

Gas-Actuated Thermometers, with Capillary Line

LTfCh
LTfChG

Bayonet ring case stainless steel

Standard Versions

Information on selection and metrological features (temperature-resistance, among others) and temperature ranges / smallest subdivision / error limits can be found in model overview 8000.

Measuring Unit

With nitrogen filling
(inert gas, physiologically safe)

Accuracy (EN 13 190)

Class 1

Case

With bayonet ring, 1.4301 (304 stainless steel)

Case Protection Type (EN 60 529 / IEC 529)

IP 65

Case Filling

For model TFChG: silicone oil

Nominal Case Sizes

TFCh: 63, 100, 160, 250 mm (2½", 4", 6", 10")

TFChG: 63, 100, 160 mm (2½", 4", 6")

Case Configuration

Connection temperature

sensor (stem): capillary line

Capillary line position: vertical bottom position,
optional: centre back position (**rm**),
see page 2

Mounting device:

for bottom capillary line position:
back flange for surface mounting (**Rh**)
or mounting device for gauge holder
bracket (**Mgh**), see page 2

for centre back

capillary line position (**rm**): back flange for surface mounting (**Rh**) /
front flange (**Fr**)

Capillary Line (standard) 1m stainless steel Ø 2mm, with buckle
protection spirals at both ends
capillary line length L_{FL} selectable from
1m up to 15 m (> 15 m upon request)

Temperature Ranges (EN 13 190)

Spans from 80 K to 600 K

Temperature Sensor (Stem)

made of stainless steel 1.4571 (316 L),

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 resp. L1: Lmin resp. L1min up to max. 2.50 m

Please consider the minimum stem length depending on the active
length (L_a) and stem model, see page 3.

Window

Instrument glass

Movement

Brass/German silver



Dial

Aluminium, white, scaling black

Pointer

Aluminium, black

Indication Adjustment ($\pm 6\%$)

From the outside via screw

Ordering Information, Standard Temperature Ranges, Options

See page 4

Special Versions and further Options among others

- Other stem models, e.g.
 - without bent tube, with compression fitting, adjustable at capillary line see data sheet 8299.2
 - with connection for food / biotechnical / pharmaceutical industry, see data sheet 8299.3
 - contact stem for temperature measurement on the outside of the cases 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, etc.
- Stationary red pointer, min. or max. drag indicator upon request
- Case parts stainless steel 316 L (1.4404) upon request
- Model TFCh for ambient temperatures to -60 °C upon request; Model TFChG for ambient temperatures to -40 °C. For ambient temperatures below -20°C we recommend: thermometers with crimped-on ring case models TFChg resp. TFChgG
- Position of the connection 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

Accessories

Mechanical: thermowells, see DS 8.8110 ff.

Electronical: limit switch contact assemblies,
see catalogue-heading 9.1



Sales and Export South, West, North

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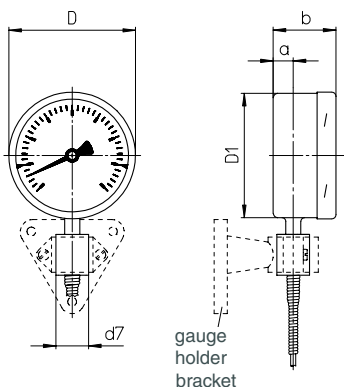
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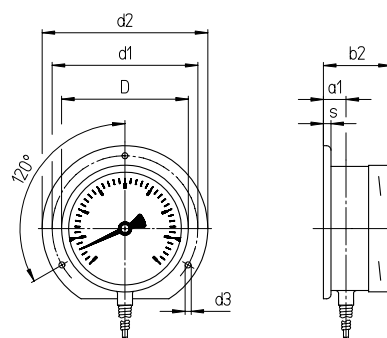
leyro

Vertical Bottom Capillary Line Position

Mounting device for gauge holder bracket¹⁾
code letters: **Mgh**

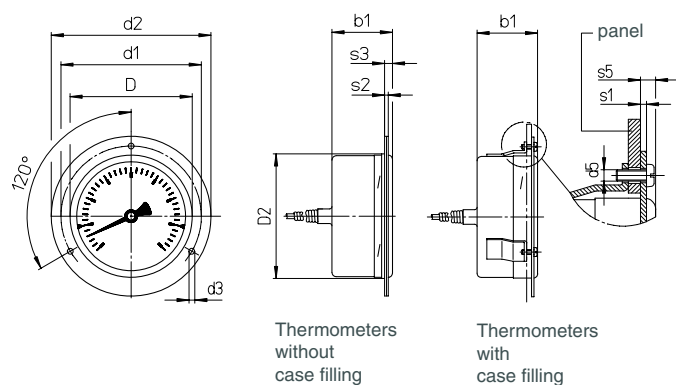


Back flange for surface mounting
code letters: **Rh**

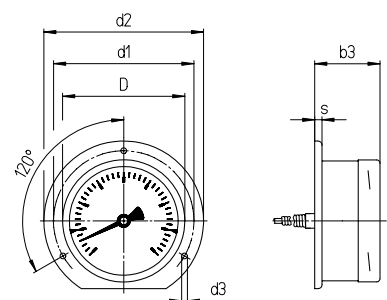


Centre Back Capillary Line Position

Front flange
code letters: **rmFr**



Back flange for surface mounting
code letters: **rmRh**



Dimensional Data (mm / inches) and Weights (kg / lb)

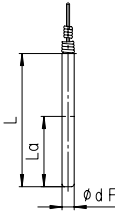
NCS	a	a1	b	b1	b2	b3	D	D1	D2	d1	d2	d3	d5	d7	s	s1	s2	s3	s5	approx. weight ²⁾	
																				TFCh	TFChG
63	12	15	39	39	42	42	64	62	66	75	85	3.6	M3	26	5	1	2	5.5	7	0.38	0.45
2½"	.47	.59	1.54	1.54	1.65	1.65	2.52	2.44	2.60	2.95	3.35	.14		1.02	.20	.04	.08	.22	.28	0.84	0.99
100	15	18.5	50	50	53.5	53.5	101	99	103	116	132	4.8	M4	26	6	1	2	5.5	7	0.6	0.85
4"	.59	.73	1.97	1.97	2.10	2.10	3.98	3.90	4.06	4.57	5.2	.19		1.02	.24	.04	.08	.22	.28	1.32	1.87
160	15	18	50	50	53	53	161	159	163	178	196	5.8	M5	26	6	1.5	2.5	6	8	0.92	1.6
6"	.59	.71	1.97	1.97	2.09	2.09	6.34	6.26	6.42	7.01	7.72	.23		1.02	.24	.06	.10	.24	.31	2.03	3.53
250	15	-	57	57	-	-	251	249	-	270	285	5.8	-	26	2	-	2	8.5	-	2.00	-
10"	.59	-	2.24	2.24	-	-	9.88	9.80	-	10.6	11.2	.23		1.02	.08	-	.08	.33	-	4.40	-

¹⁾ Available variants can be found on our website under the product range, category accessory.

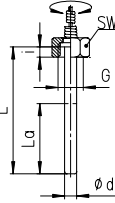
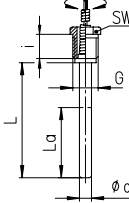
²⁾ The indications serve as example and relate to versions with mounting device for Mgh and stem A1, Ø 10 mm (0.4"), length 200 mm (8").

Stem Models

Process connection:	without screw fitting, plain stem	
Stem model:	A1	
Form according to DIN 13 190:	Form 1	
Stem material:	1.4571	
Stem-Ø dF:	8, 10, 12	
Order length:	L	
Data sheet (suitable thermowell models):	8.8140 (SK1), 8.8141 (SK2)	

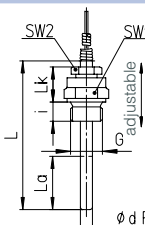
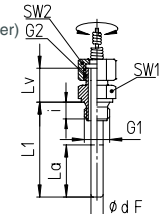


Process connection:	Union nut	Male thread, turnable
Stem model:	A3	A4
Form according to DIN 13 190:	Form 5	Form 4
Stem material:	1.4571	1.4571
Stem-Ø dF:	8, 10, 12	8, 10, 12
Screw fitting material:	1.4571	1.4571
Order length:	L	L
Data sheet (suitable thermowell models):	8.8111 (SF4.1), 8.8113 (SF4.1F)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

Thread (dimensions in mm):	G	SW	i	G	SW	i
	G 1/2	27	10	G 1/2 B	22	20
G 3/4	32	12	G 3/4 B	27	23	
M 20x1.5	27	10	M 18x1.5	22	14	
M 24x1.5	32	12	M 20x1.5	22	20	
M 27x2	32	12	Thermowell required!			

Process connection:	Male thread / compression fitting	Male thread, turnable / double male adapter
Stem model:	A5 (= basic stem A1 with compression fitting)	A6 (= basic stem A3 with double male adapter)
Form according to DIN 13 190:	Form 2 (thread cylindrical) Form 3 (thread conical)	—
Stem material:	1.4571	1.4571
Stem-Ø dF:	8, 10, 12	8, 10, 12
Screw fitting material:	1.4571	1.4571
Order length:	L	L1
Data sheet (suitable thermowell models):	8.8110 (SF4), 8.8112 (SF4F) 8.8120 (SF5), 8.8121 (SF6+SF7)	8.8110 (SF4), 8.8112 (SF4F) 8.8120 (SF5), 8.8121 (SF6+SF7)

Thread (dimensions in mm):	G	SW1	SW2	i	Lk	G1	G2	SW1	SW2	i	Lv
	G 1/2 B	27	22	14	42	G 1/2 B	G 1/2 B	27	27	14	28
G 3/4 B	32	22	16	42	G 3/4 B	G 1/2 B	32	27	16	28	
1/2" NPT	27	22	19	42	1/2" NPT	G 1/2 B	27	27	19	28	
3/4" NPT	27	22	19	42	3/4" NPT	G 1/2 B	27	27	19	28	
M 20x1.5	27	22	14	42	M 20x1.5	M 20x1.5	27	27	14	28	
					M 24x1.5	M 20x1.5	32	27	14	28	
					M 27x2	M 20x1.5	32	27	16	28	

Minimum Stem Length, Active Length and Maximum Realisable Capillary Line Length incl. Stem

The **minimum length** Lmin / L1min of the stem is the smallest possible stem length depending on the active length La (temperature-sensitive part) and the stem model.

The **active length** La of the stem (temperature-sensitive part) has to immerse completely into the medium, in order to obtain a measuring result that corresponds to the accuracy class.

The **maximum realisable stem length** is 2,50 m. Greater lengths can be obtained with a capillary line, e.g. with special stems A2, A7 and A7.1 (data sheet 8299.1).

Stem model:	Length:	Thread:	Capillary line including stem up to 5 m						Capillary line including stem > 5 m to 15 m					
			up to max. 500 °C			500 °C and above			up to max 500 °C			500 °C and above		
			Stem-Ø dF:			Stem-Ø dF:			Stem-Ø dF:			Stem-Ø dF:		
			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	67	94	129	164	214	334
A6	L1min	G 1/2 B, M 20x1.5	49	59	89	89	119	179	69	96	131	166	216	336
		G 3/4 B, M24x1.5, M27x2	51	61	91	91	121	181	72	99	134	169	219	339
		1/2" NPT, 3/4" NPT	54	64	94	94	124	184	108	135	170	205	255	375
others			upon request			upon request			upon request			upon request		

Basic Model: Gas-actuated Thermometers, Rigid Connection to Stem		TFCh																																																																								
Case filling:	without silicone oil	no code letters G																																																																								
Nominal case size:	case-Ø 63, 100, 160, 250 mm (NCS 250 not with case filling)	63, 100, 160, 250																																																																								
Capillary line position / Case configuration:	vertical bottom position, mounting device for gauge holder bracket vertical bottom position, back flange for surface mounting centre back position, front flange centre back position, back flange for surface mounting	Mgh Rh rmFr rmRh																																																																								
Temperature ranges:	<table border="0"> <tr> <td>scale:</td> <td>ΔT (K):</td> <td></td> </tr> <tr> <td>0 – 80 °C</td> <td>80</td> <td></td> </tr> <tr> <td>0 – 100 °C</td> <td>100</td> <td>e.g. 0 – 100 °C</td> </tr> <tr> <td>0 – 120 °C</td> <td>120</td> <td></td> </tr> <tr> <td>0 – 160 °C</td> <td>160</td> <td></td> </tr> <tr> <td>0 – 200 °C</td> <td>200</td> <td></td> </tr> <tr> <td>0 – 250 °C</td> <td>250</td> <td></td> </tr> <tr> <td>0 – 300 °C</td> <td>300</td> <td></td> </tr> <tr> <td>0 – 400 °C</td> <td>400</td> <td></td> </tr> <tr> <td>0 – 500 °C</td> <td>500</td> <td></td> </tr> <tr> <td>0 – 600 °C</td> <td>600</td> <td></td> </tr> <tr> <td colspan="3"><hr/></td> </tr> <tr> <td>-100 / + 100 °C</td> <td>200</td> <td></td> </tr> <tr> <td>-50 / + 50 °C</td> <td>100</td> <td></td> </tr> <tr> <td>-40 / + 40 °C</td> <td>80</td> <td></td> </tr> <tr> <td>-40 / + 60 °C</td> <td>100</td> <td></td> </tr> <tr> <td>-30 / + 50 °C</td> <td>80</td> <td>e.g. -30/+50 °C</td> </tr> <tr> <td>-20 / + 60 °C</td> <td>80</td> <td></td> </tr> <tr> <td>-20 / + 80 °C</td> <td>100</td> <td></td> </tr> <tr> <td colspan="3"><hr/></td> </tr> <tr> <td>+50 / +300 °C</td> <td>250</td> <td></td> </tr> <tr> <td>+50 / +400 °C</td> <td>350</td> <td></td> </tr> <tr> <td>+100 / +500 °C</td> <td>400</td> <td></td> </tr> </table>	scale:	ΔT (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		<hr/>			-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		<hr/>			+50 / +300 °C	250		+50 / +400 °C	350		+100 / +500 °C	400					
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Stem length:	L resp. L1 in mm	e.g. L = 100 mm																																																																								
Capillary line length:	$L_{FL} \geq 1$ to 15 m	L_{FL} = 3 m																																																																								
Process connection:	see page 3	e.g. G ½ B																																																																								
Options:	<table border="0"> <tr> <td>red mark</td> <td>on the dial</td> <td></td> </tr> <tr> <td>plastic clip</td> <td>red or green external on bayonet ring for NCS 100 and 160</td> <td></td> </tr> <tr> <td>stationary red pointer</td> <td>on the dial</td> <td></td> </tr> <tr> <td></td> <td>adjustable with removable ring</td> <td></td> </tr> <tr> <td colspan="3"><hr/></td> </tr> <tr> <td>window</td> <td>laminated safety glass</td> <td></td> </tr> <tr> <td></td> <td>acrylic glass (PMMA)</td> <td></td> </tr> <tr> <td></td> <td>polycarbonate (PC) (not NCS 250)</td> <td></td> </tr> <tr> <td colspan="3"><hr/></td> </tr> <tr> <td>movement</td> <td>stainless steel</td> <td></td> </tr> <tr> <td>case ventilation</td> <td>no. 22 for outdoor installation</td> <td></td> </tr> <tr> <td>case</td> <td>polished</td> <td></td> </tr> <tr> <td>bayonet ring</td> <td>polished</td> <td></td> </tr> <tr> <td colspan="3"><hr/></td> </tr> <tr> <td>protective hose</td> <td>flexible armour made of stainless steel</td> <td></td> </tr> <tr> <td>for capillary line</td> <td>flexible armour made of stainless steel with PE-cover</td> <td></td> </tr> <tr> <td></td> <td>shrinkdown plastic tubing polyolefine, max. 10 m</td> <td></td> </tr> <tr> <td colspan="3"><hr/></td> </tr> <tr> <td>Version:</td> <td>dial marking with symbol</td> <td></td> </tr> <tr> <td>German Lloyd or Russian Sea Register</td> <td></td> <td></td> </tr> <tr> <td>TFCh 100, 160</td> <td>copy of the certificate upon request</td> <td></td> </tr> <tr> <td>TFChG 63, 100, 160</td> <td></td> <td></td> </tr> <tr> <td colspan="3"><hr/></td> </tr> <tr> <td>measuring point marking</td> <td>stainless steel plate 12 mm x 55 mm (0.47" x 2.17") with wire mounting or sticker on case coverage</td> <td></td> </tr> </table>	red mark	on the dial		plastic clip	red or green external on bayonet ring for NCS 100 and 160		stationary red pointer	on the dial			adjustable with removable ring		<hr/>			window	laminated safety glass			acrylic glass (PMMA)			polycarbonate (PC) (not NCS 250)		<hr/>			movement	stainless steel		case ventilation	no. 22 for outdoor installation		case	polished		bayonet ring	polished		<hr/>			protective hose	flexible armour made of stainless steel		for capillary line	flexible armour made of stainless steel with PE-cover			shrinkdown plastic tubing polyolefine, max. 10 m		<hr/>			Version:	dial marking with symbol		German Lloyd or Russian Sea Register			TFCh 100, 160	copy of the certificate upon request		TFChG 63, 100, 160			<hr/>			measuring point marking	stainless steel plate 12 mm x 55 mm (0.47" x 2.17") with wire mounting or sticker on case coverage		<i>(order at present still in cleartext)</i>
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Example: TFCh 100, 0 – 100 °C, A5, dF 8, L = 100 mm, L_{FL} = 3 m G ½ B

Special Versions: Please describe your requirements in cleartext