Resistance thermometer Pt100
with screw-in thermowell or with flange connection
Type Series GA251.

Features

- Pt100 connection in 3- or 4-wire technology
- Measuring insert 1 x Pt100 or 2 x Pt100
- Measuring insert interchangeable
- Process connection
  - for screw-in
  - with flange connection
- Various thermowell designs available

Options

- Explosion protection
- Transmitter can be integrated
- Classification per SIL 2
- Measuring insert for In-process calibration

Application

The resistance thermometer is suited for operation on tanks and pipes. All standard types of process connections are available. The change in resistance, dependent 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).

Application area

- Chemical and petrochemical industry
- Machinery construction
- General process technology
**Technical Data**

**Mechanical design**
Measuring insert interchangeable with connection head and neck-tube

**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). Special materials upon request.
- Thermowell 9 x 1 bzw. 11 x 2 mm length see order details
- option: certification of material testing per DIN 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
- length of measuring insert \( l_1 \) = thermowell length \( L + 10 \) mm
- Ø of meas. insert depending on thermowell, standard 6 mm

Resistor Pt100 according to DIN 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/circuit**
see order details

**Ex-approval**
For standard measuring insert:
- BVS 04 ATEX E 144 X
- II 2 G Ex ia IIC T4/T6
- \( U_i \leq 30 \) V
- \( P_i \leq 200 \) mW

More technical information see XA_002

For In-process calibration:
- IBExU 13 ATEX 1017 X
- II 2 G Ex ia IIC T6-T1Gb
- \( U_i \leq 30 \) V
- \( P_i \leq 750 \) mW
- \( L_i \leq 10 \) \( \mu \)H/m
- \( C_i \leq 500 \) pF/m

More technical information see XA_003.

**Functional safety**
per EN 61508, classification per SIL 2; without transmitter, only

**Accuracy of the measuring resistor**
class A according to EN 60751

**Process connections**
for screw-in/insertion/weld-in
- G 1/2 B, G 3/4 B
- G 1 B
- M 20 x 1.5
- 1/2" NPT, 3/4" NPT with flange connection
- DN50 PN10/40 model B1 (DIN EN 1092-1)
- DN25 PN10/40 model B1 (DIN EN 1092-1)

Further process connections upon request
material: stainless steel mat. no. 1.4571 (316Ti)

**Integration of transmitter**
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.
Process connections for screw-in/insertion/weld-in:
- G 1/2 B, G 3/4 B
- G 1 B
- M 20 x 1.5
- 1/2" NPT, 3/4" NPT
  with flange connection
- DN50 PN10/40 model B1 (DIN EN 1092-1)
- DN25 PN10/40 model B1 (DIN EN 1092-1)

Further process connections upon request:
- Material: stainless steel mat. no. 1.4571 (316Ti)

Integration of transmitter:
- Suitable Pt 100 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.

Remark: Neck tube M > 60 mm
## Resistance Thermometer Pt100 with screw-in thermowell or with flange connection

### Design
- With thermowell: **GA251**
- Without thermowell: **A01**

### Ex-Protection
<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explosion protection, type of ex-protection as below</td>
<td><strong>A1</strong></td>
<td></td>
</tr>
</tbody>
</table>

### Process Connection

#### Material
- Stainless steel mat.-no. 1.4571 (316Ti)
- Varying

#### Thermowell Length and Material

<table>
<thead>
<tr>
<th>Material</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel mat.-no. 1.4571 (316Ti)</td>
<td><strong>B10</strong></td>
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### Thermowell Length Total L

<table>
<thead>
<tr>
<th>Length L</th>
<th>Code</th>
</tr>
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<tbody>
<tr>
<td>95 mm</td>
<td><strong>B10</strong></td>
</tr>
<tr>
<td>115 mm</td>
<td><strong>B12</strong></td>
</tr>
<tr>
<td>130 mm</td>
<td><strong>B16</strong></td>
</tr>
<tr>
<td>180 mm</td>
<td><strong>B19</strong></td>
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<tr>
<td>195 mm</td>
<td><strong>B22</strong></td>
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<tr>
<td>245 mm</td>
<td><strong>B28</strong></td>
</tr>
<tr>
<td>265 mm</td>
<td><strong>B31</strong></td>
</tr>
<tr>
<td>305 mm</td>
<td><strong>B37</strong></td>
</tr>
<tr>
<td>355 mm</td>
<td><strong>B46</strong></td>
</tr>
<tr>
<td>395 mm</td>
<td><strong>B43</strong></td>
</tr>
<tr>
<td>425 mm</td>
<td><strong>B46</strong></td>
</tr>
<tr>
<td>515 mm</td>
<td><strong>B49</strong></td>
</tr>
<tr>
<td>545 mm</td>
<td><strong>B52</strong></td>
</tr>
<tr>
<td>Varying</td>
<td><strong>B99</strong></td>
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</table>

### Thermowell Ø and Model

<table>
<thead>
<tr>
<th>Ø</th>
<th>Model</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 mm</td>
<td>F1 = 9 mm, thermowell 9/7, model 2 per DIN, standard</td>
<td><strong>C12</strong></td>
</tr>
<tr>
<td>11 mm</td>
<td>F1 = 11 mm, thermowell 11/7, model 2 per DIN</td>
<td><strong>C13</strong></td>
</tr>
<tr>
<td>9/7, reduced tip F3 = Ø 5x20 mm, ID 3.5 mm</td>
<td><strong>C16</strong></td>
<td></td>
</tr>
<tr>
<td>12, reduced tip F3 = Ø 8x40 mm, ID 6.5 mm</td>
<td><strong>C17</strong></td>
<td></td>
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</tbody>
</table>

### Immersion Length L₁

<table>
<thead>
<tr>
<th>Length</th>
<th>Varying</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 mm, rigid, st. steel, standard</td>
<td>Varying, as in writing</td>
<td><strong>999</strong></td>
</tr>
<tr>
<td>6 mm, sheathed element, st. steel</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Measuring Insert

#### Material and Design
- As per DIN 43735 (class A)
- Varying, as in writing

### Sensor Type

- 1 x Pt100 in 3-wire technology, standard
- 1 x Pt100 in 4-wire technology
- 2 x Pt100 in 3-wire technology

### Connection Head

#### Material
- Nickel plated brass, cable Ø 9-14

### Additional Features

- Type of ex-protection
  - II 2G Ex ia IIC T4/T6
  - BVS 04 ATEX E 144 X (standard measuring insert) **S68**
  - II 2G Ex ia IIC T6-T1 Gb, IIEEXU 13 ATEX 1017 X (In-process calibration) **S75**
- Incl. transmitter (pl-specify separately)
  - Mounting on the measuring insert (instead of terminal block) **Z1**
  - Mounting in the spring cover of the connection head BUZH **Z2**

### Order Code (Example)
- **GA2510A101B37C121160D2-M22N2T47**

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1. Not possible with process connection A01 (insertion/welding)
2. For In-process calibration only
3. Only with sheathed element