

RESISTANCE THERMOMETER

Measuring insert: Interchangeable

Type: RT-B-FL

Sheet No.
2-10 V2.1

5452-E010321V3.1

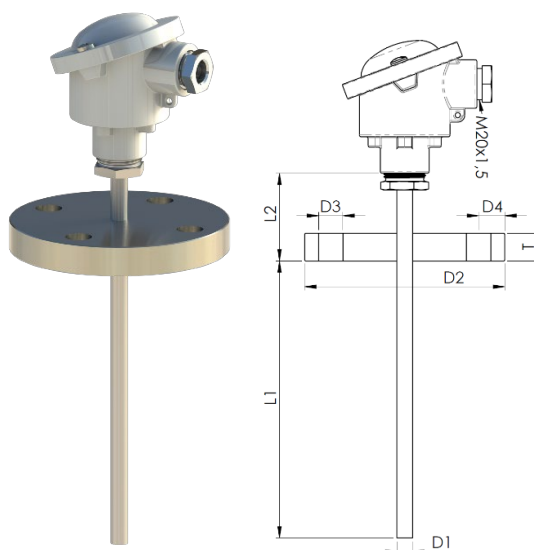


Application:

- For measuring temperatures in Marine & Offshore Applications, Power Plants & District Heating, Processing & Refineries, Boiler & Turbine Monitoring, Industrial Pipelines & Tanks and Harsh Environments & Corrosive Media

Properties:

- Heavy Duty
- Sensor Pt100, 2xPt100, Pt1000 and 2xPt1000 in acc. with IEC 60751
- Measuring insert: interchangeable
- Process attachment: flange
- Outer protective sheath and flange: acid-proof steel
- Can be delivered with head mounted transmitter
- Different electrical connection
- Marine approved by: DNV, LR, NK, RINA, ABS and BV



MECHANICAL SPECIFICATIONS

Protective sheath: -----
EN 1.4571 (AISI 316Ti) max. 850°C
Other on request

Sensor diameter Ø [mm]: -----
Ø8 / Ø9 / Ø11 / Ø15
Other on request

Extension length L2 [mm]: -----
50 / 100 / 150 / 200
Other on request

Immersion length L1 [mm]: -----
50 / 100 / 150 / 200 / 250 / 300
Other on request

Process attachment: -----
DN25 PN16
DN25 PN40
DN50
ANSI 1" 150Lbs
ANSI 2" 150Lbs
Other on request

Protection head: -----
B (aluminium (Al), enamelled, low cap, IP62)
BH (Al, enamelled, high cap, IP62)
BSB (Al, tilting lid w/screw, low cap, IP65)
BSBH (Al, tilting lid w/screw, high cap, IP65)
BSBH-W (Al, tilting lid, high cap, digital display (excl. tr.), IP65)
CE (Al, enamelled, screw cap, IP68)
BSP (plastic, black, screw cap, IP54)
BRF (stainless steel, screw cap, M20x1.5, IP67)
BRF-EEX (stainless steel, screw cap, M20x1.5, IP67)
B-SRF (sanitary, stainless steel, screw cap, M20x1.5, IP67)
Other on request

Cable gland (pre-mounted): -----
None (standard – cable entry M20x1.5)
Plastic
Nickel plated brass
Stainless acid-proof steel

Please specify cable diameter: -----

ELECTRICAL SPECIFICATIONS

---Plug (pre-mounted In Head)
M12 (for M20)
Harting (specify type)
Other on request
None

---Cable (pre-mounted in Head):
SS (Silicone-Silicone) max. 180°C
SBS (Silicone-Inner Braided-Silicone)
TBT (Teflon-Inner Braided-Teflon)
None

---Cable length [m]:

---Sensor element:
1xPt100
2xPt100
1xPt1000 (only cl. B 1/1 and cl. A)
2xPt1000 (only cl. B 1/1 and cl. A)

---Number of conductors:
2-wire (recommended only for Pt1000)
3-wire
4-wire

---Media temperature max:
+180°C
+250°C
+400°C
+600°C (only cl. B 1/1 Pt100 and Pt1000)

---Tolerance in acc. with IEC 60751:
Type A DIN (i.e. $\pm(0,15+0,002 \times T_{\text{actual}})$ °C)
Type B 1/1 DIN (i.e. $\pm(0,3+0,005 \times T_{\text{actual}})$ °C)
Type B 1/3 DIN (i.e. $\pm(0,1+0,0017 \times T_{\text{actual}})$ °C)
Type B 1/6 DIN (i.e. $\pm(0,05+0,00083 \times T_{\text{actual}})$ °C)
Type B 1/10 DIN (i.e. $\pm(0,03+0,0005 \times T_{\text{actual}})$ °C)

Link for further information: [Pt100 Tolerance](#)

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Calibration:

Temperature calibration are used to verify and certify the sensor to have the correct accuracy. We can do either: "In house" or "Accredited" calibration. Accredited is certified by 3.e part. Normally we do a calibration in 3 points.

Enhanced performance services:

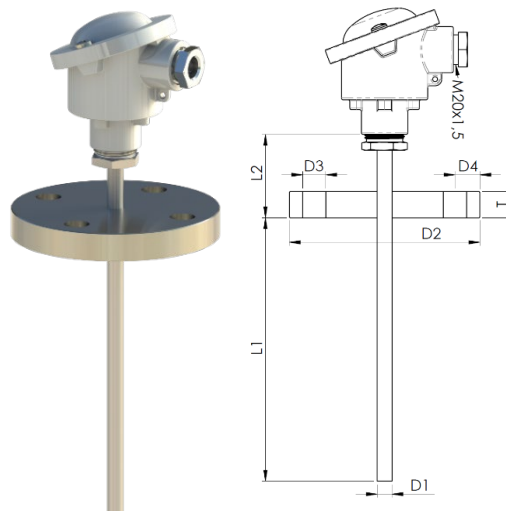
Cold applications (below -50°C) will influence the material and the measurement. CRYO treatment is needed to ensure a correct and working sensor down to -196°C.

A sensor will always drift over time, especially when there are high temperature fluctuations.

With "Ageing treatment" we stabilize the sensor to ensure a minimum drift over time. The benefits are long term stability, more correct measurement and easier planning of calibration periods.

Documentation:

Please order the correct documentation when ordering the sensor.



SIGNAL PROCESSING

Ceramic socket mounted in terminal head. -----

Prepared for transmitter w/o ceramic socket. -----
w/long leads

Programmable head mounted transmitter-----

Measuring range min/max: -200/+850°C

Output: 2-wire, 4-20 mA

Min. span: 25°C

Ambient temperature min/max: -40/+85°C

[5333A Uninsulated for RTD](#)

[5333D EEX Uninsulated for RTD](#)

[5332A Uninsulated for RTD](#)

[5332D EEX Uninsulated for RTD](#)

[5331A Galvanic Isolated RTD / TC](#)

[5331D EEX Galvanic Isolated RTD / TC](#)

[5335A Hart 5 Protocol Standard](#)

[5335D Hart 5 Protocol CSA, FM, ATEX, IECEx](#)

[5337A Hart 5 & 7 Protocol](#)

[5337D Hart 5 & 7 Protocol CSA, FM, ATEX, IECEx](#)



Transmitter Type:			
4 mA =	C°	20 mA =	C°

Link to further information:

[Transmitter Overview](#)

[Programmable rail mounted transmitter](#)



CALIBRATION

---Calibration:

In house (Span -33°C - +700°C)

Accredited – in laboratory (-196°C - +1200°C)

1.	Point	°C
2.	Point	°C
3.	Point	°C

More point on request

Enhanced performance services

-----Cryo treatment.

For temperature sensor under -50°C

-----Ageing:

For long term stability.
Secure minimum drift of sensor accuracy

-----Documentation

Certificate: 3.1 Material
Certificate of origin
Certificate of conformity

-----Marine Certificate

Certificate of DNV.GL
Certificate of BV
Certificate of Rina
Certificate of ClassNK
Certificate of LR
Certificate of ABS

Other on request

THERMOCOUPLE THERMOMETER

Measuring insert: Interchangeable

Type:
TC-B-FL

Sheet No.
3-3 V2
5353- E010321V3.1

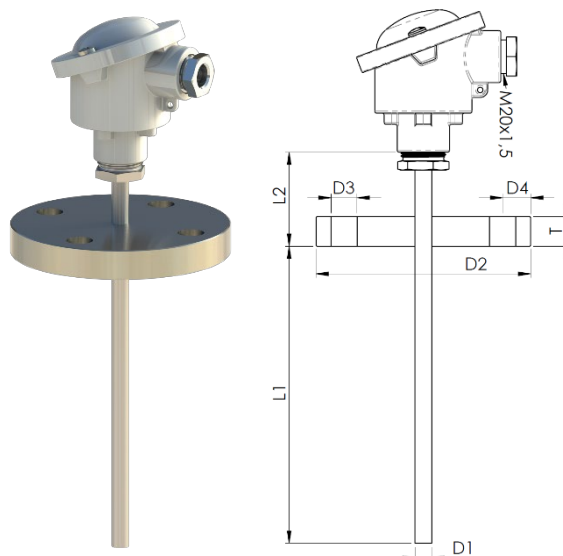


Application:

- For measuring temperatures in closed pipelines and containers with gaseous or liquid media, e.g. air, steam, gas, water or oil.
- Field of application: up to 1250°C (depending on thermocouple)
- Usually applied in: tile works, refuse disposal plants, processing plants, power plants, district heating, energy distribution

Properties:

- Thermocouple thermometer type K, J, E, N, T in acc. with DIN IEC 60584-1
- Constructed in accordance with DIN 50446
- Measuring insert: Interchangeable
- Outer protective tube: Heat-proof steel or stainless acid-proof steel
- Modular construction and standard length minimize the number of spare parts.
- Can be delivered with head mounted transmitter



MECHANICAL SPECIFICATIONS

Protective sheath: -----

EN 1.4571 (AISI 316Ti) max. 850°C
Other on request

Sensor diameter Ø [mm]: -----

Ø8 / Ø9 / Ø11 / Ø15
Other on request

Extension length L2 [mm]: -----

50 mm, 100mm, 150mm
Other on request

Immersion length L1 [mm]: -----

100mm, 150mm, 200mm, 250mm
Other on request

Process attachment: -----

DN25 PN16
DN25 PN40
ANSI 1" 150Lbs
ANSI 2" 150Lbs
Other on request

Protection head: -----

B (aluminum, enameled, low cap, IP62)
BH (aluminum, enameled, high cap, IP62)
BSB (aluminum, tilting cap with screw, low cap, IP65)
BSBH (aluminum, tilting cap with screw, high cap, IP65)
CE (aluminum, enameled, IP68)
BSP (plastic, black, screw cap, IP54)
BRF-M16 (stainless steel, screw cap, M16x1,5, IP67)
BRF-M20 (stainless steel, screw cap, M20x1,5, IP67)
Other on request

Cable gland (pre-mounted in Head): -----

None (standard – cable entry M20x1.5)
Plastic
Nickel plated brass
Stainless acid-proof steel

Please specify cable diameter: -----

ELECTRICAL SPECIFICATIONS

---Plug (pre-mounted in Head):

M12 (for M20)
Harting (specify type)
Other on request
None

---Cable (pre-mounted in Head):

SS (Silicone-Silicone) max. 180°C
SBS (Silicone-Inner Braided-Silicone)
TBT (Teflon-Inner Braided-Teflon)
None

---Cable length [m]:

---Sensor Type:

Type K (NiCr-Ni) max. +1150°C
Type J (Fe-CuNi) max. +700°C
Type N (NiCrSi-Ni) max. +1250°C
Type E (NiCr-CuNi) max. +800°C
Type T (Cu-CuNi) max. +300°C
Other on request

---Number of thermocouples:

1xTC
2xTC
Other on request

---Media temperature max:

+600°C
+800°C
+1250°C

---Tolerance in acc. with DIN 50446:

Class 1 for K,J,N,E (i.e. $\pm 1,5^{\circ}\text{C}$ or $\pm(0,0040 \times T)$)
Class 2 for K,J,N,E (i.e. $\pm 2,5^{\circ}\text{C}$ or $\pm(0,0075 \times T)$)
Class 1 for T (i.e. $\pm 0,5^{\circ}\text{C}$ or $\pm(0,0040 \times T)$)
Class 2 for T (i.e. $\pm 1,5^{\circ}\text{C}$ or $\pm(0,0075 \times T)$)

Link for further information: [TC Tolerance](#)

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Enhanced performance services:

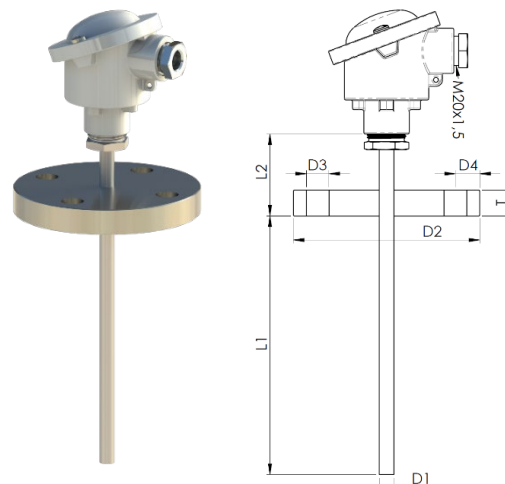
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Ceramic socket mounted in terminal head. -----

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Programmable head mounted transmitter. -----

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Transmitter Type:			
4 mA =	C°	20 mA =	C°

Programmable rail mounted transmitter

Link for further information to [Rail mounted transmitter](#)

Link for further information: [Transmitter Overview](#)

CALIBRATION

-----Calibration:

In house (Span)

Accredited – in laboratory

4.	Point	°C
5.	Point	°C
6.	Point	°C

Enhanced performance services

-----Cryo treatment.

For temperature sensor under -50°C

-----Ageing:

For long term stability.

-----Documentation

Certificate: 3.1 Material
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Certificate of conformity

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