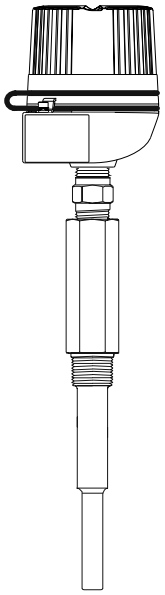
KA00236R/24/EN/13.12
71208018

Compact Instructions
Explosion proof RTD assembly in Thermowell T13



Measuring System
Explosion proof RTD assembly in Thermowell with spring loaded insert and enclosure for process industry.

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).

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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 and control drawings must be followed!

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. Approved apparatus must be installed in accordance with manufacturer's instructions, see corresponding Control Drawing:

Approval		Drawing code
XP DIP Class I, II, III Div. 1+2	CSA	ZD053R/09/en
XP NI DIP Class I, II, III Div. 1+2	CSA	ZD055R/09/en
XP DIP Class I, II, III Div. 1+2	FM	ZD057R/09/en
XP NI DIP Class I, II, III Div. 1+2	FM	ZD062R/09/en

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.

Installation and operation
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.

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

Safety pictograms and symbols

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 person being seriously injured, to safety risks or to the destruction of the device if they are not carried out properly.

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.

Performance Characteristics
Maximum measured error (Pt100 / IEC 60751)

Class	max. Tolerances (°C)
A	± (0.15 + 0.002 · |t|*), temperature range: -100 °C to 450 °C
B	± (0.3 + 0.005 · |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.

Dielectrical strength — The units are factory tested with 850 V_{DC} for one second between live parts (leads/terminals) and exposed non-current-carrying metal parts (e.g. insert sheath)

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

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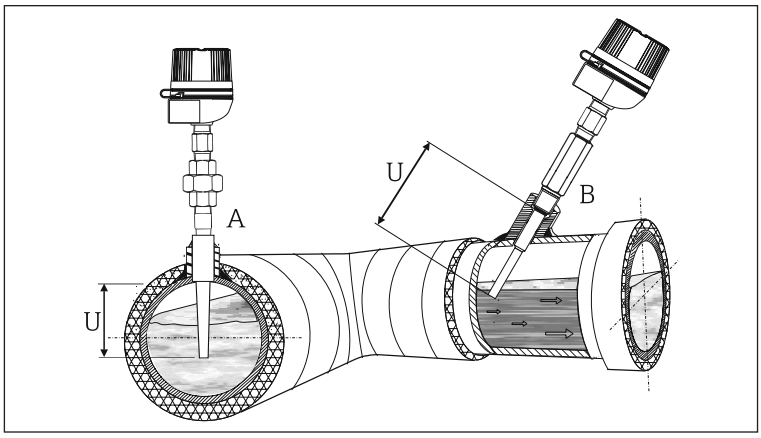
Installation

Installation locations



Examples of pipe installation. In pipes of a small section the axis line of the duct must be reached and if possible slightly exceeded by the tip of the probe (=U).

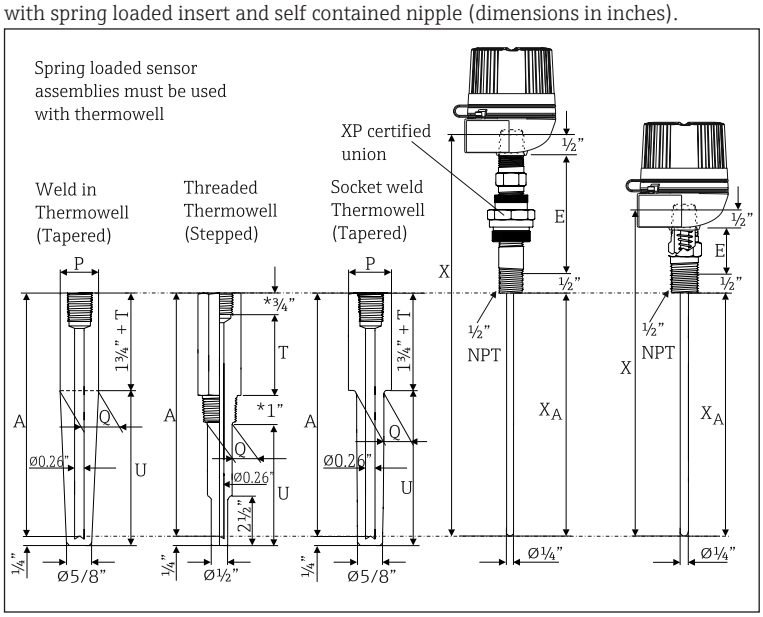
A: Socket weld installation
B: Threaded, tilted installation

For installation proceed as follows:

1. Attach thermowell to pipe (see A and B) or process container wall.
   Install and tighten the Thermowell before applying process pressure.
2. Make sure that the process fitting matches the maximum specified process pressure.
3. Seal the extension nipples with TFE tape before screwing the sensor into the thermowell.
4. Thermowells are used in measuring the temperature of a moving fluid in a conduit, where the stream exerts an appreciable force.
   The limiting value for the thermowells is governed by the temperature, the pressure and the speed of the medium, the immersion length, the materials of the thermowell and the medium, etc.
   For operating conditions, a stress calculation should be carried out.

Dimensions

with spring loaded insert and self contained nipple (dimensions in inches).



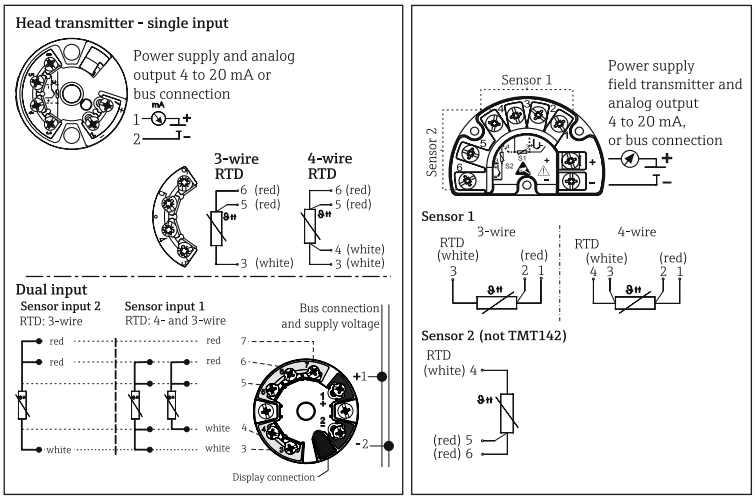
*For thermowells with ½" NPT - 1" Process thread length and ¾" Hex length dimensions are reversed.

U = Thermowell Immersion length (see table)
E = Extension (see table)
Q = Thermowell diameter
T = Lag dimension (3" or specified length 1" to 6" in ½" increments)
X_A = A = Immersion length RTD sensor, thermowell drilled depth (A= U+1½"+T)
X = Insert overall length (X = A+E)
P = Pipe size (Nom. ¾"; Dia. = 1.050" - Nom. 1"; Dia. = 1.315")

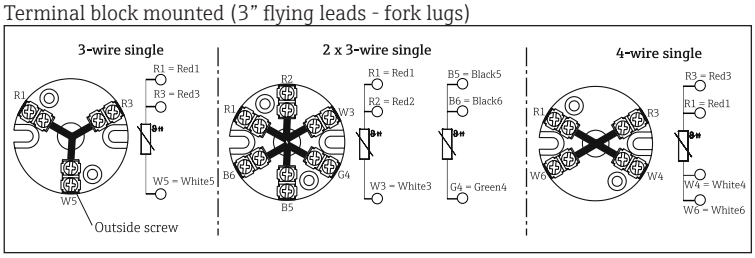
Spare part insert, TU111. For replacement with additional option code (XP spare part) need to be used to assure approved classification, please contact Endress+Hauser!

Electrical connection-wiring diagrams

Head or field transmitter mounted (3" or 5½" flying leads - crimped sleeves)



Terminal block mounted (3" flying leads - fork lugs)



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!

U	E (nom. dimension)	Process connection	Shape of Thermowell	ø Q
2½", 4½", 7½", 10½", 13½", 16½", 22½"; specified length 2" to 18" in ½" increments	Hex nipple = 1" or Nipple Union Nipple (NUN) = 4" or 7" Material: Steel or 316SS	½" NPT	Stepped (Standard duty) Tapered (Heavy duty)	5/8" 11/16"
		¾" NPT	Stepped (Standard duty) Tapered (Heavy duty)	¾" 7/8"
		1" NPT	Stepped (Standard duty) Tapered (Heavy duty)	7/8" 1 1/16"
		¾" Socket weld	Stepped (Standard duty) Tapered (Heavy duty)	¾" ¾"
		1" Socket weld	Stepped (Standard duty) Tapered (Heavy duty)	7/8" 1"
		¾" weld in	Tapered (Heavy duty)	1.050"
		1" weld in	Tapered (Heavy duty)	1.315"

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

Recommended minimum immersion for thermowell:

Stepped TW = 2½"	Tapered TW = 4½"	Weld in TW = 4½"

Technical data

Weight	From 1 to 10 lbs
Material	316SS (Wetted parts)
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	-58 to 212 °F (-50 to 100 °C)
Stainless steel housing	-58 to 212 °F (-50 to 100 °C)
Housing with head-mounted transmitter	
All types of housing	-40 to 185 °F (-40 to 85 °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