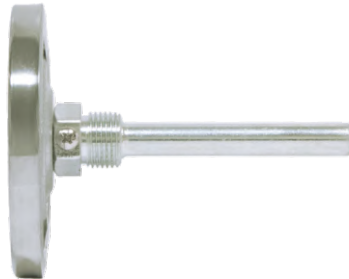


412-63B



412-100B



412-100L



## Application

- ✓ Temperature indication of liquids and gases under process
- ✓ Hot water & HVAC
- ✓ Tanks and collectors

## Special Features

- ✓ Cost effective temperature measurement
- ✓ Covering the wide range between -30 to + 500°C

## Description

Model 412 InstruMate Economy thermometers also known as hot water thermometers are suitable for use in numerous applications such as HVAC, boilers and heating systems as well as machinery manufacturing.

412 series are equipped with a thermowell with a dual function:

1. Protecting the stem
2. Ease of future replacements

This thermometer with 63mm dial is widely used in coffee and cooking machines. Model 412 temperature gauge is cost effective but it has enjoyed the same care in production process as more expensive models.

## Default Specification

<b>Design</b>	<b>Nominal Sizes in mm</b>
EN 13190	63, 100
<b>Scale Ranges °C</b>	<b>Thermowell</b>
-30...+50, -30...+60, -30...+70 -20...+120, 0...60, 0...100, 0...120, 0...160 0...200, 0...250, 0...300, 0...400, 0...500	Material: Brass for 412-63B SS316 for 412-100B & 412-100L Diameter: 12 mm
<b>Case</b>	<b>Stem</b>
412-63B & 412100B: Galvanized steel 412-100L: Black steel	Material: Copper Alloy* Diameter: 9 mm
<b>Pointer</b>	<b>Accuracy</b>
Aluminum	Class 2
<b>Window</b>	<b>Dial</b>
Glass	Aluminum
<b>Process Connection of Thermowell</b>	<b>Pressure Limitation at Thermowell</b>
G 1/2	Max. 60 bar
<b>Ingress Protection</b>	<b>Temperature Units</b>
Bottom connections: IP52 Back connections: IP51	°C (centigrade)
<b>Insertion Lengths in mm</b>	<b>Storage &amp; Transport Temperature</b>
40, 50, 100, 150, 200, 300, 400, 500, 600	-20...+60 °C
<b>Zero Adjustment</b>	<b>Temperature Element</b>
YES, check bottom of the stem	Bi-metal sensor

\* model 412-100L has stainless steel stem for temperatures  $\geq 200$  °C

## Options

- ✓ NPT process connection of thermowell
- ✓ Plastic pointer for  $\leq 200$  °C
- ✓ Other temperature units (F) or dual scale (C/F)
- ✓ Thermowell materials from SS316 or other
- ✓ Special dial designs for special applications

## Measuring Range & Maximum Permissible Errors

InstruMate economy thermometers Model 412 follow Class 2 accuracy according to EN 13190 standard.  
For Class 1 please check InstruMate 413 datasheet.

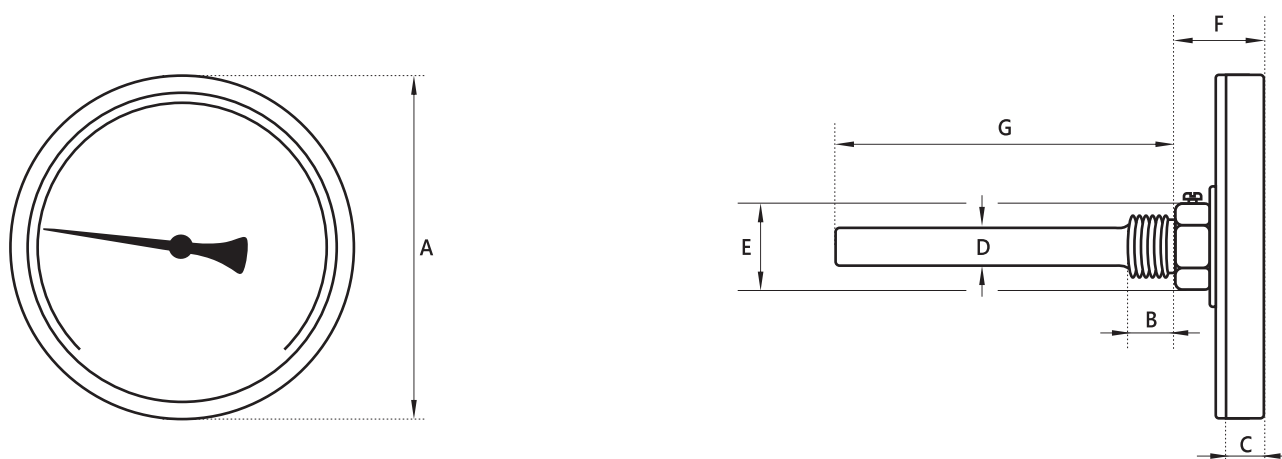
Temperature Range °C	Measuring Range °C	Limits of Error ±°C
-30...+50	-20...+40	2
-30...+60	-20...+50	2
-30...+70	-20...+60	2
-20...+120	-10...+110	4
0...60	+10...+50	2
0...100	+10...+90	2
0...120	+10...+110	4
0...160	+20...+140	4
0...200	+20...+180	4
0...250	+30...+220	5
0...300	+30...+270	10
0...400	+50...+350	10
0...500	+50...+450	10

\* All InstruMate 412 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.

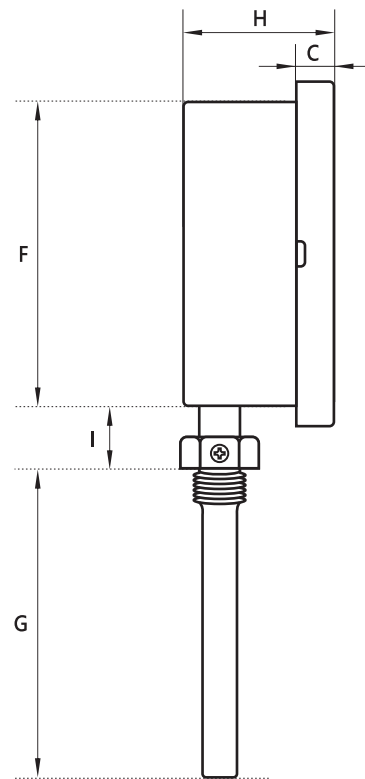
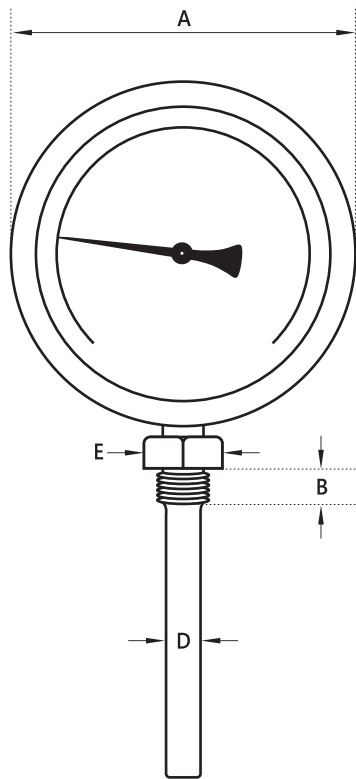
## Dimensions (in mm)

### ■ DS 63 & 100, Center Back connection



Nominal Size	A	B	C	D	E	F	G
63	63.5	12	9	12	22	23	40, 50, 100, 150, 200, 300, 400, 500, 600
100	100	15	11	12	24	27	50, 100, 150, 200, 300, 400, 500, 600

## ■ DS 100, Bottom connection



Nominal Size	A	B	C	D	E	F	G	H	I
100	111	15	14	12	24	100	50, 100, 150, 200, 300, 400, 500, 600	49	21

## How To Order

Product Group Name	Model	Nominal Size	Mounting	Stem length	Thread size	Range
<b>Example:</b> bimetal economy thermometer	412	100	B	100	B2	0...160 °C

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

# InstruMate®

InstruMate Co, Limited

www.Instrumate.com | info@Instrumate.com