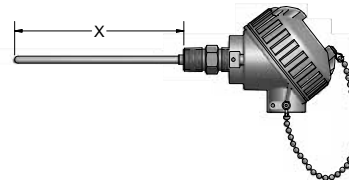
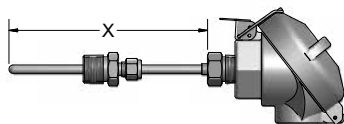


# SENSORS WITH CONNECTION HEADS

## Configuration Code GP02 Fixed-Sheath Thermocouple Assemblies with General-Purpose Connection Heads

Fixed-Sheath Thermocouple Assemblies with General-Purpose Connection Heads have head mounting fittings that are welded or brazed to the sheath for direct immersion into a process. To order an assembly with an optional 4 to 20 mA transmitter, select the assembly below and the transmitter from the back of this section. The MgO-insulated thermocouple assemblies are offered in a variety of calibrations, sheath diameters, and sheath materials.



## ORDER CODES

**Example Order Number:**

1-0	1-1	1-2	1-3	2-0	3	4-0	4-1	4-2	
J	3	8	U	-	012	-	05A	-	9HP 49, T
									Select Type and Range from back of section

### 1-0 Thermocouple Types

CODE	SINGLE	DUPLEX	TRIPLEX
E	EE	-	-
J	JJ	JJJ	-
K	KK	KKK	-
T	TT	-	-

### 1-1 Sheath Diameters

CODE	DIAMETER (inches)
2	1/8
3	3/16
4	1/4
6	3/8

### 1-2 Sheath Materials

CODE	MATERIAL	STANDARD AVAILABLE TYPES
3	Alloy 600	K
4	310 SS	K
5	446 SS	K <sup>[1]</sup>
8	316 SS	E, J, K, T

[1] All sensors with 446SS sheaths must have an ungrounded measuring junction.

### 1-3 Measuring Junctions

CODE	DESCRIPTION
G	Grounded junction
U	Ungrounded junction
E	Exposed junction

### 2-0 'X' Dimension

Insert three digit "X" length in inches

Sheath lengths over 72" will be shipped in a coiled configuration unless otherwise specified.

### 3-0 No Fitting

CODE	00
------	----

### 3-1 One-Time Adjustable Fittings

CODE	TYPE	NPT SIZE (inches)	PRESSURE-RATED	AVAILABLE SHEATH DIAMETERS (inches)
05A	316 SS	1/8	YES	1/8, 3/16, 1/4
05B	316 SS	1/4	YES	1/8, 3/16, 1/4, 3/8
05C	316 SS	1/2	YES	1/8, 3/16, 1/4, 3/8
15A	Brass	1/8	NO	1/8, 3/16, 1/4
15B	Brass	1/4	NO	3/16, 1/4, 3/8
15C	Brass	1/2	NO	1/4, 3/8
14	Brass/Steel	Flange	NO	1/8, 3/16, 1/4, 3/8

### 3-2 Re-Adjustable Compression Fittings

CODE	TYPE	NPT SIZE (inches)	AVAILABLE SHEATH DIAMETERS (inches)
12A	316 SS	1/8	1/8, 3/16, 1/4
12B	316 SS	1/4	1/8, 3/16, 1/4, 3/8
12C	316 SS	1/2	1/8, 3/16, 1/4, 3/8
11A	Brass	1/8	1/8, 3/16, 1/4
11B	Brass	1/4	1/8, 3/16, 1/4, 3/8
11C	Brass	1/2	1/4, 3/8
19C	Spring-loaded SS well fitting	1/2	3/16, 1/4

FEP gland standard 204 °C [400 °F] max.

### 3-3 Fixed Bushings<sup>[1]</sup>

CODE	MOUNTING THREAD NPT (inches)	AVAILABLE SHEATH DIAMETERS (inches)
316 SS		
8A _ <sup>[2]</sup>	1/8	1/8, 3/16, 1/4
8B _ <sup>[2]</sup>	1/4	1/8, 3/16, 1/4, 3/8
8C _ <sup>[2]</sup>	1/2	1/8, 3/16, 1/4, 3/8
8D _ <sup>[2]</sup>	3/4	1/8, 3/16, 1/4, 3/8

[1] Requires Table 4, Option 9HP Selection

[2] When ordering fixed bushings, specify order code above plus insert length "U", as measured from hot tip to bottom of threaded bushing. EXAMPLE: order code 8A06 is 1/8" NPT, 316 SS bushing located 6" from hot tip.

### 4-0 Head Mounting Fittings

CODE	DESCRIPTION
6HN	1/2" x 1/2" NPT steel hex nipple 1" "E" length
8HN	1/2" x 1/2" NPT stainless steel hex nipple 1" "E" length
9HP	1/2" NPT stainless steel bushing (no process threads)
8RND	3/4" x 1/2" NPT stainless steel hex nipple

### 4-1 Head and Sheath Terminations

CODE	DESCRIPTION
22	3" Individual fluoropolymer leads with terminal pins
31	Aluminum screw-cover head
34	Cast iron screw-cover head
35T142A	(4 to 20) mA HART® Field Transmitter with aluminum general-purpose housing
36T71-D10	(4 to 20) mA isolated programmable transmitter with digital display and general purpose aluminum housing with glass lid
36T72-D10	(4 to 20) mA isolated programmable HART® transmitter with digital display and general purpose aluminum housing with glass lid
36T82-D10	(4 to 20) mA dual input HART® transmitter with digital display and general-purpose aluminum housing with glass lid
49	Flip-top aluminum head
63	White polypropylene screw-cover head
91	316 L stainless steel screw-cover head

### 4-2 Options

W <sup>[1]</sup>	Epoxy Coating
GS	Ground screw
I	Stainless tag
NB	1/2" NPT nylon conduit reducer bushing
SB	1/2" NPT conduit reducer bushing
T71-00	(4 to 20) mA isolated programmable transmitter
T72-00	(4 to 20) mA isolated programmable HART® transmitter
T82-00	(4 to 20) mA dual input HART® head-mounted transmitter

See transmitter ordering information in back of section.

[1] Available with option 31 only.

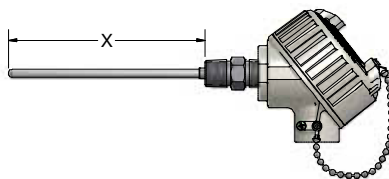
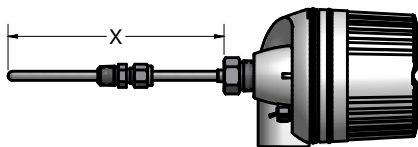
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# SENSORS WITH CONNECTION HEADS

## Configuration Code GP02 Fixed-Sheath Thermocouple Assemblies with Explosion-Proof Connection Heads

Fixed-Sheath Thermocouple Assemblies with Explosion-Proof Connection Heads are provided with head mounting fittings that are welded or brazed to the sheath for direct immersion into a process. To order an assembly with an optional 4 to 20 mA transmitter, select the assembly below and the transmitter from the back of this section. The MgO-insulated thermocouple assemblies are offered in a variety of calibrations, sheath diameters, and sheath materials.



### ORDER CODES

Example Order Number:

1-0 1-1 1-2 1-3 2-0 3 4-0 4-1 4-2  
**J 2 8 U - 012 - 05A - 9HP 74, T** Select Type and Range from back of section

#### 1-0 Thermocouple Type

CODE	SINGLE	DUPLEX	TRIPLEX
E	EE	-	-
J	JJ	JJJ	-
K	KK	KKK	-
T	TT	-	-

#### 1-1 Sheath Diameters

CODE	DIAMETER (inches)
2	1/8
3	3/16
4	1/4
6	3/8

#### 1-2 Sheath Materials

CODE	MATERIAL	STANDARD AVAILABLE TYPES
3	Alloy 600	K
4	310 SS	K
5	446 SS	K <sup>[1]</sup>
8	316 SS	E, J, K, T

[1] All sensors with 446SS sheaths must have an ungrounded measuring junction.

#### 1-3 Measuring Junctions

CODE	DESCRIPTION
G	Grounded junction
U	Ungrounded junction
E	Exposed junction

#### 2-0 'X' Dimension

Insert three digit "X" length in inches

Sheath lengths over 72" will be shipped in a coiled configuration unless otherwise specified.

#### 3-0 No Fitting

CODE	DESCRIPTION
00	No fitting

#### 3-1 One-Time Adjustable Fittings

CODE	TYPE	NPT SIZE (inches)	PRESSURE-RATED	AVAILABLE SHEATH DIAMETERS (inches)
05A	316 SS	1/8	YES	1/8, 3/16, 1/4
05B	316 SS	1/4	YES	1/8, 3/16, 1/4, 3/8
05C	316 SS	1/2	YES	1/8, 1/4, 3/8
15A	Brass	1/8	NO	1/8, 3/16, 1/4
15B	Brass	1/4	NO	3/16, 1/4, 3/8
15C	Brass	1/2	NO	1/4, 3/8
14	Brass/Steel	Flange	NO	1/8, 3/16, 1/4, 3/8

#### 3-2 Re-Adjustable Compression Fittings

CODE	TYPE	NPT SIZE (inches)	AVAILABLE SHEATH DIAMETERS (inches)
12A	316 SS	1/8	1/8, 3/16, 1/4
12B	316 SS	1/4	1/8, 3/16, 1/4, 3/8
12C	316 SS	1/2	1/8, 1/4, 3/8
11A	Brass	1/8	1/8, 3/16, 1/4
11B	Brass	1/4	1/8, 3/16, 1/4, 3/8
11C	Brass	1/2	1/4, 3/8
19C	Spring-loaded SS well fitting	1/2	3/16, 1/4

FEP gland standard 204 °C [400 °F] max.

#### 3-3 Fixed Bushings<sup>[1]</sup>

CODE	MOUNTING THREAD NPT (inches)	AVAILABLE SHEATH DIAMETERS (inches)
316 SS		
8A __ <sup>[1]</sup>	1/8	1/8, 3/16, 1/4
8B __ <sup>[1]</sup>	1/4	1/8, 3/16, 1/4, 3/8
8C __ <sup>[1]</sup>	1/2	1/8, 3/16, 1/4, 3/8
8D __ <sup>[1]</sup>	3/4	1/8, 3/16, 1/4, 3/8

[1] Requires Table 4, Option 9HP Selection

[2] When ordering fixed bushings, specify order code above plus insert length "U", as measured from hot tip to bottom of threaded bushing. EXAMPLE: order code 8A06 is 1/8" NPT, 316 SS bushing located 6" from hot tip.

#### 4-0 Head Mounting Fittings

CODE	DESCRIPTION
6HN	1/2" x 1/2" NPT steel hex nipple 1" "E" length
8HN	1/2" x 1/2" NPT stainless steel hex nipple 1" "E" length
9HP	1/2" NPT stainless steel bushing (no process threads)
8RND	3/4" x 1/2" NPT stainless steel hex nipple

#### 4-1 Head Terminations

CODE	DESCRIPTION
74	Dual conduit DIN form B aluminum explosion-proof/flame-proof head, NEC, IEC, Atex approved
75T142C	(4 to 20) mA HART® field transmitter with aluminum explosion-proof housing
93	Aluminum explosion-proof/flame-proof head, NEC, IEC, Atex approved
94	316L stainless steel explosion-proof/flame-proof head, NEC, IEC, Atex approved

#### 4-2 Options

CODE	DESCRIPTION
SB	1/2" NPT conduit reducer bushing
I	Stainless tag
T71-00	(4 to 20) mA isolated programmable transmitter
T72-00	(4 to 20) mA isolated programmable HART® head-mounted transmitter
T82-00	(4 to 20) mA dual input, isolated HART® head-mounted transmitter

See transmitter ordering information in back of section.

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## ORDER CODES

**Example Order Number:**

**T31** - **D** - **3** **85** **U** - **S(0-200)** **C** - **B**

### 1-0 Transmitter Type

CODE	DESCRIPTION
T31	(4 to 20) mA programmable head-mounted RTD Transmitter
T71-00	(4 to 20) mA isolated programmable transmitter
T72-00	(4 to 20) mA isolated programmable HART® head-mounted transmitter
35T142A	(4 to 20) mA HART® Field Transmitter with general-purpose aluminum housing
36T71-D10	(4 to 20) mA isolated Programmable transmitter with digital display and general purpose aluminum housing with glass lid
36T72-D10	(4 to 20) mA isolated Programmable HART® transmitter with digital display and general purpose aluminum housing with glass lid
75T142C	(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 I Groups E,F,G; Class III; NI Class I Div II Groups A,B,C,D

### 1-1 Options (For 142 Series only)

CODE	DESCRIPTION
T	Solid cover
D	Glass cover with digital display
Leave blank if using T31, T71, or T72	

### 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 4-wire Pt100 (0-100) °C	

### 1-7 Options

CODE	DESCRIPTION
B <sup>[1]</sup>	Bluetooth (APP) Configuration
[1] Only available with T72 Models	

### 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 ( $\alpha = 0.00385\text{ }^{\circ}\text{C}^{-1}$ )
92	100 ohm platinum ( $\alpha = 0.00392\text{ }^{\circ}\text{C}^{-1}$ )
95	1000 ohm platinum ( $\alpha = 0.00385\text{ }^{\circ}\text{C}^{-1}$ )

**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  
**36T82-D10 - 33 - 85 - 85 - E - U - S(0-200) C - SIL**

#### 1-0 Transmitter Type

CODE	DESCRIPTION
T82-00	(4 to 20) mA dual input, isolated HART® head-mounted Transmitter, no display (transmitter only)
36T82-D10	(4 to 20) mA dual input, isolated HART® Transmitter with digital display and general purpose screw-cover housing

#### 1-1 Configuration Input

CODE	DESCRIPTION
00	Unconfigured
2I	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
3I	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
4I	Ch1: RTD 4-wire, Ch2: inactive
4T	Ch1: RTD 4-wire, Ch2: Thermocouple
TI	Ch1: Thermocouple, Ch2: inactive
TT	Ch1: Thermocouple, Ch2: Thermocouple

#### 1-2 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
R	Type R thermocouple
S	Type S thermocouple
B	Type B thermocouple
85	100 ohm platinum ( $\alpha = 0.00385\text{ }^{\circ}\text{C}^{-1}$ )
55	500 ohm platinum ( $\alpha = 0.00385\text{ }^{\circ}\text{C}^{-1}$ )
95	1000 ohm platinum ( $\alpha = 0.00385\text{ }^{\circ}\text{C}^{-1}$ )

#### 1-8 SIL Option

CODE	DESCRIPTION
SIL	Safety Integrity Level SIL2 and Supports SIL3

#### 1-7 Unit of Measure

CODE	DESCRIPTION
C	Celsius
F	Fahrenheit

#### 1-6 Range

CODE	DESCRIPTION
S	(lower limit – upper limit)

#### 1-5 Failure Mode

CODE	DESCRIPTION
U	Upscale Burnout $\geq 23\text{ mA}$
D	Downscale Burnout $\leq 3\text{ mA}$

#### 1-4 Input Set-ups

CODE	DESCRIPTION
A	Process variable = Ch1; Ch2 = inactive
B	Process variable = Ch1; Secondary value = Ch2
C	Process variable = the difference between Ch1 and Ch2
D	Process variable = average of Ch1 and Ch2
E	Sensor backup; Process variable = Ch1 and Ch2

#### 1-3 Sensor Input Channel 2

CODE	DESCRIPTION
00	No second channel
J	Type J thermocouple
K	Type K thermocouple
T	Type T thermocouple
N	Type N thermocouple
E	Type E thermocouple
R	Type R thermocouple
S	Type S thermocouple
B	Type B thermocouple
85	100 ohm platinum ( $\alpha = 0.00385\text{ }^{\circ}\text{C}^{-1}$ )
55	500 ohm platinum ( $\alpha = 0.00385\text{ }^{\circ}\text{C}^{-1}$ )
95	1000 ohm platinum ( $\alpha = 0.00385\text{ }^{\circ}\text{C}^{-1}$ )

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

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