

# Gas Filled Temperature Guage (TG-GF)

Precise Measurement of Temperature Guaranteed

## General Description

The Gas Filled Dial Thermometer consists of a stem, capillary, and bourdon tube in a case. These parts are connected to form a unit. The complete measuring system is filled with an inert gas such as nitrogen, as standard, under pressure. A temperature change causes the internal pressure and volume in the stem to change. The deflection of the bourdon tube thus caused is transmitted to the pointer by a movement. A bimetallic element is fitted in between the movement and bourdon tube to compensate for fluctuations of ambient temperature at the case.

An extensive range of the standard version facilitates a variety of applications. In addition, special customized versions are also available.

## This Gauge is Available in

Nominal sizes: 100, 150, 200 and 250 mm dial sizes

Ranges: 0 to 50 deg. C up to 600 deg. C

## Features

Compliance to latest EN13190

Standard range: 50°C to 600°C

Overload capacity 130 % of FSD

Protection to IP67

Accuracy class: tolerance class 1 as per EN 13190

Stainless steel casing

Dry or liquid filled version

External zero adjustment (optional)



## Applications

Some industries where gas filled temperature gauges are used are

Chemical / Petrochemical industries

Thermal / Nuclear / Hydro power stations

Pharmaceutical industry

Food processing industry / Hygienic applications

Water treatment plants

Iron and steel industry

Rubber molding / Processing plants

Hydraulics and pneumatics

Sugar / Fertilizer industries

Refineries

Cryogenics

## Standard Product Specifications

Standards	Description
Reference standard	EN13190
Mounting	Direct bottom entry
Connection	1/2" NPT (M)
Stem diameter	8 mm
Case and Bezel	SS 304 (bayonet type bezel)
Stem	SS 316
Connection	SS 316
Sensing element	Nitrogen gas filled in bulb
Dial	Aluminum, white background with black marking
Pointer	Aluminum, black color micrometer pointer with zero adjustable
Window	Toughened glass
Protection	IP67*
Filling plug	Neoprene
Gasket	Silicon
Accuracy	Class 1 as per EN 13190 (as standard)
Dampening liquid**	Glycerin up to 65°C *
	Silicon oil -40 to 120°C *
Over pressure limit	130 % of full scale value
Ambient temperature	-25°C to +65°C
Operating pressure	Max. 15 Kg/sq.cm
Process temperature	Max. 600°C (for dry gauge)
	Max. 120°C (for silicon oil filled gauges)

\* Enclosure protection to IP67 for 100 and 150 mm dial sizes only.

\*\*On customer requests, please consult Forbes Marshall.

## Temperature Range Details

### Immersion length vs. bulb diameter (Bulb)

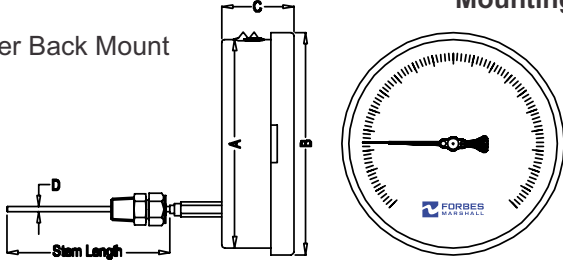
Code	Temperature ranges in °C	Min. immersion length for bulb diameter 6 mm	Min. immersion length for bulb diameter 8 mm	Min. immersion length for bulb diameter 10 mm	Min. immersion length for bulb diameter 12 mm	Min. immersion length for bulb diameter 14 mm
A1	0 + 50	300	200	200	150	150
A2	0 + 60	300	200	200	150	150
A3	0 + 80	300	200	200	150	150
A4	0 + 100	300	200	200	150	120
A5	0 + 120	300	200	200	150	120
A6	0 + 150	300	200	200	150	120
A7	0 + 200	300	200	200	150	120
A8	0 + 250	300	200	200	150	120
A9	0 + 300	300	200	200	150	120
B0	0 + 400	300	200	200	150	120
B1	0 + 500	X	200	200	150	120
B2	0 + 600	X	200	200	150	120

General note: While selecting the range for your temperature gauge, please take into account the relative immersion length required for proper sensing.

**Product Drawing**

**Mounting - 2**

Lower Back Mount

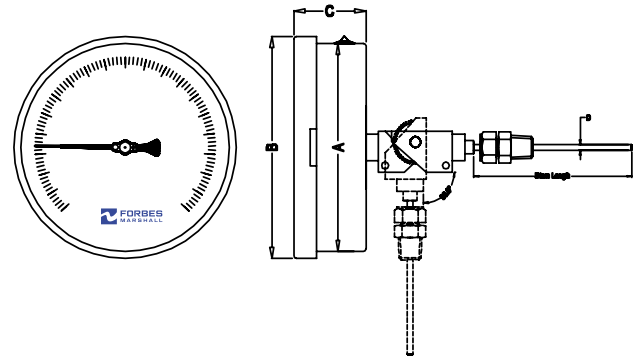


→ Parameters

Dial Size	A	B	C	D
100	Ø100	Ø110	52	6/8/9.5/10/12/14/16
150	Ø150	Ø160	52	6/8/9.5/10/12/14/16
200	Ø202	Ø215	52	6/8/9.5/10/12/14/16
250	Ø2150	Ø264	53	6/8/9.5/10/12/14/16

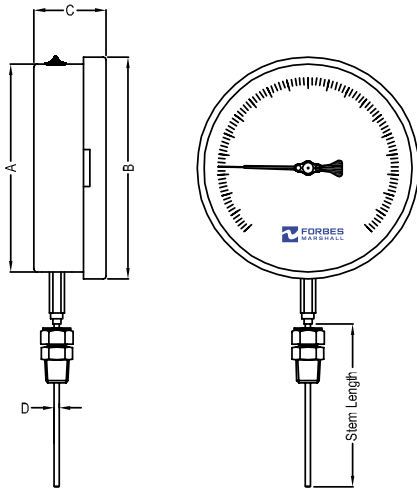
**Mounting - 0**

Every Angle Mount



**Mounting - 1**

Direct Bottom Mount

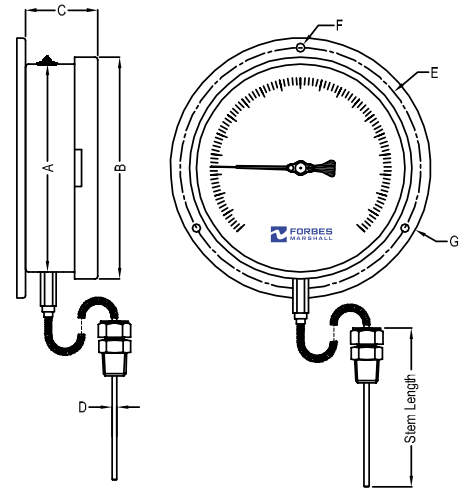


→ Parameters

Dial Size	A	B	C	D
100	Ø100	Ø110	52	6/8/9.5/10/12/14/16
150	Ø150	Ø160	52	6/8/9.5/10/12/14/16
200	Ø202	Ø215	52	6/8/9.5/10/12/14/16
250	Ø2150	Ø264	53	6/8/9.5/10/12/14/16

**Mounting - 4**

Surface Bottom Mount

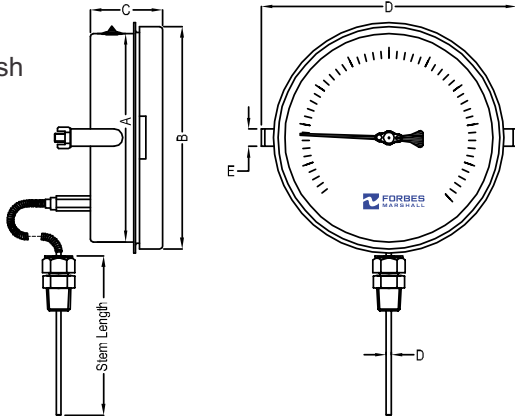


→ Parameters

Dial Size	A	B	C	G	E	F	D
100	Ø100	Ø110	52	Ø134	Ø118	Ø6	6/8/9.5/10/12/14/16
150	Ø150	Ø160	52	Ø166	Ø166	Ø6	6/8/9.5/10/12/14/16
200	Ø202	Ø215	52	Ø240	Ø226	Ø7	6/8/9.5/10/12/14/16
250	Ø250	Ø264	53	Ø290	Ø276	Ø7	6/8/9.5/10/12/14/16

**Mounting - 6**

Lower Back finish Mount

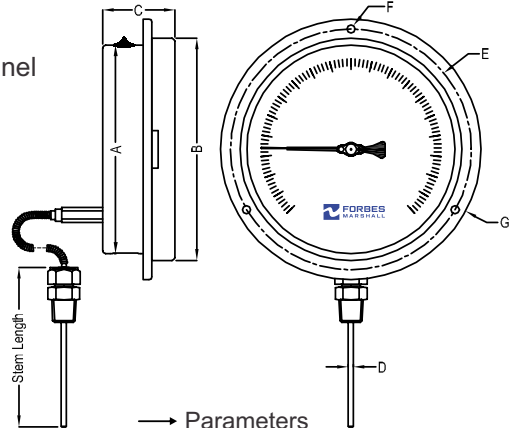


→ Parameters

Dial Size	A	B	C	F	E	D
100	Ø100	Ø110	52	116	17	6/8/9.5/10/12/14/16
150	Ø150	Ø160	52	158.5	16	6/8/9.5/10/12/14/16
200	Ø202	Ø215	52	241	40	6/8/9.5/10/12/14/16
250	Ø2150	Ø264	53	254	40	6/8/9.5/10/12/14/16

**Mounting - 5**

Lower Back Panel Mount



→ Parameters

Dial Size	A	B	C	G	E	F	D
100	Ø100	Ø110	52	Ø134	Ø118	Ø6	6/8/9.5/10/12/14/16
150	Ø150	Ø160	52	Ø186	Ø166	Ø6	6/8/9.5/10/12/14/16
200	Ø202	Ø215	52	Ø240	Ø226	Ø7	6/8/9.5/10/12/14/16
250	Ø250	Ø264	53	Ø290	Ø276	Ø7	6/8/9.5/10/12/14/16

## Ordering Information

\*\* \* \* \* \* \*\* \*

Model	
Gas filled (adjustable connection)	GA

Dial Size	
100 mm	E
150 mm	F
200 mm	G
250 mm	H

Mountings	
Every angle	0
Direct bottom	1
Lower back	2
Surface bottom	4
Lower back panel mounting	5
Lower back flush mounting	6

Connection Size	
3/8"	B
1/2"	C
3/4"	D
M20x1.5P	1

Connection Type	
NPT (M)	A
BSP (M)	B
BSPT (M)	C
Metric Thread (M)	M

Range*	A5
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Engineering Unit**	
Degree Celsius	A
Dual scale Celsius / Fahrenheit	C

\*For ranges, please refer to the temperature range tables

\*\*A dual scale with both °Celsius and °Fahrenheit can also be provided (standard °Celsius ranges available in the range table).

## Configurator Generated Code

\*\*\*\*

### Stem Diameter

6 mm  
8 mm (standard)  
10 mm

### Stem Length

300 mm (Standard)  
100 mm to 700 mm with steps of 25 mm – please specify

### Capillary Length \*

1 meter to 15 meters ( with PVC coating option) – please specify

### Case and Bezel

SS304 (standard)  
SS316

### Bourdon Tube\*\*

SS 316 L (standard)  
25CRMO4

### Movement

SS 304 (standard)  
SS 316

### Stem

SS 316 (standard)  
SS 316 L

### Connection

SS 316 (standard)  
SS 316 L

### Pointer

Micrometer pointer (standard)  
Fixed pointer

### Window

Toughened glass (standard)  
Safety laminated shatterproof glass

### Optional Features

130 % of full scale reading (standard)  
Dampening liquid silicon oil (upto 120°C)  
2" pipe mounting bracket in SS 304  
2" Pipe mounting bracket in SS 316  
External zero adjustment  
Tag marking on dial  
SS tag plate  
Pointer stopper  
Epoxy painted case and bezel  
Custom designed dial  
Special requirement – please specify

### Tests And Certificates

Three point calibration certificate(standard)  
Five point calibration certificate  
NABL traceability certificate  
Material test certificate  
EN10204 3.1.B certificate  
Special requirement – please specify

\*Ordering example :GAE1CAA5A-0000 (Standard Code)

\*General note : For special requirements, please consult Forbes Marshall.



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Forbes Marshall Steam Systems

Plot No. A-19/2 & T-4/2, I.D.A  
Nacharam, Hyderabad - 500 076  
Tel : +91-40-27179223, 27171909,  
27170732  
Fax : +91-40-27173235

Email : [response@forbesmarshall.com](mailto:response@forbesmarshall.com), [ccmidc@forbesmarshall.com](mailto:ccmidc@forbesmarshall.com)

B-85, Phase II, Chakan Indl Area  
Sawardari, Chakan, Tal. Khed  
Dist. Pune - 410 501. INDIA  
Tel : 91(0)2135-393400

A-34/35, MIDC H Block  
Pimpri, Pune - 411 018. INDIA.  
Tel : 91(0)20-27442020, 39851199  
Fax : 91(0)20-27442040  
CIN No.: U28996PN1985PTC037806  
[www.forbesmarshall.com](http://www.forbesmarshall.com)

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