

Resistance thermometer for measuring surface temperature Type Series GA265 .



Application area

- Chemical and petrochemical industry
- Pharmaceuticals
- Biotechnology
- Food industry

Features

- Resistance thermometer for measuring the surface temperature of tanks and pipes
- Flush mounted silver temperature sensor, thermally isolated
- Replaceable 6 mm measuring insert, pretensioned
- 1 x Pt100 measuring resistor in 3-wire technology, class A
- Fast response time
- Temperature range -20... 150°C
- Mounted with weld-on or weld-in socket
- Can be supplied with connection head or M12 circular connector
- Connection head/electrical connection can be positioned as required

Options

- Explosion protection
- As per UKCA regulations
- Classification per SIL 2
- Transmitter can be integrated

Application

The resistance thermometer for measuring surface temperature measures temperatures at tanks and pipes. The thermometer is mounted on the surface of the object with a weld-on or weld-in socket. This is a very straightforward procedure. The measuring insert is pressed against the surface being measured by a pre-defined spring force. The temperature sensor is thermally isolated to prevent heat dissipation. Changes in surface temperature are converted to changes in resistance which can be sensed by a transmitter and converted to a standard signal. A range of suitable transmitters are available for different applications. Many applications for this instrument are to be found.

Technical Data

Mechanical design

A replaceable measuring insert that is spring loaded with connection head and necktube.

Necktube

Necktube stainless steel mat.-no. 1.4305 (303), male thread G 1/2 B length L= 45 mm

Electrical connection

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, mat. stainless steel mat.-no. 1.4305 (303), IP 67 according to DIN EN 60529
- circular connection with screw connection M12, IP according to DIN EN 60529

Measuring insert

Ø 6 mm, stainless steel with silver tip, thermal isolation with plastic insert.

Measuring insert screwed into the connection head under spring tension. Use heat sink compound as per data sheet T6-030.

Measuring resistor

1 x Pt 100 in 3-wire technology per DIN EN 60751 class A

Temperature range

-20...150 °C

Response time / accuracy

see fig. 1, page 2

Ex-approval

TÜV 08 ATEX 554093 X

⊕ II 1G Ex ia IIC T6/T5/T4

⊕ II 2G Ex ib IIC T6/T5/T4

⊕ II 1D Ex iaD 20 T89°C

⊕ II 2D Ex ibD 21 T129°C

$U_i \leq 30$ V

$P_i \leq 200$ mW

C_i and L_i negligible small

Intrinsically safe per EN 60079-11, P5.7

simple electrical apparatus (UK).

More technical information see XA_001.

Functional safety

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

Weight

- with connection head model B: 0.45 kg

- with M12 circular connector: 0.30 kg

Accessories

- Weld-on socket G 1/2 with bore hole 6.1 mm, material 1.4435 (316L), Ø = 30 mm suitable for welding to a tank / pipe ≥ nominal width 80 mm, order code MT8200-A1
- Weld-in socket G 1/2 without bore hole, bottom piece reduced to 1 mm for fast response, stainless steel mat.-no. 1.4435 (316L) suitable for welding in a tank with a Ø 30 mm bore hole, order code MT8200-A2

Integration transmitter

Suitable Pt 100 transmitters may be integrated in the connection head. The following devices are available:

- a) transmitter instead of terminal block
- b) transmitter mounted in the spring cover of the connection head BUZH

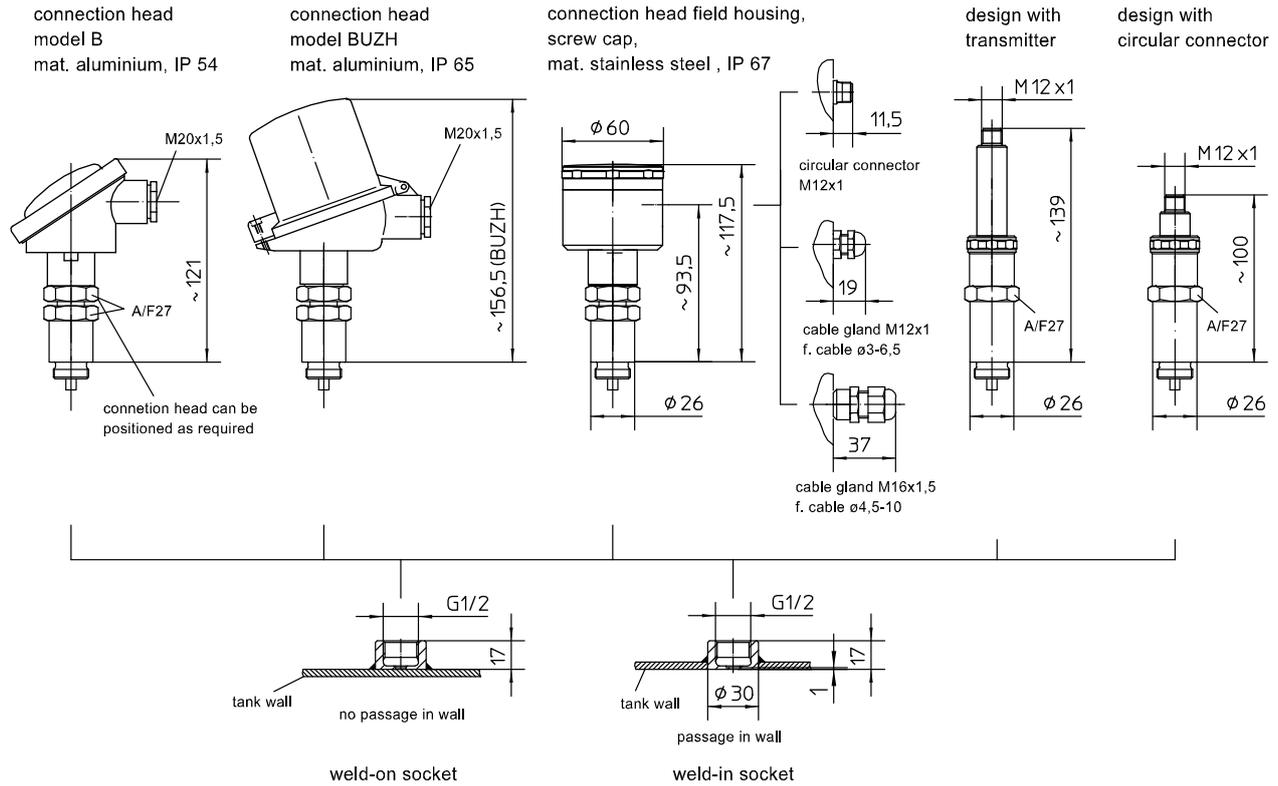
The transmitter is integrated directly in a stainless steel case in the M12 circular connector.

For a selection of transmitters see the product category: „Transmitters for temperature.“

LED-on-site indication

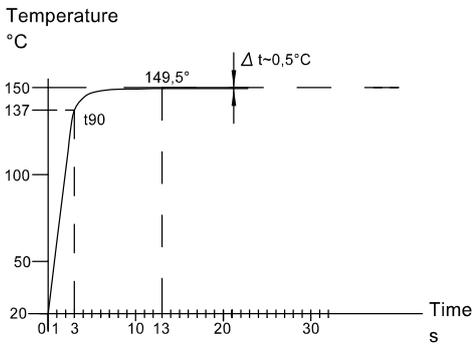
programmable LED-on-site indication for stainless steel field housing (Ø 60 mm), see data sheet M6-031.

Dimensions



Response time / accuracy (Fig. 1)

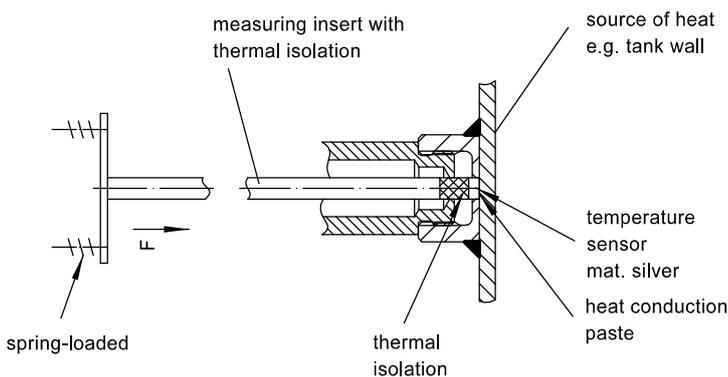
Example: design with circular connector, type GA2650-A2220-T150 and weld-on socket, type MT8200-A1 using heat conduction paste



Process data:

- ambient temperature 20 °C
- measuring point not insulated
- actual surface temperature 150 °C
- measured temperature with GA2650 = 149.5 °C after 13 sec. (temperature jump from 20 °C up to 150 °C)
- response time $\tau_{90} \sim 3$ sec.

Function principle

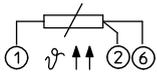


The actual fluid temperature measured is a function of the following parameters:

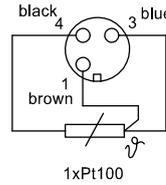
- heat transfer between temperature sensor and tank
- thermal conductivity of the fluid
- the flow rate
- thickness of tank wall
- ambient temperature

Connection diagram

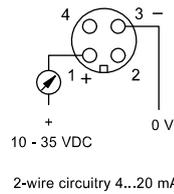
with connection socket



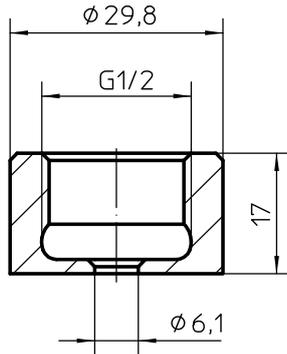
with circular connector



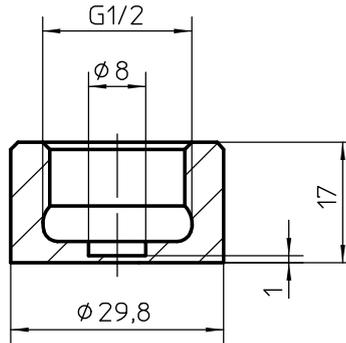
with transmitter



Accessories



weld-on socket
order code: MT8200-A1



weld-in socket
order code: MT8200-A2

Order details

Resistance thermometers for measuring surface temperature					GA265 .
version	· standard				0
	· explosion protection, type of ex-protection s. below				1
design	· flush-mounted silver temperature sensor, thermal isolation lagging tube length 45 mm, measuring insert 6 mm, pretensioned measuring resistor 1 x Pt 100 in 3-wire technology, class A				A2220
electrical connection	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	for cable Ø 3-6.5	T47
			st. steel	for cable Ø 4.5-10	T47.40
		with circular connector M12x1			T47.21
circular connector M12				T47.51	
					T150
additional features (to be indicated in case of need, only)					
type of ex-protection	· II 1G Ex ia IIC T6/T5/T4				S71
	· II 2G Ex ib IIC T6/T5/T4				S72
	· II 1D Ex iaD 20 T89°C				S73
	· II 2D Ex ibD 21 T129°C				S74
	· intrinsically safe per EN 60079-11, P5.7 simple electrical apparatus (UK)				S52
incl. transmitter	integrated in the connection head (specify separately)	· mounting on the measuring insert (instead of terminal block)			Z1
		· mounting in the spring cover of the connection head BUZH			Z2
	with circular connector M12	· transmitter 4...20 mA in stainless steel case ¹ type PA2430, see data sheet T4-082-1			Z52
functional safety per EN 61508, classification per SIL2					W2604
as per UKCA regulations					W2660
Order code (example):					GA2650 A2220 T47

accessories

weld-on socket with 6.1 mm bore hole, material no. 1.4435 (316L), ext. diam. = 30 mm	MT8200-A1
weld-in socket without bore hole, bottom piece reduced to 1 mm for fast response, material no. 1.4435 (316L), for passage in wall 30 mm	MT8200-A2

¹ not with Ex-protection