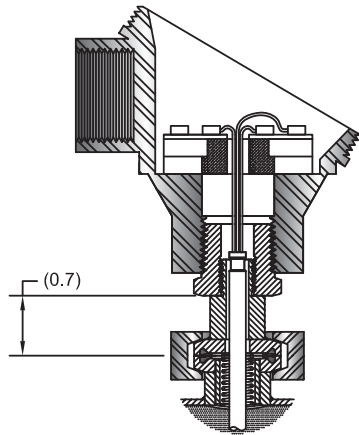


# SNR Non-Intrusive Removable Replacement Sensor

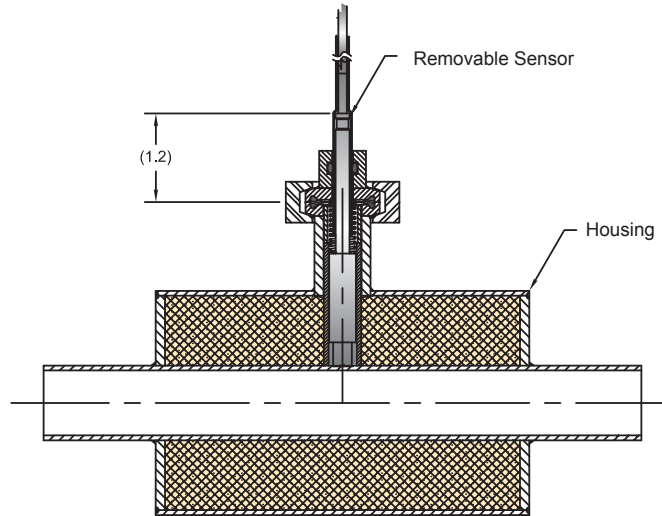
## Installation

The SNR sensor is uniquely designed to reduce stem conduction and ensure maximum thermal contact with the process, and is removable for periodic calibration. Available with extended cable or wires for connection head wiring, the SNR sensor will provide confident non-intrusive temperature measurements.

### SNR Non-Intrusive Removable Replacement Sensor Installation



Sensor installation with connection head

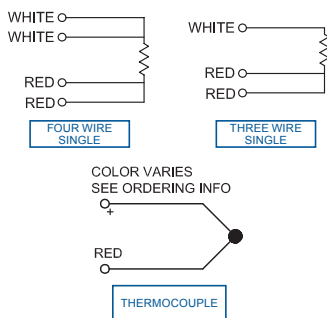


Sensor installation with cable option

### Replacement Sensor Part Number

Process Tube	Flow Tube Diameter	Outer Tube Ø	Bore Depth	RTD w/Cable	RTD w/Head	Thermocouple
0500	0.500"	1.25"	1.5"	22535-1	22536-1	22537-1
0750	0.750"	2"	1.5"	22535-1	22536-1	22537-1
1000	1.000"	3"	2.188"	22535-2	22536-2	22537-2
1500	1.500"	3"	1.5"	22535-1	22536-1	22537-1
2000	2.000"	4"	2.188"	22535-2	22536-2	22537-2
2500	2.500"	4"	1.5"	22535-1	22536-1	22537-1
3000	3.000"	6"	2.188"	22535-2	22536-2	22537-2
4000	4.000"	6"	2.188"	22535-2	22536-2	22537-2

#### Element/Lead Wire Configuration



#### Wire Gauge Size:

##### Cable Designs (RTD):

3 Conductor Cable: 22 AWG

4 Conductor Cable: 26 AWG

##### Wire Designs (RTD):

3 Conductor Cable: 22 AWG

4 Conductor Cable: 24 AWG

##### Thermocouple Designs:

2 Wire, Single Thermocouple: 20AWG



# SNR Non-Intrusive Removable Replacement Sensor

## Ordering Information

### Replacement RTD for Assemblies with Cable

22535-	
<b>Bore Depth</b> (NOTE 1)	
1	1.5 Inches
2	2.188 Inches
<b>Element Configuration</b>	
A	3 Wire
B	4 Wire
<b>"LY" Cable Length in Inches</b> (NOTE 2)	
120	120 inches
240	240 inches
***	Specify Length (060 = 60 Inches)

EXAMPLE PART NUMBER  
22535-1B120

Link to Drawing: [www.BurnsEngineering.com/22535](http://www.BurnsEngineering.com/22535)

### Replacement RTD for Assemblies with Connection Head

22536-	
<b>Bore Depth</b> (NOTE 1)	
1	1.5 Inches
2	2.188 Inches
<b>Element Configuration</b>	
A	3 Wire
B	4 Wire
<b>"L" PFA Sheath Length in Inches</b>	
006	6 inches (NOTE 3)
012	12 inches
024	24 inches

EXAMPLE PART NUMBER  
22536-1B012

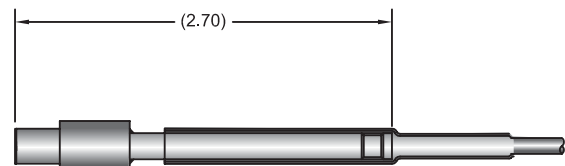
Link to Drawing: [www.BurnsEngineering.com/22536](http://www.BurnsEngineering.com/22536)

### Replacement Thermocouple for Assemblies with Connection Heads or Cable

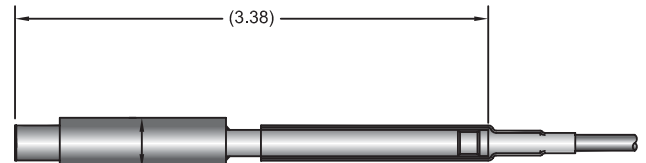
22537-	
<b>Bore Depth</b> (NOTE 1)	
1	1.5 Inches
2	2.188 Inches
<b>Element Configuration</b>	
E	Type 'E'
J	Type 'J'
K	Type 'K'
T	Type 'T'
<b>"LY" Cable Length in Inches</b>	
006	6 inches
120	120 inches
***	Specify Length in Inches

EXAMPLE PART NUMBER  
22537-1J006

Link to Drawing: [www.BurnsEngineering.com/22537](http://www.BurnsEngineering.com/22537)



**REMOVEABLE PROBE USED ON:**  
1.5" BORE DEPTH SNR DESIGNS



**REMOVEABLE PROBE USED ON:**  
2.188" BORE DEPTH SNR DESIGNS

To identify the proper replacement sensor, measure the sensor length to determine bore depth code in ordering tables.

NOTE 1: To determine the correct Bore Depth code, see the sensor illustration and the table on page 29 relating process tube size, bore depth and replacement sensor part number.

NOTE 2: For 3 wire designs – Order the actual installed length. To maintain stated RTD accuracy, 3 wire Single designs with LY>324" and 3 wire dual designs with LY> 120" cannot be shortened.

NOTE 3: For replacement thermocouple sensor in an assembly with a connection head, choose 6" leads – code '006'

# Specifications

## RTDS

### Operating Temperature Range:

-50°C to 200°C

### Element Resistance:

100 ohms at 0°C nominal

### Temperature Coefficient of Resistance (alpha):

0.00385  $\Omega/\Omega/^\circ\text{C}$  nominal

### Accuracy:

Standard: 0.10% of resistance at 0°C

Precision: 0.05% of resistance at 0°C

### Insulation Resistance:

100 megohms minimum at 100 VDC at 25°C

(Not applicable for grounded thermocouples)

### Interchangeability:

For 100 ohm elements the tolerance values at any temperature for these specifications are given by:

Tolerance  $^\circ\text{C} = \pm(0.13 + 0.00185 \text{ ltl})$  for accuracy code 05

Tolerance  $^\circ\text{C} = \pm(0.26 + 0.0037 \text{ ltl})$  for accuracy code 10

(ltl = absolute value of temperature in  $^\circ\text{C}$ )

### Leadwire:

PTFE insulated nickel-plated stranded copper, 22 and 24 AWG typical

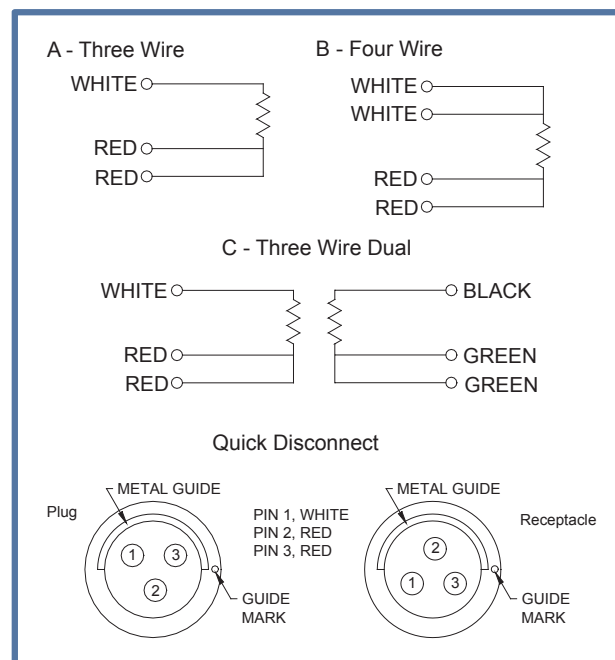
### Sheath Material:

316L stainless steel typical

### 100% Tested:

For accuracy at 0°C and insulation resistance

## Color Codes Element/Leadwire Configuration



Temperature		Interchangeability			
$^\circ\text{C}$	$^\circ\text{F}$	0.05%**		0.10%	
-50	-58	$\pm 0.23^\circ\text{C}$	$\pm 0.41^\circ\text{F}$	$\pm 0.45^\circ\text{C}$	$\pm 0.80^\circ\text{F}$
0	32	$\pm 0.13^\circ\text{C}$	$\pm 0.23^\circ\text{F}$	$\pm 0.26^\circ\text{C}$	$\pm 0.46^\circ\text{F}$
100	212	$\pm 0.32^\circ\text{C}$	$\pm 0.57^\circ\text{F}$	$\pm 0.64^\circ\text{C}$	$\pm 1.15^\circ\text{F}$
200	392	$\pm 0.50^\circ\text{C}$	$\pm 0.90^\circ\text{F}$	$\pm 1.00^\circ\text{C}$	$\pm 1.80^\circ\text{F}$

\*\*  $\pm 0.05$  accuracy is not currently available with all models. See the Ordering Information Table for each model for applicability.

## Thermocouples

The tables listed below are provided to the user for a ready reference of thermocouple designations as compared to the generic and trade names for the most common thermocouple materials. The letter "P" in the designation indicates the positive (+) leg of the thermocouple while the letter "N" designates the negative (-). Color coding and other means of conductor identification are also provided. Specification reference per ASTM E230 / E230M.

ANSI Thermocouple Type	Temperature Range	Special Limits
E	-50°C to 125°C 125°C to 200°C	$\pm 0.5^\circ\text{C}$ $\pm 0.4\%^*$
J	0°C to 200°C	$\pm 1.1^\circ\text{C}$
K	0°C to 200°C	$\pm 1.1^\circ\text{C}$
T	-50°C to 125°C 125°C to 200°C	$\pm 0.5^\circ\text{C}$ $\pm 0.4\%^*$

\* % applies to measurement in  $^\circ\text{C}$

Thermocouple Grade Wire

ANSI Type	Grade or Generic Trade Names	Single Conductors	Magnetic	Conductor Color Code	Overall Color Code
E	Chromel® Constantan	EP EN	No No	Purple Red	Brown w/ Purple Tracer
J	Iron Constantan	JP JN	Yes No	White Red	Brown w/ White Tracer
K	Chromel® Alumel®	KP KN	No Yes	Yellow Red	Brown w/ Yellow Tracer
T	Copper Constantan	TP TN	No No	Blue Red	Brown w/ Blue Tracer

Extension Grade Wire

ANSI Type	Grade or Generic Trade Names	Single Conductors	Magnetic	Conductor Color Code	Overall Color Code
EX	Chromel® Constantan	EPX ENX	No No	Purple Red	Purple
JX	Iron Constantan	JPX JNX	Yes No	White Red	Black
KX	Chromel® Alumel®	KPX KNX	No Yes	Yellow Red	Yellow
TX	Copper Constantan	TPX TNX	No No	Blue Red	Blue