Hazardous Location CSA Non-Incendive Certified
Temperature Sensor Assemblies

Hazardous Location, Non-incendive, CSA Certified Thermocouple and RTD Assemblies for U.S. and Canada (NEC and CEC Hazardous Locations)

Speed, Service, Solutions...
Beyond Measure®

HAZARDOUS LOCATION CSA NON-INCENDIVE CERTIFIED TEMPERATURE SENSOR ASSEMBLIES



- RTD and thermocouple types
- Assemblies with extension lead wire
- Remote mount assemblies
- Heat tracing assemblies
- Optional temperature transmitters
- Wide variety of designs and options

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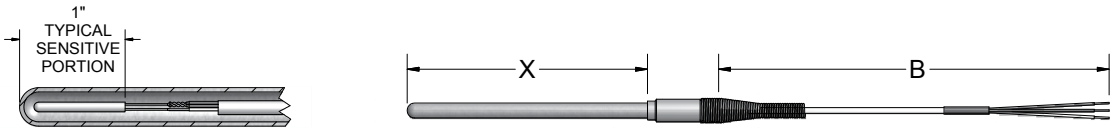
RT01 RTD Assemblies with Extension Lead Wire

Hazardous location certified RTD assemblies with extension leadwire are designed to measure temperature in a variety of process applications. These RTDs are CSA Certified for use in US and Canada hazardous locations with non-incendive field wiring (see listing below). The following tables allow customer selection of various tolerances, sheath diameters, mounting fittings, wire types and terminations. See the Pyromation online configurator for additional options. Maximum sensor length including sheath and wire is 100 feet.



Order Codes

Example Order Number: 1: **HL05** - 2-1: **R5T185L** 2-2(A): **48** 2-3: **3** - 2-4: **006** - 3: **05A** - **Finish part number on next page**

1 Agency Approval

CODE	DESCRIPTION
HL05	Certified: US/CAN Non-Incendive; Div 2; Zone 2, 22

2-1 Platinum RTD Elements

CODE		TOLER-ANCE[1]	TEMP. RANGE[1]
SINGLE	*DUPLEX*		
R1T185L	R1T285L	Grade B	(-200 to 200) °C
R3T185L	R3T285L	Class AA	(-50 to 200) °C
R5T185L	R5T285L	(1/5) Class B	(-30 to 150) °C
R1T192L	R1T292L	Grade B	(-200 to 200) °C
R3T192L	R3T292L	Class AA	(-50 to 200) °C
RBF185L	RBF285L	Class B	(-50 to 200) °C
RAF185L	RAF285L	Class A	(-30 to 200) °C
RBF195L	RBF295L	Class B	(-50 to 200) °C
R1T185H	R1T285H	Grade B	(-200 to 600) °C
RAT185H	RAT285H	Class A	(-100 to 450) °C
R1T192H	R1T292H	Grade B	(-200 to 600) °C

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

2-2 Sheath Diameters

CODE	DIAMETER (inches)
28	1/8 - 316 SS
38	3/16 - 316 SS
48	1/4 - 316SS
68	3/8 - 316SS

2-3 Element Connection

CODE	DESCRIPTION
2	2-wire
3	3-wire
4[1]	4-wire

[1] Not available in duplex or longer than 48" in L28 construction

2-2A

CODE	NOMINAL SHEATH DIAMETER (inches)	TIP DIA. O.D. (inches)	TIP LENGTH (inches)
88R48	1/2	1/4	1 1/4
68R38	3/8	3/16	1 1/4
48R28	1/4	1/8	1 1/4

Table 1-2A lists RTD elements with reduced tip sheaths. To order, use order code numbers from Tbl. 1-2A in place of straight sheath order code numbers from Tbl. 1-2. Other reduced tips are available upon request. EXAMPLE: R1T185L**88R483**-006.

2-4 Length

CODE
3 Digit 'X' Length

3-1 No Fitting or Bend Options

CODE	00

3-2 One-Time Adjustable Compression Fittings

CODE	TYPE	NPT SIZE (inches)	PRESSURE RATED	AVAILABLE SHEATH DIAMETERS (inches)
05A	316 Stainless steel	1/8	YES	1/16, 1/8, 3/16, 1/4
05B	316 Stainless steel	1/4	YES	1/8, 3/16, 1/4, 3/8
05C	316 Stainless steel	1/2	YES	1/8, 3/16, 1/4, 3/8

3-3 Re-Adjustable Compression Fittings

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

FEP gland standard 204 °C [400 °F] max. For lava gland 649 °C [1200 °F] max. opt. 12A, 12B, and 12C only use letter suffix "L" after compression fitting order code.
EXAMPLE: 12AL for lava gland.

3-4 Fixed Bushings

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

[1] 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.

3-5 Sheath Bends

CODE	DESCRIPTION
2 _ _	Sheath bent 45º
3 _ _	Sheath bent 90º

When ordering bend options, specify hot leg dim. "A". EX: order code 206 is a 45º bend with 6" hot leg. Total sheath length in Table 1, referred to as "X" length = hot leg plus cold leg.

3-6 Miscellaneous Options

CODE	TYPE	AVAILABLE SHEATH DIAMETER (inches)
13A _ _ [1]	Spring-loaded bayonet fitting	1/8, 3/16
14	Adjustable flange with brass compression fitting	1/8, 3/16, 1/4, 3/8
16A	Spring-loaded adjustable bayonet compression fitting	1/8

[1] When ordering fixed bayonet fitting specify dimension "A". EXAMPLE: order code 13A06 is for a fixed bayonet adapter with 6" A Dimension.

C SA US

Class I, Division 2, Groups A, B, C, D T6…T1
Class II, Division 2, Groups F, G
Class III, Division 2

Class I, Zone 2 Group IIC T6…T1
Zone 22 Group IIIB
Zone 22 IIIA

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Order Codes

Example Order Number: **HL05 - R5T185L483-006 - 05A - 16 - T3 036 - 3, CG**

(4) (5) (6-1) (6-2)

4 Leadwire transitions

CODE	DESCRIPTION
13[1]	Same size transition with heat-shrink tubing 104 ºC [220 ºF]
15	Extension leadwire transition with relief spring 204 ºC [400 ºF]
16	Extension leadwire transition with heat-shrink tubing 104 ºC [220 ºF]
18[1]	Same size transition without heat-shrink tubing 204 ºC [400 ºF]
19	Extension leadwire transition without spring or heat-shrink tubing 204 ºC [400 ºF]
	Options
HT[2]	High temperature potting 538 ºC [1000 ºF] not available with option 13 or 16

[1] Not available with flex armor
[2] Not available with option 13 or 16. When specifying high temp potting with Flex Armor option 19 must be selected

4 Threaded Fittings with Extension Leads

CODE	DESCRIPTION
6HN23	1/2" x 1/2" NPT steel hex nipple
8HN23	1/2" x 1/2" NPT stainless steel hex nipple
9HP23	1/2" NPT stainless steel bushing (no process threads)
8RNDC23	3/4" process x 1/2" NPT stainless steel hex nipple

5 Extension Leadwire Type and B + C Dimension

CODE	DESCRIPTION	TEMP. RATING
FIBERGLASS		
F3J_ _ _	Fiberglass insulation - individual leads - stranded conductor (12" limit)	482 ºC [900 ºF]
F3_ _ _	Fiberglass insulation - stranded conductor	
F3A_ _ _	Fiberglass insulation - stranded conductor - flexible armor	
F3B_ _ _	Fiberglass insulation - stranded conductor - stainless steel overbraid	
FLUOROPOLYMER		
T3J_ _ _	Fluoropolymer insulation - individual leads - stranded conductor (12" limit)	204 ºC [400 ºF]
T3_ _ _	Fluoropolymer insulation - stranded conductor	
T3A_ _ _	Fluoropolymer insulation - stranded conductor - flexible armor	
T3B_ _ _	Fluoropolymer insulation - stranded conductor - stainless steel overbraid	
M3_ _ _	Fluoropolymer insulation - stranded conductor - stainless steel overbraid - Fluoropolymer insulation	
T3M_ _ _	Fluoropolymer insulation - stranded conductor - polyester shield	
T3MA_ _ _	Fluoropolymer insulation - stranded conductor - polyester shield - flexible armor	
POLYIMIDE		
K3_ _ _	Polyimide insulation - stranded conductor	316 ºC [600 ºF]
K3A_ _ _	Polyimide insulation - stranded conductor - flexible armor	
K3B_ _ _	Polyimide insulation - stranded conductor - stainless steel overbraid	
SILICON RUBBER		
S3_ _ _	Fluoropolymer insulation - stranded conductor - silicon rubber	204 ºC [400 ºF]

Insert wire code number and 3 digit 'B' length in inches **EXAMPLE: T3036 = 36" B length**
For assemblies requiring leadwire beyond the flexible armor (illustrated in 'C' in drawing), insert 3 digit 'C' length after armor length.
EXAMPLE: F3A036 -012 = 36" B length with additional 12" 'C' length leads beyond armor.
All insulated leadwires in flexible armor are available with either extruded PVC or FEP covering over the flexible armor.
Substitute suffix codes T (FEP) or P (PVC) for the suffix 'A' code above. **EXAMPLE: T3T is FEP covered armor.**

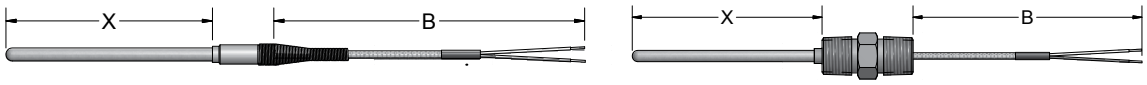
6-1 Terminations

CODE	DESCRIPTION
0	Leads not stripped
2	2" split leads, 1/4" stripped
3	2" split leads with spade lugs
8	2" split leads with 1/4" female quick disconnects

6-2 Options

CODE	DESCRIPTION
CG	Cord grip (1/2" NPT Nylon)

Hazardous location certified MgO thermocouple assemblies with extension leadwire are designed to measure temperature in a variety of process applications. These thermocouples are CSA Certified for use in US and Canada hazardous locations with non-incendive field wiring (see listing below). The following tables allow customer selection of various thermocouple types, sheath diameters, mounting fittings, wire types and terminations. See the Pyromation online configurator for additional options. Maximum sensor length including sheath and wire is 100 feet.



Order Codes

Example Order Number:

1		2-1	2-2	2-3	2-4	2-4 A		2-5		3		
HL05	-	K	4	8	G	M	-	012	-	05A	-	Finish part number on next page

1 Agency Approval

CODE	DESCRIPTION
HL05	Certified: US/CAN Non-Incendive; Div 2; Zone 2, 22

2-1 Thermocouple Types

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

2-2 Sheath Diameters

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

2-2 A Reduced-Tip MgO Thermocouples

CODE	NORMAL SHEATH DIA. O.D. (inches)	TIP DIA. (inches)	TIP LENGTH (inches)	MATERIAL
88R48	1/2	1/4	1 (1/4)	316 SS
68R38	3/8	3/16	1 (1/4)	316 SS
48R28	1/4	1/8	1 (1/4)	316 SS

Table 1-2 A lists thermocouple elements with reduced-tip sheaths. To order, use order code numbers from Tbl. 1-2 A in place of straight sheath order code numbers from Tbl. 1-2 and 1-3. EXAMPLE: J88R48

2-3 Sheath Materials

CODE	MATERIAL	STANDARD AVAILABLE TYPES
3	Alloy 600	K, N
4	310 Stainless steel	K
5	446 Stainless steel	K[1]
8	316 Stainless steel	E, J, K, T

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

2-4 Measuring Junctions

CODE	DESCRIPTION
G	Grounded junction
U	Ungrounded junction

2-4 A Special Options

CODE	DESCRIPTION
M	Special limits of error

Use this table only if options are desired.

2-5 "X" Dimension

Insert three digit sheath length ("X" Dimension) in inches

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

3-1 No Fitting or Bend Options

CODE	00

3-2 One-Time Adjustable Compression Fittings

CODE	TYPE	NPT SIZE (inches)	PRESSURE RATED	AVAILABLE SHEATH DIAMETERS (inches)
05A	316 Stainless steel	1/8	YES	1/16, 1/8, 3/16, 1/4
05B	316 Stainless steel	1/4	YES	1/8, 3/16, 1/4, 3/8
05C	316 Stainless steel	1/2	YES	1/8, 3/16, 1/4, 3/8

3-3 Re-Adjustable Compression Fittings

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

FEP gland standard 204 ºC [400 ºF] max. For lava gland 649 ºC [1200 ºF] max. opt. 12A, 12B, and 12C only use letter suffix "L" after compression fitting order code. EXAMPLE: 12AL for lava gland.

3-4 Fixed Bushings

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

[1] 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.

3-5 Sheath Bends

CODE	DESCRIPTION
2 _ _	Sheath bent 45º
3 _ _	Sheath bent 90º

When ordering bend options, specify hot leg dim. "A". EX: order code 206 is a 45º bend with 6" hot leg. Total sheath length in Table 1, referred to as "X" length = hot leg plus cold leg.

3-6 Weld Pads

CODE	DESCRIPTION
17	316 SS weld pad 1" x 1" x 1/4" thick perpendicular mount
18	316 SS weld pad 1" x 1" x 1/4" thick horizontal mount
17R	316 SS weld pad 1" x 1" x 1/8" thick perpendicular mount with radius bend (specify radius)
18R	316 SS weld pad 1" x 1" x 1/8" thick horizontal mount with radius bend (specify radius)

C SP US

Class I, Division 2, Groups A, B, C, D T6…T1
Class II, Division 2, Groups F, G
Class III, Division 2

Class I, Zone 2 Group IIC T6…T1
Zone 22 Group IIIB
Zone 22 IIIA

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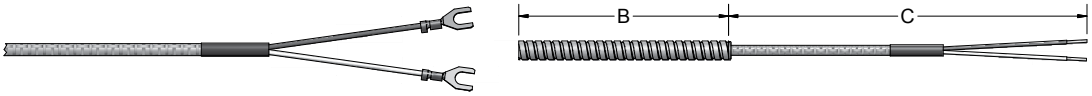


Order Codes

Example Order Number: **HL05 - K48GM - 012 - 00 - 05A - 15 - F1048 - 3, CG**

4 Leadwire Transitions

CODE	DESCRIPTION
15	Extension leadwire transition with relief spring 204 ºC [400 °F]
16	Extension leadwire transition with heat-shrink tubing 104 ºC [220 °F]
13[1]	Same size transition with heat-shrink tubing 104 ºC [220 °F]
18[1]	Same size transition without heat-shrink tubing 204 ºC [400 °F]
19	Extension leadwire transition w/o spring or heat-shrink tubing 204 ºC [400 °F]
	Options
HT[2]	High-temperature potting 538 ºC [1000 ºF]

[1] Not available with Flex Armor
[2] Not available with option 13 or 16. When specifying high temp potting with Flex Armor, Option 19 must be selected.

4 Threaded Fittings with Extension Leadwire

CODE	DESCRIPTION
6HN23	1/2" x 1/2" NPT steel hex nipple
8HN23	1/2" x 1/2" NPT stainless steel hex nipple
9HP23	1/2" NPT stainless steel bushing (no process threads)
8RNDC23	3/4" process x 1/2" NPT stainless steel hex nipple

5 Extension Leadwire Type

	CODE	DESCRIPTION	AVAILABLE CALIBRATIONS					TEMP. RATING
Fiberglass	F1	Fiberglass insulation - solid conductor	J	K	T	E	N	482 ºC [900 ºF]
	F1A	Fiberglass insulation - solid conductor - flexible armor	J	K	T	E	N	482 ºC [900 ºF]
	F1B	Fiberglass insulation - solid conductor - stainless steel overbraid	J	K	T	E		482 ºC [900 ºF]
	F3	Fiberglass insulation - stranded conductor	J	K	T	E		482 ºC [900 ºF]
	F3A	Fiberglass insulation - stranded conductor - flexible armor	J	K	T	E		482 ºC [900 ºF]
	F3B	Fiberglass insulation - stranded conductor - stainless steel overbraid	J	K	T			482 ºC [900 ºF]
Fluoropolymer	T3J	Individual stranded fluoropolymer leads - 12 inch limit	J	K				204 ºC [400 ºF]
	T1	Fluoropolymer insulation - solid conductor	J	K	T		N	204 ºC [400 ºF]
	T1A	Fluoropolymer insulation - solid conductor - flexible armor	J	K	T		N	204 ºC [400 ºF]
	T1B	Flouropolymer insulation - solid conductor - stainless steel overbraid	J	K				204 ºC [400 ºF]
	T1M	Fluoropolymer insulation - solid conductor - polyester shield	J	K				204 ºC [400 ºF]
	T3	Fluoropolymer insulation - stranded conductor	J	K	T	E		204 ºC [400 ºF]
	T3A	Fluoropolymer insulation - stranded conductor - flexible armor	J	K	T	E		204 ºC [400 ºF]
	T3B	Fluoropolymer insulation - stranded conductor - stainless steel overbraid	J	K				204 ºC [400 ºF]

Insert wire code number and 3 digit "B" length code. **Example: F1036 = 36" "B" length.**
For assemblies requiring leadwire beyond the flexible armor, illustrated as "C" in drawing, insert 3 digit "C" length after armor length. **Example: T1A036-012 = 36" "B" length with additional 12" "C" length leads beyond armor.**
Insulated leadwires in flexible armor are available with either extruded PVC or FEP covering over the flexible armor. Substitute suffix codes T (FEP) or P (PVC) for the suffix "A" code above. **Example: T3T is FEP covered armor.**
Duplex elements supplied with individual leads.

6-1 Terminations

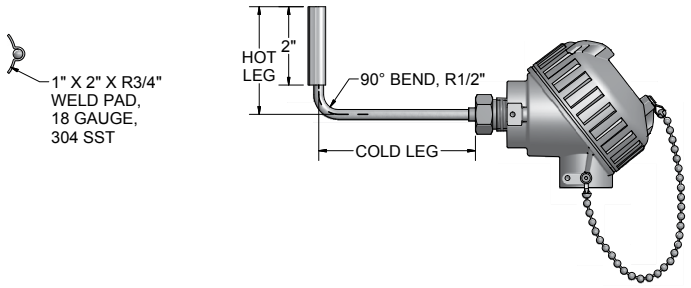
CODE	DESCRIPTION
0	Leads not stripped
2	2" split leads, 1/4" stripped
3	2" split leads with spade lugs
8	2" split leads with 1/4" quick disconnect female terminal lugs

6-2 Options

CODE	DESCRIPTION
CG	Cord grip (1/2" Nylon)

XP08 Heat-Tracing RTD Assemblies

Hazardous location certified Heat-Tracing Thermocouple assemblies are designed for use in systems that measure the surface temperature of process pipe that is carrying products whose temperatures must be controlled to prevent freeze-up, or to maintain a viscosity level so that the inner medium will flow. These products are CSA Certified for use in US and Canada hazardous locations with non-incendive field wiring, Ingress Protection: IP66 (see listing below). The service temperature range for Certified Assemblies is limited to -40°C to 435°C and the T-code corresponds to the higher ambient or process temperature. These Thermocouples are offered in a variety of temperature ranges and are supplied with a 316SS sheath, and a 3/4" radius stainless steel mounting pad.



Order Codes

Example Order Number:

1-0		2-0	2-1	2-2		3-0		4-0		5-0	5-1
HL05	-	RBF185L	48	3	-	HT	-	0304	-	18RD	-	31,OR,GS	I

1-0 Agency Approval

CODE	DESCRIPTION
HL05	Certified: US/CAN Non-Incendive; Div 2; Zone 2, 22

2-0 100 Ω Platinum RTD Elements α = 0.003 85 °C^{-1}

CODE		TOLERANCE[1]	TEMP. RANGE[1]
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
RBF185M	RBF285M	Class B	(-40 to 485) °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

CODE	DIAMETERS (inches) 316 SS
48	1/4
68	3/8

2-2 Element Connection

CODE	DESCRIPTION
2	2-wire element
3	3-wire element
4	4-wire element

3-0 Sheath Lengths

CODE	HOT LEG (inches)	COLD LEG (inches)
0304	3	4
0306	3	6
0308	3	8

Consult factory for other hot leg lengths or cold leg lengths.

4-0 Radius Mounting Pads 1" W x 2" L x 18 Ga. 304 SS

CODE	RADIUS (inches)	NPT PIPE SIZE (inches)
18RD	3/4	1 1/2

Mounting pad is flexible enough to be formed around pipe sizes from 1" to 12" NPS pipe.

5-0 Standard Head Terminations

CODE	DESCRIPTION
31,OR,GS	Aluminum screw-cover head, Class I Div II; Type 4X/IP66
34,OR,GS	Cast Iron screw-cover head, Class I Div II; Type 4X/IP66
91,OR,GS	316L Stainless Steel screw-cover head, Class I Div II; Type 4X/IP66

5-1 Standard Head Options

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

See transmitter ordering information in back of section

C SP US

Class I, Division 2, Groups A, B, C, D T6…T1
Class II, Division 2, Groups F, G
Class III, Division 2

Class I, Zone 2 Group IIC T6…T1
Zone 22 Group IIIB
Zone 22 IIIA

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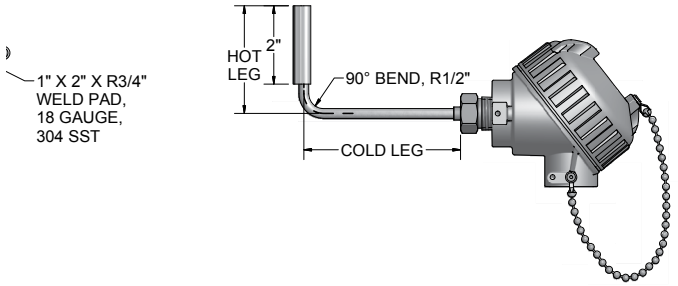
Hazardous location certified Heat-Tracing RTD assemblies are designed for use in systems that measure the surface temperature of process pipe that is carrying products whose temperatures must be controlled to prevent freeze-up, or to maintain a viscosity level so that the inner medium will flow. These products are CSA Certified for use in US and Canada hazardous locations with non-incendive field wiring, Ingress Protection: IP66 (see listing below). The service temperature range for Certified Assemblies is limited to -40°C to 435°C and the T-code corresponds to the higher ambient or process temperature. These RTDs are offered in a variety of temperature ranges and are supplied with a 316SS sheath, and a 3/4" radius stainless steel mounting pad.



Order Codes

Example Order Number:

1-0		2-0	2-1	2-2		3-0		4-0		5-0	5-1
HL05	-	J	48	U	-	HT	-	0304	-	18RD	-	91,OR,GS	I

1-0 Agency Approval

CODE	DESCRIPTION
HL05	Certified: US/CAN Non-Incendive; Div 2; Zone 2, 22

2-0 Thermocouple Types

CODE	
SINGLE	*DUPLEX*
E	EE
J	JJ
K	KK
T	TT

2-1 316 SS Sheath Diameters and Insulation Type

CODE	DIAMETER (inches)	Insulation Type
48	1/4	MgO
68	3/8	MgO
P48	1/4	Fiberglass
P68	3/8	Fiberglass

2-2 Measuring Junction

CODE	DESCRIPTION
U	Ungrounded
ELEMENT OPTIONS	
M	Special Limits of Error

3-0 Sheath Lengths

CODE	HOT LEG (inches)	COLD LEG (inches)
0304	3	4
0306	3	6
0308	3	8
Consult factory for other hot leg lengths or cold leg lengths.		

4-0 Radius Mounting Pads 1" W x 2" L x 18 Ga. 304 SS

CODE	RADIUS (inches)	NPT PIPE SIZE (inches)
18RD	3/4	1 1/2
Mounting pad is flexible enough to be formed around pipe sizes from 1" to 12" NPS pipe.		

5-0 Standard Head Terminations

CODE	DESCRIPTION
31,OR,GS	Aluminum screw-cover head, Class I Div II; Type 4X/IP66
34,OR,GS	Cast Iron screw-cover head, Class I Div II; Type 4X/IP66
91,OR,GS	316L Stainless Steel screw-cover head, Class I Div II; Type 4X/IP66

5-1 Standard Head Options

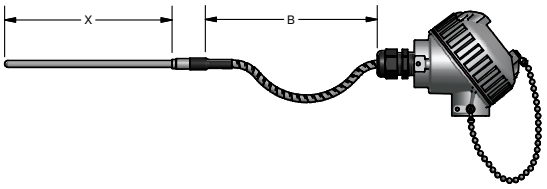
CODE	DESCRIPTION
I	Stainless Steel Tag
SB	1/2" NPT conduit reducer bushing
T71	4-20 mA isolated head-mounted transmitter
T72	4-20 mA HART® isolated head-mounted transmitter
T82-00	(4 to 20) mA dual input HART® head-mounted transmitter
See transmitter ordering information in back of section	

C SA US

Class I, Division 2, Groups A, B, C, D T6…T1
Class II, Division 2, Groups F, G
Class III, Division 2

Class I, Zone 2 Group IIC T6…T1
Zone 22 Group IIIB
Zone 22 IIIA

Hazardous location certified Remote-mounted RTD assemblies are designed for applications where space is limited, or where high ambient temperatures or excessive heat conduction exist. These products are CSA Certified for use in US and Canada hazardous locations with non-incendive field wiring, Ingress Protection: IP56 (see listing below). The service temperature range for Certified Assemblies is limited to -40°C to 435°C and the T-code corresponds to the higher ambient or process temperature. These assemblies are available in a variety of element types, accuracies, sheath diameters, process connections, and head options. They are also available with a variety of optional head-mounted temperature transmitters. Total sensor length cannot exceed 100 feet.



Order Codes

Example Order Number:

1-0		1-1	1-2	1-3		2-0		3-0		4-0		5-0		6-0	6-1
HL05	-	R1T185L	48	3	-	012	-	00	-	16	-	T3P048	-	AG	31,OR,GS

1-0 Agency Approval

CODE	DESCRIPTION
HL05	Certified: US/CAN Non-Incendive; Div 2; Zone 2, 22

1-1 Pt100 (α = 0.003 85 °C⁻¹) RTD Assemblies

CODE		TOLERANCE[1]	TEMPERATURE RANGE[1]
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 450°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.

1-2 Sheath - 316 SS

CODE	DIAMETER (inches)
38	3/16"
48	1/4"
68	3/8"

1-3 Element Connection

CODE	DESCRIPTION
3	3 wires
4	4 wires

2-0 Sheath Length

Specify 3 digit "X" length in inches

3-0 Sheath Mounting Fittings

CODE	DESCRIPTION	NPT SIZE (inches)
00	No fitting or bushing	
COMPRESSION FITTINGS		
05A	316 SS One-time adjustable	1/8"
05B	316 SS One-time adjustable	1/4"
05C	316 SS One-time adjustable	1/2"
12A	316 SS Readjustable	1/8"
12B	316 SS Readjustable	1/4"
12C	316 SS Readjustable	1/2"
19C	303 SS Spring-loaded well fitting	1/2"

4-0 Leadwire Transitions

CODE	DESCRIPTION
15	Extension leadwire transition with relief spring 204°C
16	Extension leadwire transition with heat-shrink tubing 104°C
19	Extension leadwire transition with no strain relief 204°C

5-0 Extension Leadwire "B" Dimensions

CODE	DESCRIPTION
T3A[1]	Fluoropolymer insulation, stranded conductor, flexible armor
T3P[1]	Fluoropolymer insulation, stranded conductor, PVC-coated flexible armor
T3T[1]	Fluoropolymer insulation, stranded conductor, FEP-coated flexible armor

[1] Insert 3 digit "B" length in inches.

6-1 Head Terminations

CODE	DESCRIPTION
31,OR,GS	Aluminum screw-cover head, Class I Div II; Type 4X/IP66
34,OR,GS	Cast Iron screw-cover head, Class I Div II; Type 4X/IP66
91,OR,GS	316L stainless steel screw-cover head, Class I Div II; Type 4X/IP66
Options	
I	Stainless Steel Tag
SB	1/2" NPT conduit reducer bushing
T71	(4 to 20) mA isolated head-mounted transmitter
T72	(4 to 20) mA isolated HART® head-mounted transmitter
T82-00	(4 to 20) mA isolated HART® dual Input head-mounted transmitter

6-0 Head Mounting Fittings

CODE	DESCRIPTION
8HN	1/2" x 1/2" NPT Stainless steel hex nipple
9HP	1/2" NPT Stainless steel bushing (no process threads)
8RNDC	1/2" x 3/4" NPT Stainless steel hex nipple
CG	Nylon cord grip
AG	Aluminum cord grip

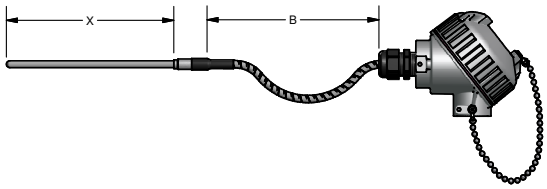
C SP US

Class I, Division 2, Groups A, B, C, D T6…T1
Class II, Division 2, Groups F, G
Class III, Division 2

Class I, Zone 2 Group IIC T6…T1
Zone 22 Group IIIB
Zone 22 IIIA

pyromation inc. beyond measure

Hazardous location certified Remote-mounted thermocouple sensor assemblies are designed for applications where space is limited, or where high ambient temperatures or excessive heat conduction exist. These products are CSA Certified for use in US and Canada hazardous locations with non-incendive field wiring, Ingress Protection: IP56 (see listing below). The service temperature range for Certified Assemblies is limited to -40°C to 435°C and the T-code corresponds to the higher ambient or process temperature. They are available in a variety of thermocouple types, sheath diameters, sheath materials, process connections, and head options. They are also available with a variety of optional head-mounted temperature transmitters. Total sensor length cannot exceed 100 feet.



Order Codes

Example Order Number:

1-0		1-1	1-2	1-3	1-4		2-0		3-0		4-0		5-0		6-0	6-1
HL05	-	K	4	8	U	-	018	-	00	-	16	-	T3T120	-	CG	91,OR,GS

1-0 Agency Approval

CODE	DESCRIPTION
HL05	Certified: US/CAN Non-Incendive; Div 2; Zone 2, 22

1-1 Thermocouple Type — 1-2 Sheath Diameter

CODE	
SINGLE	*DUPLEX*
E	EE
J	JJ
K	KK
N	NN
T	TT

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

1-3 Sheath Material

CODE	DESCRIPTION	AVAILABLE SHEATH TYPES
3	Alloy 600	K, N
8	316 Stainless steel	E, J, K, T

1-4 Junction Type

CODE	DESCRIPTION
G	Grounded
U	Ungrounded

2-0 Sheath Length

Specify 3 digit "X" length in inches

3-0 Sheath Mounting Fittings

CODE	DESCRIPTION	NPT SIZE (inches)
00	No fitting or bushing	
COMPRESSION FITTINGS		
05A	316 SS One-time adjustable	1/8"
05B	316 SS One-time adjustable	1/4"
05C	316 SS One-time adjustable	1/2"
12A	316 SS Readjustable	1/8"
12B	316 SS Readjustable	1/4"
12C	316 SS Readjustable	1/2"
19C	303 SS Spring-loaded well fitting	1/2"

4-0 Leadwire Transitions

CODE	DESCRIPTION
15	Extension leadwire transition with relief spring 204°C
16	Extension leadwire transition with heat-shrink tubing 104°C
19	Extension leadwire transition with no strain relief 204°C

5-0 Extension Leadwire "B" Dimensions

CODE	DESCRIPTION
T3A[1]	Fluoropolymer insulation, stranded conductor, flexible armor
T3P[1]	Fluoropolymer insulation, stranded conductor, PVC-coated flexible armor
T3T[1]	Fluoropolymer insulation, stranded conductor, FEP-coated flexible armor
[1] Insert 3 digit "B" length in inches.	

6-1 Head Terminations

CODE	DESCRIPTION
31,OR,GS	Aluminum screw-cover head, Class I Div II; Type 4X/IP66
34,OR,GS	Cast Iron screw-cover head, Class I Div II; Type 4X/IP66
91,OR,GS	316L stainless steel screw-cover head, Class I Div II; Type 4X/IP66
Options	
I	Stainless Steel Tag
SB	1/2" NPT conduit reducer bushing
T71	(4 to 20) mA isolated head-mounted transmitter
T72	(4 to 20) mA isolated HART® head-mounted transmitter
T82-00	(4 to 20) mA isolated HART® dual Input head-mounted transmitter

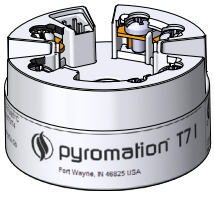
6-0 Head Mounting Fittings

CODE	DESCRIPTION
8HN	1/2" x 1/2" NPT Stainless steel hex nipple
9HP	1/2" NPT Stainless steel bushing (no process threads)
8RNDC	1/2" x 3/4" NPT Stainless steel hex nipple
CG	Nylon cord grip
AG	Aluminum cord grip

C SA US

Class I, Division 2, Groups A, B, C, D T6…T1
Class II, Division 2, Groups F, G
Class III, Division 2

Class I, Zone 2 Group IIC T6…T1
Zone 22 Group IIIB
Zone 22 IIIA





Order Codes

Example Order Number:

1-0		1-1	1-2	1-3		1-4	1-5		1-6
T72-00	-	3	85	U	-	S(0-200)	C	-	B

1-0 Transmitter Type

CODE	DESCRIPTION
T71-00	(4 to 20) mA isolated programmable transmitter
T72-00	(4 to 20) mA isolated programmable HART® head-mounted transmitter

1-1 Input Type

CODE	DESCRIPTION
00[1]	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	

1-2 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 (α = 0.003 85 $°C^{-1}$)
92	100 ohm platinum (α = 0.003 92 $°C^{-1}$)
95	1000 ohm platinum (α = 0.003 85 $°C^{-1}$)

1-3 Failure Mode

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

1-4 Range

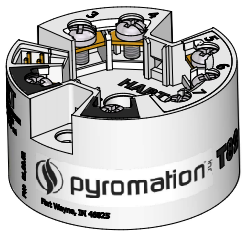
CODE	DESCRIPTION
S	(lower limit – upper limit)

1-5 Unit of Measure

CODE	DESCRIPTION
C	Celsius
F	Fahrenheit

1-6 Options

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



Order Codes

Example Order Number:

1-0		1-1		1-2		1-3		1-4		1-5		1-6		1-7		1-8
T82-00	-	**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)

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 (α = 0.003 85 $^{\circ}C^{-1}$)
55	500 ohm platinum (α = 0.003 85 $^{\circ}C^{-1}$)
95	1000 ohm platinum (α = 0.003 85 $^{\circ}C^{-1}$)

1-3 Sensor Input Channel 2

CODE	DESCRIPTION	CODE	DESCRIPTION
J	Type J thermocouple	E	Type E thermocouple
K	Type K thermocouple	R	Type R thermocouple
T	Type T thermocouple	S	Type S thermocouple
N	Type N thermocouple	B	Type B thermocouple
00	No second channel		
85	100 ohm platinum (α = 0.003 85 $^{\circ}C^{-1}$)		
55	500 ohm platinum (α = 0.003 85 $^{\circ}C^{-1}$)		
95	1000 ohm platinum (α = 0.003 85 $^{\circ}C^{-1}$)		

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

1-5 Failure Mode

CODE	DESCRIPTION
U	Upscale Burnout ≥ 23 mA
D	Downscale Burnout ≤ 3 mA

1-6 Range

CODE	DESCRIPTION
S	(lower limit – upper limit)

1-7 Unit of Measure

CODE	DESCRIPTION
C	Celsius
F	Fahrenheit

1-8 SIL Option

CODE	DESCRIPTION
SIL	Safety Integrity Level SIL2 and Supports SIL3

North American Certifications for Hazardous Locations

Pyromation Non-Incendive temperature sensor assemblies are made for use in U.S. and Canadian hazardous areas where there is a low risk of an explosive atmosphere. These designs are incapable of causing ignition of a flammable gas, vapor, or dust-air mixture due to arcing or thermal effects under normal operating conditions. They are certified for use in the below locations.

- Class I, Division 2, Groups A,B,C,D T6...T1
- Class II, Division 2, Groups F,G
- Class III, Division 2
- Class I, Zone 2 Group IIC T6...T1
- Zone 22 Group IIIB
- Zone 22 IIIA

C SA US

HL05-0925

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Operating since 1962, Pyromation is the premier temperature sensor manufacturer in North America. From RTDs and thermocouples to thermowells, connection heads, accessories and complete assemblies, Pyromation can make the right temperature sensor for your process and deliver it faster than anyone in the industry. A broad product line, industry experience, friendly customer service and quick delivery make Pyromation the best choice for your temperature measurement applications. For more information, please call us or visit www.pyromation.com.

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beyond measure

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