

## Resistance thermometer Pt100 with interchangeable measuring insert Type series GA254 .



### Features

- Measuring resistor 1 x Pt100 in 3- or 4-wire technology
- Measuring insert of stainless steel
- Measuring insert interchangeable (spring-loaded)
- DIN 11864-1, VARIVENT®, DIN 11851 and Clamp per DIN 32676 / ISO 2852 with EHEDG certificate
- Process connections for food/pharmaceutical/ biotechnology
- Hygienic design, constructive design according to the EHEDG recommendations
- Available with reduced tip (fast response)

### Options

- Explosion protection
- As per UKCA regulations
- Transmitter can be integrated
- Classification per SIL2
- Measuring insert for In-process calibration

### Application area

- Food industry
- Pharmaceuticals
- Biotechnology

### Application

The resistance thermometer is suited for operation on tanks and pipings especially in hygienic applications. All standard types of process connections are available. Because of its robust design it is suitable for use in a great number of technological processes. The change in resistance, dependant 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).

## Technical data

### Mechanical design

measuring insert (interchangeable)  
with connection head and thermowell

### 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) or 1.4404 (316L)

thermowell 9 x 1 or 11 x 2 mm

length see order details

option: certification of material testing per 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

resistor Pt100 per 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/ciit

see order details

### Functional safety

per EN 61508, classification per SIL2 ;  
without transmitter, only

### Ex-approval

Ex-type examination certificate for

Standard measuring insert:

BVS 04 ATEX E 144 X

⊕ II 2G EEx ia IIC T4/T6

$U_i \leq 30 \text{ V}$

$P_i \leq 200 \text{ mW}$

More technical information see XA\_002.

Intrinsically safe per EN 60079-11,  
P5.7 simple electrical apparatus (UK).

More technical information see XA\_030.

### Measuring insert In-process calibration:

IBExU 13 ATEX 1017 X

⊕ II 2G Ex ia IIC T6...T1 Gb

$U_i \leq 30 \text{ V}$

$P_i \leq 750 \text{ mW}$

$L_i$  max. 10  $\mu\text{H/m}$

$C_i$  max. 500 pF/m

More technical information see XA\_003.

Intrinsically safe per EN 60079-11,  
P5.7 simple electrical apparatus (UK).

More technical information see XA\_003.

### Accuracy of the measuring resistor

class A per EN 60751

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

### Process connections

- Aseptic connection DIN 11864-1
- DIN 11851 with coupling nut
- Tri-Clamp
- Clamp connection DIN 32676
- Clamp connection acc. to ISO 2852
- Thermowell with welding ball 30 x 40 mm

· Thread connection G1A conical, metal-to-metal joint

· VARIVENT®

· Neumo BioControl

· Ingold connection incl. O-ring gasket EPDM

Further process connections upon request.

material of process conn.: stainless steel mat. no. 1.4404 (316L).

Gasket is not included (except for Ingold).

### Surface roughness

standard:

surface roughness  $R_a \leq 1.5 \mu\text{m}$

hygienic:

surface roughness  $R_a \leq 0.8 \mu\text{m}$

welding:  $< 1.5 \mu\text{m}$

### Integrated transmitters

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

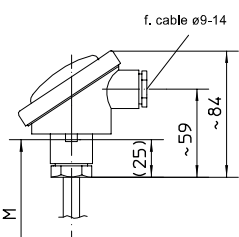
### LED-on-site indication

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

# Dimensions

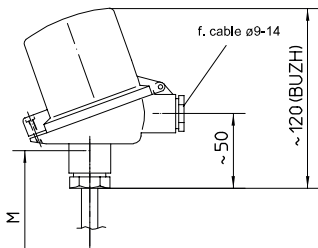
## connection heads

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



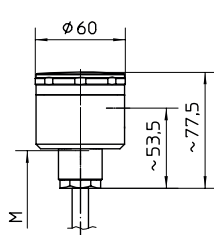
up to sealing surface

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



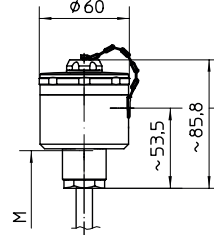
up to sealing surface

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

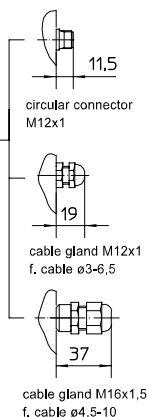


up to sealing surface

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

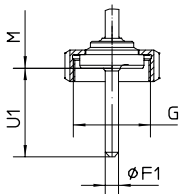


up to sealing surface

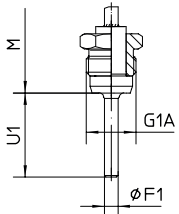


## process connections

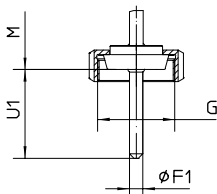
tapered coupling with groove union nut  
aseptic design per DIN 11864-1



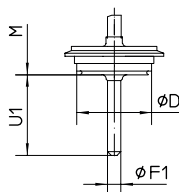
G1A dead-zone free (conical taper of metall)



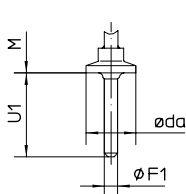
tapered coupling with groove union nut  
per DIN 11851



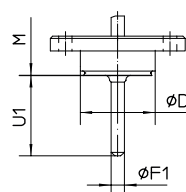
Varivent connection



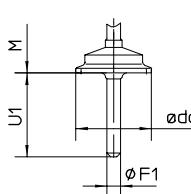
Tri-clamp connection



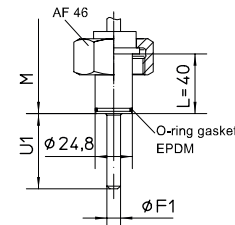
NEUMO BioControl



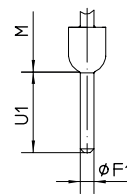
clamp connection per DIN 32676 or ISO 2852



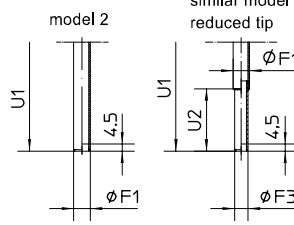
connection per INGOLD DN 25 with coupling nut



thermowell with welding ball 30x40 mm

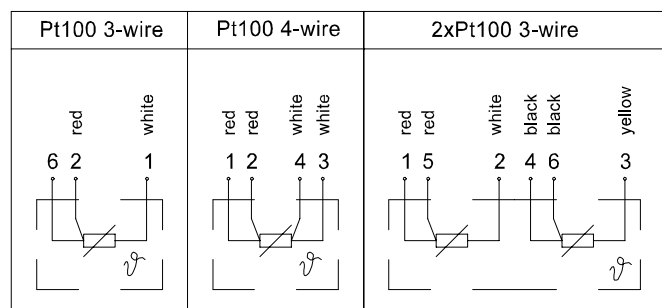


neck tube according to DIN 43772

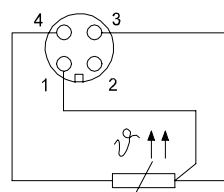


# Connection diagram

## connection head



## circular connector M12x1



# Order details

Resistance thermometer Pt100 for food/pharmaceutical/biotechnology				GA254 .	
ex-protection	· without			0	
	· explosion protection, type of ex-protection s. below			1	
surface roughness	· standard			-	
	· according to hygienic design (see data sheet D1-030)			HY	
process connection (further process connections upon request)	tapered coupling with groove union nut DIN 11851 <sup>1,2</sup> DN (da)	· DN 25 (26 mm)		A121066	
		· DN 32 (35 mm)		A121068	
		· DN 40 (41 mm)		A121070	
		· DN 50 (53 mm)		A121072	
	clamp DIN 32676 <sup>1,2</sup> DN (da)	· DN 25 (50.5 mm)		A141066	
		· DN 40 (50.5 mm)		A141070	
		· DN 50 (64 mm)		A141072	
	clamp ISO 2852 <sup>1,2</sup> DN (da)	· DN 25 (1") (50.5 mm)		A145083	
		· DN 38 (1 1/2") (50.5 mm)		A145084	
		· DN 51 (2") (64 mm)		A145085	
		· DN 63.5 (2 1/2") (77.5 mm)		A145086	
	Tri-Clamp DN (da) <sup>1,2</sup>	· DN 1" (50.5 mm)		A147083	
		· DN 1 1/2" (50.5 mm)		A147084	
	VARIVENT® <sup>1,2</sup> connection	· Form F (D = 50) for VARINLINE® access unit			A151060
		· Form N (D = 68) for VARINLINE® access unit			A151061
	BioControl (Neumo)	· Gr. 25 (30.5 mm)			A161066
		· Gr. 50 (50 mm)			A161072
		· Gr. 65 (50.5 mm)			A161073
	thermowell w. welding ball	· 30 x 40 mm			A191010
	aseptic connection DIN 11864-1, collar connection with coupling nut (further variants upon request) <sup>1</sup>	for pipes per DIN 11850 DN (da)	· DN 25 (RD 52x1.6)		B121166
· DN 32 (RD 58x1.6)				B121168	
· DN 40 (RD 65x1.6)				B121170	
· DN 50 (RD 78x1.6)				B121172	
for pipes ISO 1127 per DIN 2463 DN (da)		· DN 26.9 (RD 52x1.6)		B121266	
		· DN 33.7 (RD 58x1.6)		B121268	
		· DN 42.4 (RD 65x1.6)		B121270	
		· DN 48.3 (RD 78x1.6)		B121272	
threaded connection	· G1A, conical, metal-to-metal joint			A101015	
custom-made				A9999	
thermowell Ø	· F1 = 9 mm, thermowell 9/7, material stainless steel mat.-no. 1.4404 (316L)			C122 . . . .	
	· F1 = 11 mm, thermowell 11/7, material stainless steel mat.-no. 1.4571 (316Ti)			C131 . . . .	
	· 9/7, reduced design, tip F3 = Ø 5x20 mm, ID 3.5 mm, mat. stainless steel mat.-no.1.4404 (316L)			C162 . . . .	
as in writing				C99 . . . . .	
neck tube	· M = 80 mm			1	
	· M = 145 mm			2	
as in writing				9	
immersion length	immersion length U1	length meas. insert l5			
		neck tube M=80 mm	neck tube M=145 mm		
	35 mm	125 mm	190 mm	035	
	50 mm	140 mm	205 mm	050	
	100 mm	190 mm	255 mm	100	
	160 mm	250 mm	315 mm	160	
	250 mm	340 mm	405 mm	250	
	400 mm	490 mm	555 mm	400	
custom-made				999	
measuring insert, as per DIN 43735 (class A)	<u>diameter, design, material</u>	<u>meas. element</u>	<u>operating range</u>	<u>test pipe</u>	
	· 6 mm, st. steel, standard	thin film	-50...+400 °C	-	
	· 6 mm, sheathed element, st. steel	ceramic	-200...+600 °C	-	
	· 6 mm, rigid, st. steel (In-process)		-50...+400 °C <sup>3</sup>	28 mm <sup>4</sup>	
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 nickel plated brass			T11
	· model BUZH	cable Ø 9-14			T15
	· field housing	cable gland	polyamide	cable Ø 3-6.5	T47
			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	cable Ø 3-6.5	T49
			black	cable Ø 4.5-10	T49.40
st. steel			cable Ø 3-6.5	T49.21	
<b>additional features (to be indicated in case of need, only)</b>					
type of ex-protection	· Intrinsically safe per EN 60079-11, P5.7 simple electrical apparatus (UK; Standard measuring insert)			S52	
	· Intrinsically safe per EN 60079-11, P5.7 simple electrical apparatus (UK; Measuring insert In-process calibration)			S53	
	· II 2G Ex ia IIC T4/T6 <sup>5</sup> , BVS 04 ATEX E 144 X (standard measuring insert)			S68	
	· II 2G Ex ia IIC T6...T1 Gb, IBEU 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	
functional safety per EN 61508, classification per SIL2				W2604	
as per UKCA regulations <sup>6</sup>				W2660	
process connection electropolished				W4035	
transmitter with resistance thermometer calibrated, incl. calibration certificate 3 meas. points				W1204	
<b>order code (example):</b>				GA2540 A121066 C1311100 D2-M22 N2 T47	

<sup>1</sup> EHEDG certified only in connection with hygienic design (order code option HY)  
<sup>2</sup> EHEDG certificate valid only if gaskets are used that are listed in the "EHEDG position paper"  
<sup>3</sup> up to 300 °C accuracy class A, above this class B  
<sup>4</sup> for In-process calibration  
<sup>5</sup> for devices with Ex protection only with sheathed element  
<sup>6</sup> not possible with inline diaphragm seal or connection to inline unit ASEPconnect with pipe diameter > 25 mm