

Bimetal thermometer

For the process industry per EN 13190, premium version

Model 55

WIKA data sheet TM 55.01



for further approvals
see page 7

Applications

- General process instrumentation in the chemical and petrochemical industries, oil and gas industries, energy and water/wastewater industries
- Temperature measurement in harsh and aggressive environments

Special features

- Scale ranges from -70 ... +600 °C
- For extreme ambient temperatures
- Maintenance-friendly bayonet case
- All stainless steel construction
- Individual stem length from 63 ... 1,000 mm

Description

The model 55 bimetal thermometer has been developed and is manufactured in accordance with the EN 13190 standard. The high-quality thermometer has been designed especially for the requirements of the process industry. Especially in the chemical and petrochemical, oil and gas, and power engineering industries, the temperature measuring instrument completely manufactured from stainless steel is used successfully.

The model 55 satisfies the high requirements for resistance against aggressive media. As an option, the case can be made from 316L to fulfil the highest requirements.



Fig. left: Bimetal thermometer, model R5502

Fig. right: Bimetal thermometer, adjustable stem and dial, model S5550

To allow optimum fitting to the process, individual insertion lengths and different process connections can be selected.

When it comes to harsh climatic conditions at the place of use, the model 55 is the right choice, as it can be used at temperatures ranging from -40 °C to +70 °C (optional also up to -50 °C or -70 °C).

Specifications

Bimetal thermometer, model 55	
Measuring element	Bimetal coil
Nominal size in mm	<ul style="list-style-type: none"> ■ 63 ■ 100 ■ 160
Connection location	<ul style="list-style-type: none"> ■ A5525 NS 63 Back mount (axial) ■ A5500 NS 100 Back mount (axial) ■ A5501 NS 160 Back mount (axial) ■ R5526 NS 63 Lower mount (radial) ■ R5502 NS 100 Lower mount (radial) ■ R5503 NS 160 Lower mount (radial) ■ S5550 NS 100 Back mount, adjustable stem and dial ■ S5551 NS 160 Back mount, adjustable stem and dial
Connection design	<ul style="list-style-type: none"> ■ S, standard (male threaded connection) ■ 1, plain stem (without thread) ■ 2, male nut ■ 3, union nut ■ 4, compression fitting (sliding on stem) ■ 5, union nut and loose threaded connection
Unit (scale range)	°C Option: <ul style="list-style-type: none"> ■ °F ■ °C/°F (dual scale) ■ °F/°C (dual scale)
Process connection	<ul style="list-style-type: none"> ■ Plain, without thread ■ G ½ B ■ ½ NPT ■ G ½ female ■ ½ NPT female ■ M20 x 1.5 ■ M24 x 1.5 female others on request
Accuracy class	Class 1 per EN 13190
Working range	
Continuous load (1 year)	Measuring range (EN 13190)
Short time (max. 24 h)	Scale range (EN 13190)
Stem diameter	8 mm Option: <ul style="list-style-type: none"> ■ 6 mm ■ 10 mm ■ 12 mm
Insertion length L ₁	63 ... 1,000 mm Minimum/maximum length is dependent on the measuring range and diameter (see tables from page 4)
Window	Instrument glass NS 63: window from polycarbonate Option: Laminated safety glass, clear non-splintering plastic
Zero adjustment (option)	On case back side, external only for adjustable stem and dial
Damping	Without Option: With silicone oil case filling, up to max. 250 °C (at the probe)
Wetted materials	
Stem, process connection	Stainless steel 316SS
Non-wetted materials	
Case, bayonet ring	Stainless steel 304SS (option: stainless steel 316L)
Dial	Aluminium white, black lettering
Pointer	Aluminium, black, micro adjustable pointer

Bimetal thermometer, model 55	
Ingress protection per IEC/EN 60529	IP65 Option: ■ IP66 ■ IP67
Permissible temperatures	
Ambient (at the case)	-40 ... +70 °C (with/without filling liquid) Option: ■ -50 ... +70 °C ■ -70 ... +60 °C
Storage and transport	-50 ... +70 °C
Permissible operating pressure at the stem	max. 25 bar, static

Scale and measuring ranges ¹⁾ (EN 13190)

Scale graduation per WIKA standard

Scale range in °C	Measuring range ¹⁾ in °C	Scale spacing in °C
-70 ... +70	-50 ... +50	2
-70 ... +30	-60 ... +20	1
-50 ... +50	-40 ... +40	1
-50 ... +100	-30 ... +80	2
-50 ... +300	0 ... 250	5
-50 ... +500	0 ... 450	5
-40 ... +60	-30 ... +50	1
-40 ... +80	-20 ... +60	2
-40 ... +160	-20 ... +140	2
-30 ... +50	-20 ... +40	1
-30 ... +70	-20 ... +60	1
-20 ... +60	-10 ... +50	1
-20 ... +80	-10 ... +70	1
-20 ... +100	0 ... 80	2
-20 ... +120	0 ... 100	2
-20 ... +140	0 ... 120	2
-10 ... +50	0 ... 40	1
0 ... 60	10 ... 50	1
0 ... 80	10 ... 70	1
0 ... 100	10 ... 90	1
0 ... 120	10 ... 110	2
0 ... 150	20 ... 130	2
0 ... 160	20 ... 140	2
0 ... 200	20 ... 180	2
0 ... 250	30 ... 220	2
0 ... 300	30 ... 270	5
0 ... 400	50 ... 350	5
0 ... 500	50 ... 450	5
0 ... 600	100 ... 500	5

Scale range in °F	Measuring range ¹⁾ in °F	Scale spacing in °F
-80 ... +120	-40 ... +100	2
-80 ... +240	-50 ... +210	2
-20 ... +120	0 ... 100	2
0 ... 200	20 ... 180	2
0 ... 250	30 ... 220	2
30 ... 300	60 ... 270	5
30 ... 400	80 ... 350	5
50 ... 300	80 ... 270	5
50 ... 400	100 ... 350	5
100 ... 800	200 ... 700	5
200 ... 700	250 ... 650	5
200 ... 1.000	300 ... 900	5

¹⁾ The measuring range is indicated on the dial by two triangular marks.
Only within this range is the stated error limit valid per EN 13190.

Minimum insertion lengths in mm

■ Model A55 (back mount)

Scale range in °C

Design	1 and 2			3, 4, 5 and S		
	6	8	≥ 10	6	8	≥ 10
Scale range in °C						
-70 ... +70	63	63	63	69	63	64
-70 ... +30	63	63	63	82	69	73
-50 ... +50	63	63	63	80	68	73
-50 ... +100	63	63	63	69	63	63
-50 ... +200	63	63	63	78	69	67
-50 ... +300	119	119	119	119	119	119
-50 ... +400	119	119	119	119	119	119
-50 ... +500	119	119	119	119	119	119
-40 ... +40	79	65	63	98	79	79
-40 ... +60	65	63	63	79	72	73
-40 ... +80	63	63	63	80	68	69
-40 ... +160	63	63	63	67	63	63
-30 ... +30	90	72	80	109	91	99
-30 ... +50	69	63	63	88	75	81
-30 ... +70	65	63	63	79	72	71
-20 ... +40	88	70	80	107	89	99
-20 ... +60	68	63	63	87	74	78
-20 ... +80	63	63	63	78	66	68
-20 ... +100	63	63	63	71	63	66
-20 ... +120	63	63	63	67	63	63
-20 ... +140	63	63	63	66	63	63
-10 ... +50	88	70	80	107	89	89
0 ... 60	77	70	80	96	89	89
0 ... 80	68	63	63	87	74	78
0 ... 100	63	63	63	72	63	67
0 ... 120	63	63	63	69	63	64
0 ... 150	63	63	63	66	63	63
0 ... 160	63	63	63	63	63	63
0 ... 200	63	63	63	63	63	63
0 ... 250	63	63	63	73	69	68
0 ... 300	119	119	119	119	119	119
0 ... 400	119	119	119	119	119	119
0 ... 500	119	119	119	119	119	119
0 ... 600	119	119	119	119	119	119

Scale range in °F

Design	1 and 2			3, 4, 5 and S		
	6	8	≥ 10	6	8	≥ 10
Scale range in °F						
-100 ... +150	68	63	63	87	76	69
-80 ... +120	63	63	63	82	69	81
-80 ... +240	63	63	63	81	71	67
-40 ... +120	75	63	63	94	81	75
-20 ... +120	71	63	65	90	75	79
0 ... 140	68	63	63	87	74	78
0 ... 200	63	63	63	72	63	69
0 ... 250	63	63	63	66	63	69
30 ... 300	63	63	63	66	63	63
30 ... 400	63	63	63	63	63	63
50 ... 300	63	63	63	65	63	63
50 ... 400	63	63	63	63	63	63
100 ... 800	119	119	119	119	119	119
150 ... 750	119	119	119	119	119	119
200 ... 700	119	119	119	119	119	119
200 ... 1.000	119	119	119	119	119	119

■ Model R55 (lower mount)

Scale range in °C

Design	1 and 2			3, 4, 5 and S		
	6	8	≥ 10	6	8	≥ 10
Stem diameter in mm	6	8	≥ 10	6	8	≥ 10
Scale range in °C						
-70 ... +70	63	63	63	79	68	65
-70 ... +30	68	63	63	87	69	75
-50 ... +50	63	63	63	82	72	72
-50 ... +100	63	63	63	73	64	63
-50 ... +200	63	63	63	69	63	63
-50 ... +300	119	119	119	119	119	119
-50 ... +400	119	119	119	119	119	119
-50 ... +500	119	119	119	119	119	119
-40 ... +40	72	63	63	91	82	75
-40 ... +60	63	63	63	81	71	71
-40 ... +80	63	63	63	78	69	69
-40 ... +160	63	63	63	75	64	64
-30 ... +30	87	72	72	106	91	91
-30 ... +50	68	63	63	87	75	75
-30 ... +70	63	63	63	81	71	71
-20 ... +40	85	68	68	104	87	87
-20 ... +60	67	63	63	87	74	74
-20 ... +80	63	63	63	78	67	67
-20 ... +100	63	63	63	74	65	65
-20 ... +120	63	63	63	73	64	64
-20 ... +140	63	63	63	74	64	67
-10 ... +50	85	68	68	104	87	87
0 ... 60	77	67	67	96	86	86
0 ... 80	67	63	63	86	74	74
0 ... 100	63	63	63	78	67	67
0 ... 120	63	63	63	73	65	65
0 ... 150	63	63	63	73	64	64
0 ... 160	63	63	63	74	67	67
0 ... 200	63	63	63	73	63	63
0 ... 250	63	63	63	82	72	72
0 ... 300	119	119	119	119	119	119
0 ... 400	119	119	119	119	119	119
0 ... 500	119	119	119	119	119	119
0 ... 600	119	119	119	119	119	119

Scale range in °F

Design	1 and 2			3, 4, 5 and S		
	6	8	≥ 10	6	8	≥ 10
Stem diameter in mm	6	8	≥ 10	6	8	≥ 10
Scale range in °F						
-100 ... +150	75	63	63	94	80	80
-80 ... +120	68	63	63	87	75	75
-80 ... +240	63	63	63	81	71	71
-40 ... +120	71	63	63	90	79	79
-20 ... +120	69	63	63	88	76	74
0 ... 140	67	63	63	86	74	74
0 ... 200	63	63	63	75	66	66
0 ... 250	63	63	63	74	65	65
30 ... 300	63	63	63	74	66	66
30 ... 400	63	63	63	73	63	63
50 ... 300	63	63	63	74	64	64
50 ... 400	63	63	63	75	63	63
100 ... 800	119	119	119	119	119	119
150 ... 750	119	119	119	119	119	119
200 ... 700	119	119	119	119	119	119
200 ... 1.000	119	119	119	119	119	119

■ Model S55 (back mount, adjustable stem and dial)








Scale range in °C

Design	1 and 2			3, 4, 5 and S		
	Stem diameter in mm	6	8	≥ 10	6	8
Scale range in °C						
-70 ... +70	63	63	63	78	67	63
-70 ... +30	75	63	63	94	80	80
-50 ... +50	67	63	63	86	78	78
-50 ... +100	66	63	63	85	76	68
-50 ... +200	67	63	63	86	78	67
-50 ... +300	119	119	119	119	119	119
-50 ... +400	119	119	119	119	119	119
-50 ... +500	119	119	119	119	119	119
-40 ... +40	90	74	63	109	93	74
-40 ... +60	67	63	63	86	78	78
-40 ... +80	63	63	63	80	70	70
-40 ... +160	63	63	63	67	63	63
-30 ... +30	101	77	77	120	96	96
-30 ... +50	78	66	66	96	85	85
-30 ... +70	72	63	63	91	80	80
-20 ... +40	99	80	80	118	99	99
-20 ... +60	77	65	65	96	79	79
-20 ... +80	66	63	63	85	74	74
-20 ... +100	63	63	63	76	68	68
-20 ... +120	63	63	63	73	66	66
-20 ... +140	63	63	63	71	64	64
-10 ... +50	99	80	80	118	99	99
0 ... 60	94	75	74	113	94	94
0 ... 80	77	65	65	96	79	79
0 ... 100	63	63	63	82	73	73
0 ... 120	63	63	63	75	67	67
0 ... 150	63	63	63	71	64	64
0 ... 160	63	63	63	66	63	63
0 ... 200	63	63	63	63	63	63
0 ... 250	66	63	63	85	73	73
0 ... 300	119	119	119	119	119	119
0 ... 400	119	119	119	119	119	119
0 ... 500	119	119	119	119	119	119
0 ... 600	119	119	119	119	119	119

Scale range in °F

Design	1 and 2			3, 4, 5 and S		
	Stem diameter in mm	6	8	≥ 10	6	8
Scale range in °F						
-100 ... +150	71	63	63	90	80	74
-80 ... +120	81	66	66	100	85	85
-80 ... +240	63	63	63	81	71	71
-40 ... +120	85	72	66	104	91	85
-20 ... +120	74	63	65	93	75	79
0 ... 140	77	65	65	96	79	79
0 ... 200	63	63	63	73	65	69
0 ... 250	63	63	63	72	64	64
30 ... 300	63	63	63	73	65	65
30 ... 400	63	63	63	64	63	63
50 ... 300	63	63	63	74	66	66
50 ... 400	63	63	63	65	63	63
100 ... 800	119	119	119	119	119	119
150 ... 750	119	119	119	119	119	119
200 ... 700	119	119	119	119	119	119
200 ... 1.000	119	119	119	119	119	119

Approvals

Logo	Description	Country
	EU declaration of conformity ATEX directive (option) Hazardous areas	European Union
	EAC (option) ■ Electromagnetic compatibility ■ Low voltage directive ■ Hazardous areas	Eurasian Economic Community
	GOST (option) Metrology, measurement technology	Russia
	KazInMetr (option) Metrology, measurement technology	Kazakhstan
-	MTSCHS (option) Permission for commissioning	Kazakhstan
	BelGIM (option) Metrology, measurement technology	Belarus
	UkrSEPRO (Option) Metrology, measurement technology	Ukraine
	Uzstandard (option) Metrology, measurement technology	Uzbekistan
-	CRN (option) Safety (e.g. electr. safety, overpressure, ...)	Canada

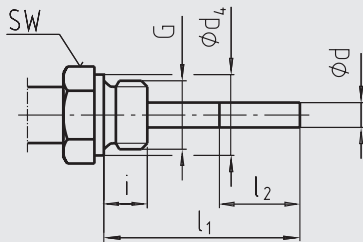
Certificates (options)

- 2.2 test report
- 3.1 inspection certificate
- DKD/DAkkS calibration certificate

Approvals and certificates, see website

Connection designs

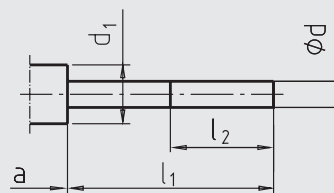
Standard design (male threaded connection)



Connection, male: G ½ B, G ¾ B, ½ NPT, ¾ NPT
Standard insertion length $l_1 = 63, 100, 160, 200, 250$ mm

Nominal size	Process connection		Dimensions in mm		
	G	i	SW	d_4	$\varnothing d$
NS 63, 100, 160	G ½ B	14	27	26	8
	G ¾ B	16	32	32	8
	½ NPT	19	22	-	8
	¾ NPT	20	30	-	8

Design 1, plain stem (without thread)

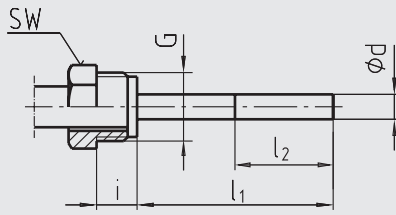


Standard insertion length $l_1 = 140, 200, 240, 290$ mm
Basis for design 4, compression fitting

Nominal size	Dimensions in mm			
	d_1	$\varnothing d$	a for axial	a for adjustable stem and dial
NS				
63	14	8	15	25
100, 160	18	8	15	25

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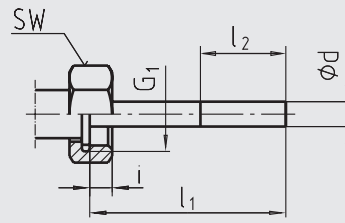
Design 2, male nut



Standard insertion length $l_1 = 80, 140, 180, 230$ mm
 Non-sealed process connection, thus use with thermowell.

Nominal size	Process connection		Dimensions in mm		
	G	i	SW	Ø d	
63, 100, 160	G ½ B	20	27	8	

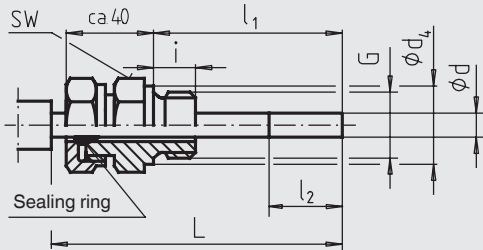
Design 3, union nut



Standard insertion length $l_1 = 89, 126, 186, 226, 276$ mm

Nominal size	Process connection		Dimensions in mm		
	G	i	SW	Ø d	
63, 100, 160	G ½ B	8.5	27	8	
	G ¾ B	10.5	32	8	
	M24 x 1.5	13.5	32	8	

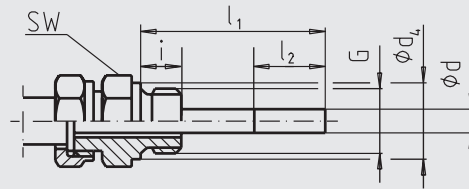
Design 4, compression fitting (sliding on stem)



Standard insertion length $l_1 = 63, 100, 160, 200, 250$ mm
 Length $L = l_1 + 40$ mm

Nominal size	Process connection		Dimensions in mm			
	G	i	SW	d ₄	Ø d	
63, 100, 160	G ½ B	14	27	26	8	
	G ¾ B	16	32	32	8	
	M18 x 1.5	12	24	23	8	
	½ NPT	19	22	-	8	
	¾ NPT	20	30	-	8	

Design 5, union nut and loose threaded connection



G ½ B, G ¾ B, M18 x 1.5 and ½ NPT, ¾ NPT
 Minimum immersion depth l_{min} approx. 60 mm
 Insertion length $l_1 =$ variable
 Length $L = l_1 + 40$ mm
 Stainless steel 1.4571

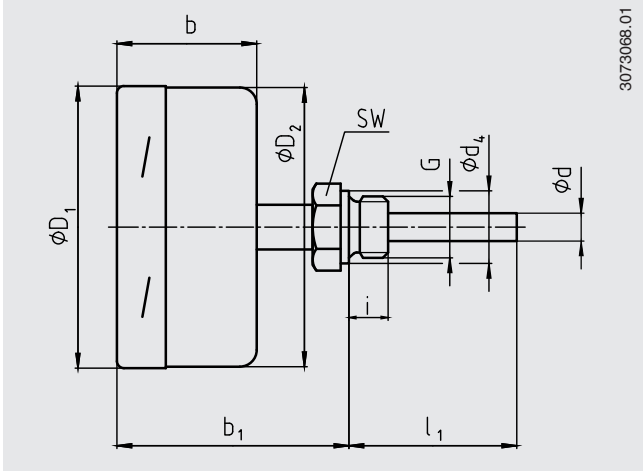
Nominal size	Process connection		Dimensions in mm			
	G	i	SW	d ₄	Ø d	
63, 100, 160	G ½ B	14	27	26	8	
	G ¾ B	16	32	32	8	
	M18 x 1.5	12	24	23	8	
	½ NPT	19	22	-	8	
	¾ NPT	20	30	-	8	

Legend:

- G Male thread
- G₁ Female thread
- i Thread length (incl. collar)
- a Distance to the case/articulated joint
- Ø d₄ Diameter of the sealing collar
- SW Spanner width
- Ø d Stem diameter
- l₁ Insertion length
- l₂ Active length

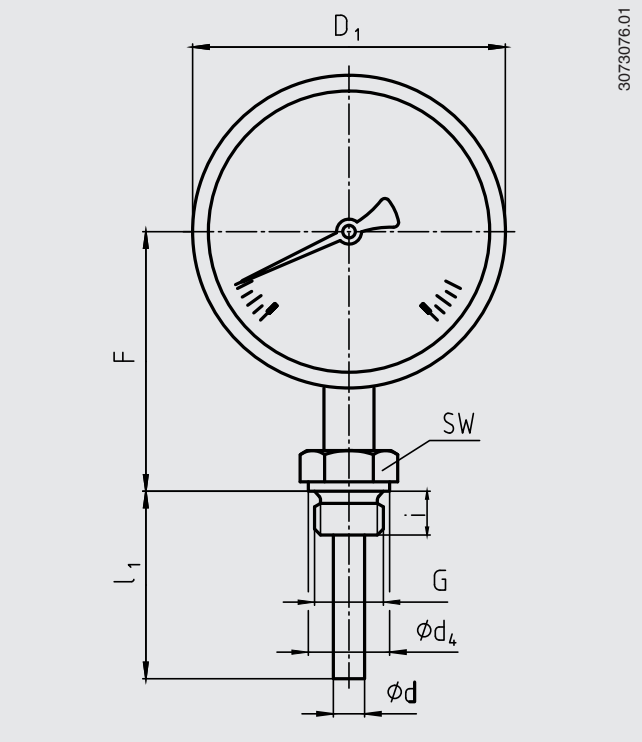
Dimensions in mm

Back mount (BM)



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Lower mount (LM)

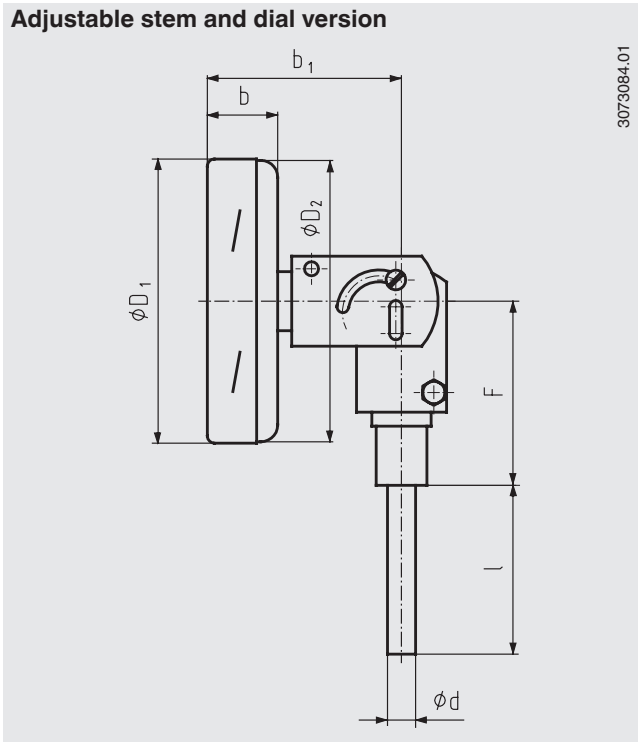


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NS	Dimensions in mm									Weight in kg	
	b	b ₁ ¹⁾	d ²⁾	d ₄	Ø D ₁	Ø D ₂	F ¹⁾	G	SW	Model A55xx	Model R55xx
63	35	60	8	26	64	62	57	G ½ B	27	0.25	0.25
100	50	83	8	26	101	99	83	G ½ B	27	0.8	0.8
160	50	83	8	26	161	159	113	G ½ B	27	1.1	1.1

1) With scale ranges ≥ 0 ... 300 °C the dimensions increase by 40 mm
 2) Option: stem Ø 6, 10, 12 mm

Adjustable stem and dial version



NS	Dimensions in mm						Weight in kg
	b	b ₁	d ¹⁾	Ø D ₁	Ø D ₂	F	Model S55xx
100	25	68	8	101	99	68	0.5
160	25	68	8	161	159	68	0.7

1) Option: stem Ø 6, 10, 12 mm

Thermowell

In principle, the operation of a mechanical thermometer without a thermowell with low process-side loading (low pressure, low viscosity and low flow velocities) is possible.

However, in order to enable exchanging the thermometer during operation (e.g. instrument replacement or calibration) and to ensure a better protection of the instrument and also the plant and the environment, it is advisable to use a thermowell from the extensive WIKA thermowell portfolio.

For further information on the calculation of the thermowell, see Technical information IN 00.15.

Ordering information

Model / Nominal size / Scale range / Connection size / Connection location / Options

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