

# STT 3000 Series STT800 Temperature Probe Assemblies Specifications

Models STT820, STT830, STT840

34-TT-03-08 October 2022



## Overview

Honeywell's STT 3000 family of microprocessor based smart temperature transmitters includes STT 170, STT250, STT350 and STT800 series of products. While the STT 170, STT250 and STT350 are standalone temperature transmitters, STT800 series are integrated probe assemblies based on variety of temperature elements; thermowells; connection heads and terminal blocks for connection to remote mounted transmitters.

Choose the unit to meet your application needs:

- **STT820:** Rigid Probe assembly without thermowell
- **STT830:** Threaded and socket weld assembly with thermowell and extension
- **STT840:** Drilled Flanged assembly with thermowell and extension.

## Description

The STT800 series integrated temperature probe assemblies cater to tough industrial applications and are available with variety of process connection options. The integrated temperature probe assemblies are ready for installation when they are calibrated and shipped from the factory. They can be ordered with variety of RTD and Thermocouple elements and wells.

## Features

- Ready to install temperature point resulting in lower engineering, procurement, installation and commissioning cost
- Choice of STT 3000 temperature transmitters with connection head, extension, sensor and thermowell are available with easy to order model number
- Custom calibration for transmitter and element
- Probe with transmitter calibration option
- Variety of communication protocols Analog, DE, HART, FF

## Specifications of Connection Heads:

Connection Heads are part of the STT 800 integrated temperature probe assemblies meant for housing the sensor terminals and/or transmitters. STT 800 integrated temperature probe assemblies are available with both



head mounted and field mounted housings.



Series STT830 Assembly – Typical

Series STT840 Assembly – Typical

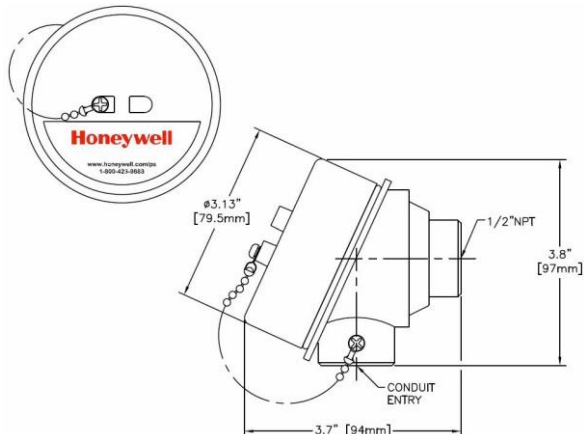


## Series STT820 Assembly - Typical

### Housings

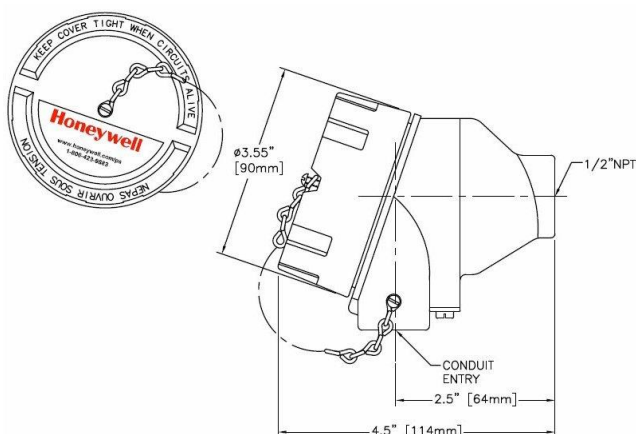
#### General Purpose Aluminum Housings:

- Dimensions according to DIN form **B**
- Protection grade: **IP66 (NEMA-4)**
- Max. temperature: **121° C (250° F)**
- Material: **aluminum**
- Conduit Entry: **1/2" NPT or 3/4" NPT or M20 x 1.5**
- Thermowell Entry: **1/2" NPT**
- Body Color: **Gray**
- Cap Color: **Gray**
- Weight: **.8lbs (360g)**
- Captive Chain: **Stainless Steel Ball Type**



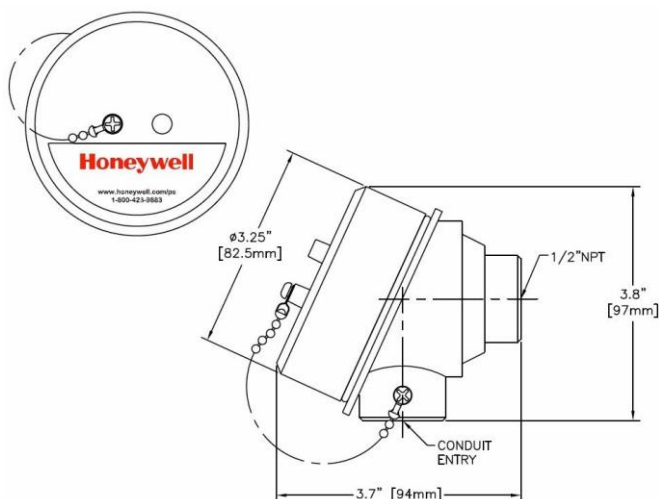
#### Explosion Proof Aluminum Housings:

- Dimensions according to DIN form **B**
- Protection grade: **IP66 (NEMA-4)**
- Class 1 Div 1, **Groups B, C & D**
- Class 2, Div. 1 **Groups E, F & G**
- Max. temperature: **121° C (250° F)**
- Material: **aluminum**
- Conduit Entry: **1/2" NPT, 3/4" NPT or M20 x 1.5**
- Thermowell Entry: **1/2" NPT**
- Body Color: **Gray**
- Cap Color: **Gray**
- Weight: **.8lbs (360g)**
- Captive Chain: **Stainless Steel Ball Type**



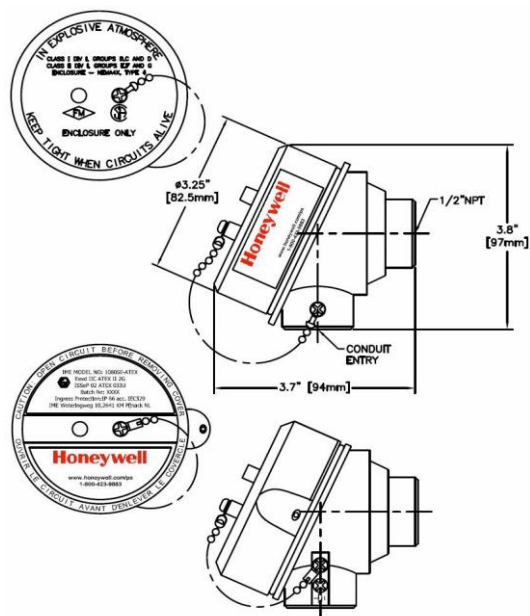
#### General Purpose Stainless Steel Housings:

- Dimensions according to DIN form **B**
- Protection grade: **IP66 (NEMA-4, -4X)**
- Max. temperature: **121° C (250° F)**
- Material: **316 Stainless Steel**
- Conduit Entry: **1/2" NPT, 3/4" NPT or M20 x 1.5**
- Thermowell Entry: **1/2" NPT**
- Body Finish: **Electro Polish**
- Cap Finish: **Electro Polish**
- Weight: **1.8Lbs (800g)**
- Captive Chain: **Stainless Steel Ball Type**

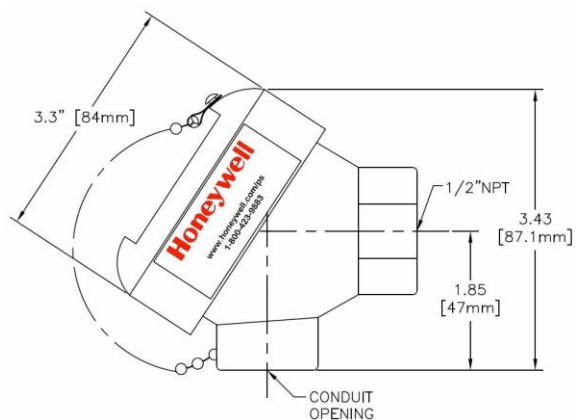


**Explosion Proof Stainless Steel Housings:**

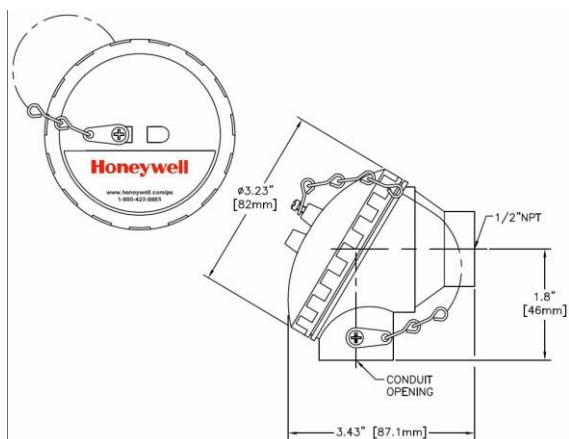
- Dimensions according to DIN form **B**
- Protection grade: **IP66 (NEMA-4, -4X)**
- Class 1 Div 1, **Groups B, C & D**
- Class 2, Div. 1 **Groups E, F & G**
- Max. temperature: **121° C (250° F)**
- Material: **316 Stainless Steel**
- Conduit Entry: **1/2" NPT, 3/4" NPT or M20 x 1.5**
- Thermowell Entry: **1/2" NPT**
- Body Finish: **Electro Polish**
- Cap Finish: **Electro Polish**
- Weight: **1.8Lbs (800g)**
- Captive Chain: **Stainless Steel Ball Type**

**General Purpose Cast Iron Housings:**

- Dimensions according to DIN form **B**
- Protection grade: **IP68 (NEMA-4, -4X)**
- Max. temperature: **121° C (250° F)**
- Material: **Cast Iron**
- Conduit Entry: **1/2" NPT, 3/4" NPT or M20 x 1.5**
- Thermowell Entry: **1/2" NPT**
- Body Finish: **Cast Iron with a High Temperature Black Paint**
- Cap Finish: **Cast Iron with a High Temperature Black Paint**
- Weight: **2Lbs (900g)**
- Captive Chain: **Stainless Steel Ball Type**

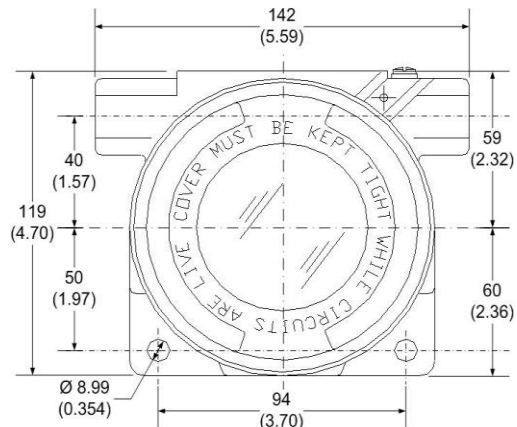
**General Purpose Polypropylene Housings:**

- Dimensions according to DIN form **B**
- Protection grade: **FDA Approved Polypropylene**
- Max. temperature: **92° C (198° F)**
- Material: **White Polypropylene**
- Conduit Entry: **1/2" NPT, 3/4" NPT or M20 x 1.5**
- Thermowell Entry: **1/2" NPT**
- Weight : **6oz (170g)**
- Captive Chain: **Stainless Steel Link Type**



**Explosion Proof Aluminum & Stainless Steel housing EPE / STE:**

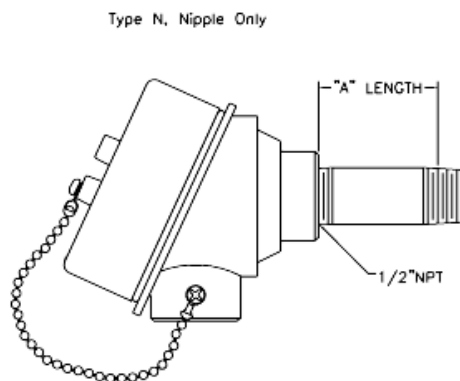
- Protection grade: **IP66/67 (NEMA-4, -4X)**
- Class 1 Div 1, **Groups B, C & D**
- Class 2, Div. 1 **Groups E, F & G**
- Max. temperature: **121° C (250°F)**
- Material: **Aluminum Alloy 360 / 316 Stainless Steel**
- Conduit Entry: **½" NPT**
- Thermowell Entry: **½" NPT**
- Aluminum Body Finish: **Beige Epoxy**
- Aluminum Cap Finish: **Beige Epoxy**
- Weight: **3.05 Lbs (1.38 kg)**

**Extension**

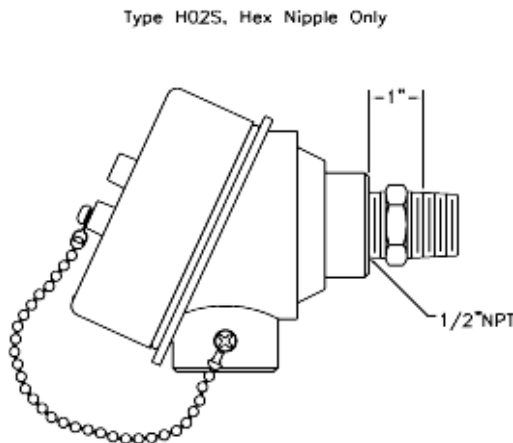
To complete the connection between the thermowell and the head a nipple or nipple / union / nipple combination is used. The most economical would be a pipe nipple. A nipple / union / nipple combination allows for rotating the connection head 360°. Hex nipples provide for wrench adjustment. Extensions are available in carbon steel or stainless steel for corrosion protection. Extension lengths can be 1, 2, 5, 7 or 9" with the longer lengths to extend the head beyond insulation or firebrick.

**Extension Specifications:****Nipple Extension Only**

- Most economical
- Provides for minimal space between head and thermowell
- Nipple size: ½"NPT by Schedule 40
- Available materials: Carbon Steel or 304 Grade Stainless Steel
- Standard "A" Length: 2" and 5"
- Available in longer lengths, 316 Stainless Steel and/or Schedule 80

**Hex Nipple Extension**

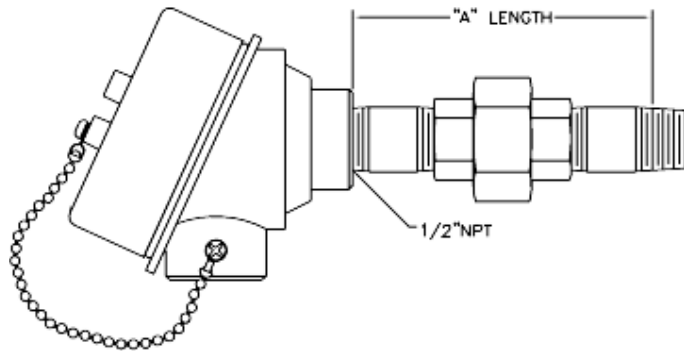
- Machined from solid bar stock
- Best suited for wiring the transmitter
- Hex allows for easy dis-assembly
- Standard "A" length of 1"
- Standard 316 Grade Stainless Steel



### Nipple/Union/Nipple Extension

- Union provides the means for positioning for conduit cable connection
- Nipple size:  $\frac{1}{2}$ "NPT by Schedule 40
- Union size:  $\frac{1}{2}$ "NPT by 150#
- Available nipple materials: Carbon Steel or 304 Grade Stainless Steel
- Available union materials: Galvanized Steel or 304 Grade Stainless Steel
- Standard "A" Length: 5", 7" and 9"
- Available in other lengths, 316 Stainless Steel or Schedule 80 nipples and 3000# rated unions

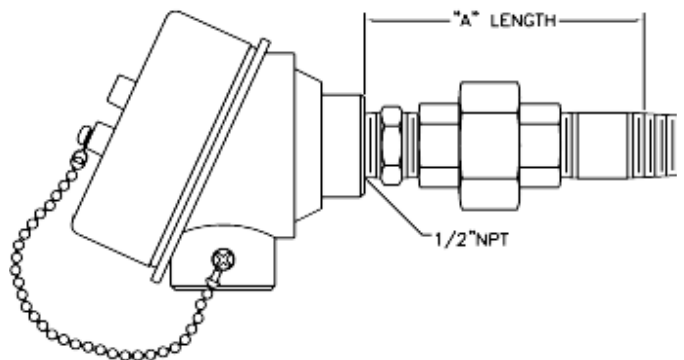
Type U, Nipple-Union-Nipple



### Hex Nipple/Union/Nipple Extension

- Union provides the means for positioning for conduit cable connection
- Best suited for wiring the transmitter
- Hex nipple provide for additional wrench tightening
- Union provides the means for positioning for conduit cable connection
- Nipple size:  $\frac{1}{2}$ "NPT by Schedule 40
- Union size:  $\frac{1}{2}$ "NPT by 150#
- Hex nipple: 316 Grade Stainless Steel
- Available nipple materials: Carbon Steel or 304 Grade Stainless Steel
- Available union materials: Galvanized Steel or 304 Grade Stainless Steel
- Standard "A" Length: 5", 7" and 9"
- Available in other lengths, 316 Stainless Steel or Schedule 80 nipples and 3000# rated unions

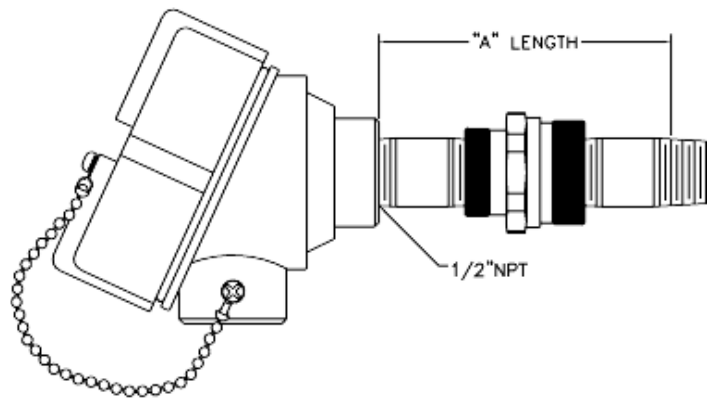
Type H, Hex Nipple-Union-Nipple



### Nipple/Explosion Proof Union/Nipple Extension

- Same benefits as the standard Nipple/Union/Nipple extension except with explosion proof union rated:
  - Class 1, Division 1 and 2, Groups A, B, C and D
  - Class 2, Division 1 and 2, Groups E, F and G
  - Class 3
  - Recommended when supplied with explosion proof connection heads.

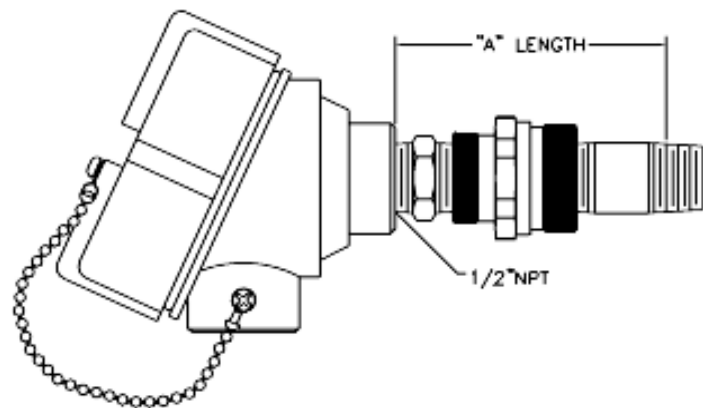
Type E, Nipple-Explosion Proof Union-Nipple



### Hex Nipple/Explosion Proof Union/Nipple Extension

- Same benefits as the standard Hex Nipple/Union/Nipple extension except with explosion proof union rated:
  - Class 1, Division 1 and 2, Groups A, B, C and D
  - Class 2, Division 1 and 2, Groups E, F and G
  - Class 3
  - Recommended when supplied with explosion proof connection heads.

Type X, Hex Nipple-Explosion Proof Union-Nipple



## Thermowells:

Thermowells are generally incorporated into the process three ways, threaded, welded or a flanged connection. For smaller diameters where the well is not required to be removed on a regular basis and corrosion is not a serious problem, threaded process connections are preferred. By threading into a coupling, thread-o-let or TEE, the well has attached directly to the vessel or run pipe.

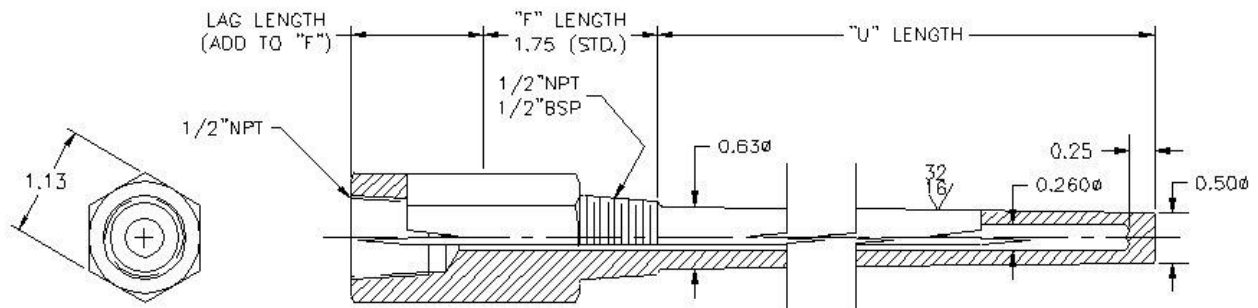
For installations where the well needs to be removed more frequently due to corrosion or other requirements, a flange connection is used. The flange connection will bolt to a mating flange mounted to the process. Flange connections are more appropriate for high-pressure applications and larger pipe sizes.

For applications where access is not required, a socket well can be used; these provide a high quality connection and cannot be removed without significant effort. Welded connections are also preferred for high pressure, high temperature steam lines.

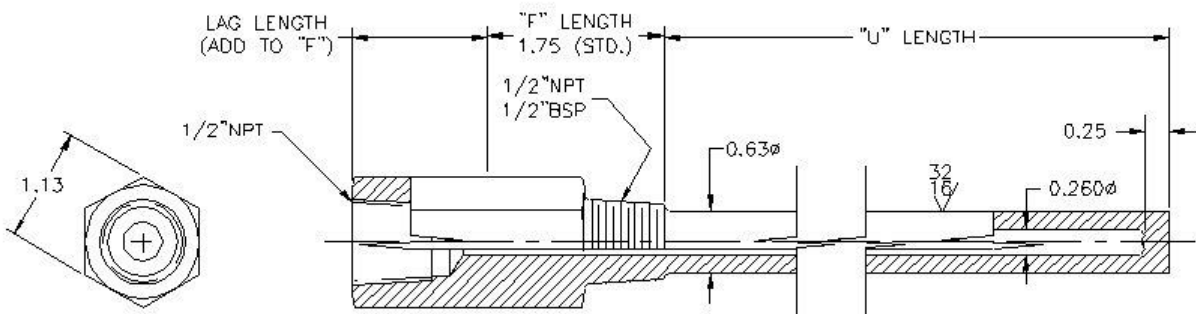
### Threaded and Socket thermowells

- Selection A (1/2"NPT Process Connection)
- Selection B (1/2"BSP Process Connection)

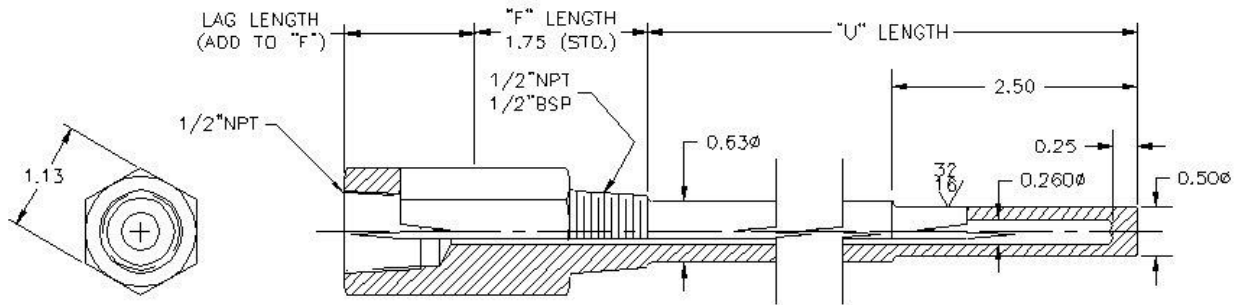
### T Tapered Design



### S Straight Design

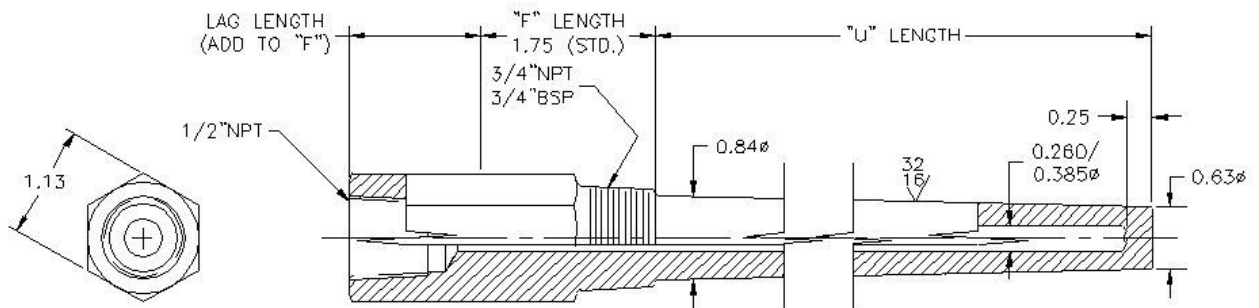


## P Stepped Design



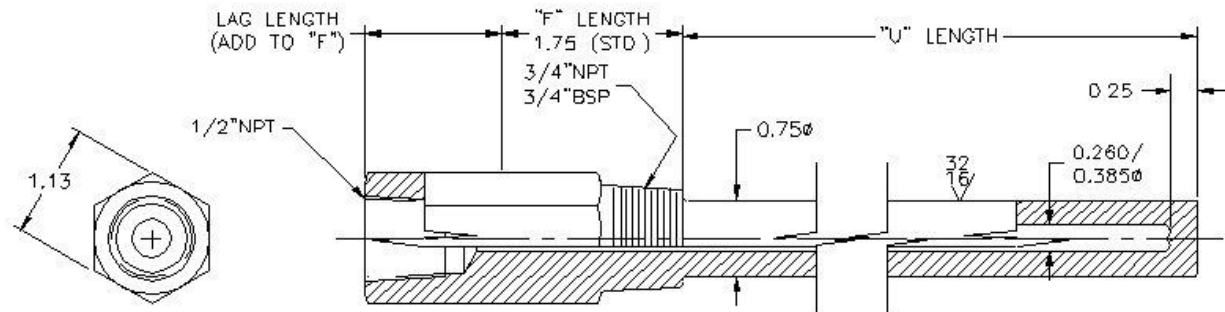
- Selection C (3/4" NPT Process Connection, .260 $\varnothing$  Bore)
- Selection D (3/4" NPT Process Connection, .385 $\varnothing$  Bore)
- Selection E (3/4" BSP Process Connection, .260 $\varnothing$  Bore)
- Selection F (3/4" BSP Process Connection, .385 $\varnothing$  Bore)

## T Tapered Design

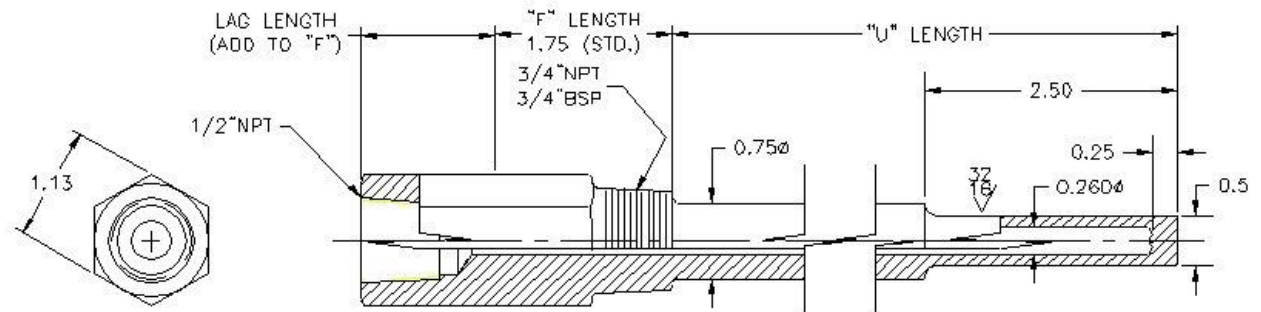




### S Straight Design

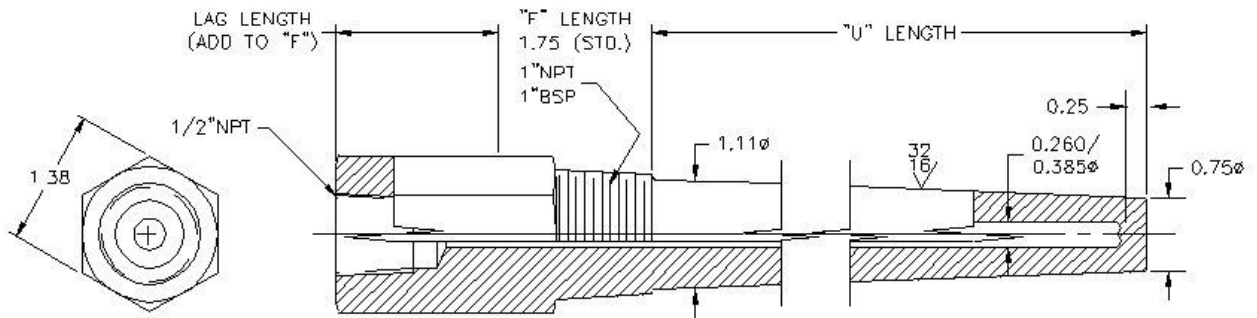


### P Stepped Design

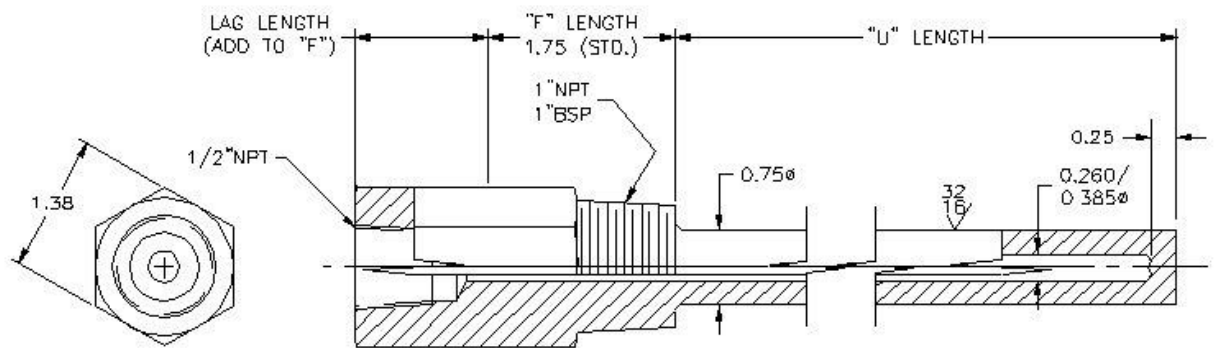


- Selection G (1"NPT Process Connection, .260 $\phi$  Bore)
- Selection H (1"NPT Process Connection, .385 $\phi$  Bore)
- Selection J (1"BSP Process Connection, .260 $\phi$  Bore)
- Selection K (1"BSP Process Connection, .385 $\phi$  Bore)

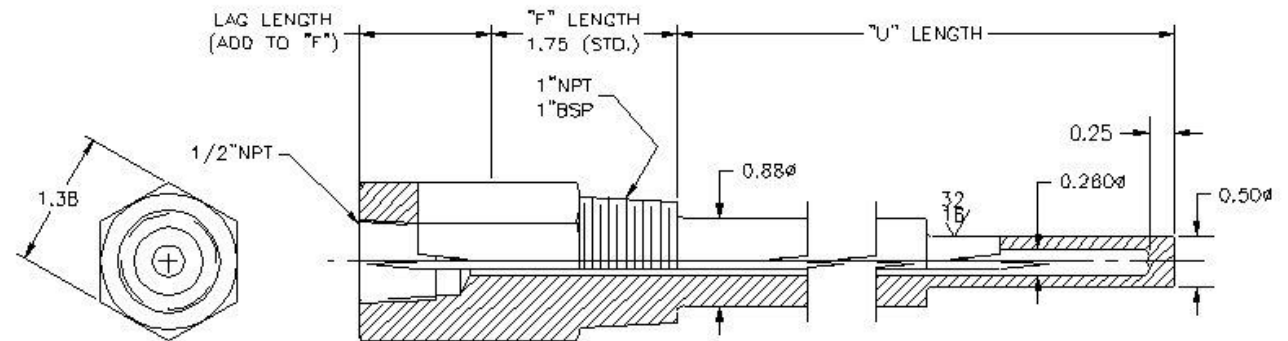
**T Tapered Design**



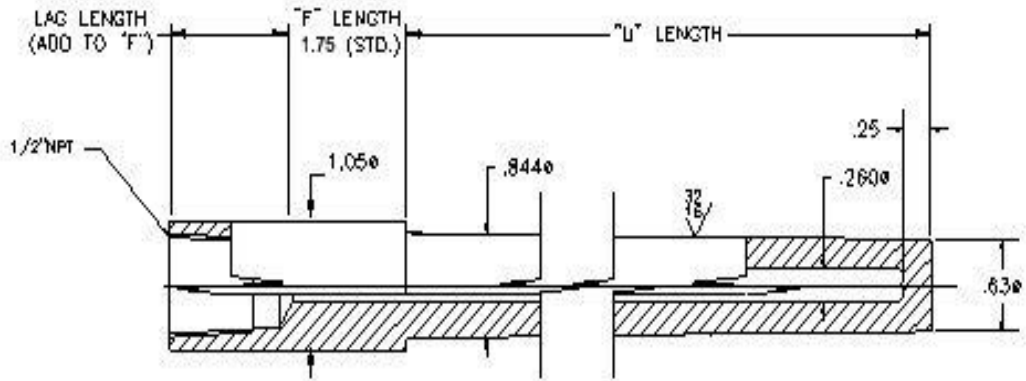
**S Straight Design**



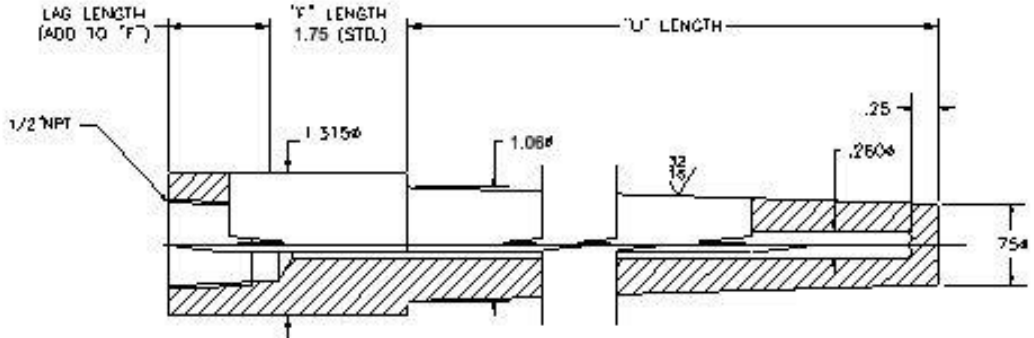
**P Stepped Design**



- Selection M (3/4" NPS Socket Weld Process Connection)

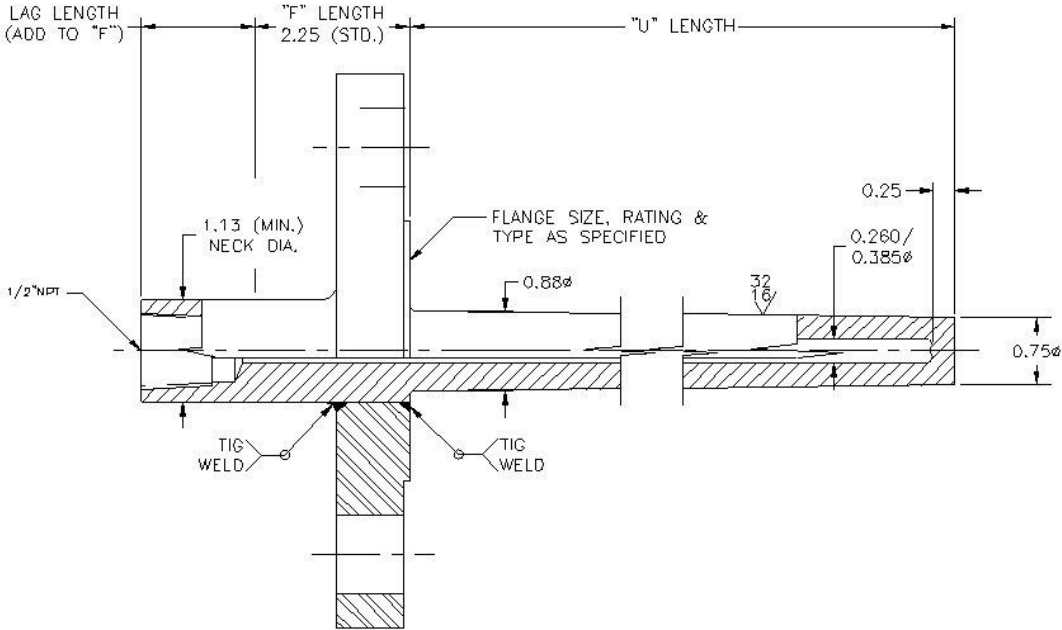


- Selection N (1" NPS Socket Weld Process Connection)

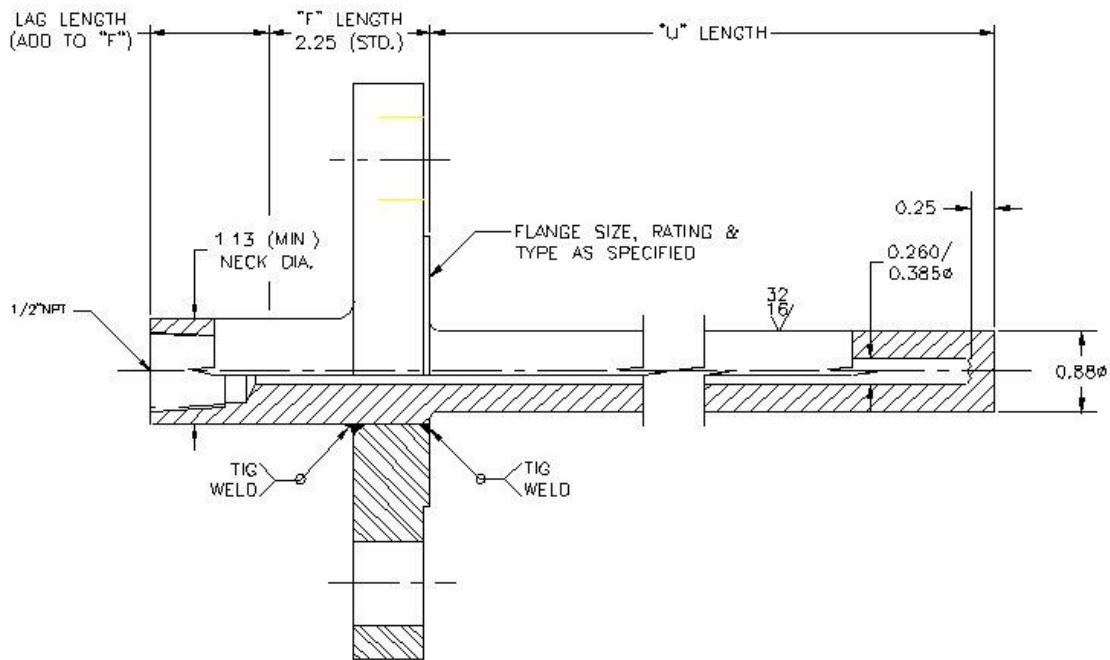


**Flanged Thermowells:**

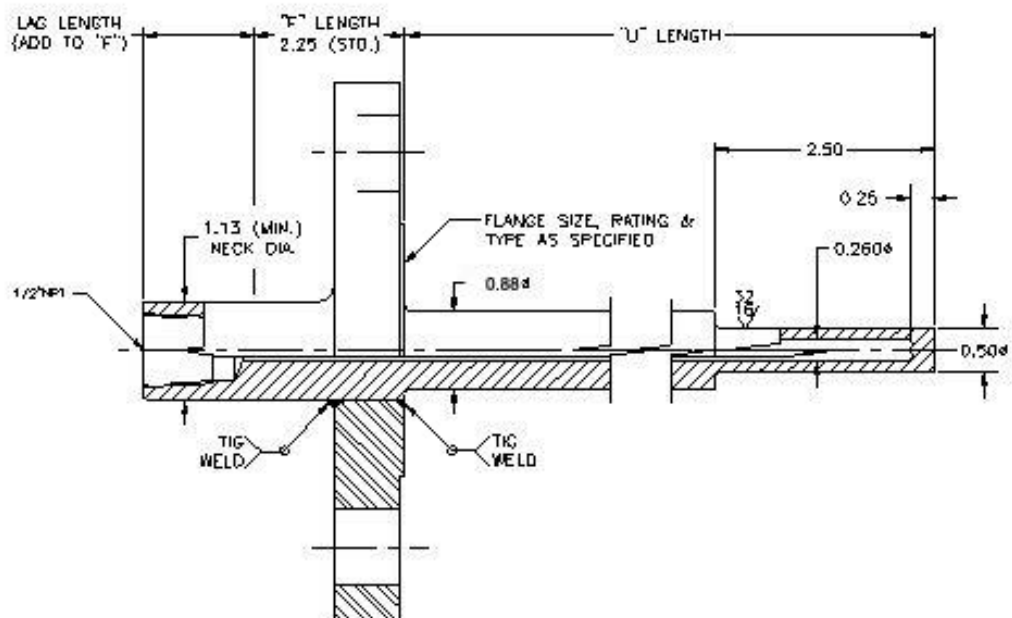
- Selection A (.260Ø Bore, Tapered Design)
- Selection B (.385Ø Bore Tapered Design)



- Selection C (.260Ø Bore, Straight Design)
- Selection D (.385Ø Bore Straight Design)



- Selection E (.260Ø Bore, Stepped Design)



## **Assembly Options**

### **Selection PT1 & PT2, Hydrostatic Testing (PT1 only on Socket wells)**

Hydrostatic testing is a diagnostic technique to check for leaks or defects by means of slowly increasing water pressure in a line or chamber to a pre-determined setting. A visual inspection is performed to determine if any leakage exists or if the pressure set point reduces. Thermowells are mostly internally pressure tested, flanged and threaded thermowells may be externally tested. Testing pressure is recommended at the process maximum pressure or at 1.5 times the pressure rating in accordance with ANSI B16.5.

### **Selection FPW, Full Penetration Weld (Flanged Thermowells)**

The most secure method of connecting the flange to the well is with a full penetration weld. In this, the flange is over bored to allow the well material to make full contact for the entire length of the connection. With a full penetration welded connection, the integrity of the connection is excellent. While this is much more costly in initial procurement cost, it can save significant long-term cost in the life and performance of the thermowell. Again, proper welding procedures are critical.

### **Selection HT1, NACE Certificate**

Certification of material to the maximum hardness guidelines for sour service is found in NACE MR0175.

### **Selection XGN Oxygen Cleaning in accordance with ASTM G 93 - 96**

Adequate contamination control in oxygen systems is imperative to minimize hazards and component failures because of contamination. This method of cleaning for service in oxygen environments eliminates contamination problems encountered in the use of enriched air, mixtures of oxygen with other gases, or any other oxidizing gas that may be solved by the same cleaning procedures. This is applicable to metallic materials thereby preventing ignition by a variety of mechanisms such as particle impact, mechanical or pneumatic impact.

### **Selection CLN Chlorine Cleaning in accordance with ASTM G 93 - 96**

To assure that dry chlorine systems have protection from the intrusion of moisture the Chlorine Institute, Inc. has provided pamphlets to support the chlor-alkali industry and serve the public with human health and environmental protection in the distribution and use of chlorine.

### **Selection FRQ Frequency Calculation**

Thermowells must be carefully selected for processes where significant velocity is present. By penetrating the process flow, the thermowell is subject to the stress and friction of the flow. This may set up a natural vibration in the well. If this is not done correctly, the vibration will be such that the well will shear off in the process. This can be especially troublesome in high velocity steam lines. As the engineer needs to have the well deep enough into the process to accurately measure the temperature, the selection of the length and diameter of the well needs to be checked against the process to ensure that they are compatible. This is done through a calculation known as a Murdock. This calculation will determine whether a thermowell will be acceptable for the proposed process. The Von Karman Trail refers to the turbulent wake, which is formed as fluid flows past the thermowell. A vibration frequency is determined by the diameter of the thermowell and the fluid velocity. Should this frequency equal the natural frequency of the thermowell it will cause the thermowell to vibrate to the point where it will break off? Therefore, it is important that the thermowell is designed to insure the natural frequency of the thermowell always exceeds the potential wake frequency.

**Selection TMC Thermowell Material Certificate**

The bar stock and flange supplier certifications are traceable to the lot, batch, or heat number lot in accordance with the applicable specification. A Mill Test Report or MTR is documentation that shows the chemical makeup and physical strength/properties of materials (bar stock, flanges) used in fabrication of thermowells required to meet ASME and ASTM grades. The MTR shows the percentage of alloy used through chemical analysis and mechanical tests of a sample piece to represent the whole batch of a run of material. The MTR proves that the material received meets the grade required. The company that does the testing from the mill itself issues this or by an outside company who tests for the mill. The MTR's include approval as define in EN 10204 3.1B assuring the manufacturer's authorized representation is independent of manufacturing.

**Selection AP2, AP3 & AP4 Probe Calibration Data Certificate**

Probe calibration provided at two, three or four temperature points. A comparison method to NIST standard PRT (Primary Reference Thermometer) is used. This allows for maintaining a calibration uncertainty of as low as .03° C. Calibration testing is available at any temperature between -35° C and 1250° C as well as cryogenic temperature of -195.6° C. Detailed calibration report is submitted with shipment showing test results. Temperature points are required at time of order.

**Selection SP1 & SP2 Upgrade to Special Limits (Thermocouples)**

For improved probe accuracy of approximately ½ the calibration error of the standard, we select and check calibration that are set factory temperature points. Recommend when using options AP2, AP3 & AP4.

**Selection CL1 & CL2 Upgrade to Grade A (RTD's)**

Platinum RTD's typically are provided in grades (or class) or tolerance. Grade A has an ice point tolerance of  $\pm 0.06\%$  at ice point and grade B  $\pm 0.12\%$  at ice point. The ASTM standard is slightly better than the DIN at  $\pm 0.05\%$  and  $\pm 0.10\%$ . Recommend when using options AP2, AP3 & AP4.

**Selection TC1 & TC2 Transmitter with Probe System Calibration**

All temperature sensors (thermocouple or RTD) have inherent errors. A properly designed, manufactured and calibrated Class A RTD probe has an allowable error of 0.13 °C at ice point, at 500 °C the max. allowable error is 0.98 °C (per ASTM E1137-5). If a transmitter is calibrated using a calibration standard with a typical accuracy of .01 to .02 °C and then attached to an RTD probe, the error of that RTD probe is transferred directly to the transmitter output. From the start, you may see an error of close to 1 °C at the higher temperatures.

Using our system calibration, the transmitter is calibrated at the customers selected zero and span points using the actual sensor as the input rather than a standard. This means the transmitter calibration eliminates the probes inherent error. This allows the system accuracy to exceed from what it would normally achieve when calibrating the probe and transmitter separately.

Platinum RTD's typically are provided in grades (or class) or tolerance. Grade A has an ice point tolerance of  $\pm 0.06\%$  at ice point and grade B  $\pm 0.12\%$  at ice point. The ASTM standard is slightly better, in this application, than the DIN at  $\pm 0.05\%$  and  $\pm 0.10\%$ . Recommend when using options AP2, AP3 & AP4.

**Selection CRN Canadian Register Number**

The Canadian Registration Number (CRN) is a number issued by each province or territory of Canada to the design of a boiler, pressure vessel or fitting. Fitting being the thermowell has been accepted and registered for use in that province or territory. Numeric digits following the decimal point within the CRN represent the province or territory.

## Sensors

Thermocouple and RTD's (Resistance Temperature Detectors) are the most common temperature sensors employed by the process manufacturers.

**Resistance Temperature Detector (RTD)** elements are normally constructed of platinum, copper, nickel or nickel/iron. They operate as a positive temperature coefficient device when an excitation voltage is applied to convert changes in temperature to voltage signals by the measurement of resistance. The metals have the properties necessary for use in RTD elements due to their resistance to temperature characteristics that increase in resistance as temperature increases and, conversely, decrease in resistance as temperature decreases. These metals are best suited for RTD applications because of their linear resistance-temperature characteristics, their high coefficient of resistance, and their ability to withstand repeated temperature cycles. The change in electrical resistance to temperature for a material is termed the "temperature coefficient of resistance".

**Wire wound design** uses helical coil of very small platinum sensing wire of known alpha value. This coil is then slid into a ceramic insulator. Larger extension leads are spot welded to the ends of the platinum wire and cemented in place. Another construction is an outer winding of the platinum wire around a center mandrel, usually made of ceramic. This winding is coated with glass as a means of securing the windings. Wire wound elements are available in a number of materials and suitable for a wider temperature range.

**Thin film sensing elements** are manufactured with a thin layer of platinum deposited on to a ceramic substrate. The platinum film is laser cut or chemical etched to achieve the desired resistance path. The element is then coated with a thin layer of glass for protection. Lead wires are welded to the platinum with epoxy applied to hold the lead wires in place. Thin film elements are lower in cost than wire wound and faster in response time. RTD's are available in two, three and four wire configuration. Selection of the lead wire configuration is usually based on the instrumentation, desired accuracy and stability.

**Two wire RTD:** One lead wire is attached to each side of the element. This is the least accurate due to the inability to compensate for lead length resistance.

**Three wire RTD:** This is the most commonly used configuration. By adding a third lead to one end of the sensing element instrumentation can detect and compensate for lead resistance.

**Four wire RTD:** four wires provide for the most accurate method of RTD measurement. A constant current is carried through two leads with the remaining two used to measure the voltage drop.

**Duplex RTD:** RTD's are available in duplex construction in any of the wire configurations. With wire wound bulbs, two sets of windings are used. In thin film, two elements are set in place side-by-side. The second element may be used as a spare, testing purposes or connection to a second instrument.

### R - Low Temperature

Low temperature is recommended for uses up to -58 to +500°F.

The Standard RTD employs a thin film element. The element is calibrated to ASTM E1137 Grade B. Internal lead wires are nickel clad copper, insulated with Teflon. Film elements are sometimes better suited for high vibration applications.



## H – High Temperature

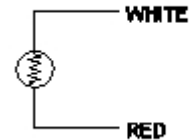
High temperature is recommended for uses up to -292 to +932°F.

It is made utilizing MgO insulated, metal sheathed cable. Internal lead wires are made from nickel-plated copper wires. This provides the minimum lead wire resistance change with temperature. H type RTD's employ a Ceramic wire wound element

RTD's are considered ungrounded.

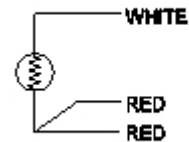
- **Type R1 or H1**

- Construction: Single, 2-wire
- Resistance @ 0°C: 100 OHMS
- Temperature Coefficient of Resistance: .00385
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"



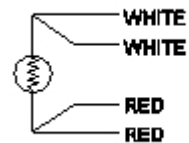
- **Type R2 or H2**

- Construction: Single, 3-wire
- Resistance @ 0°C: 100 OHMS
- Temperature Coefficient of Resistance: .00385
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"



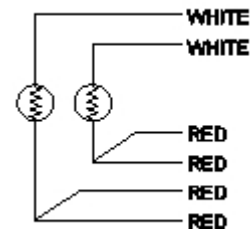
- **Type R3 or H3**

- Construction: Single, 4-wire
- Resistance @ 0°C: 100 OHMS
- Temperature Coefficient of Resistance: .00385
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"



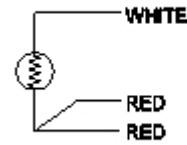
- **Type R4 or H4**

- Construction: Duplex, 3-wire
- Resistance @ 0°C: 100 OHMS
- Temperature Coefficient of Resistance: .00385
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"



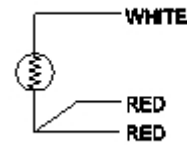
- **Type R5 or H5**

- Construction: Single, 3-wire
- Resistance @ 0°C: 200 OHMS
- Temperature Coefficient of Resistance: .00385
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"



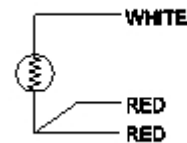
- **Type R6 or H6**

- Construction: Single, 3-wire
- Resistance @ 0°C: 500 OHMS
- Temperature Coefficient of Resistance: .00385
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"



- **Type R7 or H7**

- Construction: Single, 3-wire
- Resistance @ 0°C: 1000 OHMS
- Temperature Coefficient of Resistance: .00385
- Insulation Teflon(FEP)
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"

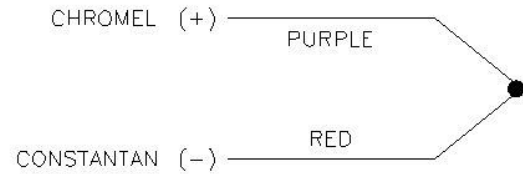


Lead Wire provides for termination from the sheath solid wire to flexible lead wire with Teflon insulation. Lead wires are attached by soldering and the area is sealed with epoxy to provide a durable moisture seal. Lead wires terminate to bare ends for connection to terminal block or transmitters.

## Thermocouples

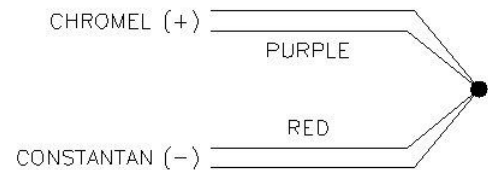
### • Type T1

- Construction: Single
- Calibration: Type E, Chromel – Constantan
- Conductor Size: 18 Ga.
- Insulation: Hard Packed MgO
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"
- Recommended Temperature Range: -328 to +1600° F



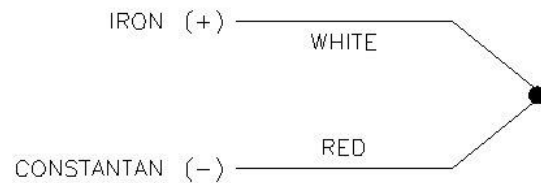
### • Type T2

- Construction: Duplex
- Calibration: Type E, Chromel – Constantan
- Conductor Size: 18 Ga.
- Insulation: Hard Packed MgO
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"
- Recommended Temperature Range: -328 to +1600° F



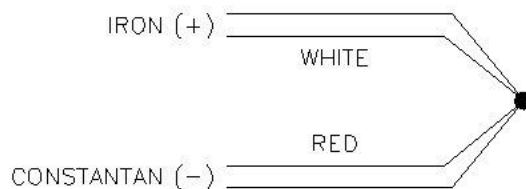
### • Type T3

- Construction: Single
- Calibration: Type J, Iron - Constantan
- Conductor Size: 18 Ga.
- Insulation: Hard Packed MgO
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"
- Recommended Temperature Range: -32 to +1400° F



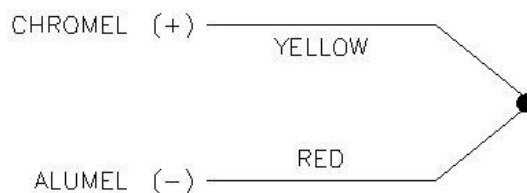
- **Type T4**

- Construction: Duplex
- Calibration: Type J, Iron - Constantan
- Conductor Size: 18 Ga.
- Insulation: Hard Packed MgO
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"
- Recommended Temperature Range: -32 to +1400° F



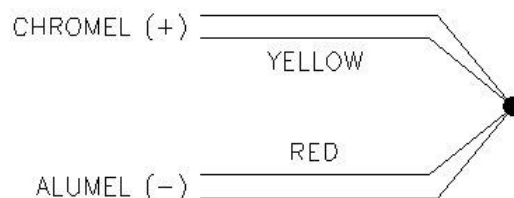
- **Type T5**

- Construction: Single
- Calibration: Type K, Chromel - Alumel
- Conductor Size: 18 Ga.
- Insulation: Hard Packed MgO
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"
- Recommended Temperature Range: -328 to +2300° F



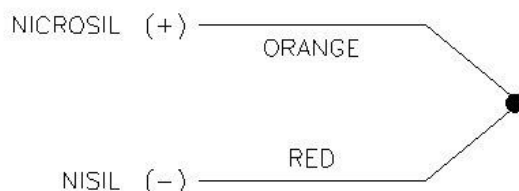
- **Type T6**

- Construction: Duplex
- Calibration: Type K, Chromel - Alumel
- Conductor Size: 18 Ga.
- Insulation: Hard Packed MgO
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"
- Recommended Temperature Range: -328 to +2300° F



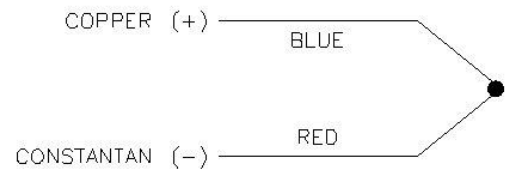
- **Type T7**

- Construction: Single
- Calibration: Type N, Nicrosil - Nisil
- Conductor Size: 18 Ga.
- Insulation: Hard Packed MgO
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"
- Recommended Temperature Range: -328 to +2300° F



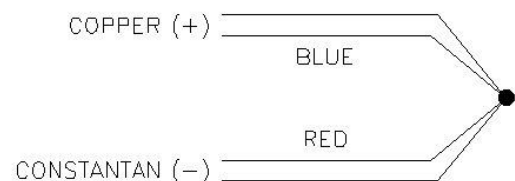
- **Type T1**

- Construction: Single
- Calibration: Type T, Copper – Constantan
- Conductor Size: 18 Ga.
- Insulation: Hard Packed MgO
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"
- Recommended Temperature Range: -328 to +700° F



- **Type T2**

- Construction: Duplex
- Calibration: Type T, Copper – Constantan
- Conductor Size: 18 Ga.
- Insulation: Hard Packed MgO
- Sheath Material: 316 Stainless Steel
- Sheath Diameter: ¼"
- Recommended Temperature Range: -328 to +700° F



**Type E:** CHROMEL (+) vs Constantan (-) has the highest EMF output of any standardized metallic thermocouple. If used unprotected, Type E wires are NOT subject to corrosion at sub-zero temperatures. They can be used in inert, oxidizing or reducing atmospheres. Because they cover a wide range with a single calibration curve, Type E thermocouples are preferred for computer applications.

**Type J:** Iron (+) vs Constantan (-), is the most commonly used calibration. It is suitable for use in a vacuum, inert, oxidizing (with the iron leg protected) or reducing atmosphere. If unprotected the iron wire may be attacked by ammonia, nitrogen and hydrogen atmospheres. In sub zero temperatures the iron wire may rust or become brittle. Type J should not be used in sulfurous atmospheres above 540°C.

**Type K:** Chromel (+) vs Alumel (-) is generally used to measure high temperatures up to 2300°F. It should not be used for accurate temperature measurement below 900°F or after prolonged exposure above 1400°F. If unprotected, it can be used only in inert or oxidizing atmospheres. It has a short life in alternately oxidizing and reducing atmospheres and in reducing atmospheres, particularly in the 1500 to 1850°F range.

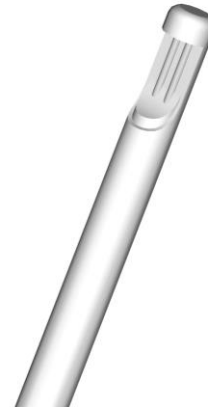
**Type N:** Nicrosil (+) vs Nisil(-), was developed for oxidation resistance and EMF stability superior to those of Type K thermocouples at elevated temperatures. These couples have shown to have a longer life, than Type K thermocouples, in both laboratories and industrial applications

**Type T:** Copper (+) vs. Constantan (-), is commonly used for sub-zero to 700°F temperature. It is preferred to Type J for sub-zero applications because of copper's higher moisture resistance as compared to iron. If unprotected, it will still function in a vacuum, inert, oxidizing or reducing atmosphere.

### Grounded Measuring Junction – G (Not permitted with ATEX certification)

In this construction, the measuring junction is completely sealed from contaminants and becomes an integral part of sheath at the tip of the thermocouple. Response time approaches that of an exposed loop thermocouple and in addition, the junction conductors are completely protected in a pressure tight seal protecting it from harsh environmental conditions and mechanical damage. Grounded junctions should not be used when ground loops or other electrical interference is likely.

Dual grounded junction thermocouples furnish two measuring circuits for simultaneous control and indication (or recording) of a single point with two instruments. Thus preventing the signal loading effect common to instrumentation of low or combination low and high impedance.



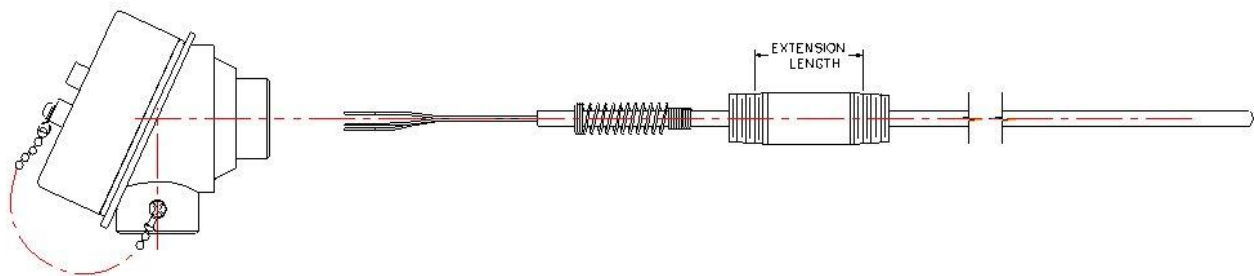
### Ungrounded Measuring Junction - U

In this construction, the thermocouple conductors are welded together to form the junction, which is insulated from the external sheath with magnesium oxide. The response time for an insulated junction is slightly longer than for a grounded junction thermocouple of the same outside diameter. This feature is advantageous in applications where thermocouples are used in conductive solutions, or when used for differential, averaging (parallel) or additive (series) applications, or wherever isolation of the measuring circuitry is required. The strain due to differential expansion between wires and sheath may be reduced.



Same as the single ungrounded junction the dual ungrounded junction thermocouples furnish two measuring circuits for simultaneous control and indication (or recording) of a single point with two instruments. Thus preventing the signal loading effect is common to instrumentation of low or combination low and high impedance.

Lead Wire provides for termination from the sheath solid wire to flexible lead wire with PVC insulation. Lead wires are attached by welding or soldering and the area is then sealed with epoxy to provide a durable moisture seal. Thermocouple lead wires utilize the same alloys as the thermocouple calibration. Lead wires terminate to bare ends for connection to terminal block or transmitters.



## Integral Meters

Honeywell's Series STT800 integrated temperature probe assemblies can be supplied with local or remote indication as an option. An Analog, (ME), Engineering Unit (EU) or a Smart Meter (SM) can be mounted integral to the transmitter inside the field mount housing. Order an integral meter as part of the model number; Table II \_\_ M, \_\_ E and \_\_ S, respectively. Order a remote meter as model RMA300. The analog meter (ME) is a 4-20mA moving coil type and displays the temperature in 0 to 100% span.

The EU meter displays temperature in engineering units with the STT25H, STT25T and STT25S HART units. Refer to 34-ST-25-08D for more details. The Smart Meter accepts 4-20mA or DE protocol and displays temperature on a LCD in engineering units or 0 to 100% span.

The remote digital meter (DM) reads DE protocol and displays temperature on a LCD in 0 to 100% span. Refer to 34-ST-25 07A for details. Smart Meter and Fieldbus Meter are available with STT350 and STT35F Respectively in the field mounted housing.

The EU meter is available with STT170 transmitters in the field-mounted housing without hazardous location certifications.

## Certifications

STT820 probe and STT830 / STT840 thermowell assemblies with a terminal block, or model STT170, STT250, STT350, or STT35F temperature transmitters installed.

NOTICE: The temperature probe and head-mount housings are supplied and certified by Thermo Electric Company, Inc., 1193 McDermott Drive, West Chester, PA 19380. Honeywell International Inc. supplies the temperature transmitter module.

### CSA Certification

Class I, Division 1, Group B, C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1; Ex d, IIC, T6;

RTD and TC assemblies, Series CH, OS, LT and SF: rated 24Vdc, 30 mA (when used with terminal block, otherwise rating dependent on transmitter head used), MWP of 0, 70 and 1500 psi. (Dependent on seal fitting assembly and/or thermowell used). Maximum operating ambient 85°C. Enclosure type 4X and Ingress protection IP66 (only when Thermowell assembly is used with equally rated CSA rated enclosure.)

### Ex d, IIC, T6;

RTD and TC assemblies, Series CF; rated 24Vdc, 30 mA (when used with terminal block, otherwise rating dependent on transmitter head used), MWP of 1500 psi. (When thermowell used). The maximum operating ambient 85°C. Enclosure Type 4X and Ingress protection IP66 (only when thermowell assembly is used with equally rated CSA rated enclosure.)

### FM Approval (U.S.A.)

Series CH, SF & LT Thermocouple/RTD Sensor Assembly

Class I, Division 1, Group A\*, B, C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1, T\*\*; Type 4/4X, IP66\*\*\*

Class I, Zone 1 IIC; T\*\*; Type 4/4X\*\*\*, IP66\*\*\*\*

Series OS Thermocouple/RTD Sensor Assembly

Class I, Division 1, Group B, C and D; Class II, Division 1, Groups E, F and G; Class III, Division 1, T\*\*; Type 4/4X \*\*\*

Class I, Zone 1 IIB+H<sub>2</sub>; T\*\*; Type 4/4X\*\*\*

Special Conditions of Use;

\* Enclosures supplied with a window are de-rated to Class I and II, Gas Groups B, C, & D and IIB + H<sub>2</sub>.

\*\* Temperature Class (T-Codes)

**DB Electronics Option:**

T6 Ta = -50°C to +80°C

**DT Electronics Option; actual T-Code dependent upon specific electronics.**

T6 Ta = -40°C to +45°C or Ta = -40°C to +60°C

T5 Ta = -40°C to +60°C or Ta = -40°C to +65°C

T4 Ta = -40°C to +85°C or Ta = -50°C to +60°C

T3 Ta = -40°C to +85°C or Ta = -40°C to +60°C

\*\*\* Type 4X, rating dependent upon enclosure, nipple extension and thermowell material.

\*\*\*\*IP66 dependent upon enclosure, thermowell required.

See FM Approvals Certificate of Compliance for complete listings.

**ATEX Certification**

STT820 – Rigid Probe Assembly – Explosionproof / Flameproof Installation Conditions

LCIE 05 ATEX 6105 X – Flameproof EEx d IIC T\*; IP6X\*\* T85°C

Ambient Limits: -20°C to +60°C

ATEX Special Conditions for Safe Use: The caloric transfer of the sensor probe shall not transmit in any application where heating is above +60°C or cooling below -20°C, including ambient temperature to all sensor parts directly in contact with the explosive atmosphere.

STT830 – Threaded &amp; Socket Weld Thermowell &amp; Probe Assembly – Explosionproof / Flameproof Installation Conditions

LCIE 05 ATEX 6105 X – Flameproof EEx d IIC T\*; IP6X\*\* T85°C

Ambient Limits: (See selected transmitter specification)

STT840 – Flanged Thermowell &amp; Probe Assembly – Explosionproof / Flameproof Installation Conditions

LCIE 05 ATEX 6105 X – Flameproof EEx d IIC T\*; IP6X\*\* T85°C

Ambient Limits: (See selected transmitter specification)

\* The T-Code is T6 when supplied only with a terminal block. For the T-Code with the temperature transmitter installed, refer to the transmitter Model Selection Guide (MSG) or transmitter specification.

\*\* Refer to the head-mount enclosure supplied to determine the environmental “Type” or “IP” rating.

The range of thermowells available as a total thermal solution covers almost every possible requirement:

STT820 Series	34-44-16-08	Rigid Probe Assemblies.
STT830 Series	34-44-16-09	Threaded and Socket Weld Thermowell Assemblies.
STT840 Series	34-44-16-10	Drilled Flanged Thermowell Assemblies.

For the detailed specifications of Honeywell STT 3000 range of temperature transmitters, refer to

34-TT-03-07	STT170	Specification
EN0I – 6031	STT250	Specifications of STT25M, STT25D, STT25H, and STT25S Smart temperature transmitters
EN0I – 6091	STT250	Specifications of STT25T Dual Input Smart temperature transmitters
EN0I – 6083	STT35F	Specification
EN0I – 5222	STT350	Specification



Model Selection Guide



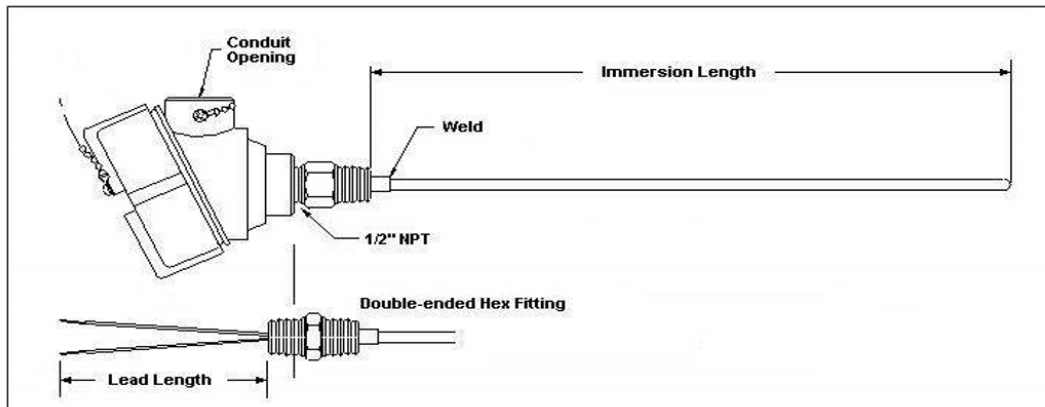
Section 13  
Page: STT-21  
Effective Date: June 1, 2022

**STT 3000 Temperature Probe Assemblies  
Series STT820 - Rigid Probe Assembly**

**Model Selection Guide  
with Pricing Data**

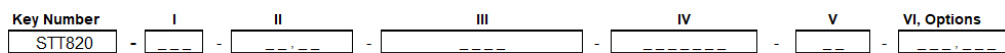
Model Selection Guide  
34-44-16-08 Issue 33 Rev1

Honeywell Proprietary



**Instructions**

- Choose availability column based on mounting configuration.
- A dot (•) denotes unrestricted availability. A letter denotes restricted availability.
- Blank denotes unavailable - choose alternate. View Restrictions table.
- Select options and approvals from Tables.



**Transmitter Options:  
STT170 SERIES**



Key Number	Selection	Availability
Rigid Probe Assembly	STT820	↓

Table I - Transmitter Selection	Selection	STT17				
		000	0TB	1	3	H
No transmitter, no housing	000	•				
No transmitter, head mount housing with terminal block only	0TB		•			
Wired to STT171 (Analog)	171			•		
Wired to STT173 (Analog)	173				•	
Wired to STT17H (HART)	17H					•

**NOTE:** Transmitters have additional certifications as Intrinsically Safe, Non-incendive and Non-sparking. See transmitter specifications for details.

TABLE II - STT Options		Selection	Availability				
			000	0TB	STT17		
No options		00	•	•	•	•	•
Configur-ation	Transmitter Configuration (See 13:STT-OE pages for choices)	TC			•	•	•
Customer Tagging	316 SS Wired-on Customer I.D. Tag (4 lines, 28 chars.)	TG	e	e	e	e	e
	316 SS Wired-on Customer I.D. Tag (blank)	TB	e	e	e	e	e
Owners Manual (Transmitter)	STT171 Version; English, French, German Language	M1			•		
	STT173 Version; English, French, German Language	M3				•	
	STT17H Version; English, French, German Language	MH					•
Mounting Arrangement	Carbon Steel angle Mounting Bracket for 2" Pipe	MB			d	d	d
	Stainless Steel angle Mounting Bracket for 2" Pipe	SB			d	d	d
	DIN Rail Mounting via Clip (to Top Hat or "G" Rail)	DB			h	h	h
316 SS Conduit Adaptors	1/2 NPT to M20 - CSA CL I, Div 1, GP ABCD, Type 4; ATEX, IECEX, Ex d IIC, IP66 - 1 Adaptor	A1			d	d	d
	1/2 NPT to M20 - CSA CL I, Div 1, GP ABCD, Type 4; ATEX, IECEX, Ex d IIC, IP66 - 2 Adaptors	A2			d	d	d
	1/2 NPT to 3/4 NPT - 1 Adaptor	A3			d	d	d
Lightning Protection	Externally Mountable to Field Mount Housing	EL			d	d	d
	Internal Surge/ Lightning Protection	SL			d	d	d
Warranty	Additional Transmitter Warranty - 1 year	W1			•	•	•
Optional Certificate	Factory Transmitter Configuration/ Calibration Certificate	CD			•	•	•
	Certificate of Conformance/ Origin	CC			•	•	•
	Certificate of Origin (F0195)	CF			•	•	•

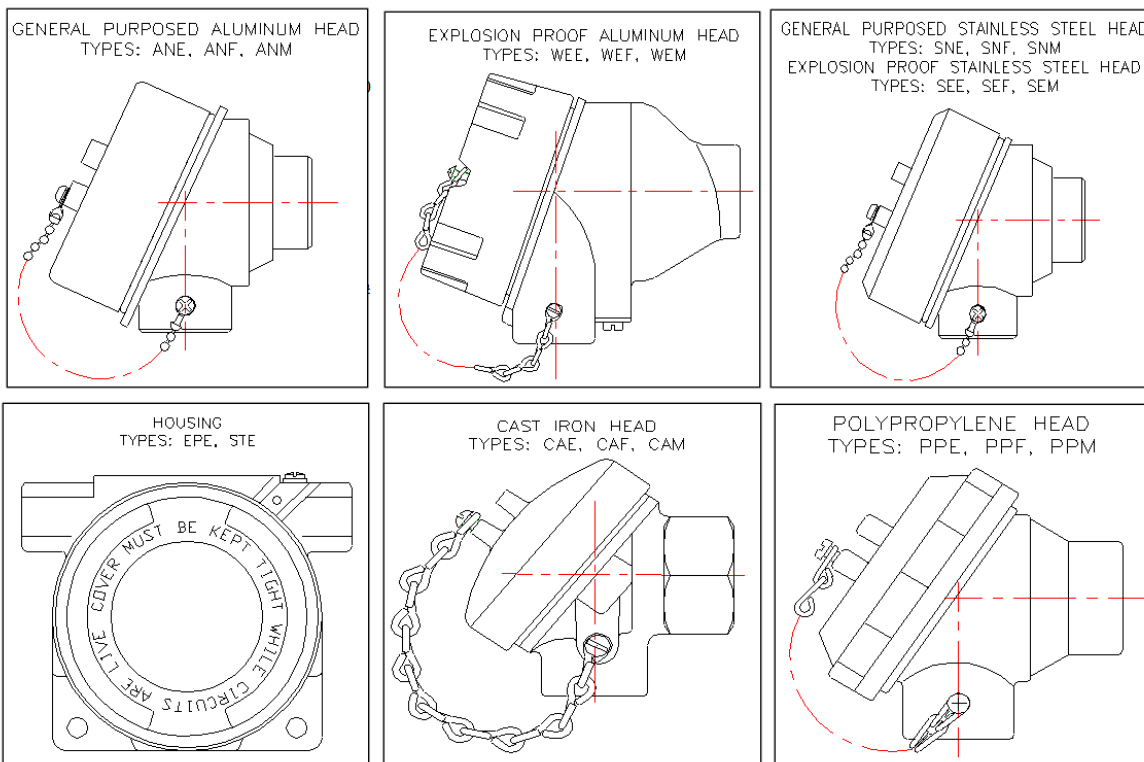



TABLE III - Housing and Meters		Selection	STT17				
			000	0TB	1	3	H
No housing		000_	•		n	n	n
<b>Head-mount Housings</b>		<b>Conduit Entry</b>					
General purpose aluminum	Euro	1/2" NPT		n	n	n	n
General purpose aluminum		3/4" NPT		n	n	n	n
General purpose aluminum		M20		n	n	n	n
Explosion proof aluminum		1/2" NPT		•	•	•	•
Explosion proof aluminum		3/4" NPT		•	•	•	•
Explosion proof aluminum		M20		f	f	f	f
General purpose stainless steel		1/2" NPT			n	n	n
General purpose stainless steel		3/4" NPT			n	n	n
General purpose stainless steel		M20			n	n	n
Explosion proof stainless steel	1/2" NPT			•	•	•	
Explosion proof stainless steel	3/4" NPT			•	•	•	
Explosion proof stainless steel	M20			f	f	f	
Cast Iron	1/2" NPT			n	n	n	
Cast Iron	3/4" NPT			n	n	n	
Cast Iron	M20			n	n	n	
Polypropylene	1/2" NPT			n	n	n	
Polypropylene	3/4" NPT			n	n	n	
Polypropylene	M20			n	n	n	
<b>Field-mount Honeywell Housings</b>							
Aluminum explosion proof with Beige Epoxy Coating	1/2" NPT				c	c	c
Explosion-Proof 316 Stainless Steel	1/2" NPT				c	c	c
<b>Integral Meter</b>							
No Integral Meter Supplied		_0	•	•	•	•	•

TABLE IV - Sensor Type				Selection	STT17				
				000	0TB	1	3	H	
Sensor Type	No sensor			00	n	n	n	n	n
	Compatible with STT: 17X								
	<b>Thermocouples</b>								
	1 x Type E (IEC)	3, H, F, P		T1	•	•	•	•	•
	2 x Type E (IEC)	H, F, P		T2	•	•	•	•	•
	1 x Type J (IEC)	3, H, F, P		T3	•	•	•	•	•
	2 x Type J (IEC)	H, F, P		T4	•	•	•	•	•
	1 x Type K (IEC)	3, H, F, P		T5	•	•	•	•	•
	2 x Type K (IEC)	H, F, P		T6	•	•	•	•	•
	1 x Type N (IEC)	3, H, F, P		T7	•	•	•	•	•
	1 x Type T (IEC)	3, H, F, P		T8	•	•	•	•	•
	2 x Type T (IEC)	H, F, P		T9	•	•	•	•	•
	<b>RTD Applications (-58 to +500°F)</b>								
	1 x Pt100 (IEC), 2-wire	1, 3, H, F		R1	•	r	r	r	r
	1 x Pt100 (IEC), 3-wire	1, 3, H, F		R2	•	r	r	r	r
	1 x Pt100 (IEC), 4-wire	1, 3, H, F		R3	•	r	r	r	r
	2 x Pt100 (IEC), 3-wire	H, F		R4	•	r			r
	1 x Pt200 (IEC), 3-wire	-		R5	•	r			
	1 x Pt500 (IEC), 3-wire	-		R6	•	r			
	1 x Pt1000 (IEC), 3-wire	H, F		R7	•	r			r
<b>RTD Applications (-292 to +932°F)</b>									
1 x Pt100 (IEC), 2-wire	1, 3, H, F		H1	•	•	•	•	•	
1 x Pt100 (IEC), 3-wire	1, 3, H, F		H2	•	•	•	•	•	
1 x Pt100 (IEC), 4-wire	1, 3, H, F		H3	•	•	•	•	•	
2 x Pt100 (IEC), 3-wire	H, F		H4	•	•	•	•	•	
1 x Pt200 (IEC), 3-wire	-		H5	•	•	•	•	•	
1 x Pt500 (IEC), 3-wire	-		H6	•	•	•	•	•	
1 x Pt1000 (IEC), 3-wire	H, F		H7	•	•	•	•	•	
Sensor Grounding	No sensor			0	•	•	•	•	•
	Grounded (standard for T/Cs and Not applicable for RTDs)			G	q	q	q	q	q
	Ungrounded (standard for RTDs but also applicable for TCs)			U	•	•	•	•	•
Immersion Length "L"	Whole Number	No sensor		00	•	•	•	•	•
		1 in.			01	•	•	•	•
		2 in.			02	•	•	•	•
		3 in.			03	•	•	•	•
		4 in.			04	•	•	•	•
		5 in.			05	•	•	•	•
		6 in.			06	•	•	•	•
		7 in.			07	•	•	•	•
		8 in.			08	•	•	•	•
		9 in.			09	•	•	•	•
		10 in.			10	•	•	•	•
		11 in.			11	•	•	•	•
		12 in.			12	•	•	•	•
		13 in.			13	•	•	•	•
		14 in.			14	•	•	•	•
		15 in.			15	•	•	•	•
		16 in.			16	•	•	•	•
		17 in.			17	•	•	•	•
		18 in.			18	•	•	•	•
		19 in.			19	•	•	•	•
		20 in.			20	•	•	•	•
		21 in.			21	•	•	•	•
		22 in.			22	•	•	•	•
		23 in.			23	•	•	•	•
	24 in.			24	•	•	•	•	
Decimal	.00 in. or No sensor		0	•	•	•	•	•	
	.25 in.		2	k	k	k	k	k	
	.50 in.		5	k	k	k	k	k	
	.75 in.		7	k	k	k	k	k	
Lead Length	Factory Defaults : Table IV:000000D - No lead length ;Table I : 000, 35_ - 9" Lead Length ;Table I : 0TB,17_, 25_ - 6" Lead length.			D	•	•	•	•	

TABLE V - Safety Approvals				Selection	Availability				
Approval Body	Approval Type	Location or Classification			000	0TB	1	3	H
None	No approval body certifications included			00	•	•	•	•	•
FM	Explosion-Proof	Class I, Div. 1, 2, Groups A**, B, C, D		1D	•	•	•	•	•
	Dust Ignition-Proof	Class II, Div. 1, 2, Groups E, F, G							
	Dust Ignition-Proof	Class III, Div. 1, T***							
	Outdoor Location	NEMA 4X****							
FM	Flameproof	Class I, Zone 1, IIC**, T***		15	•	•	•	•	•
	Environmental	IP66****							
CSA	Explosion-Proof	Class I, Div. 1, Groups B, C, D		2K	•	•	•	•	•
	Dust Ignition-Proof	Class II, Div. 1, Groups E, F, G							
	Dust Ignition-Proof	Class III, Div. 1, T***							
	Flameproof	Ex d, IIC, T***							
CSA	Environmental	Enclosure Type 4X / IP66****		3D	•	•	•	•	•
	Flameproof	IP66****							
ATEX	Flameproof, zone 1	 II 2 G Ex d IIC T6, Ambient Limits -20 to +60°C		3D	•	•	•	•	•

\*\* Enclosures supplied in stainless steel and enclosures with a window are de-rated to Gas Groups B, C, & D and Zone 1 Group IIB + H2

\*\*\* Temperature Class (T-Codes) is T6 with terminal block or dependant on transmitter.

\*\*\*\* Type 4X and IP66 ratings are dependent upon the enclosure, nipple extension and thermowell materials. IP66 dependent upon enclosure and a thermowell is

\*\* Environmental ratings per CSA markings on the Head-mount enclosure.

**NOTICE:** The temperature probe and head-mount housings are supplied and certified by Thermo Electric Company, Inc., 60A Commerce Way, Totowa, NJ 075 temperature transmitter module is supplied by Honeywell International Inc.

TABLE VI - Assembly Options	Selection	000	0TB	1	3	H
No options	000	•	•	•	•	•
External hydrostatic pressure test (2500 PSI Standard)	PT2	•	•	•	•	•
Transmitter with Probe calibration (system) @ 2 points, Single Sensor (specify range)	TC1			a	a	a
Transmitter with Probe calibration (system)@ 2 points, Duplex Sensor	TC2			a	a	a
Clean for oxygen service (ASTM G93-96)	XGN	k	k	k	k	k
Clean for chlorine service (The Chlorine Institute, Inc. Pamphlet 6)	CLN	k	k	k	k	k
Probe Calibration Data Certificate (2-point info to be provided)	AP2	m	m	m	m	m
Probe Calibration Data Certificate (3-point info to be provided)	AP3	m	m	m	m	m
Probe Calibration Data Certificate (4-point info to be provided)	AP4	m	m	m	m	m
Upgrade to Special Limits Thermocouple Calibration to ANSI MC96.1 and ASTM E230, Single	SP1	o	o	o	o	o
Upgrade to Special Limits Thermocouple Calibration to ANSI MC96.1 and ASTM E230, Duplex	SP2	p	p	p	p	p
Upgrade to ASTM E1137 Grade A RTD, Single	CL1	l	l	l	l	l
Upgrade to ASTM E1137 Grade A RTD, Duplex	CL2	i	i	i	i	i

**RESTRICTIONS**

Restriction		Available Only With	Not Available With	
Letter	Table	Selection	Table	Selection
a	II	TC	IV	00_____
b		Make one selection from this group		
c			V	3D
e			III	000_
f			V	2K
h	III	000_		
i	IV	R4_____, H4_____		
k			IV	00_____
l	IV	R1_____ to R3_____, R5_____ to R7_____ H1_____ to H3_____, H5_____ to H7_____		
m			IV	00_____
n			V	1D, 2K, 3D, 15
			IV	__ 0 0 __
o	IV	T1_____, T3_____, T5_____, T7_____, T8_____ __		
p	IV	T2_____, T4_____, T6_____, T9_____		
q			V	3D
			IV	00_____, R1_____ to R7_____, H1_____ to H7_____ __
r			V	1D, 15



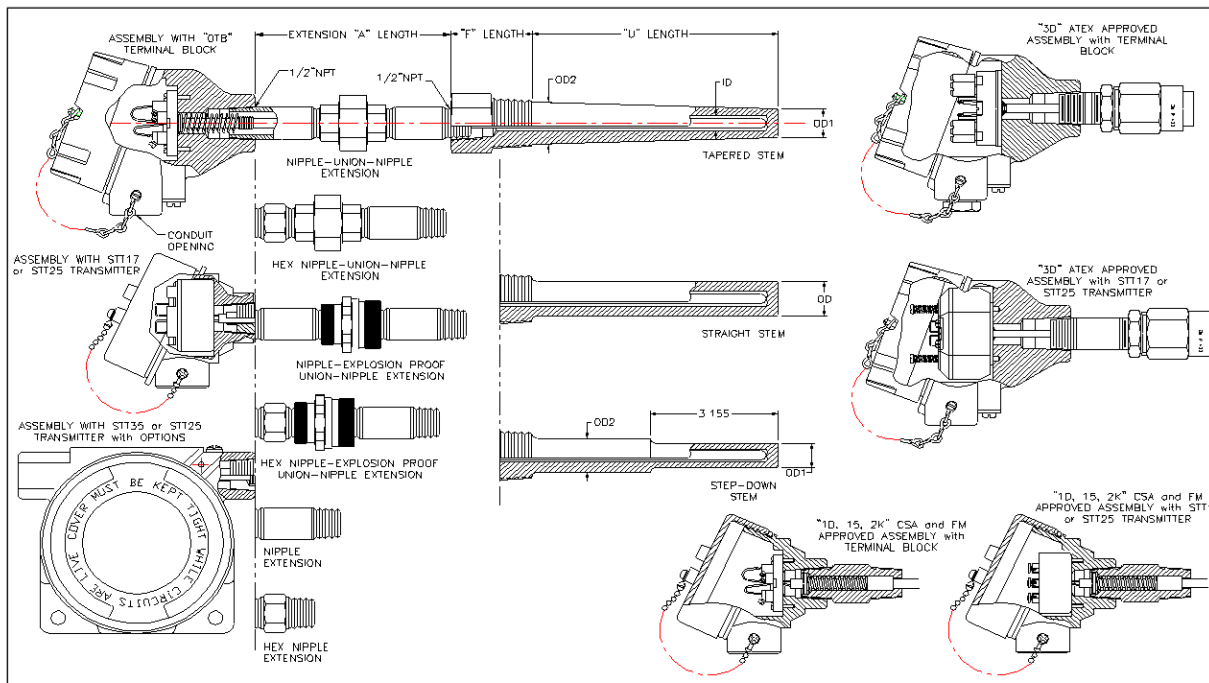
Section 13  
Page: STT-27  
Effective Date: June 1, 2022

**STT 3000 Temperature Probe Assemblies  
Series STT830 - Threaded & Socket Weld  
Thermowell Assembly with  
Transmitter Option**

**Model Selection Guide  
with Pricing Data**

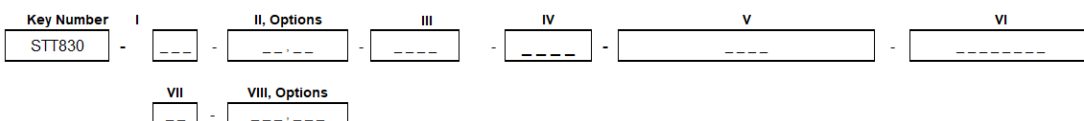
Model Selection Guide  
34-44-16-09 Issue 36 Rev1

Honeywell Proprietary



**Instructions**

- Choose availability column based on mounting configuration.
- A dot (•) denotes unrestricted availability. A letter denotes restricted availability.
- Blank denotes unavailable - choose alternate. View Restrictions table.
- Select options and approvals from Tables.



Ordering Example: STT830-173-TC-WEE0-H08C-R1U6-A00SR090-00-000

Key Number	Selection	Availability
Threaded Bar Stock Thermowell Assembly	STT830	↓

Table I - Transmitter Selection	Selection	Availability				
		000	OTB	1	3	H
No transmitter, no housing	000	•				
No transmitter, head mount housing with terminal block only	OTB		•			
Wired to STT171 (Analog)	171			•		
Wired to STT173 (Analog)	173				•	
Wired to STT17H (HART)	17H					•

**NOTE:** Transmitters have additional certifications as Intrinsically Safe, Non-incendive and Non-sparking. See transmitter specifications for details.

**Transmitter Options:  
STT170 SERIES**



TABLE II - STT Options			Selection	STT17					
				000	0TB	1	3	H	
No Options			00	•	•	•	•	•	•
Configuration	Transmitter Configuration (See 13.STT-OE pages for choices)	TC			•	•	•		
Customer Tagging	316 SS Wired-on Customer I.D. Tag (4 lines, 28 chars.)	TG	e	e	e	e	e	e	b
	316 SS Wired-on Customer I.D. Tag (blank)	TB	e	e	e	e	e	e	
Owners Manual (Transmitter)	STT171 Version: English, French, German Language	M1			•				
	STT173 Version: English, French, German Language	M3			•				b
	STT17H Version: English, French, German Language	MH						•	
Mounting Arrangement	Carbon Steel angle Mounting Bracket for 2" Pipe	MB			d	d	d		
	Stainless Steel angle Mounting Bracket for 2" Pipe	SB			h	h	h		b
	DIN Rail Mounting via Clip (to Top Hat or "G" Rail)	DB							
316 SS Conduit Adaptors	1/2 NPT to M20 - CSA CL I, Div 1, GP ABCD, Type 4; ATEX, IECEx, Ex d IIC, IP66 - 1 Adaptor	A1			d	d	d		
	1/2 NPT to M20 - CSA CL I, Div 1, GP ABCD, Type 4; ATEX, IECEx, Ex d IIC, IP66 - 2 Adaptors	A2			d	d	d		b
	1/2 NPT to 3/4 NPT - 1 Adaptor	A3			d	d	d		
Lightning Protection	Externally Mountable to Field Mount Housing	EL						d	
	Internal Surge/ Lightning Protection	SL			d	d	d		b
Warranty	Additional Transmitter Warranty - 1 year	W1			•	•	•		
Optional Certificate	Factory Transmitter Configuration/ Calibration Certificate	CD			•	•	•		
	Certificate of Conformance/ Origin	CC			•	•	•		
	Certificate of Origin (F0195)	CF			•	•	•		

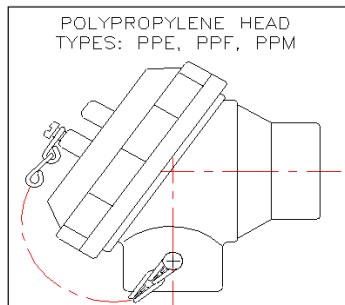
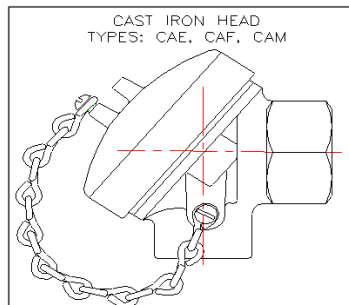
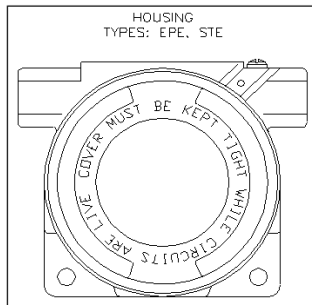
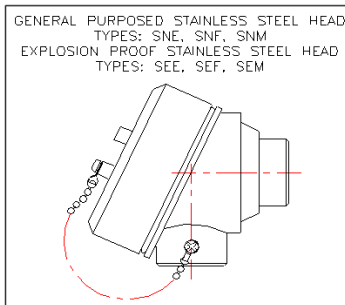
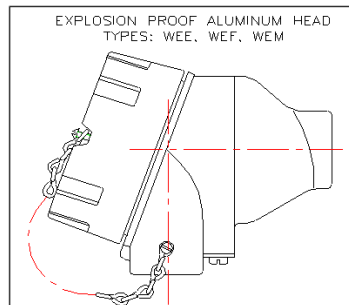
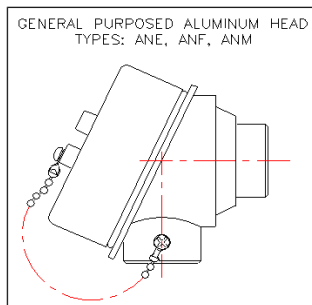


TABLE III - Housing and Meters			Selection	Availability					
				000	0TB	STT17			
No housing			000_	•		o	o	o	o
<b>Head-mount Housings</b>									
General purpose aluminum	Conduit Entry								
	1/2" NPT	ANE_		o	o	o	o		
	3/4" NPT	ANF_		o	o	o	o		
General purpose aluminum	M20	ANM_		o	o	o	o		
Explosion proof aluminum	1/2" NPT	WEE_		•	•	•	•		
	3/4" NPT	WEF_		•	•	•	•		
	M20	WEM_		f	f	f	f		
General purpose stainless steel	1/2" NPT	SNE_		o	o	o	o		
	3/4" NPT	SNF_		o	o	o	o		
	M20	SNM_		o	o	o	o		
Explosion proof stainless steel	1/2" NPT	SEE_		•	•	•	•		
	3/4" NPT	SEF_		•	•	•	•		
	M20	SEM_		f	f	f	f		
Cast Iron	1/2" NPT	CAE_		o	o	o	o		
	3/4" NPT	CAF_		o	o	o	o		
	M20	CAM_		o	o	o	o		
Polypropylene	1/2" NPT	PPE_		o	o	o	o		
	3/4" NPT	PPF_		o	o	o	o		
	M20	PPM_		o	o	o	o		
<b>Field-mount Honeywell Housings</b>									
Aluminum explosion proof with Beige Epoxy Coating	1/2" NPT	EPE_				k	k	k	
Explosion-Proof 316 Stainless Steel	1/2" NPT	STE_				k	k	k	
<b>Integral Meter</b>									
No Integral Meter Supplied			0	•	•	•	•	•	

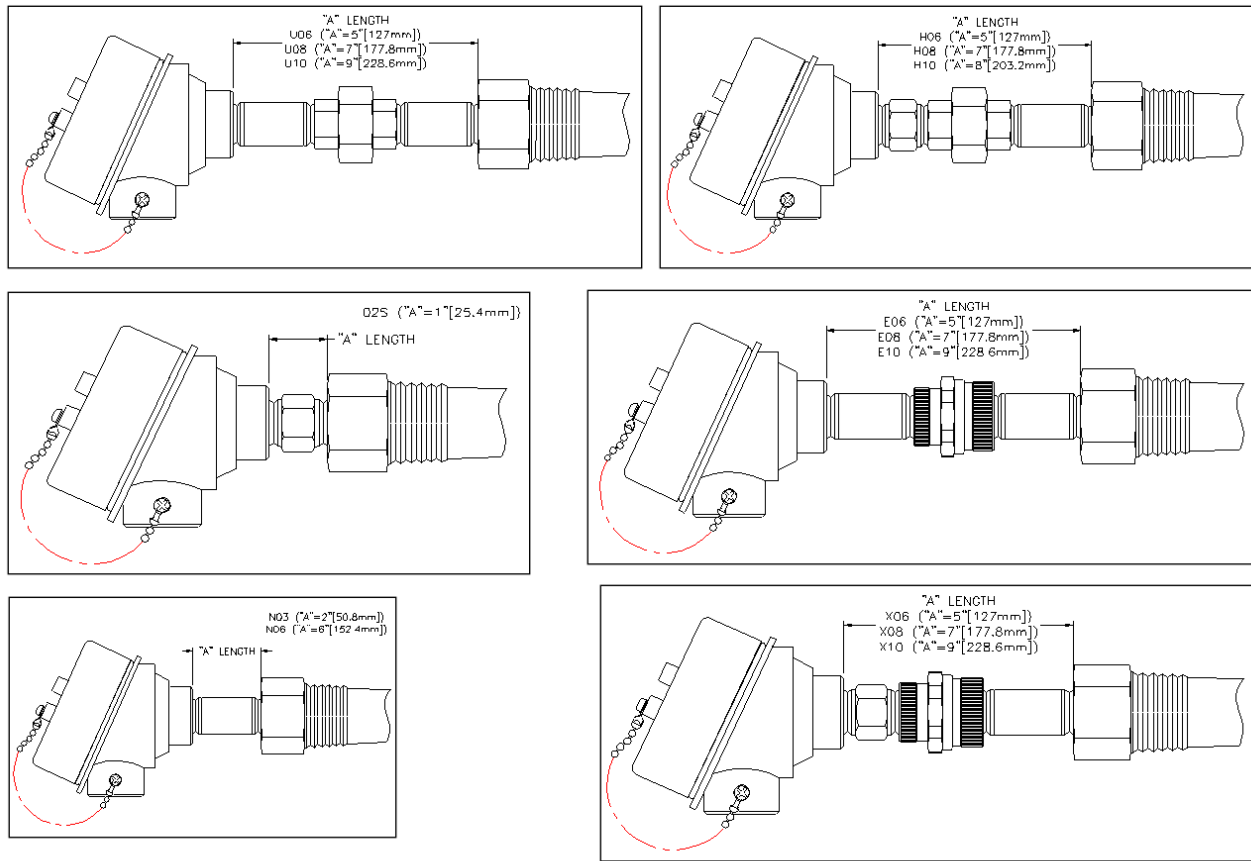


TABLE IV - Extension Type, Length "A" & Material						Availability				
						STT17				
No extension	"A" Length	Nipple	Union	Nipple	Selection	000	0TB	1	3	H
3" Straight nipple	2 in.	N/A	N/A	Carbon Stl.	N03C	•	c	c	c	c
6" Straight nipple	5 in.	N/A	N/A	Carbon Stl.	N06C	•	c	c	c	c
Nipple-union-nipple	5 in.	Carbon Stl.	Carbon Stl.	Carbon Stl.	U06C	•	o	o	o	o
Nipple-union-nipple	7 in.	Carbon Stl.	Carbon Stl.	Carbon Stl.	U08C	•	o	o	o	o
Nipple-union-nipple	9 in.	Carbon Stl.	Carbon Stl.	Carbon Stl.	U10C	•	o	o	o	o
Nipple-XP union-nipple	5 in.	Carbon Stl.	Galv. Stl.	Carbon Stl.	E06C	•	c	c	c	c
Nipple-XP union-nipple	7 in.	Carbon Stl.	Galv. Stl.	Carbon Stl.	E08C	•	c	c	c	c
Nipple-XP union-nipple	9 in.	Carbon Stl.	Galv. Stl.	Carbon Stl.	E10C	•	c	c	c	c
Hex nipple-union-nipple	5 in.	SS (Hex)	Carbon Stl.	Carbon Stl.	H06C	•	k	k	k	k
Hex nipple-union-nipple	7 in.	SS (Hex)	Carbon Stl.	Carbon Stl.	H08C	•	k	k	k	k
Hex nipple-union-nipple	9 in.	SS (Hex)	Carbon Stl.	Carbon Stl.	H10C	•	k	k	k	k
Hex nipple-XP union-nipple	5 in.	SS (Hex)	Galv. Stl.	Carbon Stl.	X06C	•	•	•	•	•
Hex nipple-XP union-nipple	7 in.	SS (Hex)	Galv. Stl.	Carbon Stl.	X08C	•	•	•	•	•
Hex nipple-XP union-nipple	9 in.	SS (Hex)	Galv. Stl.	Carbon Stl.	X10C	•	•	•	•	•
3" Straight nipple	2 in.	N/A	N/A	Stn. Stl.	N03S	•	c	c	c	c
6" Straight nipple	5 in.	N/A	N/A	Stn. Stl.	N06S	•	c	c	c	c
Nipple-union-nipple	5 in.	SS	SS	Stn. Stl.	U06S	•	o	o	o	o
Nipple-union-nipple	7 in.	SS	SS	Stn. Stl.	U08S	•	o	o	o	o
Nipple-union-nipple	9 in.	SS	SS	Stn. Stl.	U10S	•	o	o	o	o
Nipple-XP union-nipple	5 in.	SS	Galv. Stl.	Stn. Stl.	E06S	•	c	c	c	c
Nipple-XP union-nipple	7 in.	SS	Galv. Stl.	Stn. Stl.	E08S	•	c	c	c	c
Nipple-XP union-nipple	9 in.	SS	Galv. Stl.	Stn. Stl.	E10S	•	c	c	c	c
Hex nipple only	1 in.	SS (Hex)	N/A	N/A	H02S	•	•	•	•	•
Hex nipple-union-nipple	5 in.	SS (Hex)	SS	Stn. Stl.	H06S	•	k	k	k	k
Hex nipple-union-nipple	7 in.	SS (Hex)	SS	Stn. Stl.	H08S	•	k	k	k	k
Hex nipple-union-nipple	9 in.	SS (Hex)	SS	Stn. Stl.	H10S	•	k	k	k	k
Hex nipple-XP union-nipple	5 in.	SS (Hex)	Galv. Stl.	Stn. Stl.	X06S	•	•	•	•	•
Hex nipple-XP union-nipple	7 in.	SS (Hex)	Galv. Stl.	Stn. Stl.	X08S	•	•	•	•	•
Hex nipple-XP union-nipple	9 in.	SS (Hex)	Galv. Stl.	Stn. Stl.	X10S	•	•	•	•	•

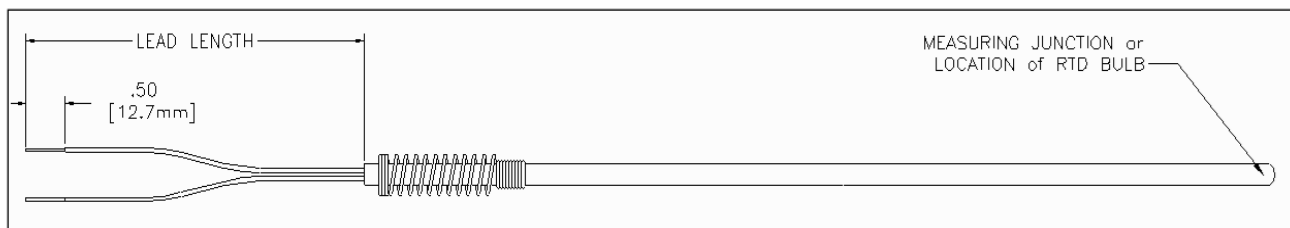


TABLE V - Sensor Type				Availability					
				000	0TB	1	3	H	
Sensor Type	No sensor			00__	o	o	o	o	o
	Compatible with STT:								
	17X								
	<b>Thermocouples</b>								
	1 x Type E (IEC)			T1__	•	•		•	•
	2 x Type E (IEC)			T2__	•	•			•
	1 x Type J (IEC)			T3__	•	•		•	•
	2 x Type J (IEC)			T4__	•	•			•
	1 x Type K (IEC)			T5__	•	•		•	•
	2 x Type K (IEC)			T6__	•	•			•
	1 x Type N (IEC)			T7__	•	•		•	•
	1 x Type T (IEC)			T8__	•	•		•	•
	2 x Type T (IEC)			T9__	•	•			•
	<b>RTD Applications (-58 to +500°F)</b>								
	1 x Pt100 (IEC), 2-wire			R1__	•	v	v	v	v
	1 x Pt100 (IEC), 3-wire			R2__	•	v	v	v	v
	1 x Pt100 (IEC), 4-wire			R3__	•	v		v	v
	2 x Pt100 (IEC), 3-wire			R4__	•	v			v
	1 x Pt200 (IEC), 3-wire			R5__	•	v			
	1 x Pt500 (IEC), 3-wire			R6__	•	v			
1 x Pt1000 (IEC), 3-wire			R7__	•	v			v	
<b>RTD Applications (-292 to +932°F)</b>									
1 x Pt100 (IEC), 2-wire			H1__	•	•	•	•	•	
1 x Pt100 (IEC), 3-wire			H2__	•	•	•	•	•	
1 x Pt100 (IEC), 4-wire			H3__	•	•		•	•	
2 x Pt100 (IEC), 3-wire			H4__	•	•			•	
1 x Pt200 (IEC), 3-wire			H5__	•	•				
1 x Pt500 (IEC), 3-wire			H6__	•	•				
1 x Pt1000 (IEC), 3-wire			H7__	•	•			•	
Sensor Grounding	No sensor			__0__	r	r	r	r	r
	Grounded (standard for T/Cs and not applicable for RTDs)			__G__	s	s	s	s	s
	Ungrounded (standard for RTDs but also applicable for TCs)			__U__	•	•	•	•	•
Lead Length	Factory Defaults : Table V : 000D - No Lead length Table I: 000,35_ - 9" Lead length Table I : 0TB,17_,25_ - 6" Lead length			___D	•	•	•	•	•

Note: only one side of a duplex probe is connected to the transmitter



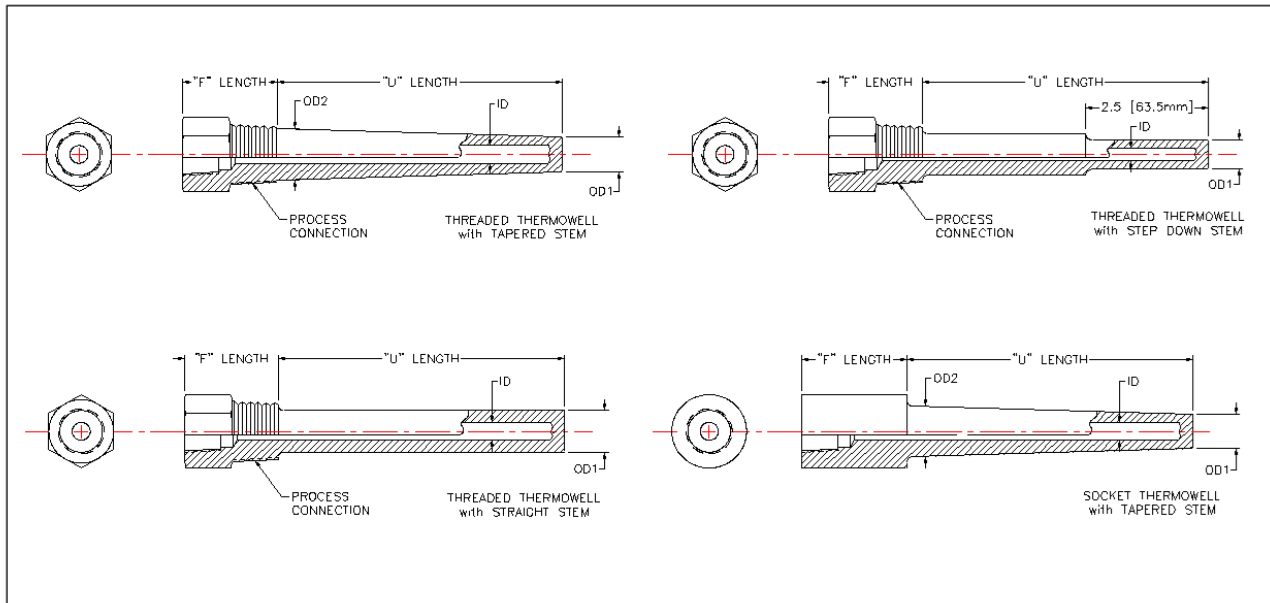



Table VI - Thermowell		Availability														
		Selection	000	0TB	1	3	H									
No Thermowell (Or Sensor only)		0	k	k	k	k	k									
Process Connection	Dimensions in inches															
		Tapered Stem			Straight Stem			Step Down Stem								
		OD-1	OD-2	ID	OD-1	OD-2	ID	OD-1	OD-2	ID						
	1/2" NPT	0.50	0.63	0.260	0.63	0.63	0.260	0.50	0.63	0.260	A	•	•	•	•	•
	1/2" BSP	0.50	0.63	0.260	0.63	0.63	0.260	0.50	0.63	0.260	B	•	•	•	•	•
	3/4" NPT	0.63	0.844	0.260	0.75	0.75	0.260	0.50	0.75	0.260	C	•	•	•	•	•
	3/4" NPT	0.63	0.844	0.385	0.75	0.75	0.385	----	----	----	D	•	•	•	•	•
	3/4" BSP	0.63	0.844	0.260	0.75	0.75	0.260	0.50	0.75	0.260	E	•	•	•	•	•
	3/4" BSP	0.63	0.844	0.385	0.75	0.75	0.385	----	----	----	F	•	•	•	•	•
	1" NPT	0.75	1.00	0.260	0.75	0.75	0.260	0.50	0.88	0.260	G	•	•	•	•	•
	1" NPT	0.75	1.00	0.385	0.75	0.75	0.385	----	----	----	H	•	•	•	•	•
	1" BSP	0.75	1.00	0.260	0.75	0.75	0.260	0.50	0.88	0.260	J	•	•	•	•	•
	1" BSP	0.75	1.00	0.385	0.75	0.75	0.385	----	----	----	K	•	•	•	•	•
	3/4" NPS SW	0.63	0.844	0.260	n/a	n/a	n/a	n/a	n/a	n/a	M	•	•	•	•	•
1" NPS SW	0.75	1.00	0.260	n/a	n/a	n/a	n/a	n/a	n/a	N	•	•	•	•	•	
Lagging Length "F" Standard length 1.75"	No thermowell or No Lag						00	•	•	•	•	•	•	•	•	
	2.25 in.						05	•	•	•	•	•	•	•	•	
	2.75 in.						10	•	•	•	•	•	•	•		
	3.25 in.						15	•	•	•	•	•	•	•		
	3.75 in.						20	•	•	•	•	•	•	•		
	4.25 in.						25	•	•	•	•	•	•	•		
	4.75 in.						30	•	•	•	•	•	•	•		
Well Design	No thermowell						0	u	u	u	u	u	u	u		
	Tapered						T	•	•	•	•	•	•	•		
	Straight						S	•	•	•	•	•	•	•		
	Stepped						P	•	•	•	•	•	•	•		
	No thermowell						0	u	u	u	u	u	u	u		
Well Material	Carbon Steel						N	•	•	•	•	•	•	•		
	304 Stainless Steel						P	•	•	•	•	•	•	•		
	316 Stainless Steel (reference price table 1)						R	•	•	•	•	•	•	•		

Table VI - Thermowell (continued)			Selection	Availability				
				000	0TB	STT17		
Insertion Length "U"	0 in. (No Thermowell)		-----00	w	w	w	w	w
	1 in.		-----01	•	•	•	•	•
	2 in.		-----02	•	•	•	•	•
	3 in.		-----03	•	•	•	•	•
	4 in.		-----04	•	•	•	•	•
	5 in.		-----05	•	•	•	•	•
	6 in.		-----06	•	•	•	•	•
	7 in.		-----07	•	•	•	•	•
	8 in.		-----08	•	•	•	•	•
	9 in.		-----09	•	•	•	•	•
	10 in.		-----10	•	•	•	•	•
	11 in.		-----11	•	•	•	•	•
	12 in.		-----12	•	•	•	•	•
	13 in.		-----13	•	•	•	•	•
	14 in.		-----14	•	•	•	•	•
	15 in.		-----15	•	•	•	•	•
	16 in.		-----16	•	•	•	•	•
	17 in.		-----17	•	•	•	•	•
	18 in.		-----18	•	•	•	•	•
	19 in.		-----19	•	•	•	•	•
	20 in.		-----20	•	•	•	•	•
	21 in.		-----21	•	•	•	•	•
	22 in.		-----22	•	•	•	•	•
	23 in.		-----23	•	•	•	•	•
	24 in.		-----24	•	•	•	•	•
	Decimal	.00 in. or No sensor	-----0	•	•	•	•	•
		.25 in.	-----2	x	x	x	x	x
		.50 in.	-----5	x	x	x	x	x
		.75 in.	-----7	x	x	x	x	x

TABLE VII - Safety Approvals			Availability					
Approval Body	Approval Type	Location or Classification	Selection	000	0TB	STT17		
				1	3	H		
None	No approval body certifications included		00	•	•	•	•	•
FM	Explosion-Proof Dust Ignition-Proof Dust Ignition-Proof Environmental	Class I, Div. 1, Groups A**, B, C, D Class II, Div. 1, Groups E, F, G Class III, Div. 1 T*** NEMA 4X****	1D		g	g	g	g
	Flameproof Environmental	Class I, Zone 1, IIC**, T*** IP66****	15		g	g	g	g
CSA	Explosion-Proof Dust Ignition-Proof Dust Ignition-Proof	Class I, Div. 1, Groups B, C, D Class II, Div. 1, Groups E, F, G Class III, Div. 1 T***	2K		g	g	g	g
	Flameproof	Ex d IIC, T***						
	Environmental	NEMA 4X/IP66****						
ATEX	Flameproof, zone 1	Flameproof  II 2 G Ex d IIC T6, Ambient Limits -20 to +60°C	3D		•	•	•	•

\*\* Enclosures supplied in stainless steel and enclosures with a window are de-rated to Gas Groups B, C, & D and Zone 1 Group IIB + H<sub>2</sub>

\*\*\* Temperature Class (T-Codes) is T6 with terminal block or dependant on transmitter.

\*\*\*\* Type 4X and IP66 ratings are dependent upon the enclosure, nipple extension and thermowell materials. IP66 dependent upon enclosure and a thermowell is required.

\*\* Environmental ratings per CSA markings on the Head-mount enclosure.

**NOTICE:** The temperature probe, head-mount housings, extension hardware and thermowell are supplied and certified by Thermo Electric Company, Inc., 60A Commerce Way, Totowa, NJ 07512. The temperature transmitter module is supplied by Honeywell International Inc.

TABLE VIII - Assembly Options		Selection	000	0TB	1	3	H
No options		000	•	•	•	•	•
Internal hydrostatic pressure test of thermowell (2500 PSI Standard)		PT1	t	t	t	t	t
External hydrostatic pressure test of thermowell (2500 PSI Standard) (4)		PT2	n	n	n	n	n
NACE certificate (applies to Well)		HT1	t	t	t	t	t
Clean for oxygen service (ASTM G93-96)		XGN	t	t	t	t	t
Clean for chlorine service (The Chlorine Institute, Inc. Pamphlet 6)		CLN	t	t	t	t	t
Frequency calculation (Murdock, ASME PTC-19.3 TW-2010) (Velocity, pressure and temp. required)		FRQ	t	t	t	t	t
Thermowell material certificate		TMC	t	t	t	t	t
Canadian registration number (CRN)		CRN	t	t	t	t	t
Transmitter with Probe calibration (system) @ 2 points, Single Sensor (specify range)		TC1			j	j	j
Transmitter with Probe calibration (system) @ 2 points, Duplex Sensor		TC2			j	j	j
Probe Calibration Data Certificate (2-point info to be provided)		AP2	m	m	m	m	m
Probe Calibration Data Certificate (3-point info to be provided)		AP3	m	m	m	m	m
Probe Calibration Data Certificate (4-point info to be provided)		AP4	m	m	m	m	m
Upgrade to Special Limits Thermocouple Calibration to ANSI MC96.1 and ASTM E230, Single		SP1	p	p	p	p	p
Upgrade to Special Limits Thermocouple Calibration to ANSI MC96.1 and ASTM E230, Duplex		SP2	q	q	q	q	q
Upgrade to ASTM E1137 Grade A RTD, Single		CL1	l	l	l	l	l
Upgrade to ASTM E1137 Grade A RTD, Duplex		CL2	i	i	i	i	i

(4) external not available on socket welds

**RESTRICTIONS**

Restriction Letter	Available Only With		Not Available With	
	Table	Selection	Table	Selection
a	VI	0000000000		
b		Make one selection from this group		
c			VII	1D, 2K, 15
e			III	000
f			VII	2K
g	IV	X___, H02S	VI	0_____
h	III	000_		
i	V	R4___, H4__		
j	II	TC	V	00__
k			VII	3D
l	V	R1__ to R3___, R5__ to R7___, H1__ to H3___, H5__ to H7__		
m			V	00__
n			VI	0_____, M_____, N_____
o			VII	1D, 2K, 3D, 15
p	V	T1___, T3___, T5___, T7___, T8__		
q	V	T2___, T4___, T6___, T9__		
r	V	00__		
s			VII	3D
			V	00___, R1__ to R7___, H1__ to H7__
t			VI	0_____
u	VI	0_____		
v			VII	1D, 15
w	VI	0_____		
	V	00__		
x			VI	_____ 0 0_

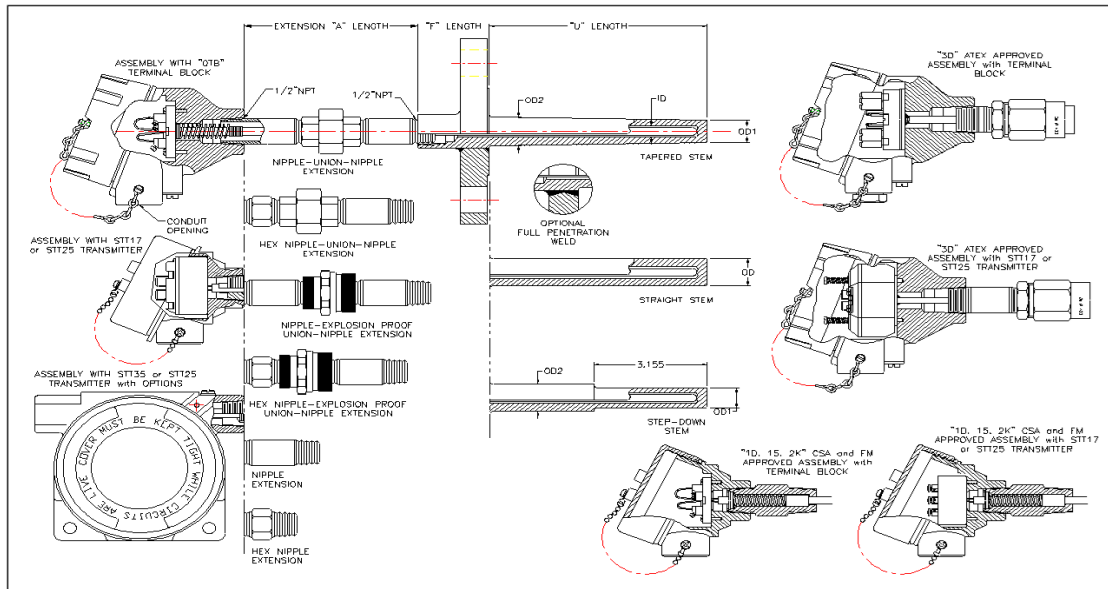


Section 13  
Page: STT-35  
Effective Date: June 1, 2022

**STT 3000 Temperature Probe Assemblies**  
**Series STT840 - Drilled Flanged**  
**Thermowell Assembly**  
Model Selection Guide  
34-44-16-10 Issue 34 Rev 1

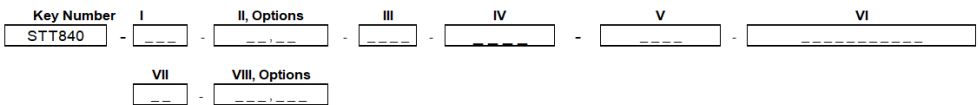
**Model Selection Guide**

Honeywell Proprietary



**Instructions**

- Choose availability column based on mounting configuration.
- A dot (•) denotes unrestricted availability. A letter denotes restricted availability.
- Blank denotes unavailable - choose alternate. View Restrictions table.
- Select options and approvals from Tables.



Ordering Example: STT840-173-TC-WEE0-H08C-R1U6-CPF20D15160-00-000

Key Number	Selection	Availability
Flanged Bar Stock Thermowell Assembly	STT840	↓

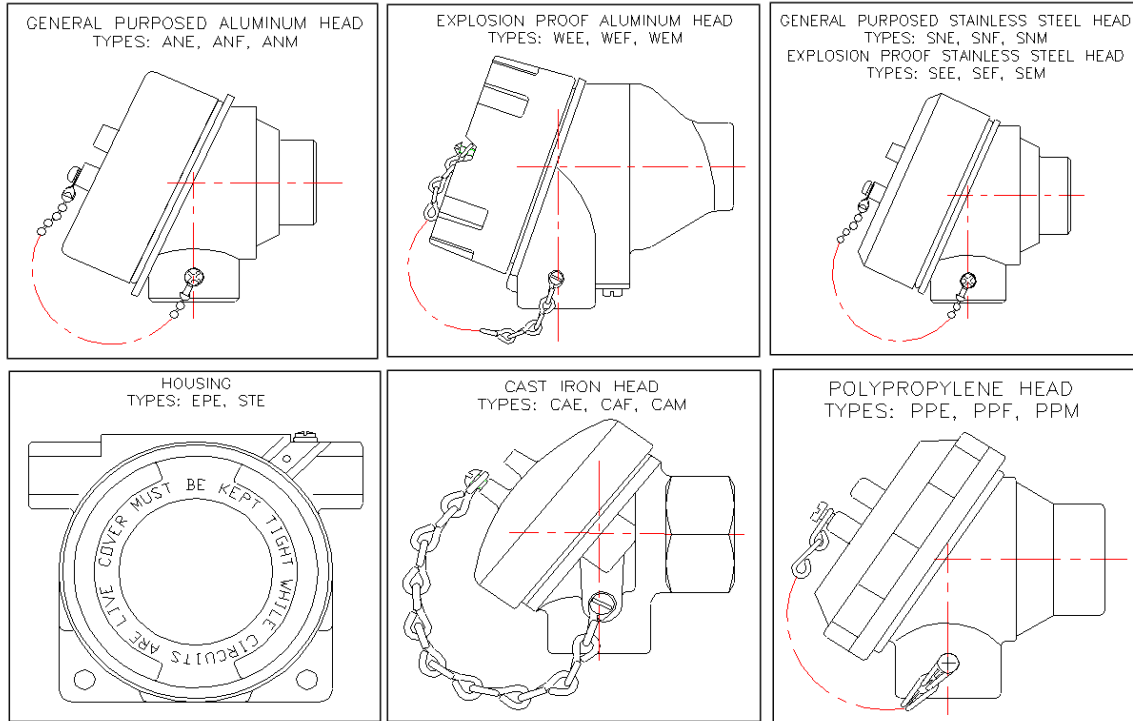
Transmitter options:  
**STT170 SERIES**



Table I - Transmitter Selection	Selection	000	0TB	1	3	H
No transmitter, no housing	000	•				
No transmitter, head mount housing with terminal block only	0TB		•			
Wired to STT171 (Analog)	171			•		
Wired to STT173 (Analog)	173				•	
Wired to STT17H (HART)	17H					•

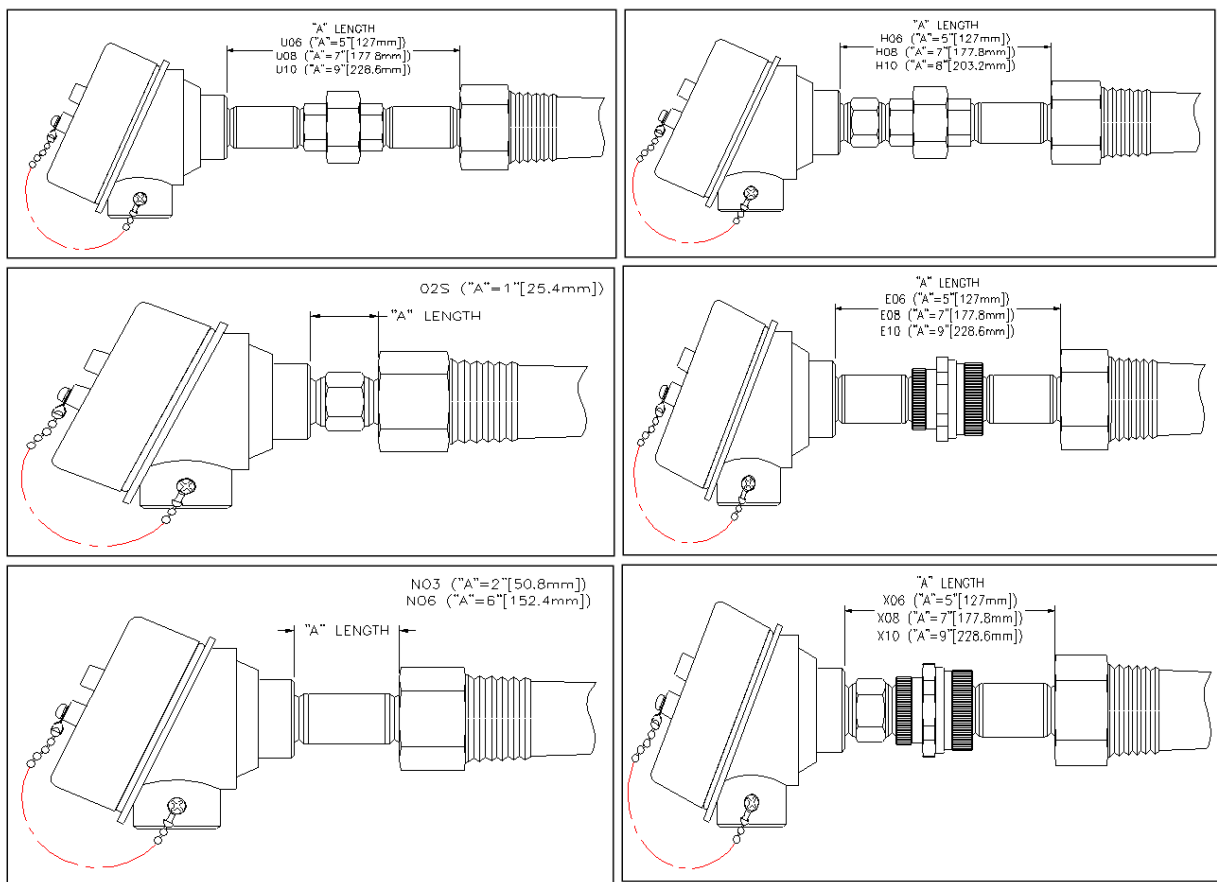
**NOTE:** Transmitters have additional certifications as Intrinsically Safe, Non-incendive and Non-sparking. See transmitter specifications for details.

TABLE II - STT Options	Selection	Availability				
		000	0TB	STT17		
No options	00	•	•	•	•	•
Configuration (See 13:STT-OE pages for choices)	TC			•	•	•
Customer Tagging	TG	e	e	e	e	e
	TB	e	e	e	e	e
Owners Manual (Transmitter)	M1			•		
	M3				•	
	MH					•
Mounting Arrangement	MB			d	d	d
	SB			d	d	d
	DB			h	h	h
316 SS Conduit Adaptors	A1			d	d	d
	A2			d	d	d
	A3			d	d	d
Lightning Protection	EL			d	d	d
	SL			d	d	d
Warranty	W1			•	•	•
Optional Certificate	CD			•	•	•
	CC			•	•	•
	CF			•	•	•



Availability

TABLE III - Housing and Meters		Selection	STT17				
			000	0TB	1	3	H
<b>No housing</b>		000_	•		o	o	o
<b>Head-mount Housings</b>		<b>Conduit Entry</b>					
General purpose aluminum	1/2" NPT	ANE_		o	o	o	o
General purpose aluminum	3/4" NPT	ANF_		o	o	o	o
General purpose aluminum	M20	ANM_		o	o	o	o
Explosion proof aluminum	1/2" NPT	WEE_		•	•	•	•
Explosion proof aluminum	3/4" NPT	WEF_		•	•	•	•
Explosion proof aluminum	M20	WEM_		f	f	f	f
General purpose stainless steel	1/2" NPT	SNE_		o	o	o	o
General purpose stainless steel	3/4" NPT	SNF_		o	o	o	o
General purpose stainless steel	M20	SNM_		o	o	o	o
Explosion proof stainless steel	1/2" NPT	SEE_		•	•	•	•
Explosion proof stainless steel	3/4" NPT	SEF_		•	•	•	•
Explosion proof stainless steel	M20	SEM_		f	f	f	f
Cast Iron	1/2" NPT	CAE_		o	o	o	o
Cast Iron	3/4" NPT	CAF_		o	o	o	o
Cast Iron	M20	CAM_		o	o	o	o
Polypropylene	1/2" NPT	PPE_		o	o	o	o
Polypropylene	3/4" NPT	PPF_		o	o	o	o
Polypropylene	M20	PPM_		o	o	o	o
<b>Field-mount Honeywell Housings</b>							
Aluminum explosion proof with Beige Epoxy Coating	1/2" NPT	EPE_			k	k	k
Explosion-Proof 316 Stainless Steel	1/2" NPT	STE_			k	k	k
<b>Integral Meter</b>							
No Integral Meter Supplied		__0	•	•	•	•	•



Availability

TABLE IV - Extension Type, Length "A" & Material					STT17					
					000	0TB	1	3	H	
No extension	A Length	Nipple	Union	Nipple	Selection	000	0TB	1	3	H
3" Straight nipple	2 in.	N/A	N/A	Carbon Stl.	N03C	•	c	c	c	c
6" Straight nipple	5 in.	N/A	N/A	Carbon Stl.	N06C	•	c	c	c	c
Nipple-union-nipple	5 in.	Carbon Stl.	Carbon Stl.	Carbon Stl.	U06C	•	o	o	o	o
Nipple-union-nipple	7 in.	Carbon Stl.	Carbon Stl.	Carbon Stl.	U08C	•	o	o	o	o
Nipple-union-nipple	9 in.	Carbon Stl.	Carbon Stl.	Carbon Stl.	U10C	•	o	o	o	o
Nipple-XP union-nipple	5 in.	Carbon Stl.	Galv. Stl.	Carbon Stl.	E06C	•	c	c	c	c
Nipple-XP union-nipple	7 in.	Carbon Stl.	Galv. Stl.	Carbon Stl.	E08C	•	c	c	c	c
Nipple-XP union-nipple	9 in.	Carbon Stl.	Galv. Stl.	Carbon Stl.	E10C	•	c	c	c	c
Hex nipple-union-nipple	5 in.	SS (Hex)	Carbon Stl.	Carbon Stl.	H06C	•	k	k	k	k
Hex nipple-union-nipple	7 in.	SS (Hex)	Carbon Stl.	Carbon Stl.	H08C	•	k	k	k	k
Hex nipple-union-nipple	9 in.	SS (Hex)	Carbon Stl.	Carbon Stl.	H10C	•	k	k	k	k
Hex nipple-XP union-nipple	5 in.	SS (Hex)	Galv. Stl.	Carbon Stl.	X06C	•	•	•	•	•
Hex nipple-XP union-nipple	7 in.	SS (Hex)	Galv. Stl.	Carbon Stl.	X08C	•	•	•	•	•
Hex nipple-XP union-nipple	9 in.	SS (Hex)	Galv. Stl.	Carbon Stl.	X10C	•	•	•	•	•
3" Straight nipple	2 in.	N/A	N/A	Stn. Stl.	N03S	•	c	c	c	c
6" Straight nipple	5 in.	N/A	N/A	Stn. Stl.	N06S	•	c	c	c	c
Nipple-union-nipple	5 in.	SS	SS	Stn. Stl.	U06S	•	o	o	o	o
Nipple-union-nipple	7 in.	SS	SS	Stn. Stl.	U08S	•	o	o	o	o
Nipple-union-nipple	9 in.	SS	SS	Stn. Stl.	U10S	•	o	o	o	o
Nipple-XP union-nipple	5 in.	SS	Galv. Stl.	Stn. Stl.	E06S	•	c	c	c	c
Nipple-XP union-nipple	7 in.	SS	Galv. Stl.	Stn. Stl.	E08S	•	c	c	c	c
Nipple-XP union-nipple	9 in.	SS	Galv. Stl.	Stn. Stl.	E10S	•	c	c	c	c
Hex nipple only	1 in.	SS (Hex)	N/A	N/A	H02S	•	•	•	•	•
Hex nipple-union-nipple	5 in.	SS (Hex)	SS	Stn. Stl.	H06S	•	k	k	k	k
Hex nipple-union-nipple	7 in.	SS (Hex)	SS	Stn. Stl.	H08S	•	k	k	k	k
Hex nipple-union-nipple	9 in.	SS (Hex)	SS	Stn. Stl.	H10S	•	k	k	k	k
Hex nipple-XP union-nipple	5 in.	SS (Hex)	Galv. Stl.	Stn. Stl.	X06S	•	•	•	•	•
Hex nipple-XP union-nipple	7 in.	SS (Hex)	Galv. Stl.	Stn. Stl.	X08S	•	•	•	•	•
Hex nipple-XP union-nipple	9 in.	SS (Hex)	Galv. Stl.	Stn. Stl.	X10S	•	•	•	•	•

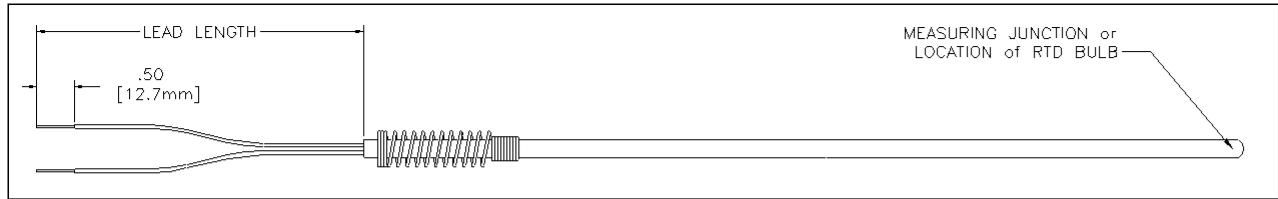


TABLE V - Sensor Type				Selection	000	0TB	STT17		
					0	0	1	3	H
Sensor Type	No sensor			00 __	o	o	o	o	o
	Compatible with STT: 17X								
	<b>Thermocouples</b>								
	1 x Type E (IEC)	3, H, F, P		T1 __	•	•		•	•
	2 x Type E (IEC)	H, F, P		T2 __	•	•			•
	1 x Type J (IEC)	3, H, F, P		T3 __	•	•		•	•
	2 x Type J (IEC)	H, F, P		T4 __	•	•			•
	1 x Type K (IEC)	3, H, F, P		T5 __	•	•		•	•
	2 x Type K (IEC)	H, F, P		T6 __	•	•			•
	1 x Type N (IEC)	3, H, F, P		T7 __	•	•		•	•
	1 x Type T (IEC)	3, H, F, P		T8 __	•	•		•	•
	2 x Type T (IEC)	H, F, P		T9 __	•	•			•
	<b>RTD Applications (-58 to +500°F)</b>								
	1 x Pt100 (IEC), 2-wire	1, 3, H, F		R1 __	•	v	v	v	v
	1 x Pt100 (IEC), 3-wire	1, 3, H, F		R2 __	•	v	v	v	v
	1 x Pt100 (IEC), 4-wire	1, 3, H, F		R3 __	•	v		v	v
	2 x Pt100 (IEC), 3-wire	H, F		R4 __	•	v			v
	1 x Pt200 (IEC), 3-wire	-		R5 __	•	v			
	1 x Pt500 (IEC), 3-wire	-		R6 __	•	v			
	1 x Pt1000 (IEC), 3-wire	H, F		R7 __	•	v			v
	<b>RTD Applications (-292 to +932°F)</b>								
	1 x Pt100 (IEC), 2-wire	1, 3, H, F		H1 __	•	•	•	•	•
	1 x Pt100 (IEC), 3-wire	1, 3, H, F		H2 __	•	•	•	•	•
	1 x Pt100 (IEC), 4-wire	1, 3, H, F		H3 __	•	•		•	•
	2 x Pt100 (IEC), 3-wire	H, F		H4 __	•	•			•
	1 x Pt200 (IEC), 3-wire	-		H5 __	•	•			
	1 x Pt500 (IEC), 3-wire	-		H6 __	•	•			
	1 x Pt1000 (IEC), 3-wire	H, F		H7 __	•	•			•
Sensor Grounding	No sensor			--0_	r	r	r	r	r
	Grounded(standard for T/Cs and Not Applicable for RTDs)			--G_	s	s	s	s	s
	Ungrounded(standard for RTDs but also applicable for TCs)			--U_	•	•	•	•	•
Lead Length	Factory Defaults : Table V : 000D - No Lead length								
	Table I : 000,35_ - 9" Lead length			___D	•	•	•	•	•
	Table I : 0TB,17_,25_ - 6" Lead length								

Note: only one side of a duplex probe is connected to the transmitter

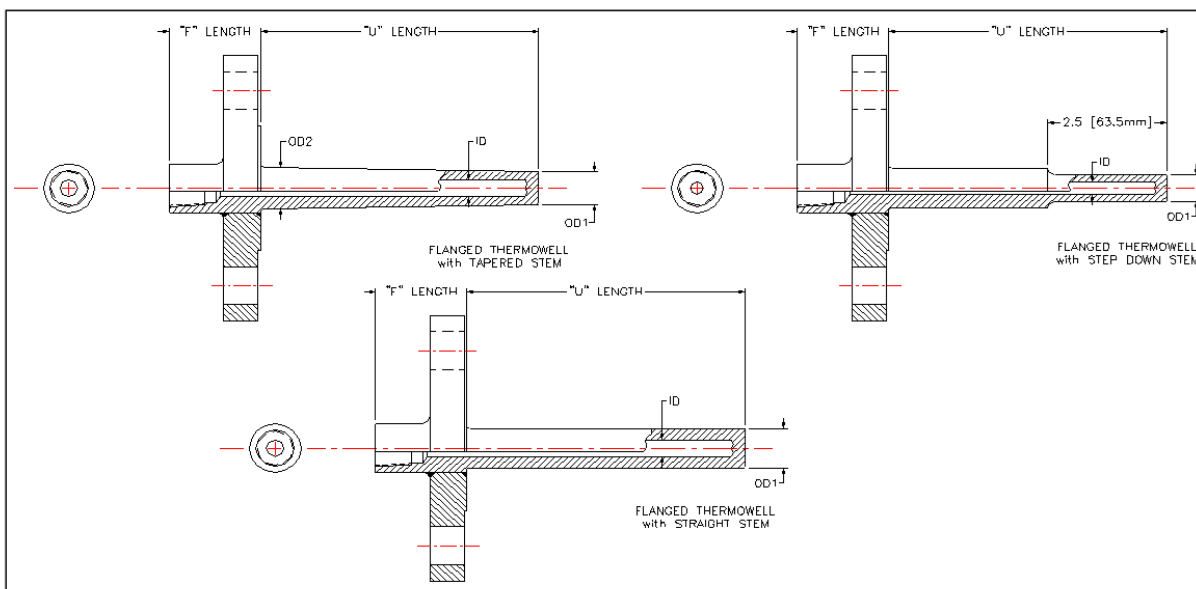


Table VI - Thermowell					Selection		Availability				
					000	0TB	1	3	H	STT17	
Well Design	No thermowell				0	k	k	k	k	k	
	Tapered	OD-1	OD-2	ID 0.26	A	•	•	•	•	•	
				ID 0.385	B	•	•	•	•	•	
	Straight	0.88	0.88	ID 0.26	C	•	•	•	•	•	
				ID 0.385	D	•	•	•	•	•	
Stepped	0.5	0.88	ID 0.26	E	•	•	•	•	•		
Well & Flange Material	No thermowell				0	u	u	u	u	u	
	Carbon Steel				N	•	•	•	•	•	
	304 Stainless Steel				P	•	•	•	•	•	
	316 Stainless Steel (reference price table 1)				R	•	•	•	•	•	
Process Connection	No thermowell				0000	u	u	u	u	u	
	Type	Size	Material	Rating							
	Flat Face	1 in.	Carbon Steel, 304 or 316 Str. Stl.	150 lbs	F10A	•	•	•	•	•	
				300 lbs	F10B	•	•	•	•	•	
				600 lbs	F10C	•	•	•	•	•	
				900 lbs	F10D	•	•	•	•	•	
				1500 lbs	F10E	•	•	•	•	•	
		1.5 in.		150 lbs	F15A	•	•	•	•	•	
				300 lbs	F15B	•	•	•	•	•	
				600 lbs	F15C	•	•	•	•	•	
				900 lbs	F15D	•	•	•	•	•	
				1500 lbs	F15E	•	•	•	•	•	
		2 in.		150 lbs	F20A	•	•	•	•	•	
				300 lbs	F20B	•	•	•	•	•	
				600 lbs	F20C	•	•	•	•	•	
				900 lbs	F20D	•	•	•	•	•	
				1500 lbs	F20E	•	•	•	•	•	
	3 in.	150 lbs	F30A	•	•	•	•	•			
		300 lbs	F30B	•	•	•	•	•			
		600 lbs	F30C	•	•	•	•	•			
		900 lbs	F30D	•	•	•	•	•			
		1500 lbs	F30E	•	•	•	•	•			
	Raised Face	1 in.	150 lbs	R10A	•	•	•	•			
			300 lbs	R10B	•	•	•	•			
			600 lbs	R10C	•	•	•	•			
			900 lbs	R10D	•	•	•	•			
			1500 lbs	R10E	•	•	•	•			



Table VI - Thermowell (continued)					Selection	Availability				
						000	0TB	STT17		
							1	3	H	
Process Connection	Raised Face	1.5 in.	Carbon Steel, 304 or 316 Stn. Stl.	150 lbs	--- R15A ---	•	•	•	•	•
				300 lbs	--- R15B ---	•	•	•	•	•
				600 lbs	--- R15C ---	•	•	•	•	•
				900 lbs	--- R15D ---	•	•	•	•	•
				1500 lbs	--- R15E ---	•	•	•	•	•
		2 in.		150 lbs	--- R20A ---	•	•	•	•	•
				300 lbs	--- R20B ---	•	•	•	•	•
				600 lbs	--- R20C ---	•	•	•	•	•
				900 lbs	--- R20D ---	•	•	•	•	•
	1500 lbs			--- R20E ---	•	•	•	•	•	
	3 in.	150 lbs		--- R30A ---	•	•	•	•	•	
		300 lbs		--- R30B ---	•	•	•	•	•	
		600 lbs		--- R30C ---	•	•	•	•	•	
		900 lbs		--- R30D ---	•	•	•	•	•	
		1500 lbs		--- R30E ---	•	•	•	•	•	
	Ring Type Joint	1 in.		150 lbs	--- J10A ---	•	•	•	•	•
				300 lbs	--- J10B ---	•	•	•	•	•
				600 lbs	--- J10C ---	•	•	•	•	•
				900 lbs	--- J10D ---	•	•	•	•	•
				1500 lbs	--- J10E ---	•	•	•	•	•
		1.5 in.		150 lbs	--- J15A ---	•	•	•	•	•
				300 lbs	--- J15B ---	•	•	•	•	•
				600 lbs	--- J15C ---	•	•	•	•	•
				900 lbs	--- J15D ---	•	•	•	•	•
1500 lbs			--- J15E ---	•	•	•	•	•		
2 in.		150 lbs	--- J20A ---	•	•	•	•	•		
		300 lbs	--- J20B ---	•	•	•	•	•		
	600 lbs	--- J20C ---	•	•	•	•	•			
	900 lbs	--- J20D ---	•	•	•	•	•			
	1500 lbs	--- J20E ---	•	•	•	•	•			
3 in.	150 lbs	--- J30A ---	•	•	•	•	•			
	300 lbs	--- J30B ---	•	•	•	•	•			
	600 lbs	--- J30C ---	•	•	•	•	•			
	900 lbs	--- J30D ---	•	•	•	•	•			
	1500 lbs	--- J30E ---	•	•	•	•	•			
Lag	No thermowell or No Lag, (Standard 2.25" F Length)			--- 00 ---	•	•	•	•	•	
	2.75 in.			--- 10 ---	t	t	t	t	t	
	3.25 in.			--- 15 ---	t	t	t	t	t	
	3.75 in.			--- 20 ---	t	t	t	t	t	
	4.25 in.			--- 25 ---	t	t	t	t	t	
	4.75 in.			--- 30 ---	t	t	t	t	t	
Insertion Length "U"	0 in. (No Thermowell)			--- 00 ---	w	w	w	w	w	
	1 in.			--- 01 ---	•	•	•	•	•	
	2 in.			--- 02 ---	•	•	•	•	•	
	3 in.			--- 03 ---	•	•	•	•	•	
	4 in.			--- 04 ---	•	•	•	•	•	
	5 in.			--- 05 ---	•	•	•	•	•	
	6 in.			--- 06 ---	•	•	•	•	•	
	7 in.			--- 07 ---	•	•	•	•	•	
	8 in.			--- 08 ---	•	•	•	•	•	
	9 in.			--- 09 ---	•	•	•	•	•	
	10 in.			--- 10 ---	•	•	•	•	•	
	11 in.			--- 11 ---	•	•	•	•	•	
	12 in.			--- 12 ---	•	•	•	•	•	
	13 in.			--- 13 ---	•	•	•	•	•	
	14 in.			--- 14 ---	•	•	•	•	•	
	15 in.			--- 15 ---	•	•	•	•	•	
	16 in.			--- 16 ---	•	•	•	•	•	
	17 in.			--- 17 ---	•	•	•	•	•	
	18 in.			--- 18 ---	•	•	•	•	•	
	19 in.			--- 19 ---	•	•	•	•	•	
	20 in.			--- 20 ---	•	•	•	•	•	
	21 in.			--- 21 ---	•	•	•	•	•	
	22 in.			--- 22 ---	•	•	•	•	•	
	23 in.			--- 23 ---	•	•	•	•	•	
	24 in.			--- 24 ---	•	•	•	•	•	
Decimal	.00 in. or No sensor			--- 0 ---	•	•	•	•	•	
	.25 in.			--- 2 ---	x	x	x	x	x	
	.50 in.			--- 5 ---	x	x	x	x	x	
	.75 in.			--- 7 ---	x	x	x	x	x	

TABLE VII - Safety Approvals			Availability					
Approval Body	Approval Type	Location or Classification	Selection	000	0TB	STT17		
						1	3	H
None	No approval body certifications included		00	•	•	•	•	•
FM	Explosion-Proof	Class I, Div. 1, Groups A**, B, C, D	1D		g	g	g	g
	Dust Ignition-Proof	Class II, Div. 1, Groups E, F, G						
	Dust Ignition-Proof	Class III, Div. 1, T***	15		g	g	g	g
	Flameproof	Class I, Zone 1, IIC**, T***						
	Environmental	NEMA 4X/IP66****						
CSA	Explosion-Proof	Class I, Div. 1, Groups B, C, D	2K		g	g	g	g
	Dust Ignition-Proof	Class II, Div. 1, Groups E, F, G						
	Dust Ignition-Proof	Class III, Div. 1, T***	3D		•	•	•	•
	Flameproof	Ex d IIC, T***						
	Environmental	NEMA 4X/IP66****						
ATEX	Flameproof, zone 1	Flameproof $\text{Ex d IIC T6}$ Ex d IIC T6, Ambient Limits -20 to +60°C			•	•	•	•

\*\* Enclosures supplied in stainless steel and enclosures with a window are de-rated to Gas Groups B, C, & D and Zone 1 Group IIB + H<sub>2</sub>

\*\*\* Temperature Class (T-Codes) is T6 with terminal block or dependant on transmitter.

\*\*\*\* Type 4X and IP66 ratings are dependent upon the enclosure, nipple extension and thermowell materials. IP66 dependent upon enclosure and a thermowell is required.

\*\* Environmental ratings per CSA markings on the Head-mount enclosure.

**NOTICE:** The temperature probe, head-mount housings, extension hardware and thermowell are supplied and certified by Thermo Electric Company, Inc., 60A Commerce Way, Totowa, NJ 07512. The temperature transmitter module is supplied by Honeywell International Inc.

\*\*\* Temperature Class (T-Codes) is T6 with terminal block or dependant on transmitter.

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\*\* Environmental ratings per CSA markings on the Head-mount enclosure.

**NOTICE:** The temperature probe, head-mount housings, extension hardware and thermowell are supplied and certified by Thermo Electric Company, Inc., 60A Commerce Way, Totowa, NJ 07512. The temperature transmitter module is supplied by Honeywell International Inc.

TABLE VIII - Assembly Options	Selection	000	0TB	1	3	H
No options	000	•	•	•	•	•
Internal hydrostatic pressure test of thermowell (2500 PSI Standard)	PT1	t	t	t	t	t
External hydrostatic pressure test of thermowell (2500 PSI Standard) (4)	PT2	t	t	t	t	t
Full Penetration Weld	FPW	t	t	t	t	t
NACE certificate (applies to Well)	HT1	t	t	t	t	t
Clean for oxygen service (ASTM G93-96)	XGN	t	t	t	t	t
Clean for chlorine service (The Chlorine Institute, Inc. Pamphlet 6)	CLN	t	t	t	t	t
Frequency calculation (Murdock, ASME PTC-19.3 TW-2010) (Velocity, pressure and temp. required)	FRQ	t	t	t	t	t
Thermowell material certificate	TMC	t	t	t	t	t
Canadian registration number(CRN)	CRN	t	t	t	t	t
Transmitter with Probe calibration (system) @ 2 points, Single Sensor (specify range)	TC1			j	j	j
Transmitter with Probe calibration (system)@ 2 points, Duplex Sensor	TC2			j	j	j
Probe Calibration Data Certificate (2-point info to be provided)	AP2	m	m	m	m	m
Probe Calibration Data Certificate (3-point info to be provided)	AP3	m	m	m	m	m
Probe Calibration Data Certificate (4-point info to be provided)	AP4	m	m	m	m	m
Upgrade to Special Limits Thermocouple Calibration to ANSI MC96.1 and ASTM E230, Single	SP1	p	p	p	p	p
Upgrade to Special Limits Thermocouple Calibration to ANSI MC96.1 and ASTM E230, Duplex	SP2	q	q	q	q	q
Upgrade to ASTM E1137 Grade A RTD, Single	CL1	l	l	l	l	l
Upgrade to ASTM E1137 Grade A RTD, Duplex	CL2	i	i	i	i	i

**RESTRICTIONS**

Restriction Letter	Available Only With			Not Available With		
	Table	Selection	Table	Selection		
a	VI	0000000000				
b		Make one selection from this group				
c			VII	1D, 2K, 15		
e			III	000		
f			VII	2K		
g	IV	X___H02S	VI	0_____		
h	III	000_				
i	V	R4___H4_				
j	II	TC	V	00__		
k			VII	3D		
l	V	R1___to R3___R5___to R7___H1___to H3___H5___to H7___	V	00__		
m			VII	1D, 2K, 3D, 15		
p	V	T1___,T3___,T5___,T7___,T8___				
q	V	T2___,T4___,T6___,T9___				
r	V	00__				
s			VII	3D		
t			V	00___, R1___to R7___, H1___to H7___		
u	VI	0_____	VI	0_____		
v			VII	1D, 15		
w	VI	0_____				
x		00__	VI	00__		

## Ordering information

### Sales and Service

For application assistance, current specifications, pricing, or name of the nearest Authorized Distributor, contact one of the offices below.

#### ASIA PACIFIC

(TAC)

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*Specifications are subject to change without notice.*

### For More Information

Learn more about how Honeywell's STT 3000 Series STT800 - STT integrated temperature probe assemblies Models STT820, STT830, STT840, visit our website [www.honeywell.com/ps](http://www.honeywell.com/ps) or contact your Honeywell account manager.

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