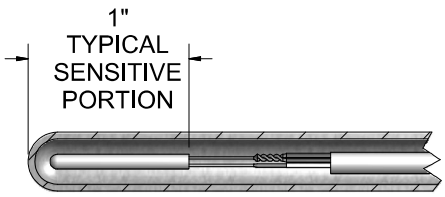
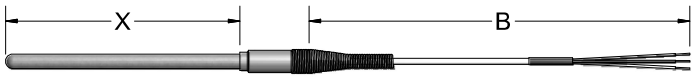
RTD

Configuration Code RT01
RTD Assemblies with Extension Leadwire
Configuration Code RT02
RTD Assemblies with Sheath Terminations

The RTD elements illustrated and described on this page are designed to measure temperature in a variety of process and laboratory applications. These RTDs are specifically designed for use in two different process temperature ranges and will provide accurate and repeatable temperature measurement through a broad range. Low range RTDs are constructed using fluoropolymer-insulated, silver-plated copper internal leads with potting compounds to resist moisture penetration. High range RTDs are constructed with nickel internal leads inside swaged MgO insulated cable to allow higher temperature measurements at the RTD element and provide higher temperature lead protection along the sheath. The following tables allow customer selection of standard element materials, tolerances, sheath diameters, mounting fittings and terminations. Custom-built assemblies with non-standard specifications are available upon request.





ORDER CODES

Example Order Number:

1-1	1-2(A)	1-3		1-4		Page RTD-2		Page RTD-3		Page RTD-4		Page RTD-5
R5T185L	48	3	-	006	-		-		-		-	

1-1 Single Platinum RTD Elements

1-2 Available Sheath Diameters 316SS

CODE	TOLERANCE[1]	TEMP. RANGE	BASE RESISTANCE @ 0 °C (R_0)	TEMPERATURE COEFFICIENT	CODE			
					1/8" O.D.	*3/16" O.D.*	*1/4" O.D.*	*3/8" O.D.*
R1T185L	Grade B	(-200 to 200) °C	100 Ω	α = 0.003 85 °C^{-1}	28	38	48	68
R3T185L	Class AA	(-50 to 200) °C	100 Ω	α = 0.003 85 °C^{-1}	28	38	48	68
R5T185L	(1/5) Class B	(-30 to 150) °C	100 Ω	α = 0.003 85 °C^{-1}	28	38	48	68
R1T192L	Grade B	(-200 to 200) °C	100 Ω	α = 0.003 92 °C^{-1}	28	38	48	68
R3T192L	Class AA	(-50 to 200) °C	100 Ω	α = 0.003 92 °C^{-1}	28	38	48	68
RBF185L	Class B	(-50 to 200) °C	100 Ω	α = 0.003 85 °C^{-1}	28	38	48	68
RAF185L	Class A	(-30 to 200) °C	100 Ω	α = 0.003 85 °C^{-1}	28	38	48	68
RBF195L	Class B	(-50 to 200) °C	1000 Ω	α = 0.003 85 °C^{-1}	28	38	48	68
R1T185H	Grade B	(-200 to 600) °C	100 Ω	α = 0.003 85 °C^{-1}	28	38	48	68
RAT185H	Class A	(-100 to 450) °C	100 Ω	α = 0.003 85 °C^{-1}	28	38	48	68
R1T192H	Grade B	(-200 to 600) °C	100 Ω	α = 0.003 92 °C^{-1}	28	38	48	68

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

1-4 Length

CODE
3 Digit 'X' Length

1-3 Element Connection

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

[1] Not available in duplex

1-1 Duplex Platinum RTD Elements

1-2 Available Sheath Diameters 316SS

CODE	TOLERANCE[1]	TEMP. RANGE	BASE RESISTANCE @ 0 °C (R_0)	TEMPERATURE COEFFICIENT	CODE		
					3/16" O.D.	*1/4" O.D.*	*3/8" O.D.*
R1T285L	Grade B	(-200 to 200) °C	100 Ω	α = 0.003 85 °C^{-1}	38	48	68
R3T285L	Class AA	(-50 to 200) °C	100 Ω	α = 0.003 85 °C^{-1}	38	48	68
R5T285L	(1/5) Class B	(-30 to 150) °C	100 Ω	α = 0.003 85 °C^{-1}	38	48	68
R1T292L	Grade B	(-200 to 200) °C	100 Ω	α = 0.003 92 °C^{-1}	38	48	68
R3T292L	Class AA	(-50 to 200) °C	100 Ω	α = 0.003 92 °C^{-1}	38	48	68
RBF285L	Class B	(-50 to 200) °C	100 Ω	α = 0.003 85 °C^{-1}	38	48	68
RAF285L	Class A	(-30 to 200) °C	100 Ω	α = 0.003 85 °C^{-1}	38	48	68
RBF295L	Class B	(-50 to 200) °C	1000 Ω	α = 0.003 85 °C^{-1}	38	48	68
R1T285H	Grade B	(-200 to 600) °C	100 Ω	α = 0.003 85 °C^{-1}	38	48	68
RAT285H	Class A	(-100 to 450) °C	100 Ω	α = 0.003 85 °C^{-1}	38	48	68
R1T292H	Grade B	(-200 to 600) °C	100 Ω	α = 0.003 92 °C^{-1}	38	48	68

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

1-2A

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

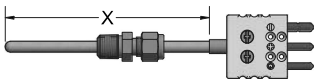
REDUCED-TIP RTD's

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.

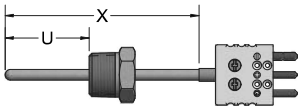
Configuration Code RT01
Configuration Code RT02
Optional Sheath Mounting Fittings and Bends

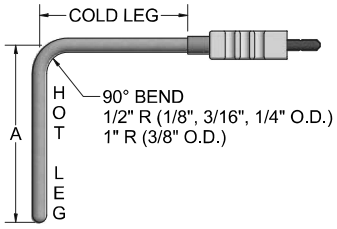
Select Sheath Mounting or Bend Options as desired from tables below.

COMPRESSION FITTING

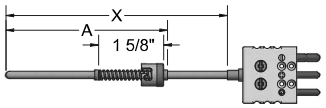


FIXED BUSHING

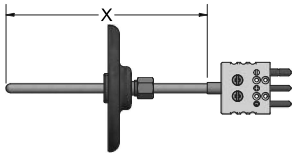




BAYONET CAP and SPRING (OPTION 13A)



ADJUSTABLE FLANGE (OPTION 14)



ORDER CODES

Example Order Number: **R5T185L483-006 - 05A,304 - PAGE RTD 3 - PAGE RTD 4 - PAGE RTD 5**

(2)

2-1 No Fitting or Bend Options

CODE	00

2-2 One-time Adjustable Compression Fittings

CODE	TYPE	NPT SIZE (inches)	PRESSURE RATED	AVAILABLE SHEATH DIAMETERS (inches)
05A	316 stainless steel	1/8	YES	1/8, 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
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

2-3 Re-adjustable Compression Fittings

CODE	TYPE	NPT SIZE (inches)	AVAILABLE SHEATH DIAMETERS (inches)
12A	316 stainless steel	1/8	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
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 ºC [400 °F] max. For lava gland 649 ºC [1200 °F] max. opt. 12A, 12B, and 12C only use letter suffix "L" after compression fitting order code. EXAMPLE: 12AL for lava gland.

2-6 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.

2-5 Fixed Bushings

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

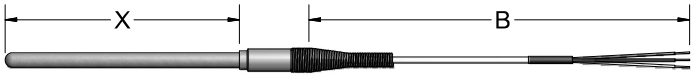
[1] When ordering fixed bushings, specify order code above, plus insertion length "U", as measured from hot tip to bottom of threaded bushing. EXAMPLE: order code 8A06 is 1/8" NPT, 316 SS bushing located 6" from hot tip.

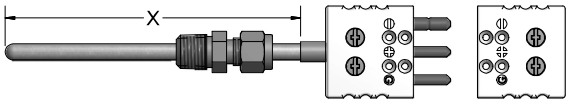
2-4 Sheath Bends

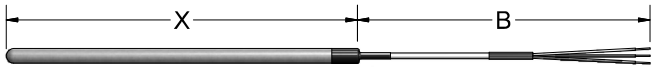
CODE	DESCRIPTION
2 _ _	Sheath bent 45º
3 _ _	Sheath bent 90º

2" minimum hot leg length

When ordering bend options, specify hot leg dim. "A". EXAMPLE: order code 206 is a 45° bend with 6" hot leg. Total sheath length is Table 1 "X" length = hot leg plus cold leg.







RT02 ORDER CODES RT01

Example Order Number:

R5T185L483-006-00 - 4, MC (3-1) **or R5T185L483-006-01A,304 - 16** (3-2) **- PAGE RTD-4 - PAGE RTD-5**

3-1 Plug and Jack Sheath Terminations

CODE	DESCRIPTION
4	Standard plug
5	Standard jack
6[1]	Miniature plug
7[1]	Miniature jack
	Options
MC	Mating connector
CL[2]	Compression L bracket to hold plug to sheath

[1] Not available with 1/4" O.D. or 3/8" O.D. sheath
[2] Not available with miniature connector

3-2 Leadwire transitions

(Requires Table 4 and 5 selections)

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

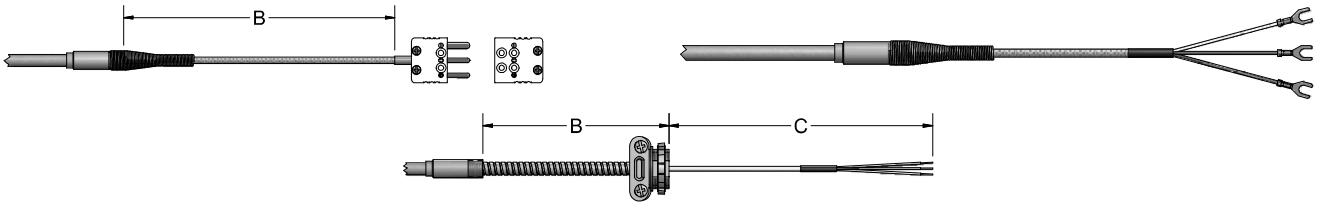
[2] Not available with option 13 or 16. When specifying high temp potting with Flex Armor option 19 must be selected.

3-2 Threaded Fittings with Extension Leadwire

(Requires Table 4 and 5 selections)

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

Select desired leadwire type by order code number, followed by desired length in inches.



ORDER CODES

Example Order Number: **R5T185L483-006-01A,304-16 - T3 036 - PAGE RTD-5**

4 5

4 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]
COIL CORDS		
C3060	PVC insulation - stranded conductor - coil cord - 60" extended length	104 ºC [220 ºF]
C3120	PVC insulation - stranded conductor - coil cord - 120" extended length	

Insert wire code number and 3 digit 'B' length in inches EXAMPLE: T3036 = 36" B length

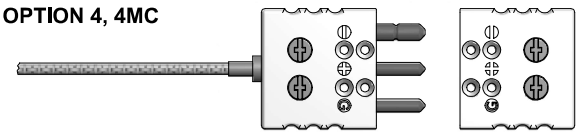
For assemblies requiring leadwire beyond the flexible armor (illustrated in 'C' in drawing), insert 3 digit 'C' length after armor length.
EXAMPLE: F3A036 -012 = 36" B length with additional 12" 'C' length leads beyond armor.

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.

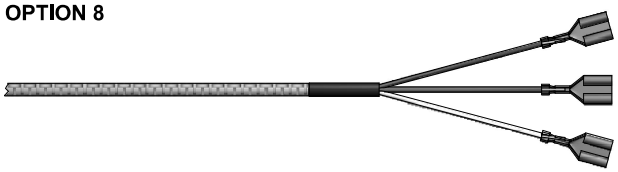
Select desired leadwire termination and options (if desired), by order code numbers below.

OPTION 3

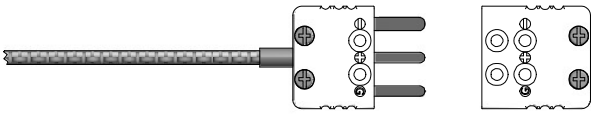
OPTION 4, 4MC



OPTION 8



OPTION 6, 6MC



ORDER CODES

Example Order Number: **R5T185L483-006-01A,304-16-T3036 - 4, MC**

5-1 5-2

5-1 Terminations

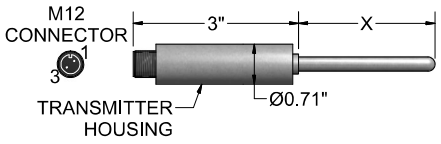
CODE	DESCRIPTION
0	Leads not stripped
2	2" split leads, 1/4" stripped
3	2" split leads with spade lugs
4	Standard plug
5	Standard jack
6	Miniature plug
7	Miniature jack
8	2" split leads with 1/4" female quick disconnects

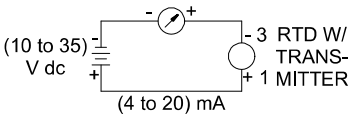
5-2 Options

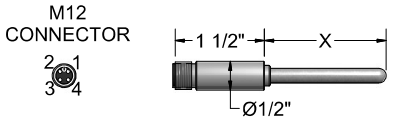
CODE	DESCRIPTION
BX	1/2" NPT BX connector with Options 0, 2, 3, or 8
CC	Plug or jack secured to leads with cable clamp
CG	Cord grip (1/2" NPT PVC)
MC	Mating connector
RB	Rubber boot

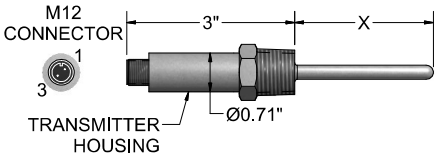
Configuration Code RT03
Water-Tight RTD Assembly
With Optional Series 450 Temperature Transmitter

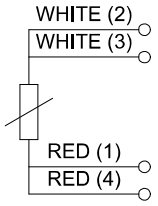
These RTD Assemblies house an optional Series 450 Temperature Transmitter (no connection head is required) that is ideal for monitoring temperature in small areas such as tanks and pipes. The water-tight construction meets the NEMA 6, IP67 Protection Rating requirements. Standard units include a sensor, an M12 process connection housing, and optional transmitter.The transmitter is a 2-wire unit with an analog output. It has measurement input for Pt100 resistance thermometers (RTD) in 4-wire connections. Transmitters can be ranged from (-51 to 160) ºC [-60 to 320] ºF. With a 10 ºC [18 ºF] minimum span requirement. **The ambient temperature limits for the M12 connector is (-40 to 85) ºC.**

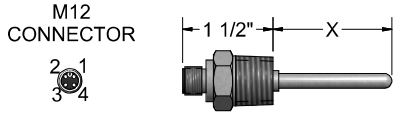












ORDER CODES

Example Order Number:

1	2		3		4		5		6		7		8	9
R1T185L	484	-	06	-	00	-	C45, T	-	450	-	U	-	S(0-200)	F

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

CODE	TOLERANCE[1]
R1T185L	Grade B
R3T185L	Class AA
R5T185L	(1/5) Class B
RAF185L	Class A
RBF185L	Class B

[1] Refer to RTD tolerance information in the General information section for calcalations to determine specific tolerance at temperature. See Instrument Section for total sensor and transmitter output accuracy.

2 316 S.S. Sheath

CODE	DIAMETER O.D. (inches)
284	1/8
384	3/16
484	1/4

3 Immersion Length "X"

Specify "X" length in inches using 2 digits, plus any fractional length desired. EXAMPLE: 04 = 4", 04(1/2) = 4.5"

4-1 Sheath Fittings

CODE	
00	No Fitting

4-2 Re-Adjustable Compression Fittings

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

FEP gland standard 204 ºC [400 ºF] max.

4-3 One-Time Adjustable Compression Fittings

CODE	DESCRIPTION	NPT (inches)	AVAILABLE SHEATH DIAMETERS (inches)
05A	Stainless Steel	1/8	1/8, 3/16, 1/4
05B	Stainless Steel	1/4	1/8, 3/16, 1/4
05C	Stainless Steel	1/2	1/8, 3/16, 1/4

4-4 316SS Fixed Bushings[1]

CODE	MOUNTING THREAD NPT (inches)	AVAILABLE SHEATH DIAMETERS (inches)
8A_ _	1/8	1/8, 3/16, 1/4
8B_ _	1/4	1/8, 3/16, 1/4
8C_ _	1/2	1/8, 3/16, 1/4
8D_ _	3/4	1/8, 3/16, 1/4

[1] Requires Table 5 - Option 45 Selection

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

5 M12 Connector Termination

CODE	DESCRIPTION
45	No process connection
C45	1/2" NPT process connection
B45	1/4" NPT process connection
D45	3/4" NPT process connection
OPTIONAL TRANSMITTER	
T	4 to 20 mA Temperature Transmitter (Requires Table 6 selection)

6 Transmitter

CODE	DESCRIPTION
450-00	Programmable transmitter-unconfigured
450	Programmable transmitter-configured

7 Fault Signal

CODE	DESCRIPTION
U	Upscale burnout
D	Downscale burnout

8 Range

CODE	DESCRIPTION
S	(lower limit - upper limit)

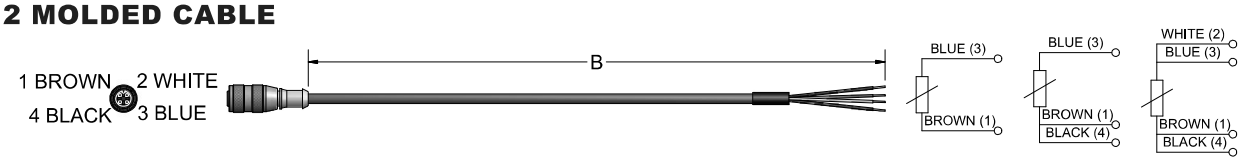
9 Units

CODE	DESCRIPTION
C	Celsius
F	Fahrenheit

M12 Molded and Field-Wireable cables are available for connection to Pyromation Water-Tight Assemblies with Optional Series 450 Transmitters. The M12 quick disconnect plug eliminates all external screw connections, simplifying the electrical installation process and solving the problems caused by moisture, loose connections, and corrosion. They are easier to install and more secure than conventional field-wired connections. Both are available in 2-, 3-, and 4-wire connection options, and in straight or 90º angle styles. Molded cables are PVC insulated and meet NEMA 1, 3, 4, 6 and IEC IP67. Field-Wireable Cable insulations are listed below and meet IP67 requirements. Cable lengths are manufactured to customer specifications. All M12 Molded Cables are supplied as 4-wire and are terminated as specified in part number.

ORDER CODES

M12 MOLDED CABLE



Example Order Number: **RT3E46MS - P3072 - 2** (1 - 2 - 3)

1 M12 Connector Options

CODE	NUMBER OF WIRES	DESCRIPTION
RT2E46MS	2	Straight M12 Molded Connector
RT3E46MS	3	
RT4E46MS	4	
RT2E46MA	2	90º Angle M12 Molded Connector
RT3E46MA	3	
RT4E46MA	4	

2 Extension Cable

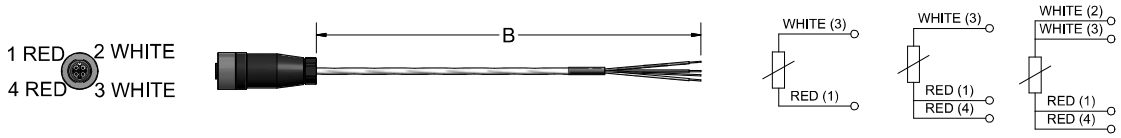
CODE	DESCRIPTION
P3_ _ _ [1]	22 AWG PVC insulation
[1] Insert length in inches	

3 Terminations and Options

CODE	DESCRIPTION
0	No termination
2	2" split leads, 1/4" stripped
3	2" split leads with spade lugs
4	Standard plug
5	Standard Jack
Options	
BX	Box connector
CC	Cable clamp
CG	Cord Grip (1/2" PVC)
MC	Mating connector
RB	Rubber boot

ORDER CODES

M12 FIELD-WIREABLE CABLES



Example Order Number: **RT3E46S - T3072 - 2** (1 - 2 - 3)

1 M12 Connector Options

CODE	NUMBER OF WIRES	DESCRIPTION
RT2E46S	2	Straight M12 Connector
RT3E46S	3	
RT4E46S	4	
RT2E46A	2	90º Angle M12 Connector
RT3E46A	3	
RT4E46A	4	

2 Extension Leadwire and B + C Dimension

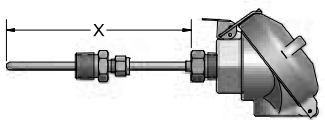
CODE[1]	WIRE DESCRIPTION
P3 _ _ _	Stranded; PVC insulation
T3 _ _ _	Stranded; fluoropolymer insulation
T3M_ _ _	Stranded; fluoropolymer with aluminum polyester shield and drain
[1] Insert 3 digit B length in inches. EXAMPLE: T3036=36" B length.	

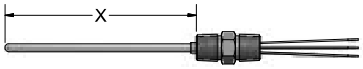
3 Terminations and Options

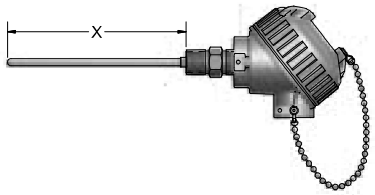
CODE	DESCRIPTION
0	No termination
2	2" split leads, 1/4" stripped
3	2" split leads with spade lugs
4	Standard plug
5	Standard jack
6	Miniature plug
7	Miniature jack
8	2" split leads with 1/4" female disconnects
Options	
BX	Box connector
CC	Cable clamp
CG	Cord Grip (1/2" PVC)
MC	Mating connector
RB	Rubber boot

Configuration Code GP01
Fixed-Sheath RTD Assemblies with General-Purpose Connection Heads

Fixed-Sheath RTD Assemblies with General-Purpose 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 RTD assemblies are supplied with a 316 stainless steel sheath in several diameters. They are available in various tolerances and temperature ranges as noted below.







ORDER CODES

	1-0	1-1	1-2		2-0		3		4-0	4-1	4-2		
Example Order Number:	**RBF185L**	**48**	**3**	**-**	**006(1/2)**	**-**	**00**	**-**	**8HN**	**31,**	**SB,**	**T-**	Select Type and Range from back of section

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

CODE		TOLERANCE[1]	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.

1-1 Sheath Diameters

CODE	DIAMETERS (inches) 316 SS
28[1]	1/8
38	3/16
48	1/4
68	3/8

[1] Not available in duplex

1-2 Element Connection

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

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

2-0 "X" Dimensions

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)	AVAILABLE SHEATH DIAMETERS (inches)
05A	316 SS	1/8	1/8, 3/16, 1/4
05B	316 SS	1/4	1/8, 3/16, 1/4, 3/8
05C	316 SS	1/2	1/8, 3/16, 1/4, 3/8
15A	Brass	1/8	1/8, 3/16, 1/4
15B	Brass	1/4	3/16, 1/4, 3/8
15C	Brass	1/2	1/4, 3/8
14	Brass/ Steel	Flange	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[1]

CODE *316 SS*	MOUNTING THREAD NPT (inches)	AVAILABLE SHEATH DIAMETERS (inches)
8A _ _[2]	1/8	1/8, 3/16, 1/4
8B _ _[2]	1/4	1/8, 3/16, 1/4, 3/8
8C _ _[2]	1/2	1/8, 3/16, 1/4, 3/8
8D _ _[2]	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)
8RNDC	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
35T-642A	(4 to 20) mA HART® Field Transmitter with aluminum general-purpose housing
36T82-D10	(4 to 20) mA dual input HART® transmitter with digital display and general-purpose aluminum housing with glass lid
37T-662A	(4 to 20) mA HART® dual cavity field temperature transmitter with general-purpose aluminum housing
49	Flip-top aluminum head
63	White polypropylene screw-cover head
91	316 L stainless steel screw-cover head
4-2 Options	
W[1]	Epoxy Coating
GS	Ground screw
I	Stainless tag
NB	1/2" NPT nylon conduit reducer bushing
SB	1/2" NPT conduit reducer bushing
T-440	(4 to 20) mA head-mounted RTD transmitter
T-441	(4 to 20) mA isolated head-mounted transmitter
T-442	(4 to 20) mA isolated HART® head-mounted 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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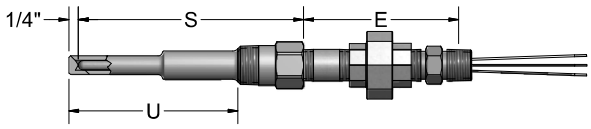
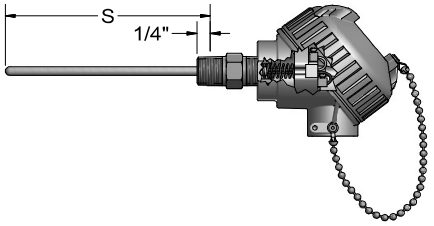
Sensors with Connection Heads

Configuration Code GP03
Spring-Loaded RTD/Thermowell Assemblies with General-Purpose Connection Heads

Spring-Loaded RTD/Thermowell Assemblies with General-Purpose Connection Heads are designed for use with various thermowell types. Complete assemblies can be ordered by selecting the RTD assembly below, the thermowell from the thermowell section of this catalog, and a temperature transmitter from the back of this section. Assemblies without a thermowell can be ordered by selecting the sensor assembly from this page and inserting the "S" length in table 2-0. These sensors are supplied with a 316 stainless steel sheath and are available in various tolerances and temperature ranges as noted in the tables below.





ORDER CODES

	1-0	1-1	1-2		2-0		3-0		4-0	4-1	4-2	
Example Order Number:	**R1T185L**	**48**	**3**	**-**	Select Thermowell Part # or Insert 3 Digit Length Code	**-**	**SL**	**-**	**8HN**	**31,**	**T-**	Select Type and Range from back of section

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

CODE		TOLERANCE[1]	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.

1-1 Sheath Diameters

CODE	DIAMETERS (inches) 316 SS
38	3/16
48	1/4

1-2 Element Connection

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

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

2-0

Select thermowell part number from Thermowell Section, or specify 3 digit "S" length in inches if no thermowell is required.

3-0 Element Options

CODE	DESCRIPTION
SL[1]	Spring-loaded element
SC	Self-contained spring-loaded element
SN	Self-contained spring-loaded element with Buna-N oil seal 121°C [250°F] 100 PSI Max.

[1] Not available with option 35T, 36T, or 37T

4-0 Head Mounting Fittings

CODE	DESCRIPTION	CODE	DESCRIPTION
STEEL FITTINGS		*316SS FITTINGS*	
6HN	1/2" x 1/2" NPT hex nipple 1" length	8HN	1/2" x 1/2" NPT hex nipple 1" length
6PN_	1/2" NPT pipe nipple (specify "E" length in inches)	8PN_	1/2" NPT pipe nipple (specify "E" length in inches)
6PU_ [1]	1/2" NPT union/nipple (specify "E" length in inches)	8PU_ [1]	1/2" NPT union/nipple (specify "E" length in inches)

[1] 4" Minimum length required

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
35T-642A	(4 to 20) mA HART® Field Transmitter with aluminum general-purpose housing
36T82-D10	(4 to 20) mA dual input HART® transmitter with digital display and general-purpose aluminum housing with glass lid
37T-662A	(4 to 20) mA HART® dual cavity field temperature transmitter with general-purpose aluminum housing
49	Flip-top aluminum head
63	White polypropylene screw-cover head
91	316 L stainless steel screw-cover head

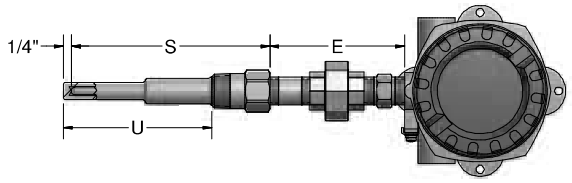
4-2 Options

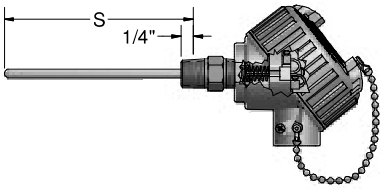
W[1]	Epoxy Coating
GS	Ground screw
I	Stainless tag
NB	1/2" NPT nylon conduit reducer bushing
SB	1/2" NPT conduit reducer bushing
T-440	(4 to 20) mA head-mounted RTD transmitter
T-441	(4 to 20) mA isolated head-mounted transmitter
T-442	(4 to 20) mA isolated HART® head-mounted transmitter
T82-00	(4 to 20) mA dual input HART® head-mounted transmitter
See transmitter ordering information in back of section.	

[1] Available with option 31 only.

Configuration Code GP03
Spring-Loaded RTD/Thermowell Assemblies with Explosion-Proof Connection Heads

Spring-Loaded RTD/Thermowell Assemblies with Explosion-Proof Connection Heads are designed for use with various thermowell types. Complete assemblies can be ordered by selecting the RTD assembly below, the thermowell from the thermowell section of this catalog, and a temperature transmitter from the back of this section. Assemblies without a thermowell can be ordered by selecting the sensor assembly from this page and inserting the "S" length in table 2-0. These sensors are supplied with a 316 stainless steel sheath and are available in various tolerances and temperature ranges as noted in the tables below.





ORDER CODES

	1-0	1-1	1-2		2-0		3-0		4-0	4-1	4-2	
Example Order Number:	**RBF185L**	**48**	**3**	**-**	Select Thermowell Part # or Insert 3 Digit Length Code	**-**	**SL**	**-**	**8HN**	**93,**	**T-**	Select Type and Range from back of section

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

CODE		TOLERANCE[1]	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.			

1-1 Sheath Diameters

CODE	DIAMETERS (inches) 316 SS
38	3/16
48	1/4

1-2 Element Connection

CODE	DESCRIPTION
2	2-wire element
3	3-wire element
4[1]	4-wire element
[1] Not available in duplex or with 440 Series Transmitter	

2-0

Select thermowell part number from Thermowell Section, or specify 3 digit "S" length in inches if no thermowell is required.

4-1 Head Terminations

CODE	DESCRIPTION
74	Dual conduit DIN form B aluminum explosion-proof/flame-proof head, NEC, IEC, Atex approved
75T-642C	(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/flame-proof head, NEC, IEC, Atex approved
94	316L stainless steel explosion-proof/flame-proof head, NEC, IEC, Atex approved

4-2 Options

SB	1/2" NPT conduit reducer bushing
I	Stainless tag
T-440[1]	(4 to 20) mA head-mounted RTD transmitter
T-441	(4 to 20) mA isolated head-mounted transmitter
T-442	(4 to 20) mA isolated 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.	
[1] Not available with option 74.	

4-0 Head Mounting Fittings

CODE	DESCRIPTION	CODE	DESCRIPTION
STEEL FITTINGS		*316SS FITTINGS*	
6HN	1/2" x 1/2" NPT hex nipple 1" length	8HN	1/2" x 1/2" NPT hex nipple 1" length
6PN_	1/2" NPT pipe nipple (specify "E" length in inches)	8PN_	1/2" NPT pipe nipple (specify "E" length in inches)
6XU_ [1]	1/2" NPT union/nipple (specify "E" length in inches)	8XU_ [1]	1/2" NPT union/nipple (specify "E" length in inches)
[1] 3 1/2" Minimum length required			

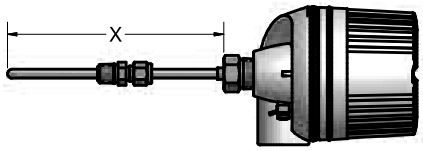
3-0 Element Options

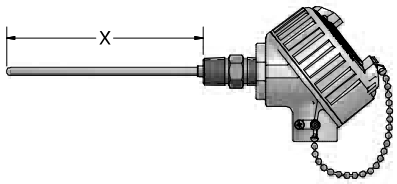
CODE	DESCRIPTION
SL[1]	Spring-loaded element
SC	Self-contained spring-loaded element
SN	Self-contained spring-loaded element with Buna-N oil seal 121°C [250°F] 100 PSI Max.
[1] Not available with option 75T, 76T, or 77T	

Sensors with Connection Heads

Configuration Code GP01
Fixed-Sheath RTD Assemblies with Explosion-Proof Connection Heads

Fixed-Sheath RTD 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 option 4 to 20 mA transmitter, select the assembly below and the transmitter from the back of this section. The RTD assemblies are supplied with a 316 stainless steel sheath in several diameters. They are available in various tolerances and temperature ranges as noted below.





ORDER CODES

	1-0	1-1	1-2		2-0		3		4-0	4-1	4-2		
Example Order Number:	**RAF185L**	**48**	**3**	**-**	**012(1/2)**	**-**	**00**	**-**	**8HN**	**94,**	**SB,**	**T-**	Select Type and Range from back of section

1-0 100 Ω Platinum RTD Elements α = 0.003 85 °C⁻¹

CODE		TOLERANCE[1]	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.

1-1 Sheath Diameters

CODE	DIAMETERS (inches) 316 SS
28[1]	1/8
38	3/16
48	1/4
68	3/8

[1] Not available in duplex

1-2 Element Connection

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

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

2 -0 "X" Dimensions

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)	AVAILABLE SHEATH DIAMETERS (inches)
05A	316 SS	1/8	1/8, 3/16, 1/4
05B	316 SS	1/4	1/8, 3/16, 1/4, 3/8
05C	316 SS	1/2	1/8, 1/4, 3/8
15A	Brass	1/8	1/8, 3/16, 1/4
15B	Brass	1/4	3/16, 1/4, 3/8
15C	Brass	1/2	1/4, 3/8
14	Brass/ Steel	Flange	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[1]

CODE *316 SS*	MOUNTING THREAD NPT (inches)	AVAILABLE SHEATH DIAMETERS (inches)
8A _ _[1]	1/8	1/8, 3/16, 1/4
8B _ _[1]	1/4	1/8, 3/16, 1/4, 3/8
8C _ _[1]	1/2	1/8, 3/16, 1/4, 3/8
8D _ _[1]	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)
8RNDC	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
75T-642C	(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/flame-proof head, NEC, IEC, Atex approved
94	316L stainless steel explosion-proof/flame-proof head, NEC, IEC, Atex approved
4-2 Options	
SB	1/2" NPT conduit reducer bushing
I	Stainless tag
T-440[1]	(4 to 20) mA head-mounted RTD transmitter
T-441	(4 to 20) mA isolated head-mounted transmitter
T-442	(4 to 20) mA isolated 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.	
[1] Not available with option 74.	

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