



TEMPERATURE

2025



DIAL THERMOMETERS



GT-04

Gas Expansion Thermometer with Nitrogen Filling



Features

/ Housing sizes from 2.5" to 10"

/ Stainless steel housing

/ Directly att. sensor or capillary tube

/ Temperature sensor and process
connection, individually configurable

/ Measuring ranges up to +800°C

/ Optionally, alarm or analogue output

/ Measuring acc.: Cl. 1.0 and Cl. 0.6

Description:

The GT-04 series of gas expansion thermometers consists of a housing with integrated movement and a sensor system connected directly or through a capillary tube. The sensors are filled with neutral nitrogen gas that serves as a transmission medium for the temperature data. The nitrogen gas pressure in the sensor system is evaluated by the movement and mechanically displayed.

Application:

Thanks to a wide variety of possible versions, GT-04 gas expansion thermometers can be used in nearly any type of applications where the process temperature needs to be captured locally or by means of a remote display. Moreover, limit contacts, analogue output signals or optionally available temperature recorders enable evaluation of temperature data as well as controlling processes upstream or downstream.



Ordering Codes:

Order number	GT-04.	R.	X.	100.	L.	A.	37.	0.	0.	9x90.	BX1.	0.	0
GT-04 Gas Expansion Thermometer													
Version (table 1) / R = with directly mounted sensor C = with capillary tube S = special design													
Housing material / X = stainless steel													
Housing diameter / 63 = 2.5" (63 mm) 80 = 3" (80 mm) 100 = 4" (100 mm) 160 = 6" (160 mm) 250 = 10" (250 mm) xxx = special design, please specify in detailed text													
Damping / X = unfilled (standard) L = with glycerin filling S = with silicone oil filling K = with oil filling for devices with built-in limit contacts													
Version / A..H = as per table 1													
Operating range / 1..47 = as per table 2													
Capillary tube (in mm)** / 0 = none X [..] = as per table 3 XP [..] = as per table 3													
Capillary sheathing / 0 = none SP..PB = as per table 4 (only for capillary tube X)													
Sensor / DxL = sensor diameter x sensor length as per table 5													
Process connection / BX1..CS3X6 = as per table 6													
Electrical output signals / 0 = none M..TT2 = as per table 7													
Options / Multiple naming possible 0 = none A..L = as per table 8													

** Example: X [1000] = Capillary tube; Material: stainless steel 1.451; Length: 1000 mm;



Version (table 1):

with directly mounted sensor			
		connection at the bottom	A
		connection at the back, in the center	E
		connection at the bottom, at 90° angle (A to D: direction of 90° angle)	T
		connection at the back, at the center with rim at the back	F

with capillary tube			
		connection at the bottom with wall holder	A
		connection at the bottom with rim at the back for surface-mounting	B
		connection at the bottom with rim in the front for flush mounting	D
		connection at the back with rim at the back	F
		connection at the back, in the center with rim in the front	G
		connection at the back, eccentric with triangular front ring and U-clamp for flush mounting	H

Technical Specifications:

Versions and material / see the following pages

Limit contacts and analogue outputs / see table 7

Options / see table 8

max. Process pressure /

without protection sleeve: min. 16 bar (depending on temperature, sensor diameter and length)

with protection sleeve: 25 bar (special designs for higher pressure on request)

min. Sensor length / see table 5 (shorter lengths on request)

Depending on the medium and the sensor diameter different minimum sensor lengths are recommended.

Example:

Sensor diameter: 10 mm

Medium:

water: $L_{\min} = 60 \text{ mm}$

oil: $L_{\min} = 100 \text{ mm}$

air: $L_{\min} = 160 \text{ mm}$

max. Sensor length / 3 m (greater lengths on request)

max. length of capillary tube / 30 m (greater lengths on request)

Accuracy /

NG 63, 80,
NG 100, 160, 250: Cl. 1.0

Optional
NG 100, 160, 250: Cl. 0.6

Overload safety / 30 % of operating range end value however, max. +800°C (optionally 100 %)

Protection / IP65



Versions:

GT-04 Gas Expansion Thermometer

R = Thermometer with directly mounted sensor

C = Thermometer with capillary tube

Materials:

X = housing stainless steel 1.4301, with bayonet ring, IP 65 mineral glass dial, 4 mm aluminium scale, white, lettering black aluminium indicator, black brass movement

Housing diameter:

Nominal size: diameters: 63, 80, 100, 160, 250 mm

Customized designs:

(on request) rectangular housing:
72x72, 96x96,
144x144, 192x192,
72x144 vertical or horizontal,
96x192 vertical or horizontal
temperature recorder rectangular:
192 x192, 288x288 mm,
round: d = 260 mm

Damping:

X = unfilled

L = with glycerin filling for vibration attenuation

S = with silicon oil filling (increased vibration attenuation)

K = with oil filling (for devices with built-in limit contacts)

Sensor:

The temperature sensors are basically made of stainless steel 1.4541. Minimum sensor length is limited by the parameter L_s (see Table 5). This parameter indicates the sensitive part of the sensor which must be immersed into the medium in any case.

While specifying, please use the following format:

Sensor diameter x sensor length (in mm)

Example: 10x200

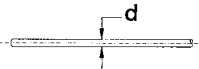

Operating ranges (table 2):

Nr.	Range in °C	Scale division in °C		Annotation
		Class 1.0	Class 0.6	
1	-200...+50	5	2	option
2	-120...+40	2	1	option
3	-110...+50	5	1	option
4	-100...+100	5	1	option
5	-100...+50	5	1	option
6	-80...+40	2	1	option
7	-60...+40	2	0.5	option
8	-60...+60	2	1	option
9	-50...+50	2	0.5	option
10	-40...+20	1	0.5	option
11	-40...+40	1	0.5	standard
12	-40...+60	2	0.5	option
13	-40...+80	2	1	option
14	-40...+110	5	1	option
15	-40...+120	2	0.5	option
16	-40...+160	5	1	option
17	-30...+30	1	0.5	standard
18	-30...+50	1	0.5	option
19	-30...+70	2	0.5	option
20	-30...+170	5	1	option
21	-20...+40	1	0.5	option
22	-20...+60	1	0.5	option
23	-20...+80	2	0.5	option
24	-20...+100	2	1	option
25	-20...+120	2	1	option
26	-20...+180	5	1	option
27	-15...+45	1	0.5	option
30	-10...+50	1	0.5	option
31	-10...+110	2	1	option
32	-10...+150	5	1	option
35	0...+60	1	0.5	standard
36	0...+80	1	0.5	option
37	0...+100	2	0.5	standard
38	0...+120	2	1	standard
39	0...+160	5	1	standard
40	0...+200	5	1	option
41	0...+250	5	2	option
42	0...+300	5	2	option
43	0...+400	10	2	option
44	0...+500	10	5	option
45	0...+600	10	5	option
46	0...+700	10	5	option
47	0...+800	10	5	option



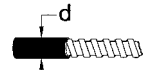

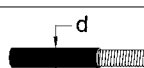
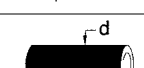
Capillary tube (table 3):

only for GT-04.C...

	Material	d (mm)	T _{min.} (°C)	T _{max.} (°C)	Code
	stainless steel 1.4541	2	-260	800	X
	stainless steel with PVC-coating	4	-60	120	XP

Capillary sheathing (tab. 4):

only for GT-04.C...

	Material	d (mm)	T _{min.} (°C)	T _{max.} (°C)	Code
	flexible, stainless steel 1.4301 with PVC coating	8	-60	120	SP
	flexible, stainless steel 1.4401	7	-260	800	X
	flexible, stainless steel 1.4401 with PVC coating	7	-60	120	XP
	lead cladding	16	-20	200	PB

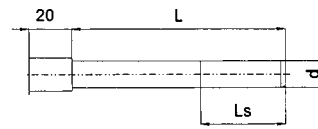
Limit contacts and analogous outputs:

Limit contacts are intended for alerting when certain threshold limits are crossed in either direction. The GT-04 thermometers in housing sizes 4" (100 mm) and 6" (160 mm) as well as the rectangular housing designs can be optionally equipped with up to 4 snap action contacts or inductive contacts integrated into the housing. The contacts will be designed as NO-contact or NC-contact (as the case may be, with reference to increasing temperature). In addition, micro-switches with higher switching load, contacts mounted on the housing or pneumatic contacts can be supplied on request.

Analogue outputs are meant for transferring the measuring data to higher-level display, evaluation or control systems. Angle of rotation measuring transmitters mounted into the housing or PT-100 measuring transmitters with sensor integrated PT-100 sensor are available.

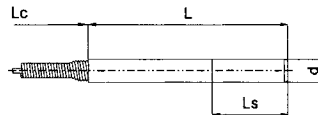
Sensor dimensions (table 5):

Possible sensor diameter and minimum sensor length L_s (in mm)* (see table)



GT-04.R

sensor directly mounted
min. sensor length:
L = L_s



GT-04.C

with capillary tube
min. sensor length:
L = L_s

Sensor Diameter (in mm)	Standard Thermometer			Thermometer with alarm contact	
	GT-04.R sensor directly mounted	GT-04.C with capillary up to 5 m	GT-04.C with capillary above 5 m	GT-04.R sensor directly mounted	GT-04.C span: 80 °C above 5 m
6	120	---	---	120	---
6.35	96	---	---	96	---
7	80	190	---	80	---
8	60	135	---	60	---
9	45	100	190	45	190
10	35	80	150	35	150
11	30	65	120	30	120
12	25	55	95	25	95
12.5	25	50	90	25	90
13	25	50	90	25	90
14	20	40	70	20	70
15	20	35	60	20	60
16	17	30	55	17	55
18	16	30	50	16	50
20	15	20	43	15	43

* others on request



Process connection (tab. 6):

Versions (tab. 7):

	Version	Connection	Material stainless steel 1.4301
	with swivel nut for GT-04.R and GT-04.C	1/2" BSP	BX1
		3/4" BSP	BX2
		1" BSP	BX3
	with permanent nipple for GT-04.R and GT-04.C	1/2" BSP	CX1
		3/4" BSP	CX2
		1" BSP	CX3
		1/2" NPT	CX4
		3/4" NPT	CX5
		1" NPT	CX6
	with turnable nipple for GT-04.R & GT-04.C	1/2" BSP	A04X1
		3/4" BSP	A04X2
		1" BSP	A04X3
	with double nipple and swivel nut for GT-04.R and GT-04.C	1/2" BSP	B01X1
		3/4" BSP	B01X2
		1" BSP	B01X3
		1/2" NPT	B01X4
		3/4" NPT	B01X5
		1" NPT	B01X6
	with double nipple and swivel nut, can be shifted to capillary for GT-04.C	1/2" BSP	CS2X1
		3/4" BSP	CS2X2
		1" BSP	CS2X3
		1/2" NPT	CS2X4
		3/4" NPT	CS2X5
		1" NPT	CS2X6
	with double nipple and swivel nut, can be shifted to sensor for GT-04.R and GT-04.C	1/2" BSP	CS3X1
		3/4" BSP	CS3X2
		1" BSP	CS3X3
		1/2" NPT	CS3X4
		3/4" NPT	CS3X5
		1" NPT	CS3X6
Other process connections:			
Metric threads, aseptic glands, tri-clamp, surface sensors, helical sensors for air etc. on request			

snap action contacts		AC: 50 VA (max. 250V) DC: 30 W (max. 250V)
x = 1: NO-contact function x = 2: NC-contact function x = 3: change-over	for housing diameters 4", 6", rectangular housing 96x96, 144x144, 72x144 mm	
1 contact	NC-contact or NO-contact, change-over	Mx
2 contacts	NC-contact, NO-contact or 2 change-over	Mxx
3 contacts	NC-contact or NO-contact not meant for 72x144 housing	Mxxx
4 contacts	NC-contact or NO-contact, not meant for 72x144 housing	Mxxxx
Inductive contacts as per NAMUR (intrinsically safe contact protecting relay required for operation)		
1 contact	NC-contact or NO-contact	Ix
2 contacts	NC-contact, NO-contact	Ixx
3 contacts	NC-contact or NO-contact not meant for 72x144 housing	Ixxx
Analogue outputs:		
Angle of rotation measuring transmitter with 0...100 Ohm, 3-wire output	diameters 100, 160 mm 96x96, 144x144 mm	R
PT-100-Measuring transmitters with 4 to 20 mA, 2-wire output, including PT-100 element in the sensor and cable	diameters 100, 160 mm 96x96, 144x144, 72x144 mm	TT2

Options (tab. 8):

housing stainless steel 1.4401 instead of 1.4301	for GT-04...X...	A
dial made of safety glass		B
maximum indicator, can be reset with key	for devices without contact	C
maximum indicator, can be reset with key	for devices with contact	D
micrometer indicator		E
movement and indicator made of stainless steel 1.4301		F
double scale °C + °F		G
precision measuring version class 0.6	for 6" (160 mm), 10" (250 mm), 144x144, 192x192, 72x144 mm only	H
mirror scale	in combination with precision measuring version only for 6" (160 mm), 10" (250 mm) only	I
polished sensor		K
sensor HALAR coated	max. 1000 mm, max. 200°C	L



Stainless steel sensor protection sleeves:
can be used for sensors with A04, B, C and CS3 connections
Versions (Table 9):

		<p>TS02... with male thread sensor-side</p>				
		<p>TS03... with female thread sensor-side</p>				
Typ	.1	.2	.3	.4	.5	.6
max. sensor diameter	10	10	10	12.5	12.5	12.5
L (mm) (min. length)	100	100	100	63	63	63
sensor connection d1 (mm)	G 1/2	G 1/2	G 1/2	G 1/2	G 1/2	G 1/2
Process connection d2 (mm)	G 1/2	G 3/4	G 1	G 1/2	G 3/4	G 1
internal diameter d3 (mm)	10.5	10.5	10.5	13	13	13
external diameter D (mm)	12.5	12.5	12.5	15	15	15
HEX 1 (mm)	22	27	36	22	27	36
HEX 2 (mm)	27	32	36	27	32	36

Parameter L1: for sensor connections B, C, CS3: L1 = sensor length
for sensor connection A04: L1 = sensor length + 15

Example: TS02.2.120 protection sleeve with G1/2-male sensor-side, G 3/4male process-side, length 120 mm, for sensor diameter 10 mm





BT-01

Bimetallic Thermometer



Features

/ Affordable price

/ Robust

/ Accuracy Class 1.0

/ Bayonet ring housing

/ Many possibilities of connection

/ Switching contacts

Description:

In bimetallic thermometers, varying thermal expansion of metals is utilized to measure and regulate temperatures. A spring element is present in an immersible brass or stainless steel tube that consists of two curved metallic strips rolled over each other, possessing different coefficients of thermal expansion. When the temperature rises the outer metallic strip expands more than the inner strip. The torsion of the spiral resulting from this action directly influences an indicator movement that displays the temperature on a dial.

Application:

The BT-01 series of precision bimetallic thermometers offers an excellent alternative to machine or glass thermometers considering the fact that they are just as cost-effective and accurate as their siblings, however, offer better reading comfort. The design of the bimetallic thermometer is extremely robust and the protection tubes which can be supplied in brass or stainless steel, are resistant to hostile media. These thermometers are available for direct mounting as well as for inserting into protection tubes, optionally with a smooth shaft, permanently fixed threaded stem or swivel nut in all commonly used thread variants. This makes the BT-01 compatible with nearly any type of processes. Starting from a minimum temperature of -50°C up to a maximum temperature of $+500^{\circ}\text{C}$, the BT-01 series of thermometers is capable of recording a temperature range that covers a large section of all applications.



Versions:

BT-01 Bimetallic Thermometer

Mounting position: The mounting position of BT-01 can be selected between axial and vertical positions. For most of the versions a pivoted housing that can be tilted in both directions is available on request.

Nominal size: The housing diameters can be selected between 63, 80, 100 und 160 mm.

Process connection: All versions are available with smooth shaft, permanently fixed screw on pin, turnable screw on pin or with loose-fitting swivel nut where only the variants with permanently fixed pin can be provided with NPT thread.

Immersion tube diameter: The immersion tube diameters can be selected between 6, 8 and 10 mm to facilitate mounting in protection tube as well as for direct mounting.

Shaft length: The immersion shaft is manufactured as per customer's specification for length which must be indicated in mm from the point of sealing surface.

Neck tube: If the housing and process connection are separated, for example, by means of an insulating layer, the thermometer can be fitted with a neck tube. Normally, these extensions protect the display from extreme access heat. The lengths are displayed in a table.

Housing material: St. steel – other materials on request.

Operating range: The operating ranges are between -50°C and +500°C.

Additional features: For all devices marking or maximum value indicators and fluid filled housings are available (for 4" and 6" diameters only).

Connecting thread: With regard to connecting threads various cylindrical or conical thread standards can be selected.

Material: As materials for the immersion tube and thread brass or stainless steel can be selected.

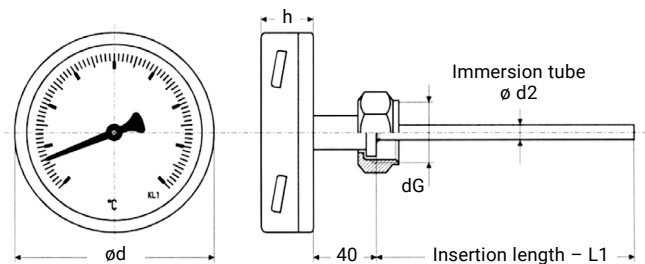
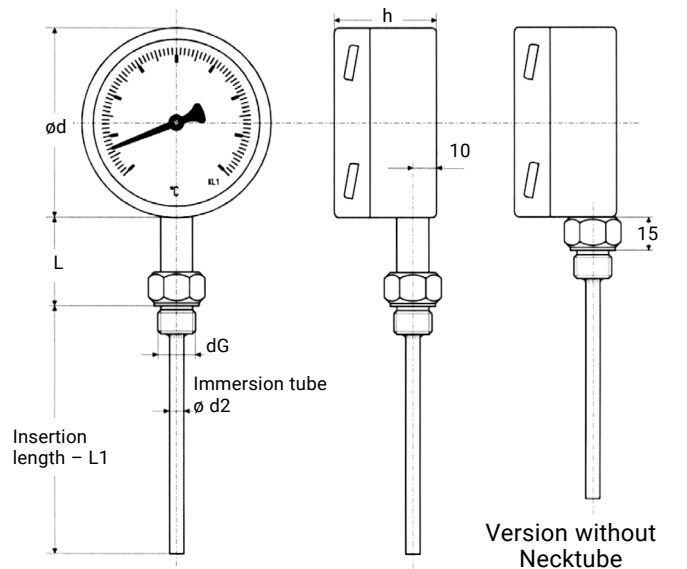
Neck tube lengths (standard):

Temperature	Length for vertical thread	Length for axial thread	Length for immersion tube
< 300 °C	37 mm	12 mm	11 mm
> 300 °C	60 mm	37 mm	37 mm
500 °C	-	60 mm	57 mm

Technical Specifications:

Ambient temp. /	-25. .+70°C
Pressure /	PN16 without immersion tube PN50 with immersion tube
Accuracy /	Class 1 according to DIN EN 13190
Housing /	Bayonet ringcap, 63, 80, 100, or 160 mm diameter
Housing material /	St. Steel 1.4301 – other materials on request
Protection class /	IP 65 according to EN 60529
Options /	· crimped ring housing with/without oil filling · Low-cost-version

Dimensions in mm:





Ordering Codes:

Order number BT-01. A. F. 80. 2. 1. □□□□. 1. E. 04. B. 2. 1. 0

BT-01 Bimetallic Thermometer

Mounting position /

- A = axial
- V = vertikal
- Z = tilted (special order)

Housing style /

- B = bayonet ringcap
- F = crimped ring

Nominal size /

- 63 = 63 mm diameter
- 80 = 80 mm diameter
- 100 = 100 mm diameter
- 160 = 160 mm diameter

Process connection /

- 1 = smooth shaft
- 2 = smooth with screw fitting
- 3 = fixed screw on pin
- 4 = turnable screw on pin
- 5 = loose swivel nut

Immersion tube diameter /

- 1 = 6 mm
- 2 = 8 mm
- 3 = 10 mm

Shaft length /

□□□□ please specify shaft length in mm

Neck tube /

- 1 = standard length (siehe Tabelle)
- 9 = special lengths on request

Housing material /

- E = Stainless steel
- 9 = other materials on request

Measuring range /

- | | |
|-------------------|------------------------------|
| 01 = -50...+50 °C | 09 = 0...+160 °C |
| 02 = -30...+50 °C | 10 = 0...+200 °C |
| 03 = -20...+40 °C | 11 = 0...+250 °C |
| 04 = -20...+60 °C | 12 = 0...+300 °C |
| 05 = 0...+60 °C | 13 = 0...+400 °C |
| 06 = 0...+80 °C | 14 = 0...+500 °C |
| 07 = 0...+100 °C | 99 = other ranges on request |
| 08 = 0...+120 °C | |

Additional features /

- A = none
- B = marking indicator
- C = flyback hand indicator with max. value pointer
- D = oil filling (up to 200 °C)

Connecting thread /

- 1 = none (smooth shaft)
- 2 = G 1/2"
- 3 = G 3/4"
- 4 = G 1"
- 5 = 1/2"-NPT
- 6 = 3/4"-NPT
- 7 = M20 x 1,5
- 8 = M24 x 1,5
- 9 = special thread (please specify)

Material (immersion tube and thread) /

- 1 = st. steel

Immersion tube from st. steel /

- 0 = none
- 1 = screw-in
- 2 = weld-on





MT-01

Industrial Thermometer



Features

- / Long scale
- / Robust design
- / Scratch-proof lettering
- / Legible from any direction
- / Straight or angled immersion tube
- / Connectable to any type of protection tubes

Description:

The immersion tube of the MT-01 series of industrial thermometers is either directly in contact with the medium or it is built into a protection tube to counter high processing pressure or chemically hostile environment. Within a short span of time it picks up the medium's temperature and transfers it to a glass capillary in its interior. The fluid filling in the capillary expands proportionally to the temperature. Its height is a reference for the measured temperature which can be read on a burned-in scale with an accuracy of 1% of the range end value.

Application:

The Profimess MT-01 Industrial Thermometers are deployed where temperatures need to be reliably measured without the use of electrical power. Their top portion is V-shaped and, therefore, can be comfortably read from any angle of view. It consists of brass-coloured anodized aluminium in which the lettering is placed below the anodized layer to ensure maximum mechanical strength. The prismatic capillary in the stem consists of solid glass material with a diameter of approx. 6 mm and has a black burned-in scale which is also absolutely resistant to scratches. The immersion tubes of the MT-01 series are made of brass for media temperatures up to 200°C. Moreover, steel or stainless steel tubes are also used. For special applications like sea-water, different suitable materials can be used.



Versions:

MT-01 Industrial Thermometer

Process connection: The thermometer can be connected to the process or to the protection tube without screw threads by insertion, with threads for screw mounting or by means of a brass swivel nut.

Immersion tube position: The top part and immersion tube are in vertical or rectangular position to each other. A third possibility is aligning it at 135°.

Scaling: The top part of MT-01 can have a single-side Celsius scale or a Celsius and a Fahrenheit scale on the right and left side of the capillary.

Filling: The capillary is white back with a wide, easy-to-read column with blue filling. The graduation is indelibly diffused into the glass. Other capillary fillings are available.

Insertion length: For MT-01 intended for insertion, the insertion length is according to the immersion tube length from "lower edge of the pin" and, in the screw on version and the variant with swivel nut it is the immersion tube length including the thread.

Connecting thread: Different thread types are available for the thread pin of MT-01.2 as well as for the swivel nut of MT-01.3.

Immersion tube material: The screw stems are available in brass, made from one piece, as per DIN Standard type B with threads for mounting lengths up to $L_1 = 63$ mm. They are hard-soldered for other lengths.

Ordering Codes:

Order number	MT-01.	2.	2.	1.	1.	1.	4.	2
MT-01 Industrial Thermometer								
Process connection /								
1 = plug-in design, no thread (on request)								
2 = screw on design								
3 = brass swivel nut								
Immersion tube position /								
1 = immersion tube vertical								
2 = immersion tube 90° angled								
3 = immersion tube 135° angled								
Operating range /								
1 = -60...+40°C								
2 = -30...+50°C								
3 = 0...+60°C								
4 = 0...+100°C								
5 = 0...+120°C								
6 = 0...+160°C								
7 = 0...+200°C								
Graduation /								
1 = Celsius (°C)								
2 = Celsius and Fahrenheit (°C + F)								
Insertion length /								
1 = 40 mm								
2 = 50 mm								
3 = 63 mm								
4 = 100 mm								
5 = 160 mm								
6 = 250 mm								
7 = 400 mm								
Connecting thread /								
0 = no thread (on request)								
1 = G1/2A, SW27								
2 = G3/4A, SW32								
3 = M20 x 1,5, SW27								
4 = M27 x 2, SW32								
Immersion tube material /								
1 = brass								
2 = steel								
3 = stainless steel 1.4571								
4 = CuNi30Mn1Fe								

Dimensions in mm:

