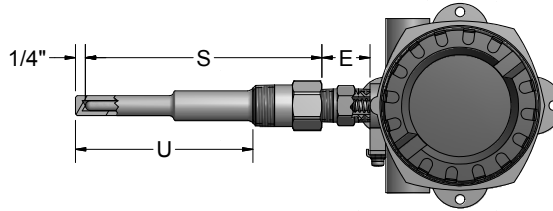


# HAZARDOUS LOCATION

Configuration Code XP03  
**Hazardous Location Explosion-Proof-Certified,  
 RTD Assemblies with Thermowells**

Explosion-Proof RTD Assemblies with Thermowells are made for use in U.S. and Canadian hazardous areas. They are designed to extinguish flames inside the device, eliminating the potential for ignition of flammable mixtures in the surrounding atmosphere. FM and CSA certified assemblies, dependent on connection head type, meet XP Class I Division I & II; Groups A, B, C, D; DIP Class II Division I; Groups E, F, G; Class III; Type 4/4X. The required thermowell is available in standard, heavy-duty, and flanged constructions. The assemblies feature 316 stainless steel sheaths. They are available with aluminum or stainless steel explosion-proof connection heads.



## ORDER CODES

**Example  
 Order Number:**

**XP** - **R1T185L** **48** **3** - Select Thermowell Part # from Thermowell Section - **SC** - **8HN** **75T-642B**, **I** Select Type and Range from back of Section

### 1-0 Agency Approval

CODE	DESCRIPTION
XP	FM/CSA explosion-proof-certified assembly

### 2-0 100 Ω Platinum RTD Elements α = 0.003 85 °C<sup>-1</sup>

CODE		TOLERANCE <sup>[1]</sup>	TEMP. RANGE
SINGLE	DUPLEX		
R1T185L	R1T285L	Grade B	(-200 to 200) °C
R5T185L	R5T285L	(1/5) Class B	(-30 to 150) °C
RBF185L	RBF285L	Class B	(-50 to 200) °C
RAF185L	RAF285L	Class A	(-30 to 200) °C
R1T185H	R1T285H	Grade B	(-200 to 600) °C
RAT185H	RAT285H	Class A	(-100 to 450) °C

[1] Refer to RTD tolerance information in the General Information section for calculations to determine specific tolerance at temperature.

### 2-1 Sheath Diameters 316 SS

CODE	DIAMETERS (inches)
48	1/4

### 2-2 Element Connection

CODE	DESCRIPTION
2	2-wire
3	3-wire
4 <sup>[1]</sup>	4-wire

[1] Not available in duplex or with 440 Series Transmitter

### 3-0 Thermowell

Select thermowell part number from Thermowell Section.

### 5-1 Head Terminations

CODE	DESCRIPTION
74	DIN form B aluminum explosion-proof head
75T-642B	(4 to 20) mA HART® Field Transmitter with aluminum explosion-proof housing
76T82-D10	(4 to 20) mA dual input HART® Field Transmitter with digital display and explosion-proof aluminum housing
77T-662C	(4 to 20) mA HART® Field Transmitter with dual cavity explosion-proof aluminum housing
93	Aluminum explosion-proof head
94	316L stainless steel explosion-proof head

### 5-2 Options

SB	1/2" NPT conduit reducer bushing
I	Stainless steel tag
T-440 <sup>[1]</sup>	(4 to 20) mA head-mounted transmitter
T-441	(4 to 20) mA isolated head-mounted transmitter
T-442	(4 to 20) mA HART® isolated head-mounted transmitter
T82-00	(4 to 20) mA dual input, isolated HART® head-mounted transmitter

See transmitter ordering information in back of section.

[1] Not available with option 74.

### 5-0 Head Mounting Fittings

CODE	DESCRIPTION	CODE	DESCRIPTION
<i>STEEL FITTINGS</i>		<i>316SS FITTINGS</i>	
6HN	1/2" x 1/2" NPT hex nipple 1" length	8HN	1/2" x 1/2" NPT hex nipple 1" length
6PN <sub>-</sub>	1/2" NPT pipe nipple (specify "E" length in inches)	8PN	1/2" NPT pipe nipple (specify "E" length in inches)
6XU <sub>-1</sub>	1/2" NPT union/nipple (specify "E" length in inches)	8XU <sub>-1</sub>	1/2" NPT union/nipple (specify "E" length in inches)

[1] 3 1/2" Minimum length required. Maximum allowable "E" length is 9"

### 4-0 Element Options

CODE	DESCRIPTION
SL <sup>[1]</sup>	Spring-loaded element
SC	Self-contained, spring-loaded element

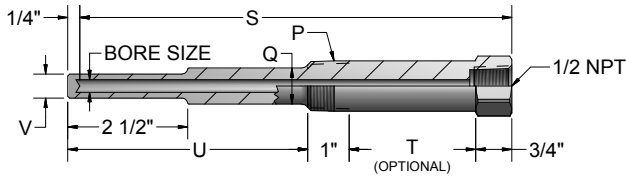
[1] Not available with option 75T, 76T, or 77T

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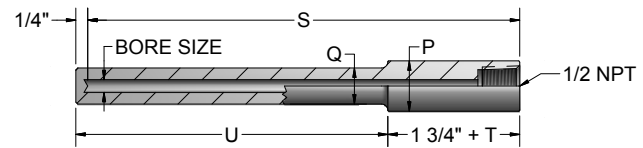


The drilled thermowells listed below are those most commonly found in process applications. Other types and styles are listed later in this section. The thermowells listed below are available as separate component wells and can be ordered by the code numbers listed below. They can also be ordered as a part of a complete sensor assembly. Consult factory for wells with different mounting threads, lengths, and materials.

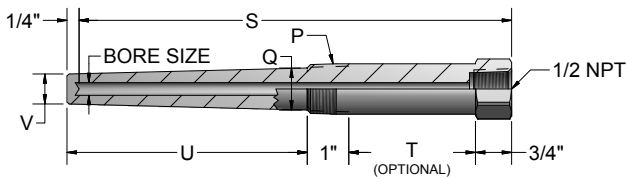
### STANDARD-DUTY WELLS



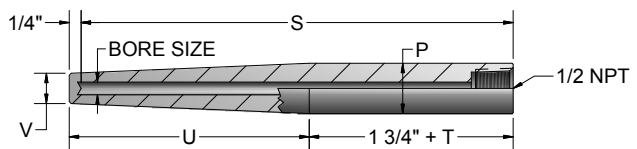
### STRAIGHT-SHANK, SOCKET-WELD



### HEAVY-DUTY WELLS



### WELD-IN WELLS



## ORDER CODES

### Example Order Number:

1-0 1-1 1-2 1-3 1-4 1-5 1-6  
**S 4 D 06 08 T2 S**

#### 1-0 Well Type

CODE	DESCRIPTION
S	Standard-duty threaded (NPT)
H	Heavy-duty threaded (NPT)
SW	Straight-shank, socket-weld
WI	Weld-in

#### 1-1 Bore Size

CODE	DESCRIPTION
4	0.260 Dia. Bore

#### 1-2 Pipe Size "P"

CODE	DESCRIPTION
C	1/2" Pipe <sup>[1]</sup>
D	3/4" Pipe
E	1" Pipe

[1] Only available with well type S or H

#### 1-3 Length Dimensions (inches)

CODE	"S" DIMENSIONS	"U" DIMENSIONS	
		NO LAG	WITH STANDARD LAG
04	4	2(1/2)	N/A
06	6	4(1/2)	2(1/2)
09	9	7(1/2)	4(1/2)
12	12	10(1/2)	7(1/2)
15	15	13(1/2)	10(1/2)
18	18	16(1/2)	13(1/2)
24	24	22(1/2)	19(1/2)

#### 1-6 Well Options

CODE	DESCRIPTION
C8	316 stainless steel well cap and chain
C22	Brass well cap and chain
S	Customer specified part number marked on the thermowell - (10 digit maximum)

#### 1-5 Optional "T" Lag Dimension

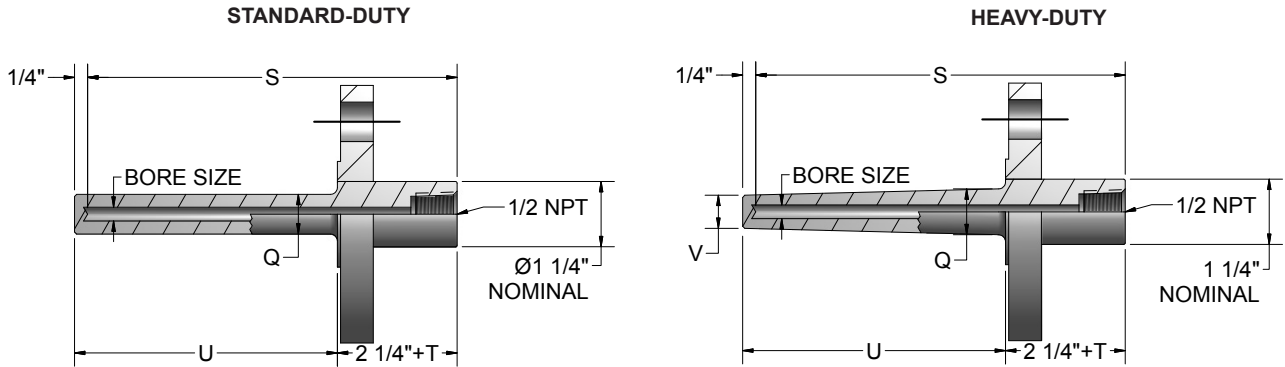
CODE	DESCRIPTION
Leave blank if No Lag is required	
T2	2" Lag standard on 6" well
T3	3" Lag standard on 9, 12, 15, 18, 24" wells
T__	Special Lag specify "T" dimension in inches

#### 1-4 Material

CODE	DESCRIPTION
08	316 stainless steel
09	304 stainless steel

The flanged thermowells described on this page are those commonly found in most process applications. These wells are supplied as standard- or heavy-duty with raised-faced flanges. Other types and styles are listed later in this section. Consult factory for wells with different flange sides, lengths, and materials.

## FLANGED THERMOWELLS



## ORDER CODES

**Example Order Number:**

1-0 1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8  
**SF 4 15 R 3 12 08 T2 C8**

### 1-0 Well Type

CODE	DESCRIPTION
SF	Standard-duty flanged
HF	Heavy-duty flanged

### 1-1 Bore Size

CODE	DESCRIPTION
4	0.260 Bore

### 1-2 Flange Size

CODE	DESCRIPTION
10	1"
15	1 1/2"
20	2"

### 1-3 Flange Type

CODE	DESCRIPTION
R	Raised face

### 1-4 Pressure Rating

CODE	DESCRIPTION
1	150 class
3	300 class

### 1-8 Well Options

CODE	DESCRIPTION
C8	316 stainless steel well cap and chain
C22	Brass well cap and chain
S	Customer specified part number marked on thermowell (10 digit maximum)

### 1-7 Optional "T" Lag Dimension

CODE	DESCRIPTION
	Leave blank if no lag is required
T__	Specify "T" dimension in inches

### 1-6 Well Material

CODE	DESCRIPTION
08	316 Stainless steel
09	304 Stainless steel

### 1-5 Well Length (inches)

CODE	DESCRIPTION	
	"S" DIMENSION	"U" DIMENSION
06	6	4
09	9	7
12	12	10
15	15	13
18	18	16
24	24	22

### ORDER CODES

**Example Order Number:** <sup>1-0</sup> **75T-642B** - <sup>1-1</sup> **D** - <sup>1-2</sup> **3** <sup>1-3</sup> **85** <sup>1-4</sup> **U** - <sup>1-5</sup> **S(0-200)** <sup>1-6</sup> **C**

#### 1-0 Transmitter Type

CODE	DESCRIPTION
440 <sup>[1]</sup>	(4 to 20) mA programmable head-mounted RTD transmitter
441	(4 to 20) mA programmable head-mounted universal transmitter
442	(4 to 20) mA HART® programmable head-mounted universal transmitter
75T-642B	(4 to 20) mA HART® Field Transmitter with explosion-proof aluminum housing FM/ CSA / XP Class I Div I Groups A,B,C,D; DIP Class II Div 1 Groups E,F,G; Class III; NI Class I Div II Groups A,B,C,D
75T-642D	(4 to 20) mA HART® Field Transmitter with explosion-proof aluminum housing FM/ CSA / XP Class I Div I Groups B,C,D; DIP Class II Div I Groups E,F,G; Class III; NI Class I Div II Groups B,C,D
75T-642E	(4 to 20) mA HART® Field Transmitter with flame-proof/dust-protected aluminum housing ATEX/IECEX; Ex d IIC T6...T4Gb; Ex tb IIC T110 °C Db, IP66/67

[1] Only available with 2- or 3-wire input connection and Pt100 sensor type

#### 1-1 Options (For 642 Series only)

CODE	DESCRIPTION
T	Solid cover
D	Glass cover with digital display
Leave blank if using 440, 441, or 442	

#### 1-2 Input Type

CODE	DESCRIPTION
00 <sup>[1]</sup>	Unconfigured
1	Thermocouple (TC)
2	RTD (2-wire)
3	RTD (3-wire)
4	RTD (4-wire)

[1] Default setting supplied as 3-wire Pt100 (0-100) °C

#### 1-6 Unit of Measure

CODE	DESCRIPTION
C	Celsius
F	Fahrenheit

#### 1-5 Range

CODE	DESCRIPTION
S	(lower limit – upper limit)

#### 1-4 Failure Mode

CODE	DESCRIPTION
U	Upscale burnout ≥ 20.5 mA
D	Downscale burnout ≤ 3.8 mA

#### 1-3 Sensor Type

CODE	DESCRIPTION
J	Type J thermocouple
K	Type K thermocouple
T	Type T thermocouple
N	Type N thermocouple
E	Type E thermocouple
85	100 ohm platinum ( $\alpha = 0.00385 \text{ } ^\circ\text{C}$ )

**For complete transmitter specifications see Transmitter Section.**

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### ORDER CODES

**Example Order Number:**

1-0      1-1      1-2      1-3      1-4      1-5      1-6      1-7      1-8  
**77T-662C - D - 33 - 85 - 85 - A - U - S(0-200) C**

#### 1-0 Transmitter Type

CODE	DESCRIPTION
77T-662C	(4 to 20) mA HART® Field Transmitter with dual-cavity explosion-proof aluminum housing FM/CSA XP Class I Div I Groups B,C,D; DIP Class II Div I Groups E,F,G; Class III; NI Class I Div II Groups B,C,D
77T-662E	(4 to 20) mA HART® Field Transmitter with dual cavity flame-proof/dust-protected aluminum housing ATEX/IECEX; Ex d IIC T6...T4Gb; Ex tb IIIC T110 °C Db, IP66/67
T82-00	(4 to 20) mA dual input, isolated HART® head-mounted Transmitter
76T82	(4 to 20) mA dual input HART® programmable Transmitter with digital display and explosion-proof aluminum housing, FM/CSA,NI,IS,XP,DIP Class I Div I and Div II, Groups A,B,C,D

#### 1-1 Housing Cover Options

CODE	DESCRIPTION
T	Solid cover for 662 series
D	Glass cover with digital display for 662 series
D10	Glass cover with digital display for 36T82 and 76T82 series

#### 1-2 Configuration Input

CODE	DESCRIPTION
00	T82 Unconfigured
01	662 Single input, unconfigured
02	662 Dual input, unconfigured
21	Ch1: RTD 2-wire, Ch2: inactive
22	Ch1: RTD 2-wire, Ch2: RTD 2-wire
23	Ch1: RTD 2-wire, Ch2: RTD 3-wire
2T	Ch1: RTD 2-wire, Ch2: Thermocouple
31	Ch1: RTD 3-wire, Ch2: inactive
32	Ch1: RTD 3-wire, Ch2: RTD 2-wire
33	Ch1: RTD 3-wire, Ch2: RTD 3-wire
3T	Ch1: RTD 3-wire, Ch2: Thermocouple
41	Ch1: RTD 4-wire, Ch2: inactive
4T	Ch1: RTD 4-wire, Ch2: Thermocouple
TI	Ch1: Thermocouple, Ch2: inactive
TT	Ch1: Thermocouple, Ch2: Thermocouple

**For complete transmitter specifications see Transmitter Section.**

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#### 1-8 Unit of Measure

CODE	DESCRIPTION
C	Celsius
F	Fahrenheit

#### 1-7 Range

CODE	DESCRIPTION
S	(lower limit – upper limit)

#### 1-6 Failure Mode

CODE	DESCRIPTION
U	Upscale Burnout ≥ 20.5 mA
D	Downscale Burnout ≤ 3.8 mA

#### 1-5 Input Set-ups

CODE	DESCRIPTION
0	One Input (662 only)
A	Process Variable = Ch1; CH2 = inactive
B	Process variable = CH1; secondary variable = Ch2 (T82 Only)
C	Process variable = the difference between CH1 and Ch2
D	Process variable = the average between CH1 and Ch2
E	Sensor backup; Process variable= Ch1 and Ch2

#### 1-4 Sensor Input Channel 2

CODE	DESCRIPTION
J	Type J thermocouple
K	Type K thermocouple
T	Type T thermocouple
N	Type N thermocouple
E	Type E thermocouple
85	100 ohm platinum ( $\alpha = 0.00385 \text{ } ^\circ\text{C}^{-1}$ )
00	No second channel

#### 1-3 Sensor Input Channel 1

CODE	DESCRIPTION
J	Type J thermocouple
K	Type K thermocouple
T	Type T thermocouple
N	Type N thermocouple
E	Type E thermocouple
85	100 ohm platinum ( $\alpha = 0.00385 \text{ } ^\circ\text{C}^{-1}$ )