

Gas filled // Version for diesel engines // with capillary line



Type 331 KL

Your advantages

Type	311 WH / 321 TA / 332 TE / 331 KL
	• Suitable for outdoor use - closed system (IP65) • Completely stainless steel - high-quality version • Without electrical auxiliary power

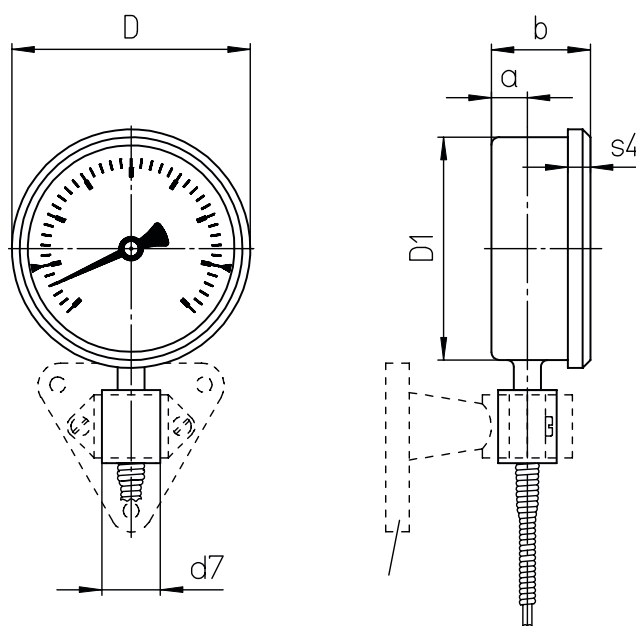
Technical data

Type	311 WH	321 TA	332 TE	331 KL
Version	With wall bracket	Rear mounting flange	Front mounting flange	With U bracket
Nominal size	Ø 80 or 100 mm			
Display ranges according to EN 13190	0...100 °C 0...120 °C 0...160 °C 0...250 °C 50...650 °C			
Accuracy according to EN 13190	Class 1			
Medium / Application area	Liquid and gaseous media			
Capillary line connection	Bottom		Central back	
Immersion tube length	Between 100...400 mm			
Immersion tube diameter	Ø 12 mm			
Capillary line	with Stainless steel-spiral protection, 1...15 m Length			
Process connection	Connection types: A, AK			
Nominal pressure	Max. 25 bar			
Measuring system	Nitrogen filled			
Degree of protection according to EN 60529	IP65			
Medium temperature	See selected display range			
Ambient temperature	-20...60 °C (only indoors)			
Storage temperature	-40...60 °C			
Nominal service temperature (EN 13190)	23 °C ±2 °C			
Approvals				
				

Options

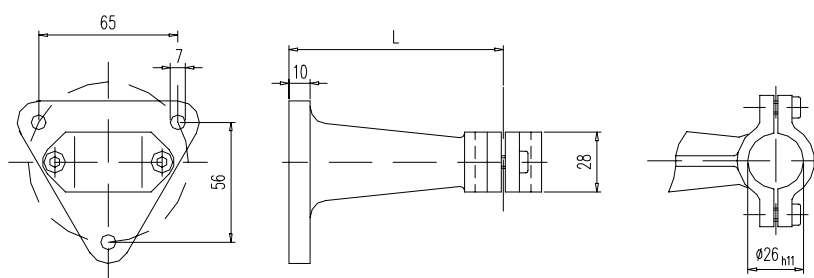
For type	On request
311 WH / 321 TA / 332 TE / 331 KL	Other immersion tube diameter and connection types. Other display ranges and / or special scales, e.g. double scale °C / °F. Capillary line > 15 m

Type 311 WH with wall bracket



Dimensions [mm]							Weight [kg]
NS	a	b	D	D1	d7	s4	filled
80	15	42	86	79	26	8	0.60
100	15	43	106	99	26	10	0.78

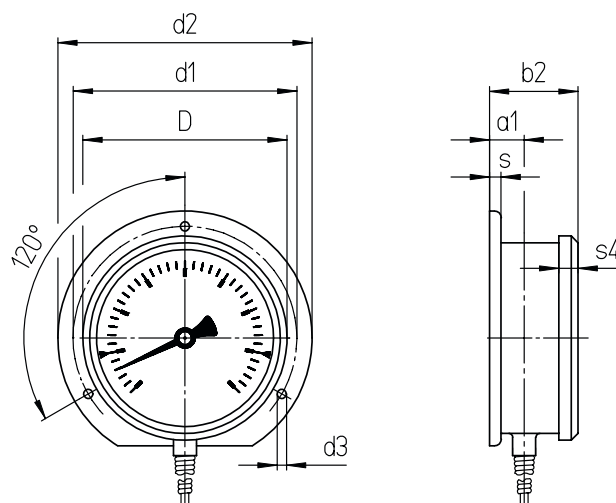
This information is provided as an example and relates to the version with connection type A, Ø 10 mm, and immersion tube length 200 mm and capillary 1 m.



Wall bracket compliant with DIN 16 281

Material	Surface finish	L	Form
Aluminium	Black painted	100	H

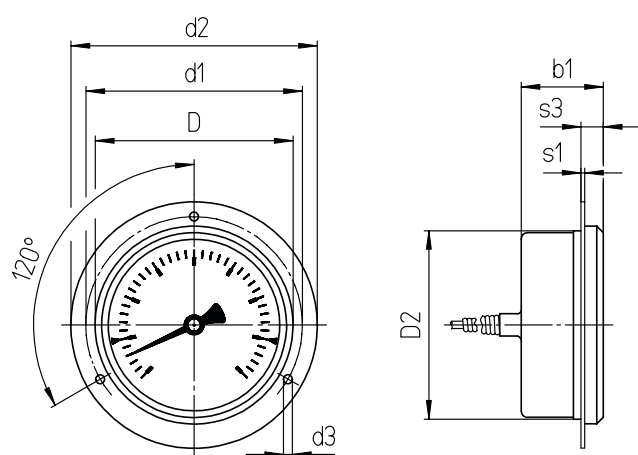
Type 321 TA rear mounting flange



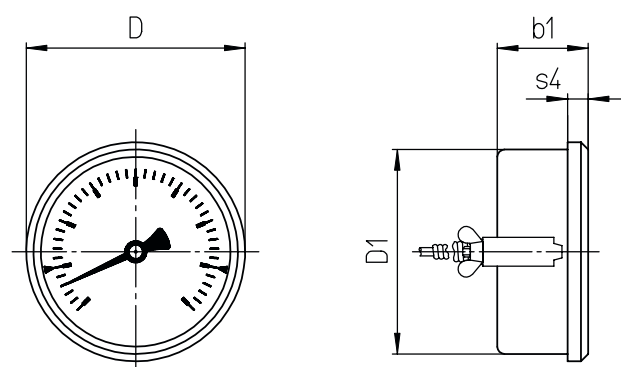
Dimensions [mm]									Weight [kg]
NS	a1	b2	D	d1	d2	d3	s	s4	filled
80	18	45	86	95	110	4.8	5	8	0.60
100	18,5	46.5	106	116	132	4.8	6	10	0.78

This information is provided as an example and relates to the version with connection type A, Ø 10 mm, and immersion tube length 200 mm and capillary 1 m.

Type 332 TE front mounting flange



Type 331 KL with U bracket



Dimensions [mm]											Weight [kg]
NS	b1	D	D1	D2	d1	d2	d3	s1	s3	s4	filled
80	42	86	79	81	95	110	4.8	1	9	8	0.60
100	43	106	99	101	116	132	4.8	1	11.5	10	0.78

This information is provided as an example and relates to the version with connection type A, Ø 10 mm, and immersion tube length 200 mm and capillary length 1 m.

Material	
Housing	Crimped-on ring, Stainless steel 1.4301, filled with silicone oil
Window	Instrument glass
Pointer movement	German silver / brass
Dial	Aluminium white with black scale markings Aluminium silver with black scale markings (Display range 50...650 °C)
Pointer	Aluminium black
Capillary line	Stainless steel 1.4571
Material in contact with medium	
Process connection	Stainless steel 1.4571
Immersion tube	Stainless steel 1.4571

Standard connection types // Immersion tube // for type 311 to 332

Connection type A

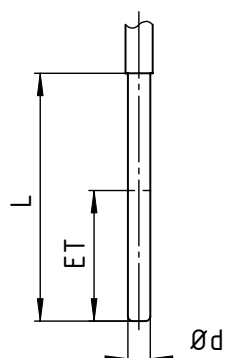
Plain immersion tube, universally usable.

Connection type AK [mm]

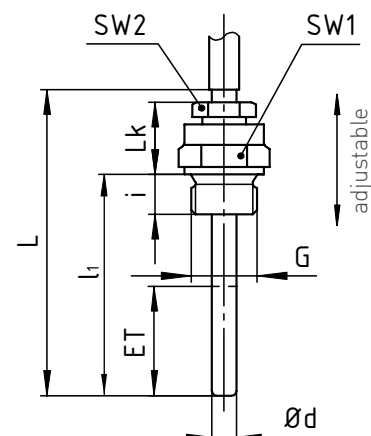
With adjustable compression fitting,
for direct installation or use with protection tubes

G	SW1	SW2	i	Lk
G½ B	27	22	14	42
G¾ B	32	22	16	42
½ NPT	27	22	19	42
¾ NPT	27	22	19	42
M20 x 1.5	27	22	14	42

Connection type A



Connection type AK



Connection type	Capillary line length incl. sensor ≤ 5m		Capillary line length incl. sensor > 5m	
	Length ET	Lmin	Length ET	Lmin
A	80	150	120	175
AK	80	150	120	175

The minimum length Lmin / l1min of the immersion tube is the shortest possible immersion tube length for a given active length ET (bulb) and connection type.
The active length ET of the immersion tube (bulb) must be fully immersed in the substance to be measured in order to obtain measurements corresponding to the stated accuracy class.

Order code																
Thermometer version																
With wall bracket	Z	311														
With Rear mounting flange	Z	321														
With Front mounting flange	Z	331														
With U bracket	Z	332														
Nominal size			B2	C2												
80 mm																
100 mm																
Display range			10	12							16	25	56			
0...100 °C																
0...120 °C																
0...160 °C																
0...250 °C																
50...650 °C																
Immersion tube length l ₁	Nominal length L = l ₁ + 45 mm		100	135	160	200	250	300	400							
100 mm	145 mm															
135 mm	180 mm															
160 mm	205 mm															
200 mm	245 mm															
250 mm	295 mm															
300 mm	345 mm															
400 mm	445 mm															
Connection type			1	9												
Connection type A, Plain immersion tube																
Connection type AK, adjustable compression fitting																
Process connection			0	2							3	B	C	7		
Without - Plain immersion tube																
G½																
G¾																
½ NPT																
¾ NPT																
M20 x 1.5																
Immersion tube diameter			Ø 12 mm													
Capillary line length			1	3	5	—										
1 m																
3 m																
5 m																
Other length (choose in meters)																
Capillary line material and protection			C													
Stainless steel, stainless steel-spiral protection																
Example order number	Z	311	B2	10	100	1	0	2	1	C						