

Performance Characteristics (continued)
 Maximum measured error (Pt100 / IEC 60751)

Class	max. Tolerances (°C)
A	$\pm (0.15 + 0.002 \cdot t)$, temperature range: -100 °C to 450 °C
B	$\pm (0.3 + 0.005 \cdot t)$, temperature range: -200 °C to 600 °C

* |t| = absolute value °C. For measurement errors in °F, calculate using equation above in °C, then multiply the outcome by 1.8.

Insulation resistance Insulation resistance between terminals and probe sheath, test voltage 250 V.
 ■ $\geq 100 \text{ M}\Omega$ at 77 °F (25 °C)
 ■ $\geq 10 \text{ M}\Omega$ at 572 °F (300 °C)

Supplementary documentation

All important Temperature Operating Instructions, particularly with regard to head and field transmitters are available on CD-ROM, find enclosed or order by order number: **SONDTT-AG**.

www.addresses.endress.com



Though the information provided herein is believed to be accurate, be advised that the information contained herein is NOT a guarantee of satisfactory results. Specifically, this information is neither a warranty nor guarantee, expressed or implied, regarding performance, merchantability, fitness, or other matter with respect to the products; and recommendation for the use of the product/process information in conflict with any patent. Please note that Endress+Hauser reserves the right to change and/or improve the product design and specifications without notice.

Notes draw attention to activities or procedures that can have a direct influence on operation or trigger an unforeseen device reaction if they are not carried out properly.
CAUTION Cautions draw attention to activities or procedures that can lead to persons being seriously injured, to safety risks or to the destruction of the device if they are not carried out properly.



Safety pictograms and symbols

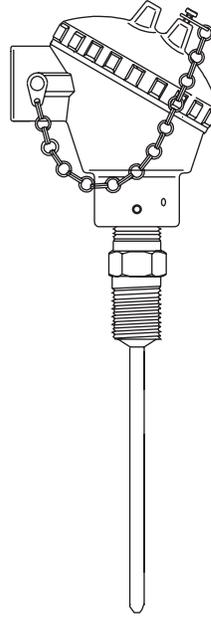
Please follow the Return Authorization Policy which is attached with this manual.
Returns

The unit is constructed using the most up to date production equipment and complies with the safety requirements of the local guidelines. However, if it is installed incorrectly or misused, certain application dangers can occur. Installation, wiring and maintenance of the unit must only be completed by trained, skilled personnel who are authorized to do so by the plant operator. The plant operator must make sure that the measurement system has been correctly wired to the connection schematics. Procedures indicated in these instructions must be followed.
Installation and operation

The accessories for pipe connections and the appropriate gaskets and sealing rings are not supplied with the sensors. These are the customer's responsibility. Depending on temperature and pressure operating conditions, the gaskets, the sealing and the applicable torques must be selected by the user.
 For further information regarding connections, please refer to the corresponding Standards.

CAUTION Do not disconnect equipment unless power has been switched off or the area is not hazardous.

**Compact Instructions
 RTD Assembly TH15**



Measuring System

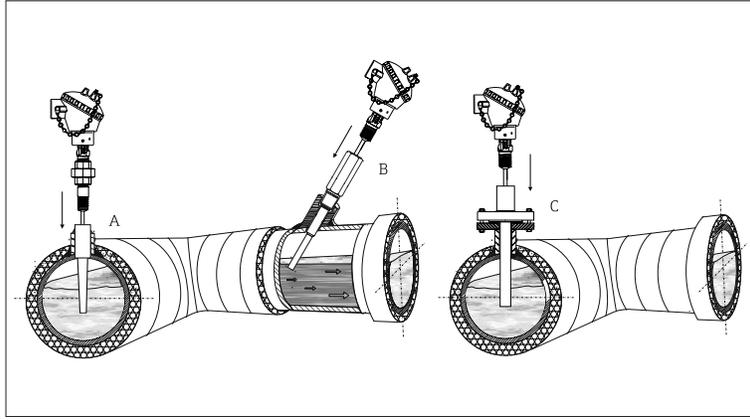
RTD assembly TH15 with spring loaded insert.
 The Pt100 RTD is specifically designed for use in two different process temperature ranges:
 Low range RTD -58 °F to 392 °F;
 high range RTD -328 °F to 1112 °F.

Important Notice
CAUTION Electrical shock could cause death or serious injury. If the sensor is installed in a high voltage environment and a fault or installation error occurs, high voltage may be present on the connection terminals or the probe itself.
 Safe and secure operation of the temperature sensor can only be guaranteed if the operating instructions of the used transmitters and all included safety notes are read, understood and followed. For Endress+Hauser temperature transmitters see enclosed CD-ROM.
Correct use
 The manufacturer cannot be held responsible for damage caused by misuse of the unit. The installation conditions and connection values indicated in the operating instructions must be followed!
CAUTION The RTD assembly (TH15) is designed to be used in conjunction with a thermowell. It is not meant to be used directly in pressurized applications; Maximum working pressure = P_{atm}. (Atmospheric pressure)
Installation Guidelines and Safety Instructions
 1. Install the unit according to the relevant NEC Code and local regulations.
 2. Avoid any spark due to impact, friction and installation. Anti-sparking wrenches should be utilized.
 3. The temperature sensor should be connected to the power supply or other external circuit using the appropriate cable glands and wire entries.
 4. For ambient temperature higher than 158 °F, suitable cables, conduit and conductors must be used. Only use approved wire entries.
 5. When utilized in dust atmospheres, the connection between the housing, fittings and thermowell should provide a minimum degree of ingress protection. Liquid/gas sealants should be used. Local regulations need to be respected.



Installation

Installation locations



Examples of spring loaded insert installation.

- A: RTD assembly TH15 installed within a socket weld thermowell
- B: RTD assembly TH15 installed within a tilted installed threaded thermowell
- C: RTD assembly TH15 installed within a flanged thermowell

For installation proceed as follows:

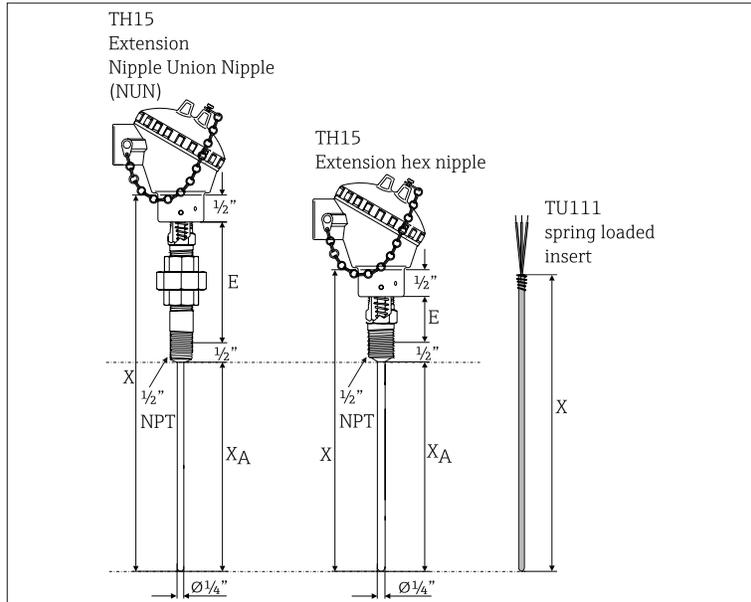
1. Seal the extension nipples with TFE tape before screwing in the device.
2. Screw the RTD assembly TH15 only into an already prepared thermowell.

CAUTION

Do not install the RTD assembly TH15 directly to the process pipe or process container wall. Otherwise it could cause death or serious injury!

Dimensions

With spring loaded insert and self contained nipple. All dimensions in inches.



E = Extension (see table)

X_A = Immersion length RTD sensor = thermowell drilled depth (see table)

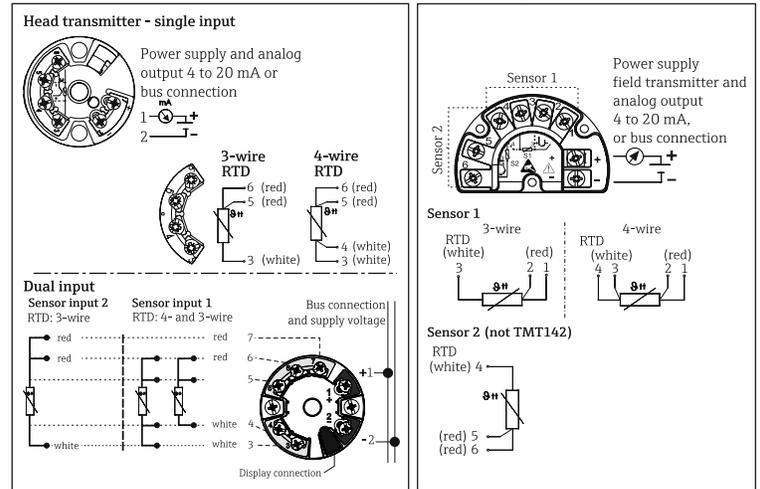
X = Insert overall length ($X = X_A + E$)

i For spare part insert, TU111, please contact Endress+Hauser!

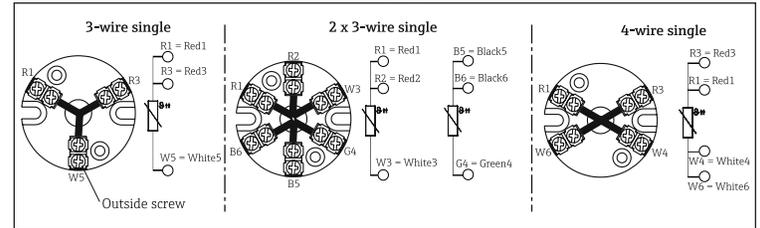
X_A	E (nom. dimension)
4", 6", 9", 12", 14", 9.5" specified length 4" to 30" in 1/2" increments	Hex nipple = 1" or Nipple Union Nipple (NUN) = 4" or 7" Material: Steel or 316 SS

Electrical connection-wiring diagrams

Head transmitter mounted (3" or 5 1/2" flying leads - crimped sleeves)



Terminal block mounted (insert with 3" flying leads)



i The blocks and transmitters are shown as they will sit inside the heads in reference to the conduit opening. ALWAYS terminate leads to the outside screw!

Wire specifications 24AWG, 19 strand silver plated copper with 0.010" TFE extruded outer

Recommended minimum immersion

Construction	RTD insert ϕ 1/4"
High temperature range -328 °F to 1112 °F (-200 °C to 600 °C)	1 1/4"
Low temperature range -58 °F to 392 °F (-50 °C to 200 °C)	3/4"

Technical data

Weight From 1 to 5.5 lbs
 Material Insert 316 SS
 Shock and vibration resistance 4g/2 to 150 Hz as per IEC 60 068-2-6

Ambient temperature limits*

Housing without head-mounted transmitter	
Aluminium pressure die-cast housing	-40 to 300 °F (-40 to 150 °C)
Plastic housing	-40 to 185 °F (-40 to 85 °C)
Deep drawn SS housing without display	-40 to 300 °F (-40 to 150 °C)
Housing with head-mounted transmitter	
Deep drawn SS housing with display	-4 to 160 °F (-20 to 70 °C)
Field transmitter	
with display	-40 to 158 °F (-40 to 70 °C)
without display	-40 to 185 °F (-40 to 85 °C)

*For hazardous areas refer to the transmitter control drawing

Performance Characteristics

Response time 63% response time per ASTM E644

Construction	RTD insert ϕ 1/4"
High temp. range	3 s
Low temp. range	9 s

Response time for sensor assembly without thermowell and transmitter!