Gas-actuated Thermometers, with Capillary Line

Crimped-on ring case stainless steel

TFChg
TFChgG

Standard Versions

This data sheet contains detailed information on our standard versions and available options. In overview 8000 you will find additional information on selection, metrological features, permissible ambient and storage temperatures as well as error limits, etc. Information on the metrologically optimal design of thermometers can be found in our technical information sheet T08-000-031.

Measuring Unit
With nitrogen filling (inert gas, physiologically safe)

Accuracy (DIN EN 13 190)
Class 1

Case
With polished crimped-on ring, stainless steel 1.4301 (304)

Degree of Protection (DIN EN 60 529/IEC 529)
IP65

Case Filling
For model TFChg**G**: silicone oil

Nominal Case Sizes
63, 80, 100, 160 mm (2½, 3, 4, 6")

Case Configuration
Connection temperature sensor (stem):
- capillary line

Capillary line position:
- vertical bottom position
- centre back position (**rm**)

Mounting device:
- for bottom capillary line position:
  - back flange for surface mounting (**Rh**)
  - mounting device for gauge holder bracket (**Mgh**)
- for centre back capillary line position:
  - back flange for surface mounting (**rmRh**)
  - front flange for panel mounting (**rmFr**)
  - u-clamp for panel mounting (**rmBFr**)

Capillary line
1 m stainless steel Ø 2 mm
with buckle protection spiral at both ends
capillary line length L_{FL} selectable from 1 m to 15 m

Temperature Ranges (DIN EN 13 190)
Temperature differences (spans) from 80 K up to 600 K

Temperature Sensor (Stem)
Made of stainless steel 1.4571 (316Ti)
Max. static operating pressure: 25 bar

Stem models:	A1, A3, A4, A5 or A6
Stem Ø dF:	8, 10 or 12 mm
Stem length L or L1:	from Lmin or L1min up to 2.50 m

Please regard the minimum stem length depending on active length (La) and stem model, see page 3

Window
Instrument glass

Movement
Brass/German silver

Dial
Aluminum white, scale black

Pointer
Aluminum black

Indication Adjustment (±6 %)
Externally via screw

Ordering Information, Standard Ranges, Options

See page 4

Special Versions and Further Options

- Other stem models, e.g.
  - without bent tube, with compression fitting, adjustable at the capillary line, see data sheet 8299.2
  - with connection for food/bio/pharmaceutical industries, see data sheet 8299.3
  - contact stem for temperature measurement at the outside of tanks and pipe barrels up to 300 °C, see data sheet 8299.4
- Other stem Ø, connection threads and materials upon request
- Capillary line F_{FL} > 15 m upon request
- Other temperature ranges and/or special scales, e.g. dual scale °C/°F, coloured fields or ranges, dial inscriptions
- Case parts stainless steel 1.4404 (316L) upon request
- Model TFChg for ambient temperatures to –60 °C;
  Model TFChgG for ambient temperatures to –40 °C, to –60°C NCS 100 and 160
- Position of connection radial at 3 o'clock, 9 o'clock, 12 o'clock, others upon request or other than vertical installation (90°)
- GOST version for Russia, Ukraine, Kazakhstan, Belarus

Thermowells

See data sheets 8.8110ff.

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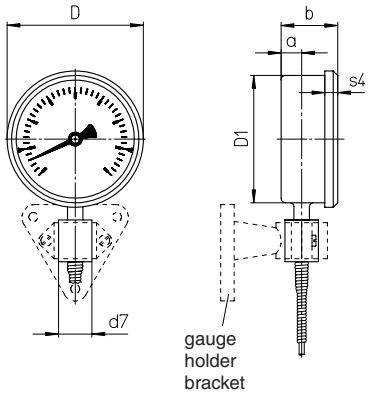
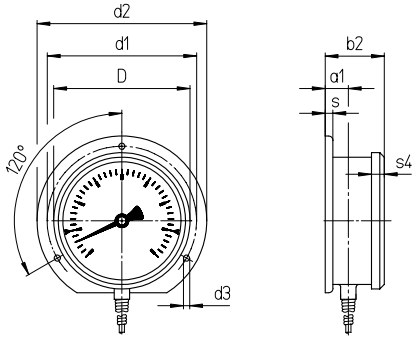
Capillary Line Position, Code Letters, Dimensional Data and Weights

Vertical Bottom Capillary Line Position

mounting device for gauge holder bracket[1)]
code letters: **Mgh**

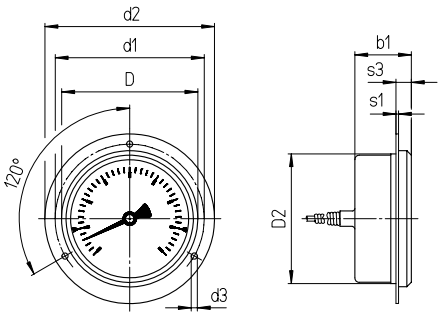


back flange for surface mounting
code letters: **Rh**

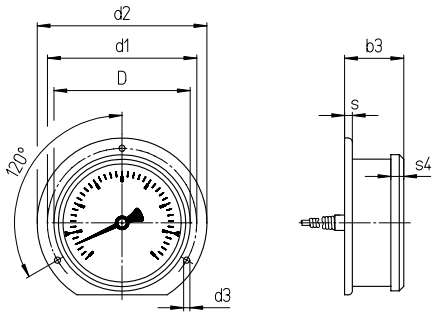


Centre Back Capillary Line Position

front flange for panel mounting
code letters: **rmFr**

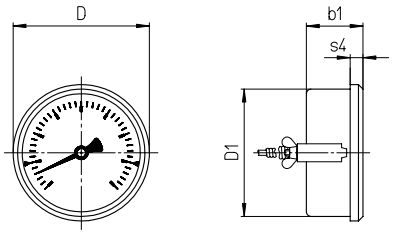


back flange for surface mounting (except NCS 80)
code letters: **rmRh**



Centre Back Capillary Line Position

u-clamp for panel mounting
code letters: **rmBFr**



Dimensional Data (mm) and Weights (kg)

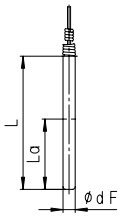
NCS	a	a1	b	b1	b2	b3	D	D1	D2	d1	d2	d3	d7	s	s1	s3	s4	approx. weight[2)] TFChg	approx. weight[2)] TFChgG
63	12	15	39	39	42	42	67	62	64	75	85	3.6	26	5	1	9	8	0.36	0.44
80	15	18	42	42	45	–	86	79	81	95	110	4.8	26	5	1	9	8	0.45	0.59
100	15	18.5	43	43	46.5	46.5	106	99	101	116	132	4.8	26	6	1	11.5	10	0.57	0.76
160	15	18	51	51	54	54	167	159	–	178	196	5.8	26	6	–	–	11	0.88	1.59

[1)] Available versions can be found on our website in section Product Range, heading Accessories.
[2)] The data are examples and relate to the version with mounting device for gauge holder bracket Mgh and stem A1, Ø 10 mm, length 200 mm and 1 m capillary line.

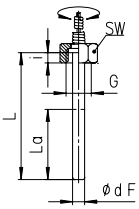
Stem Models

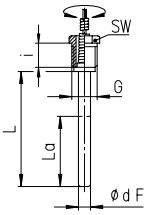
Stem Models

Process connection:	Without screw fitting, plain stem
Stem model:	**A1**
Form acc. to DIN EN 13 190:	Form 1
Stem material:	1.4571
Stem Ø dF:	8, 10, 12 mm
Order length:	L
Suitable thermowell models: (data sheet)	SK1 (8.8140), SK2 (8.8141)



Process connection:	Union nut	Male thread, turnable
Stem model:	**A3**	**A4**
Form acc. to DIN EN 13 190:	Form 5	Form 4
Stem material:	1.4571	1.4571
Stem Ø dF:	8, 10, 12 mm	8, 10, 12 mm
Screw fitting material:	1.4571	1.4571
Order length:	L	L
Suitable thermowell models: (data sheet)	SF4.1 (8.8111), SF4.1F (8.8113) SF8 (8.8130), SF9 (8.8131)	SF4 (8.8110), SF4F (8.8112) SF5 (8.8120), SF6, SF7 (8.8121)





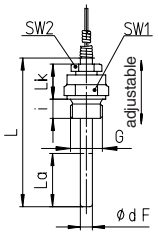
Thread (dimensional data in mm):

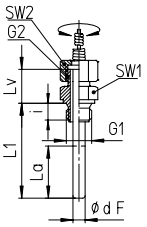
G	SW	i
G ½	27	10
G ¾	32	12
M20x1.5	27	10
M24x1.5	32	12
M27x2	32	12

G	SW	i
G ½ B	22	20
G ¾ B	27	23
M18x1.5	22	14
M20x1.5	22	20

Thermowell required!

Process connection:	Male thread/compression fitting	Male thread, turnable/double male adapter
Stem model:	**A5** (A1 with compression fitting)	**A6** (A3 with double male adapter)
Form acc. to DIN EN 13 190:	Form 2 (cylindrical thread) Form 3 (conical thread)	—
Stem material:	1.4571	1.4571
Stem Ø dF:	8, 10, 12 mm	8, 10, 12 mm
Screw fitting material:	1.4571	1.4571
Order length:	L	L1
Suitable thermowell models: (data sheet)	SF4 (8.8110), SF4F (8.8112) SF5 (8.8120), SF6, SF7 (8.8121)	SF4 (8.8110), SF4F (8.8112) SF5 (8.8120), SF6, SF7 (8.8121)





Thread (dimensional data in mm):

G	SW1	SW2	i	Lk
G ½ B	27	22	14	42
G ¾ B	32	22	16	42
½" NPT	27	22	19	42
¾" NPT	27	22	19	42
M20x1.5	27	22	14	42

G1	G2	SW1	SW2	i	Lv
G ½ B	G ½ B	27	27	14	28
G ¾ B	G ½ B	32	27	16	28
½" NPT	G ½ B	27	27	19	28
¾" NPT	G ½ B	27	27	19	28
M20x1.5	M20x1.5	27	27	14	28
M24x1.5	M20x1.5	32	27	14	28
M27x2	M20x1.5	32	27	16	28

Minimum Stem Length, Active Length and Maximum Feasible Capillary Line Length incl. Stem (mm)

			Capillary line incl. stem up to 5 m up to max. 500 °C			Capillary line incl. stem up to 5 m 500 °C and above			Capillary line incl. stem >5 m to 15 m up to max. 500 °C			Capillary line incl. stem >5 m to 15 m 500 °C and above		
			Stem Ø dF:			Stem Ø dF:			Stem Ø dF:			Stem Ø dF:		
Stem model:	**Length:**	**Thread:**	**12**	**10**	**8**	**12**	**10**	**8**	**12**	**10**	**8**	**12**	**10**	**8**
all models	La	all standard threads	35	45	75	75	105	165	53	80	115	150	200	320
A1 / A3 / A4	Lmin	all standard threads	55	65	95	95	125	185	73	100	135	170	220	340
A5	Lmin	all standard threads	90	100	130	130	160	220	108	135	170	205	255	375
A6	L1min	G ½ B, M20x1.5	49	59	89	89	119	179	69	96	131	166	216	336
		G ¾ B, M24x1.5, M27x2	51	61	91	91	121	181	72	99	134	169	219	339
		½" NPT, ¾" NPT	54	64	94	94	124	184	67	94	129	164	214	334
others			upon request			upon request			upon request			upon request		

The minimum length Lmin/L1min is the smallest feasible stem length.
Important: Please note the technical information sheet T08-000-031 on the metrologically optimal stem length.

The active length La is the temperature-sensitive part of the stem.

The **maximum feasible stem length** is 2.50 m. With a capillary line, greater lengths are possible, e.g. with special stems A2, A7 and A7.1 (data sheet 8299.2).

Ordering Information

Basic Model:	Gas-actuated Thermometer with Capillary Line			TFChg
Case filling:	without			without code letters
	silicone oil			**G**
Nominal case size:	case Ø 63, 80, 100, 160 mm (2½, 3, 4, 6")			**63, 80, 100, 160**
Capillary line position/ case configuration:	vertical bottom position, mounting device for gauge holder bracket			**Mgh**
	vertical bottom position, back flange for surface mounting			**Rh**
	centre back position, front flange for panel mounting			**rmFr**
	centre back position, with back flange for surface mounting			**rmRh**
	centre back position, u-clamp for panel mounting			**rmBFr**
Temperature ranges:	scale:	Δ T (K):		
	0 – 80 °C	80		
	0 – 100 °C	100	e.g.	**0–100 °C**
	0 – 120 °C	120		
	0 – 160 °C	160		
	0 – 200 °C	200		
	0 – 250 °C	250		
	0 – 300 °C	300		
	0 – 400 °C	400		
	0 – 500 °C	500		
	0 – 600 °C	600		
	–100 / +100 °C	200		
	–50 / +50 °C	100		
	–40 / +40 °C	80		
	–40 / +60 °C	100		
	–30 / +50 °C	80	e.g.	**–30/+50 °C**
	–20 / +60 °C	80		
	–20 / +80 °C	100		
	50 – 300 °C	250		
	50 – 400 °C	350		
	100 – 500 °C	400		
Stem:	without screw fitting, plain stem			**A1**
	union nut			**A3**
	male thread, turnable			**A4**
	male thread/compression fitting			**A5**
	male thread, turnable/double male adapter			**A6**
Stem Ø dF:	8, 10 or 12 mm			**dF 8, 10, 12**
Stem length:	L or L1 in mm		e.g.	**L = 100 mm**
Capillary line length:	L_{FL} ≥ 1 to 15 m			**L_{FL} = 3 m**
Process connection:	see page 3		e.g.	**G ½ B**
Options:	red mark	on the dial		
	plastic clip	red or green, external at crimped-on ring for NCS 80, 100, 160		
	window	tempered safety glass for NCS 80, 100 and 160		
		acrylic glass (PMMA) for NCS 80 and 100		
		polycarbonate (PC) NCS 63, 80 and 100		
	movement stainless steel			
	case ventilation no. 22 for outdoor installation			
	case polished			
	protection hose for capillary line	spiral protection hose made of stainless steel		
		spiral protection hose made of stainless steel with PE cover		
		shrinking hose polyolefin, max. 10 m		
	versions: DNV GL and Russian Sea Register **TFChg 100 TFChgG 63, 80, 100**	dial marking with symbol		
		copy of the certificate upon request		
	instrument tag	stainless steel plate 12 x 55 mm (0.47 x 2.17") with wire mounting		
		or sticker upon the case		
Example:				**TFChg 80 rmBFr, 0–100 °C, A3, dF 10, L = 100 mm, L_{FL} = 3 m G ½**

Special Versions: Please describe your requirements in cleartext!