

In-line resistance thermometer Model TR25

WIKA data sheet TE 60.25



Applications

- Food and beverage industry, dairies, drink dispensers and bottling plants, breweries
- Biochemical and pharmaceutical industries, paints and dyes sector, cleanroom technology

Special features

- Hygienic version (dead space free transitions)
- Residue-free and quick cleaning of the measuring point (piggable, suitable for SIP and CIP)
- Materials and surface finish qualities in accordance with pharmaceutical industry directives and standards
- High measuring accuracy with short response times
- Explosion-proof versions Ex-i



In-line resistance thermometer model TR25

Description

Resistance thermometers for temperature measurement in processes with extremely high hygienic requirements. These thermometers are used in applications where a thermowell immersed into the process medium is not possible or not desired.

A wide variety of process connections is available, so that these thermometers can be used for many different processes without any problems.

3- or 4-wire platinum measurement resistances in accuracy classes A and B per DIN EN 60751 serve as sensors.

Analogue or digital transmitters built into the connection head are capable of making various output signals available, for example 4 ... 20 mA, HART® protocol, FOUNDATION™ fieldbus or PROFIBUS® PA.

Sensor

Sensor connection method

- 3-wire With a cable length of approx. 30 m or longer, measuring errors can occur.
- 4-wire The internal lead resistance of the connecting wires is negligible.

Sensor tolerance value per DIN EN 60751

- Class B
- Class A

The combination of 2-wire connection and Class A is not permissible.

For detailed specifications for Pt100 sensors, see Technical Information IN 00.17 at www.wika.com.

Documentation and correction of measuring errors

With these electrical thermometers, the measuring errors can be determined under realistic mounting conditions and certified with a test certificate. The standard test temperature is 70 °C; others available on request.

If a digital transmitter is mounted within the thermometer, any measurement error determined can be corrected using the transmitter's adaption feature.

Materials

In sanitary applications mainly austenitic CrNiMo steels are used as standard materials.

In the food and beverage sector and in the pharmaceutical industry the qualities 1.4404 and 1.4435 are to be preferred to the titanium-stabilised steel 1.4571 (AISI 316Ti).

For these thermometers WIKA uses stainless steel 1.4435 as standard material for all metallic surfaces that may come into contact with the process medium.

Surface finish

The cleanability of a plant in the scope of CIP/SIP processes is mainly affected by the quality of the surfaces in contact with the process medium.

In order to avoid concentration of pathogenic organisms, the surface in contact with the product should be passive and free of microscopic faults.

All model TR25 surfaces that may come into contact with the process medium achieve an average surface roughness of $R_a \leq 0,8 \mu\text{m}$.

On request we supply the surfaces in contact with the product in the following versions:

- 0.8 μm (standard)
- 0.4 μm
- 0.4 μm electropolished
- 0.25 μm mechanical- and electropolished

Neck tube

Material: Stainless steel

The neck tube is screwed into the connection head (M24 x 1.5).

Standard neck length N(MH): 50 mm
Standard diameter d: 12 mm

In many cases, the neck tube serves as a cooling extension between the connection head and the medium, in order to protect any possible built-in transmitter from high medium temperatures.

Tubular body

Material: stainless steel 1.4435

Available documentation, certificates

Hygiene certificates

Approval	3-A (74-03) certificate
Clamp	yes
DIN 11851	yes ¹⁾
BioConnect®	yes
DIN 11864-1	yes
DIN 11864-2	yes
DIN 11864-3	yes
IDF	yes
APV RJT	no
SMS	no

1) In combination with
- ASEPTO-STAR k-flex upgrade gaskets from Kieselmann GmbH, Germany or
- SKS gasket set DIN 11851 EHEDG from Siersema Komponenten

Process connection

Material: stainless steel 1.4435

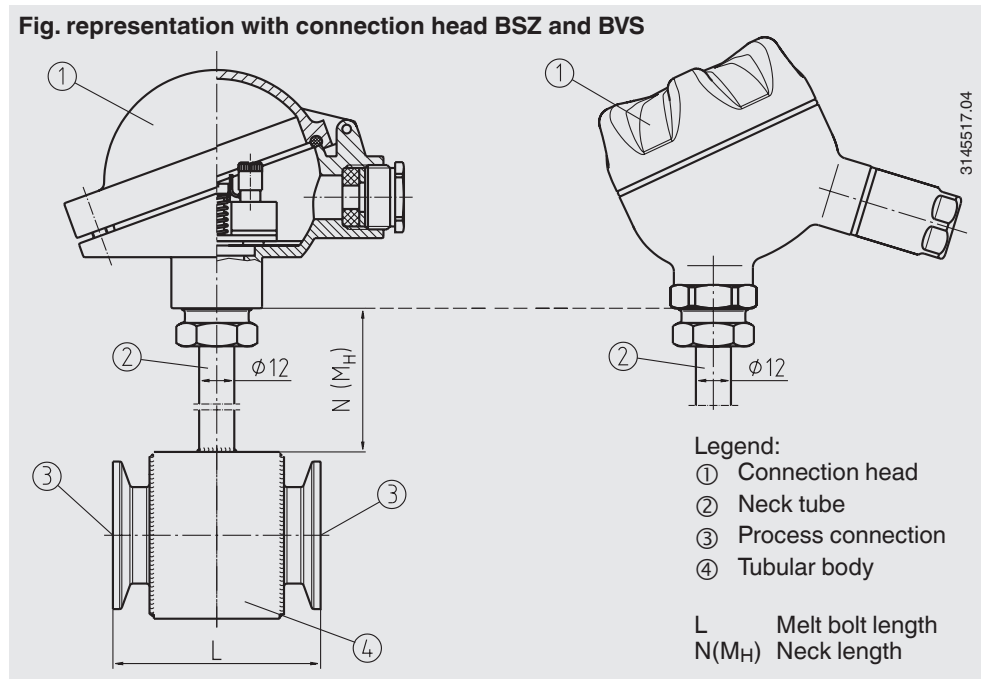
- Tri-clamp
- Clamp per DIN 32676
- Thread per DIN 11851 (DIN 11887)
- Thread per DIN 11864-1 Form A
- Thread NEUMO BioConnect®
- Thread SMS
- Thread IDF
- Thread APV RJT

Others on request

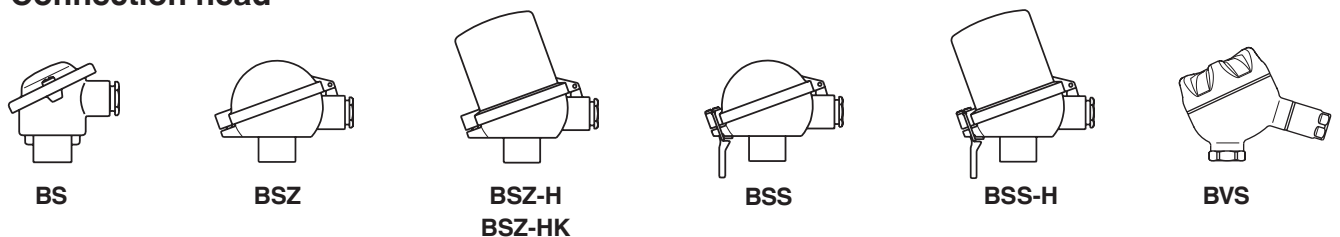
Seal (option)

Material: NBR, PTFE or EPDM

TR25 components



Connection head

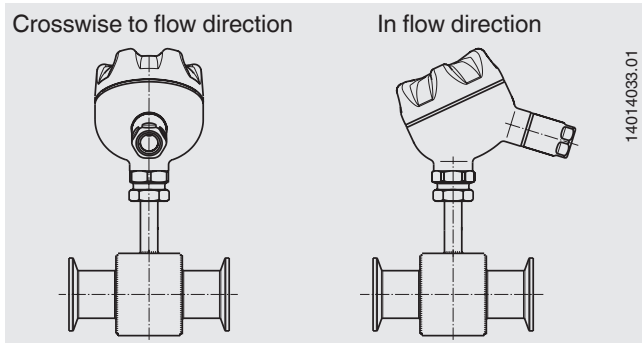


Model	Material	Cable entry	Ingress protection	Cap	Surface finish	Weight in kg
BS	Aluminium	M20 x 1.5 ¹⁾	IP 65	Cap with 2 screws	blue, painted ²⁾	0.142
BSZ	Aluminium	M20 x 1.5 ¹⁾	IP 65	Hinged cover with cylinder head screw	blue, painted ²⁾	0.290
BSZ-H	Aluminium	M20 x 1.5 ¹⁾	IP 65	Hinged cover with cylinder head screw	blue, painted ²⁾	0.303
BSZ-HK	Plastic	M20 x 1.5 ¹⁾	IP 65	Hinged cover with cylinder head screw	blank	0.135
BSS	Aluminium	M20 x 1.5 ¹⁾	IP 65	Hinged cover with clip	blue, painted ²⁾	0.270
BSS-H	Aluminium	M20 x 1.5 ¹⁾	IP 65	Hinged cover with clip	blue, painted ²⁾	0.318
BVS	Stainless steel	M20 x 1.5 ¹⁾	IP 68	Screw cover	precision casting, electropolished	0.508

1) Standard

2) RAL5022, polyester paint saltwater-resistant

Position of the cable entry at the connection head



Connection head with digital indicator (option)

As an alternative to the standard connection head the thermometer can be fitted with an optional DIH10 digital indicator. The connection head used for this is similar to the model BSZ-H head. For operation, a 4 ... 20 mA transmitter is needed, which is mounted to the measuring insert. The scale range of the indicator is configured identically to the measuring range of the transmitter.

Designs with ignition protection type "intrinsically safe", Ex-i, are also available.



Fig. connection head with digital indicator, model DIH10

Transmitter (option)

Depending on the connection head used, a transmitter can be mounted within the thermometer.

- Mounted instead of terminal block
- Mounted within the cap of the connection head
- Mounting not possible

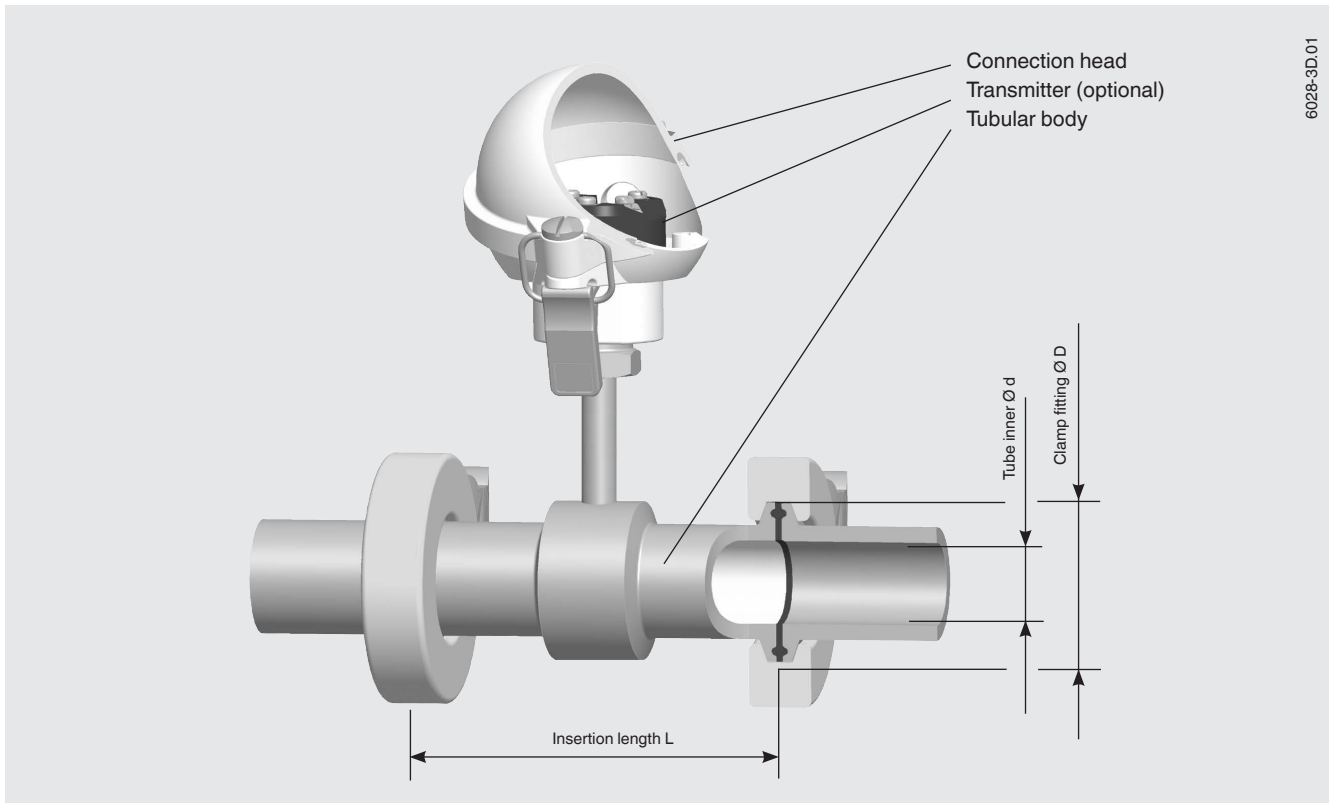
Connection head	Transmitter model				
	T12	T19	T24	T32	T53
BS	-	○	○	-	○
BSZ / BSZ-K	○	○	○	○	○
BSZ-H / BSZ-HK	●	●	●	●	●
BSS	○	○	○	○	○
BSS-H	●	●	●	●	●
BVS	○	○	○	○	○

Mounting of 2 transmitters on request.

Model	Description	Explosion protection	Data sheet
T19	Analogue transmitter, configurable	without	TE 19.03
T24	Analogue transmitter, PC configurable	optional	TE 24.01
T12	Digital transmitter, PC configurable	optional	TE 12.03
T32	Digital transmitter, HART® protocol	optional	TE 32.04
T53	Digital transmitter FOUNDATION™ Fieldbus and PROFIBUS® PA	Standard	TE 53.01

Dimensions in mm

Version with clamp connection



6028-3D.01

Tri-clamp for pipes per ISO 1127

DN	For pipe Outside Ø x wall thickness	Dimensions in mm			PN ¹⁾
		d	L	D	
8	13.5 x 1.6	10.3	71	25.0	40
10	17.2 x 1.6	14.0	71	25.0	40
15	21.3 x 1.6	18.1	71	34.0	40
20	26.9 x 1.6	23.7	71	50.5	40
25	33.7 x 2	29.7	71	50.5	40
32	42.4 x 2	38.4	71	50.5	40
40	48.3 x 2	44.3	71	64.0	40

Tri-clamp for pipes per ASME BPE

DN	For pipe Outside Ø x wall thickness	Dimensions in mm			PN ¹⁾
		d	L	D	
1"	25.4 x 1.65	22.1	71	50.5	40
1 ½"	38.1 x 1.65	34.8	71	50.5	40
2"	50.8 x 1.65	47.5	71	64.0	40

Tri-clamp for pipes per BS4825 Part 3 and O.D.-Tube

DN	For pipe Outside Ø x wall thickness	Dimensions in mm			PN ¹⁾
		d	L	D	
½"	12.7 x 1.6	9.5	71	25.0	40
¾"	19.05 x 1.6	15.85	71	25.0	40
1"	25.4 x 1.6	22.2	71	50.5	40
1 ½"	38.1 x 1.6	34.9	71	50.5	40
2"	50.8 x 1.6	47.6	71	64.0	40

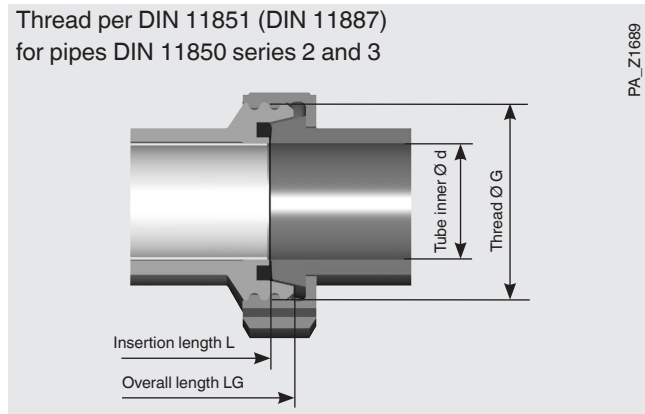
Clamp per DIN 32676 for pipes per DIN 11850

DN	For pipe Outside Ø x wall thickness	Dimensions in mm			PN ¹⁾
		d	L	D	
25	28 x 1	26	71	50.5	40
32	34 x 1	32	71	50.5	40
40	40 x 1	38	71	50.5	40
50	52 x 1	50	71	64.0	40

1) For maximum pressure range consider the pressure range 'pressure rating of clamp'.

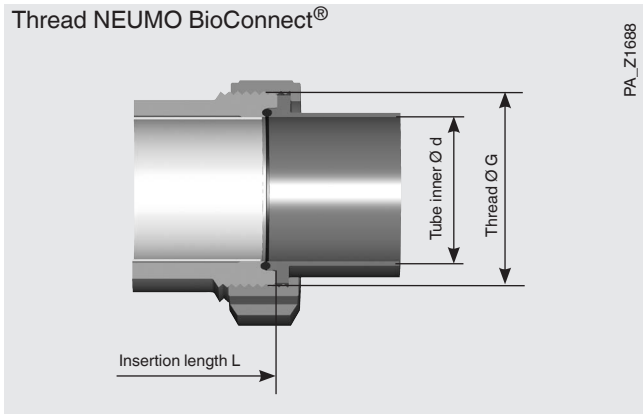
Version with threaded connection

Thread per DIN 11851 (DIN 11887)
for pipes DIN 11850 series 2 and 3



DN	For pipe Outside Ø x wall thickness	Dimensions in mm				PN
		d	G	LG	L	
10	13 x 1.5	10	Rd 28 x 1/8	84	76	40
15	19 x 1.5	16	Rd 34 x 1/8	84	76	40
20	23 x 1.5	20	Rd 28 x 1/6	84	72	40
25	29 x 1.5	26	Rd 52 x 1/6	84	70	40
32	35 x 1.5	32	Rd 58 x 1/6	84	70	40
40	41 x 1.5	38	Rd 65 x 1/6	84	70	40
50	53 x 1.5	50	Rd 78 x 1/6	84	70	25
65	70 x 2	66	Rd 95 x 1/6	88	72	25

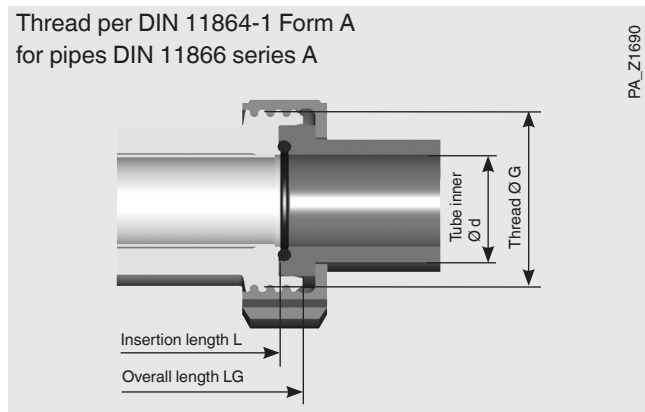
Thread NEUMO BioConnect®



Thread NEUMO BioConnect®
for pipes DIN 11866 series A

DN	For pipe Outside Ø x wall thickness	Dimensions in mm			PN
		d	G	L	
15	19 x 1.5	16	M30 x 1.5	84	40
20	23 x 1.5	20	M36 x 2	84	40
25	29 x 1.5	26	M42 x 2	84	40
32	35 x 1.5	32	M52 x 2	84	40
40	41 x 1.5	38	M56 x 2	84	40
50	53 x 1.5	50	M86 x 2	84	25
65	70 x 2	66	M90 x 3	88	25

Thread per DIN 11864-1 Form A
for pipes DIN 11866 series A



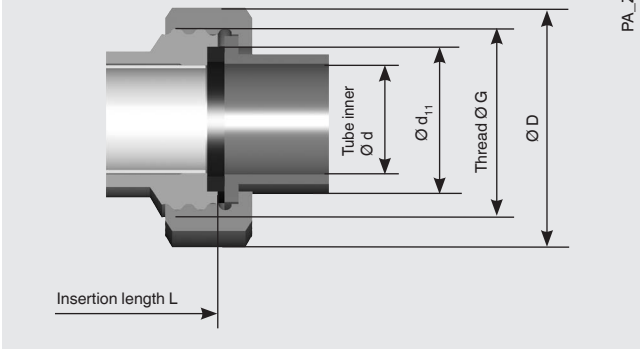
DN	For pipe Outside Ø x wall thickness	Dimensions in mm				PN
		d	G	LG	L	
10	13 x 1.5	10	Rd 28 x 1/8	84	76	40
15	19 x 1.5	16	Rd 34 x 1/8	84	76	40
20	23 x 1.5	20	Rd 28 x 1/6	84	74	40
25	29 x 1.5	26	Rd 52 x 1/6	84	72	40
32	35 x 1.5	32	Rd 58 x 1/6	84	70	40
40	41 x 1.5	38	Rd 65 x 1/6	84	70	40
50	53 x 1.5	50	Rd 78 x 1/6	84	70	25
65	70 x 2	66	Rd 95 x 1/6	88	72	25

Thread NEUMO BioConnect®
for pipes ISO 1127

DN	For pipe Outside Ø x wall thickness	Dimensions in mm			PN
		d	G	L	
15	21.3 x 1.6	18.1	M30 x 1.5	84	40
20	26.9 x 1.6	23.7	M36 x 2	84	40
25	33.7 x 2	29.7	M42 x 2	84	40
32	42.4 x 2	38.4	M52 x 2	84	40
40	48.3 x 2	44.3	M56 x 2	84	40
50	60.3 x 2	56.3	M86 x 2	84	25
65	76.1 x 2.3	71.5	M90 x 3	88	25

Thread SMS

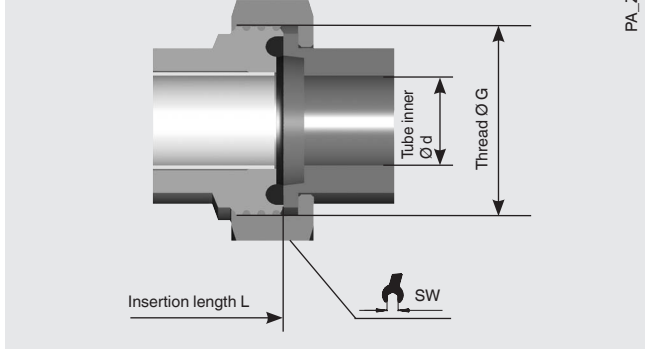
PA_Z1724



DN	For pipe Outside Ø x wall thickness	Dimensions in mm					PN
		d	G	L	D	d ₁₁	
1"	25.6 x 1.5	22.6	Rd 40 x 1/6	84	51	32	40
1 1/2"	38.6 x 1.5	35.6	Rd 60 x 1/6	84	74	48	40
2"	51.6 x 1.5	48.6	Rd 70 x 1/6	84	84	61	40

Thread APV RJT

PA_Z1726

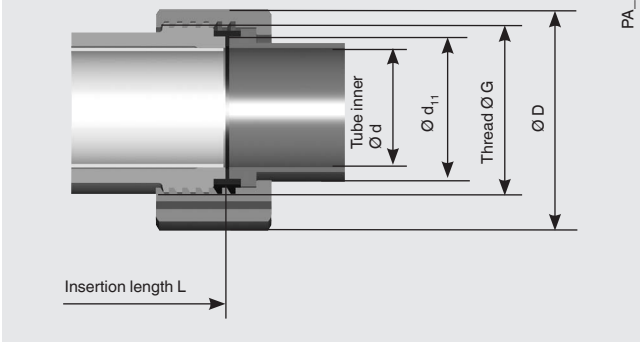


DN	For pipe Outside Ø x wall thickness	Dimensions in mm				PN
		d	G	L	SW	
1"	25.4 x 1.6	22.2	1 13/16 x 8"	84	50	40
1 1/2"	38.1 x 1.6	34.9	2 5/16 x 8"	84	65	40
2"	50.8 x 1.6	47.6	2 7/8 x 6	84	80	40

Fixing material such as female union nut or clamp element as well as sealings are not included in the standard scope of delivery.

Thread IDF

PA_Z1725



DN	For pipe Outside Ø x wall thickness	Dimensions in mm					PN
		d	G	L	D	d ₁₁	
1"	25.6 x 1.5	22.6	1" IDF	84	51	32	40
1 1/2"	38.6 x 1.5	35.6	1 1/2" IDF	84	74	48	40
2"	51.6 x 1.5	48.6	2" IDF	84	84	61	40

Explosion protection (option)

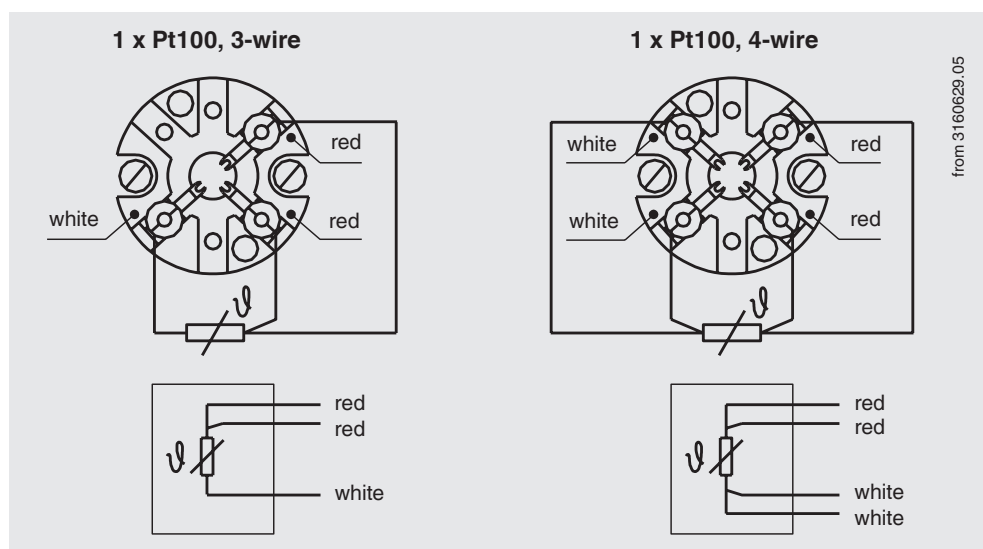
Resistance thermometers of the TR25 series are available with a EC type-examination certificate for "intrinsically safe", Ex-i, ignition protection.

These instruments comply with the requirements of 94/9/EC (ATEX) directive for gas and dust.

The classification/suitability of the instrument (permissible power P_{max} as well as the permissible ambient temperature) for the respective category can be seen on the EC type-examination certificate and in the operating instructions.

Built-in transmitters have their own EC type-examination certificate. The permissible ambient temperature ranges of the built-in transmitters can be taken from the corresponding transmitter approval. The system operator is responsible for using suitable thermowells.

Electrical connection



For the electrical connections of built-in temperature transmitters see the corresponding transmitter data sheets or operating instructions.

Ordering information

Model / Explosion protection / Connection head / Female thread at the connection head / Terminal block, transmitter / Position of the cable entry / Process connection / Material wetted parts / Surface finish / Insertion length / Neck tube, -length / Measuring element / Connection method / Temperature range / Certificates / Options

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