NOBLE METAL THERMOCOUPLE WITH TERMINAL HEAD AND PROTECTION TUBE

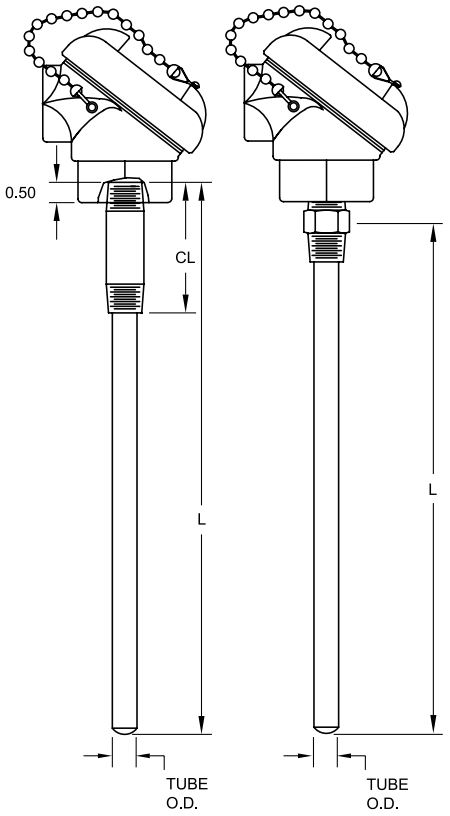
How to build a part number:

To order an Applied Sensor Technologies temperature sensor, select the requirements for the categories listed below and fill in the corresponding boxes with your selection. Don't see exactly what you need? Give us a call!

SENSOR TYPE	STYLE	PROTECTION TUBE CONFIGURATION	CALIBRATION	WIRE GAUGE	BEAD MATERIAL	PRIMARY TUBE LENGTH	OPTIONS

SENSOR TYPE
BTC – Beaded construction

STYLE
81N – **Noble metal element with primary protection tube only**; threaded connection between head and tube; NEMA 4 aluminum terminal head and ceramic terminal block; 3/4" NPT conduit connection; gasketed screw cover with stainless steel chain



PROTECTION TUBE CONFIGURATION
(e.g., **00A6** = 3/8" O.D. tube with 6" nipple and 1/2" NPT connection.
See page 1-8b for available combinations of OD and thread size)
Protection tube diameter
0 – 3/8" O.D.
1 – 1/2" O.D.
2 – 11/16" O.D.
3 – 3/4" O.D.
Process thread size and material

Carbon Steel	*316 stainless steel*
0 – 1/2" NPT	**3** – 1/2" NPT
1 – 3/4" NPT	**4** – 3/4" NPT
2 – 1" NPT	**5** – 1" NPT

Protection tube material
A – Alumina (98.8% aluminum oxide)
M – Mullite (not recommended over 1200°C)
Connection Length ("CL")
1 – hex fitting only
– length of nipple

CALIBRATION

Single junction	**Dual junctions**
R – Platinum and Platinum/13% Rhodium	**RR**
S – Platinum and Platinum/10% Rhodium	**SS**
B – Platinum/6% Rhodium and Platinum/30% Rhodium	**BB**

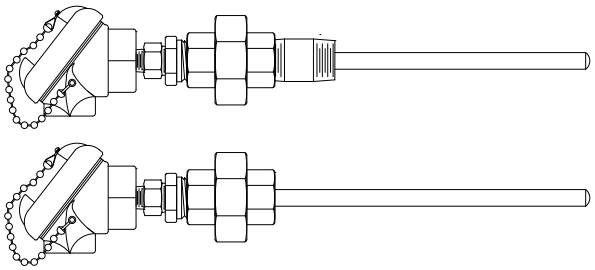
WIRE GAUGE
24 – 24 AWG

BEAD MATERIAL
A – Alumina beads (0.125" OD for single junction, 0.188" for dual)

PROTECTION TUBE LENGTH
L# – (e.g., L12 = 12" protection tube length)

OPTIONS – see back page

Note: union fitting or union with nipple can be added to this style (consult AST for part numbers and availabilities)

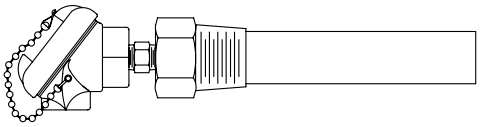


STYLE 81N

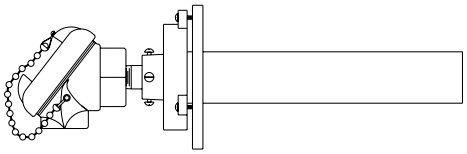
ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
RB10	Replace terminal block with customer supplied part
RB11	Supply assembly with no terminal block inside head
WC20	Wiring cable gland for 0.187 - 0.312 diameter cables, for terminal heads with 1/2" NPT conduit connections
WC21	Wiring cable gland for 0.125 - 0.187 diameter cables, for terminal heads with 1/2" NPT conduit connections

For additional Noble Metal Thermocouple styles, see:

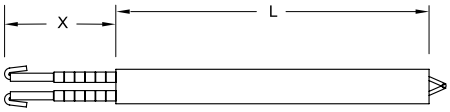
Style 81B – Secondary tube with mounting bushing



Style 81F – Secondary tube with slip flange mounting



Style 51 – Replacement Sensor



TERMINAL HEAD OPTIONS

NEMA 4 OR 4X TERMINAL HEAD OPTIONS			
Head without ground screw	Head with internal ground screw	Process Connection	Conduit Connection
Cast aluminum, screw cover with chain, NEMA 4			
HD10*	HD11*	1/2"	1/2"
Std.*	HD13*	1/2"	3/4"
Epoxy-coated aluminum, screw cover with chain, NEMA 4X			
HD50*	HD51*	1/2"	1/2"
HD52*	HD53*	1/2"	3/4"
Cast iron, screw cover with chain, NEMA 4			
HD20*	HD21*	1/2"	1/2"
HD22*	HD23*	1/2"	3/4"
316 stainless steel, screw cover with chain, NEMA 4X			
HD40*	HD41*	1/2"	3/4"
White polypropylene, screw cover with chain, NEMA 4			
HD30	N/A	1/2"	3/4"
Black polypropylene, screw cover with chain, NEMA 4			
HD31	N/A	1/2"	3/4"
Nylon, screw cover			
HD32	N/A	1/2"	1/2"
*can be used with transmitters			

TRANSMITTERS – For complete specs, see Transmitters section	
TR11	4-20 mA, 2-wire transmitter, single input, isolated output; specify range, units of measure (e.g., 0-200°C) and optional terminal head with *.
TR12	4-20 mA, 2-wire transmitter, single input, non-isolated output; specify range and units of measure (e.g., 0-200°C) and terminal head with *.
TR13	HART®/ 4-20 mA, 2-wire transmitter, single input, isolated output; specify range and units of measure (e.g., 0-200°C) and terminal head with *.

Notes:

1. Not all materials and process thread sizes are compatible with all tubing O.D.'s. Use the chart below as a guide for the possible combinations.

PROCESS THREAD (NPT)

		Carbon steel			316 Stainless		
	CODE	**0** (1/2")	**1** (3/4")	**2** (1")	**3** (1/2")	**4** (3/4")	**5** (1")
TUBE O.D.	**0** (3/8")	Yes			Yes		
	1 (1/2")	Yes	Yes		Yes	Yes	
	2 (11/16")		Yes			Yes	
	3 (3/4")		Yes	Yes		Yes	Yes

2. Applied Sensor Technologies recommends alumina protection tubes when using platinum thermocouples. Mullite, although less expensive when compared to alumina, can contaminate the platinum, causing drift.
3. In many cases platinum thermocouples can be recycled, thereby reducing the long-term overall cost. Please contact Applied Sensor Technologies for further information.
4. Applied Sensor Technologies offers many other temperatures sensor designs and technologies, including base metal thermocouples, RTDs, thermistors and Integrated Circuit chips, along with a full line of accessory items such as thermowells, transmitters, etc. Please visit our website or contact us for further information.

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Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements. HART® is a registered trademark of the HART Communication Foundation.

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