Gas Actuated Thermometers
Combi-Thermometers with Pt100
Stainless Steel Series, Model 76

Applications

- For aggressive media in chemical, petrochemical, process engineering and food industry
- Universally suitable for machinery, plant, tank and apparatus construction

Special Features

- Instruments meet the highest standards of measurement technology
- Case and stem material stainless steel
- Two independent measuring systems in one instrument
- Various designs of connection possible

Gas Actuated Thermometers Model R76.100
Fig. left: Design of connection 1 incl. Option: Transmitter and Alarm Contacts
Fig. right: Design of connection 1

Description

This series of thermometers is designed for installation in pipes, tanks, plants and machinery.
The gas actuated thermometer enables the visualisation of measured values on site, while the integrated Pt100 resistance sensor additionally provides an electrical signal for further processing.

The gas actuated combi-thermometer with capillary is intended for bridging long distances. Thanks to its flexible capillary this version can be used in locations which are not easily accessible.

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 its high ingress protection (IP 65) and a large variety of optional extras the gas actuated combi-thermometer can be used in almost any process.

Standard version

Measuring principle
mechanical: inert gas expansion system (non-toxic)
electrical: Pt100, 3-wire connection (DIN IEC 751)

Nominal size in mm
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
6 Compression fitting (sliding on capillary or armoured capillary)

Location of stem
R76.XXX: bottom (radial)
F76.XXX: bottom (radial, with capillary and surface mounting bracket)

Accuracy class
mechanical: class 1 per DIN EN 13 190
electrical: class B per DIN IEC 751

Working range
Normal (1 Jahr): measuring range per DIN EN 13 190
Short time (24 h max.): scale range per DIN EN 13 190

Rated operating ranges and conditions
per EN 13 190

Case, bezel ring, stem, process connection
Stainless steel

Dial
Aluminium, white, lettering black

Window
Laminated safety glass

Pointer
Aluminium, black, micro adjustement

Capillary
Ø 2 mm, stainless steel 1.4571, bending radius no less than 6 mm
amoured capillary Ø 7 mm, flexible
length to user specifications

Temperature limits for storage and transport
-50 °C … +70 °C (EN 13 190) without liquid damping
-20 °C … +60 °C (EN 13 190) with food-compatible liquid damping
-50 °C … +60 °C (EN 13 190) with liquid damping

Permissible ambient temperature at case
0 °C … +40 °C max. (others on request)

Permissible pressure rating of stem
25 bar max., static

Ingress protection
IP 65 per EN 60 529 / IEC 529

Options

- Scale range °F, °C/°F (dual scale)
- Case with liquid damping
- Case with food-compatible liquid damping
- Pt100 class A
- Radial connection other than bottom
- Window of clear plastic
- Thermowell per DIN 43 772 or to customer specifications
- Alarm contacts (data sheet AC 08.01)
- Analogue or digital temperature transmitters from WIKA transmitter program
- Ingress protection IP 66 (not for gauges with alarm contacts)
- Special temperature range or dial printing to customer specifications (on request)

Scale, measuring ranges [1], limits of error (DIN EN 13 190)
Scale graduation per WIKA standard

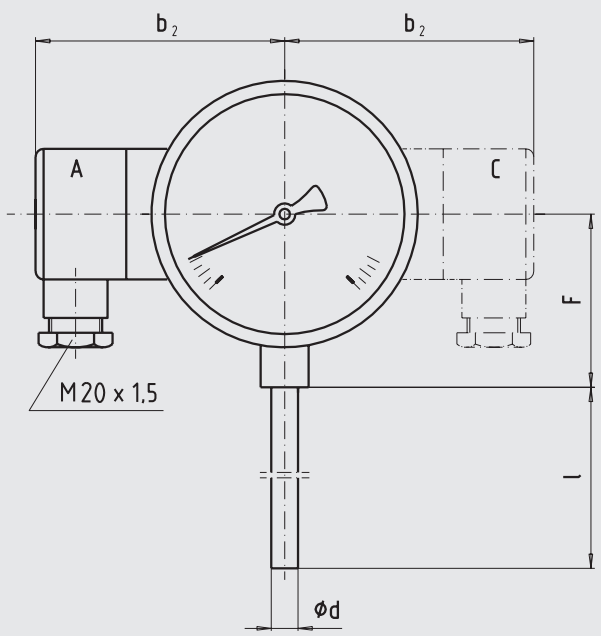
Scale range in °C	Measuring range in °C	Scale spacing in °C	Limit of error ± °C
-80 ... +60	-60 ... +40	2	2
-60 ... +40	-50 ... +30	1	1
-40 ... +60	-30 ... +50	1	1
-30 ... +50	-20 ... +40	1	1
-20 ... +60	-10 ... +50	1	1
-20 ... +80	-10 ... +70	1	1
0 ... 60	+10 ... +50	1	1
0 ... 80	+10 ... +70	1	1
0 ... 100	+10 ... +90	2	1
0 ... 120	+10 ... +110	2	2
0 ... 160	+20 ... +140	2	2
0 ... 200	+20 ... +180	2	2
0 ... 250	+30 ... +220	5	2.5
0 ... 300	+30 ... +270	5	5

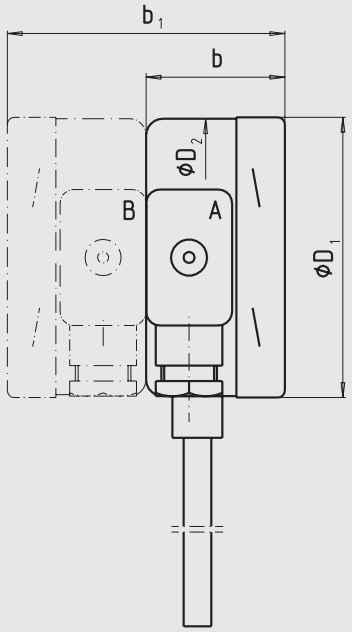
1) The measuring range is indicated on the dial by two triangular marks.
Only within this range the stated limit of error is valid according to DIN EN 13 190.

Models

Model	NS	Location of stem
R76.100	100	bottom
R76.160	160	bottom
F76.100	100	radial bottom, with capillary
F76.160	160	radial bottom, with capillary

Dimensions in mm





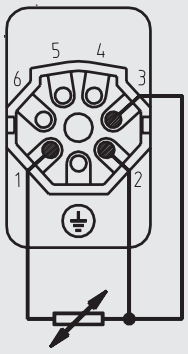
Use of the terminal boxes (A, B and C in the above illustration)

- Standard version: A for Pt100
- With transmitter as option: B for transmitter
- With alarm contacts as option: A for alarm contacts and C for Pt100
- With alarm contacts and alarm contacts as option: A for alarm contacts and B for transmitter

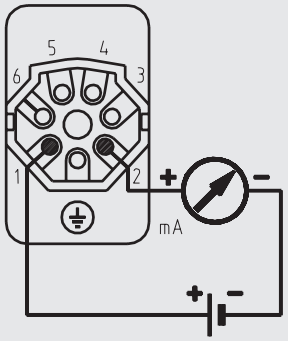
Nominal size	Dimensions in mm without transmitter Alarm contacts			with transmitter Alarm contacts								Weight in kg
	without	1 or 2	3	without	1 or 2	3						
NS	b	b	b	b_1	b_1	b_1	b_2	d	D_1	D_2	F	
100	50	88	-	100	138	-	92	10	101	99	83	approx. 1.2
160	50	88	96	100	138	146	122	10	161	159	113	approx. 1.4

Designation of terminal connectors

Pt100 with 3-wire connection (standard)



Connection with transmitter (option)



4 ... 20 mA-loop
Terminal 1: +
Terminal 2: -

Alarm contacts (option)

see data sheet AC 08.01

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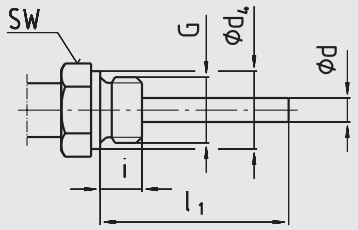
Design of connection

Design S, standard (male thread connection)
Standard stem lengths: l_1 = 200, 210, 310, 410 mm
(not with F76.XXX)

Nominal size	Process connection		Dimensions in mm		
NS	G	i	SW	d_4	Ø d
100, 160	G ½ B	14	27	26	10
	G ¾ B	16	32	32	10
	½ NPT	19	22	-	10
	¾ NPT	20	30	-	10



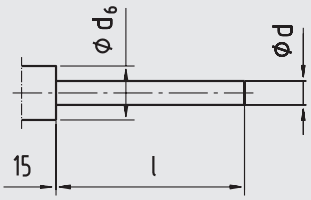
3073050.03(G1)

Legend:
G Male thread
i Thread length
Ø d_4 Diameter of the sealing collar
SW Flats
Ø d Stem diameter

Design 1, plain stem (without thread)
Standard stem lengths: l = 200, 210, 250, 310, 400, 500 mm
Basis for design 4, compression fitting

Nominal size	Dimensions in mm	
NS	d_6 1)	Ød
100, 160	18	10

1) Not applicable to version with capillary

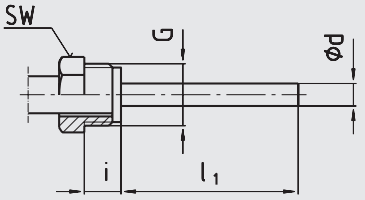


3073050.03(G1)

Legend:
Ø d_6 Plain diameter
Ø d Stem diameter

Design 2, male nut
Standard stem lengths: l_1 = 200, 210, 250, 310, 400 mm

Nomial size	Process connection		Dimensions in mm	
NS	G	i	SW	Ød
100, 160	G ½ B	20	27	10
	M20 x 1.5	15	22	10



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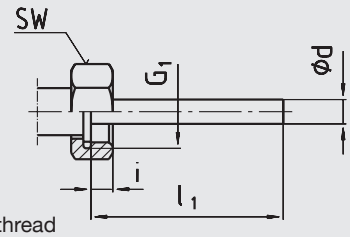
Legend:
G Male thread
i Thread length incl. collar
SW Flats
Ø d Stem diameter

Design 3, union nut
Standard stem lengths: l_1 = 200, 210, 250, 310, 400 mm

Nomial size	Process connection		Dimensions in mm	
NS	G_1	i	SW	Ød
100, 160	G ½	8.5	27	10
	G ¾	10.5	32	10
	M24 x 1.5	13.5	32	10



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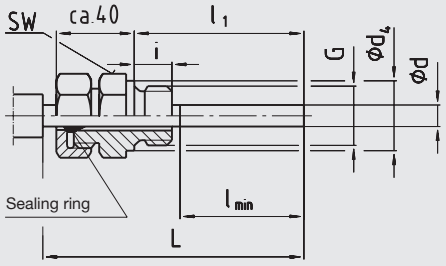
Legend:
G_1 Female thread
i Thread length
SW Flats
Ø d Stem diameter

Design 4, compression fitting (sliding on stem)
Stem length: l_1 = variable
Length L = l_1 + 40 mm

Nominal size	Process connection		Dimensions in mm		
NS	G	i	SW	d_4	Ød
100, 160	G ½ B	14	27	26	10
	G ¾ B	16	32	32	10
	½ NPT	19	22	-	10
	¾ NPT	20	30	-	10



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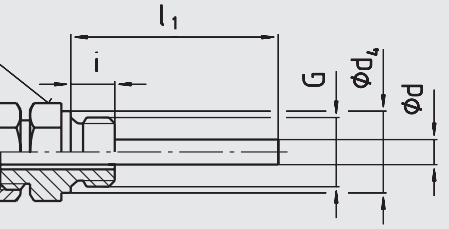
Legend:
G Male thread
i Thread length
Ø d_4 Diameter of the sealing collar
SW Flats
Ø d Stem diameter

Design 5, union nut G ½ with fitting
Standard stem lengths: l_1 = 200, 210, 250, 310, 400 mm

Nominal size	Process connection		Dimensions in mm		
NS	G	i	SW	d_4	Ø d
100, 160	G ½ B	14	27	26	10
	G ¾ B	16	32	32	10
	½ NPT	19	22	-	10
	¾ NPT	20	30	-	10

Option: Union nut M24 x 1.5 with fitting M18 x 1.5

Nominal size	Process connection		Dimensions in mm		
NS	G	i	SW	d_4	Ø d
100, 160	M18 x 1.5	12	32	23	10



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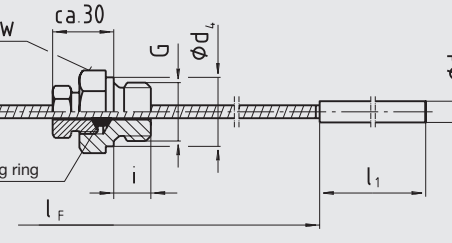
Legend:
G Male thread
i Thread length
Ø d_4 Diameter of the sealing collar
SW Flats
Ø d Stem diameter

Design 6.3, compression fitting sliding on spiral protecting hose (compression fitting is not leak-proof)
Standard stem length: l_1 = 200 mm (others on request)

Nominal size	Process connection			Dimensions in mm	
NS	G	i	SW	d_4	Ø d
100, 160	G ½ B	14	27	26	10
	G ¾ B	16	32	32	10
	½ NPT	19	22	-	10
	¾ NPT	20	30	-	10



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Legend:
G Male thread
i Thread length
l_F Length of capillary
Ø d_4 Diameter of the sealing collar
SW Flats
Ø d Stem diameter

Ordering information

Model / Nominal size / Scale range / Design of connection / Process connection / Length l, l_1 / Length of capillary l_F / 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.

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