



closing the loop on thermal solutions

Resistance Temperature Detectors

INTRODUCTION

For high-accuracy temperature measurements in a variety of industrial and commercial air and gas applications, Durex Industries offers RTD's of multiple elements and styles. Durex RTD's are available with an assortment of connections, mounting hardware, and enclosures to suit harsh chemical, immersion, and other heavy-duty requirements. Sealed leadwire transitions eliminate contamination. Multiple sensing elements can be located at various points for precise temperature control.



Design Features:

- Platinum, Nickel, or Nickel Iron elements
- 2, 3, or 4-wire styles
- High pressure applications up to 5000 psi
- Optional sanitary-grade stainless steel hardware
- Temperatures up to 1500°F (816°C)
- Optional braiding or armor cable shielding

Typical Applications:

- Food Service
- Semiconducting
- Packaging
- Hot Melt Dispensing
- Vacuum Sealing and Forming
- Automotive
- Medical / Laboratory Settings



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Resistance Temperature Detectors

SPECIFICATIONS

Unless otherwise specified, Durex's RTD assemblies include photo-lithographically structured, high-purity platinum thin-film elements laser trimmed to precise resistance values. These sensors feature brief response times, excellent long term stability, low self heating and excellent resistance to vibration and temperature shocks.

Thermal Response Time

The response time $T_{0.63}$ is the time the sensors need to respond to 63% of the change in temperature. The response time depends on the sheath dimensions, but can be as low as 1.2 seconds.

Long Term Stability

The change of ohmage after 1,000 hours at maximum operating temperature amounts to less than 0.03%.

Self Heating

To measure the resistance, an electric current has to flow through the element, which will generate heat energy resulting in errors of measurement. To minimize error, the testing current should be kept low (approximately 1mA for Pt-100).

Temperature error $\Delta T = RI^2/E$ with:

E = self-heating coefficient in mW/K

R = resistance in k Ω

I = measuring current in mA

The self-heating coefficient (E) for the standard elements used in Durex RTD assemblies is 4 mW/K in air and 40 mW/K in water.

Measuring Current

Measurement current causes heating of the platinum thin-film sensor. The resulting temperature error is given by: $\Delta T = P/E$ with the power loss $P = I^2R$, and the self-heating coefficient E in mW/K.

The amount of thermal transfer from the sensor in the application determines how much measuring current can be applied. There is no bottom limit of the measurement current with platinum thin-film. The measurement current depends highly on the application in use.

We recommend at:

100 Ω : typically 1mA, maximum 5mA

500 Ω : typically 0.5mA, maximum 3mA

1000 Ω : typically 0.3mA, maximum 2mA

2000 Ω : typically 0.2mA, maximum 1mA

Nominal Values

The nominal or rated value of the sensor is the target value of the sensor resistance at 0°C. The temperature coefficient α is defined as $\alpha = \frac{R_{100} - R_0}{100 - R_0}$ (K⁻¹) and has the numerical value of 0.00385 K⁻¹ according to DIN IEC 751.

In practice, a value multiplied by 10⁶ is often entered: $TCR = 10^6 \times \frac{R_{100} - R_0}{100 - R_0}$ x (ppm/K)

In this case, the numerical value is 3850 ppm/K.

Resistance Temperature Detectors

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Temperature Characteristic Curve

The temperature characteristic curve determines the dependence of the electrical resistivity on the temperature. The following definition of the temperature curve according to DIN EN 60751 standard applies:

-200 to 0°C	$R(t) = R_0[1 + (A \cdot t) + (B \cdot t^2) + C(t - 100)t^3]$
0 to 250°C	$R(t) = R_0[1 + (A \cdot t) + (B \cdot t^2)]$

Platinum (3850 ppm/K):

$$A = 3.9083 \cdot 10^{-3} [^{\circ}\text{C}^{-1}]$$

$$B = -5.775 \cdot 10^{-7} [^{\circ}\text{C}^{-2}]$$

$$C = -4.183 \cdot 10^{-12} [^{\circ}\text{C}^{-4}]$$

Platinum (3750 ppm/K):

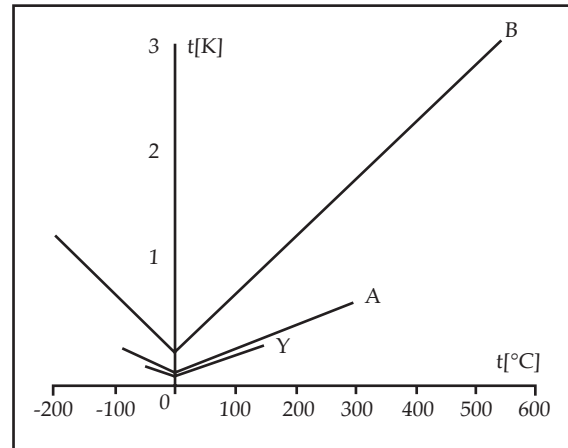
$$A = 3.9083 \cdot 10^{-3} [^{\circ}\text{C}^{-1}]$$

$$B = -6.01888 \cdot 10^{-7} [^{\circ}\text{C}^{-2}]$$

$$C = -6 \cdot 10^{-12} [^{\circ}\text{C}^{-4}]$$

R_0 = Resistance value in ohm at 0°C

t = temperature in accordance with ITS 90



Tolerance Field

Tolerance Classes

The temperature sensors are divided into classes according to their limit deviations:

Class	± limit deviations in °C (K)	IST AG designation	Temperature range
DIN 60751, class B	$0.30 + 0.005 \times T $	B	-200°C to 850°C
DIN 60751, class A	$0.15 + 0.002 \times T $	A	-90°C to 300°C
1/3 DIN 60751, class B	$0.10 + 0.0017 \times T $	Y	-50°C to 150°C

|T| is the numerical value of the temperature °C without taking into account either negative or positive signs.

Special selection of sensors upon request (pairings, groupings, special tolerances).

Calibration Services

Durex RTD calibrations are fully traceable to the National Institute of Standards and Technology (NIST) and are useful for defining the exact temperature coefficient of the sensor. For sensor applications below 32°F (0°C), a cryogenic range calibration is recommended. Certificates are supplied with all calibrations. Printed tables of interpolated values are only supplied with cryogenic range calibrations.

RTD Assembly Temperature Ranges

Style: R1L, R2L, R3L, R4L	The maximum rated temperature for these four styles is 500°F. Typically they are constructed with Teflon leads and the lead end is protected with an epoxy seal. This epoxy seal provides a moisture resistant barrier.
Style: R1M, R2M, R3M, R4M	The maximum rated temperature for these next four styles is 900°F. They are constructed with high temperature fiberglass insulated conductors. The lead end is sealed and protected with a high temperature cement.
Style: R1P, R2P, R3P, R4P	The maximum rated temperature for these last four styles is 1200°F. Their construction features highly compacted magnesium oxide insulation. Nickel conductors provide for extended temperature ratings and harsh environments.

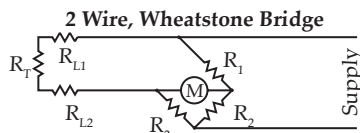
Resistance Temperature Detectors

SPECIFICATIONS

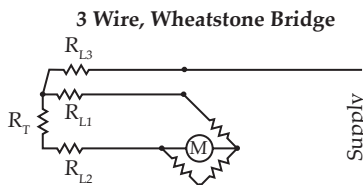
Available RTD Elements

Code	Element Type	Temperature Coefficient	Tolerance at 0°C
A	100 ohm Platinum	.00385	.1%
B	100 ohm Platinum	.00385	.06%
C	100 ohm Platinum	.00385	.03%
D	500 ohm Platinum	.00385	.1%
E	1000 ohm Platinum	.00385	.1%
F	2000 ohm Platinum	.00385	.1%
G	100 ohm Platinum	.00392	.1%
H	100 ohm Platinum	.00392	.03%
J	120 ohm Nickel	.00672	.5%
K	604 ohm Nickel Iron	.00520	.5%

Wiring Diagrams

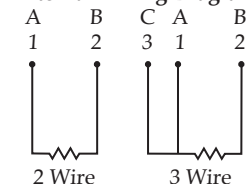


The meter reads R_T + the two lead resistances R_{L1} and R_{L2}

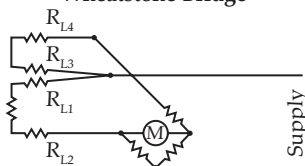


One lead resistance is included in each of the two arms of the bridge. The errors reduce to $R_{L1} - R_{L2}$

Internal Wiring Diagram

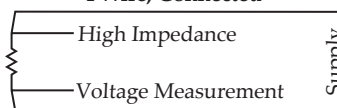


4 Wire, Compensated Wheatstone Bridge

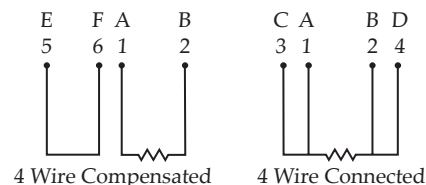


In this type R_{L3} and R_{L4} appear in one arm of the bridge. R_{L1} and R_{L2} appear in the other. Errors are $R_{L1} + R_{L2} - R_{L3} - R_{L4}$

4 Wire, Connected



Errors can be made negligible by having a very high input impedance amplifier.

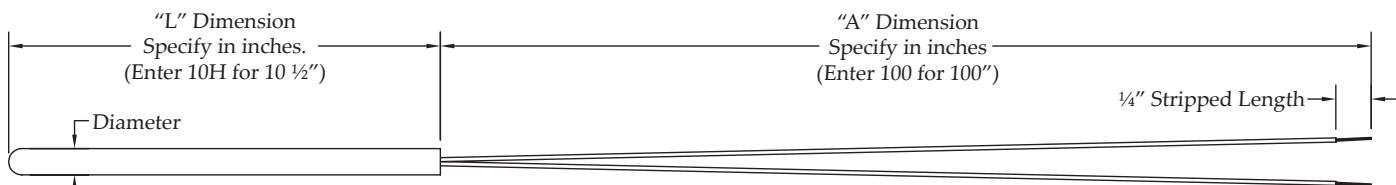


Code Definitions

"L" Dimensions				"B" Dimensions				"A" Dimensions		Fractional Dimension Letter Code			
"L" dimensions are specified in whole inches and a single alpha character which represents a fraction. Enter the three digit code as follows:				"B" dimensions are specified in fractions from 1/8" to 1". Use the single alpha character to indicate the tip length. Enter the code as follows:				"A" dimensions are specified in whole inches only. Enter the three digit code as follows:		1/16"	A	11/16"	L
										1/8"	B	3/4"	M
3"	030	10 5/8"	10K							3/16"	C	13/16"	N
4 1/2"	04H	12"	120	1/8"	B	5/8"	K	9"	009	1/4"	D	7/8"	P
6 1/4"	06D	15 3/8"	15F	1/4"	D	3/4"	M	12"	012	5/16"	E	15/16"	R
7 7/8"	07P	17 3/4"	17M	3/8"	F	7/8"	P	36"	036	3/8"	F	1"	S
9 5/8"	09K	22 1/8"	22B	1/2"	H	1"	S	144"	144	7/16"	G	0	No
										1/2"	H	Fraction	
										9/16"	J		
										5/8"	K		

Resistance Temperature Detectors

RTD WITH LEADWIRE



STYLE R1L R1M

R1L - Maximum Temperature 500°F

R1M - Maximum Temperature 900°F

Code	Table 1: Element Type
A	100 ohm .00385 Curve Class B Platinum
B	100 ohm .00385 Curve Class A Platinum
D	500 ohm .00385 Curve Class B Platinum
E	1000 ohm .00385 Curve Class B Platinum
G	100 ohm .00392 Curve Class B Platinum
J	120 ohm .00672 Curve Nickel (R1L Only)
K	604 ohm .00520 Curve Nickel Iron (R1L Only)

Code	Table 2: Wiring Configuration
A	Single, 2 Wire
B	Single, 3 Wire (Minimum sheath diameter .156")
C	Single, 4 Wire (Minimum sheath diameter .188")
D	Dual, 4 Wire (Minimum sheath diameter .188")
E	Dual, 6 Wire (Minimum sheath diameter .250")

Code	Table 3: Sheath Material
4	304 Stainless Steel
6	316 Stainless Steel
8	Inconel 600

Code	Table 4: Sheath Diameter
B	.125" or 1/8" O.D.
V	.156" or 5/32" O.D.
C	.188" or 3/16" O.D.
D	.250" or 1/4" O.D.
F	.375" or 3/8" O.D.

Code	Table 5: Sheath Length ("L" Dimension)
	Specify in inches. See table on page 4 for codes.

Code	Table 6: Lead Length ("A" Dimension)
	Specify in inches. See table on page 4 for codes.

Code	Table 7: Leadwire Type
A	Stranded Fiberglass Singles
B	Stranded Fiberglass with Overall Fiberglass Jacket
C	Stranded Fiberglass with Stainless Steel Overbraid
D	Stranded Fiberglass with Stainless Steel Armor
E	Stranded Mica/Fiberglass Singles
F	Stranded Teflon Singles (R1L Only)
G	Stranded Teflon with Overall Teflon Jacket (R1L Only)
J	Stranded Teflon with Stainless Steel Overbraid (R1L Only)
K	Stranded Teflon with Stainless Steel Armor (R1L Only)
M	PVC with Mylar Shield (R1L Only)

Code	Table 8: Terminations
0	2" Split Ends
1	#6 Spade Lug
2	BX Connector with #6 Spade Lug
3	Standard Plug
A	3/16" Quick Disconnect
B	3/16" Quick Disconnect, Insulated
C	1/4" Quick Disconnect
D	1/4" Quick Disconnect, Insulated
M	Mini Plug
X	Special, Specify

Code	Table 9: Fitting Options
0	No Fitting
N	1/8" NPT Compression, Brass
P	1/8" NPT Compression, Stainless Steel
R	1/4" NPT Compression, Brass
S	1/4" NPT Compression, Stainless Steel
V	1/2" NPT Compression, Stainless Steel
X	Special, Specify

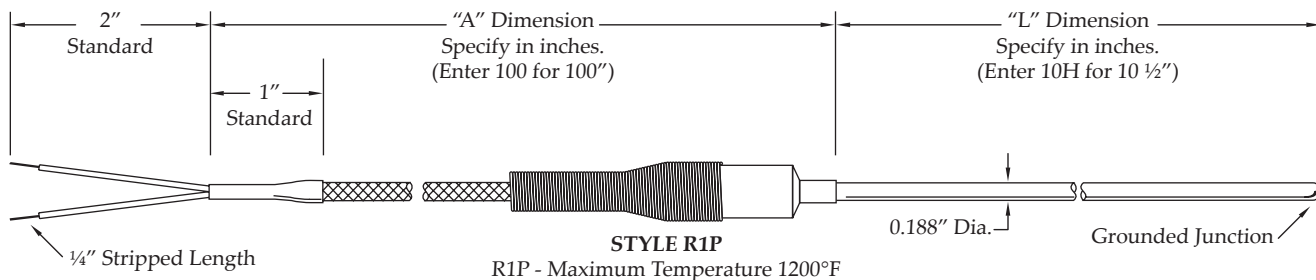
Part Number Sequence

R1L-AB-4F100-100FCR

R1L	-	A	B	-	4	F	100	-	100	F	C	R
R1L or R1M	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9			
Sensor Type & Style No.	Element Type	Wiring Configuration	Sheath Material	Sheath Diameter	"L" Sheath Length	"A" Lead Length	Leadwire Type	Terminations	Fitting Options			

Resistance Temperature Detectors

HIGH TEMPERATURE RTD WITH LEADWIRE



Code	Table 1: Element Type
A	100 ohm .00385 Curve Class B Platinum
B	100 ohm .00385 Curve Class A Platinum
D	500 ohm .00385 Curve Class B Platinum
E	1000 ohm .00385 Curve Class B Platinum
G	100 ohm .00392 Curve Class B Platinum

Code	Table 7: Leadwire Type
A	Stranded Fiberglass Singles
B	Stranded Fiberglass with Overall Fiberglass Jacket
C	Stranded Fiberglass with Stainless Steel Overbraid
D	Stranded Fiberglass with Stainless Steel Armor
E	Stranded Mica/Fiberglass Singles

Code	Table 2: Wiring Configuration
A	Single, 2 Wire
B	Single, 3 Wire (Minimum sheath diameter .156")
C	Single, 4 Wire (Minimum sheath diameter .188")
D	Dual, 4 Wire (Minimum sheath diameter .188")
E	Dual, 6 Wire (Minimum sheath diameter .250")

Code	Table 3: Sheath Material
4	304 Stainless Steel
6	316 Stainless Steel
8	Inconel 600

Code	Table 4: Sheath Diameter
B	.125" or 1/8" O.D.
V	.156" or 5/32" O.D.
C	.188" or 3/16" O.D.
D	.250" or 1/4" O.D.
F	.375" or 3/8" O.D.

Code	Table 5: Sheath Length ("L" Dimension)
	Specify in inches. See table on page 4 for codes.

Code	Table 6: Lead Length ("A" Dimension)
	Specify in inches. See table on page 4 for codes.

Code	Table 8: Terminations
0	2" Split Ends
1	#6 Spade Lug
2	BX Connector with #6 Spade Lug
3	Standard Plug
A	3/16" Quick Disconnect
B	3/16" Quick Disconnect, Insulated
C	1/4" Quick Disconnect
D	1/4" Quick Disconnect, Insulated
M	Mini Plug
X	Special, Specify

Code	Table 9: Fitting Options
0	No Fitting
N	1/8" NPT Compression, Brass
P	1/8" NPT Compression, Stainless Steel
R	1/4" NPT Compression, Brass
S	1/4" NPT Compression, Stainless Steel
V	1/2" NPT Compression, Stainless Steel
X	Special, Specify

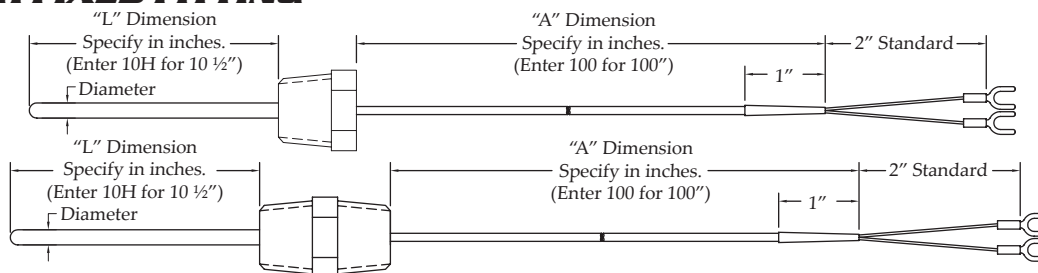
Part Number Sequence

R1P-AA-4B09H-072ECR

R1P	-	A		A	-	4		B		09H	-	072		E		C		R
R1P		Table 1		Table 2		Table 3		Table 4		Table 5		Table 6		Table 7		Table 8		Table 9
Sensor Type & Style No.		Element Type		Wiring Configuration		Sheath Material		Sheath Diameter		"L" Sheath Length		"A" Lead Length		Leadwire Type		Terminations		Fitting Options

Resistance Temperature Detectors

RTD WITH FIXED FITTING



STYLE R2L, R2M or R2P

R2L - Maximum Temperature 500°F

R2M - Maximum Temperature 900°F

R2P - Maximum Temperature 1200°F

Code	Table 1: Element Type
A	100 ohm .00385 Curve Class B Platinum
B	100 ohm .00385 Curve Class A Platinum
D	500 ohm .00385 Curve Class B Platinum
E	1000 ohm .00385 Curve Class B Platinum
G	100 ohm .00392 Curve Class B Platinum
J	120 ohm .00672 Curve Nickel (R2L Only)
K	604 ohm .00520 Curve Nickel Iron (R2L Only)

Code	Table 2: Wiring Configuration
A	Single, 2 Wire
B	Single, 3 Wire (Minimum sheath diameter .156")
C	Single, 4 Wire (Minimum sheath diameter .188")
D	Dual, 4 Wire (Minimum sheath diameter .188")
E	Dual, 6 Wire (Minimum sheath diameter .250")

Code	Table 3: Sheath Material
4	304 Stainless Steel
6	316 Stainless Steel
8	Inconel 600

Code	Table 4: Sheath Diameter
B	.125" or 1/8" O.D.
V	.156" or 5/32" O.D.
C	.188" or 3/16" O.D.
D	.250" or 1/4" O.D.
F	.375" or 3/8" O.D.

Code	Table 5: Sheath Length ("L" Dimension)
	Specify in inches. See table on page 4 for codes.

Code	Table 6: Lead Length ("A" Dimension)
	Specify in inches. See table on page 4 for codes.

Code	Table 7: Leadwire Type
A	Stranded Fiberglass Singles
B	Stranded Fiberglass with Overall Fiberglass Jacket
C	Stranded Fiberglass with Stainless Steel Overbraid
D	Stranded Fiberglass with Stainless Steel Armor
E	Stranded Mica/Fiberglass Singles
F	Stranded Teflon Singles (R2L Only)
G	Stranded Teflon with Overall Teflon Jacket (R2L Only)
J	Stranded Teflon with Stainless Steel Overbraid (R2L Only)
K	Stranded Teflon with Stainless Steel Armor (R2L Only)
M	PVC with Mylar Shield (R2L Only)

Code	Table 8: Spring Loaded Options
1	Fixed Fitting
2	Spring Loaded Fitting

Code	Table 9: Terminations
0	2" Split Ends
1	#6 Spade Lug
2	BX Connector with #6 Spade Lug
3	Standard Plug
A	3/16" Quick Disconnect
B	3/16" Quick Disconnect, Insulated
C	1/4" Quick Disconnect
D	1/4" Quick Disconnect, Insulated
M	Mini Plug
X	Special, Specify

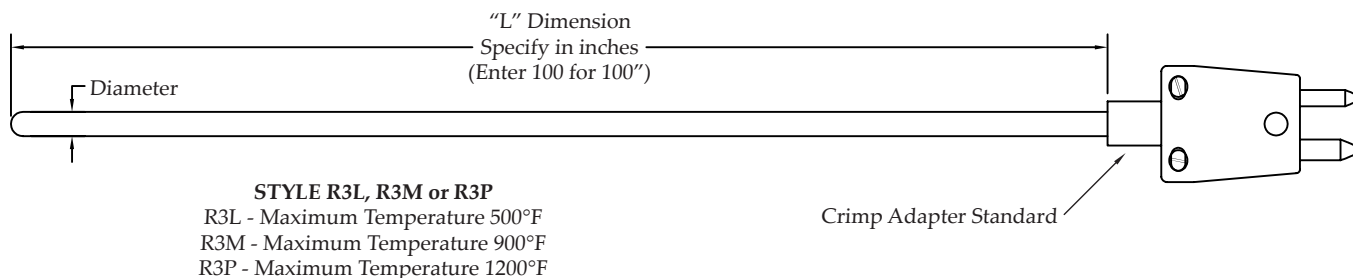
Code	Table 10: Fitting Options
1	1/4" NPT x 1/4" NPT Brass Hex Nipple
2	1/4" NPT x 1/4" NPT Stainless Steel Hex Nipple
5	1/2" NPT x 1/2" NPT Brass Hex Nipple
6	1/2" NPT x 1/2" NPT Stainless Steel Hex Nipple
C	1/4" NPT Brass Bushing
D	1/4" NPT Stainless Steel Bushing
G	1/2" NPT Brass Bushing
H	1/2" NPT Stainless Steel Bushing
X	Special, Specify

Part Number Sequence R2P-EB-4V12F-018E1CC

R2P	-	E	B	-	4	V	12F	-	018	E	1	C	C
R2L, R2M, R2P		Table 1	Table 2		Table 3	Table 4	Table 5		Table 6	Table 7	Table 8	Table 9	Table 10
Sensor Type & Style No.		Element Type	Wiring Configuration		Sheath Material	Sheath Diameter	"L" Sheath Length		"A" Lead Length	Leadwire Type	Spring Loading	Terminations	Fitting Options

Resistance Temperature Detectors

RTD WITH PLUG



Code	Table 1: Element Type
A	100 ohm .00385 Curve Class B Platinum
B	100 ohm .00385 Curve Class A Platinum
D	500 ohm .00385 Curve Class B Platinum
E	1000 ohm .00385 Curve Class B Platinum
G	100 ohm .00392 Curve Class B Platinum
J	120 ohm .00672 Curve Nickel (R3L Only)
K	604 ohm .00520 Curve Nickel Iron (R3L Only)

Code	Table 4: Sheath Diameter
B	.125" or 1/8" O.D.
V	.156" or 5/32" O.D.
C	.188" or 3/16" O.D.
D	.250" or 1/4" O.D.
F	.375" or 3/8" O.D.

Code	Table 2: Wiring Configuration
A	Single, 2 Wire
B	Single, 3 Wire (Minimum sheath diameter .156")
C	Single, 4 Wire (Minimum sheath diameter .188")
D	Dual, 4 Wire (Minimum sheath diameter .188")
E	Dual, 6 Wire (Minimum sheath diameter .250")

Code	Table 5: Sheath Length ("L" Dimension)
	Specify in inches. See table on page 4 for codes.

Code	Table 3: Sheath Material
4	304 Stainless Steel
6	316 Stainless Steel
8	Inconel 600

Code	Table 6: Terminations
5	Standard Plug with Crimp Connector
7	Standard Plug with Tube Adapter
J	Open Disk Block, Ceramic
K	Open Disk Block, Glass Fiber
M	Mini Plug with Crimp Adapter
X	Special, Specify

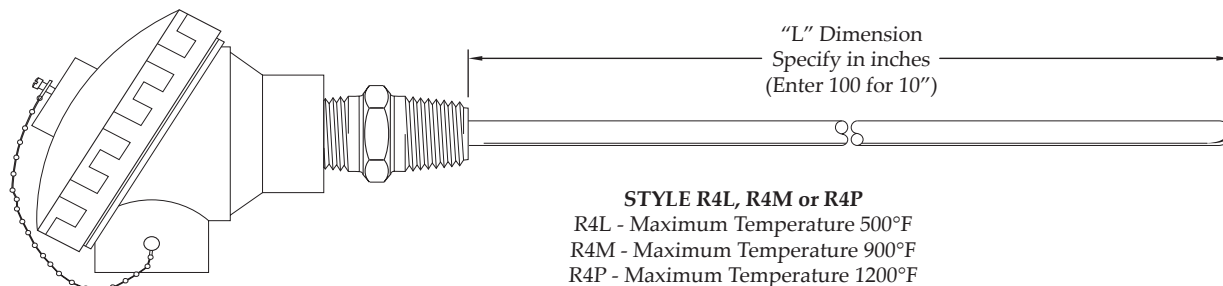
Part Number Sequence

R3L-BB-6F100-5

R3L	-	B	B	-	6	F	100	-	5
R3L, R3M, R3P	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6			
Sensor Type & Style No.	Element Type	Wiring Configuration	Sheath Material	Sheath Diameter	"L" Sheath Length	Terminations			

Resistance Temperature Detectors

RTD WITH TERMINAL HEAD



Code	Table 1: Element Type
A	100 ohm .00385 Curve Class B Platinum
B	100 ohm .00385 Curve Class A Platinum
D	500 ohm .00385 Curve Class B Platinum
E	1000 ohm .00385 Curve Class B Platinum
G	100 ohm .00392 Curve Class B Platinum
J	120 ohm .00672 Curve Nickel (R4L Only)
K	604 ohm .00520 Curve Nickel Iron (R4L Only)

Code	Table 6: Process Connections
6	½" NPT Stainless Steel Hex Nipple
8	¾" NPT Stainless Steel Hex Nipple

Code	Table 7: Spring Loaded Options
1	Fixed Fitting
2	Spring Loaded Fitting

Code	Table 2: Wiring Configuration
A	Single, 2 Wire
B	Single, 3 Wire (Minimum sheath diameter .156")
C	Single, 4 Wire (Minimum sheath diameter .188")
D	Dual, 4 Wire (Minimum sheath diameter .188")
E	Dual, 6 Wire (Minimum sheath diameter .250")

Code	Table 8: Terminal Heads
A	½" NPT Conduit, Aluminum Head
B	¾" NPT Conduit, Aluminum Head
C	½" NPT Conduit, Cast Iron Head
D	¾" NPT Conduit, Cast Iron Head
M	¼" NPT Conduit Connection, Miniature Plastic Head
P	½" NPT Conduit, Grey Delrin Head
R	¾" NPT Conduit, Grey Delrin Head
W	½" NPT Conduit, White Polypropylene Head
V	¾" NPT Conduit, White Polypropylene Head
Z	½" NPT Conduit, Explosion Proof Aluminum Head
Y	¾" NPT Conduit, Explosion Proof Aluminum Head

Code	Table 3: Sheath Material
4	304 Stainless Steel
6	316 Stainless Steel
8	Inconel 600

Code	Table 4: Sheath Diameter
B	.125" or ½" O.D.
V	.156" or 5/32" O.D.
C	.188" or 3/16" O.D.
D	.250" or ¼" O.D.
F	.375" or 3/8" O.D.

Code	Table 5: Sheath Length ("L" Dimension)
	Specify in inches. See table on page 4 for codes.

Code	Table 9: Fitting Options
0	No Fitting
N	⅛" NPT Compression, Brass
P	⅛" NPT Compression, Stainless Steel
R	¼" NPT Compression, Brass
S	¼" NPT Compression, Stainless Steel
V	½" NPT Compression, Stainless Steel
X	Special, Specify

Part Number Sequence

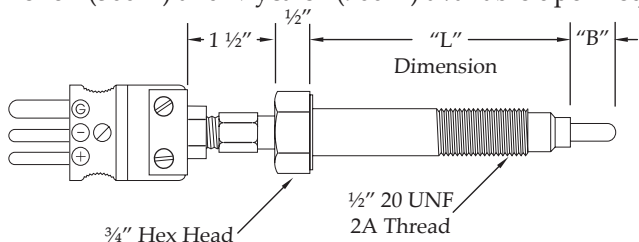
R4L-EA-4C060-62AR

R4L	-	E	A	-	4	C	060	-	6	2	A	R
R4L, R4M, R4P	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9			
Sensor Type & Style No.	Element Type	Wiring Configuration	Sheath Material	Sheath Diameter	"L" Sheath Length	Process Connections	Spring Loading	Terminal Head	Fitting Options			

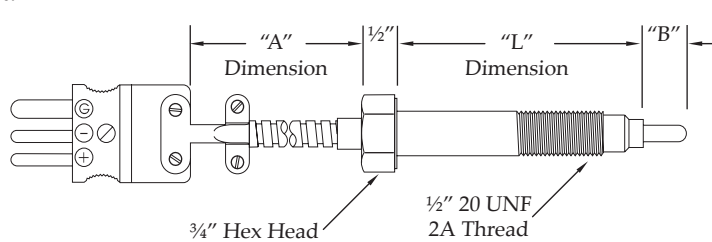
Resistance Temperature Detectors

MELT BOLT RTD

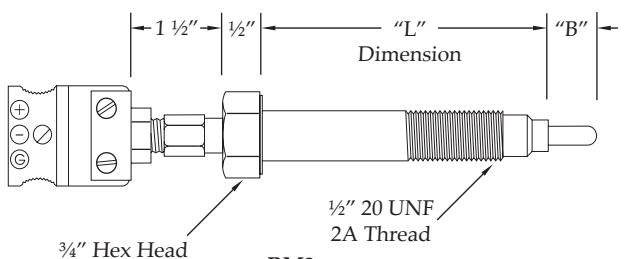
Durex melt bolts are designed for dependable temperature measurement of the plastic melt stream within extruders and injection molding equipment. Standard assemblies are supplied with mineral insulated sensing elements for extended pressure and temperature performance. For options at the probe tip there are thermal barriers of Teflon (500°F) and Mycalex (900°F) available upon request.



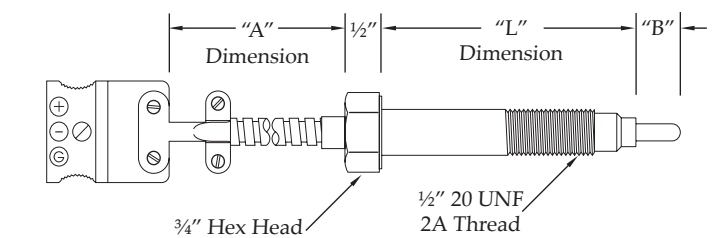
RM0



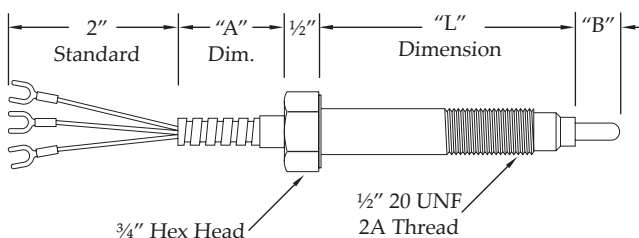
RM1



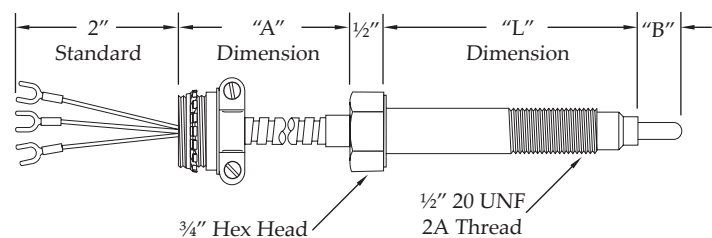
RM2



RM3



RM4



RM5

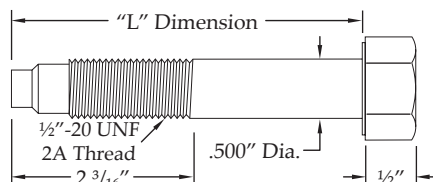
Code	Table 1: Element Type
A	100 ohm .00385 Curve Class B Platinum
B	100 ohm .00385 Curve Class A Platinum
D	500 ohm .00385 Curve Class B Platinum
E	1000 ohm .00385 Curve Class B Platinum
G	100 ohm .00392 Curve Class B Platinum

Code	Table 2: Wiring Configuration
A	Single, 2 Wire
B	Single, 3 Wire (Minimum sheath diameter .156")
C	Single, 4 Wire (Minimum sheath diameter .188")
D	Dual, 4 Wire (Minimum sheath diameter .188")
E	Dual, 6 Wire (Minimum sheath diameter .250")

Part Number Sequence RM1-EA-030-S024L

RM1	-	E	-	A	-	030	-	S	-	024	-	L
RM0 - RM5		Table 1		Table 2		"L" Dim.		"B" Dim.		"A" Dim.		Operating Temp.
Sensor Type & Style No.		Element Type		Wiring Configuration		030 = 3" / 040 = 4" / 060 = 6"		See Page 4		See Page 4		L = 500°F / M = 900°F

Blank Bolts

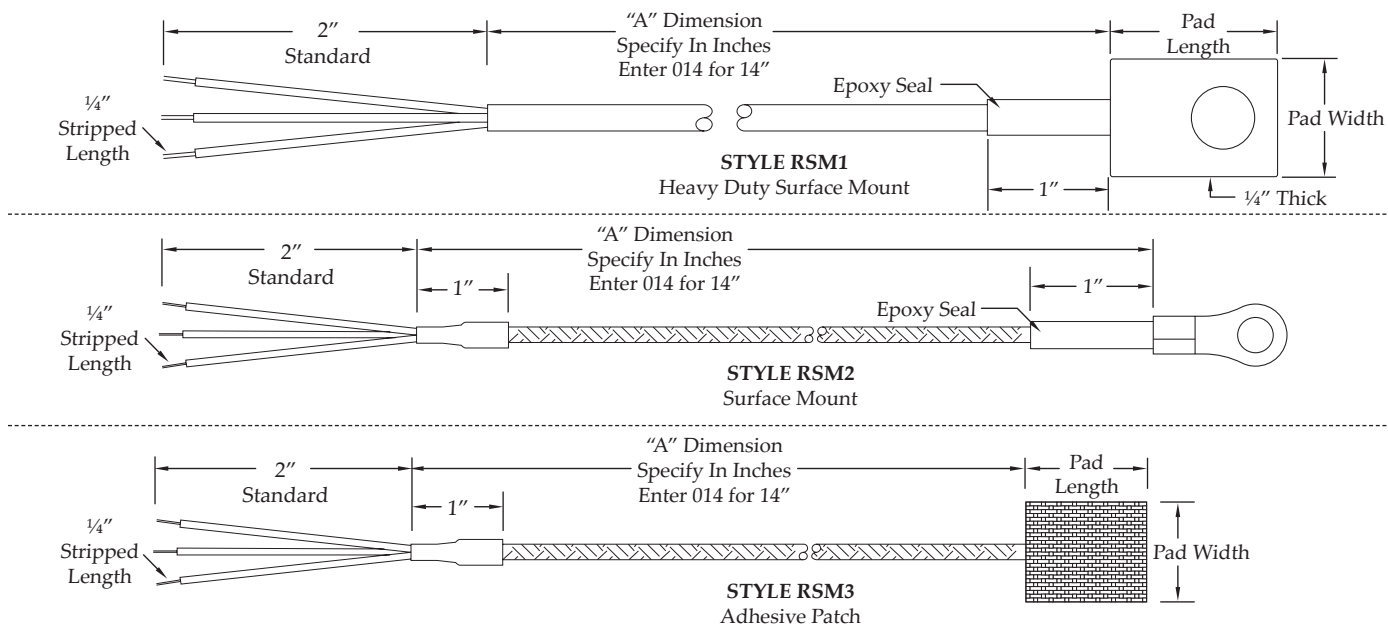


"L" Dimension	Part Number
3"	244008
4"	244053
6"	244009

Blank Bolts occupy hole when Melt Bolt is removed.

Resistance Temperature Detectors

SURFACE MOUNT RTDS



Code	Table 1: Element Type
A	100 ohm .00385 Curve Class B Platinum
B	100 ohm .00385 Curve Class A Platinum
D	500 ohm .00385 Curve Class B Platinum
E	1000 ohm .00385 Curve Class B Platinum
G	100 ohm .00392 Curve Class B Platinum

Code	Table 2: Wiring Configuration
A	Single, 2 Wire
B	Single, 3 Wire (Minimum sheath diameter .156")
C	Single, 4 Wire (Minimum sheath diameter .188")
D	Dual, 4 Wire (Minimum sheath diameter .188")
E	Dual, 6 Wire (Minimum sheath diameter .250")

Code	Table 3: Pad Material
B	Brass
F	Fiberglass
4	304 Stainless Steel
0	None

Code	Table 4: Pad Thickness
C	3/16" (.188")
D	1/4" (.250")
H	1/2" (.500")
0	None

Code	Table 5: Pad Width
06H	6.5" LG
00M	Standard (.750")
000	No Pad

Code	Table 6: Pad Length
06H	6.5" Long
010	Standard (1")
000	No Pad

Code	Table 7: Lead Length ("A" Dimension)
Specify in inches. See table on page 4 for codes.	

Code	Table 8: Leadwire Type
A	Stranded Fiberglass Singles
B	Stranded Fiberglass with Overall Fiberglass Jacket
E	Stranded Mica/Fiberglass
F	Stranded Teflon Singles
J	Stranded Teflon with Stainless Steel Overbraid
K	Stranded Teflon with Stainless Steel Armor
M	PVC with Mylar Shield

Code	Table 9: Terminations
0	2" Split Ends
1	#6 Spade Lug
2	BX Connector with #6 Spade Lug
3	Standard Plug
M	Mini Plug
X	Special, Specify

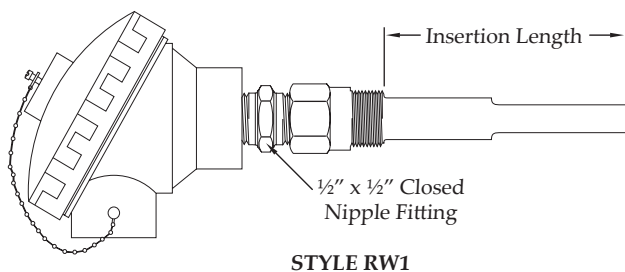
Code	Table 10: Mounting Hole
A	No. 6 Stud Size, .144" Hole Diameter
B	No. 6 Stud Size, .169" Hole Diameter
C	No. 10 Stud Size, .196" Hole Diameter
D	1/4" Stud Size, .266" Hole Diameter
E	3/8" Stud Size, .390" Hole Diameter
P	Patch

Part Number Sequence RSM1-AB-BD00M010-060F3A

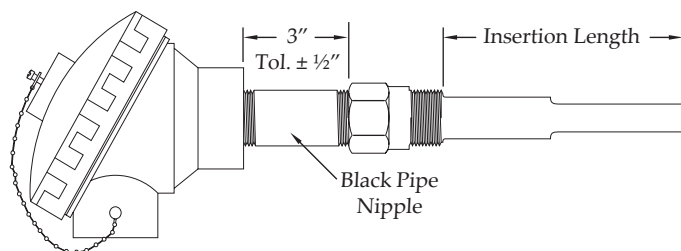
RSM1	-	A	B	-	B	D	00M	010	-	060	F	3	A
RSM1, RSM2, RSM3	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9	Table 10			
Sensor Type & Style No.	Element Type	Wiring Configuration	Pad Material	Pad Thickness	Pad Width	Pad Length	Leadwire Length	Leadwire Type	Terminations	Mounting Hole			

Resistance Temperature Detectors

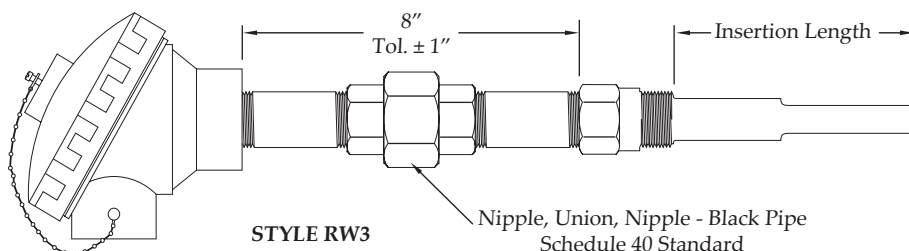
RTD THERMOWELLS



STYLE RW1



STYLE RW2



STYLE RW3

Nipple, Union, Nipple - Black Pipe
Schedule 40 Standard

Code	Table 1: Element Type
A	100 ohm .00385 Curve Class B Platinum
B	100 ohm .00385 Curve Class A Platinum
D	500 ohm .00385 Curve Class B Platinum
E	1000 ohm .00385 Curve Class B Platinum
G	100 ohm .00392 Curve Class B Platinum
J	120 ohm .00672 Curve Nickel
K	604 ohm .00520 Curve Nickel Iron

Code	Table 5: Process Connection Material
K	Black Pipe, Schedule 40
Y	Galvanized Pipe, Schedule 40
4	304 Stainless Steel

Code	Table 2: Wiring Configuration
A	Single, 2 Wire
B	Single, 3 Wire (Minimum sheath diameter .156")
C	Single, 4 Wire (Minimum sheath diameter .188")
D	Dual, 4 Wire (Minimum sheath diameter .188")
E	Dual, 6 Wire (Minimum sheath diameter .250")

Code	Table 6: Spring Loaded Options
1	Fixed Fitting
2	Spring Loaded Fitting

Code	Table 3: Thermowell Number
	See next page for Thermowell Code Numbers

Code	Table 7: Terminal Heads
A	1/2" NPT Conduit, Aluminum Head
B	3/4" NPT Conduit, Aluminum Head
C	1/2" NPT Conduit, Cast Iron Head
D	3/4" NPT Conduit, Cast Iron Head
M	1/4" NPT Conduit Connection, Miniature Plastic Head
P	1/2" NPT Conduit, Grey Delrin Head
R	3/4" NPT Conduit, Grey Delrin Head
W	1/2" NPT Conduit, White Polypropylene Head
V	3/4" NPT Conduit, White Polypropylene Head
Z	1/2" NPT Conduit, Explosion Proof Aluminum Head
Y	3/4" NPT Conduit, Explosion Proof Aluminum Head

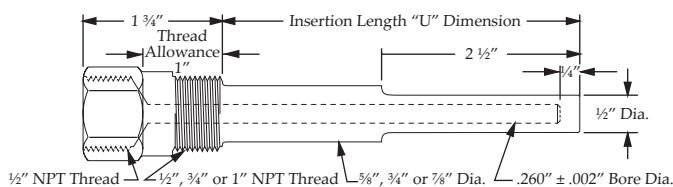
Code	Table 4: Well Material
4	304 Stainless Steel
6	316 Stainless Steel

Part Number Sequence RW3-AB-5302H4-K2D

RW3	-	A	B	-	5302H	4	-	K	2	D
RW1, RW2, RW3		Table 1	Table 2		Table 3	Table 4		Table 5	Table 6	Table 7
Sensor Type & Style No.		Element Type	Wiring Configuration		Thermowell Number	Well Material		Process Connection Material	Spring Loading	Terminal Head

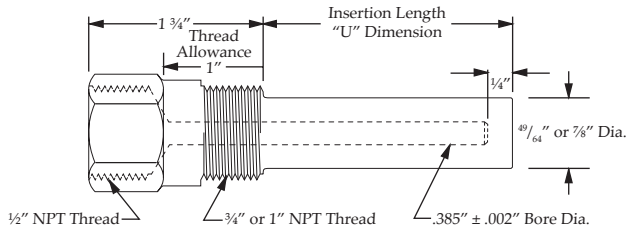
Resistance Temperature Detectors

RTD THERMOWELLS



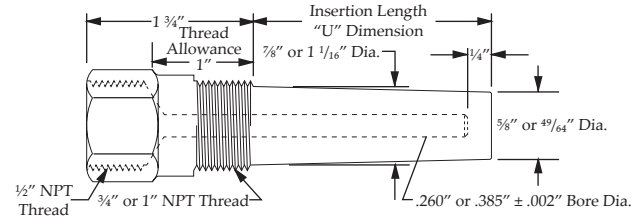
Standard Well - Stepped Shank

"U" Dim.	1/2" NPT	3/4" NPT	1" NPT
2 1/2"	1202H	1302H	1402H
4 1/2"	1204H	1304H	1404H
6"	12060	13060	14060
7 1/2"	1207H	1307H	1407H
10 1/2"	1210H	1310H	1410H
12"	12120	13120	14120
16 1/2"	1216H	1316H	1416H
22 1/2"	1222H	1322H	1422H



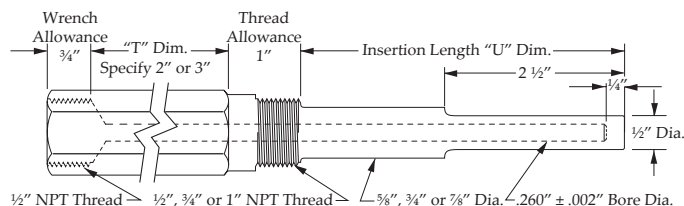
Standard Well - Straight Shank

"U" Dim.	3/4" NPT	1" NPT
2 1/2"	3302H	3402H
4 1/2"	3304H	3404H
6"	33060	34060
7 1/2"	3307H	3407H
10 1/2"	3310H	3410H
12"	33120	34120
16 1/2"	3316H	3416H
22 1/2"	3322H	3422H



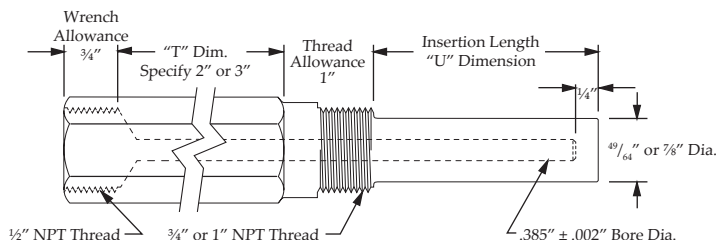
Standard Well - Tapered Shank

"U" Dim.	3/4" NPT		1" NPT	
	.260" Bore	.385" Bore	.260" Bore	.385" Bore
2 1/2"	5302H	6302H	5402H	6402H
4 1/2"	5304H	6304H	5404H	6404H
6"	53060	63060	54060	64060
7 1/2"	5307H	6307H	5407H	6407H
10 1/2"	5310H	6310H	5410H	6410H
12"	53120	63120	54120	64120
16 1/2"	5316H	6316H	5416H	6416H
22 1/2"	5322H	6322H	5422H	6422H



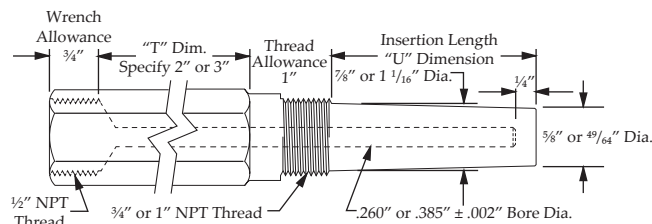
Lagging Extension Well - Stepped Shank

"U" Dim.	1/2" NPT	3/4" NPT	1" NPT
2 1/2"	2202H	2302H	2402H
4 1/2"	2204H	2304H	2404H
6"	22060	23060	24060
7 1/2"	2207H	2307H	2407H
10 1/2"	2210H	2310H	2410H
12"	22120	23120	24120
16 1/2"	2216H	2316H	2416H
22 1/2"	2222H	2322H	2422H



Lagging Extension Well - Straight Shank

"U" Dim.	3/4" NPT	1" NPT
2 1/2"	4302H	4402H
4 1/2"	4304H	4404H
6"	43060	44060
7 1/2"	4307H	4407H
10 1/2"	4310H	4410H
12"	43120	44120
16 1/2"	4316H	4416H
22 1/2"	4322H	4422H

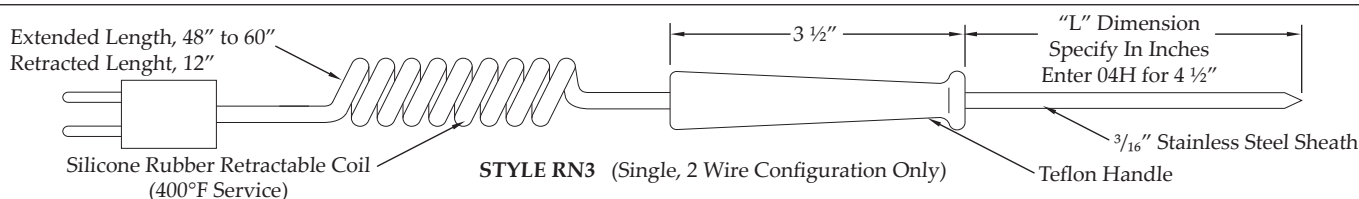
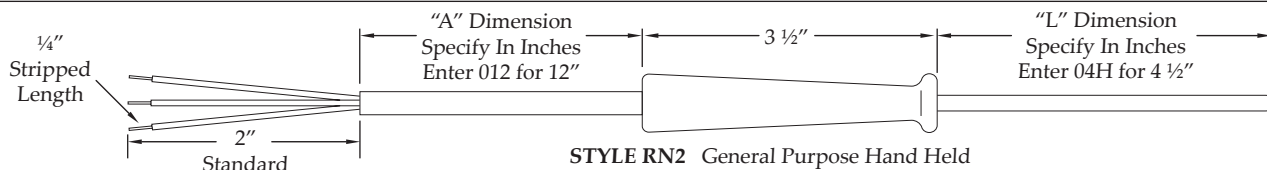
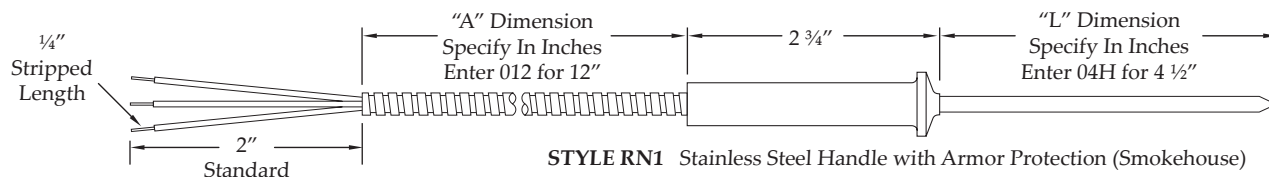


Lagging Extension Well - Tapered Shank

"U" Dim.	3/4" NPT		1" NPT	
	.260" Bore	.385" Bore	.260" Bore	.385" Bore
2 1/2"	7302H	8302H	7402H	8402H
4 1/2"	7304H	8304H	7404H	8404H
6"	73060	83060	74060	84060
7 1/2"	7307H	8307H	7407H	8407H
10 1/2"	7310H	8310H	7410H	8410H
12"	73120	83120	74120	84120
16 1/2"	7316H	8316H	7416H	8416H
22 1/2"	7322H	8322H	7422H	8422H

Resistance Temperature Detectors

HAND HELD RTDS



Code	Table 1: Element Type
A	100 ohm .00385 Curve Class B Platinum
B	100 ohm .00385 Curve Class A Platinum
D	500 ohm .00385 Curve Class B Platinum
E	1000 ohm .00385 Curve Class B Platinum
G	100 ohm .00392 Curve Class B Platinum
J	120 ohm .00672 Curve Nickel
K	604 ohm .00520 Curve Nickel Iron

Code	Table 6: Leadwire Type
C	Fiberglass Leadwire with Stainless Steel Overbraid
J	Teflon Leadwire with Stainless Steel Overbraid
K	Teflon Leadwire with Stainless Steel Armor
M	PVC Leadwire with Mylar Shield
R	Coiled PVC Cord (Single 2 Wire Only)
S	Coiled Silicone Rubber Cord (Single 2 Wire Only)

Code	Table 2: Wiring Configuration
A	Single, 2 Wire
B	Single, 3 Wire (Minimum sheath diameter .156")
C	Single, 4 Wire (Minimum sheath diameter .188")
D	Dual, 4 Wire (Minimum sheath diameter .188")
E	Dual, 6 Wire (Minimum sheath diameter .250")

Code	Table 7: Tip Configuration
R	Round
P	Piercing
A	Air Temperature
S	Surface

Code	Table 3: Sheath Diameter
B	.125" or 1/8" O.D.
V	.156" or 5/32" O.D.
C	.188" or 3/16" O.D.
D	.250" or 1/4" O.D.

Code	Table 8: Terminations
0	2" Split Ends
1	#6 Spade Lug
2	BX Connector with #6 Spade Lug
3	Standard Plug
A	3/16" Quick Disconnect
B	3/16" Quick Disconnect, Insulated
C	1/4" Quick Disconnect
D	1/4" Quick Disconnect, Insulated
M	Mini Plug
X	Special, Specify

Code	Table 4: Sheath Length ("L" Dimension)
	Specify in inches. See table on page 4 for codes.

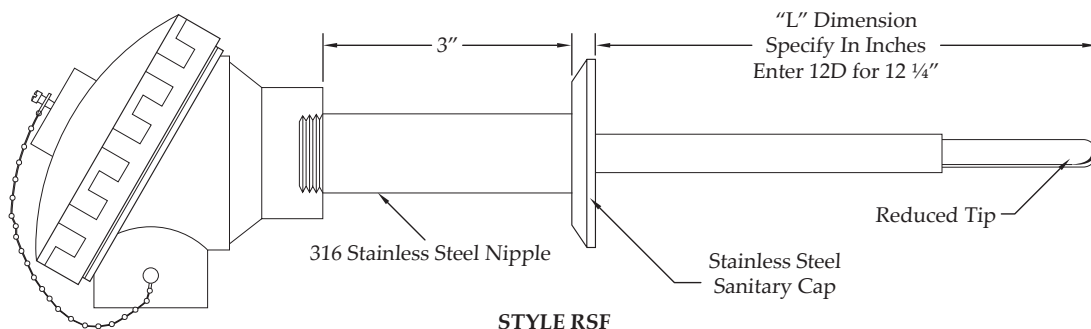
Code	Table 5: Lead Length ("A" Dimension)
	Specify in inches. See table on page 4 for codes.

Part Number Sequence RN2-AB-C04P-036MRD

RN2	-	A	B	-	C	04P	-	036	M	R	D
RN1, RN2, RN3		Table 1	Table 2		Table 3	Table 4		Table 5	Table 6	Table 7	Table 8
Sensor Type & Style No.		Element Type	Wiring Configuration		Sheath Diameter	"L" Sheath Length		"A" Lead Length	Leadwire Type	Tip Configuration	Terminations

Resistance Temperature Detectors

RTD WITH SANITARY FITTING



STYLE RSF

Code	Table 1: Element Type
A	100 ohm Platinum, Class B .00385 Coefficient
B	100 ohm Platinum, Class A .00385 Coefficient
E	1000 ohm Platinum, Class B .00385 Coefficient
G	100 ohm Platinum, Class B .00392 Coefficient

Code	Table 6: Sanitary Cap Type
T	16A Plain Cap, Tri Clover
U	16A Plain Cap & 13H Hex Union Nut, Tri Clover
X	Special, Specify

Code	Table 2: Wiring Configuration
A	Single, 2 Wire
B	Single, 3 Wire (Minimum sheath diameter .156")
C	Single, 4 Wire (Minimum sheath diameter .188")
D	Dual, 4 Wire (Minimum sheath diameter .188")
E	Dual, 6 Wire (Minimum sheath diameter .250")

Code	Table 7: Sanitary Cap Size
1	1 1/2" (Tube Outer Diameter)
2	2" (Tube Outer Diameter)
3	2 1/2" (Tube Outer Diameter)
4	3" (Tube Outer Diameter)
X	Special, Specify

Code	Table 3: Sheath Material
6	316 Stainless Steel

Code	Table 4: Sheath Diameter
C	.188" or 3/16" O.D.
D	.250" or 1/4" O.D.

Code	Table 8: Terminal Head
A	Aluminum Screw Cover Head; 1/2" NPT Conduit Connection
W	White Polypropylene FDA Compliant Screw Cover Head; 1/2" NPT Conduit Connection

Code	Table 5: Immersion Length ("L" Dimension)
	Specify in inches. See table on page 4 for codes.

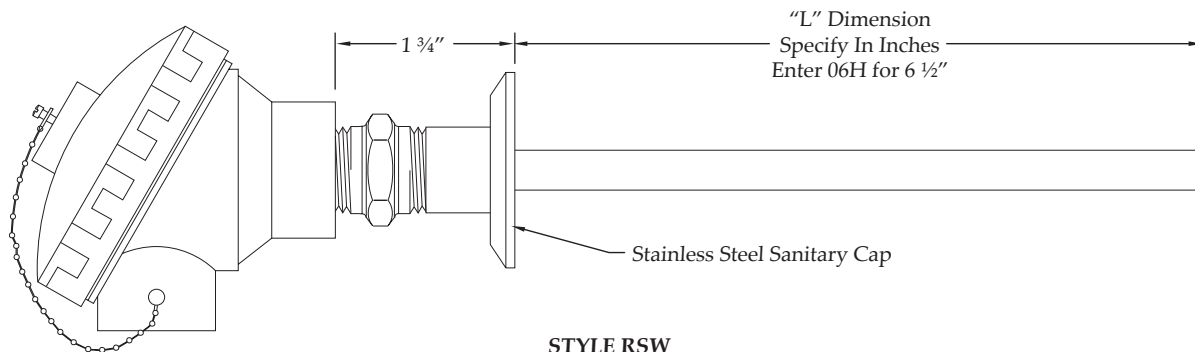
Part Number Sequence

RSF-HB-6D12D-T1W

RSF	-	H	B	-	6	D	12D	-	T	1	W
RSF		Table 1	Table 2		Table 3	Table 4	Table 5		Table 6	Table 7	Table 8
Sensor Type & Style No.		Element Type	Wiring Configuration		Sheath Material	Sheath Diameter	Immersion Length "L"		Cap Type	Cap Size	Terminal Head

Resistance Temperature Detectors

RTD WITH SANITARY WELLS CONNECTED



STYLE RSW

Code	Table 1: Element Type
A	100 ohm Platinum, Class B .00385 Coefficient
B	100 ohm Platinum, Class A .00385 Coefficient
E	1000 ohm Platinum, Class B .00385 Coefficient
G	100 ohm Platinum, Class B .00392 Coefficient

Code	Table 6: Sanitary Cap Type
T	16A Plain Cap, Tri Clover
U	16A Plain Cap & 13H Hex Union Nut, Tri Clover
X	Special, Specify

Code	Table 2: Wiring Configuration
A	Single, 2 Wire
B	Single, 3 Wire (Minimum sheath diameter .156")
C	Single, 4 Wire (Minimum sheath diameter .188")
D	Dual, 4 Wire (Minimum sheath diameter .188")
E	Dual, 6 Wire (Minimum sheath diameter .250")

Code	Table 7: Sanitary Cap Size
1	1 1/2" (Tube Outer Diameter)
2	2" (Tube Outer Diameter)
3	2 1/2" (Tube Outer Diameter)
4	3" (Tube Outer Diameter)
X	Special, Specify

Code	Table 3: Sheath Material
6	316 Stainless Steel

Code	Table 4: Sheath Diameter
H	.500 or 1/2" Outer Diameter

Code	Table 8: Terminal Head
A	Aluminum Screw Cover Head; 1/2" NPT Conduit Connection
W	White Polypropylene FDA Compliant Screw Cover Head; 1/2" NPT Conduit Connection

Code	Table 5: Immersion Length ("L" Dimension)
	Specify in inches. See table on page 4 for codes.

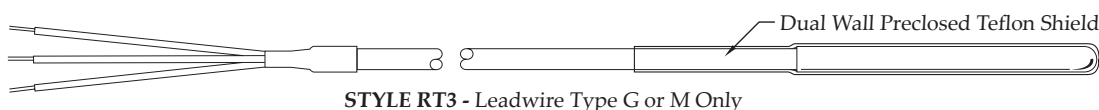
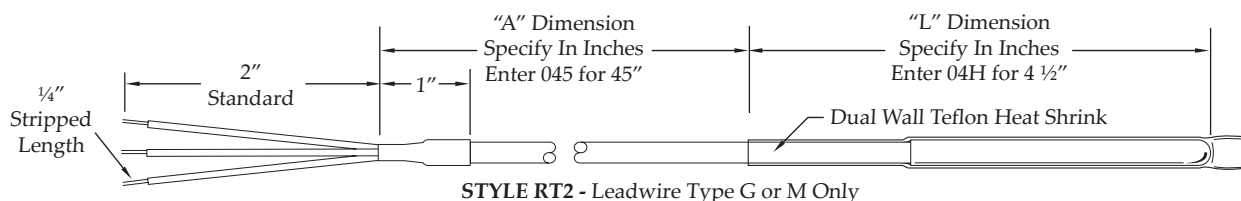
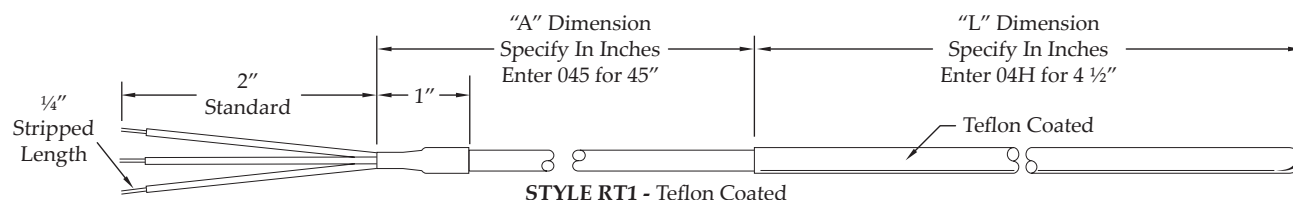
Part Number Sequence

RSW-ED-6H06H-T1W

RSW	-	E		D	-	6		H		06H	-	T		1		W
RSW		Table 1		Table 2		Table 3		Table 4		Table 5		Table 6		Table 7		Table 8
Sensor Type & Style No.		Element Type		Wiring Configuration		Sheath Material		Sheath Diameter		Immersion Length "L"		Cap Type		Cap Size		Terminal Head

Resistance Temperature Detectors

TEFLON SHIELDED RTD



Code	Table 1: Element Type
A	100 ohm Platinum, Class B .00385 Coefficient
B	100 ohm Platinum, Class A .00385 Coefficient
E	1000 ohm Platinum, Class B .00385 Coefficient
G	100 ohm Platinum, Class B .00392 Coefficient

Code	Table 2: Wiring Configuration
A	Single, 2 Wire
B	Single, 3 Wire
C	Single, 4 Wire
D	Dual, 4 Wire
E	Dual, 6 Wire (Minimum sheath diameter .250")

Code	Table 3: Sheath Material
4	304 Stainless Steel
6	316 Stainless Steel

Code	Table 4: Sheath Diameter		
	Nominal	RT1	RT2 / RT3
C	.188"	.200"	.220"
D	.250"	.262"	.285"

Code	Table 5: Sanitary Length ("L" Dimension)
	Specify in inches. See table on page 4 for codes.

Code	Table 6: Lead Length ("A" Dimension)
	Specify in inches. See table on page 4 for codes.

Code	Table 7: Leadwire Type
A	Stranded Fiberglass Singles
B	Stranded Fiberglass with Overall Fiberglass Jacket
C	Stranded Fiberglass with Stainless Steel Overbraid
D	Stranded Fiberglass with Stainless Steel Armor
E	Stranded Mica/Fiberglass Singles
F	Stranded Teflon Singles
G	Stranded Teflon with Overall Teflon Jacket
J	Stranded Teflon with Stainless Steel Overbraid
K	Stranded Teflon with Stainless Steel Armor
M	PVC with Mylar Shield

Code	Table 8: Terminations
0	2" Split Ends
1	#6 Spade Lug
2	BX Connector with #6 Spade Lug
3	Standard Plug
A	3/16" Quick Disconnect
B	3/16" Quick Disconnect, Insulated
C	1/4" Quick Disconnect
D	1/4" Quick Disconnect, Insulated
M	Mini Plug
X	Special, Specify

Part Number Sequence

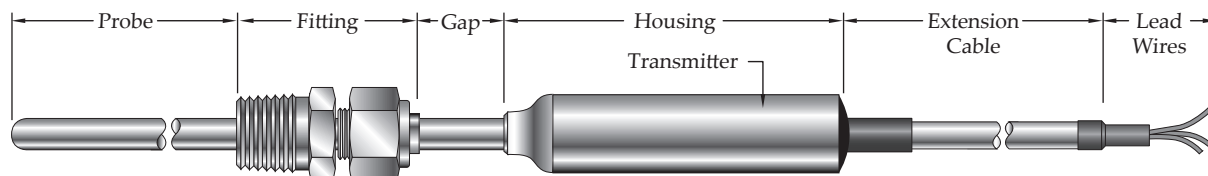
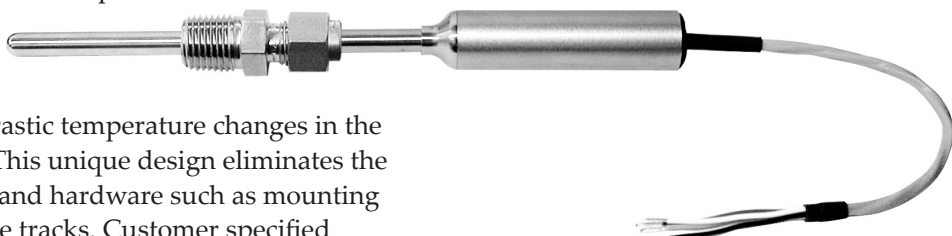
RT2-AB-4C04H-024FC

RT2	-	A	B	-	4	C	04H	-	024	F	C
RT1, RT2 or RT3		Table 1	Table 2		Table 3	Table 4	Table 5		Table 6	Table 7	Table 8
Sensor Type & Style No.		Element Type	Wiring Configuration		Sheath Material	Sheath Diameter	"L" Sheath Length		"A" Lead Length	Leadwire Type	Terminations

Resistance Temperature Detectors

INTEGRATED TRANSMITTER RTD ASSEMBLY

The unique line of Integrated Transmitter RTD Assemblies combines an industry standard 4-20mA transmitter with a matched high accuracy RTD (Resistive Temperature Device) in a compact, hermetically sealed assembly. The robust construction of this product enables it to withstand vibrations, harsh wash downs and drastic temperature changes in the roughest environmental conditions. This unique design eliminates the need for additional connection leads and hardware such as mounting boxes, transmitter housings, and cable tracks. Customer specified temperature range for the transmitter calibration as well as custom probe dimensions, extension cable length and type, and process connection types make these sensors a sure fit for the most challenging applications.



Design Features:

- Can be recalibrated and re-scaled in the field.
- Compact size permits easy usage where space is limited
- Standard 2.5" long by 0.62" diameter housing holds electronic circuit and microprocessor
- Robust construction of transmitter housing resists wear in severe operating conditions
- Hermatic seal prevents moisture from entering the transmitter housing, ensuring reliability
- Sturdy construction is resistant to vibrations
- Cost effective and maintenance free

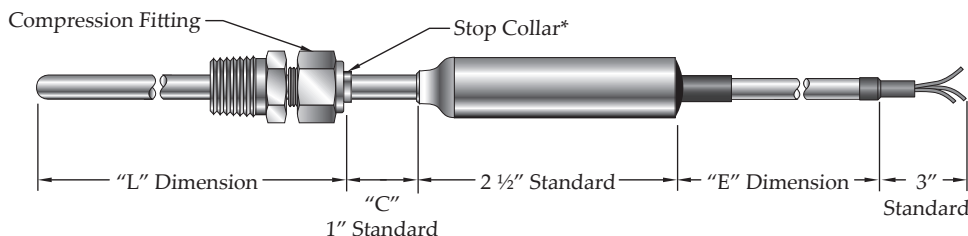
Typical Applications:

- Generators
- Engines
- Compressors
- Pharmaceutical Industries
- Utilities
- Chemical Plants
- Gas Pipelines
- Food Preparation
- Refineries
- Petrochemical Plants
- Paper Mills

Resistance Temperature Detectors

INTEGRATED TRANSMITTER RTD ASSEMBLY

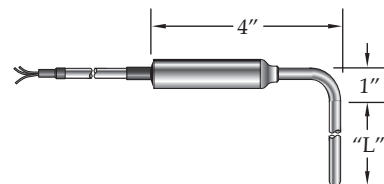
The IT22 assembly's configuration range stands out amongst other temperature sensors in its class. With a wide variety of probe diameters, temperature ranges, and fitting configurations, the IT22 can be designed to fit an abundance of applications.



STYLE IT22

*No stop collar option, "C" = N00

Stop collar recommended for temperatures above 100°C



To order the IT22 with a 90° bend, add suffix "B" after the model number.
Ex: IT22B

Code	Table 1: Calibrated Temperature Range
05	0 to 50°C (32-122°F)
10	0 to 100°C (32-212°F)
15	0 to 150°C (32-302°F)
20	0 to 200°C (32-392°F)
55	-50 to 50°C (-58-122°F)
51	-50 to 150°C (-58-302°F)
52	-50 to 200°C (-58-392°F)
XX	Custom Temperature Range, Specify

Integrated Transmitter RTD Assemblies are factory calibrated to an accuracy of $\pm 0.25\%$ of span or better.

Code	Table 2: Output
LP	4-20 mA loop, upscale burnout (standard)
LD	4-20 mA loop, downscale burnout

Code	Table 3: Probe Diameter "D"
B	1/8"
C	3/16"
D	1/4"
F	3/8"
H	1/2"

Code	Table 4: Probe Material
S	316 Stainless Steel

Code	Table 5: Probe Length "L"
---	Specify in 0.1 inch increments. Ex: 065 = 6.5"

Code	Table 6: Extension Length "C"
N_	Specify in 0.1 inch increments. Ex: N20 = 2.0"

Code	Table 7: Fitting Type
N	None
S18S*	Compression Fitting (See below to configure)
S18S is an example, configure fitting type: Ferrule material: S = Stainless Steel B = Brass* T = Teflon *Not readjustable with metal ferrule Process NPT Size: 18 = 1/8" 14 = 1/4" 38 = 3/8" 12 = 1/2" 34 = 3/4" 44 = 1" Fitting material: S = Stainless Steel B = Brass	

Code	Table 8: Extension Cable Type
PV	PVC Insulation, 90°C (195°F) max.
TF	Teflon Insulation, 200°C (392°F) max.
TA	Teflon with Stainless Steel Armor, 200°C (392°F) max.
TB	Teflon with Stainless Steel Overbraid, 200°C (392°F) max.

Code	Table 9: Extension Cable Length "E"
---	Specify in inches. Ex: 060 = 60"

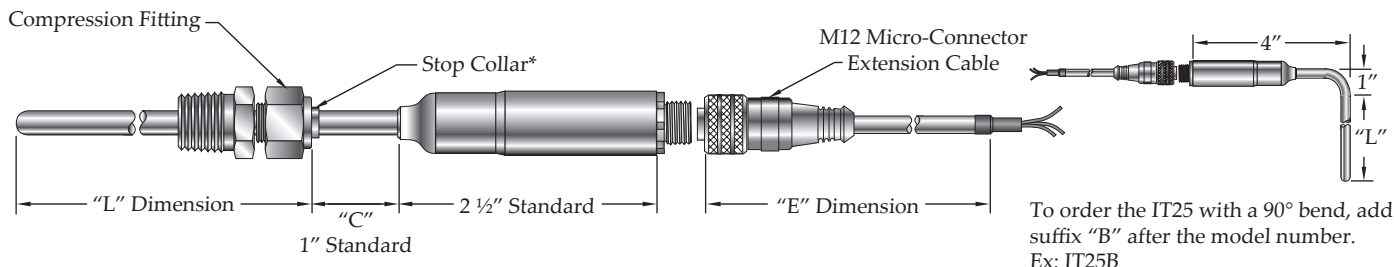
Part Number Sequence IT22-05-LP-B-S-065-N20-N-TA-060

IT22	-	05	-	LP	-	B	-	S	-	065	-	N20	-	N	-	TA	-	060
IT22		Table 1		Table 2		Table 3		Table 4		Table 5		Table 6		Table 7		Table 8		Table 9
Sensor Type & Style No.		Temp Range		Output		Probe Diameter		Probe Material		Probe Length		Extension Length		Fitting Type		Extension Cable Type		Extension Cable Length

Resistance Temperature Detectors

INDUSTRIAL TEMPERATURE SENSOR WITH M12 MICRO-CONNECTOR

IT25 assemblies can be utilized in similar applications as the IT22, but the IT25 allows for quick disconnections. IT25 devices are effective in laboratory test equipment, hydraulic power units, skids, generators, and mobile equipment.



STYLE IT25

*No stop collar option, "C" = N00

Stop collar recommended for temperatures above 100°C

Code	Table 1: Calibrated Temperature Range
05	0 to 50°C (32-122°F)
10	0 to 100°C (32-212°F)
15	0 to 150°C (32-302°F)
20	0 to 200°C (32-392°F)
55	-50 to 50°C (-58-122°F)
51	-50 to 150°C (-58-302°F)
52	-50 to 200°C (-58-392°F)
XX	Custom Temperature Range, Specify

Integrated Transmitter RTD Assemblies are factory calibrated to an accuracy of $\pm 0.25\%$ of span or better.

Code	Table 2: Output
LP	4-20 mA loop, upscale burnout (standard)
LD	4-20 mA loop, downscale burnout

Code	Table 3: Probe Diameter "D"
B	1/8"
C	3/16"
D	1/4"
F	3/8"
H	1/2"

Code	Table 4: Probe Material
S	316 Stainless Steel

Code	Table 5: Probe Length "L"
---	Specify in 0.1 inch increments. Ex: 065 = 6.5"

Code	Table 6: Extension Length "C"
N_	Specify in 0.1 inch increments. Ex: N20 = 2.0"

Code	Table 7: Fitting Type
N	None
S18S*	Compression Fitting (See below to configure)
S18S is an example, configure fitting type: Ferrule material: S = Stainless Steel B = Brass* T = Teflon *Not readjustable with metal ferrule Process NPT Size: 18 = 1/8" 14 = 1/4" 38 = 3/8" 12 = 1/2" 34 = 3/4" 44 = 1" Fitting material: S = Stainless Steel B = Brass	

Code	Table 8: Connector Type
M12	M12 Micro-Connector 5 pin male receptacle, Nickel Plated Brass

Code	Table 9: Extension Cable "E"
N	None
A2	Straight, 2 meters
A5	Straight, 5 meters
B2	Right Angle, 2 meters
B5	Right Angle, 5 meters

Part Number Sequence

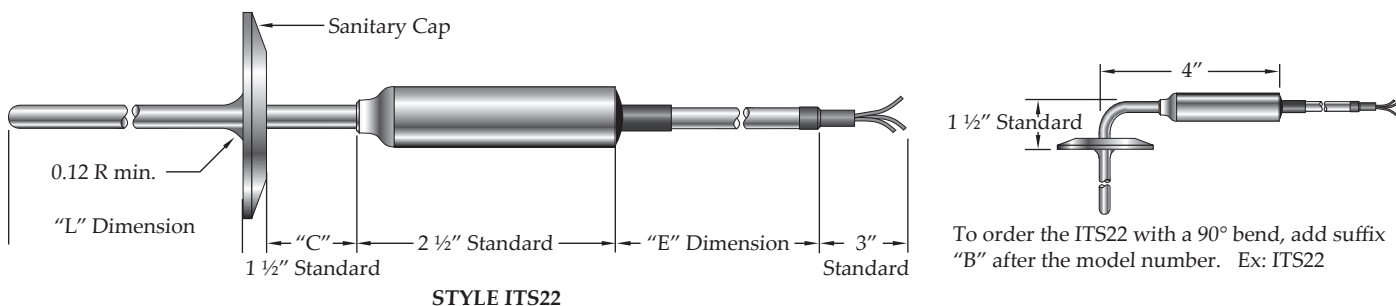
IT25-05-LP-B-S-065-N20-N-M12-A2

IT25	-	05	-	LP	-	B	-	S	-	065	-	N20	-	N	-	M12	-	A2
IT25		Table 1		Table 2		Table 3		Table 4		Table 5		Table 6		Table 7		Table 8		Table 9
Sensor Type & Style No.		Temp Range		Output		Probe Diameter		Probe Material		Probe Length		Extension Length		Fitting Type		Connector Type		Extension Cable

Resistance Temperature Detectors

SANITARY TEMPERATURE SENSOR WITH EXTENSION CABLE

ITS22 assemblies are particularly useful where extreme operating conditions exist in wash down situations and very wet environments. While external cables will withstand wash downs, to further protect the sensor and ensure longer life, stainless steel armor or overbraid can be custom added to prevent abrasion wear.



Code	Table 1: Calibrated Temperature Range
05	0 to 50°C (32-122°F)
10	0 to 100°C (32-212°F)
15	0 to 150°C (32-302°F)
20	0 to 200°C (32-392°F)
55	-50 to 50°C (-58-122°F)
51	-50 to 150°C (-58-302°F)
52	-50 to 200°C (-58-392°F)
XX	Custom Temperature Range, Specify

Integrated Transmitter RTD Assemblies are factory calibrated to an accuracy of $\pm 0.25\%$ of span or better.

Code	Table 2: Output
LP	4-20 mA loop, upscale burnout (standard)
LD	4-20 mA loop, downscale burnout

Code	Table 3: Probe Diameter "D"	
D	¼"	
F	⅜"	
H	½"	
-	Sheath Outer Dia.	Tip Outer Dia.
DB	¼"	⅛"
FC	⅜"	3/16"
HC	½"	3/16"
HD	½"	¼"
JD	⅝"	¼"

Code	Table 4: Probe Material
S	316 Stainless Steel

Code	Table 5: Probe Length "L"
---	Specify in 0.1 inch increments. Ex: 065 = 6.5"

Code	Table 6: Extension Length "C"
N_	Specify in 0.1 inch increments. Ex: N20 = 2.0"

Code	Table 7: Fitting Type
T15	Tri-Clamp, 1 1/2" (16 AMP)
T20	Tri-Clamp, 2" (16 AMP)
T25	Tri-Clamp, 2 1/2" (16 AMP)
T30	Tri-Clamp, 3" (16 AMP)

Code	Table 8: Extension Cable Type
PV	PVC Insulation, 90°C (195°F) max.
TF	Teflon Insulation, 200°C (392°F) max.
TA	Teflon with Stainless Steel Armor, 200°C (392°F) max.
TB	Teflon with Stainless Steel Overbraid, 200°C (392°F) max.

Code	Table 9: Extension Cable Length "E"
---	Specify in inches. Ex: 060 = 60"

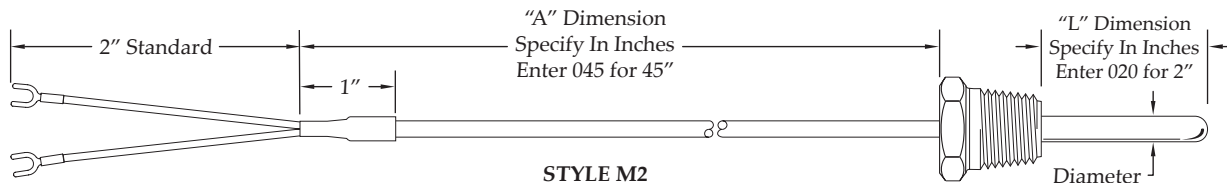
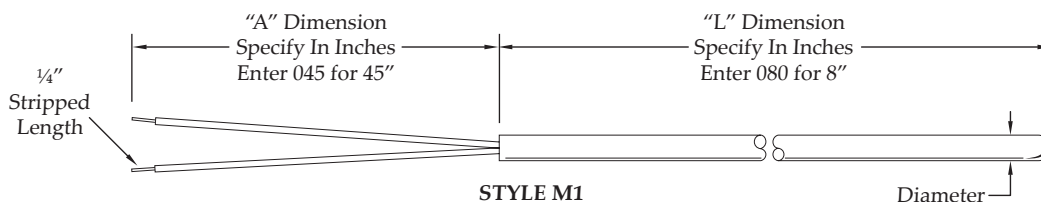
Code	Table 10: Surface Finish
S	Standard
P	Pharmaceutical

Part Number Sequence ITS22-05-LP-DB-S-065-N20-T15-PV-060-S

ITS22	-	05	-	LP	-	DB	-	S	-	065	-	N20	-	T15	-	PV	-	060	-	S
ITS22		Table 1		Table 2		Table 3		Table 4		Table 5		Table 6		Table 7		Table 8		Table 9		Table 10
Sensor Type & Style No.		Temp Range		Output		Probe Diameter		Probe Material		Probe Length		Extension Length		Fitting Type		Extension Cable Type		Extension Cable Length		Surface Finish

Resistance Temperature Detectors

THERMISTOR SENSOR



Code	Table 1: Element Type
1	10K ohm at 25°C
2	30K ohm at 25°C
3	50K ohm at 25°C
4	100K ohm at 25°C
5	500K ohm at 25°C

Code	Table 2: Element Tolerance
A	± 1% at 25°C
B	± 5% at 25°C
C	± 10% at 25°C
D	± 20% at 25°C

Code	Table 3: Sheath Material
4	304 Stainless Steel
6	316 Stainless Steel

Code	Table 4: Sheath Diameter
B	.125" or 1/8" Outer Diameter
V	.156" or 5/32" Outer Diameter
C	.188" or 3/16" Outer Diameter
D	.250" or 1/4" Outer Diameter

Code	Table 5: Sheath Length ("L" Dimension)
Specify in inches. See table on page 4 for codes.	

Code	Table 6: Lead Length ("A" Dimension)
Specify in inches. See table on page 4 for codes.	

Code	Table 7: Leadwire Type
A	Fiberglass Leadwire Singles
F	Teflon Leadwire Singles
G	Teflon Leadwire with Overall Teflon Jacket

Code	Table 8: Fitting Options
A	1/8" NPT Brass Bushing
B	1/8" NPT Stainless Steel Bushing
C	1/4" NPT Brass Bushing
D	1/4" NPT Stainless Steel Bushing
E	3/8" NPT Brass Bushing
F	3/8" NPT Stainless Steel Bushing
G	1/2" NPT Brass Bushing
H	1/2" NPT Stainless Steel Bushing
0	No Fitting (M1 Only)

Code	Table 9: Terminal Connectors
1	#6 Spade Lug
A	3/16" Disconnect
B	3/16" Disconnect, Insulated
C	1/4" Disconnect
D	1/4" Disconnect, Insulated
M	Mini Plug
X	Special, Specify

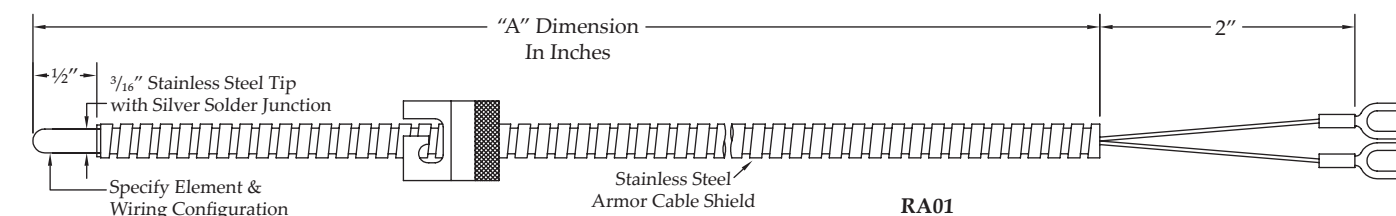
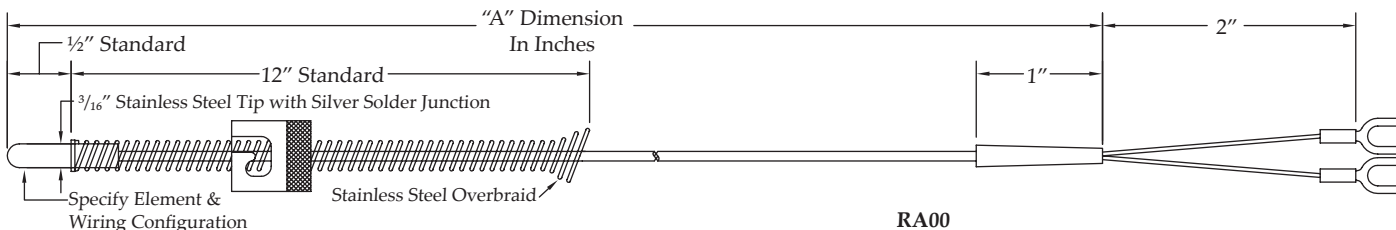
Part Number Sequence

M2-3B-4B020-045AHC

M2	-	3	B	-	4	B	020	-	045	A	H	C
M1 or M2		Table 1	Table 2		Table 3	Table 4	Table 5		Table 6	Table 7	Table 8	Table 9
Sensor Type & Style No.		Element Type	Element Tolerance		Sheath Material	Sheath Diameter	"L" Sheath Length		"A" Lead Length	Leadwire Type	Fitting Options	Terminal Connectors

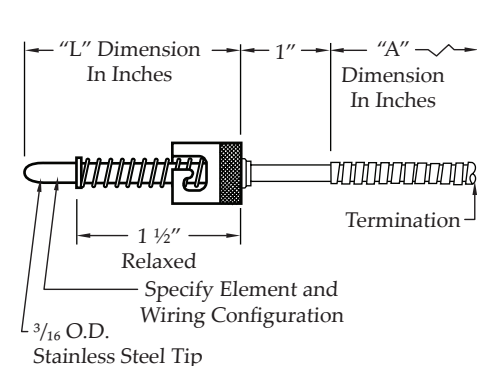
ADJUSTABLE DEPTH RTDs

Resistance Temperature Detectors (RTDs) are continuing to expand as a temperature sensor for plastic machinery applications. All the standard plastics thermocouple designs are available in RTD configurations. The standard element is 100 ohm Platinum, 0.00385 $\Omega/\Omega/^\circ\text{C}$, Class B per IEC 751 and DIN 43760 ($\pm 0.1\%$ at 0°C). All assemblies can be specified as 2, 3, or 4 wire configurations. Please specify requirements.

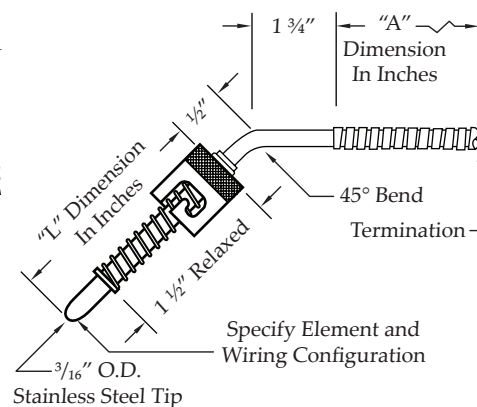


Part Number Sequence					
RA01	-	A	B	-	048
RA01	Next Page	Next Page	See page 54	L = 500°F / M = 900°F	1
Sensor Type & Style No.	Element Type	Wiring Configuration	"A" Dimension	Operating Temperature	Termination Type

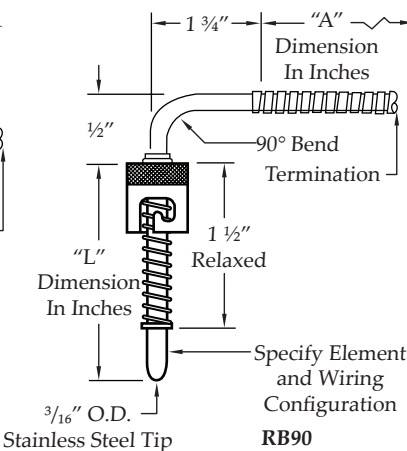
FIXED BAYONET RTDs



RB00



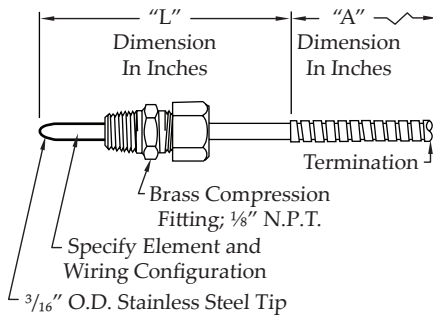
RB45



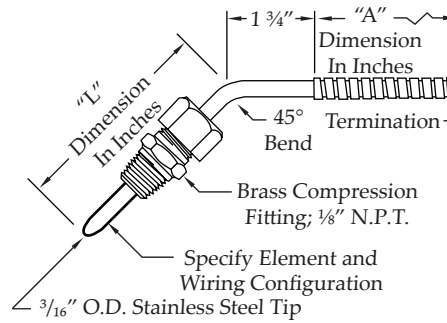
RB90

Part Number Sequence					
RB00	-	G	B	-	09F
RB00	Next Page	Next Page	See page 54	See page 54	L = 500°F / M = 900°F
Sensor Type & Style No.	Element Type	Wiring Configuration	"L" Dimension	"A" Dimension	Operating Temperature

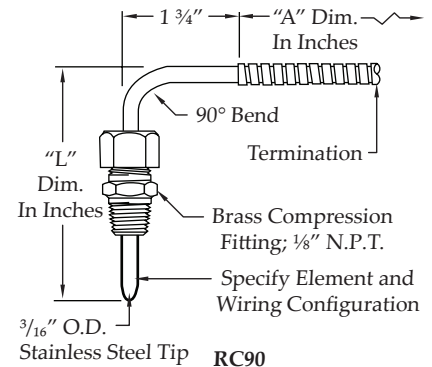
COMPRESSION FITTING RTDs



RC00



RC45



RC90

Part Number Sequence

RC45-ED-04K-028L0

See tables on next page

RC45	-	E	D	-	04K	028	-	L	0
RC45	Table Below	Table Below	See page 54	See page 54	L = 500°F / M = 900°F	Options Below			
Sensor Type & Style No.	Element Type	Wiring Configuration	"L" Dimension	"A" Dimension	Operating Temperature	Termination Type			

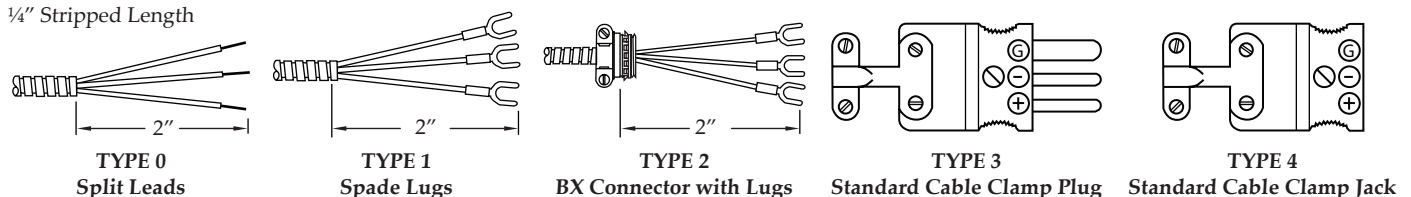
RTD OPTIONS

Code	Element Type
A	100 ohm Platinum, Class B .00385 Coefficient
B	100 ohm Platinum, Class A .00385 Coefficient
E	1000 ohm Platinum, Class B .00385 Coefficient
G	100 ohm Platinum, Class B .00392 Coefficient

Code	Wiring
A	Single, 2 Wire
B	Single, 3 Wire
C	Single, 4 Wire
D	Double, 4 Wire

TERMINATION OPTIONS

1/4" Stripped Length





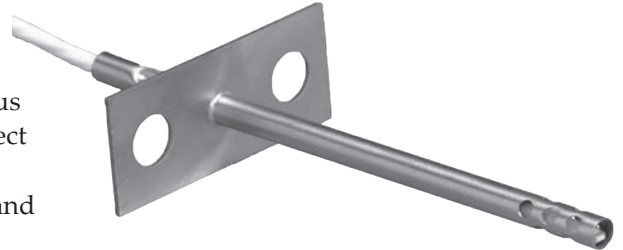
closing the loop on thermal solutions

Resistance Temperature Detectors

SPECIALTY SENSORS

Air Temperature RTD's

The perforated tip of the air resistance temperature detector is designed for rapid monitoring of airflow temperature in various applications. Small film elements used in these housings can detect incremental changes more quickly than conventional housings. This construction can also be adapted to include special flanges and fittings, as well as custom connector options.



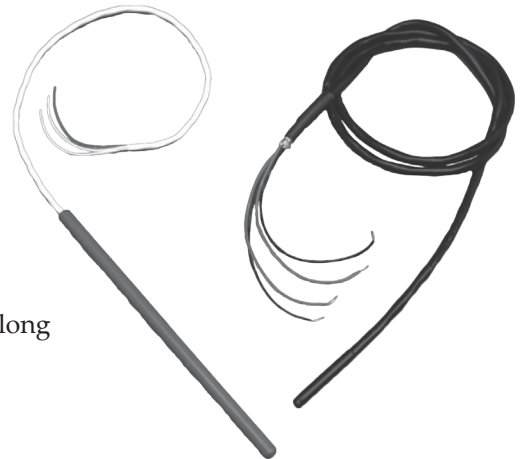
Self Adhesive RTD's

If the surface being measured for temperature cannot be penetrated or if space limitations require it, Durex can provide an RTD with an adhesive patch for direct surface mounting. We routinely provide such sensors with special adhesive to accommodate temperature and vapor release requirements.



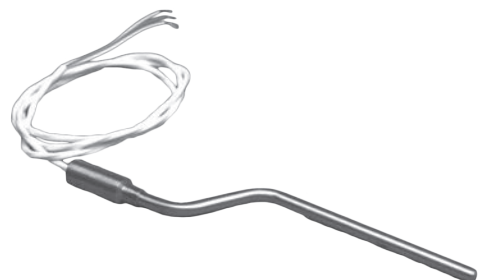
Teflon®-Coated Probes

RTD's are available with Teflon® coated sheaths for applications that require contact temperature measurement in corrosive or chemical environments. The Teflon® coating can be applied directly to the sheath of the RTD, providing protection while minimizing effects to response. In applications that require considerable long-term protection, a welded Teflon® sleeve can be used adding as much as 1/16" thick of Teflon® protection to the surface of the probe. Flexible RTD designs are available, which encapsulate the entire length of the RTD for applications requiring long lengths of immersion.



Bendable RTD's

When an RTD needs to "snake" through an installation because of space limitations or other factors, Durex offers bendable elements with overbraid shielding or armor to suit the specifics of your application.



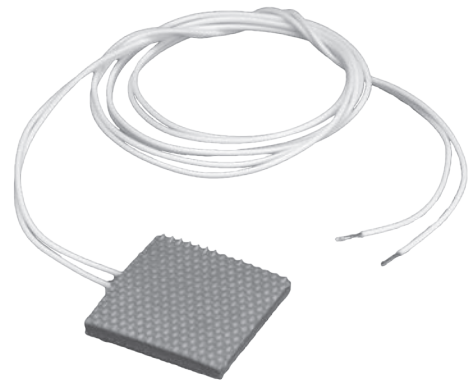


Resistance Temperature Detectors

SPECIALTY SENSORS

Flexible RTD's

Utilizing the same technology as a sealed Silicone Rubber heater, Durex offers a surface mount RTD sensor for direct mounting to flat or curved surfaces. The desing can be maintained in various thicknesses and supplied with an adhesive backing for quick application. A thinner profile can be used to wrap the sensor to curved surfaces such as cooling or water lines.



Hand Held RTD's

Durex manufactures a line of multi-purpose hand held resistance temperature detectors for foodservice, industrial proces, and laboratory applications. Probe features include handles of stainless steel, Teflon®, or plastic and coil cord leadwires that can be constructed to withstand ambient temperatures up to 400°F. Standard designs include a mini plug connector, but many options are available. The RTD sheath itself is typically stainless steel and can be constructed with tips designed for piercing frozen meat, sensing gas temperatures, liquid immersion, or surface temperature measurements.



Foodservice RTD's

Accuracy and reliability are the main requirements for probes designed for use in the foodservice industry. Robust designs that can handle the rigors of the industry are essential for long term performance. Durex has manufactured a wide variety of temperature sensors specifically for use in commercial cooking and food processing equipment. All probes are designed to the rigid specifications of the individual applications including such requirements as NSF, FDA, and UL/CSA. Customer designs are available in thermocouples, RTD's, or thermistors.

