

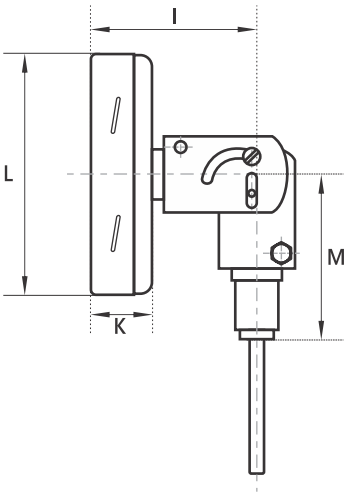


Bottom connection



Nominal Size	K	L	M
63	23	64	62
80	26	80	62
100	28	100	83
150	30	150	109

Every Angel



Nominal Size	I	K	L	M
100	76	28	100	62
150	78	30	150	62

How To Order

	Product Group Name	Model	Nominal Size	Mounting	Insertion length	Thread type	Thread size	Range
E.g.	Thermometers for process industry	414	100	L	100	5	N2	0...160°C

Or simply order by item number on the basis of your previous purchases.