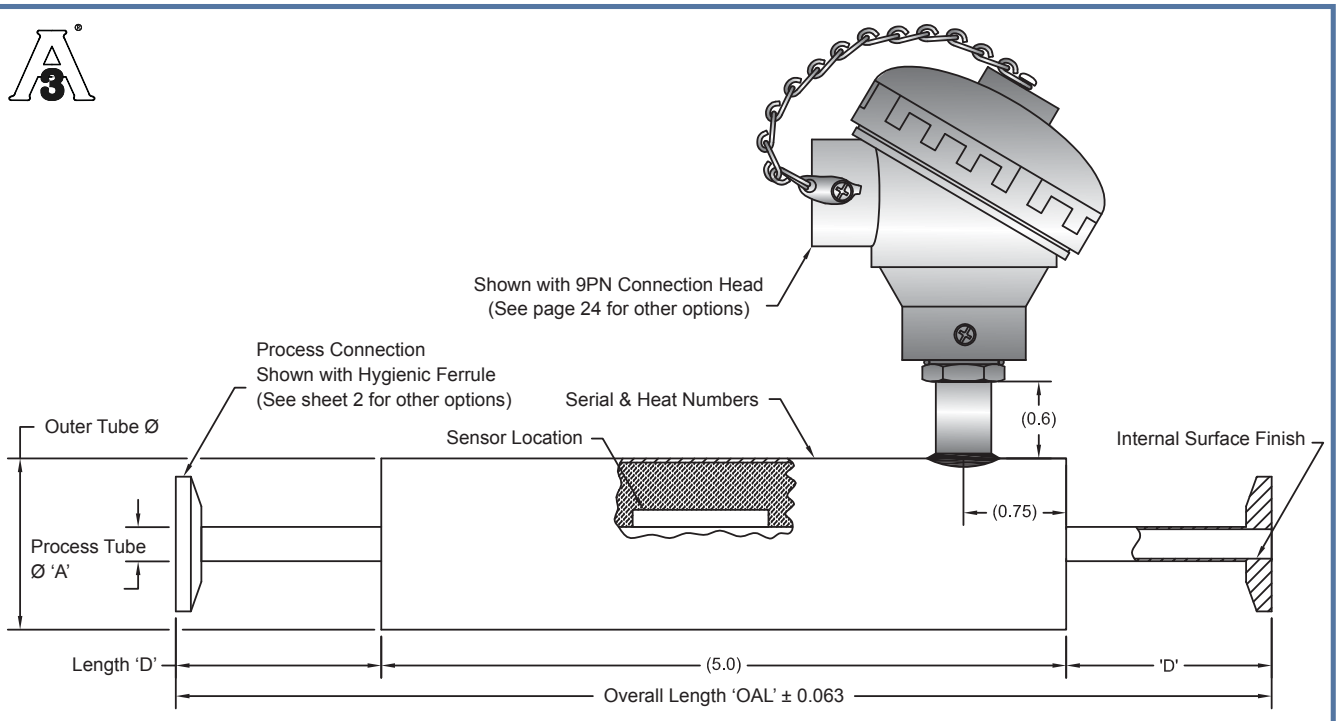
SNI Non-Intrusive

Specification



Link to Drawing: www.BurnsEngineering.com/SNI.pdf

All dimensions in inches.

SNI Specifications

Time Constant: Maximum time to reach 63.2% of a step change in temperature in water flowing at 3 fps.	12.0 seconds
RTD Repeatability: Maximum change in resistance at 0°C after 10 cycles over the full temperature range.	0.04%
RTD Long Term Stability: Maximum change in resistance at 0°C after 1000 hours at 200°C	Precision: 0.01% Standard: 0.10%
RTD Hysteresis: Maximum % error at the mid point of the operating temperature range. (Example: 0.04% over a 250°C range = 0.10°C)	Precision: 0.04% Standard: 0.08%

- **General Specifications:**
  - » See page 4 of this catalog
- **Process Connections:**
  - » Hygienic ferrules for hygienic clamp union connection
  - » Weld-ends squared off to support automatic weld process
- **Installation Length:**
  - » For assemblies with hygienic ferrules, the OAL is 8.0 inches.
  - » For assemblies with weld-ends, to support automatic welding, the OAL range is 8.5 to 9.25 inches based on the process tube size. See ordering information table under 'Process Tube Ø'

SNI, Non-Intrusive

Ordering Information

Sensor Style

SNI- Sanitary Non-Intrusive

RTD Accuracy

10 Standard RTD +/-0.10% of resistance at 0 degrees C
05 Precision RTD +/-0.05% of resistance at 0 degrees C

Thermocouple Type

E Chromel/Constanian (leadwire colors = +purple -red)
J Iron/Constanian (leadwire colors = +white -red)
K Chromel/Alumel (leadwire colors = +yellow -red)
T Copper/Constanian (leadwires colors = +blue -red)

RTD Lead Element Configuration

A Three Wire Single
B Four Wire Single
C Three Wire Dual

Thermocouple Junction Configuration

D Single Ungrounded
E Single Grounded
F Dual Ungrounded
G Dual Grounded

Connection Head (NOTE 1)

1EN	Cast Iron, Epoxy Coated NET Solution
2EN	Aluminum, Epoxy Coated NET Solution
5EN	Aluminum, Epoxy Coated NET Solution
9PN	Polypropylene White, NET Solution
14SN	Stainless Steel, NET Solution
16AN	Mini Aluminum, Epoxy Coated NET Solution
19AN	Aluminum, with LED indicator NET Solution
20PN	Plastic, with LED indicator NET Solution
21SN	Stainless Steel, with LED indicator NET Solution
22AN	Aluminum, with LCD indicator NET Solution
23PN	Plastic, with LCD indicator NET Solution
24SN	Stainless Steel, with LCD indicator NET Solution
N1	No Connection Head, 1/2" NPT Bushing
N2	No Connection Head, 1/2" NPSM Bushing
N3	No Connection Head with 3/8-24 UNF Threads
NA	Cable Design, 120" Length, Nylon Spring Standard
****	See page 40 for other options

Process Tube Ø 'A'		Wall Thickness	Outer Tube Ø	Process Connection Length 'D' for Weld Ends	Overall Length for Weld Ends
0250	0.250	0.032"	1.25	1.75"	6.50"
0500	0.500"	0.065"	1.25"	1.75"	6.50"
0750	0.750"	0.065	2"	1.75"	6.50"
1000	1.000	0.065"	3"	1.75"	6.50"
1250	1.250"	0.065"	3"	1.75"	6.50"
1500	1.500"	0.065"	3"	1.75"	6.50"
2000	2.000"	0.065"	4	1.75"	6.50"
2500	2.500"	0.065"	4"	1.75"	6.50"
3000	3.000"	0.065"	6"	2.00"	7.00"
4000	4.000"	0.083"	6"	2.13"	7.25"

Process Tube Material

-06 316L
-20 AL6XN

Internal Finish

A 32 Ra Mechanical Finish
B 10 Ra Electropolish
N Standard Pipe Finish, Mechanical, Not Available with 3A

External Finish

1 Sand Blasted
2 Bright Mechanical (32 Ra Surface Finish)

Process Connection Fitting

C Hygienic Ferrule
N Weld Ends No Process Connection

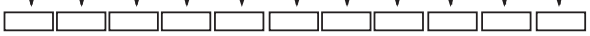
Process Connection Size 'C' Compatible with tube sizes

050	1/2"	0500, 0750
150	1 1/2"	1000, 1500
200	2"	2000
250	2 1/2"	2500
300	3"	3000
400	4"	4000

Weld Ends, No Process Connection, Leave Blank

Process Connection Material

-06 316L SS
-20 AL6XN
Weld Ends, Leave Blank



Example Part Number: SNS-10A9PN1000-06A1C150-06

NOTE 1: For full descriptions see page 40 or: www.BurnsEngineering.com/Con-Heads.pdf

Specifications

RTDS

Operating Temperature Range:

-50ºC to 200ºC

Element Resistance:

100 ohms at 0°C nominal

Temperature Coefficient of Resistance (alpha):

0.00385 Ω/Ω/°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 °C = ±(0.13 + 0.00185 ItI) for accuracy code 05

Tolerance °C = ±(0.26 + 0.0037 ItI) for accuracy code 10

(ItI = absolute value of temperature in °C)

Leadwire:

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

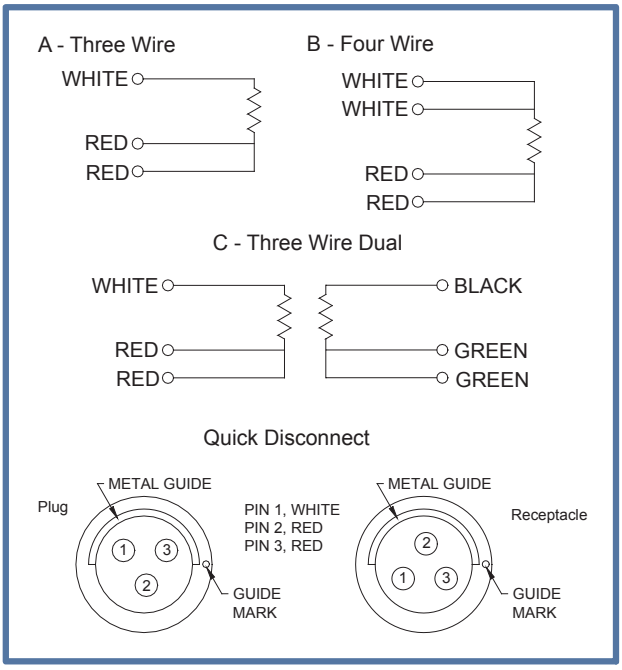
Sheath Material:

316L stainless steel typical

100% Tested:

For accuracy at 0°C and insulation resistance

Color Codes Element/Leadwire Configuration



Temperature °C	Temperature °F	Interchangeability 0.05%**		0.10%	
-50	-58	±.23°C	±.41°F	±.45°C	±.80°F
0	32	±.13°C	±.23°F	±.26°C	±.46°F
100	212	±.32°C	±.57°F	±.64°C	±1.15°F
200	392	±.50°C	±.90°F	±1.00°C	±1.80°F

** ±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 ASTME230 / E230M.

ANSI Thermocouple Type	Temperature Range	Special Limits
E	-50°C to 125°C 125°C to 200°C	±0.5°C ±0.4%*
J	0°C to 200°C	±1.1°C
K	0°C to 200°C	±1.1°C
T	-50°C to 125°C 125°C to 200°C	±0.5°C ±0.4%*

* % applies to measurement in °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