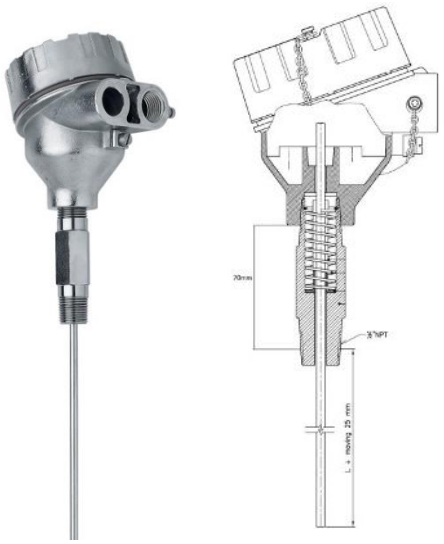
RESISTANCE THERMOMETER **Measuring insert: Interchangeable**	**Type: RT-B-OF**	Sheet No. 1-4 V2.1 **5452-E010818V2.1**

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 600°C, max 50bar and media velocities of up to 25m/sec
- Typically applied in:
  - Off shore
  - power plants
  - district heating, energy distribution

Properties:

- Pt100 or Pt1000 resistance thermometer in accordance with IEC 60751
- Mechanical and thermal stress in accordance with DIN 43772
- Process attachment: Welded
- Measuring insert: Interchangeable, short reaction time
- Outer protective sheath: Stainless acid-proof steel
- Modular construction and standard length minimizes the number of spare parts
- Can be delivered with head mounted transmitter
- Marine approved by: DNV, LR, NK, RINA, ABS and BV



MECHANICAL SPECIFICATIONS

Protective sheath: ----------
Wnr.1.4571 (AISI316TI max 850°C)
Other on request

Sensor diameter mm: ----------
Ø6 mm
Other on request

Extension length L2: ----------
70 mm
Other on request

Immersion length L1: ----------
100 mm, 150 mm, 200 mm, 250 mm, 300 mm
Other on request

Process attachment: ----------
NPT ½"
Other on request

Protection head: ----------
CE (aluminium, enamelled, screw cap, IP68)
BRF-EEX (ATEX Approved)
Other on request

Cable gland (pre-mounted): ----------
Plastic
Nickle platted brass
Stainless acid-proof steel
None

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) max. 180°C
TBT (Teflon-Inner Braided-Teflon) max. 250°C
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.±(0,15+0,002xTactual) °C)
Type B 1/1 DIN (i.e.±(0,3+0,005xTactual) °C)
Type B 1/3 DIN (i.e.±(0,1+0,0017xTactual) °C)
Type B 1/6 DIN (i.e.±(0,05+0,00083xTactual) °C)
Type B 1/10 DIN (i.e.±(0,03+0,0005xTactual) °C)

Link for further information: Pt100 Tolerance

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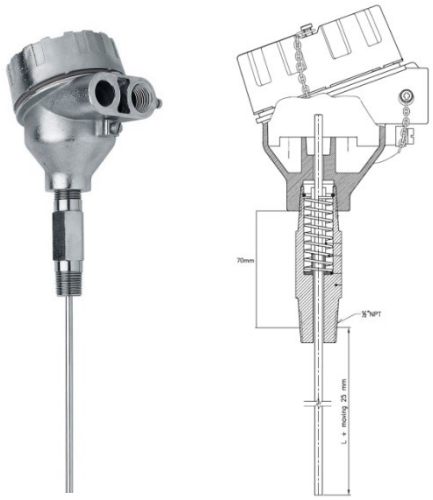
THERMOCOUPLE THERMOMETER **Measuring insert: Interchangeable**	**Type:** **RT-B-OF**	Sheet No. 1-4 V2.1 **5352-E010818V2.1**

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°

5350A Profibus standard
5350B Profibus ATEX, FM and CSA

Link to further information:

Transmitter Overview

Programmable rail mounted transmitter

CALIBRATION

None ----**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
Certificate of BV
Certificate of Rina
Certificate of ClassNK
Certificate of LR
Certificate of ABS

Other on request

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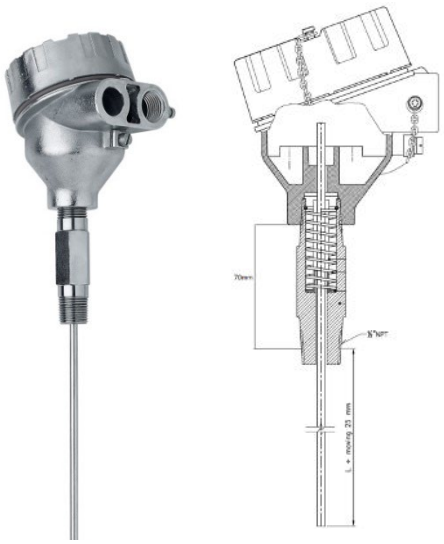
THERMOCOUPLE THERMOMETER **Measuring insert: Interchangeable**	**Type: TC-B-OF**	Sheet No. 1-4 V2.1 **5352-E010818V2.1**

Application:

- For measuring temperatures in closed pipelines and containers with gaseous or liquid media, e.g. air, steam, gas, water or oil.
- Heavy Duty
- Field of application: up to 1150°C, max 50bar and media velocities of up to 25m/sec
- Typically applied in:
  - Off shore
  - power plants
  - district heating, energy distribution

Properties:

- Thermo couple thermometer type K, J, E, N, T in acc. with DIN IEC 584-1
- Mechanical and thermal stress in accordance with DIN 43772
- Measuring inset: interchangeable, short reaction time
- Outer protective sheath: stainless acid-proof steel
- Modular construction and standard length minimize the number of spare parts
- Can be delivered with head mounted transmitter
- Marine approved by: DNV, LR, NK, RINA, ABS and BV



MECHANICAL SPECIFICATIONS

Protective sheath: ----------
Wnr.1.4571 (AISI316TI max 850°C)
Other on request

Sensor diameter mm: ----------
Ø6 mm
Other on request

Extension length L2: ----------
70 mm
Other on request

Immersion length L1: ----------
100 mm, 150 mm, 200 mm, 250 mm, 300 mm
Other on request

Process attachment: ----------
NPT ½"
Other on request

Protection head: ----------
CE (aluminium, enamelled, screw cap, IP68)
BRF-EEX (ATEX Approved)
Other on request

Cable gland (pre-mounted): ----------
Plastic
Nickle platted brass
Stainless acid-proof steel
None

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) max. 180°
TBT (Teflon-Inner Braided-Teflon) max. 250°C
None

-----Cable length [m]:

-----Sensor element:
Type K (NiCr-Ni) max. +1150°C
Type J (Fe-CuNi) max. +700C
Type E (NiCr-CuNi) max. +800°C
Type N (NiCrSi-Ni) max. +1250°C
Type T (Cu-CuNi) max. +300°C
Special

----Number of thermocouples:
1xTC
2xTC
Special

-----Media temperatures max.:
+700°C
+800C
+1150°C

-----Tolerance in acc. with DIN 43732:
Class 1 for K, J, E, N (i.e. ±1,5°C or (0,0040xT)
Class 2 for K, J, E, N (i.e. ±2,5°C or (0,0075xT)
Class 1 for T (i.e. ±0,5°C or ±(0,0040xT)
Class 2 for T (i.e. ±1,5°C or ±(0,0075xT)

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THERMOCOUPLE THERMOMETER **Measuring insert: Interchangeable**	**Type: TC-B-OF**	Sheet No. 1-4 V2.1 **5352-E010818V2.1**

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.
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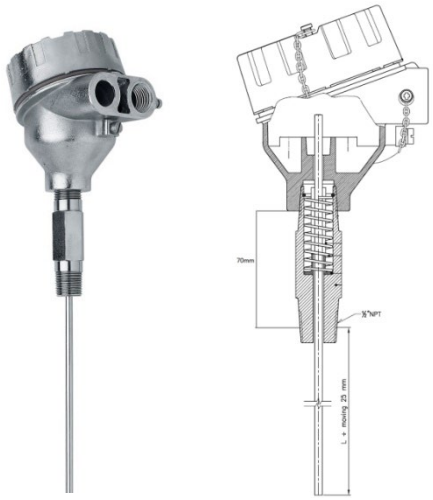
Documentation:
Please order the correct documentation when ordering the sensor.



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

5334A Uninsulated for TC
5334B Galvanic Isolated TC
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°

5350A Profibus standard
5350B Profibus ATEX, FM and CSA

Link to further information:

Transmitter Overview

Programmable rail mounted transmitter

CALIBRATION

None ----**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
Certificate of BV
Certificate of Rina
Certificate of ClassNK
Certificate of LR
Certificate of ABS

Other on request

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