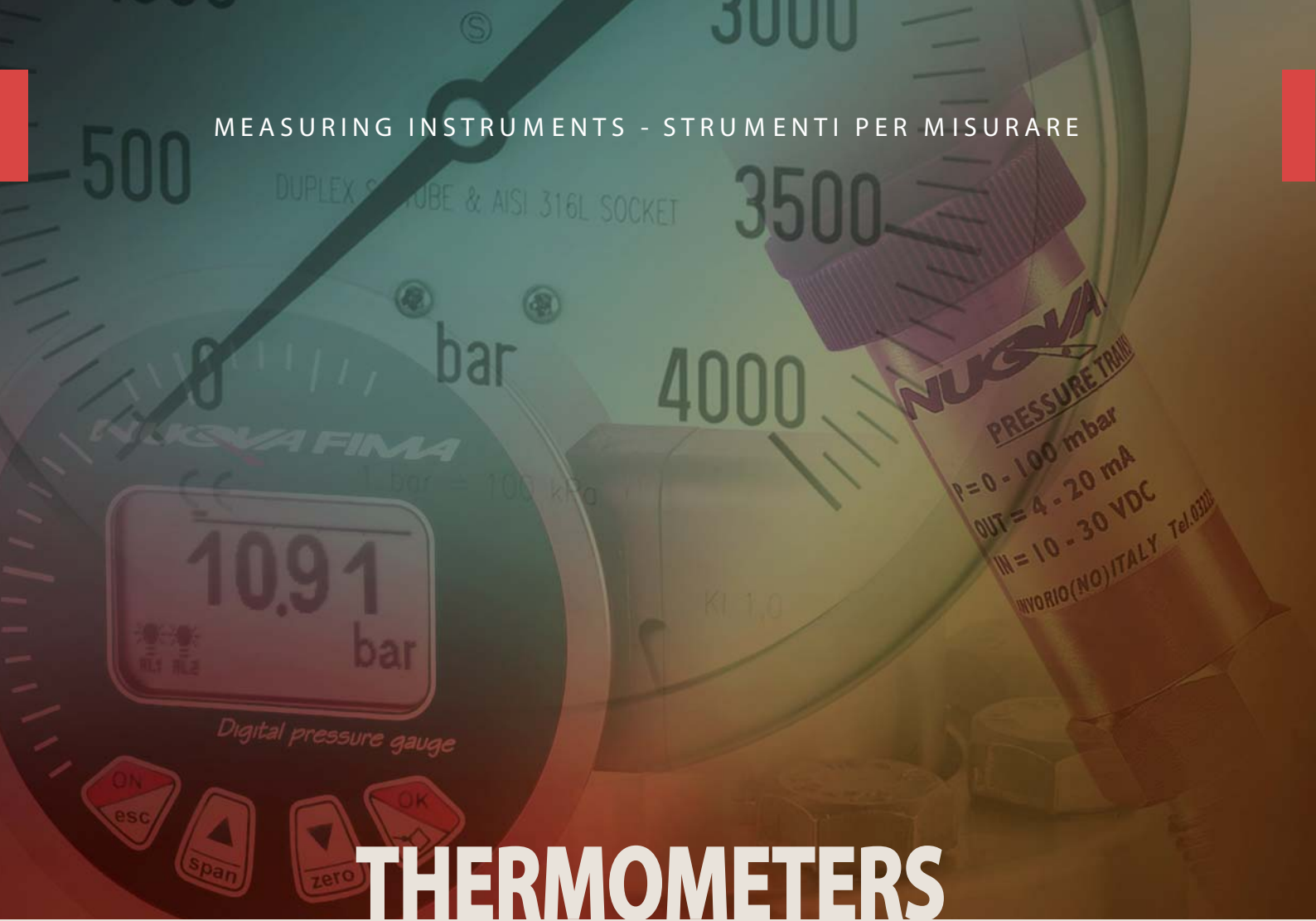


MEASURING INSTRUMENTS - STRUMENTI PER MISURARE



THERMOMETERS

NUOVA FIMA

bi-metal thermometers

DS 2.5", 3", 4", 5"

(63-80-100-125 mm)

TB7



These instruments are designed for use in chemical, petrolchemical processing industries. They are built to resist the most severe operating conditions created by the environment and the process medium. An Argonarc welded case/bulb strengthens the whole construction.

6.TB7 - Standard Model

Designation: EN 13190.

Accuracy class: 2 as per EN 13190, measuring range.

Indication ranges: 0...+1000 °F (-20...+500 °C).

Measuring ranges: +15...+840 °F (-10...+450 °C).

Overtemperature limit: 10% of full scale range for temperature ≤ 750 °F (400 °C); max 930 °F (500 °C).

Ambient temperature: -13...+149 °F (-25...+65 °C).

Max working pressure: 200 psi - 15 bar (without thermowell).

Protection degree: IP 55 as per EN 60529 / IEC 529.

Process connection: stainless steel.

Bulb: ø 0.24 (cod. 4), ø 0.31" (cod. 5) (6-8 mm) AISI 316 st. st.

Bulb length: 3.94-5.91-7.87-9.84" (100 - 150 - 200 - 250 mm)

Measurement element: bi-metal spiral shaped.

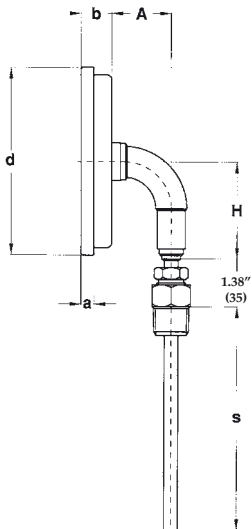
Case: stainless steel.

Ring: stainless steel, crimped.

Window: plexiglas.

Dial: aluminium, white with black markings.

Pointer: not adjustable, aluminium, black.



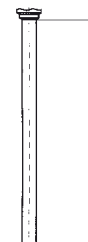
	DS	a	b	d	A	H
D	3" (80)	0.32" (8,2)	0.67" (17)	3.13" (79,5)	1.36" (34,5)	2.09" (53)
E	4" (100)	0.29" (7,4)	0.71" (18)	4.32" (109,8)	1.36" (34,5)	2.09" (53)
F	5" (125)	0.26" (6,5)	0.65" (16,5)	5.09" (129,2)	1.36" (34,5)	2.64" (67)

dimensions : inches (mm)

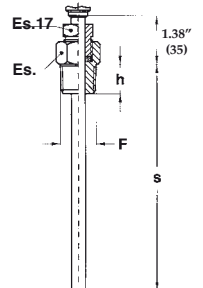
DS 3-4-5" (80-100-125 mm)

1 - Lower connection

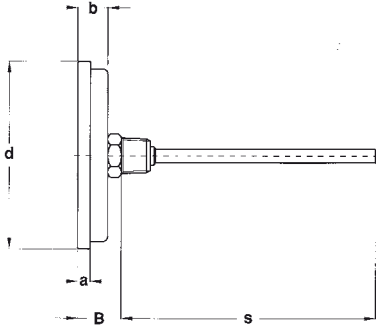
F	Hex.	h
41M G 1/2 A	0.87" (22)	0.55" (14)
43M 1/2-14 NPT	0.87" (22)	0.67" (17)



0 - Without threaded connection



9 - Sliding male and swivel nut

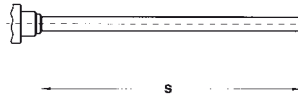


DS 2.5-3-4-5" (63-80-100-125 mm)

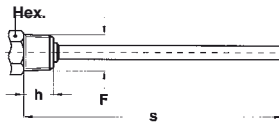
4 - Back connection

DS	a	b	d	B
C 2.5" (63)	0.23" (5,8)	0.51" (13)	2.67" (67,9)	0.83" (21)
D 3" (80)	0.32" (8,2)	0.67" (17)	3.13" (79,5)	0.98" (25)
E 4" (100)	0.29" (7,4)	0.70" (17,7)	4.32" (109,8)	1.01" (25,7)
F 5" (125)	0.26" (6,5)	0.65" (16,5)	5.09" (129,2)	0.96" (24,5)

0 - Without threaded connection



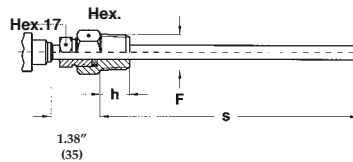
3 - Fixed male



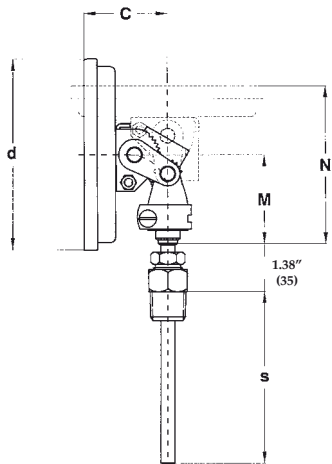
F	Hex.	h
41M G 1/2 A	0.87" (22)	0.55" (14)
43M 1/2-14 NPT	0.87" (22)	0.67" (17)
21M G 1/4 A	0.67" (17)	0.47" (12)

dimensions : inches (mm)

9 - Sliding male and swivel nut



F	Hex.	h
41M G 1/2 A	0.87" (22)	0.55" (14)
43M 1/2-14 NPT	0.87" (22)	0.67" (17)



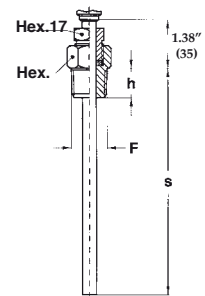
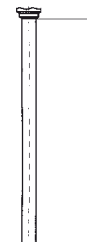
DS	d	C	M	N
E 4" (100)	4.32" (109,8)	1.88" (47,7)	2.03" (51,5)	3.59" (91,2)
F 5" (125)	5.09" (129,2)	1.83" (46,5)	2.03" (51,5)	3.54" (90)

F	Hex.	h
41M G 1/2 A	0.87" (22)	0.55" (14)
43M 1/2-14 NPT	0.87" (22)	0.67" (17)

dimensions : inches (mm)

DS 4-5" (100-125 mm)

9 - Every angle connection



0 - Without threaded connection

9 - Sliding male, swivel nut

"HOW TO ORDER" SEQUENCE

Section / Model / Mounting / Connection type / Diameter / Range / Process connection / Bulb type and length / Options

6	TB7	1	0	C	41M	4
		4	1	D	43M	5
		9	3	E	21M	
			9	F		

bi-metal thermometers

all stainless steel construction

DS 4", 5", 6" (100-125-150 mm)

TB8



These instruments are designed for use in chemical, petrolchemical processing industries. They are built to resist the most severe operating conditions created by the ambient environment and the process medium. An TIG welded case/bulb strengthens the whole construction. A leak tight fit is ensured if the instrument is filled with a dampening fluid to prevent damage due to vibration.

6.TB8 - Standard Model

Designation: EN 13190.

Indication ranges: -80...+1000 °F (-50...+600 °C).

Measuring ranges: -60...+900 °F (-40...+500 °C); -60...+840 °F (-40...+450 °C) continuous; +840...900 °F (+450...500 °C) intermittent only.

Accuracy class: 1 as per EN 13190, measuring range.

Overtemperature limit: 30% of full scale range for temperature ≤ 750 °F (400 °C); max 900 °F (500 °C).

Special overtemperature (option F02): 100% of full scale range for temperature ≤ 300 °F (150 °C); 50% of full scale range for temperature from +300...550 °F (+150...300 °C).

Ambient temperature: -13...+149 °F (-25...+65 °C).

Max working pressure: 200 psi - 15 bar (without thermowell).

Protection degree: IP 55 as per EN 60529 / IEC 529.

Process connection: AISI 316 st.st.

Bulb: ø 0.24" (cod. 6), ø 0.25" (cod. 7), ø 0.31" (cod. 8), ø 0.38" (cod. 9) (ø 6-6,4-8-9,6 mm) AISI 316 st. st.

Immersion length:

from 5.91" to 27.55" (from 150 to 700 mm)

for bulbs ø 0.24-0.25" (6-6,4 mm);

from 3.94" to 35.43" (from 100 to 900 mm)

for bulbs ø 0.31-0.38" (8-9,6 mm) and ranges ≤ 600 °F (300 °C);

from 5.91" to 35.43" (from 150 to 900 mm)

for bulbs ø 0.31-0.38" (8-9,6 mm) and ranges > 600 °F (300 °C)

(other lengths available upon request)

Measuring element: bi-metal spiral shaped.

Case: stainless steel.

Ring: stainless steel bayonet lock.

Window: tempered glass.

Dial: aluminium white with black markings.

Pointer: not adjustable, aluminium, black.

Zero-Adjustment: external zero-adjustment screw.

OPTIONS

DESCRIPTION	DS 4" (100mm)	DS 5" (125mm)	DS 6" (150mm)
2E3 - ATEX version II 2GD c	See the ATEX temperature gauges data-sheet for technical details		
2K3 - ATEX version II 2GD ck			
3D3 - ATEX version II 3GD c			
C40 - Case and ring AISI 316 st.st.	♦	♦	♦
F02 - Special overtemperature	♦	♦	♦
R10 - Glycerine filling, max +320 °F (+160 °C)	♦	♦	♦
R11 - Silicone filling, max +482 °F (+250 °C)	♦	♦	♦
T01 - Tropicalization	♦	♦	♦
T32 - Safety double stratified glass	♦	♦	♦



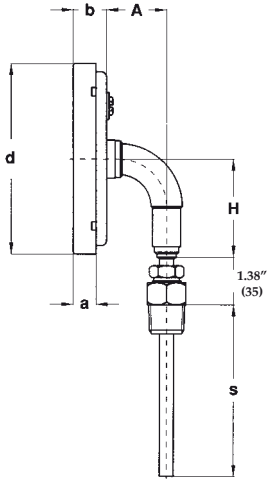
For use in potentially explosive atmospheres, instruments must be designed in conformity to ATEX 94/9/CE. This version is shown on separate data sheet available on request.

bi-metal thermometers all stainless steel construction
DS 4", 5", 6" (100-125-150 mm)

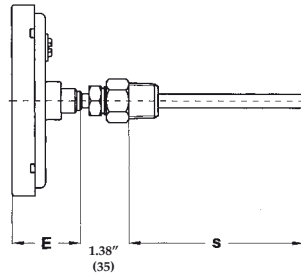
TB8

RB3 - 03 / 13

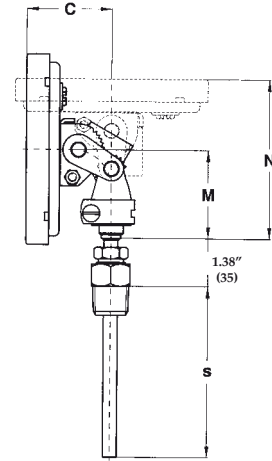
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1 - LOWER CONNECTION



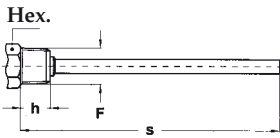
4 - BACK CONNECTION



9 - EVERY-ANGLE CONNECTION

DS	A	a	b	C	d	E	H	M	N
E 4" (100)	1.36" (34,5)	0.51" (13)	0.75" (19)	1.93" (49)	4.35" (110,6)	1.54" (39)	2.24" (57)	2.03" (51,5)	3.64" (92,5)
F 5" (125)	1.36" (34,5)	0.57" (14,5)	0.77" (19,5)	1.95" (49,5)	5.12" (130)	1.56" (39,5)	2.56" (65)	2.03" (51,5)	3.66" (93)
G 6" (150)	1.36" (34,5)	0.59" (15)	0.79" (20)	1.97" (50)	6.34" (161)	1.57" (40)	3.23" (82)	2.03" (51,5)	3.68" (93,5)

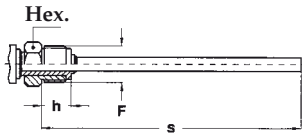
dimensions : inches (mm)



3 - Fixed male

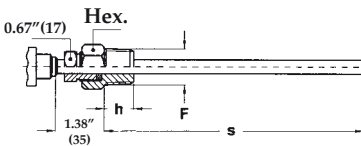
F	Hex.	h
41M - G 1/2 A	0.87" (22) *	0.67" (17)
43M - 1/2-14 NPT	0.87" (22) *	0.55" (14)

* ø 24 for every-angle mounting



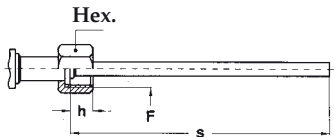
5 - Male swivel nut

F	Hex.	h
41M - G 1/2 A	0.87" (22)	0.55" (14)
51M - G 3/4 A	0.87" (22)	0.55" (14)



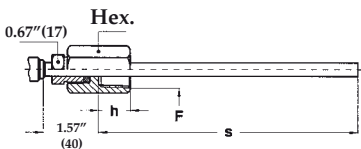
9 - Sliding male and swivel nut

F	Hex.	h
41M - G 1/2 A	0.87" (22)	0.55" (14)
43M - 1/2-14 NPT	0.87" (22)	0.67" (17)
51M - G 3/4 A	1.06" (27)	0.63" (16)
53M - 3/4-14 NPT	1.06" (27)	0.67" (17)



8 - Female swivel nut

F	Hex.	h
41F - G 1/2 A	0.94" (24)	0.63" (16)
51F - G 3/4 A	1.18" (30)	0.63" (16)



7 - Sliding female and swivel nut

F	Hex.	h
43F - 1/2-14 NPT	0.94" (24)	0.71" (18)
53F - 3/4-14 NPT	1.26" (32)	0.71" (18)

"HOW TO ORDER" SEQUENCE

Section / Model / Mounting / Connection type / Diameter / Range / Process connection / Bulb type and length / Options

6	TB8	1	3	E	41M	6	2E3...T32
		4	5	F	43M	7	
		9	7	G	51M	8	
			8		53M	9	
			9		43F		
					53F		

bi-metal thermometers, all stainless steel construction, ATEX versions, DS 4", 6" (100-150 mm)

TB8

REV.A.1 E 12/08



Versions
2E3/2K3
II
2
GD
T6
IP65

Group: all the installations, with exclusion of mines
Category: high level of protection
Explosive atmosphere: inflammable gases and dusts
Temperature class: 85°C
Enclosure protection

These instruments are designed for explosive atmospheres in food, processing, pharmaceutical, petrochemical industries and conventional and nuclear power plants. They are in conformity with the essential Health and Safety Requirements laid down in European Directive 94/9/EC for Group II, Category 2G or 2GD equipment in the T1...T6 temperature classes. They are NOT suitable for ZONES 0 and 20.

2E3 Version , Gas and Dust

They are available as **standard** or **fillable** version, 4" and 6" (DS 100-150 mm).

They keep the same functional and constructive features as TB8 model with **ranges** $\leq 80^{\circ}\text{C}$. They differ from them as follows :

- Ambient temperature:** $-4...+140^{\circ}\text{F}$ ($-20...+60^{\circ}\text{C}$).
- Max process fluid temperature "Tp":** see table (measured on the lowest point of socket).
- Windows:** high resistance safety glass.
- Dial marking:** CE Ex II 2GD c T6 X TF3 IP65 T85°C, model name and serial/lot number.
- Special dial:** ranges different from standard, custom artworks and dials without Nuova Fima logo are not available.
- Options:** plexiglas or tempered glass windows and overtemperature are not available.
- Included documentation:** Installation manual.

Class	Tp
T6 : 185°F (85°C)	176°F (80°C)
T5 : 212°F (100°C)	203°F (95°C)
T4 : 275°F (135°C)	266°F (130°C)
T3 : 392°F (200°C)	383°F (195°C)
T2 : 572°F (300°C)	554°F (290°C)
T1 : 842°F (450°C)	824°F (440°C)

Technical File: TF3 - Rev. 0/2005.

2K3 Version, Gas and Dust

They are available as **fillable** version, 4" and 6" (DS 100-150 mm).

They keep the same functional and constructive features as TB8 model with **ranges** $>80... \leq 250^{\circ}\text{C}$. They differ from them as follows :

- Damping liquids:** glycerine 98%, silicon oil.
- Ambient temperature:** $+59...+140^{\circ}\text{F}$ ($+15...+60^{\circ}\text{C}$) for glycerine filling; $-4...+140^{\circ}\text{F}$ ($-20...+60^{\circ}\text{C}$) for silicon oil filling.
- Max process fluid temperature "Tp":** see table (measured on the lowest point of socket).
- Windows:** high resistance safety glass.
- Dial marking:** CE Ex II 2GD ck T6 X TF3 IP65 T85°C, model name and serial/lot number.
- Special dial:** ranges different from standard, custom artworks and dials without Nuova Fima logo are not available.
- Options:** plexiglas or tempered glass windows and overtemperature are not available.
- Included documentation:** Installation manual.

bi-metal thermometers, all stainless steel construction, ATEX versions, DS 4", 4.5", 6" (100-125-150 mm)

TB8

REV.A.1 E 12/08

Versions
3D3
II
3
GD
c

Group: all the installations, with exclusion of mines
Category: high level of protection
Explosive atmosphere: inflammable gases and dusts
Type of ignition protection: costruational safety



These instruments are designed for explosive atmospheres in food, processing, pharmaceutical, petrochemical industries and conventional and nuclear power plants. They are in conformity with the essential Health and Safety Requirements laid down in European Directive 94/9/EC for Group II, Category 3GD equipment in the T1...T6 temperature classes. They are suitable for installations within ZONES 2 and 22.

3D3 Version, Gas and Dust

They are available as **IP65** version, 4", 4.5" and 6" (DS 100-125-150 mm).

They keep the same functional and constructive features as TB8 model. They differ from them as follows :

Protection degree: IP 655 as per IEC 529.

Ambient temperature: -4...+140 °F (-20...+60 °C).

Max process fluid temperature "Tp": see table (measured on the lowest point of socket).

Windows: high resistance safety glass.

Dial marking: CE Ex II 3GD c, model name and serial/lot number.

Special dial: ranges different from standard, custom artworks and dials without Nuova Fima logo are not available.

Options: liquid filling, plexiglas or tempered glass windows and overtemperature are not available.

Included documentation: Installation manual.

Class	Tp
T6 : 185°F (85°C)	176°F (80°C)
T5 : 212°F (100°C)	203°F (95°C)
T4 : 275°F (135°C)	266°F (130°C)
T3 : 392°F (200°C)	383°F (195°C)
T2 : 572°F (300°C)	554°F (290°C)
T1 : 842°F (450°C)	824°F (440°C)

Technical File: TF13 - Rev. 0/2006.

NUOVA FIMA

-1-

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ISO 9002
Cert. n° 0433



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bi-metal thermometers

DS 3", 5"

(80-125 mm)



These instruments are designed for use in chemical, petrolchemical processing industries. They are built to resist the most severe operating conditions created by the environment and the process medium. A TIG welded case/bulb strengthens the whole construction. The hermetic seal minimize the risk of icing or fogging inside the case.

6.TB9 - Standard Model

Designation: ASME B40.3.

Accuracy class: 1% full-span (grade A).

Ranges: -80...+1000 °F/°C.

Overtemperature limit: 10% of full scale range; max 930 °F.

Ambient temperature: -20...+150 °F (-30...+65 °C).

Max working pressure: 200 psi - 15 bar (without thermowell).

Protection degree: IP 65 as per EN 60529/IEC 529.

Process connection: AISI 303 stainless steel.

Stem: ϕ 1/4" (6,35 mm), AISI 304 st. st.

Sensing element: coiled bi-metal.

Case: stainless steel, hermetically sealed as per ASME B40.3.

Ring: stainless steel, crimped.

Window: heavy duty tempered glass.

Dial: white aluminium, black and red marking.

Pointer: black aluminium.

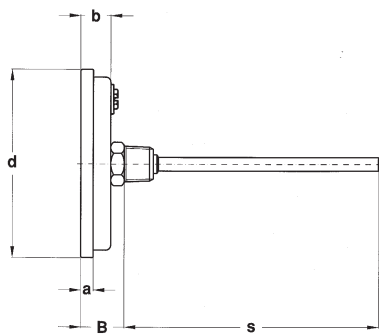
Zero-adjustment: external, at back of case.

Ranges (°F/°C)
-80...+120
-20...+120
+30...+130
0...+200
0...+250
0...+300
+50...+300
+50...+400
+50...+550
+200...+700 ⁽¹⁾
+100...+800 ⁽¹⁾
+200...+1000 ⁽¹⁾

(1) minimum stem length:
6" inches (150 mm)

STEM LENGTH

cod.	7C	7D	7E	7F	7G	7H	7I
inch.	2" 1/2	4"	6"	9"	12"	15"	18"
(mm)	(63,5)	(101,6)	(152,4)	(228,6)	(304,8)	(381)	(457,2)

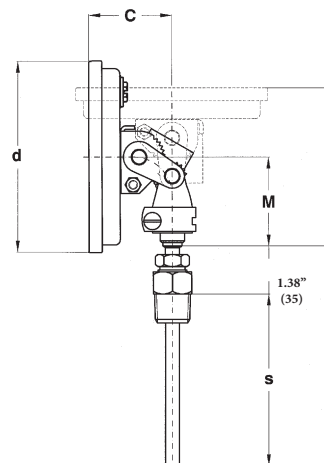


DS 3.5"-4.5" (80-125 mm)

4 - Back connection

DS	a	b	d	B
D 3" (80)	0.32" (8,2)	0.67" (17)	3.13" (79,5)	0.98" (25)
F 5"(125)	0.26" (6,5)	0.65" (16,5)	5.09" (129,2)	0.96" (24,5)

dimensions : inches (mm)

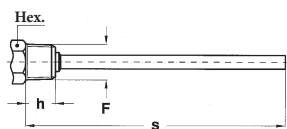


DS 4.5" (125 mm)

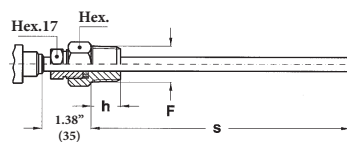
9 - Every-angle connection

DS	d	C	M	N
F 5"(125)	5.09" (129,2)	1.83" (46,5)	2.03" (51,5)	3.54" (90)

dimensions : inches (mm)



3 - Fixed male



9 - Sliding male and swivel nut

DS	F	Hex.	h
D 3" (80)	23M 1/4-18 NPT	0.87" (22)	0.67" (17)
F 5"(125)	43M 1/2-14 NPT	0.87" (22)	0.67" (17)

dimensions : inches (mm)

OPTIONS

DESCRIPTION	
P00 - Glycerine fillable	(1)
P01 - Silicone fillable	(1)
R10 - Glycerine filling, max +320 °F (+160 °C)	(1)
R11 - Silicone filling, max +482 °F (+250 °C)	(1)

(1) Protection degree: IP 67 as per EN 60529/IEC 529.

“HOW TO ORDER” SEQUENCE

Section / Model / Mounting / Connection type / Diameter / Range / Process connection / Bulb type and length / Options

6 **TB9** 4 3 **D** 43M 7C...7I **P00...R11**
9 9 **F** 23M

inert gas filled thermometers, local mounting

all stainless steel construction

DS 4", 6" (100-150 mm)

TG8



These instruments are designed for use in chemical and petrochemical processing industries, and in conventional power plants. They are built to resist the most severe operating conditions created by the ambient environment and the process medium. An TIG welded case/bulb and capillary strengthens the whole construction. A leak tight fit is ensured if the instrument is filled with a dampening fluid to prevent damage due to vibration.

6.TG8 - Standard Model

Designation: EN 13190.

Indication ranges: -320...+1200 °F (-200...+600 °C).

Measuring ranges: -280...+1100 °F (-170...+500 °C).

Accuracy class: 1 as per EN 13190, measuring range.

Overtemperature limit: 25% of full scale range for temperature ≤ 750 °F (400 °C); max 1100 °F (600 °C).

Ambient temperature: -13...+149 °F (-25...+65 °C).

Max working pressure: 360 psi - 25 bar (without thermowell).

Protection degree: IP 55 as per IEC 529.

Process connection: AISI 316 st.st.

AISI 316 st.st. bulb: with rigid extension ø 0.31" (8 mm):

S22 - ø 0.31" (8 mm) = 5.63"...393,7" (143...10000 mm);

S21 - ø 0.38" (9,6 mm) = 4.41"...393,7" (112...10000 mm);

S20 - ø 0.45" (11,5 mm) = 3.35"...393,7" (85...10000 mm);

with flexible extension ø 0.10" (2,5 mm):

S22 - ø 0.31" (8 mm) = 5.63"...393,7" (143...10000 mm);

S21 - ø 0.38" (9,6 mm) = 4.41"...393,7" (112...10000 mm);

S20 - ø 0.45" (11,5 mm) = 3.35"...393,7" (85...10000 mm);

Measuring element: inert gas filled expansion system.

Case: stainless steel.

Ring: stainless steel bayonet lock.

Window: tempered glass.

Movement: stainless steel.

Internal compensation device: by a bimetallic linkage.

Dial: aluminium, white with black markings.

Pointer: adjustable, aluminium, black.

OPTIONS

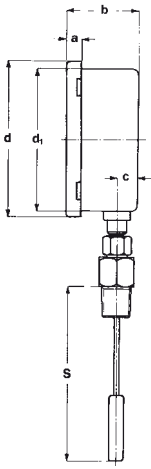
2G3 - ATEX version II 2G c	(1) (2)	Electric contacts	(3)
2D3 - ATEX version II 2GD c	(1) (2)	R10 - Glycerine filling, max +320 °F (+160 °C)	(2)
C40 - Case and ring AISI 316 st.st.		R11 - Silicone filling, max +482 °F (+250 °C)	(2)
E65 - Protection degree IP65	(2)	T01 - Tropicalization	
L22 - Maximum pointer IP 65 on plexiglas window	(2)	T32 - Safety glass window	(2)

(1) See the ATEX temperature gauges data-sheet for technical details.
 (2) Not available with electric contacts

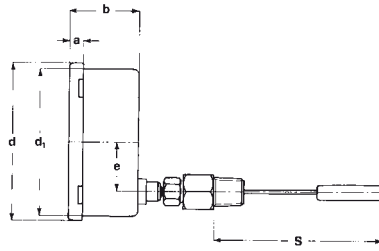
(3) Codes, description and wiring on data sheet MN14.



For use in potentially explosive atmospheres, instruments must be designed in conformity to ATEX 94/9/CE. This version is shown on separate data sheet available on request.



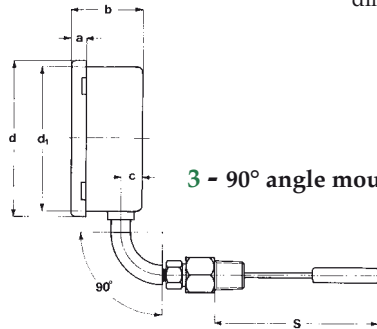
1 - Bottom mounting



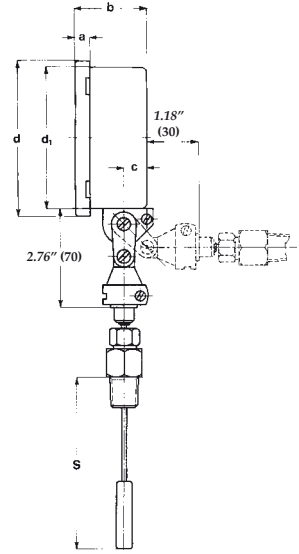
4 - Back mounting

DS	a	b	c	d	d ₁
E 4" (100)	0.57" (14,5)	1.99" (50,5)	0.61" (15,5)	4.41" (112)	3.98" (101)
G 6" (150)	0.65" (16,5)	2.11" (53,5)	0.61" (15,5)	6.54" (166)	5.91" (150)

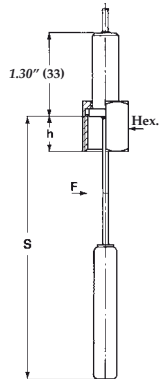
dimensions : inches (mm)



3 - 90° angle mounting

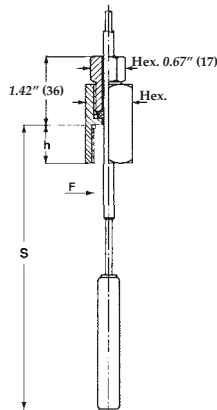


9 - Every angle mounting



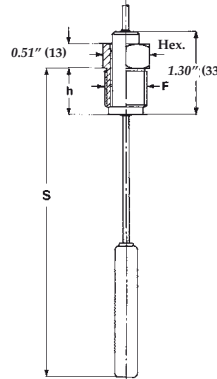
8 - Female swivel nut.

F	Hex.	h
41F	0.94" (24)	0.63" (16)
G 1/2 A		
51F	1.18" (30)	0.63" (16)
G 3/4 A		



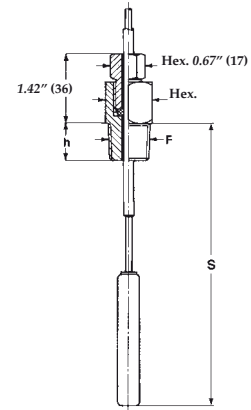
7 - Sliding female swivel nut.

F	Hex.	h
43F	0.94" (24)	0.71" (18)
1/2-14 NPT		
53F	1.18" (30)	0.71" (18)
3/4-14 NPT		



5 - Male swivel nut.

F	Hex.	h
41M	0.87" (22)	0.55" (14)
G 1/2 A		
51M	1.06" (27)	0.55" (14)
G 3/4 A		



9 - Sliding male swivel nut.

F	Hex.	h
41M	0.87" (22)	0.55" (14)
G 1/2 A		
43M	0.87" (22)	0.67" (17)
1/2-14 NPT		
51M	1.06" (27)	0.63" (16)
G 3/4 A		
53M	1.06" (27)	0.67" (17)
3/4-14 NPT		

dimensions : inches (mm)

"HOW TO ORDER" SEQUENCE

Section / Model / Mounting / Connection type / Diameter / Range / Process connection / Bulb / Options
6 **TG8** **1,3** **5,7** **E** **41M, 43M** **S20...22** **2G3...T32**
4,9 **8,9** **G** **51M, 53M** **S10...12**

inert gas filled thermometers for remote readings

all stainless steel construction

DS 4", 6" (100-150 mm)

TG8



ATEX 94/9/CE

These instruments are designed for use in chemical and petrochemical processing industries, and in conventional power plants. They are built to resist the most severe operating conditions created by the ambient environment and the process medium. An TIG welded case/bulb and capillary strengthens the whole construction. A leak tight fit is ensured if the instrument is filled with a dampening fluid to prevent damage due to vibration.

6.TG8 - Standard Model

Designation: EN 13190.

Indication ranges: -320...+1200 °F (-200...+600 °C).

Measuring ranges: -280...+1100 °F (-170...+500 °C).

Accuracy class: 1 as per EN 13190, measuring range.

Overtemperature limit: 25% of full scale range for temperature ≤ 750 °F (400 °C); max 1100 °F (600 °C).

Ambient temperature: -13...+149 °F (-25...+65 °C).

Max working pressure: 360 psi - 25 bar (without thermowell).

Protection degree: IP 55 as per EN 60529 / IEC 529.

Process connection: AISI 316 st.st.

Stainless steel capillary: 1 - uncovered, ø 0.10" (2,5 mm);

9 - covered with stainless steel flexible armour, ø 0.24" (6 mm);

6 - covered with st.st. PVC coated flexible armour, ø 0.24" (6 mm).

Measuring element: inert gas filled expansion system.

Case: stainless steel.

Ring: stainless steel bayonet lock.

Window: tempered glass.

Movement: stainless steel.

Internal compensation device: by a bimetallic linkage.

Dial: aluminium, white with black markings.

Pointer: adjustable, aluminium, black.

BULB

ø bulb	Rigid extension code, ø 0.31" (8 mm)	Flexible extension code, ø 0.1" (2,5 mm)	bulb length "S"	
			capillary ≤ 49 ft (15 mt)	capillary 52...98 ft (16...30 mt)
0.31" (8 mm)	S22	S12	5.63...39.37" (143...1000 mm)	7.56...39.37" (192...1000 mm)
0.38" (9,6 mm)	S21	S11	4.41...39.37" (112...1000 mm)	5.98...39.37" (152...1000 mm)
0.45" (11,5 mm)	S20	S10	3.34...39.37" (85...1000 mm)	4.41...39.37" (112...1000 mm)

OPTIONS

2G3 - ATEX version II 2G c	(1) (2)	Electric contacts	(3)
2D3 - ATEX version II 2GD c	(1) (2)	R10 - Glycerine filling	(2)
C40 - Case and ring AISI 316 st.st.		R11 - Silicone filling	(2)
E65 - Protection degree IP65	(2)	T01 - Tropicalization	
L22 - Maximum pointer IP 65 on plexiglas window	(2)	T32 - Safety glass window	(2)

(1) See the ATEX temperature gauges data-sheet for technical details.
 (2) Not available with electric contacts

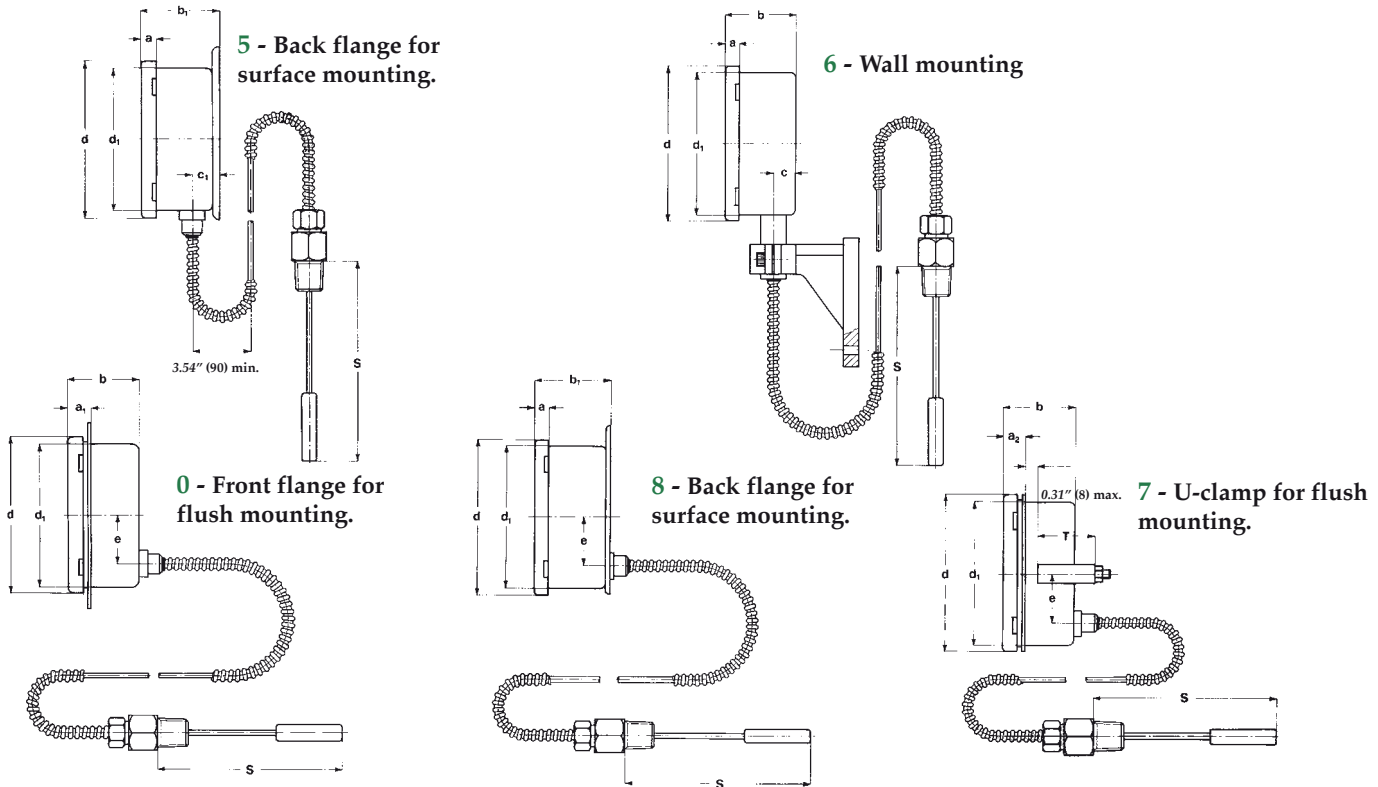
(3) Codes, description and wiring on data sheet MN14.



For use in potentially explosive atmospheres, instruments must be designed in conformity to ATEX 94/9/CE. This version is shown on separate data sheet available on request.

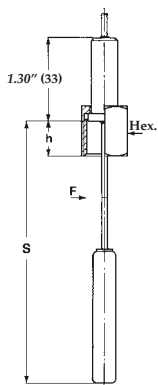
inert gas filled thermometers, for remote reading
all stainless steel construction DS 4", 6" (100-150 mm)

TG8



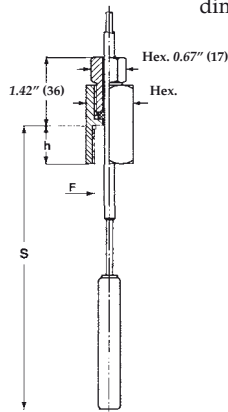
DS	A	B	a	a ₁	a ₂	b	b ₁	c	c ₁	d	d ₁	D	E	E ₁	e	h	h ₁	T	V	Z
E 4" (100)	2.72" (69)	2.36" (60)	0.57" (14,5)	0.83" (21)	0.79" (20)	1.99" (50,5)	2.15" (54,5)	0.61" (15,5)	0.77" (19,5)	4.41" (112)	3.98" (101)	5.12" (130)	4.57" (116)	4.65" (118)	1.36" (34,5)	2.05" (52)		1.63" (41,5)	2.76" (70)	4.41" (112)
G 6" (150)	3.78" (96)	2.36" (60)	0.65" (16,5)	0.83" (21)	0.79" (20)	2.11" (53,5)	2.26" (57,5)	0.61" (15,5)	0.77" (19,5)	6.54" (166)	5.91" (150)	7.48" (190)	6.89" (175)		1.36" (34,5)	3.35" (85)	3.35" (85)	1.77" (45)	4.17" (106)	6.10" (155)

dimensions : inches (mm)



8 - Female swivel nut.

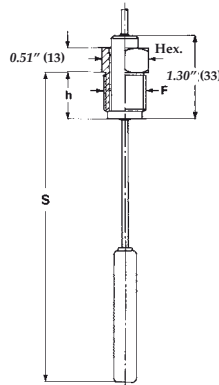
F	Hex.	h
41M G 1/2 A	0.94" (24)	0.63" (16)
51M G 3/4 A	1.18" (30)	0.63" (16)



7 - Sliding female swivel nut.

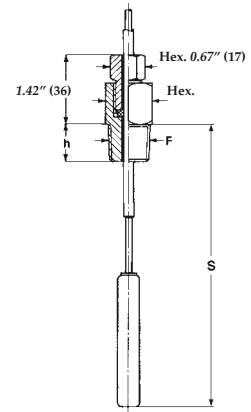
F	Hex.	h
43M 1/2-14 NPT	0.94" (24)	0.71" (18)
53M 3/4-14 NPT	1.18" (30)	0.71" (18)

dimensions : inches (mm)



5 - Male swivel nut.

F	Hex.	h
41M G 1/2 A	0.87" (22)	0.55" (14)
51M G 3/4 A	1.06" (27)	0.55" (14)



9 - Sliding male swivel nut.

F	Hex.	h
41M - G 1/2 A	0.87" (22)	0.55" (14)
43M - 1/2-14 NPT	0.87" (22)	0.67" (17)
51M - G 3/4 A	1.06" (27)	0.63" (16)
53M - 3/4-14 NPT	1.06" (27)	0.67" (17)

"HOW TO ORDER" SEQUENCE

Section / Model / Mounting / Connection type / Diameter / Range / Process connection / Bulb / Capillary / Options
6 **TG8** **0,5,6** **5,7** **E** **41M, 43M** **S20...22** **1** **2G3...T32**
7,8 **8,9** **G** **51M, 53M** **S10...12** **6**
9

inert gas filled thermometers, all stainless steel construction, ATEX versions, DS 4", 6" (100-150 mm)

TG8

RB1 - 02/09

Versions	
2G3	2D3
II	II
2	2
G	
	GD
T6	T6
	IP65

Group: all the installations, with exclusion of mines
Category: high level of protection
Explosive atmosphere: inflammable gases
Explosive atmosphere: inflammable gases and dusts
Temperature class: 85°C
Enclosure protection



These instruments are designed for explosive atmospheres in food, processing, pharmaceutical, petrochemical industries and conventional and nuclear power plants. They are in conformity with the essential Health and Safety Requirements laid down in European Directive 94/9/EC for Group II, Category 2G or 2GD equipment in the T1...T6 temperature classes.
 They are NOT suitable for ZONES 0 and 20.

2G3 Version , Gas

They are available as **standard** or **fillable** version, 4" and 6" (DS 100-150 mm).

They keep the same functional and constructive features as TG8 model. They differ from them as follows :

- Ambient temperature:** -4...+140 °F (-20...+60 °C).
- Max process fluid temperature "Tp":** see table (measured on the lowest point of socket).
- Windows:** high resistance safety glass.
- Dial marking:** CE Ex II 2G c T6X TF3, model name and serial/lot number.
- Special dial:** ranges different from standard, custom artworks and dials without Nuova Fima logo are not available.
- Options:** plexiglas or tempered glass windows, electric contacts and accessories and overtemperature are not available.
- Included documentation:** Installation manual.

Class	Tp
T6 : 185°F (85°C)	176°F (80°C)
T5 : 212°F (100°C)	203°F (95°C)
T4 : 275°F (135°C)	266°F (130°C)
T3 : 392°F (200°C)	383°F (195°C)
T2 : 572°F (300°C)	554°F (290°C)
T1 : 842°F (450°C)	824°F (440°C)

2D3 Version , Gas and Dust

They are available as **standard** or **fillable** version, 4" and 6" (DS 100-150 mm).

They keep the same functional and constructive features as TG8 model. They differ from them as follows :

- Damping liquids:** glycerine 98%, silicon oil.
- Ambient temperature:** +59...+140 °F (+15...+60 °C) for glycerine filling; -4...+140 °F (-20...+60 °C) for silicon oil filling.
- Max process fluid temperature "Tp":** see table (measured on the lowest point of socket).
- Windows:** high resistance safety glass.
- Dial marking:** CE Ex II 2GD c T6X TF3 IP65 T85°C, model name and serial/lot number.
- Special dial:** ranges different from standard, custom artworks and dials without Nuova Fima logo are not available.
- Options:** plexiglas or tempered glass windows and overtemperature are not available.
- Included documentation:** Installation manual.

Technical File: TF3 - Rev. 0/2005.

inert gas filled thermometers, anti-vibration all stainless steel construction DS 4" (100 mm)

TA8



These instruments are designed to measure the waste gas of diesel engines. They are built to resist to the most severe operating conditions created by high temperature and by the diesel engines vibrations.

6.TA8 - Standard Model

Measuring range: 0...650 °C/°F (other ranges on request).

Accuracy class: 1 as per EN 13190, measuring range.

Overtemperature limit: not suitable.

Ambient temperature: -13...+149 °F (-25...+65 °C).

Max working pressure: 360 *psi* - 25 bar (without thermowell).

Protection degree: IP 67 as per EN 60529 / IEC 529.

Process connection: AISI 303 st.st.

Bulb: AISI 316 st.st.

S24 - ø 0.37" (9,5 mm), with rigid extension ø 0.5" (12,7 mm).

Immersion length: 5.51" ...17.72" (140...450 mm);

Measuring element: inert gas filled expansion system.

Case: AISI304 st.st.

Ring: AISI304 st.st, bayonet lock.

Window: tempered glass.

Movement: stainless steel.

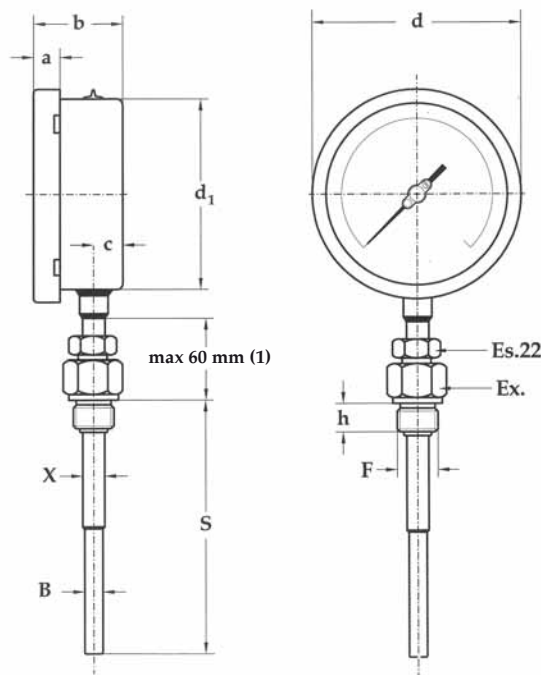
Dial: aluminium, white with black and red markings.

Pointer: adjustable, aluminium, black.

Filling liquid: high viscosity silicone oil.

Internal compensation device: by a bimetallic linkage.

Gasket: siliconic gum.



F	Ex.	h
41M	1.06"	0.55"
G 1/2 A	(27)	(14)
43M	0.94"	0.67"
1/2-14 NPT	(24)	(17)

1 - LOWER CONNECTION

a	b	c	d	d ₁	ø X	ø B	S
0.51"	1.89"	0.61"	4.35"	3.98"	0.50"	0.37"	5.51...17.72"
(13)	(48)	(15,5)	(110,6)	(101)	(12,7)	(9,5)	(140...450)

(1) For a longer instrument life do not settle the sliding connection at a higher level than the one indicated.

dimensions : inches (mm)

"HOW TO ORDER" SEQUENCE

Section / Model / Mounting / Connection type / Diameter / Range / Process connection / Bulb type and length / Options
6 TA8 1 9 E 41M 43M S24

industrial glass tube thermometer brass series

TV606



Instruments designed for use on: conventional power station, refrigeration plant, heating, ventilation and air-conditioning plant.

6.V6 - Standard Model

Accuracy: $\pm 1,0\%$ of full scale value.

Working pressure: 350 psi max (25 bar), without thermowell.

Overtemperature: not suitable.

Sensing element: colored liquid, mercury.

Graduation: engraved on internal wall of case.

Tube: glass, prismatic on mercury types.

Bulb: $\varnothing 0.43''$ (11 mm).

Case: aluminium, anodized brass.

Process connection and bulb protection:

brass for $T_e \leq 752$ °F (400 °C).

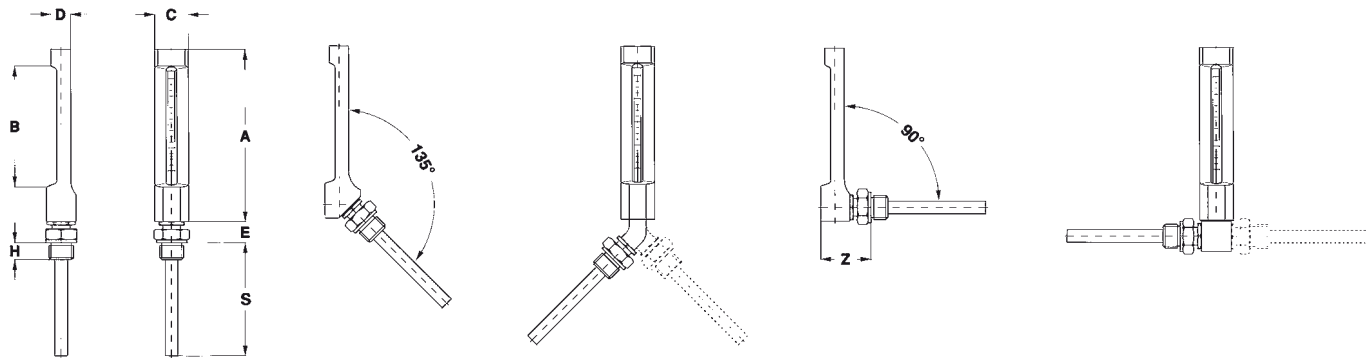
Standard bulb length: 1.57, 1.89, 2.48, 3.15, 3.93, 6.30, 7.87, 11.81'' (40, 48, 63, 80, 100, 160, 200, 300 mm).

RANGES °C	Scale graduation (°C)		
	ND 4'' (110mm)	ND 6'' (150mm)	ND 8'' (200mm)
-60...+40		2	
-50...+50			1
-40...+40	1	1	
-30...+50		1	1
-10...+50		1	1
0...+50	1		
0...+100	2	2	1
0...+120	2	2	1
0...+160	2	2	2
0...+200	5	5	2
0...+300		5	5
0...+400		5	5

NOTE

In case of breakage it is sufficient to change the tube, with engraved scale. This operation is possible thanks to the perfect interchangeability of tubes which permits a perfect alignment between engraved scale on tube and graduations on casing.

MOUNTING



Cod. 1

Cod. 2
(ND 6" - 150mm
not available)

Cod. F

Cod. G

Cod. 4

Cod. D

Cod. E

ND	F	A	B	C	D	E	Z	H	S	Weight lbs. (kg)
E 4" (110 mm)	31M - G 3/8 A	4.33 (110)	2.79 (70)	1.38 (35)	0.79 (20)	0.79 (20)	1.77 (45)	0.59 (15)	1.57...11.81 (40...300)	1.32...2.42 (0,6...1,1)
G 6" (150 mm)	41M - G 1/2 A 51M - G 3/4 A	5.91 (150)	3.94 (100)	1.38 (35)	0.79 (20)	0.79 (20)	1.77 (45)	0.59 (15)	1.57...11.81 (40...300)	1.54...2.64 (0,7...1,2)
H 8" (200 mm)	43M - 1/2-14 NPT 53M - 3/4-14 NPT	7.87 (200)	5.91 (150)	1.38 (35)	0.79 (20)	0.79 (20)	1.77 (45)	0.59 (15)	1.57...11.81 (40...300)	1.76...2.86 (0,8...1,3)

dimensions : inches (mm)

FILLING LIQUIDS

°C	Colored liquid	Mercury
	A	B
-60...+40	❖	
-50...+50	❖	
-40...+40	❖	
-30...+50	❖	❖
-10...+50	❖	❖
0...+50	❖	❖
0...+100	❖	❖
0...+120	❖	❖
0...+160	❖	❖
0...+200	❖	❖
0...+300		❖
0...+400		❖

"HOW TO ORDER" SEQUENCE

Section / Model / Mounting / Connection type / Diameter / Range / Process connection / Bulb type and length

6 V6 1 3 E 31M A
2 G 41M B
F H 51M
G 43M
4 53M
D
E

industrial glass tube thermometer watertight enclosure

TV8



These instruments are designed for the chemical and petrochemical industry, air conditioning and conventional power plants.

6.V8 - Standard Model

Accuracy: $\pm 1,0\%$ of full scale value.

Working pressure: 600 psi max (40 bar), without thermowell.

Overtemperature: not suitable.

Protection degree: IP 55 as per EN 60529/IEC 529.

Tube: Jena 16 III glass, with blue reflex on temperatures.

Sensing element: colored liquid, mercury.

Process connection and bulb protection: carbon steel.

Standard bulb length: 3.94, 7.87, 11.81, 15.75, 19.69"
(100, 200, 300, 400, 500 mm).

Dial: aluminium, white with black markings.

Bulb: $\varnothing 0.43''$ (11 mm).

Case: aluminium-alloy, black painted.

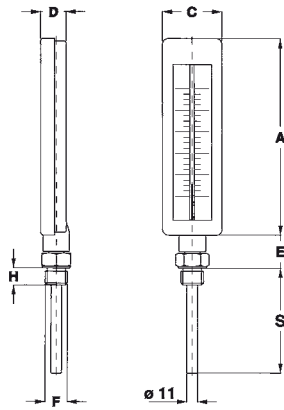
Cover: polishec stainless steel.

Window: glass, 0.08" (2 mm) thick.

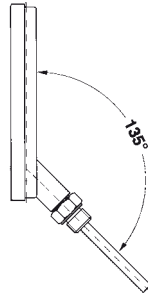
Gasket: neoprene.

RANGES	Scale graduation (°C)	
	ND 7" (180 mm)	ND 10" (250 mm)
°C		
-50...+30	1	1
-50...+50	1	1
-40...+40	1	1
-30...+50	1	1
-10...+50	1	1
0...+80	1	1
0...+100	1	1
0...+120	2	1
0...+160	2	1
0...+200	2	2
0...+240		2
0...+300	5	5
0...+400	5	5

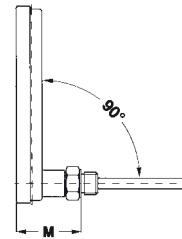
MOUNTING



Cod. 1



Cod. 2



Cod. 4

ND	F	A	C	D	E	M	H	S	Weight lbs. (kg)
H 7" (180 mm)	41M - G 1/2 A 51M - G 3/4 A	7.09 (180)	2.17 (55)	0.98 (25)	1.24 (31,5)	2.42 (61,5)	0.63 (16)	3.94...19.69 (100...500)	1.32...2.42 (0,6...1,1)
I 10" (250 mm)	43M - 1/2-14 NPT 53M - 3/4-14 NPT	9.84 (250)	2.17 (55)	0.98 (25)	1.24 (31,5)	2.42 (61,5)	0.63 (16)	3.94...19.69 (100...500)	1.54...2.64 (0,7...1,2)

FILLING LIQUIDS

°C	Colored liquid	Mercury
	A	B
-50...+30	❖	
-50...+50	❖	
-40...+40	❖	
-30...+50	❖	❖
-10...+50	❖	❖
0...+80	❖	❖
0...+100	❖	❖
0...+120	❖	❖
0...+160	❖	❖
0...+200	❖	❖
0...+240		❖
0...+300		❖
0...+400		❖

"HOW TO ORDER" SEQUENCE

Section / Model / Mounting / Connection type / Diameter / Range / Process connection / Bulb type and length

6 V8 1 3 H
 2 I
 4 41M
 51M
 43M
 53M A
 B

thermometers with electric contacts all stainless steel construction DS 4" (100 mm)

TCE



CE Compliance to requirements of
BT 2006/95/CE

They are used to control the electrical operation of compressors, pumps, presses, hydraulic and pneumatics equipment, chemical and petrochemical plant. The contacts open or close the circuit depending on the position of the indicating pointer and they are adjustable over the whole range. The filling drastically reduces the effect of such factors as well as those caused by a corrosive atmosphere, giving longer life and better performances of the pressure gauge and their electric contacts. They are also available with inductive contacts intrinsically safe.

6.TCE - Standard Model

Designation: EN 13190.

Indication ranges: -320...+1200 °F (-200...+600 °C).

Measuring ranges: -280...+1100 °F (-170...+500 °C).

Mechanical contact: sliding contact, magnetic snap-action, electronic, inductive.

Accuracy class: 1 as per EN 13190, measuring range.

Overtemperature: not suitable.

Ambient temperature: -13...+149 °F (-25...+65 °C).

Max working pressure: 360 *psi* - 25 bar (without thermowell).

Protection degree: IP 55 as per EN 60529/IEC 529.

Process connection: AISI 316 st.st.

Bulb: AISI 316 st.st. \varnothing 0.31-0.37-0.45" (8-9,5-11,5 mm), with rigid extension \varnothing 0.31" (8 mm)

Immersion length of the bulb with rigid extension "S":

S22 - \varnothing 0.31" (8 mm) = 5.63"...36.37" (143...1000 mm);

S21 - \varnothing 0.38" (9,6 mm) = 4.41"...36.37" (112...1000 mm);

S20 - \varnothing 0.45" (11,5 mm) = 3.35"...36.37" (85...1000 mm).

Measuring element: inert gas filled expansion system.

Case: stainless steel.

Ring: stainless steel bayonet lock.

Window: plexiglas.

Movement: stainless steel.

Internal compensation device: by a bimetallic linkage.

Dial: aluminium, white with black markings.

Pointer: adjustable, aluminium, black.

6.TCE...R13 - Filled Model

Indication ranges: -40...+500 °F (-40...+250 °C).

Measuring ranges: -20...+425 °F (-30...+220 °C).

Mechanical contact: magnetic snap-action, electronic, inductive.

Accuracy class: 2 as per EN 13190, measuring range.

Filling liquids: silicon oil.

Protection: IP 65 as per EN 60529/IEC 529.

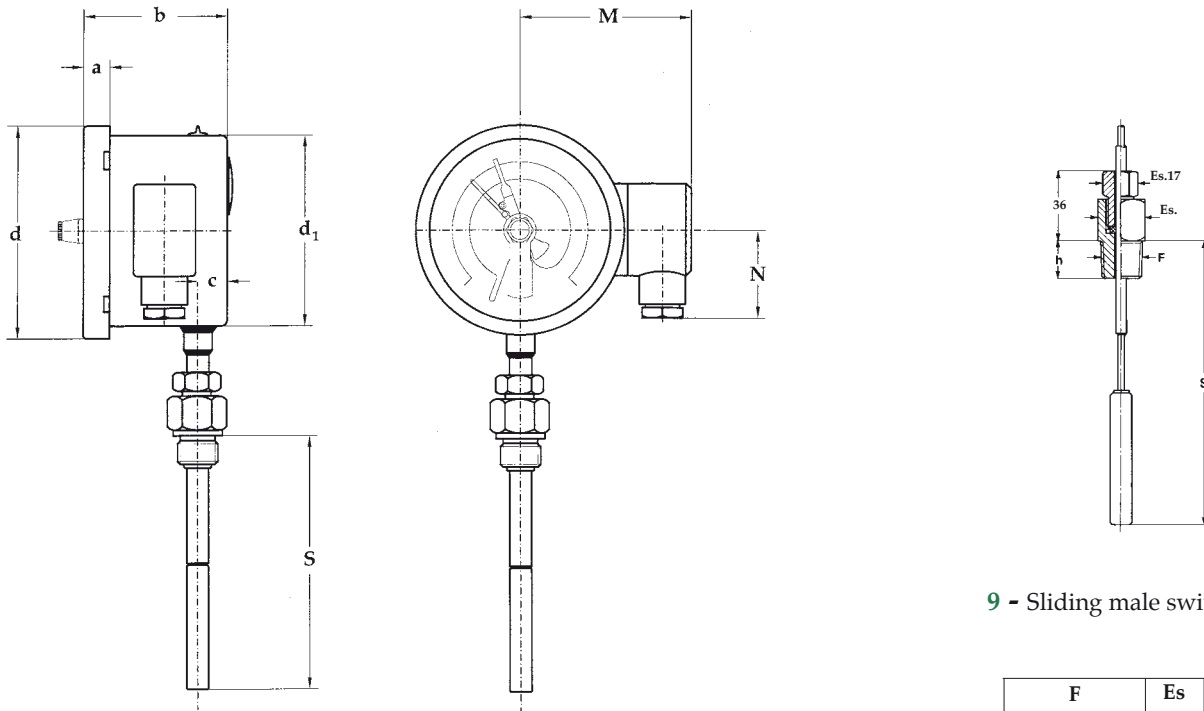
Other features: as Standard Model.

(1) The addition of mechanical electric contacts affects the accuracy of instruments such that 1% becomes 1,5%, 1,6% becomes 2,4% etc. (add the 50% of accuracy; if the contact is of the magnetically assisted type, this value can't be added within the $\pm 5\%$ of setting point).

thermometres with electric contacts
all stainless steel construction, DS 4" (100mm)

TCE

RR2 - 06/13



1 - Lower connection

9 - Sliding male swivel nut

DS	a	b (1)	d	d ₁	M	N
4" (100)	0.51" (13)	2.81/2.85" (71,5/82,5)	4.41" (112)	3.98" (101)	3.54" (90)	1.81" (46)

dimensions : inches (mm)

F	Es	h
41M G 1/2 A	0.87" (22)	0.55" (14)
43M 1/2-14 NPT	0.87" (22)	0.67" (17)
51M G 3/4 A	1.06" (27)	0.63" (16)
53M 3/4-14 NPT	1.06" (27)	0.67" (17)

CONTACT TYPE (1)

MODEL	Standard			Filled		
	Sliding contact, electronic			Magnetic snap-action contact, electronic		
Contact type	Sliding contact, electronic			Magnetic snap-action contact, electronic		
Contact number	1	2	2 independent	1	2	2 independent
Junction box	3 poles + GND	3 poles + GND	6 poles + GND	6 poles + GND	6 poles + GND	6 poles + GND
ø exit cables: inches (mm)	0,23...0,35 (6...9)	0,23...0,35 (6...9)	0,27...0,51 (7...13)	0,27...0,51 (7...13)	0,27...0,51 (7...13)	0,27...0,51 (7...13)
Minimum range	140°F (60°C)	140°F (60°C)	140°F (60°C)	140°F (60°C)	140°F (60°C)	140°F (60°C)

(1) Functional characteristics, electric diagrams and contact types are available on data-sheets :
 "ELECTRIC CONTACTS", "ELECTRONIC CONTACTS"

OPTIONS

R13 - Filling liquid: silicon oil, for temperature range ≤ +500 °F (250 °C)
ATEX version, with intrinsic safety inductive contact (1)

(1) See ATEX data-sheet for technical details

"HOW TO ORDER" SEQUENCE

Section / Model / Mounting / Connection type / Diameter / Range / Process connection / Bulb / Options
6 TCE 1 9 E 41M, 43M 51M, 53M S20...22 R13

bimetallic thermometers : ranges

standard version : DS 2.5", 3", 4", 5" (63-80-100-125 mm)

TB7

Primary °C	
Indication Ranges	Measuring Ranges
-20...+40	-10...+30
0...+60	+10...+50
0...+100	+10...+90
0...+120	+20...+100
0...+160	+20...+140
0...+200	+20...+180
0...+300	+30...+270
0...+400	+50...+350
0...+500	+50...+450

Primary °C (external)		Secondary °F (internal)	
Indication Ranges	Measuring Ranges	Indication Ranges	Measuring Ranges
-20...+40	-10...+30	-4...+104	+14...+86
0...+60	+10...+50	+30...+140	+50...+122
0...+100	+10...+90	+32...+212	+50...+194
0...+120	+20...+100	+32...+250	+68...+212
0...+160	+20...+140	+32...+320	+68...+284
0...+200	+20...+180	+35...+400	+68...+356
0...+300	+30...+270	+35...+570	+86...+518
0...+400	+50...+350	+40...+750	+122...+662
0...+500	+50...+450	0...+930	+122...+842

"all stainless steel" version : DS 4", 5", 6" (100-125-150 mm)

TB8

Primary °C	
Indication Ranges	Measuring Ranges
-50...+50	-40...+40
-30...+50	-20...+40
-20...+120	0...+100
-20...+80	-10...+70
-20...+40	-10...+30
0...+60	+10...+50
0...+80	+10...+70
0...+100	+10...+90
0...+120	+20...+100
0...+160	+20...+140
0...+200	+20...+180
0...+250	+30...+220
0...+300	+30...+270
0...+400	+50...+350
0...+500	+50...+450
0...+600	+100...+500
+50...+450	+100...+400
+100...+500	+150...+450

Primary °F	
Indication Ranges	Measuring Ranges
-80...+120	-60...+100
-20...+120	0...+100
0...+200	+20...+180
0...+250	+30...+220
+50...+400	+100...+350
+50...+550	+100...+500
+200...+700	+250...+650
+100...+800	+200...+700
+200...+1000	+300...+900

Primary °C (external)		Secondary °F (internal)	
Indication Ranges	Measuring Ranges	Indication Ranges	Measuring Ranges
-50...+50	-40...+40	-60...+122	-40...+104
-30...+50	-20...+40	-22...+122	-4...+104
-20...+120	0...+100	-4...+250	+32...+212
0...+60	+10...+50	+30...+140	+50...+122
0...+100	+10...+90	+32...+212	+50...+194
0...+120	+20...+100	+32...+250	+68...+212
0...+160	+20...+140	+32...+320	+68...+284
0...+200	+20...+180	+35...+400	+68...+356
0...+300	+30...+270	+35...+570	+86...+518
0...+400	+50...+350	+40...+750	+122...+662
0...+500	+50...+450	0...+930	+122...+842
0...+600	+100...+500	0...+1110	+212...+932

inert gas filled thermometers : ranges

“all stainless steel” version : DS 4”, 6” (100-150 mm)

TG8

Primary °C	
Indication Ranges	Measuring Ranges
-200...+100	-170...+70
-200...+50	-170...+20
-120...+40	-100...+20
-80...+40	-60...+20
-50...+50	-40...+40
-40...+80	-30...+70
-40...+60	-30...+50
-40...+40	-30...+30
-30...+50	-20...+40
-20...+120	0...+100
-20...+80	-10...+70
-20...+60	-10...+50
-20...+40	-10...+30
0...+60	+10...+50
0...+80	+10...+70
0...+100	+10...+90
0...+120	+20...+100
0...+160	+20...+140
0...+200	+20...+180
0...+250	+30...+220
0...+300	+30...+270
0...+400	+50...+350
0...+500	+50...+450
0...+600	+100...+500
+50...+450	+100...+400
+100...+500	+150...+450

Primary °F	
Indication Ranges	Measuring Ranges
-350...+200	-300...+150
-350...+100	-300...+50
-200...+100	-170...+70
-100...+100	-80...+80
-40...+180	-20...+160
-20...+120	0...+100
0...200	+20...+180
0...250	+30...+220
+50...+300	+70...+270
+50...+400	+100...+350
+50...+550	+100...+500
+100...+800	+200...+700
+200...+700	+250...+650
+200...+1000	+300...+900
+400...+1200	+500...+1100

Primary °C (external)		Secondary °F (internal)	
Indication Ranges	Measuring Ranges	Indication Ranges	Measuring Ranges
-40...+100	-20...+80	-40...+220	-4...+176
-40...+60	-30...+50	-40...+140	-22...+122
0...+60	+10...+50	+30...+140	+50...+122
0...+100	+10...+90	+32...+212	+50...+194
0...+120	+20...+100	+32...+250	+68...+212
0...+160	+20...+140	+32...+320	+68...+284
0...+200	+20...+180	+35...+400	+68...+356
0...+300	+30...+270	+35...+570	+86...+518
0...+400	+50...+350	+40...+750	+122...+662
0...+500	+50...+450	0...+930	+122...+842
+100...+500	+150...+450	+200...+930	+302...+842
0...+600	+100...+500	0...+1110	+212...+932
+200...+600	+250...+550	+400...+1110	+482...+1022



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