Resistance thermometer Pt 100

with screw-in thermowell or with flange connection

Type Series GA251 .

Features

- Pt 100 connection in 3- or 4-wire technology
- Measuring insert 1 x Pt 100 or 2 x Pt 100
- 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 area

· Chemical and petrochemical industry
· Machinery construction

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

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_5= thermowell length L + 10 mm
Ø of meas. insert depending on thermowell, standard 6 mm
resistor Pt 100 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 T_i) (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
Ⓔx II 2 G Ex ia IIC T4/T6
U_i ≤ 30 V
P_i ≤ 200 mW
More technical information see XA_002

For In-process calibration:
IBExU 13 ATEX 1017 X
Ⓔx II 2 G 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
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 Pt 100 transmitters can be integrated into the connection head.
Options:
a) instead of terminal block

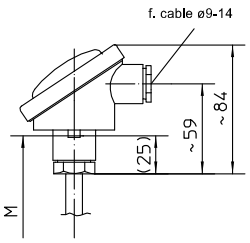
b) mounting in the spring cover of the connection head BUZH
see product group T4 for analog or digital transmitters

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

Dimensions

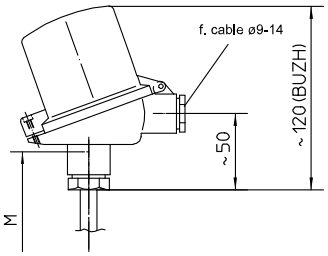
connection heads

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



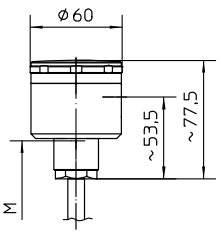
up to sealing surface

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



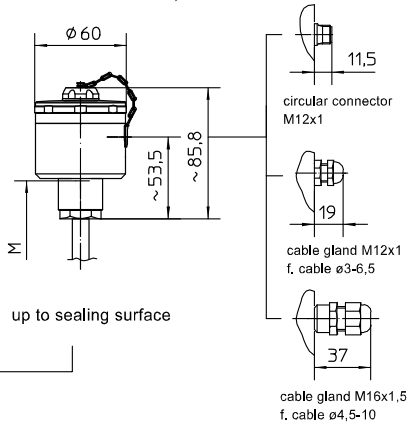
up to sealing surface

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



up to sealing surface

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



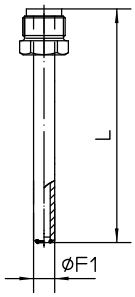
up to sealing surface

thermomwell models

process connection

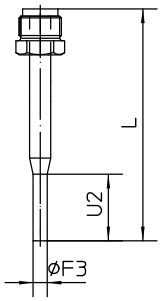
thermowell according to DIN 43772:

insertion/
welding



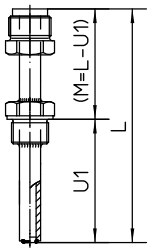
model 2

insertion/
welding



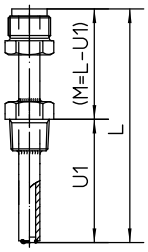
similar model 3
with reduced tip

screw-in



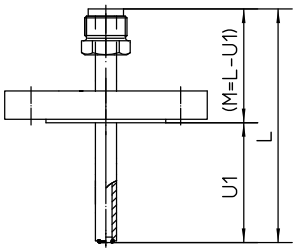
model 2 G/3 G
parallel thread
G1/2B
G3/4B
G1B
M20x1,5

screw-in



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

flanged

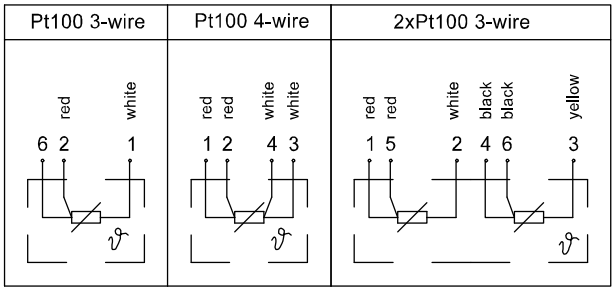


model 2 F/3F
DIN-flange
DN50/PN10/40
model B1 (DIN EN 1092-1)
DN25/PN10/40
model B1 (DIN EN 1092-1)

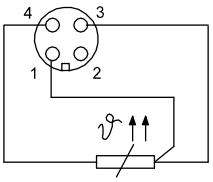
Remark: neck tube M > 60 mm

Connection diagram

connection head



circular connector
M12x1



Resistance Thermometer Pt 100 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_5			
	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 Pt 100 in 3-wire technology, standard				N2
	· 1 x Pt 100 in 4-wire technology				N3
	· 2 x Pt 100 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
			polyamide black	cable Ø 4.5-10	T47.40
			st. steel	cable Ø 3-6.5	T47.21
		with circular connector M12x1			T47.51
	· field housing with additional opening for reference sensor	cable gland	polyamide black	cable Ø 3-6.5	T49
			polyamide black	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	· Ex II 2G Ex ia IIC T4/T6 [3], BVS 04 ATEX E 144 X (standard measuring insert)	S68
	· Ex II 2G Ex ia IIC T6-T1 Gb, IBExU 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		W1020
functional safety per EN 61508, classification per SIL 2		W2604
transmitter with resistance thermometer calibrated, incl. calibration certificate with 3 meas. points		W4057

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

¹ not possible with process connection **A01** (insertion/welding)
² for In-process calibration only (no classification per SIL 2)
³ only with sheathed element