Resistance thermometer Pt100

with screw-in thermowell or with flange connection

Type series GA251.

Application area

- Chemical and petrochemical industry
- Plant and mechanical engineering
- General process technology

Features

- Pt100 connection in 3- or 4-wire technology
- Measuring insert 1 x Pt100 or 2 x Pt100
- Measuring insert interchangeable
- Process connection
  - for screw-in
  - with flange connection
- Various thermowell designs available

Options

- Approvals/Certificates
  - Explosion protection
  - Classification per SIL2
  - Material certificate per EN 10204-3.1
- As per UKCA regulations
- Various transmitters can be integrated
- Measuring insert for In-Process calibration

Application

The resistance thermometer is suited for operation on tanks and pipes. All standard types of process connections are available. The change in resistance, dependent on the measurement temperature, can be detected by a transmitter and converted into a standardized signal. A variety of transmitters for head mounting is available for different applications.

For In-Process calibration the integration of a special measuriung insert with additional test pipe is possible (data sheet T4-025-45,Type GA3100, reference sensor: data sheet T4-025-46, Type GA3110).

Technical data

Constructional design

Design: Measuring insert (interchangeable) with connection head and thermowell

Connection head:
- Model B
  cap with slotted screws,
  material: aluminium,
  degree of protection IP 54
- Model BUZH
  high spring cover with slotted screw,
  material: aluminium,
  degree of protection IP 65
- Field housing Ø 60 mm
  screw cap,
  material:
  stainless mat.-no. 1.4305 (303),
  degree of protection IP 67

Further connection heads upon request

Dimension:
- Pipe-ø 9 x 1 mm
  material: stainless steel mat.-no. 1.4305 (316L)
- Pipe-ø 11 x 2 mm
  material: stainless steel mat.-no. 1.4571 (316Ti)

Lengths see order details

Surface: Surface roughness standard:
$R_a \leq 1.5$ µm

Surface roughness hygienic:
$R_a \leq 0.8$ µm

Welding:
$R_a < 1.5$ µm

Optional:
Certification of material testing per EN 10204

Upon request a calculation for thermowells can be made (for static or dynamic application) with certificate.

Measuring system

Measuring insert: Per DIN 43735, interchangeable,
Ø 6 mm, rigid or as sheathed element

Material stainless steel

Measuring resistor: Pt100 per EN 60751,
3- or 4- wire technology
(see order details)

Optional :
Measuring insert with connection socket per DIN 43735 and with additional test pipe for In-Process calibration (see data sheet DB_T4-025-45)

Material: stainless steel mat.-no. 1.4571 (316 Ti)

Process connection

Design: For screw-in:
- G 1/2 B, G 3/4 B
- G 1 B
- M20 x 1,5
- 1/2“ NPT, 3/4“ NPT

With flange connection:

- DN50 PN 10/40 model B1 (EN 1092-1)
- DN25 PN 10/40 model B1 (EN 1092-1)

Further process connections upon request.

Material: stainless steel mat. no. 1.4571 (316Ti)

Accuracy

Accuracy: Class A per EN 60751

For In-Process measuring insert:
class A in the range -50...300 °C,
above this class B

Indication

Design: Programmable LED-on-site indication for stainless steel field housing (Ø 60 mm),
(see data sheet DB_M6-031)

Temperature ranges

See order details

Transmitter

Integration: Suitable Pt100 transmitter can be integrated into the connection head

Options:
- Instead of terminal block
- Mounting in the spring cover of the connection head BUZH

For further suitable analog and digital transmitters see product group T4.

Tests and certificates

SIL2: Functional safety:
per EN 61508, classification of Pt100 sensor per SIL2, only possible without transmitter

Ex approval standard measuring insert:

ATEX: BVS 04 ATEX E 144 X
Ⓔx II 2G EEx ia IIC T4/T6
U_i ≤ 30 V
P_i ≤ 200 mW
Further technical information see Ex Instruction XA_002.

UK: Intrinsically safe per EN 60079-11, P5.7 simple electrical apparatus.
Further technical information see Ex Instruction XA_030.

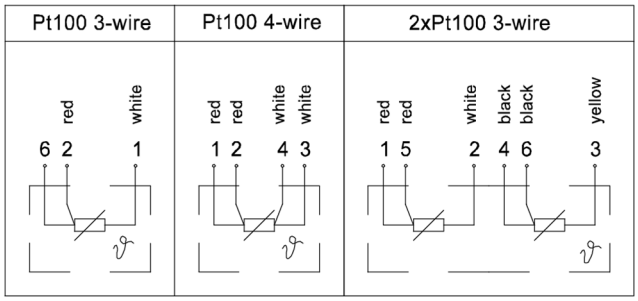
Ex approval measuring insert In-Process calibration:

ATEX: IBExU 13 ATEX 1017 X
Ⓔx II 2G Ex ia IIC T6...T1 Gb
U_i ≤ 30 V
P_i ≤ 750 mW
L_i max. 10 µH/m
C_i max. 500 pF/m
Further technical information see Ex Instruction XA_003.

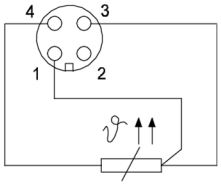
UK: Intrinsically safe per EN 60079-11, P5.7 simple electrical apparatus.
Further technical information see Ex Instruction XA_003.

Connection diagram

connection head

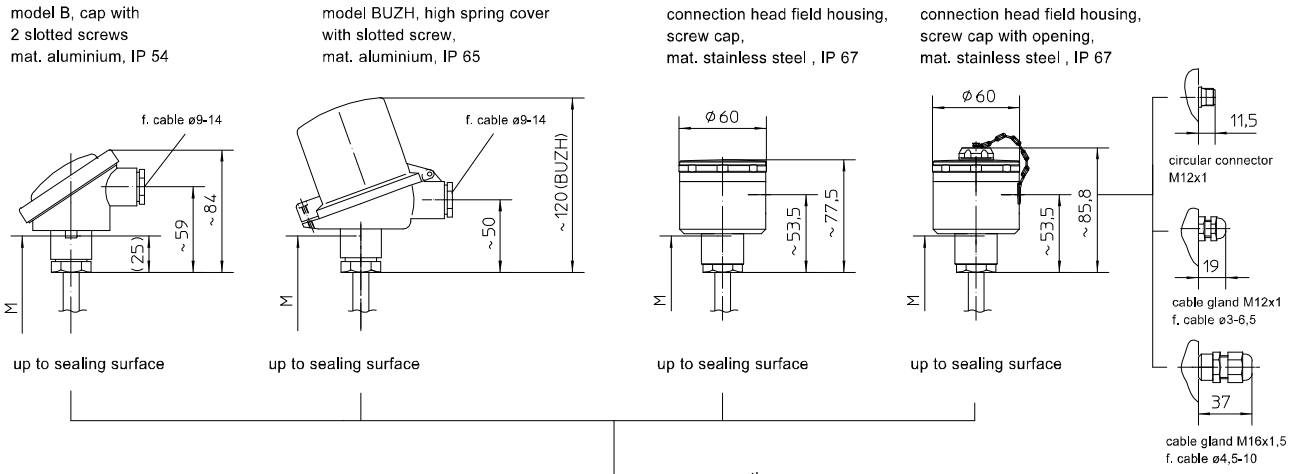


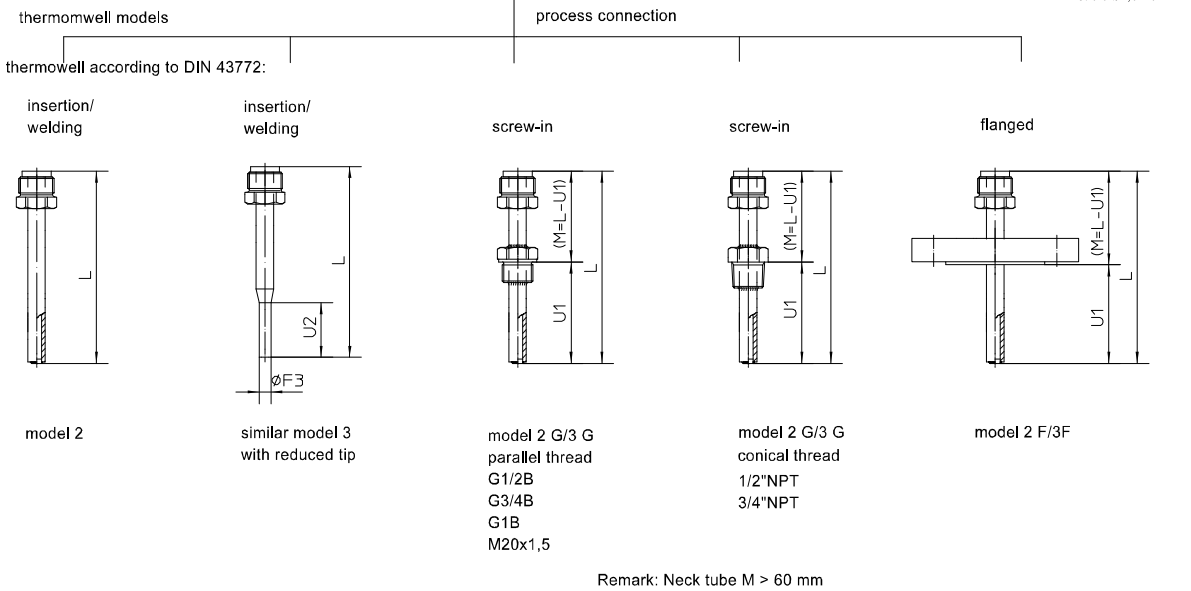
circular connector
M12x1



Dimensions

connection heads





Remark: Neck tube M > 60 mm

Order details

Resistance Thermometer Pt100 with screw-in thermowell or with flange connection			
GA251 .	design	with thermowell	
0	ex-protection	without	
1		explosion protection, type of ex-protection s. below	
A01	process connection	without, for insertion or for welding	
A10 .		G1/2 B	
A11 .		G3/4 B	
A12 .		G1 B	
A13 .		M 20 x 1.5	
A15 .		1/2" NPT	
A16 .		3/4" NPT	
A21 .		flange DN25 PN 10/40 model B1 (DIN EN 1092-1)	
A22 .		flange DN50 PN 10/40 model B1 (DIN EN 1092-1)	
1	material process conn.	stainless steel mat.-no. 1.4571 (316Ti)	
9		varying	
	thermowell length total L	**length L**	**meas. insert l_5**
B10		95 mm	105 mm
B13		115 mm	125 mm
B16		130 mm	140 mm
B19		180 mm	190 mm
B22		195 mm	205 mm
B28		245 mm	255 mm
B31		265 mm	275 mm
B37		305 mm	315 mm
B40		365 mm	375 mm
B43		395 mm	405 mm
B46		425 mm	435 mm
B49		515 mm	525 mm
B52		545 mm	555 mm
B99		varying	
C12	thermowell Ø and model	F_1 = 9 mm, thermowell 9/7, model 2 per DIN, standard	
C13		F_1 = 11 mm, thermowell 11/7, model 2 per DIN	
C16		9/7, reduced tip F3 = Ø 5x20 mm, ID 3.5 mm	
C17		12, reduced tip F3 = Ø 9x40 mm, ID 7 mm	
C99		as in writing	
1	thermowell material	stainless steel mat.-no. 1.4571 (316Ti)	
9		varying	
. . .	immersion length U1[1]	length in mm (e.g. 160 for 160 mm), Umax = L - 60 mm	
9999		varying, as in writing	

		diameter, design, material	**meas. element**	**operating range**	**test pipe**
D2-M22	measuring insert as per DIN 43735 (class A)	6 mm, st. steel, standard	thin film	-50...400 °C	--
D6-M21		6 mm, sheathed element, st.steel	ceramic	-200...600 °C	--
D22-M24		6 mm, rigid, st. steel (In-Process)		-50...400 °C [2]	28 mm [3]
N2	sensor type	1 x Pt100 in 3-wire technology, standard			
N3		1 x Pt100 in 4-wire technology			
N5		2 x Pt100 in 3-wire technology			

T11	connection head	model B	electrical connection cable gland M20x1.5 nickel plated brass, cable Ø 9-14		
T15		model BUZH			
T47		field housing	cable gland	polyamide black	cable Ø 3-6.5
T47.40					cable Ø 4.5-10
T47.21				st. steel	cable Ø 3-6.5
T47.51			with circular connector M12x1		
T49		field housing with additional opening for reference sensor	cable gland	polyamide black	cable Ø 3-6.5
T49.40					cable Ø 4.5-10
T49.21				st. steel	cable Ø 3-6.5

Additional features (to be indicated in case of need, only)		
S52	Intrinsically safe per EN 60079-11, P5.7 simple electrical apparatus (UK; standard measuring insert)	
S53	Intrinsically safe per EN 60079-11, P5.7 simple electrical apparatus (UK; Measuring insert In-Process calibration)	
S68	type of ex-protection	Ⓔx II 2G Ex ia IIC T4/T6 [4], BVS 04 ATEX E 144 X (standard measuring insert)
S75		Ⓔx II 2G Ex ia IIC T6-T1 Gb, IBExU 13 ATEX 1017 X (In-Process calibration)
Z1	incl. transmitter (pls specify separately)	mounting on the measuring insert (instead of terminal block)
Z2		mounting in the spring cover of the connection head BUZH
W1020	material certificate per EN 10204-3.1	
W2604	functional safety per EN 61508, classification per SIL2	
W2660	as per UKCA regulations [5]	
W1204	calibration certificate per EN 10204-3.1 (3 meas. points)	

Order code (example): GA2510 - A101 - B37 - C121160 - D2-M22 - N2 - T47

[1] not possible with process connection A01 (insertion/welding)
[2] up to 300 °C accuracy class A, above this class B
[3] for In-Process calibration only
[4] only with sheathed element
[5] not possible with inline diaphragm seal or connection to inline unit ASEPTconnect with pipe diameter > 25 mm