


## ● Characteristics

1510 - RESISTANCE THERMOMETER - RTD - PT100 -

|   |                          |                                   |
|---|--------------------------|-----------------------------------|
|  | - Input:                 | RTD Pt 100, Pt 1000               |
|   | - Measurement range:     | -50...+200 °C maximum             |
|   | - Accuracy transmitter:  | 0,3% of range                     |
|   | - Accuracy RTD Pt100(0): | Class A, Class AA, Class B        |
|   | - Output:                | 4...20 mA HART / RTD / CANopen    |
|   | - Resolution:            | 16 bit                            |
|   | - Configuration:         | Via software (HART communication) |
|   | - Electrical connection: | M12 4-pole, M12 8-pole            |
|   | - Internal protection:   | Inside potted completely          |
|   | - Material:              | Stainless steel 1.4571, PBT GF30  |
| - Protection class:   | At least IP65            |                                   |

## ● Technical Data

### Input

|                |   |
|----------------|---|
| Sensor:        | 1x Pt100 / 1x Pt1000 / 2x Pt100 / 2x Pt1000 |
| Connection:    | 2-wire / 3-wire / 4-wire                    |
| Accuracy:      | Class A / Class B / Class AA                |
| Maximum range: | -50...+200 °C                               |
| Minimum range: | 50 °C                                       |

### Output

|                         |   |  |
|-------------------------|---|--|
| Transmitter HART:       | Current:  | 4...20 mA with superimposed communication signal             |
|                         | Connection:   | 2-wire current loop  |
|                         | Current range:  | 3,6...21 mA  |
|                         | Signal on error:                                      | 21 mA (sensor break, open circuit, short circuit, underflow) |
| Transmitter CANopen:    | Protocol:   | CANopen CiA 404 / CAN 2.0A / CAN 2.0B                        |
|                         | Number of PDO:  | 2 transmit PDO   |
| Resistance thermometer: | Connection lead through onto plug, cable lead through |  |

### Measuring Amplifier

|                      |                         |                                   |
|----------------------|-------------------------|-----------------------------------|
| Transmitter HART:    | Combined error:         | 0,3% of range                     |
|                      | Resolution:             | 16 Bit                            |
|                      | Filter:                 | 0...99 s                          |
|                      | Transmission behaviour: | Linear with temperature           |
|                      | Switch-on delay:        | <5 s                              |
|                      | Measuring rate:         | 10 measurements/s                 |
|                      | Configuration:          | Via software (HART-Communication) |
| Transmitter CANopen: | Accuracy:               | ±0,1 K                            |
|                      | Resolution:             | 16 bit, 0,1 K                     |
|                      | Sampling rate:          | 20 ms                             |
|                      | Baud rate:              | 50 kBit/s...1MBit/s               |
|                      | Configuration:          | Baud rate, module address via LSS |

## ● Applications

A stainless steel sensor suitable for application in the industrial hygiene sector. This sensor is very durable, thanks to its compact design, its small dimensions and the materials used in its construction. The programmable transmitter reduces stock levels significantly.



## ● Technical Data (Continued)

### Supply

|                      |                             |  |
|----------------------|-----------------------------|--|
| Transmitter HART:    | Current loop:               | 12...40 VDC                                |
|                      | Load:                       | $R = (U_B - 12 \text{ V}) / 21 \text{ mA}$ |
|                      | Reverse voltage protection: | Yes (no function, no damage)               |
| Transmitter CANopen: | Voltage:                    | 8...40 VDC                                 |
|                      | Reverse voltage protection: | Yes  |
|                      | Power input:                | 500 mW maximum                             |

### Environmental Conditions

|                        |                      |                |
|------------------------|----------------------|----------------|
| Operating temperature: | with transmitter:    | -20...+80 °C   |
|                        | without transmitter: | -30...+100 °C  |
| Storage temperature:   |                      | -40...+85 °C   |
| Medium temperature:    |                      | -50...+200 °C  |
| System pressure:       |                      | 25 bar maximum |
| Condensation:          |                      | uncritical     |

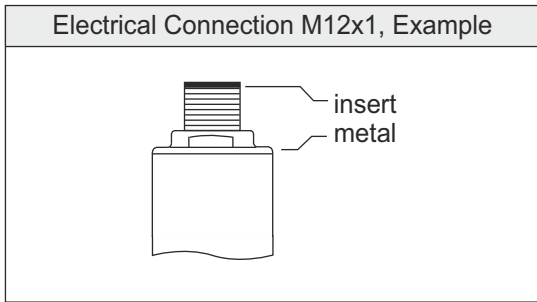
### Mechanics

|                        |                     |   |
|------------------------|---------------------|---|
| Dimensions:            |                     | see page 3                                  |
| Process connection:    |                     | G1/2" hygienic / immersion probe version    |
| Electrical connection: |                     | M12   |
| Sensor tube:           |                     | Ø6 mm                                       |
| Material:              | Sensor tube:        | Stainless steel 1.4571                      |
|                        | Process connection: | Stainless steel 1.4571                      |
|                        | Casing:             | Stainless steel 1.4571                      |
| Weight:                | Immersion probe:    | approx. 106 g                               |
|                        | G1/2" hygienic:     | approx. 170 g                               |
| Fitting position:      |                     | Any   |
| Equipment protection:  | Protection class:   | at least IP65 (Elektronik)<br>IP68 (Sensor) |
|                        | Casing:             | inside completely potted                    |

### Configurable Parameters HART

|                      |  |
|----------------------|--|
| Measuring amplifier: | Nominal measuring range start (LRL) / Nominal measuring range end (URL) /<br>Measuring range start (LRV) / Measuring range end (URV) / Filter function /<br>Adjustment output current / Simulation output current / HART address /<br>Linear output signal / 2-point calibration |
|----------------------|--|

**Electrical Connection**



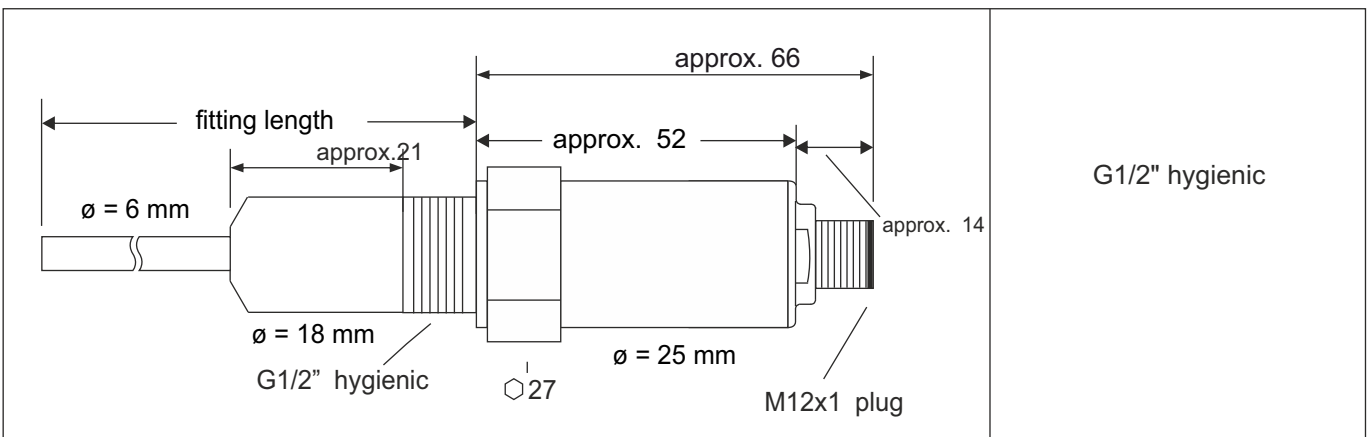
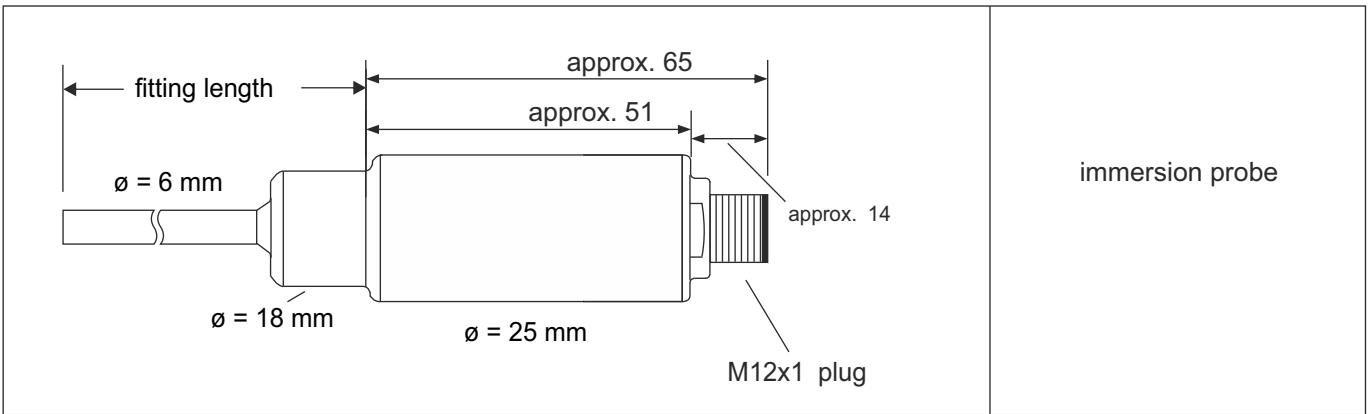
**Pin Assignment CAN-Bus**

Pin 1: Shield  
Pin 2: Supply +  
Pin 3: GND  
Pin 4: CAN High  
Pin 5: CAN Low

**Pin Assignment without CAN**

|                                 |          | 2-wire | 3-wire | 4-wire  | Transmitter |
|---------------------------------|----------|--------|--------|---------|-------------|
|                                 |          |        |        |         |             |
| <b>Connection for 1 sensor</b>  |          |        |        |         |             |
| M12, 4-pole                     |          | 3 2    | 4 3 2  | 4 3 2 1 | 1 3         |
| M12, 8-pole                     |          | 3 2    | 4 3 2  | 4 3 2 1 | 1 3         |
| <b>Connection for 2 sensors</b> |          |        |        |         |             |
| M12, 4-pole                     | sensor 1 | 4 3    |        |         |             |
|                                 | sensor 2 | 2 1    |        |         |             |
| M12, 8-pole                     | sensor 1 | 3 2    | 4 3 2  | 4 3 2 1 |             |
|                                 | sensor 2 | 7 6    | 8 7 6  | 8 7 6 5 |             |

**Dimensions, Connection (in mm)**



● **Order Code**

V H X X X X - X - X X X X X X

|                                     |   |             |                  |             |                  |  |   |  |  |  |  |  |  |  |  |  |  |  |             |
|-------------------------------------|---|-------------|------------------|-------------|------------------|--|---|--|--|--|--|--|--|--|--|--|--|--|-------------|
| <b>Transmitter:</b>                 | Without<br>4...20 mA HART<br>CANopen  | F<br>G<br>H |                  |             |                  |  |   |  |  |  |  |  |  |  |  |  |  |  |             |
| <b>Sensor:</b>                      | Pt100<br>Pt1000<br>2x Pt100<br>2x Pt1000  |             | 1<br>2<br>3<br>4 |             |                  |  |   |  |  |  |  |  |  |  |  |  |  |  |             |
| <b>Sensor connection:</b>           | 2-wire<br>3-wire<br>4-wire  |             |                  | 1<br>2<br>3 |                  |  |   |  |  |  |  |  |  |  |  |  |  |  |             |
| <b>Accuracy:</b>                    | Class A<br>Class B<br>Class AA<br>Class C (auf Anfrage)                               |             |                  |             | 1<br>2<br>3<br>4 |  |   |  |  |  |  |  |  |  |  |  |  |  |             |
| <b>Fitting length:<sup>1)</sup></b> | 50 mm<br>100 mm<br>160 mm<br>200 mm<br>250 mm<br>400 mm<br>600 mm<br>1000 mm          |             |                  |             |                  |  | 50<br>100<br>160<br>200<br>250<br>400<br>600<br>A00 |  |  |  |  |  |  |  |  |  |  |  |             |
| <b>Sensor tube diameter:</b>        | 6 mm (standard)   |             |                  |             |                  |  |   |  |  |  |  |  |  |  |  |  |  |  | 6           |
| <b>Process connection:</b>          | G1/2" hygienic<br>Immersion probe   |             |                  |             |                  |  |   |  |  |  |  |  |  |  |  |  |  |  | 1<br>2      |
| <b>Insert electr. connection:</b>   | Metal   |             |                  |             |                  |  |   |  |  |  |  |  |  |  |  |  |  |  | 2           |
| <b>Electrical connection:</b>       | M12x1, 4-pole<br>M12x1, 8-pole  |             |                  |             |                  |  |   |  |  |  |  |  |  |  |  |  |  |  | 1<br>3      |
| <b>Configuration:</b>               | Without<br>Factory setting <sup>2)</sup><br>Customized (please specify) <sup>3)</sup> |             |                  |             |                  |  |   |  |  |  |  |  |  |  |  |  |  |  | 0<br>1<br>2 |
| <b>Special model:</b>               | No<br>Yes (please specify)  |             |                  |             |                  |  |   |  |  |  |  |  |  |  |  |  |  |  | 0<br>1      |

- 1): For coding see price list, in 5 mm steps  
 2): Factory setting: Nominal measuring range: -50...200 °C (LRL...URL) / Measuring range: 0...100 °C (LRV...URV) Damping: 0 s  
 3): Please select settings as per technical data. For values not given, factory settings will be used.