

Bimetal Thermometers Heavy Duty Series, Model 54

WIKA Data Sheet TM 54.01



Applications

- Plant, machinery, tank and apparatus construction
- Facility management
- With liquid damping also suitable for applications with extreme vibrations
- Twin-Temp combined bimetal thermometer with local readout and electrical output signal

Special Features

- Universal application
- Case and stem of stainless steel
- Bimetal with zero-point adjustment on the rear of the case
- Twin-Temp: Two independent measuring systems in one instrument (bimetal and Pt100)
- Approval Germanischer Lloyd (with feature liquid damping, version axial or radial)

Description

This series of thermometers is designed for installation in pipes, tanks, plants and machinery. The Twin-Temp combined bimetal thermometer is also suitable for heating systems.

The stem and the case of the instrument are made from stainless steel. Various insertion lengths and process connections are available to optimally match the requirements of each process. Due to their high ingress protection (IP 65) and liquid damping these thermometers can be used in applications with extreme vibrations.

The Twin-Temp combined bimetal thermometer offers two measuring systems in one instrument. A bimetal thermometer displays the measured values on site, while the integrated Pt100 resistance sensor provides an electrical signal for further processing.



Fig. above: Bimetal Thermometer Model A5402
Fig. center: Bimetal Thermometer, Adjustable Stem and Dial Model S5412
Fig. below: Twin-Temp Combined Bimetal Thermometer Model R5462

Standard version

Temperature element

Bimetal helix (and Pt100 with Twin-Temp)

Nominal sizes in mm

63, 80, 100, 160

Design of connection

- S Standard (male thread connection)
 - 1 Plain stem (without thread)
 - 2 Male nut
 - 3 Union nut
 - 4 Compression fitting (sliding on stem)
 - 5 Union nut with fitting

Location of stem

- A54XX centre back (axial)
- R54XX bottom (radial)
- S54XX centre back, adjustable stem and dial
(not with Twin-Temp)

Accuracy class

- Mechanical: Class 1 per DIN EN 13 190
- Electrical (with Twin-Temp): Class B per DIN IEC 751
3-wire

Working range

- Normal (1 year): Measuring range (DIN EN 13 190)
- Short time (24 h max.): Scale range (DIN EN 13 190)

Case, ring, stem, process connection

Stainless steel

Elbow behind the case

Aluminium, only with radial entry version

Dial

Aluminium white, lettering black

Window

Instrument glass

Pointer

Aluminium, black, adjustable pointer

Pressure rating of stem

max. 25 bar, static

Ambient temperature limit at the case

+60 °C max. (others on request)

Ingress protection

IP 65 per EN 60 529 / IEC 529

Options

- Scale range °F, °C/°F (dual scale)
- Liquid damping to 250 °C max. (at stem)
- GL approval with feature liquid damping, not with adjustable stem and dial, Twin-Temp and nominal size 160 (vibratory stress conditions 25 ... 200 Hz, 5 g)
- Window of laminated safety glass or acrylic plastic
- Stem diameter 6, 8, 10 mm
- Ingress protection IP 66
- Special temperature range or dial printing to customer specifications (on request)

Scale range, measuring range ¹⁾, error limit (DIN EN 13 190)

Scale graduation per WIKA standard

Scale range in °C	Measuring range ¹⁾ in °C	Scale spacing in °C	Error limit ± °C	Minimum stem length L ₁ with Twin-Temp in mm ³⁾
-30 ... +50	-20 ... +40	0.5	1	80
-20 ... +60	-10 ... +50	0.5	1	80
0 ... 60	10 ... 50	0.5	1	80
0 ... 80	10 ... 70	0.5	1	80
0 ... 100	10 ... 90	1	1	80
0 ... 120	10 ... 110	1	2	80
0 ... 160	20 ... 140	1	2	80
0 ... 200	20 ... 180	2	2	65
0 ... 250	30 ... 220	2	2.5	65
0 ... 300 ²⁾	30 ... 270	2	5	65
0 ... 400 ²⁾	50 ... 350	5	5	65
0 ... 500 ²⁾	50 ... 450	5	5	65

1) The measuring range is limited by two triangular marks on the dial.
Within this range the specified error limit applies per DIN EN 13 190.

2) Not with Twin-Temp

3) If the stem length is shorter than the minimum stem length specified, the measuring accuracy of the Twin-Temp cannot be guaranteed anymore.

Models

Version		Nominal size in mm				Design					
		63	80	100	160	S	1	2	3	4	5
Model 54	axial	A5400	A5401	A5402	A5403	x	x	x	x	x	x
	radial	R5440	R5441	R5442	R5443	x	x	x	x	x	x
Model 54, adjustable stem/dial		S5410	S5411	S5412	S5413	-	x	x	x	x	x
Model 54, Twin-Temp	axial	A5450	A5451	A5452	A5453	x	x	-	-	x	-
	radial	R5460	R5461	R5462	R5463	x	x	-	-	x	-

Design of connection

Design standard (male thread connection)

Standard stem lengths: $l_1 = 100, 160, 200, 250$ mm

Nominal size NS	Process connection		Dimensions in mm		
	G	i	SW	d_4	$\varnothing d$
63, 80, 100, 160	G 1/2 B	14	27	26	6, 8, 10
	G 3/4 B	16	32	32	6, 8, 10
	1/2 NPT	19	22	-	6, 8, 10
	3/4 NPT	20	30	-	6, 8, 10

Design 1, plain stem (without thread)

Standard stem lengths: $l = 100, 140, 160, 200, 240, 290$ mm

The basis for design 4, compression fitting

Nominal size NS	Dimensions in mm d_6	$\varnothing d$
63, 80, 100, 160	18	6, 8, 10

Design 2, male nut

Standard stem lengths: $l_1 = 140, 180, 230$ mm

Nominal size NS	Process connection		Dimensions in mm	
	G	i	SW	$\varnothing d$
63, 80, 100, 160	G 1/2 B	20	27	6, 8, 10
	M18 x 1.5	12	24	6, 8, 10

Design 3, union nut

Standard stem lengths: $l_1 = 126, 186, 226, 276$ mm

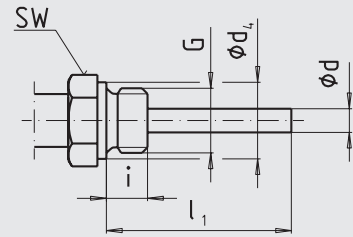
Nominal size NS	Process connection		Dimensions in mm	
	G_1	i	SW	$\varnothing d$
63, 80, 100, 160	G 1/2	8.5	27	6, 8, 10
	G 3/4	10.5	32	6, 8, 10
	M20 x 1.5	13.5	32	6, 8, 10

Design 4, compression fitting (sliding on stem)

Stem lengths: $l_1 =$ variable

Length: $L = l_1 + 40$ mm

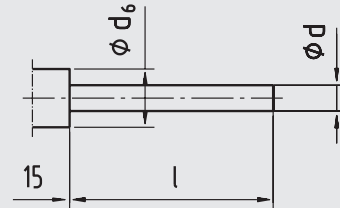
Nominal size NS	Process connection		Dimensions in mm		
	G	i	SW	d_4	$\varnothing d$
63, 80, 100, 160	G 1/2 B	14	27	26	6, 8, 10
	G 3/4 B	16	32	32	6, 8, 10
	1/2 NPT	19	22	-	6, 8, 10
	3/4 NPT	20	30	-	6, 8, 10



Legend:

- G Male thread
- i Thread length
- $\varnothing d_4$ Diameter of the sealing collar
- SW Flats
- $\varnothing d$ Stem diameter

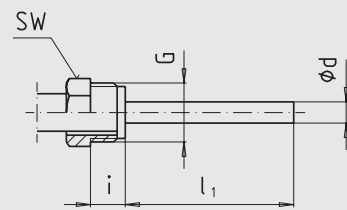
3073050.03 (G1)



Legend:

- $\varnothing d_6$ Plain diameter
- $\varnothing d$ Stem diameter

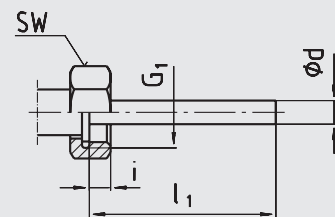
3073050.03 (G1)



Legend:

- G Male thread
- i Thread length incl. plain
- SW Flats
- $\varnothing d$ Stem diameter

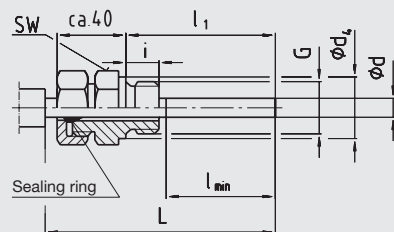
3073050.03 (G1)



Legend:

- G_1 Female thread
- i Thread length
- SW Flats
- $\varnothing d$ Stem diameter

3073050.03 (G2)



Legend:

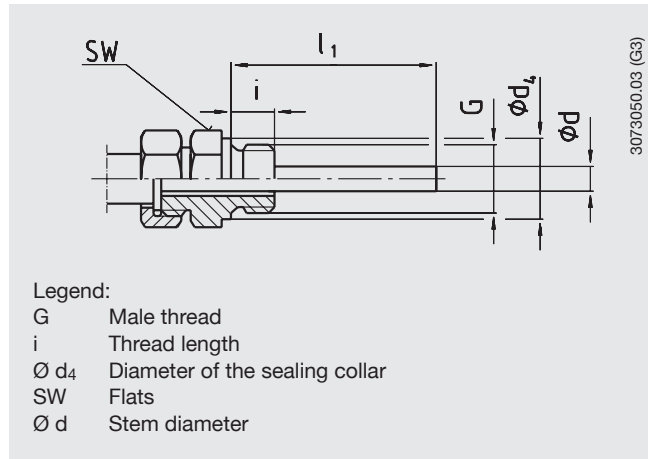
- G Male thread
- i Thread length
- $\varnothing d_4$ Diameter of the sealing collar
- SW Flats
- $\varnothing d$ Stem diameter

3073050.03 (G3)

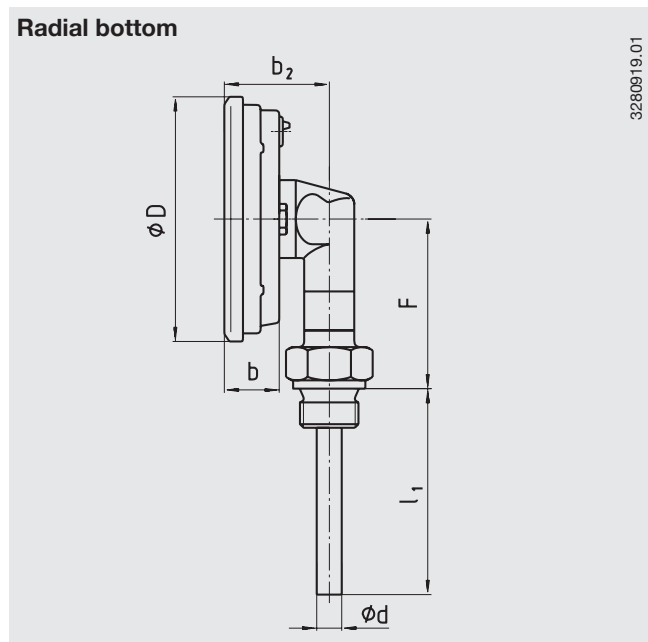
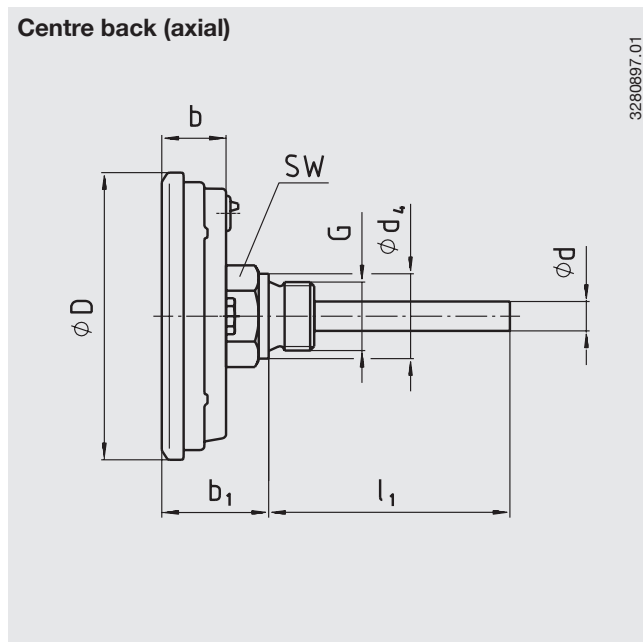
Design 5, union nut with fitting

Standard stem lengths: $l_1 = 100, 160, 200, 250$ mm

Nominal size NS	Process connection		Dimensions in mm		
	G	i	SW	d_4	$\varnothing d$
63, 80, 100, 160	G 1/2 B	14	27	26	6, 8, 10
	G 3/4 B	16	32	32	6, 8, 10
	1/2 NPT	19	22	-	6, 8, 10
	3/4 NPT	20	30	-	6, 8, 10



Dimensions and location of stem

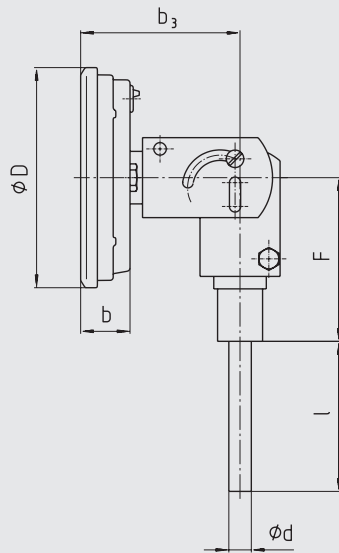


NS	Dimensions in mm						Weight in kg		
	b	b_1	b_2	$\varnothing D$	$\varnothing d$	$\varnothing d_4$	F	R	U
63	20	35	38	68	8 ¹⁾	26	47	0.20	0.30
80	20	35	38	77	8 ¹⁾	26	56	0.25	0.35
100	22	37	40	107	8 ¹⁾	26	66	0.35	0.45
160	25	40	43	161	8 ¹⁾	26	96	0.50	0.60

1) Option: Stem diameter 6, 10 mm

R Location of stem centre back
U Location of stem radial bottom

Adjustable stem and dial

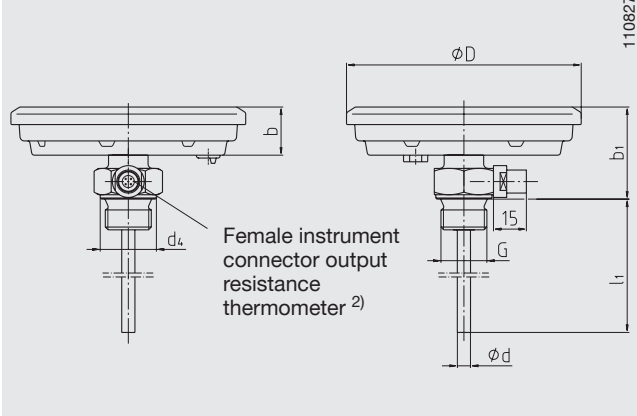


3280854.01

NS	Dimensions in mm					Weight in kg
	b	b ₃	Ø D	Ø d	F	
63	20	63	68	8 ¹⁾	66	0.35
80	20	63	77	8 ¹⁾	66	0.40
100	22	65	107	8 ¹⁾	66	0.50
160	25	68	161	8 ¹⁾	66	0.65

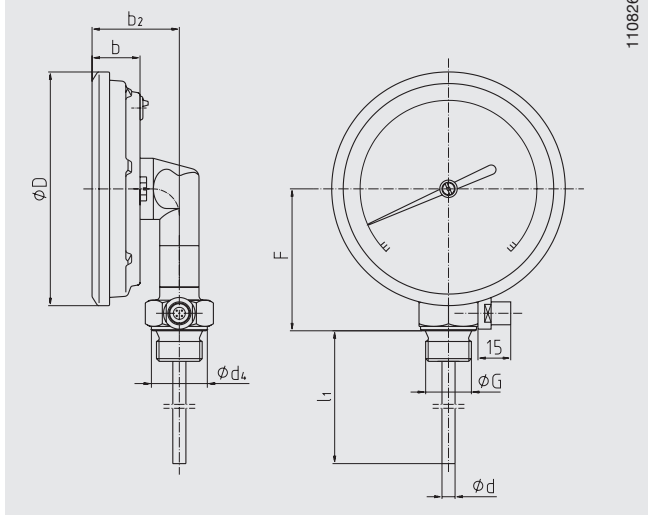
1) Option: Stem diameter 6, 10 mm

Twin-Temp combined bimetal thermometer Centre back (axial)



2) Suitable male connectors are available.

Twin-Temp combined bimetal thermometer Radial bottom



NS	Dimensions in mm							Weight in kg	
	b	b ₁	b ₂	Ø D	Ø d	Ø d ₄	F	R	U
63	20	35	38	68	8 ¹⁾	26	47	0.25	0.35
80	20	35	38	77	8 ¹⁾	26	56	0.30	0.40
100	22	37	40	107	8 ¹⁾	26	66	0.40	0.50
160	25	40	43	161	8 ¹⁾	26	75	0.55	0.65

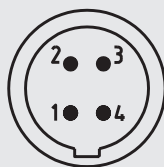
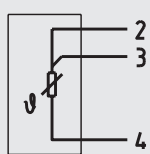
1) Option: Stem diameter 6, 10 mm

R Location of stem centre back
U Location of stem radial bottom

Electrical connection with Twin-Temp

Female instrument connector with pins

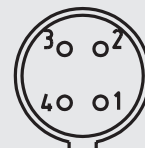
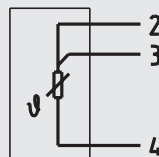
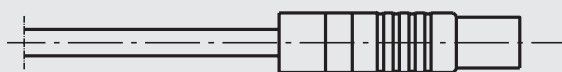
1 x Pt100
3-wire



Front view
of female
instrument
connector

11086395.01

Male connector with insert (option)



Front view
of male
connector

11086395.02

Suitable male connector for cable diameter 3.0 to 3.5 mm
Order No.: 11015217 (cable not included in delivery)

Ordering information

Model / Nominal size / Scale range / Design of connection / Connection size / Length l_1 / Options

Modifications may take place and materials specified may be replaced by others without prior notice.
Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing.

