

# TSS Thermometers Ø 63 - 80 - 100 - 160 - 250

## Direct reading industrial thermometer

The stainless steel gas expansion thermometer is intended for the following processing industries: Oil, Chemicals, Energy, Agro-Food, Biotechnology and Pharmaceuticals

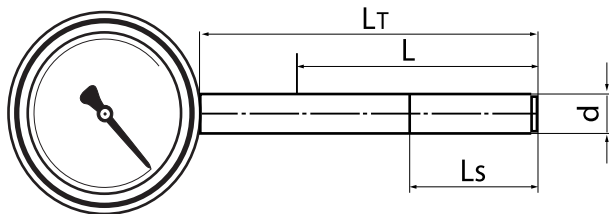


### Specifications (20°C)

<b>Measurement range</b>	-200...800°C
<b>Error limit</b>	class 1 according to EN 13190
<b>Case and sleeve</b>	Stainless steel AISI 304/1.4301 Bayonet closing
<b>Sight glass</b>	4 mm glass Polycarbonate for additional appliance
<b>Movement</b>	brass
<b>Face</b>	white with black graduations DIN 16 109, 16 128 Succession of lines and figures to T0.305
<b>Needle</b>	black aluminium, DIN 16 099
<b>Zero setting</b>	on the side or back of the case
<b>Degree of protection</b>	IP 65 (DIN 40 050)
<b>Plunger</b>	Stainless steel 1.4541
<b>Accessories</b>	unions and thermometer wells, see sheets: B51.01 (AGF/AGW), T6.215 (Ø8), T6.120, T6.220 (Ø14)

### Options

<b>Filling liquid</b>	glycerine standard silicon oil <b>Code 0776</b> ondine ®
<b>Movement stainless steel</b>	<b>Code 0651</b>



$L_s$  = Minimum immersion depth  
 $L$  = immersion depth of the plunger  
 $L_T$  =  $L + 50$  mm

## Order codification

		TSSxxxxxxxxxxxx									
<b>Type</b>	<b>digits 1 ... 4</b>										
Industrial thermometer		TSS									
Industrial thermometer with electrical contact*		TSSE									
<b>Case diameter</b>	<b>digits 5 ... 7</b>										
Ø 63 mm					063						
Ø 80 mm					080						
Ø 100 mm					100						
Ø 160 mm					160						
Ø 250 mm					250						
<b>Case and sleeve</b>	<b>digits 8</b>										
Stainless steel (304) 1.4301						2					
Stainless steel (316L) 1.4401						3					
<b>Mounting type</b>	<b>digits 9</b>										
Without flange							1				
Board mounting, front flange							2				
Wall mounting, 3 lashes							3				
Swiveling							4				
Wall mounting with mounting clamp							5				
Wall mounting with support console							6				
<b>Plunger position</b>	<b>digits 10</b>										
Bottom								1			
Back center								2			
Back excentric**								3			
<b>Plunger diameter</b>	<b>digits 11</b>										
Ø 6 mm									4		
Ø 8 mm									1		
Ø 11 mm									2		
Ø 14 mm									7		
Others									0		
<b>Plunger material</b>	<b>digits 12</b>										
Stainless steel 1.4541										6	
<b>Plunger immersion length (L)</b>	<b>digits 13</b>										
100 mm										2	
160 mm										4	
250 mm										6	
400 mm										7	
600 mm										8	
1000 mm										9	
Others (use Option /9003/LLLL)										0	
<b>Measurement range</b>	<b>digits 14 ... 16</b>										
See table											xxx

\* Only for case Ø 100 and 160 available

\*\* Only in combination with digit 9 code 5 and digit 10 code 3

### To be entered in clear language after codification

Types of connections

Filling liquid

Contacts: Electromechanical, see datasheet B22T4.105

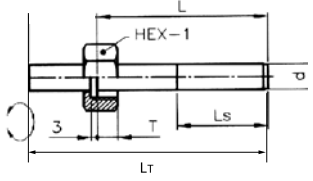
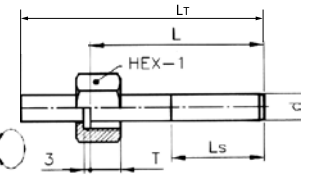
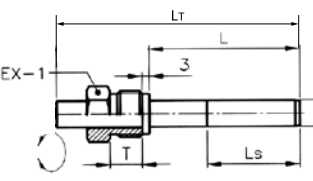
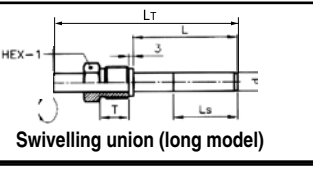
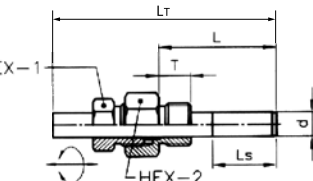
Induction, see datasheet B22T4.110.1

Overall length,  $L_T$  in mm

Code	Measurement ranges in °C	Code	Measurement ranges in °F
69T	-200 ... 50	68U	-100 ... 120
77T	-120 ... 40	09U	-50 ... 120
76T	-100 ... 50	08U	-40 ... 160
74T	-80 ... 40	02U	0 ... 200
68T	-70 ... 50	03U	0 ... 250
50T	-60 ... 40	04U	0 ... 300
65T	-40 ... 40	05U	0 ... 400
55T	-30 ... 170	06U	0 ... 500
51T	-30 ... 70	20U	+30 ... 250
61T	-30 ... 30	13U	+30 ... 320
84T	-20 ... 100	22U	+30 ... 400
54T	-20 ... 60	23U	+30 ... 580
52T	-20 ... 40	15U	+30 ... 750
11T	0 ... 60	28U	+100 ... 800
27T	0 ... 80	29U	+200 ... 1000
12T	0 ... 100		
20T	0 ... 120		
13T	0 ... 160		
22T	0 ... 200		
14T	0 ... 250		
23T	0 ... 300		
15T	0 ... 400		
25T	0 ... 500		
16T	0 ... 600		
82T	0 ... 800		
30T	+100 ... 500		

Code	Measurement ranges in °C / °F
51V	-30 ... 70 / -40 ... 160
68V	-70 ... 50 / -100 ... 100
55V	-30 ... 170 / 0 ... 350
11V	0 ... 60 / 30 ... 140
20V	0 ... 120 / 30 ... 250
13V	0 ... 160 / 30 ... 320
14V	0 ... 250 / 30 ... 500
15V	0 ... 400 / 30 ... 750
16V	0 ... 600 / 100 ... 1100

## Types of capillary tube connection

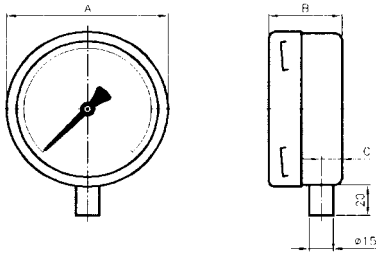
Models	Code	Type of union	HEX-1	HEX-2	T	max. Ø plunger
 <p><b>Rotating nut (standart)</b></p>	731A	1/4 Gas	22	-	7	6 to 8
	731B	3/8 Gas	27	-	9	6 to 11
	731C	1/2 Gas	27	-	9	6 to 15
	731D	3/4 Gas	32	-	9	6 to 20
	731E	1" Gas	41	-	13	6 to 20
	731P	M18x1,5	27	-	8	6 to 12
	731Q	M20x1,5	27	-	9	6 to 14
	731R	M24x1,5	32	-	9	6 to 18
 <p><b>Swivelling union (long model)</b></p>	732C	1/2 Gas	27	-	14	6 to 15
	732D	3/4 Gas	32	-	16	6 to 20
	732E	1" Gas	41	-	18	6 to 20
 <p><b>Swivelling union (long model)</b></p>	733A	1/4 Gas	17	-	12	6 to 8
	733B	3/8 Gas	22	-	12	6 to 11
	733C	1/2 Gas	22	-	14	6 to 15
	733D	3/4 Gas	30	-	16	6 to 20
	733E	1" Gas	36	-	18	6 to 20
	733P	M18x1,5	22	-	12	6 to 12
	733H	1/4 NPT	17	-	14	6 to 8
	733J	1/2 NPT	22	-	20	6 to 15
	733K	3/4 NPT	30	-	20	6 to 20
	733L	1" NPT	36	-	25	6 to 20
	733Q	M20x1,5	22	-	14	6 to 14
733R	M24x1,5	27	-	14	6 to 18	
 <p><b>Swivelling union (long model)</b></p>	734C	1/2 Gas	22	-	20	6 to 15
	734D	3/4 Gas	30	-	20	6 to 20
	734E	1" Gas	36	-	25	6 to 20
 <p><b>Sliding union on plunger</b></p>	738A	1/4 Gas	22	27	12	6 to 8
	738B	3/8 Gas	22	27	12	6 to 11
	738C	1/2 Gas	22	27	14	6 to 15
	738D	3/4 Gas	22	32	16	6 to 20
	738E	1" Gas	22	36	18	6 to 20
	738H	1/4 NPT	22	27	14	6 to 8
	738J	1/2 NPT	22	27	20	6 to 15
	738K	3/4 NPT	22	27	20	6 to 20
	738L	1" NPT	22	36	25	6 to 20
	738P	M18x1,5	22	27	12	126 to
	738Q	M20x1,5	22	27	14	6 to 14
738R	M24x1,5	22	27	14	6 to 18	

Note: minimum immersion length:

Ls for Ø 8 = 85 mm

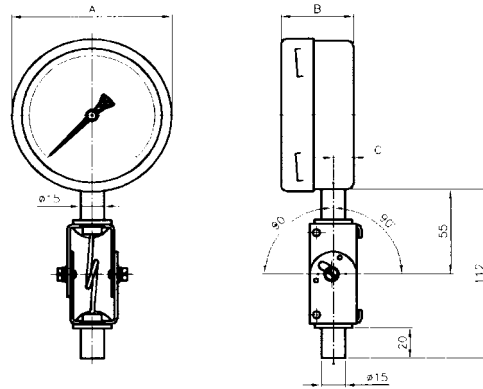
Ls for Ø 14 = 50 mm

**Type D (Code 11)**



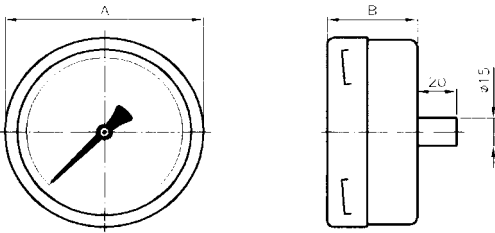
DIAMETER	DIMENSIONS in mm		
	A	B	C
63	63	38	13
80	83	37	13
100	101	45	13
160	161	45	13
250	252	55	13

**Type D Swivelling (Code 41)**



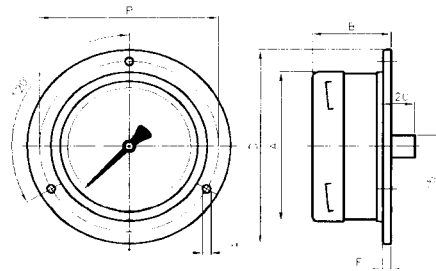
DIAMETER	DIMENSIONS in mm		
	A	B	C
63	63	38	13
80	83	37	13
100	101	45	13
160	161	45	13
250	252	55	13

**Type F (Code 12)**



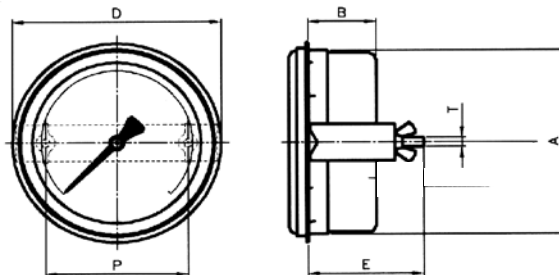
DIAMETER	DIMENSIONS in mm	
	A	B
63	65	38
80	83	37
100	101	45
160	161	45
250	252	55

**Type E (Code 32)**



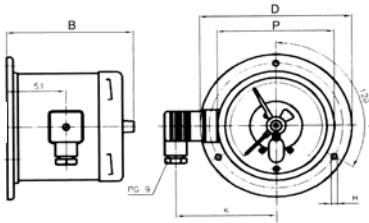
DIAMETER	DIMENSIONS in mm					
	A	B	D	F	H	P
63	65	41	86	5	3,5	75
80	83	40	110	5	4	95
100	101	51	132	5	5,5	116
160	161	51	196	5	6	178
250	252	57	285	2	6	270

**Type G (Code 53)**



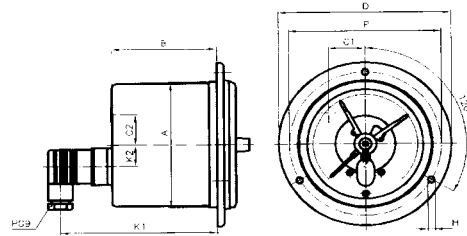
DIAMETER	DIMENSIONS in mm						
	A	B	C	D	E	P	T
63*	65	30	20**	70	50	33	M5
80	83	35	25	95	55	59	M5
100	101	35	20	112	60	75	M5
160	161	35	20	180	60	139	M5
250+	252	45	0	270	70	+	M5

**Type E (Code 32)**



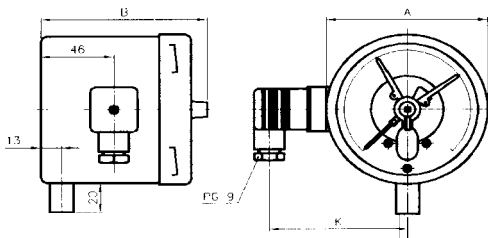
DIAMETER	DIMENSIONS in mm					
	A	B	D	H	P	K
100	101	110	132	5.5	116	92
160	161	114	196	6	178	122

**Type B (Code 22)**



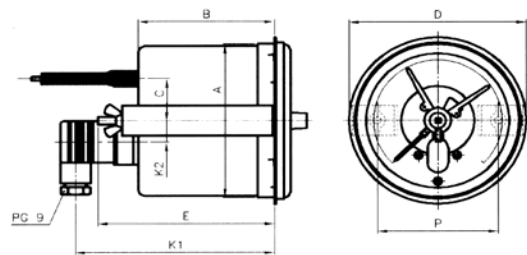
DIAMETER	DIMENSIONS in mm									
	A	B	C1	C2	D	H	P	K1	K2	
100	101	80	26	10	101	5.5	116	123	15	
160	161	83	0	0	196	6	178	126	0*	

**Type D (Code 11)**



DIAMETER	DIMENSIONS in mm		
	A	B	K
100	101	104	92
160	161	108	122

**Type G (Code 53)**



DIAMETER	DIMENSIONS in mm							
	A	B	C	D	E	P	K1	K2
100	101	84	25	112	109	75	128	15
160*	161	88	0	180	113	139	131	54**

\* U-Clamp, fitted vertically  
 \*\* 54 mm, on the right (front view)

## Equivalence table: mounting types

	Mounting type (7' digits)		Plunger position (8' digits)	
A =>	3	Wall mounting, rear flange	1	Bottom outlet
B =>	2	Board mounting, front flange	2	Rear outlet
C =>	2	Board mounting, front flange	1	Bottom outlet
D =>	1	Without flange	1	Bottom outlet
E =>	3	Wall mounting, rear flange	2	Rear outlet
F =>	1	Without flange	2	Rear outlet
G =>	5	Board mounting with mounting clamp	3	Rear outlet with clamp
H =>	6	Wall mounting with support console	1	Bottom outlet

Beispiel für die Entsprechungen: Typ A = Code 31 (Ziffer 7 und 8)