

# Resistance thermometer For sanitary applications Model TR20, flush diaphragm, NEUMO BioControl®

WIKA data sheet TE 60.20



## Applications

- Food industry
- Sanitary applications
- Bio and pharmaceutical industry

## Special features

- Dead space free
- Hygienic version
- Materials and surface finish quality in accordance with standards of hygienic designs
- Material and surface finish quality in accordance with pharmaceutical industry directives and standards



**Resistance thermometer model TR20**  
Options: Sealing combination at neck tube, cable gland in hygienic design

## Description

The model TR20 resistance thermometer is used for temperature measurement in sanitary applications.

It is equipped with a NEUMO BioControl® flush connection and is so particularly suitable for applications where a thermowell immersed into the process medium is not possible or not desired. For increased hygiene requirements for those elements in contact with the surrounding environment, a stainless steel head is available in an optimised hygienic design.

BioControl® is a registered trademark of the company NEUMO.

## Sensor

Versions with 1 x Pt100 in 2-, 3- or 4-wire connection. The standard temperature range is -50 ... +150 °C.

### Sensor tolerance value per DIN EN 60751

- Class B
- Class A (not with 2-wire connection)

The combination of a 2-wire connection with class A is not permissible, because the lead resistance of the measuring insert overrides the higher sensor accuracy.

For detailed specifications for Pt100 sensors, see Technical information IN 00.17 at [www.wika.com](http://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 measured error determined can be corrected using the transmitter's adaption feature.

## Neck tube

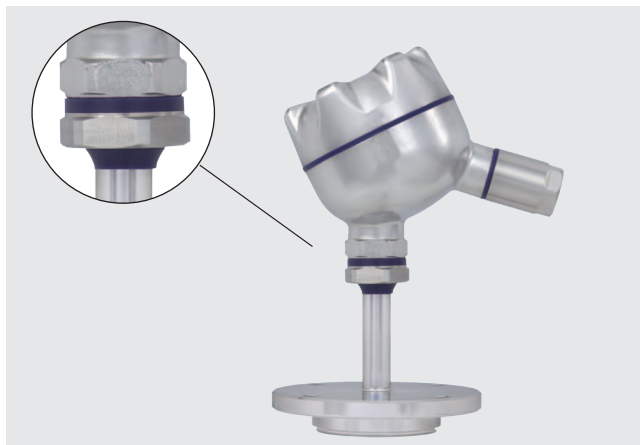
- Material stainless steel
- Diameter 12 mm
- Neck length 70 mm (standard)  
50 mm

others on request

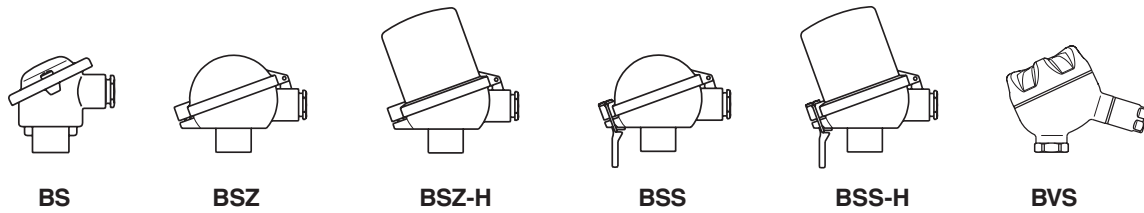
## Options

The transition from the connection head to the thermowell is effected via an optional sealing combination of flat gasket and wiper. This combination permanently prevents the penetration and depositing of humidity and impurities in this area (IP 68). Additionally, the sealing combination simplifies the cleaning process significantly.

The design of the BVS head combined with the cable gland in hygienic design results in an easy to clean and hygienic measuring location, even in areas which are not in contact with the medium.



## Connection head



| Model | Material        | Cable entry             | Ingress protection | Cap                                   | Surface finish                     | Weight in kg |
|-------|-----------------|-------------------------|--------------------|---------------------------------------|------------------------------------|--------------|
| BS    | Aluminium       | M20 x 1.5 <sup>1)</sup> | IP 65              | Cap with 2 screws                     | blue, lacquered <sup>2)</sup>      | 0.142        |
| BSZ   | Aluminium       | M20 x 1.5 <sup>1)</sup> | IP 65              | Hinged cover with cylinder head screw | blue, lacquered <sup>2)</sup>      | 0.290        |
| BSZ-H | Aluminium       | M20 x 1.5 <sup>1)</sup> | IP 65              | Hinged cover with cylinder head screw | blue, lacquered <sup>2)</sup>      | 0.303        |
| BSS   | Aluminium       | M20 x 1.5 <sup>1)</sup> | IP 65              | Hinged cover with clip                | blue, lacquered <sup>2)</sup>      | 0.27         |
| BSS-H | Aluminium       | M20 x 1.5 <sup>1)</sup> | IP 65              | Hinged cover with clip                | blue, lacquered <sup>2)</sup>      | 0.318        |
| BVS   | Stainless steel | M20 x 1.5 <sup>1)</sup> | IP 68              | Screw cover                           | Precision casting, electropolished | 0.50         |

1) Standard

2) RAL5022, polyester paint saltwater-resistant

## 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 indication range is configured identically to the measuring range of the transmitter.



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

Mounting of 2 transmitters on request.

| Connection head | Transmitter model |     |     |     |     |        |
|-----------------|-------------------|-----|-----|-----|-----|--------|
|                 | T12               | T19 | T24 | T32 | T53 | T91.10 |
| BS              | -                 | ○   | ○   | -   | ○   | ○      |
| BSZ / BSZ-K     | ○                 | ○   | ○   | ○   | ○   | ○      |
| BSZ-H / BSZ-HK  | ●                 | ●   | ●   | ●   | ●   | ●      |
| BSS             | ○                 | ○   | ○   | ○   | ○   | ○      |
| BSS-H           | ●                 | ●   | ●   | ●   | ●   | ●      |
| BVS             | ○                 | ○   | ○   | ○   | ○   | ○      |

| Model  | Description   | Explosion protection | Data sheet |
|--------|---|----------------------|------------|
| T19    | Analogue transmitter, configurable                        | without              | TE 19.03   |
| T24    | Analogue transmitter, PC configurable                     | optional             | TE 24.01   |
| T91.10 | Analogue transmitter, fixed measuring range               | without              | TE 91.01   |
| 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   |

## BioControl® connection

The flange connection is designed for fitting to the model 910.60 NEUMO BioControl® system.

### BioControl® connection

Size 25, 50 and 65

### Wetted material

Stainless steel 1.4435

### Wetted surface

Versions:

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

### Sealing (available as an option)

EPDM or FEP with FPM core  
(both materials are FDA approved)

### Nominal pressure

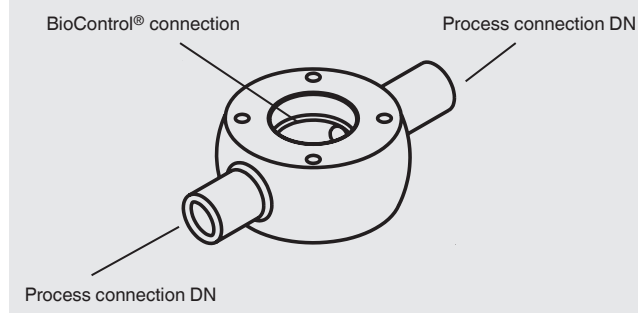
PN 16

## BioControl® housing

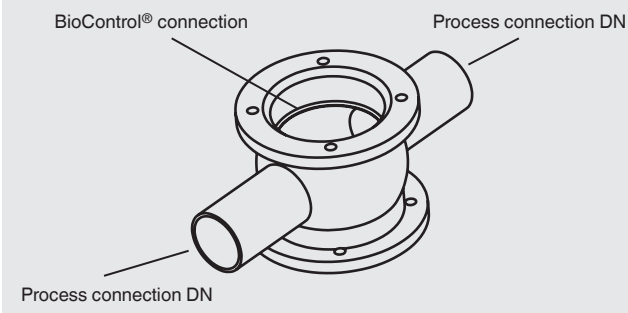
The housing of the BioControl® system is not part of the scope of delivery of the resistance thermometer described here, and can be ordered as an additional item.

For a detailed description of this housing, see data sheet AC 09.14.

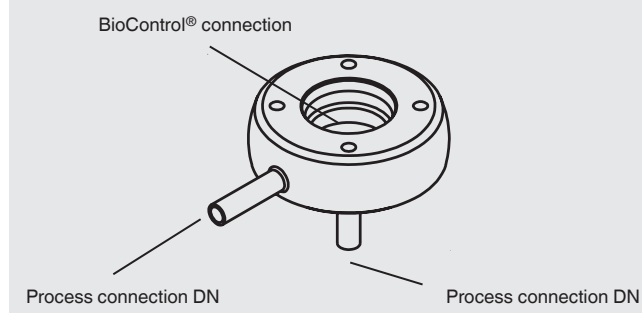
### Housing type (G), size 25



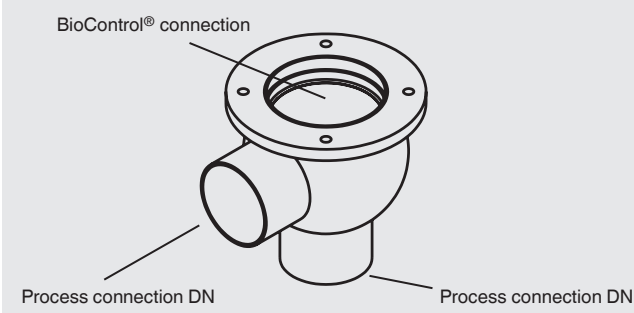
### Housing type (G), sizes 50 and 65



### Housing type - angled variant (U), size 25



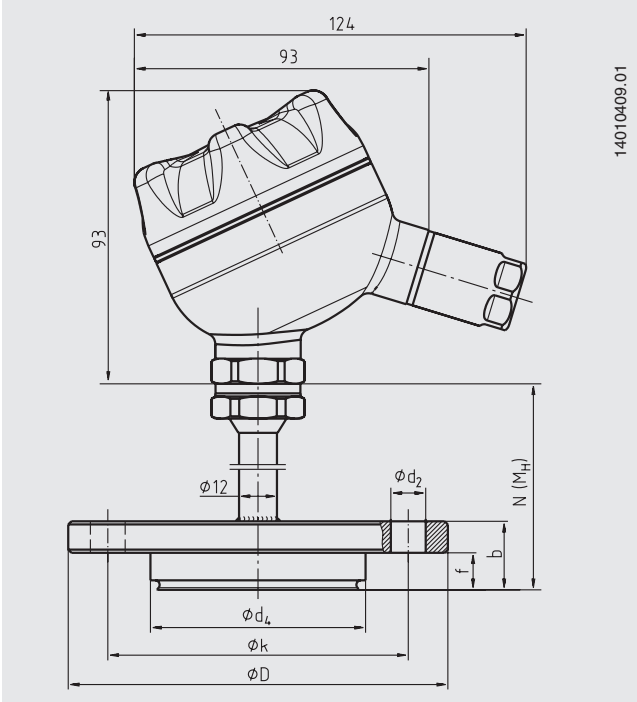
### Housing type - angled variant (U), sizes 50 and 65



## Dimensions in mm

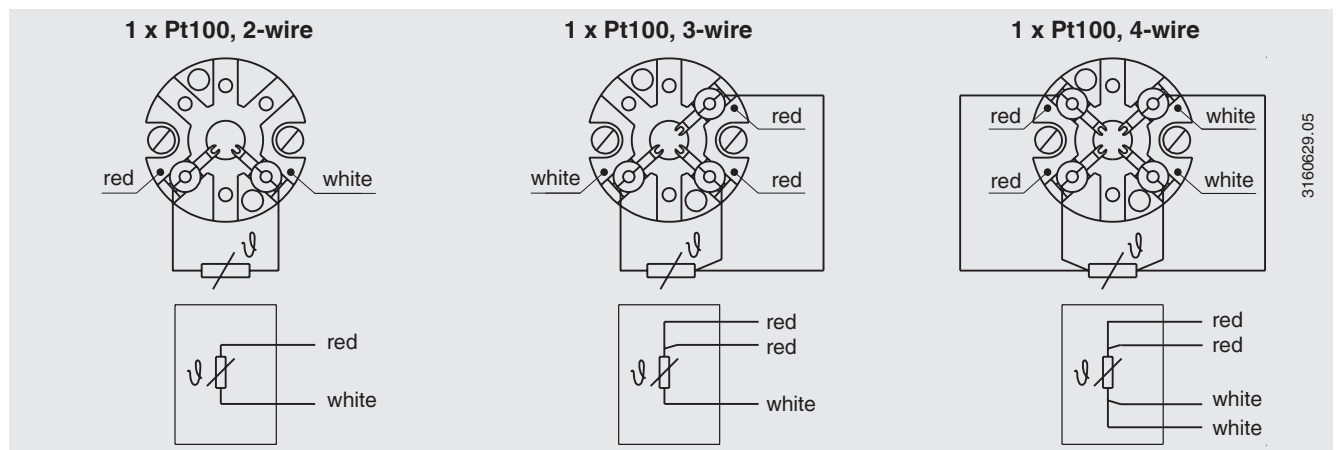
### Standard version

#### Model TR20, flush diaphragm



| BioControl® connection Size | Dimensions in mm |                  |     |    |    |     | Weight in kg |
|-----------------------------|------------------|------------------|-----|----|----|-----|--------------|
|                             | ̸ d <sub>2</sub> | ̸ d <sub>4</sub> | ̸ D | f  | b  | ̸ k |              |
| 25                          | 4 x ̸ 7          | 30.5             | 64  | 11 | 20 | 50  | 1.0          |
| 50                          | 4 x ̸ 9          | 50               | 90  | 17 | 27 | 70  | 1.4          |
| 65                          | 4 x ̸ 11         | 68               | 120 | 17 | 27 | 95  | 2.0          |

## Electrical connection



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

## Ordering information

Model / Connection head / Cable entry of connection head / Terminal block, transmitter / Process connection / Surface of wetted parts / Neck tube / Measuring element / Connection method / Temperature range / Certificates / Options

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