

GAS FILLED THERMOMETER

MODEL M3.02



PRODUCT DESCRIPTION

The thermometer measures temperature either by a rigid tube or flexible capillary inserting into a Thermowell. The temperature is accurately measured by the gas inside the thermometer expanding and contracting in relation to the temperature. This thermometers has been designed for applications where strong shocks and vibrations occur. The thermometers are completely made of stainless steel. Various insertion lengths and process connections are available to optimally match the requirements of each process.



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KEY FEATURES

- Case filled versions
- Inert gas (N₂ /Air) filled system
- Rigid stem & capillary remote mounting
- Stainless steel Case & Stem
- Connection type adjustable
- Standard Followed : EN 13190

SPECIFICATIONS

Design Standard	: According to EN 13190
Sensing Element	: Inert gas filled bulb
Accuracy	: Class 1 as per EN 13190
Dial Size	: 100mm (4"), 150mm (6")
Process Conn. Location:	Bottom connection
Process Conn. Size	: ½" NPT (M) , ½" BSP (M) (Other sizes on request)
Mounting	: Bottom
Ambient temperature	: -25°C to 65 °C
Operating pressure	: 15 kg/cm ²
Over temp. range	: 1.3 x FS value ≥ 250 °C 1.1 x FS value ≥ 250 °C up to 500 °C
Range	: -100 up to 650 °C
Ingress Protection	: IP68
Approvals	: Atex

MATERIAL OF CONSTRUCTION

Case & Bezel Ring	: SS 304
Stem & Process Connection	: SS 316
Pointer	: Micrometer zero adjustable, Aluminum black powder coated
Dial background	: Aluminum, Black graduation on white
Window	: Toughened Safety glass
Gasket	: Neoprene
Weld joints	: TIG argon arc welding

APPLICATION

- Oil & Gas Industries
- Liquid & Gaseous mediums
- Chemical & Petrochemical
- Food & Beverages
- Pulp and Paper
- Nuclear Power plants
- Fertilizer, Cement, Sugar

STANDARD RANGE

Positive range single scale

0/60 °C	0/160 °C	0/400 °C
0/80 °C	0/200 °C	0/500 °C
0/100 °C	0/250 °C	0/600 °C
0/120 °C	0/300 °C	50/650 °C

Compound range single scale

-60/60 °C	-20/80 °C	-20/180 °C
-60/40 °C	-40/60 °C	-20/100 °C
-20/60 °C	-30/50 °C	

CASE FILLING (OPTIONAL)

The gauges can be filled with different kind of fill fluids. Available fill fluids are:

- Glycerin fluid (99.7%)
- Silicon fluid

CERTIFICATION & APPROVALS

Calibration Certificate	: Gauges are factory calibrated to full range by default 5-Point Calibration Cert.
Material Certification	: Only For Wetted parts With Chemical Composition
NACE Compliance	: Available as per MR 01 75/ MR 01 03 (ISO 15156) for wetted parts (Optional)
Approvals	: ATEX: Conformity acc. to RL 2014/34/EU II 2 GD Ex h T6 (Optional)

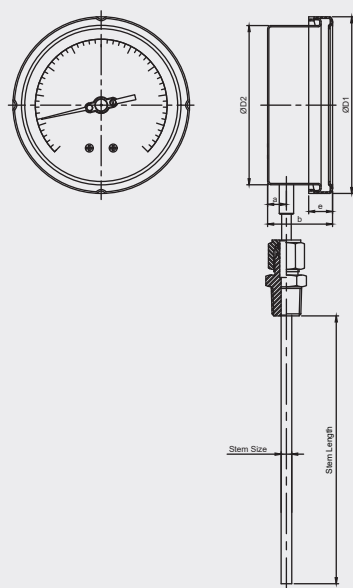


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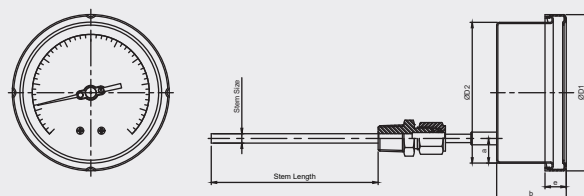
DIMENSIONAL DRAWINGS

Direct Bottom connection



NS	Dimensions are in mm				
	a	b	ØD1	ØD2	e
100	12	50	111	100	15
150	12	50	166	148	17

Direct Lower back connection



NS	Dimensions are in mm				
	a	b	ØD1	ØD2	e
100	20	50	111	100	15
150	20	50	166	148	17

Important Notes: Above drawings are not to scale.

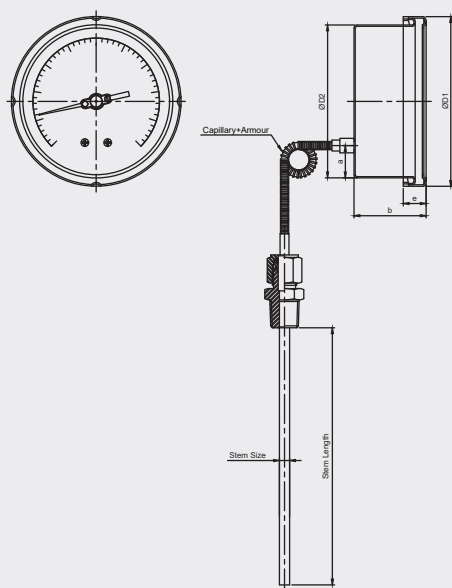


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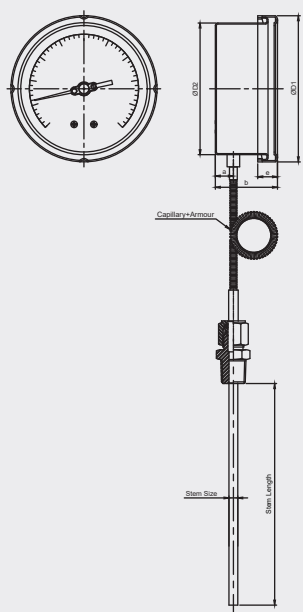
DIMENSIONAL DRAWINGS

Direct Lower back with capillary connection



NS	Dimensions are in mm				
	a	b	ØD1	ØD2	e
100	12	50	111	100	15
150	12	50	166	148	17

Direct Bottom with capillary Connection



NS	Dimensions are in mm				
	a	b	ØD1	ØD2	e
100	12	50	111	100	15
150	12	50	166	148	17

Important Notes: Above drawings are not to scale.



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RANGE TABLE

Range, stem OD stem length selection table

The following table indicates the minimum and maximum stem lengths in mm, per stem diameter per range. The lower values are indicated are the minimum immersion length (below thread) for all types of threads. During stem length selection, please select between the limits mentioned below.

Code	Range (°C)	Φ 6 mm/6.34 mm	Φ 8 mm	Φ 10
TB01	-20...40	125 / 500	120 / 600	100 / 600
TB03	-20...60	115 / 500	110 / 600	80 / 600
TB05	-20...120	70 / 500	65 / 600	60 / 600
TB07	-30...30	125 / 500	120 / 600	90 / 600
TB09	-30...50	115 / 500	110 / 600	80 / 600
TB11	-30...70	85 / 500	80 / 600	80 / 600
TB13	-40...40	115 / 500	110 / 600	80 / 600
TB15	-40...60	85 / 500	80 / 600	80 / 600
TB17	-60...80	75 / 500	70 / 600	60 / 600
TB19	0....60	120 / 500	115 / 600	100 / 600
TB21	0....80	115 / 500	110 / 600	80 / 600
TB23	0....100	85 / 500	80 / 600	80 / 600
TB25	0....120	60 / 500	55 / 600	55 / 600
TB27	0...160	60 / 500	45 / 600	45 / 600
TB29	0...200	45 / 500	40 / 600	40 / 600
TB31	0...250	40 / 500	40 / 600	40 / 600
TB33	0...300	70 / 500	70 / 600	60 / 600
TB35	0...400	60 / 500	55 / 600	50 / 600
TB37	0...500	60 / 500	55 / 600	50 / 600
		Max Stem Length -500	Max-600	Max-600



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MODEL CODING & ORDERING INFORMATION

DESCRIPTION	CODE	M3.02	04	SM	3	B	S4	S4	12NM	B06	TB19	XXX	S4	S4	09	XTM
Model																
Gas Filled Thermometer	M3.02	M3.02														
Dial Size																
100 mm (4")	04		04													
150 mm (6")	06															
Version																
Stem / Rigid	SM			SM												
Capillary / Remote	CP															
Damping																
Dry (But Fillable)	1				3											
Glycerin Filled	2															
Silicon Oil Filled	3															
Type of Mounting / Connection Orientation																
Direct Bottom Connection	B					B										
Direct Lower Back Connection	L															
Case and Bezel MOC																
SS304	S4						S4									
SS316	S6															
SS316L	SL															
Stem MOC																
SS304	S4							S4								
SS316	S6															
SS316L	SL															
Process Connection (Size and Type)																
1/2" NPT (M)	12NM								12NM							
1/2" BSP (M)	12BM															
1/4" BSP (M)	14BM															
1/4" NPT (M)	14NM															
3/4" BSP (M)	38BM															
3/4" NPT (M)	38NM															
M20X1.5(M)	M20M															
Stem Diameter																
Ø6 mm	B06									B06						
Ø6.35 mm	B63															
Ø8 mm	B08															
Ø10 mm	B10															
Ø12 mm	B12															
Range in (°C)																
0 TO 60	TB19										TB19					
To be selected from Table 1	XXXX															
Stem Length (SL)																
As per requirement in mm	XXX											XXX				
(Refer scale for Maximum & Minimum stem length)																
Capillary MOC																
SS 304	S4												S4			
SS 316	S6															
Armour																
SS 304	S4													S4		
SS 316	S6															
PVC	PV															
Capillary Length																
1 mtr to 10 mtr	09														09	
Other Options																
Window in Toughened Glass	EXO															
Tag no Marking on Dial	XTM															XTM
Wetted Parts Complied To NACE	X20															
Custom Dial Design / Private Labeling	X29															
SS Tag plate	X26															
IGC Certificate	X79															
Leak Test Certificates	XLC															
2" Pipe Mounting	XB4															
With Thermowell	X7															
With Skin Pad	X8															
Default Certification																
Calibration Certificates																
MTC for Wetted Parts																

SAMPLE ORDERING CODE:

M3.02-4.SM.1.B.14BM.B06.XXX.XXX.S4.S6.XX.X16

Note: Specifications and dimensions given in this product catalogue represents the state of engineering at the time of printing. Modifications may take place and material specified may be replaced by others without prior notice.

Dampening Temp. Range: Glycerin – up to 65 °C, Silicon Oil - up to 200 °C, Silicon Oil - up to 300 °C