RTD SPECIFICATIONS

STANDARD RTD ELEMENT SPECIFICATIONS

ELEMENT MATERIAL*	RESISTANCE @ 0°C	TEMPERATURE COEFFICIENT	OPERATING RANGE†	AVAILABLE ACCURACIES @ 0°C
Platinum	100 Ohm	.00385	-200 to 850°C	± .5% ± .1% ± .06% ± .01%
Platinum	100 Ohm	.00391	-200 to 600°C	± .1% ± .06%
Copper	10 Ohm	.00427	-200 to 204°C	± .2% ± .5%
Nickel	120 Ohm	.00672	-200 to 204°C	± .3% ± .5%

* Sensing elements of other materials and temperature coefficients are available upon request.
† Stated operating ranges are typical values and are dependant upon the sensing element and the construction style of the sensor assembly. Assemblies to exceed the stated limits may be available upon request.

RTD Elements

Aircom can supply elements of several different materials, base resistances, temperature coefficients, accuracies and configurations for installation into RTD assemblies that meet customer supplied requirements. The most common element we use is Platinum with a base resistance of 100 ohms @ 0°C, accuracy of ± 0.5% and temperature coefficient of 0.00385 ohms/ohm/°C. The second most common element is a 392 curve (0.00392 ohms/ohm/°C) element found in most Japanese and a few American made assemblies. Our most common construction of these elements is a Platinum wound element enclosed in a ceramic housing. Process conditions may dictate use of other types of element construction such as Thin-Film, Glass Bulb, or Kapton insulated. The following standards dictate the specifications to which our elements are manufactured to:

For 0.00385 ohms/ohm/°C elements
- International Electromechanical Commission Standard — IEC 751, 1995
- British Standards Institution — BS 1904, 1984
- Deutsches Institut fur Normung (Germany) — DIN 43760, 1987

For 0.00392 ohms/ohm/°C elements
- Scientific Apparatus Manufacturers Association — SAMA RC21-4-196
- Japanese Standards Association — JIS C 1604-1989

RESISTANCE/TEMPERATURE

	Copper	Nickel
Base resistance:	10 Ω at 25°C	120 Ω at 0°C
TCR (Ω/Ω°C)	.00427	.00672
Sensitivity (Average Ω/°C)	0.039	0.806
Temperature (°C)	Resistance (ohms)	
-100	5.128	
-80	5.923	66.60
-60	6.712	79.62
-40	7.490	92.76
-20	8.263	106.15
0	9.035	120.00
20	9.807	134.52
40	10.580	149.79
60	11.352	165.90
80	12.124	182.84
100	12.897	200.64
120	13.669	219.29
140	14.442	238.85
160	15.217	259.30
180	15.996	280.77
200	16.776	303.46
220	17.555	327.53
240	18.335	353.14
260	19.116	380.31

RESISTANCE/TEMPERATURE

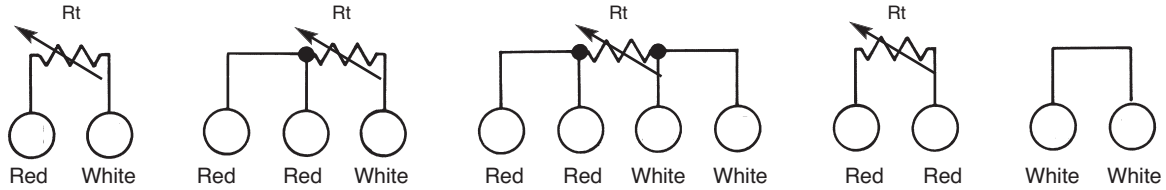
	Platinum Elements		
Resistance at 0°C: TCR (Ω/Ω/°C)	100 Ω .00392	100 Ω .00391	100 Ω .00385
Sensitivity (Average Ω/°C)	0.392	0.391	0.385
Temperature (°C)	Resistance (Ohms)		
-200	17.00	17.26	18.52
-180	25.72	25.97	27.10
-160	34.31	34.54	35.54
-140	42.80	43.01	43.88
-120	51.19	51.37	52.11
-100	59.49	59.64	60.25
-80	67.71	67.83	68.32
-60	75.87	75.96	76.33
-40	83.96	84.03	84.27
-20	92.01	92.04	92.16
0	100.00	100.00	100.00
20	107.95	107.92	107.79
40	115.85	115.78	115.54
60	123.70	123.60	123.24
80	131.50	131.38	130.90
100	139.26	139.11	138.51
120	146.97	146.79	146.07
140	154.64	154.42	153.58
160	162.25	162.01	161.05
180	169.82	169.55	168.48
200	177.35	177.04	175.86
220	184.82	184.49	183.19
240	192.25	191.89	190.47
260	199.64	199.24	197.71
280	206.97	206.55	204.90
300	214.26	213.81	212.05
320	221.50	221.02	219.15
340	228.70	228.19	226.21
360	235.85	235.31	233.21
380	242.95	242.38	240.18
400	250.00	249.41	247.09
420	257.01	256.39	253.96
440	263.97	263.32	260.78
460	270.88	270.21	267.56
480	277.75	277.04	274.29
500	284.57	283.84	280.98
520	291.34	290.58	287.62
540	298.06	297.28	294.21
560	304.74	303.93	300.75
580	311.37	310.54	307.25
600	317.96	317.09	313.71
620	324.49	323.60	320.12
640	330.98	330.07	326.48
660	337.43	336.49	332.79
680	343.82	342.86	339.06
700	350.17	349.18	345.28
720			351.46
740			357.59
760			363.67
780			369.71
800			375.70
820			381.65
840			387.54
850			390.48

RTD SPECIFICATIONS

RTD INTERCHANGEABILITY			
Temperature °C	Platinum RTD		
	±0.06% at 0°C	±0.1% at 0°C	±0.5% at 0°C
-200	±0.55°C	±1.3°C	±2.1°C
-100	±0.35°C	±0.8°C	±1.7°C
0	±0.15°C	±0.3°C	±1.3°C
20	±0.19°C	±0.4°C	±1.6°C
100	±0.35°C	±0.8°C	±2.9°C
200	±0.55°C	±1.3°C	±4.4°C
260	±0.67°C	±1.6°C	±5.5°C
300	±0.75°C	±1.8°C	
400	±0.95°C	±2.3°C	
500	±1.15°C	±2.8°C	
600	±1.35°C	±3.3°C	
700		±3.8°C	
800		±4.3°C	
850		±4.6°C	

Temperature °C	Copper RTD		Nickel RTD	
	±0.02% at 25°C	±0.5% at 25°C	±0.3% at 0°C	±0.5% at 0°C
-100	±1.5°C	±2.2°C		
0	±0.7°C	±1.5°C	±0.5°C	±0.8°C
20	±0.5°C	±1.3°C	±0.8°C	±1.2°C
100	±1.5°C	±2.5°C	±1.8°C	±2.2°C
150	±2.2°C	±3.3°C	±2.5°C	±3.0°C
200	±2.8°C	±4.1°C	±3.1°C	±3.7°C
260	±3.6°C	±5.1°C	±3.4°C	±4.0°C

WIRING CONFIGURATIONS:



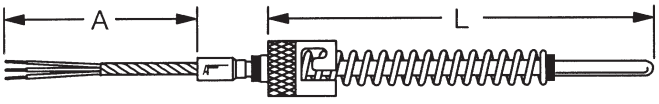
2 Wire | 3 Wire | 4 Wire | 4 Wire Compensated Loop

ELEMENT DIMENSIONS:

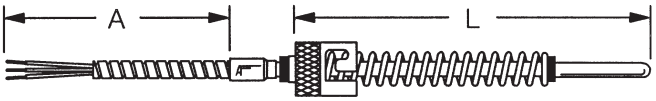
Dimensions in inches	R (0°C)	Temperature Range	Leads	63% response time Sec. in water, 0.4 m/s
550°C wire-wound elements				
0.060 ⌀ 0.40 0.50	100 Ω	-100 to 550°C	0.010" (0.25 mm) ⌀ Platinum alloy	0.14
0.080 ⌀ 0.30 0.50	100 Ω	-100 to 550°C	0.010" (0.25 mm) ⌀ Platinum alloy	0.18
0.100 ⌀ 0.40 0.50	100 Ω	-100 to 550°C	0.014" (0.35 mm) ⌀ Platinum alloy	0.22
400°C and 600°C thin-film elements				
0.055 THICK 0.08 0.09 Lead Length: 0.4	100 Ω	-70 to 400°C	0.010"⌀ Ag 0.004 Ω/mm/lead	0.2
	100 Ω	-70 to 600°C	0.008" (0.20 mm) ⌀ Pd 0.036 Ω/mm/lead	0.2

CUSTOM SHEATHED RTD'S

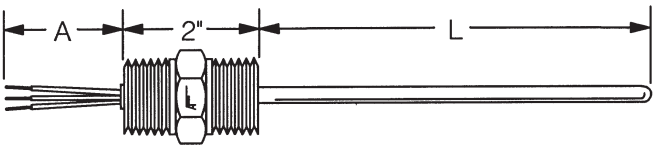
Bayonet Probe with Teflon Leads



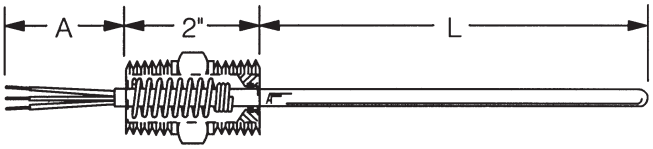
Bayonet Probe with Armoured Leads



Spring Loaded or Fixed Bushing

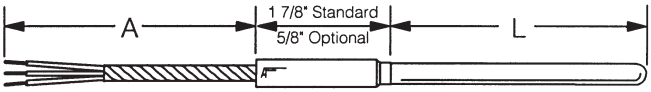


Spring Loaded Oil Seal

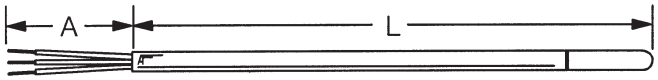


Adjustable Spring

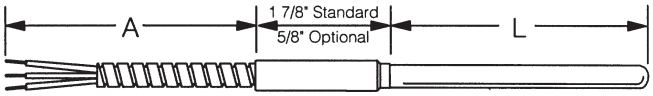
Teflon Jacketed Leads



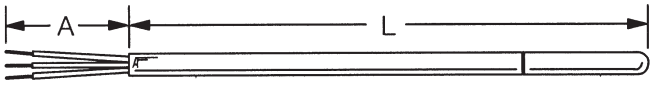
Tip Sensitive



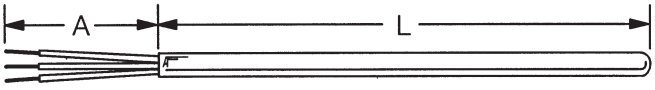
Flex Armoured Leads



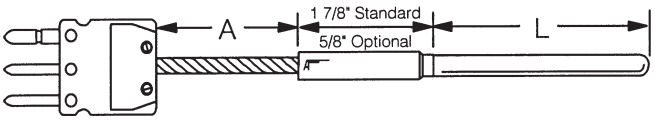
Electrically Isolated



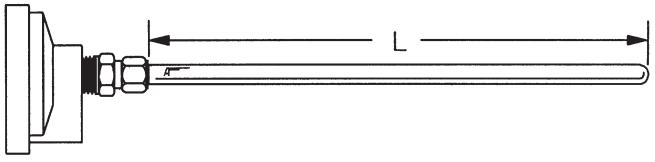
General Purpose



Teflon Leads with Standard Connector

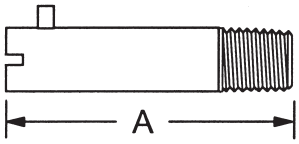


Miniature Connection Head



STANDARD ADAPTER

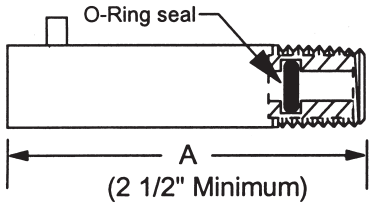
TC5SA - [A] - [X]



18	1/8" NPT
38	3/8" NF

1	7/8"
2	1 3/8"
( )	Specify in Inches

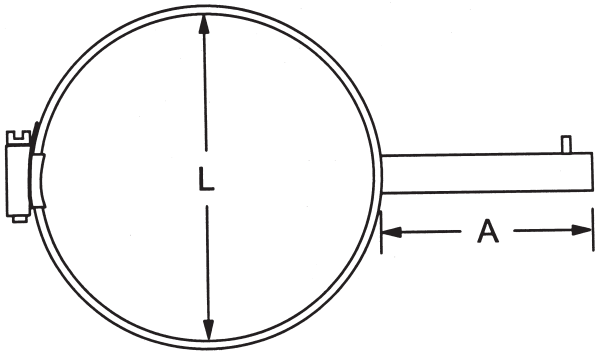
OIL SEAL ADAPTER



TC5OS - [X]

(A) Inches

PIPE CLAMP ADAPTER



TC5PC - [X] - [X]

(L) Pipe Diameter

(A) Inches

RT4 - [X] - [X] - [X] - [X] - [X] - [X] - [X] - [X] - [X] - [X] - [X] - [X]

(L) Inches **(A) Inches**

Code	Element
A	100Ω Platinum 385 ± 0.1%
B	100Ω Platinum 385 ± 0.01%
C	100Ω Platinum 392 ± 0.1%
D	120Ω Nickel 627 0.806 Ω/°C
E	10Ω Copper 427 0.039 Ω/°C
( )	Other Specify

Code	Probe Diameter
18	1/8" O.D.
14	1/4" O.D.
21	0.215" O.D.
36	3/16" O.D.

Code	Termination
BE	Bare Ended Leads
SC	Standard Connector
MC	Mini Connector
MH	Mini Head

Code	# of Leadwires
2	2 Wire
3	3 Wire
4	4 Wire
4C	4 Wire Compensated Loop

Code	Process Fitting
CF( )	Compression Fitting (Specify Process NPT)
SG	Adjustable Spring
FS( )	Fixed Hex Bushing (Specify Process NPT)
TX( )	Spring Loaded Transmitter Bushing (Specify Process NPT)
OX( )	Oil Seal Hex Bushing (Specify Process NPT)
X	Not Required

S	Single Element
D	Dual Element

Code	Probe Style
GP	General Purpose
EI	Electrically Isolated
TS	Tip Sensitive
BP	Bayonet Style
TE	Tip Sensitive/Electrically Isolated
BT	Bayonet/Tip Sensitive

* Available in most probe styles.
Minimum lengths apply. Consult factory.

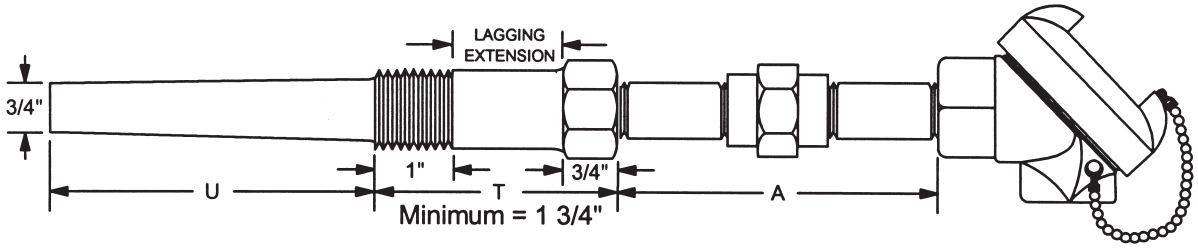
Code	Lead Options
T	Teflon Leadwire
F	Fiberglass Leadwire
AT	Armoured Teflon
AF	Armoured Fiberglass
ST	Standard 6" TFE Leads

Code	Temp. Rating
LT	Low Temp. (204°C Max.)
HT	High Temp. (482°C Max.)
VT	High Temp. High Vibration (850°C)

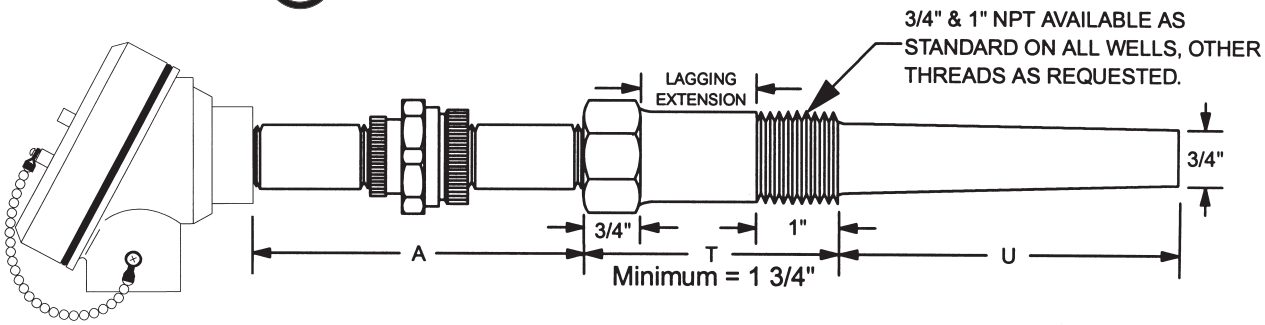
NOTE: 316SS Sheath supplied as standard. If other required, specify at time of order.

RTD ASSEMBLIES

GENERAL PURPOSE WITH THREADED THERMOWELL

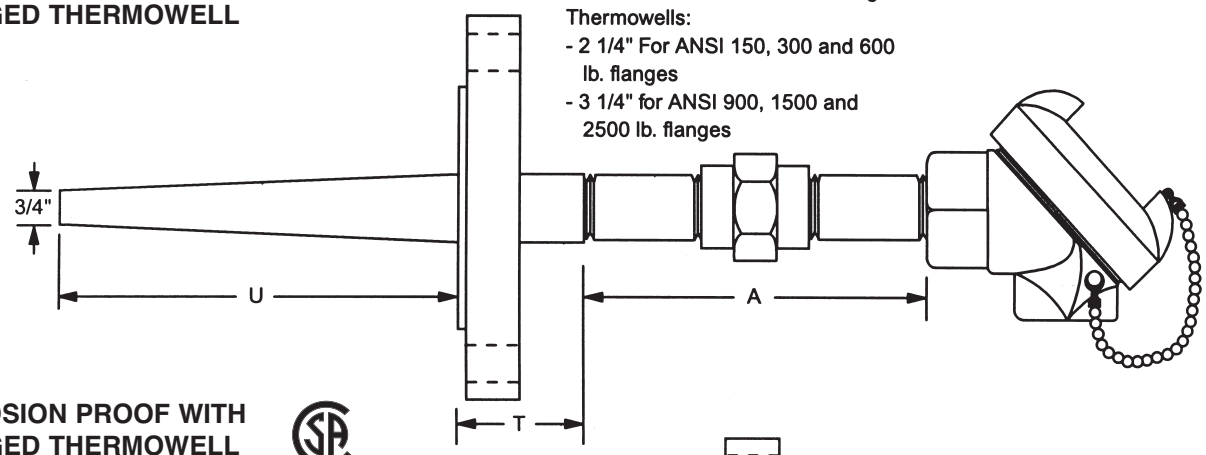


EXPLOSION PROOF WITH THREADED THERMOWELL

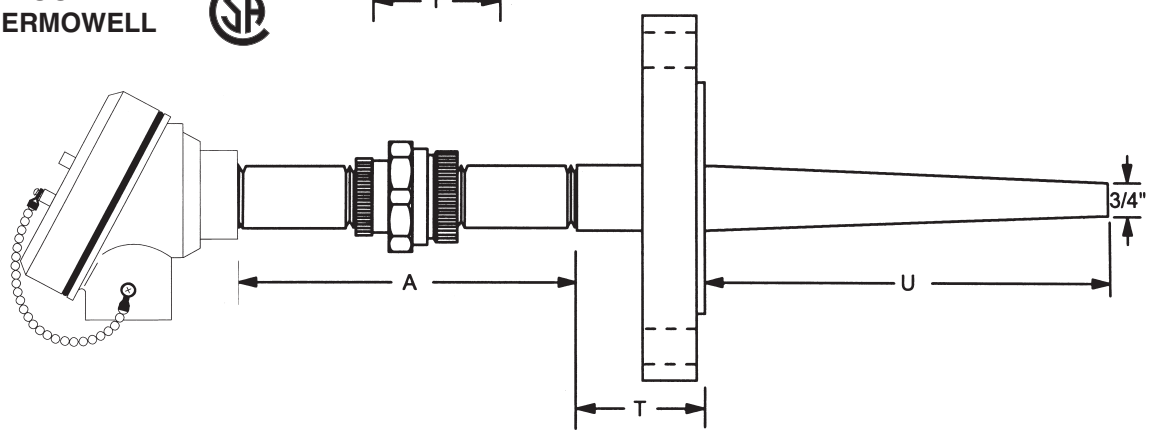


GENERAL PURPOSE WITH FLANGED THERMOWELL

NOTE:
"T" Dimension Minimum for Flanged Thermowells:
- 2 1/4" For ANSI 150, 300 and 600 lb. flanges
- 3 1/4" for ANSI 900, 1500 and 2500 lb. flanges



EXPLOSION PROOF WITH FLANGED THERMOWELL



RTD ASSEMBLIES

CONNECTION HEAD

GENERAL PURPOSE: For non-hazardous locations.
Material: Cast Aluminum supplied as standard, optional cast iron available.
Conduit Connection: 3/4" NPT standard, optional 1/2" NPT available.
Process Connection: 1/2" NPT.
Termination: Ceramic composition with solid brass screw blocks. For single or dual element.
Extension: 1/2" NPT galvanized carbon steel nipples and union.

EXPLOSION PROOF: Class 1, Groups B, C & D. Class II, Groups E, F & G.
Choose from: Aluminum, Cast Iron, Stainless Steel, or Epoxy Coated Aluminum.
Conduit Connection: 3/4" NPT standard, optional 1/2" NPT available.
Process Connection: 1/2" NPT.
Termination: Bakelite terminal block is standard or ceramic for high temperature applications.
Extension: 1/2" NPT galvanized carbon steel nipples with plated steel explosion proof union.

ELEMENT

- 100Ω Platinum 385 0.1% @ 0°C standard (other tolerances and accuracies on request) with spring loaded 1/4" O.D. 316 SS sheath and single or dual element.
- Replacement Element Length: U + T + A with 6" leads (see page RT-4 to order).

THERMOWELL

Threaded: 3/4" NPT or 1" NPT, hex bar stock drilled 0.260" bore tapered to 3/4" diameter.
Material: 304/L or 316/L SS supplied as standard, other grades available on request.
Flanged: 1 1/8" round bar stock, standard, optional 1 1/4" or 1 3/8", drilled 0.260" bore and tapered to 3/4" diameter.
Material: 304/L or 316/L SS supplied as standard, other grades available on request.

RT6 - [X] - [X] - [X] - [X] - [X] - [X] - [X] - [X] - [X] - [X]

Connection Head
Specify Model
from RT-8

(A) Inches

Code	Element
A	100Ω Platinum 385 ± 0.1%
B	100Ω Platinum 385 ± 0.01%
C	100Ω Platinum 392 ± 0.1%
D	120Ω Nickel 627 0.806 Ω/°C
E	10Ω Copper 427 0.039 Ω/°C
( )	Other Specify

S	Single Element
D	Dual Element

Code	# of Leadwires
2	2 Wire
3	3 Wire
4	4 Wire
4C	4 Wire Compensated Loop

Code	Temperature Rating
LT	Low Temp. (204°C Max.)
HT	High Temp. (482°C Max.)
VT	High Temp. (850°C Max.) High Vibration

(T) Inches

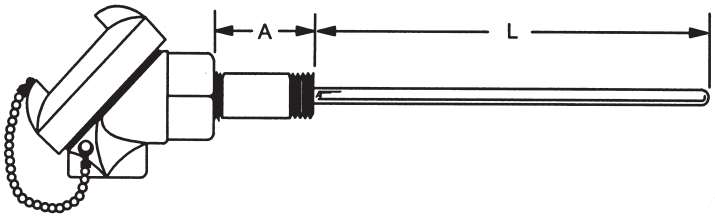
(U) Inches

Code	Grade
304	304/L SS
316	316/L SS

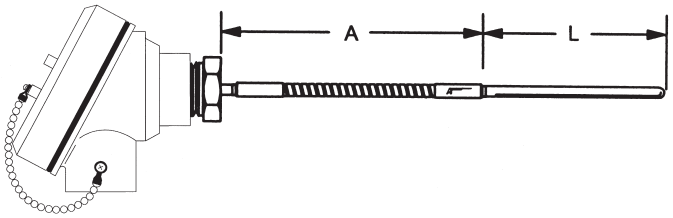
34	3/4" NPT
1	1" NPT
( )	Specify Flange Size

REPLACEMENT ASSEMBLIES

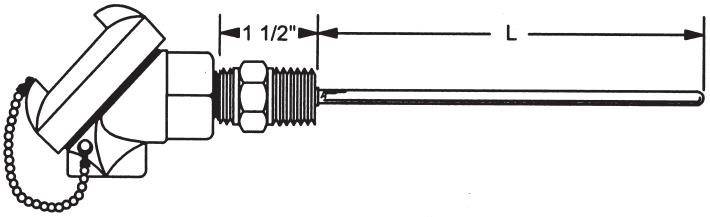
Spring Loaded, Sheathed RTD with Nipple



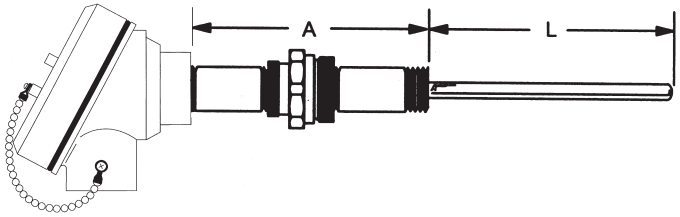
Sheathed RTD with Flex Armoured Leads



Fixed Hex, Spring Loaded Oil Seal, or Transmitter Bushing Sheathed RTD



Spring Loaded, Sheathed RTD with Nipple/Union/Nipple



For replacement sensors, see page RT-4.

RT7 - [X] - [X] - [X] - [X] - [X] - [X] - [X] - [X] - [X] - [X]

Connection Head
Specify Model
from RT-8.
(X) Not Required

(A) Inches
(X) Not Applicable

(L) Inches

Code	Element
A	100Ω Platinum 385 ± 0.1%
B	100Ω Platinum 385 ± 0.01%
C	100Ω Platinum 392 ± 0.1%
D	120Ω Nickel 627 0.806 Ω/°C
E	10Ω Copper 427 0.039 Ω/°C
( )	Other Specify

Code	Temperature Rating
LT	Low Temp. (204°C Max.)
HT	High Temp. (482°C Max.)
VT	High Temp. (850°C Max.) High Vibration

Code	# of Leadwires
2	2 Wire
3	3 Wire
4	4 Wire
4C	4 Wire Compensated Loop

Code	Probe Diameter
18	1/8”
36	3/16”
21	.215”
14	1/4”

Code	Process Fitting
N	Nipple
NU	Nipple/Union/Nipple
FX	Fixed (1/2” NPT Process)
OS	Oil Seal (1/2” NPT Process)
TX	Transmitter (1/2” NPT Process)
FA	Flex Armour

S	Single Element
D	Dual Element

NOTE: 316SS Sheath supplied as standard. If other required, specify at time of order.

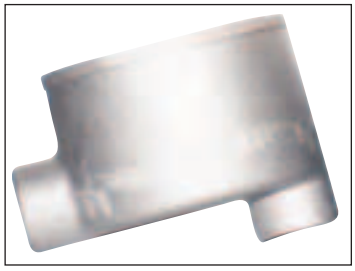
CONNECTION HEADS

EXPLOSION PROOF

Class I, Div. I, Gr. B, C, D
Class II, Div. I, Gr. E, F, G
Class III

MODEL	MATERIAL
2AL	Cast Aluminum
2SS	316 Stainless Steel
2ALT	Cast Aluminum Teflon Coated

EXPLOSION PROOF



Class I, Div. I, Gr. A, B, C, D
Class II, Div. I, Gr. E, F, G
Class III

MODEL	MATERIAL
1AL	Cast Aluminum
1CI	Cast Iron
1ALT	Cast Aluminum Teflon Coated
1CIT	Cast Iron Teflon Coated

GENERAL PURPOSE

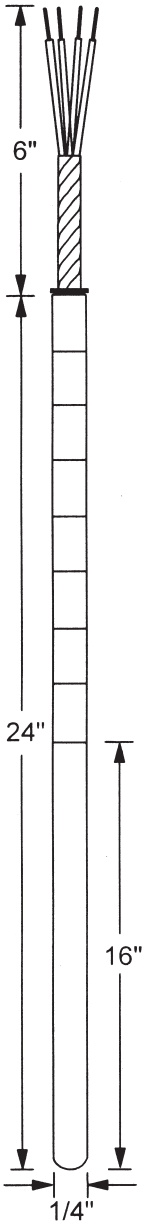
MODEL	MATERIAL
3AL	Cast Aluminum
3CI	Cast Iron
3ALE	Cast Aluminum Epoxy Coated
3CIE	Cast Iron Epoxy Coated

NON HAZARDOUS INDOOR/OUTDOOR/SANITARY

MODEL	MATERIAL
4P	White Polypropylene (92°C Max.)
4D	Grey Delrin (135°C Max.)

BREAK - TO - LENGTH RTD

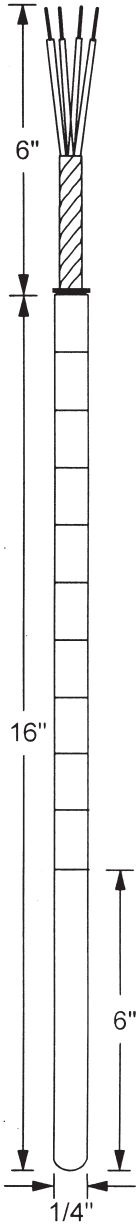
Reduce inventory levels and costs by consolidatig sensor requirements.



TO ORDER:

LT	204 °C Max
HT	482 °C Max

16	16” Length
24	24” Length



NOTE: ALSO AVAILABLE IN THERMOCOUPLE
SEE PAGE TC-15

STANDARD FEATURES :
- 100Ohm Platinum Element, +/- 0.1% @ 0°C, 0.00385 Ohm/Ohm/°C
- 316/L Stainless Steel Sheath
- Four Conductor, Teflon or Fibreglass Insulated and Jacketed Leads

The Break - To - Length sensor is designed as a quick replacement element for existing thermowell assemblies. Pre-scored at 1” incriments, the sensor can be “broken” to fit most applications. A pair of pliers and a screw driver are the only tools required for the job. This unique design has no burrs or sharp edges. For added protection the sensors come with a grommet that slips over the leads and fits into the tubing.

Shown here are our most common sensors available from stock. Please contact us to discuss options required to suit your specific needs.