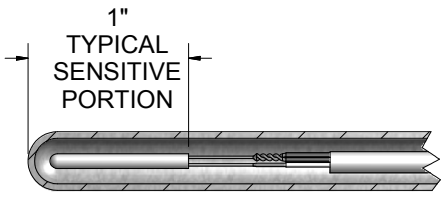
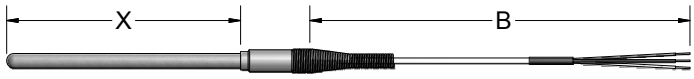
RTD

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 Teflon®-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								
R5T185L	**48**	**3**	**-**	**006**	**-**	**Page RTD-2**	**-**	**Page RTD-3**	**-**	**Page RTD-4**	**-**	**Page RTD-5**

1-1 Single Platinum RTD Elements

1-2 Available Sheath Diameters 316SS

CODE	TOLERANCE[1]	BASE RESISTANCE @ 0 ºC (R_0)	TEMPERATURE COEFFICIENT	CODE			
LOW RANGE WIRE WOUND (-200 to 200) ºC [-328 to 392] ºF				*1/8" O.D.*	*3/16" O.D.*	*1/4" O.D.*	*3/8" O.D.*
R1T185L	Grade B	100 Ω	α = 0.003 85 ºC^{-1}	28	38	48	68
R3T185L	Class AA	100 Ω	α = 0.003 85 ºC^{-1}	28	38	48	68
R5T185L	(1/5) Class B	100 Ω	α = 0.003 85 ºC^{-1}	28	38	48	68
R1T192L	Grade B	100 Ω	α = 0.003 92 ºC^{-1}	28	38	48	68
R3T192L	Class AA	100 Ω	α = 0.003 92 ºC^{-1}	28	38	48	68
LOW RANGE THIN FILM (-50 to 200) ºC [-58 to 392] ºF							
RBF185L	Class B	100 Ω	α = 0.003 85 ºC^{-1}	28	38	48	68
RAF185L	Class A	100 Ω	α = 0.003 85 ºC^{-1}	28	38	48	68
RBF195L	Class B	1000 Ω	α = 0.003 85 ºC^{-1}	28	38	48	68
HIGH RANGE WIRE WOUND (-200 to 600) ºC [-328 to 1112] ºF							
R1T185H	Grade B	100 Ω	α = 0.003 85 ºC^{-1}	28	38	48	68
RAT185H	Class A	100 Ω	α = 0.003 85 ºC^{-1}	28	38	48	68
R1T192H	Grade B	100 Ω	α = 0.003 92 ºC^{-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]	BASE RESISTANCE @ 0 ºC (R_0)	TEMPERATURE COEFFICIENT	CODE		
LOW RANGE WIRE WOUND (-200 to 200) ºC [-328 to 392] ºF				*3/16" O.D.*	*1/4" O.D.*	*3/8" O.D.*
R1T285L	Grade B	100 Ω	α = 0.003 85 ºC^{-1}	38	48	68
R3T285L	Class AA	100 Ω	α = 0.003 85 ºC^{-1}	38	48	68
R5T285L	(1/5) Class B	100 Ω	α = 0.003 85 ºC^{-1}	38	48	68
R1T292L	Grade B	100 Ω	α = 0.003 92 ºC^{-1}	38	48	68
R3T292L	Class AA	100 Ω	α = 0.003 92 ºC^{-1}	38	48	68
LOW RANGE THIN FILM (-50 to 200) ºC [-58 to 392] ºF						
RBF285L	Class B	100 Ω	α = 0.003 85 ºC^{-1}	38	48	68
RAF285L	Class A	100 Ω	α = 0.003 85 ºC^{-1}	38	48	68
RBF295L	Class B	1000 Ω	α = 0.003 85 ºC^{-1}	38	48	68
HIGH RANGE WIRE WOUND (-200 to 600) ºC [-328 to 1112] ºF						
R1T285H	Class B	100 Ω	α = 0.003 85 ºC^{-1}	38	48	68
RAT285H	Class A	100 Ω	α = 0.003 85 ºC^{-1}	38	48	68
R1T292H	Grade B	100 Ω	α = 0.003 92 ºC^{-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.

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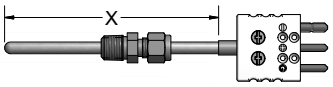
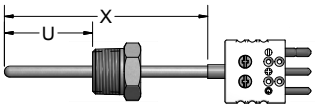
Optional Sheath Mounting Fittings and Bends

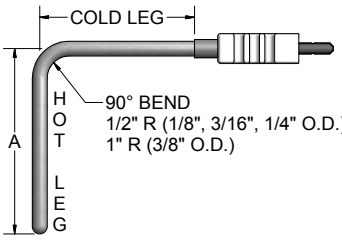
Select Sheath Mounting or Bend Options as desired from tables below.

COMPRESSION FITTING

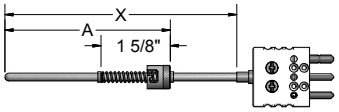


FIXED BUSHING

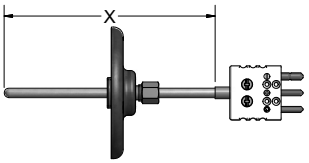




BAYONET CAP and SPRING (OPTION 13A)



ADJUSTABLE FLANGE (OPTION 14)



ORDER CODES

Example Order Number: **R5T185L483-006 - 01A,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)
01A	303 stainless steel	1/8	NO	1/8, 3/16, 1/4
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, 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)
10A	303 stainless steel	1/8	1/8, 3/16
10B	303 stainless steel	1/4	1/4, 3/8
10C	303 stainless steel	1/2	1/4, 3/8
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, 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
Teflon® gland standard 204 ºC [400 °F] max. For lava gland 649 ºC [1200 °F] max. opt. 10A and 10B only use letter suffix "L" after compression fitting order code. EXAMPLE: 10AL 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.	

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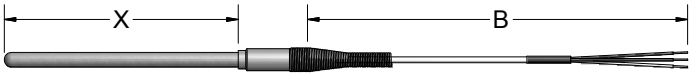
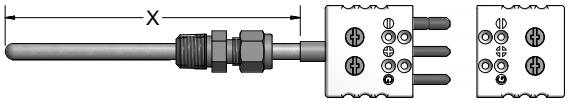
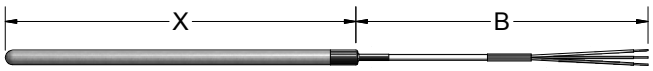






RT02 ORDER CODES RT01

Example Order Number:

R5T185L483-006-00 - 4, MC or **R5T185L483-006-01A,304 - 16 - PAGE RTD-4 - PAGE RTD-5**

(3-1 over "4, MC"; 3-2 over "16")

3-1 Plug and Jack Sheath Terminations

CODE	DESCRIPTION
4[1]	Standard plug
5[1]	Standard jack
6[2]	Miniature plug
7[2]	Miniature jack
	Options
MC	Mating connector
CL	Compression L bracket to hold plug to sheath
[1] If used with 3/8" O.D., option CL must be specified [2] Not available with 1/4" O.D. or 3/8" O.D. sheath	

3-1 Sheath Terminations

CODE	DESCRIPTION
22[1]	3" individual leads with terminal pins
[1] High temp RTDs are supplied with 1" long transition	

3-2 Leadwire transitions

(Requires Table 4 and 5 selections)

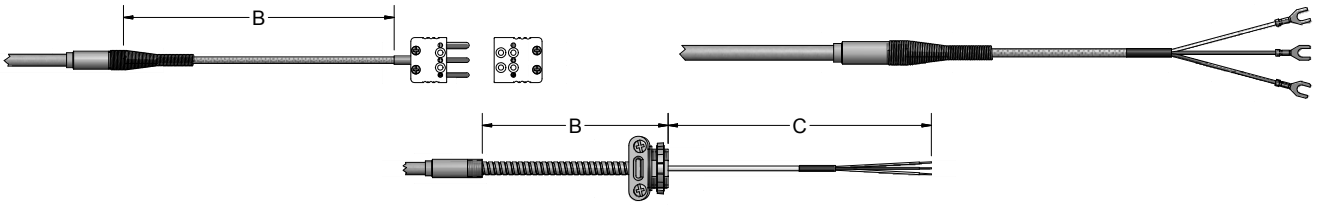
CODE	DESCRIPTION
13[1]	Same size transition with heat-shrink tubing 104 ºC [220 ºF]
15	Extension leadwire transition with relief spring 204 ºC [400 ºF]
16	Extension leadwire transition with heat-shrink tubing 104 ºC [220 ºF]
18[1]	Same size transition without heat-shrink tubing 204 ºC [400 ºF]
19	Extension 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	
TEFLON®		
T3J_ _ _	Teflon® insulation - individual leads - stranded conductor (12" limit)	204 ºC [400 ºF]
T3_ _ _	Teflon® insulation - stranded conductor	
T3A_ _ _	Teflon® insulation - stranded conductor - flexible armor	
T3B_ _ _	Teflon® insulation - stranded conductor - stainless steel overbraid	
M3_ _ _	Teflon® insulation - stranded conductor - stainless steel overbraid - Teflon® insulation	
T3M_ _ _	Teflon® insulation - stranded conductor - mylar shield	
T3MA_ _ _	Teflon® insulation - stranded conductor - mylar shield - flexible armor	
KAPTON®		
K3_ _ _	Kapton® insulation - stranded conductor	316 ºC [600 ºF]
K3A_ _ _	Kapton® insulation - stranded conductor - flexible armor	
K3B_ _ _	Kapton® insulation - stranded conductor - stainless steel overbraid	
SILICON RUBBER		
S3_ _ _	Teflon® 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 Teflon® covering over the flexible armor. Substitute suffix codes T (Teflon®) or P (PVC) for the suffix 'A' code above. EXAMPLE: T3T is Teflon® covered armor.

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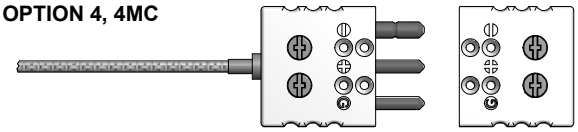
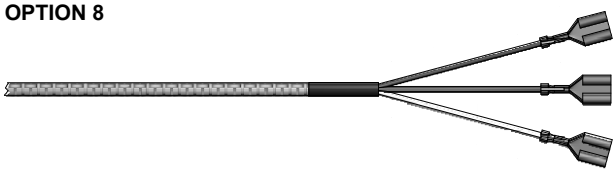
Select desired leadwire termination and options (if desired), by order code numbers below.

OPTION 3

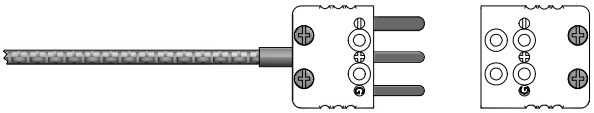
OPTION 4, 4MC



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