

Resistance thermometer Pt100 with screw-in thermowell or with flange connection Type Series GA251 .



Application area

- Chemical and petrochemical industry
- Machinery construction
- 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

- Explosion protection
- Transmitter can be integrated
- Classification per SIL 2
- 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 measuring insert with additional test pipe is possible (data sheet T4-025-45, Type GA3100, reference sensor: data sheet T4-025-46, Type GA3110).

Mechanical design

Measuring insert interchangeable with connection head and neck-tube

Connection head

selective

- model B, cap with 2 slotted screws, mat. aluminium, IP 54
 - model BUZH, high spring cover with slotted screw, mat. aluminium, IP 65
 - field housing Ø 60 mm, screw cap, stainless steel mat.-no. 1.4305 (303), IP 67
- further connection heads upon request

Thermowell

material stainless steel mat.-no. 1.4571 (316Ti). Special materials upon request.

Thermowell 9 x 1 bzw. 11 x 2 mm

length see order details

option: certification of material testing per DIN EN 10204

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

Measuring insert

Material stainless steel, interchangeable, DIN 43735

length of measuring insert l_s = thermowell length L + 10 mm

Ø of meas. insert depending on thermowell, standard 6 mm

resistor Pt100 according to DIN EN 60751

Optional: Measuring insert with connection socket per DIN 43735 and with additional test pipe for In-process calibration.

Material: stainless steel, mat.-no. 1.4571 (316 Ti) (see data sheet T4-025-45)

Type of sensor/class/circuit

see order details

Ex-approval

For standard measuring insert:

BVS 04 ATEX E 144 X

⊕ II 2G Ex ia IIC T4/T6 Gb

$U_i \leq 30$ V

$P_i \leq 200$ mW

More technical information see XA_002

For In-process calibration:

IBExU 13 ATEX 1017 X

⊕ II 2G Ex ia IIC T6-T1 Gb

$U_i \leq 30$ V

$P_i \leq 750$ mW

L_i max. 10 µH/m

C_i max. 500 pF/m

More technical information see XA_003.

Functional safety

per EN 61508, classification per SIL 2; without transmitter, only

Accuracy of the measuring resistor

class A according to EN 60751

Process connections

for screw-in/insertion/weld-in

· G 1/2 B, G 3/4 B

· G 1 B

· M 20 x 1.5

· 1/2" NPT, 3/4" NPT

with flange connection

· DN50 PN10/40 model B1 (DIN EN 1092-1)

· DN25 PN10/40 model B1 (DIN EN 1092-1)

Further process connections upon request
material: stainless steel mat. no. 1.4571 (316Ti)

Integration of transmitter

suitable Pt100 transmitters can be integrated into the connection head.

Options:

a) instead of terminal block

b) mounting in the spring cover of the connection head BUZH
see product group T4 for analog or digital transmitters

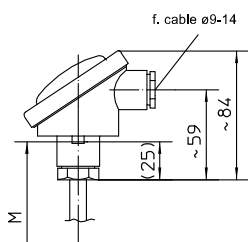
LED-on-site indication

programmable LED-on-site indication for stainless steel field housing (Ø 60 mm), see data sheet M6-031.

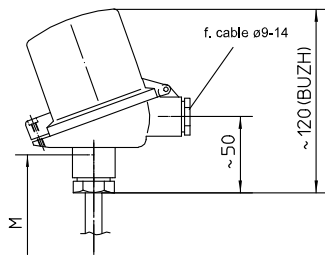
Dimensions

connection heads

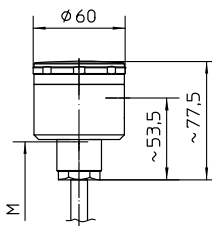
model B, cap with
2 slotted screws
mat. aluminium, IP 54



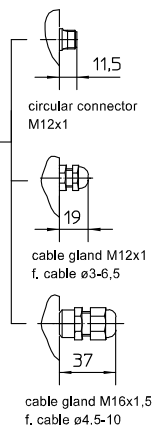
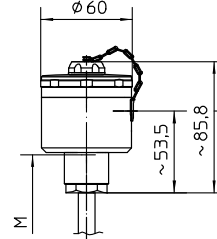
model BUZH, high spring cover
with slotted screw,
mat. aluminium, IP 65



connection head field housing,
screw cap,
mat. stainless steel, IP 67



connection head field housing,
screw cap with opening,
mat. stainless steel, IP 67

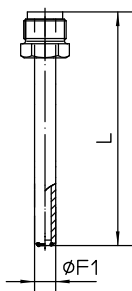


thermowell models

process connection

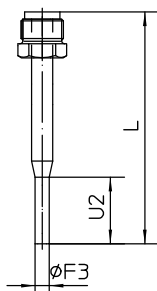
thermowell according to DIN 43772:

insertion/
welding



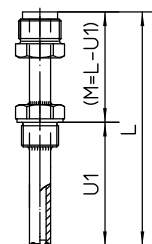
model 2

insertion/
welding



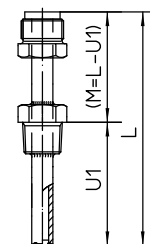
similar model 3
with reduced tip

screw-in



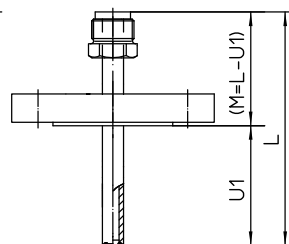
model 2 G/3 G
parallel thread
G1/2B
G3/4B
G1B
M20x1,5

screw-in



model 2 G/3 G
conical thread
1/2"NPT
3/4"NPT

flanged



model 2 F/3F
DIN-flange
DN50/PN10/40
model B1 (DIN EN 1092-1)
DN25/PN10/40
model B1 (DIN EN 1092-1)

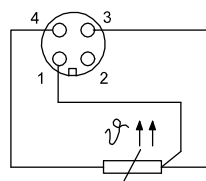
Remark: neck tube M > 60 mm

Connection diagram

connection head

Pt100 3-wire	Pt100 4-wire	2xPt100 3-wire

circular connector
M12x1



Order details

Resistance Thermometer Pt100 with screw-in thermowell or with flange connection												
design	· with thermowell								GA251 .			
ex-protection	· without								0			
	· explosion protection, type of ex-protection s. below								1			
process connection	· without, for insertion or for welding								A01			
	· G 1/2 B								A10 .			
	· G 3/4 B								A11 .			
	· G 1 B								A12 .			
	· M 20 x 1.5								A13 .			
	· 1/2" NPT								A15 .			
	· 3/4" NPT								A16 .			
	· flange DN25 PN 10/40 model B1 (DIN EN 1092-1)								A21 .			
	· flange DN50 PN 10/40 model B1 (DIN EN 1092-1)								A22 .			
material process conn.	· stainless steel mat.-no. 1.4571 (316Ti)								1			
	· varying								9			
thermowell length total L	length L	meas. insert L _s										
	95 mm	105 mm								B10		
	115 mm	125 mm								B13		
	130 mm	140 mm								B16		
	180 mm	190 mm								B19		
	195 mm	205 mm								B22		
	245 mm	255 mm								B28		
	265 mm	275 mm								B31		
	305 mm	315 mm								B37		
	365 mm	375 mm								B40		
	395 mm	405 mm								B43		
	425 mm	435 mm								B46		
	515 mm	525 mm								B49		
	545 mm	555 mm								B52		
	varying									B99		
thermowell Ø and model	· F1 = 9 mm, thermowell 9/7, model 2 per DIN, standard										C12	
	· F1 = 11 mm, thermowell 11/7, model 2 per DIN										C13	
	· 9/7, reduced tip F3 = Ø 5x20 mm, ID 3.5 mm										C16	
	· 12, reduced tip F3 = Ø 9x40 mm, ID 6.5 mm										C17	
	as in writing										C99	
thermowell material	stainless steel mat.-no. 1.4571 (316Ti)										1	
	varying										9	
immersion length U1 ¹	length in mm (e.g. 160 for 160 mm), U _{max} = L - 60 mm										. . .	
	varying, as in writing										999	
measuring insert as per DIN 43735 (class A)	diameter, design, material	meas. element		operating range		test pipe						
	· 6 mm, rigid, st. steel, standard	thin film		-50...+400 °C		-				D2-M22		
	· 6 mm, sheathed element, st. steel	ceramic		-200...+600 °C		-				D6-M21		
	· 6 mm, rigid, st. steel (In-process)			-50...+400 °C		28 mm ²				D22-M22		
sensor type	· 1 x Pt100 in 3-wire technology, standard										N2	
	· 1 x Pt100 in 4-wire technology										N3	
	· 2 x Pt100 in 3-wire technology										N5	
connection head	· model B	electrical connection cable gland M20x1.5								T11		
	· model BUZH	nickel plated brass, cable Ø 9-14								T15		
	· field housing	cable gland	polyamide black	cable Ø 3-6.5						T47		
			st. steel	cable Ø 4.5-10						T47.40		
		with circular connector M12x1		cable Ø 3-6.5						T47.21		
									T47.51			
	· field housing with additional opening for reference sensor	cable gland	polyamide black	cable Ø 3-6.5						T49		
			st. steel	cable Ø 4.5-10						T49.40		
			st. steel	cable Ø 3-6.5						T49.21		
additional features (to be indicated in case of need, only)												
type of ex-protection	·  II 2G Ex ia IIC T4/T6 Gb ³ , BVS 04 ATEX E 144 X (standard measuring insert)										S68	
	·  II 2G Ex ia IIC T6-T1 Gb, IBEExU 13 ATEX 1017 X (In-process calibration)										S75	
incl. transmitter (pls specify separately)	· mounting on the measuring insert (instead of terminal block)										Z1	
	· mounting in the spring cover of the connection head BUZH										Z2	
material certificate per DIN EN 10204-3.1												
functional safety per EN 61508, classification per SIL 2												
transmitter with resistance thermometer calibrated, incl. calibration certificate with 3 meas. points												
order code (example):												
GA2510 A101 B37 C121160 D2-M22 N2 T47												
W1020 W2604 W1204												

¹ not possible with process connection **A01** (insertion/welding)

² for In-process calibration only

³ only with sheathed element