APPLIED SENSOR TECHNOLOGIES
A Division of UNITED ELECTRIC CONTROLS

PRODUCTS:

- Thermocouples
- RTDs
- Thermowell & Protection Tubes
- Sensor Box™
- Transmitters
- Accessories

PRODUCT INDEX

CONNECTION HEAD WITH WELDED NPT PROCESS CONNECTION

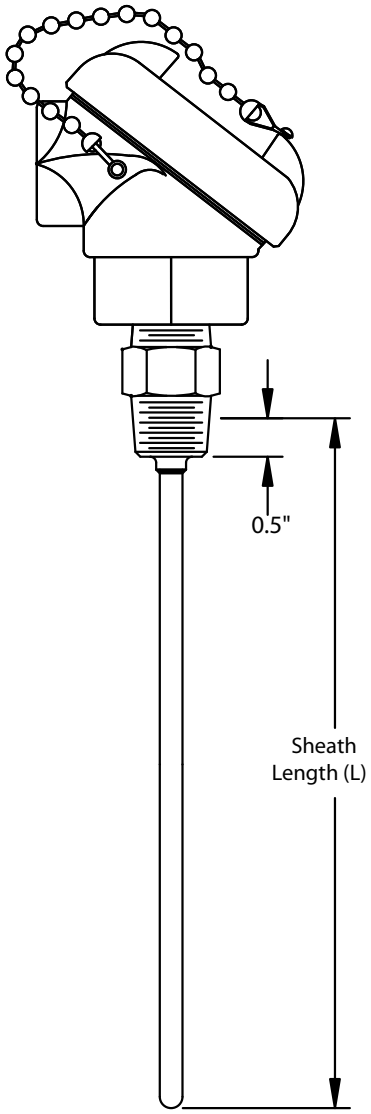
How to build a part number:

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	OPTIONS

SENSOR TYPE
MI – Mineral insulated thermocouple

ASSEMBLY STYLE
15 – **Sheath with cast aluminum head and 1/2" NPT welded stainless steel process connection**; head conforms to NEMA 4 requirements; 3/4" NPT conduit connection; ceramic terminal block; gasketed screw cover with stainless steel chain (Note: for spring-loaded assembly, see Style 75 and add optional head)



SHEATH DIAMETER (in inches)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
2 – 310 stainless steel (available on diameters 6 & 7, with K or KK calibration)
3 – 316 stainless steel
5 – Inconel® 600

CALIBRATION – Standard limits

J – Single J	**JJ** – Dual J
K – Single K	**KK** – Dual K
T – Single T	**TT** – Dual T
E – Single E	**EE** – Dual E

Special limits are available – consult AST

HOT JUNCTION
G – Grounded junction
U – Ungrounded junction
E – Exposed junction

SHEATH LENGTH (Note: lengths over L84 will be shipped coiled unless otherwise specified at time of order)
L# – (e.g., L6 = 6" sheath, L12.5 = 12.5" length)

OPTIONS – see page 1-1b

AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
PC25	1/4" NPT process connection
PC75	3/4" NPT process connection
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
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
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 *.

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			

Notes:
1. See Accessories for additional information.
2. For former Style 60, use option HD20.
3. For former Style 29, use option HD32.

CONNECTION HEAD WITH SPRING-LOADED ASSEMBLY AND MOUNTING HARDWARE

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	ASSEMBLY STYLE	CONNECTION	CONNECTION LENGTH	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	OPTIONS

SENSOR TYPE

MI – Mineral insulated thermocouple

ASSEMBLY STYLE

45 – **Sheath with cast aluminum head**; spring-loaded in head; head conforms to NEMA 4 requirements; 3/4" NPT conduit connection; ceramic terminal block; 1/2" NPT carbon steel process connection; gasketed screw cover with stainlesss steel chain; maximum head temperature 100°C

CONNECTION

H – Head only, no mounting hardware; 1/2" NPT (female) instrument connection
N – 1/2" NPT carbon steel nipple
NU – 1/2" NPT carbon steel nipple and union
NUN – 1/2" NPT carbon steel nipple, union and nipple
Add suffix "**1S**" for 304 stainless steel
Add suffix "**2S**" for 316 stainless steel
See chart below for restrictions

CONNECTION LENGTH

(e.g., 006 = 6 inch)

(See chart below for standard available lengths)

SHEATH DIAMETER (in inches)

4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL

3 – 316 stainless steel

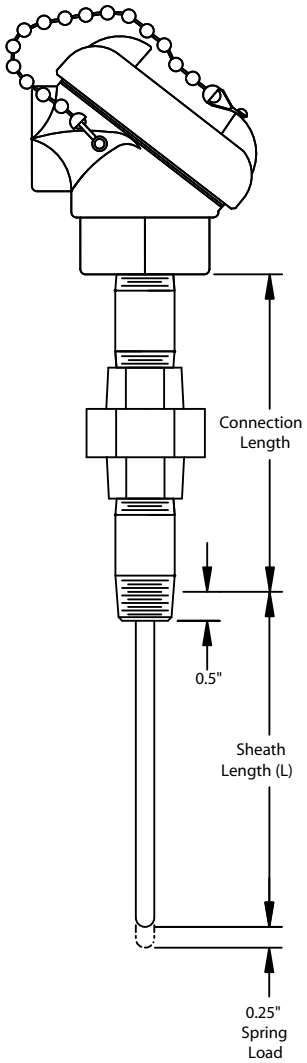
CALIBRATION – Standard limits

J – Single J
K – Single K
T – Single T
E – Single E
JJ – Dual J
KK – Dual K
TT – Dual T
EE – Dual E

Special limits are available – consult AST

HOT JUNCTION

G – Grounded junction
U – Ungrounded junction



STANDARD AVAILABLE CONNECTION LENGTHS		
N	NU	NUN
N/A	2.00	2.50
0.50	2.50	3.00 *
1.00	3.00	4.00 *
1.50	3.50	5.00
2.00	4.00	6.00 *
3.00	5.00	8.00
5.00	7.00	12.00
6.00	8.00	14.00
* NUN 2S OPTION AVAILABLE IN THESE LENGTHS ONLY.		
DIMENSIONS ARE GIVEN IN INCHES		

SHEATH LENGTH (Note: lengths over L84 will be shipped coiled unless otherwise specified at time of order)

L# – (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)

OPTIONS – see page 1-2b

AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
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
Transmitters: see Style 48	

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"

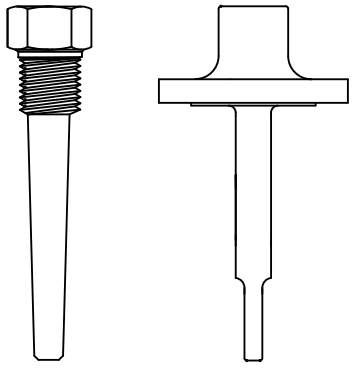
Notes:
1. See Accessories for additional information
2. For former Style 46, use option HD20

EXTENSION WIRE

A selection of extension-grade thermocouple wire is available to connect the sensor to its input device. Consult Accessories section.

THERMOWELLS & PROTECTION TUBES

For a complete offering of metal, ceramic and composite material thermowells and protection tubes, please see the Thermowell and Protection Tube sections.



H260 THERMOWELL

F260 THERMOWELL

EXPLOSION-PROOF CONNECTION HEAD WITH WELDED NPT PROCESS CONNECTION

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	OPTIONS

SENSOR TYPE
MI – Mineral insulated thermocouple

ASSEMBLY STYLE
78 – **Sheath with cast aluminum head and 1/2" NPT welded stainless steel process connection**; head CSA/FM approved for Class I, Division 1, Groups B, C, D; Class II, Groups E, F, G; screw cover with chain and gasketed o-ring, meets NEMA 4; ceramic terminal block; 1/2" NPT conduit connection (Note: for spring-loaded fitting, see Style 75 and add optional head).

SHEATH DIAMETER (in inches)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
2 - 310 stainless steel (available on diameters 6 & 7, with K or KK calibration)
3 - 316 stainless steel
5 - Inconel® 600

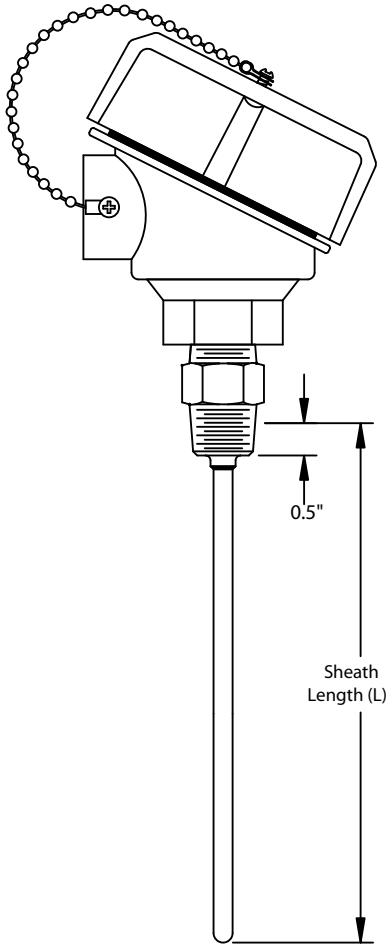
CALIBRATION – Standard limits

J – Single J	**JJ** – Dual J
K – Single K	**KK** – Dual K
T – Single T	**TT** – Dual T
E – Single E	**EE** – Dual E

Special limits are available – consult AST

HOT JUNCTION
G – Grounded junction
U – Ungrounded junction
E – Exposed junction
(Note: lengths over L84 will be shipped coiled unless otherwise specified at time of order)

SHEATH LENGTH
L# – (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)



OPTIONS – see page 1-3b

AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
PC25	1/4" NPT process connection
PC75	3/4" NPT process connection
CAL1	Calibration, NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
TRANSMITTERS – For complete specs, see Transmitters section	
TR11	4-20 mA, 2-wire transmitter, single input, isolated output; specify range and units of measure (e.g., 0-200°C)
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 *.

EXPLOSION-PROOF TERMINAL HEAD OPTIONS		
Option Code	Process Connection	Conduit Connection
Cast aluminum; screw cover with chain; o-ring gasket (Gasket rated to 100°C exposure); ceramic terminal block; FM/CSA approved for Class I Div. 1, Groups B, C and D; Class II Groups E, F and G; internal ground screw.		
HD71	1/2"	3/4"
Stainless steel (same specs as HD71)		
HD74	1/2"	1/2"
HD75	1/2"	3/4"
Epoxy-coated (same specs as HD71)		
HD80	1/2"	1/2"
HD81	1/2"	3/4"

Note: See Accessories section for additional specs.

UE APPLIED SENSOR TECHNOLOGIES
A Division of UNITED ELECTRIC CONTROLS

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.

180 Dexter Avenue, P.O. Box 9143, Watertown, MA 02471-9143 USA Telephone: 617 923-6966 Fax: 617 926-8411 http://www.appliedsensortech.com

EXPLOSION-PROOF CONNECTION HEAD WITH SPRING-LOADED ASSEMBLY AND MOUNTING HARDWARE

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	ASSEMBLY STYLE	CONNECTION	CONNECTION LENGTH	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	OPTIONS

SENSOR TYPE
MI – Mineral insulated thermocouple

ASSEMBLY STYLE
77 – **Sheath with cast aluminum head**; spring-loaded in head; CSA/FM approved head for Class I, Division 1, Groups B, C, D; Class II, Groups E, F, G; screw cover with chain and gasketed o-ring; designed for NEMA 4; ceramic terminal block; 1/2" NPT conduit and process connections.

CONNECTION
H – Head only, no mounting hardware; 1/2" NPT (female) instrument connection
N – 1/2" NPT carbon steel nipple
NU – 1/2" NPT carbon steel nipple and plated steel explosion-proof union
NUN – 1/2" NPT carbon steel nipples and plated steel explosion-proof union
Add suffix "**1S**" for 304 stainless steel nipples

CONNECTION LENGTH
(e.g., 006 = 6 inch)
(See chart below for standard available lengths)

SHEATH DIAMETER
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
3 – 316 stainless steel

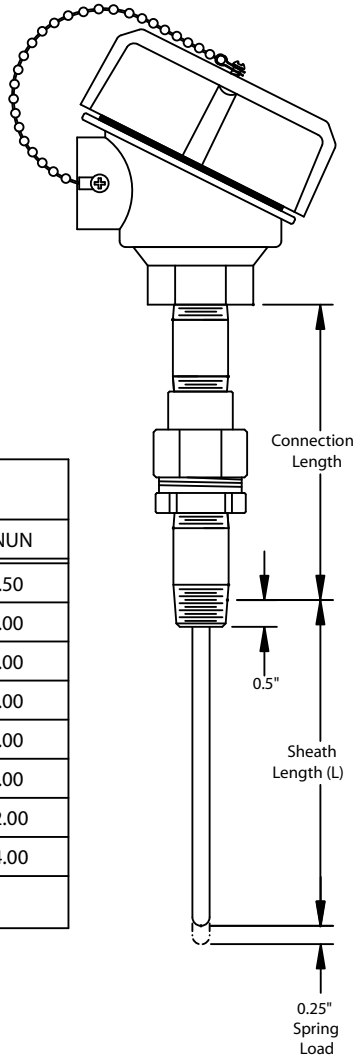
CALIBRATION - Standard limits

J – Single J	**JJ** – Dual J
K – Single K	**KK** – Dual K
T – Single T	**TT** – Dual T
E – Single E	**EE** – Dual E

Special limits are available – consult AST

HOT JUNCTION
G – Grounded junction
U – Ungrounded junction

STANDARD AVAILABLE CONNECTION LENGTHS		
N	NU	NUN
N/A	2.00	2.50
0.50	2.50	3.00
1.00	3.00	4.00
1.50	3.50	5.00
2.00	4.00	6.00
3.00	5.00	8.00
5.00	7.00	12.00
6.00	8.00	14.00
DIMENSIONS ARE GIVEN IN INCHES		



SHEATH LENGTH: (Note: lengths over L84 will be shipped coiled unless otherwise specified at time of order)
L# - (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)

OPTIONS – see page 1-4b

AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIONS	
Option Codes	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
TRANSMITTERS	
See Style 48 for available transmitters	

EXPLOSION-PROOF TERMINAL HEAD OPTIONS		
Option Code	Process Connection	Conduit Connection
Cast aluminum; screw cover with chain; o-ring gasket; ceramic terminal block; FM/CSA approved for Class I Div. 1, Groups B, C and D; Class II Groups E, F and G (Gasket rated to 100°C exposure); internal ground screw		
HD71	1/2"	3/4"
Same as above, except epoxy-coated		
HD80	1/2"	1/2"
HD81	1/2"	3/4"

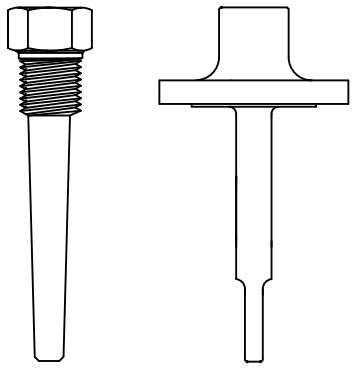
Note: See Accessories section for outline drawings and additional specs.

THERMOWELLS & PROTECTION TUBES

For a compete offering of metal, ceramic and composite material thermowells and protection tubes, please see the Thermowell and Protection Tube sections.

EXTENSION WIRE

A selection of extension-grade thermocouple wire is available to connect the sensor to its input device. Consult Accessories section.



H260 THERMOWELL

F260 THERMOWELL

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

DOUBLE-SIDED, SPRING-LOADED PROCESS MOUNTING WITH TERMINAL HEAD OPTIONS

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	LEADWIRE LENGTH	OPTION

SENSOR TYPE
MI – Mineral insulated thermocouple

ASSEMBLY STYLE
75 – **Sheath with double-sided, spring-loaded fitting**; Teflon® insulated conductors; 1/2" NPT stainless steel connection. (Note: a variety of terminal heads may be added to this style – see page 1-5b)

SHEATH DIAMETER (in inches)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
3 – 316 stainless steel
5 – Inconel® 600

CALIBRATION Standard limits

J – Single J	**JJ** – Dual J
K – Single K	**KK** – Dual K
T – Single T	**TT** – Dual T
E – Single E	**EE** – Dual E

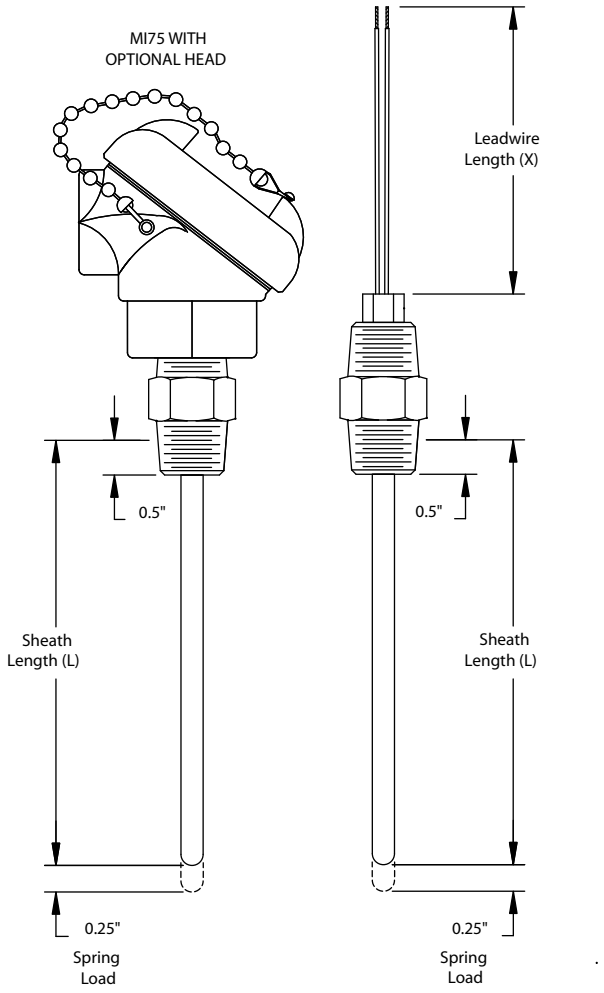
Special limits are available – consult AST

HOT JUNCTION
G – Grounded junction
U – Ungrounded junction

SHEATH LENGTH (Note: lengths over L84 will be shipped coiled unless otherwise specified at time of order)
L# – (e.g., L6 = 6 inch sheath, L12.5 = 12-1/2" length)

LEADWIRE LENGTH
X# - (e.g., X3 = 3 inch length; X3 is standard if specifying a terminal head)

OPTIONS – see page 1-5b



AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
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
WIRING CONNECTION OPTIONS	
Option Code	Description
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals
TRANSMITTERS	
TR11	4-20 mA, 2-wire; single input; isolated output; specify range, units of measure (e.g., 0-200°C) and terminal head with *. See Accessories section for additional information.
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 *.

THERMOWELLS & PROTECTION TUBES

For a complete offering of metal, ceramic and composite material thermowells and protection tubes, please see the Thermowell and Protection Tube sections.

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"
HD12*	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"

EXPLOSION-PROOF TERMINAL HEAD OPTIONS		
Option Code	Process Connection	Conduit Connection
Cast aluminum, screw cover with chain; o-ring gasket rated to 100°C; ceramic terminal block; FM/CSA approved for Class I Div. 1, Groups B, C, D; Class II, Groups E, F, G; internal ground screw		
HD70*	1/2"	1/2"
HD71*	1/2"	3/4"
Stainless steel (same spec as HD70/71)		
HD74*	1/2"	1/2"
HD75*	1/2"	3/4"
Epoxy-coated (same spec as HD70/71)		
HD80*	1/2"	1/2"
HD81*	1/2"	3/4"
Cast aluminum; ATEX approved for EEx d IIC; screw cover with chain; silicone rubber o-ring gasket; ceramic terminal block; rated for NEMA 4X, IP66 to IP68; internal and external ground screws		
HD72*	1/2"	1/2"
HD73*	1/2"	3/4"
Cast aluminum (Formerly Style 60); screw cover; plastic terminal block; UL/CSA approved for Class I Div. 1, Groups C and D; Class II Groups E, F and G.		
HD60	1/2"	1/2"
HD61	1/2"	3/4"
*can be used with transmitters		

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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SPRING-LOADED PROCESS MOUNTING HARDWARE WITH OPTIONAL TERMINAL HEAD

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.

SENSOR TYPE	ASSEMBLY STYLE	CONNECTION TYPE AND MATERIAL	CONN. LENGTH	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE
MI – Mineral insulated thermocouple

ASSEMBLY STYLE
48 – **Sheath with spring-loaded hex connector and connection hardware**; head as option

CONNECTION TYPE AND MATERIAL

Code	Union Type	Union Material	Lower Nipple Material
NU	Ordinary location	Carbon steel	None
NUS	Ordinary location	Stainless steel	None
NUX	Explosion-proof	Electroplated steel	None
NUN	Ordinary location	Carbon steel	Carbon steel
NUNS	Ordinary location	Stainless steel	Stainless steel
NUNX	Explosion-proof	Electroplated steel	Carbon steel
NUNXS	Explosion-proof	Electroplated steel	Stainless steel

CONNECTION LENGTH (For NU, NUX, NUS, use 002.5)
(e.g., 006 = 6 inch)
(See chart for available standard lengths)

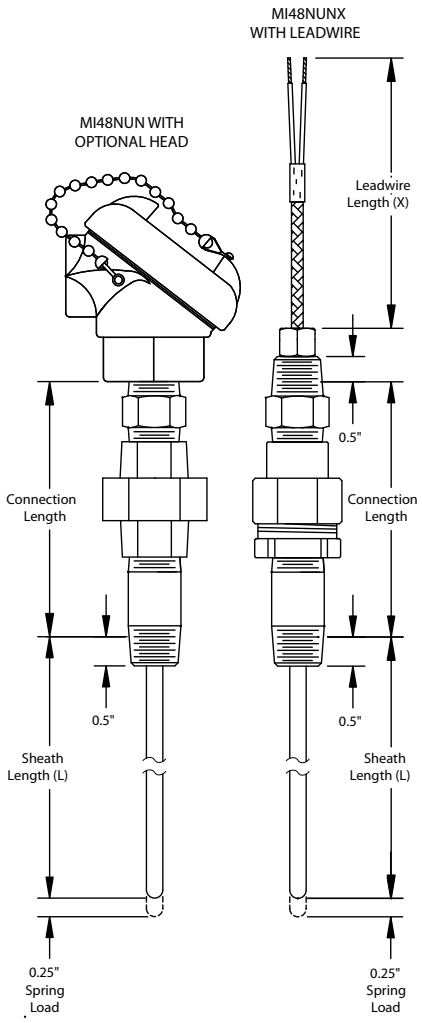
SHEATH DIAMETER (in inches)
4 – 1/8" (0.125)
6 – 3/16" (0.188)
7 – 1/4" (0.250)
9 – 3/8" (0.375)

SHEATH MATERIAL
3 – 316 stainless steel
5 – Inconel® 600

CALIBRATION – Standard limits
J – Single J **JJ** – Dual J
K – Single K **KK** – Dual K
T – Single T **TT** – Dual T
E – Single E **EE** – Dual E
Special limits are available – consult AST

HOT JUNCTION
G – Grounded junction
U – Ungrounded junction

STANDARD AVAILABLE CONNECTION LENGTHS FOR NUN CONNECTIONS
3.00
3.50
4.00
4.50
5.00
6.00
8.00
DIMENSIONS ARE GIVEN IN INCHES



SHEATH LENGTH (Note: lengths over L84 will be shipped coiled unless otherwise specified at time of order)
L# – (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)

LEADWIRE LENGTH
X# – (e.g., X3 = 3 inch length; X3 is standard if specifying optional head)

OPTIONS – see page 1-6b

AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
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
WIRING CONNECTION OPTIONS	
Option Code	Description
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals
TRANSMITTERS - for complete specs, see Transmitters section	
TR11	4-20 mA, 2-wire; single input; isolated output; specify range, units of measure (e.g., 0-200°C) and terminal head with *. See Accessories section for additional information.
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 *.

THERMOWELLS & PROTECTION TUBES

For a complete offering of metal, ceramic and composite material thermowells and protection tubes, please see the Thermowell and Protection Tube sections.

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"
HD12*	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"

EXPLOSION-PROOF TERMINAL HEAD OPTIONS		
Option Code	Process Connection	Conduit Connection
Cast aluminum, screw cover with chain; o-ring gasket rated to 100°C; ceramic terminal block; FM/CSA approved for Class I Div. 1, Groups B, C, D; Class II, Groups E, F, G; internal ground screw		
HD70*	1/2"	1/2"
HD71*	1/2"	3/4"
Stainless steel (same specs as HD70/71)		
HD74*	1/2"	1/2"
HD75*	1/2"	3/4"
Epoxy-coated (same specs as HD70/71)		
HD80*	1/2"	1/2"
HD81*	1/2"	3/4"
Cast aluminum; ATEX approved for EEx d IIC; screw cover with chain; silicone rubber o-ring gasket; ceramic terminal block; rated for NEMA 4X, IP66 to IP68; internal and external ground screws		
HD72*	1/2"	1/2"
HD73*	1/2"	3/4"
Cast aluminum (Formerly Style 60); screw cover; plastic terminal block; UL/CSA approved for Class I Div. 1, Groups C and D; Class II Groups E, F and G.		
HD60	1/2"	1/2"
HD61	1/2"	3/4"
*can be used with transmitters		

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.

CONNECTION HEAD WITH WELDED HEX FITTING

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	OPTIONS

SENSOR TYPE
MI – Mineral insulated thermocouple

ASSEMBLY STYLE
21 – **Sheath with cast aluminum head and welded stainless steel connection**; for use as ambient sensor or with compression fitting for process mounting; head conforms to NEMA 4 requirements; 3/4" conduit connection; ceramic terminal block; gasketed screw cover with stainless steel chain. See page 1-7b for other head options.

SHEATH DIAMETER (in inches)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
3 – 316 stainless steel
5 – Inconel® 600

CALIBRATION – Standard Limits

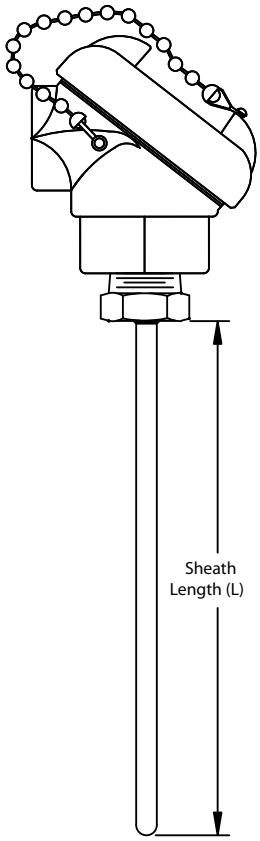
J – Single J	**JJ** – Dual J
K – Single K	**KK** – Dual K
T – Single T	**TT** – Dual T
E – Single E	**EE** – Dual E

Special limits are available – consult AST

HOT JUNCTION
G – Grounded junction
U – Ungrounded junction
E – Exposed junction

SHEATH LENGTH (Note: lengths over L84 will be shipped coiled unless otherwise specified at time of order)
L# – (e.g., L6 = 6" sheath, L12.5 = 12.5" length)

OPTIONS – see page 1-7b



Style 21

STYLE 21

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
B90-	90° bend in sheath [specify length from tip in inches e.g., B90-6)
B45-	45° bend in sheath (specify length from tip in inches e.g., B45-6)
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
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

COMPRESSION FITTINGS (for diameters 4, 6, 7)			
Option Code	NPT	Material	Ferrule
CF10	1/8"	Stainless steel	Stainless steel
CF11	1/8"	Stainless steel	Teflon®
CF12	1/8"	Brass	Brass
CF20	1/4"	Stainless steel	Stainless steel
CF21	1/4"	Stainless steel	Teflon®
CF22	1/4"	Brass	Brass
CF30	1/2"	Stainless steel	Stainless steel
CF31	1/2"	Stainless steel	Teflon®
CF32	1/2"	Brass	Brass

TRANSMITTERS - for complete specs, see Transmitters section	
TR11	4-20 mA, 2-wire, single input, isolated output; specify range, units of measure (e.g., 0-200°C) and optional head with *. See Accessories section for additional information.
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 *.

WELD PADS	
Option Code	Radius To Fit Pipe
WP00	Horizontal pad/flat
WP10	1" nominal pipe size
WP15	1.5" nominal pipe size
WP20	2" nominal pipe size
WP25	2.5" nominal pipe size
WP30	3" nominal pipe size
WP35	3.5" nominal pipe size
WP40	4" nominal pipe size

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.

AVAILABLE OPTIONS and MODIFICATIONS

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			
HD10*	HD11*	1/2"	1/2"
Std.*	HD13*	1/2"	3/4"
Epoxy-coated, cast aluminum, NEMA 4X			
HD50*	HD51*	1/2"	1/2"
HD52*	HD53*	1/2"	3/4"
Cast iron, screw cover with chain			
HD20*	HD21*	1/2"	1/2"
HD22*	HD23*	1/2"	3/4"
316 stainless steel, screw cover; NEMA 4X			
HD40*	HD41*	1/2"	3/4"
Polypropylene, white, screw cover			
HD30	N/A	1/2"	3/4"
Polypropylene, black screw cover			
HD31	N/A	1/2"	3/4"
Nylon, screw cover			
HD32	N/A	1/2"	1/2"

EXPLOSION-PROOF TERMINAL HEAD OPTIONS		
Option Code	Process Connection	Conduit Connection
Cast aluminum, screw cover with chain; o-ring gasket rated to 100°C; ceramic terminal block; FM/CSA approved for Class I Div. 1, Groups B, C, D; Class II, Groups E, F, G; internal ground screw		
HD70*	1/2"	1/2"
HD71*	1/2"	3/4"
Stainless steel (same specs as HD70/71)		
HD74*	1/2"	1/2"
HD75*	1/2"	3/4"
Epoxy-coated (same specs as HD70/71)		
HD80*	1/2"	1/2"
HD81*	1/2"	3/4"
Cast aluminum; ATEX approved for EEx d IIC; screw cover with chain; silicone rubber o-ring gasket; ceramic terminal block; rated for NEMA 4X, IP66 to IP68; internal and external ground screws		
HD72*	1/2"	1/2"
HD73*	1/2"	3/4"
Cast aluminum (Formerly Style 60); screw cover; plastic terminal block; UL/CSA approved for Class I Div. 1, Groups C and D; Class II Groups E, F and G.		
HD60	1/2"	1/2"
HD61	1/2"	3/4"
*can be used with transmitters		

Note: See Accessories section for outline drawings and additional specs.

APPLIED SENSOR TECHNOLOGIES
A Division of UNITED ELECTRIC CONTROLS
180 Dexter Avenue, P.O. Box 9143, Watertown, MA 02471-9143 USA Telephone: 617 923-6966 Fax: 617 926-8411 http://www.appliedsensortech.com

NOBLE METAL THERMOCOUPLE WITH TERMINAL HEAD AND PROTECTION TUBE

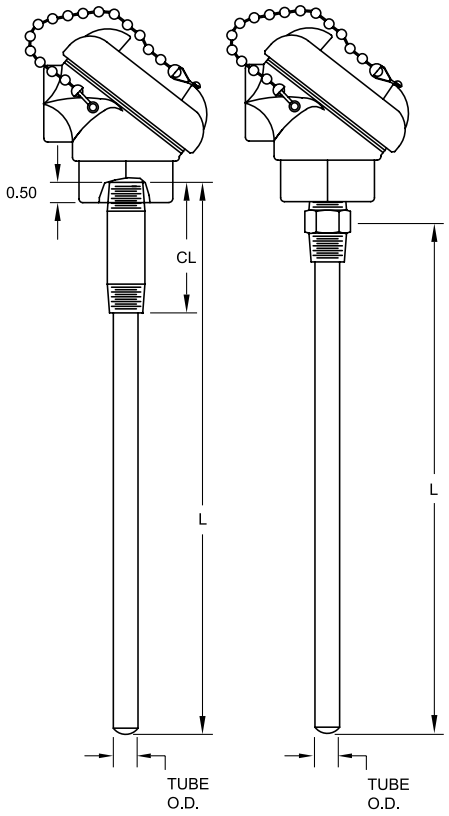
How to build a part number:

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**

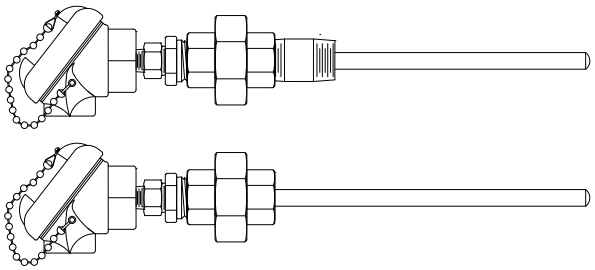
WIRE GAUGE
24 – 24 AWG

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 page 1-8b

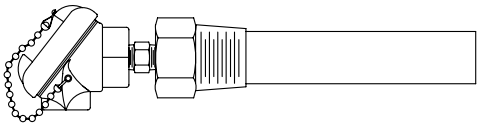
Note: union fitting or union with nipple can be added to this style (consult AST for part numbers and availabilities)



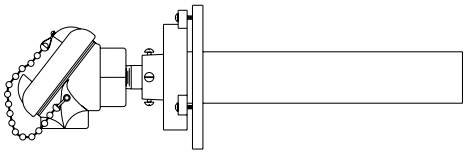
ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
WC20	Wiring cable gland for 0.187 - 0.312 diameter cables, for terminal heads with 1/2" NPT conduit connections
WC21	Wiring cable gland for 0.125 - 0.187 diameter cables, for terminal heads with 1/2" NPT conduit connections

For additional Noble Metal Thermocouple styles, see:

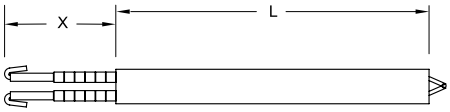
Style 81B – Secondary tube with mounting bushing



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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NOBLE METAL THERMOCOUPLE WITH SECONDARY PROTECTION TUBE & BUSHING

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	SECONDARY TUBE CONFIGURATION	CALIBRATION	WIRE GAUGE	BEAD MATERIAL	SECONDARY TUBE LENGTH	OPTIONS

SENSOR TYPE
BTC – Beaded construction

STYLE
81B – **Noble metal element with inner and outer protection tubes**; threaded bushing process attachment; NEMA 4 aluminum terminal head and ceramic terminal block; 3/4" NPT conduit connection; gasketed screw cover with stainless steel chain

SECONDARY TUBE CONFIGURATION
(e.g., **9C5A** = 1.75" O.D. silicon carbide protection tube with 2" NPT carbon steel bushing. See page 1-9b for available combinations of materials and sizes)

Outer protection tube diameter

3 – 3/4" O.D.
4 – 7/8" O.D.
5 – 1" O.D.
6 – 1-1/10" O.D.
7 – 1-1/4" O.D.
8 – 1-1/2" O.D.
9 – 1-3/4" O.D.

Outer protection tube material

C – Silicon Carbide, oxide bonded*
S – Sialon®
H – Hexalloy®
L – LT1

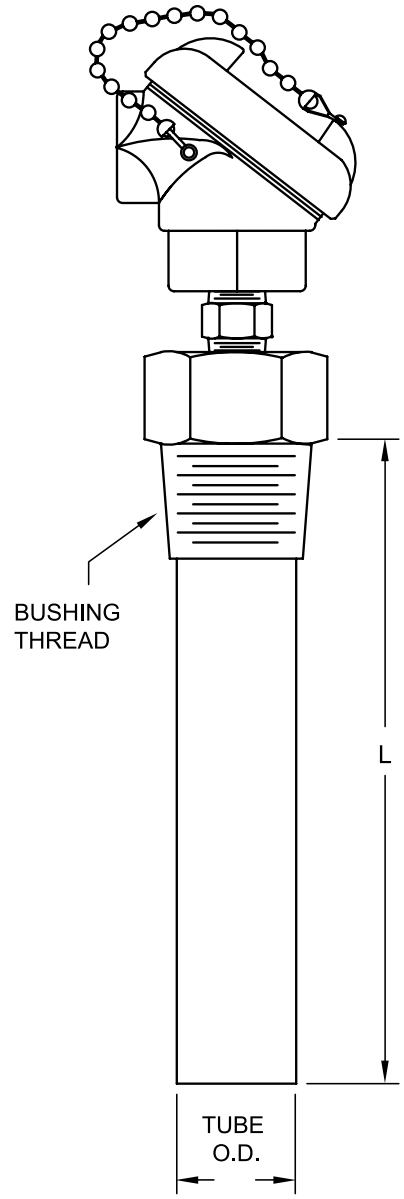
* Other grades of silicon carbide available upon request. Consult AST.

Bushing thread and material

Carbon Steel	*316 Stainless steel*
2 – 1" NPT	**6** – 1" NPT
3 – 1-1/4" NPT	**7** – 1-1/4" NPT
4 – 1-1/2 NPT	**8** – 1-1/2" NPT
5 – 2" NPT	**9** – 2" NPT

Inner protection tube material

A – Alumina (98.8% aluminum oxide)
M – Mullite (not recommended over 1200°C)



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)

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

OPTIONS – see page 1-9b

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
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

STYLE 81B

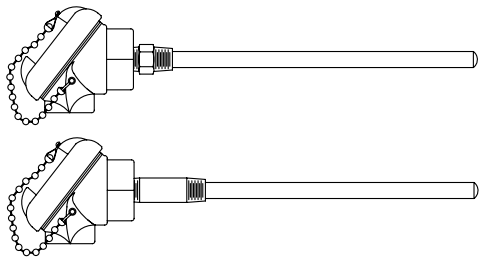
TERMINAL HEAD OPTIONS

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			

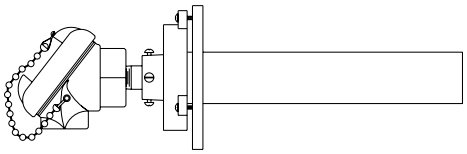
TRANSMITTERS – For complete specs, see Transmitters section	
TR11	4-20 mA, 2-wire transmitter, single input, isolated output; specify range, units of measure (e.g., 0-200°C) and optional terminal head with *.
TR12	4-20 mA, 2-wire transmitter, single input, non-isolated output; specify range and units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

For additional Noble Metal Thermocouple styles, see:

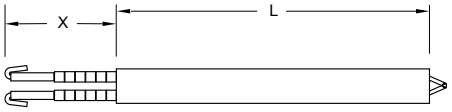
Style 81N – Single, primary protection tube only



Style 81F – Secondary tube with slip flange mounting



Style 51 – Replacement Sensor



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. For each combination of thread and O.D., available materials are noted - Silicon Carbide (C), Sialon® (S), Hexalloy® (H) and LT1 (L).

PROCESS THREAD (NPT)

		CARBON STEEL				316 STAINLESS			
OUTER TUBE O.D.	**CODE**	**2** (1")	**3** (1-1/4")	**4** (1-1/2")	**5** (2")	**6** (1")	**7** (1-1/4")	**8** (1-1/2")	**9** (2")
	3 (3/4")	H	H	H	H	H	H	H	H
	4 (7/8")	L,S	L,S	L,S	L,S	L,S	L,S	L,S	L,S
	5 (1")		H	H	H		H	H	H
	6 (1-1/10")		S	S	S		S	S	S
	7 (1-1/4")			H	H			H	H
	8 (1-1/2")			H	H			H	H
	9 (1-3/4")				C				C

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.

APPLIED SENSOR TECHNOLOGIES
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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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NOBLE METAL THERMOCOUPLE WITH SECONDARY PROTECTION TUBE & MOUNTING FLANGE

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	OUTER PROTECTION TUBE LENGTH	OPTIONS

SENSOR TYPE
BTC – Beaded construction

STYLE
81F – **Noble metal element with primary and secondary protection tubes**; mounting flange process attachment; 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., **9C5A** = 1.75" O.D. silicon carbide protection tube with 4-7/8" mounting flange and alumina inner protection tube)
Outer protection tube diameter
9 - 1-3/4" O.D.
Outer protection tube material
C - Silicon carbide, oxide bonded*
***** Other grades of silicon carbide available upon request. Consult AST.
Flange size
5 - 4-7/8" O.D.
Inner protection tube material
A – Alumina (98.8% aluminum oxide)
M – Mullite (not recommended over 1200°C)

CALIBRATION

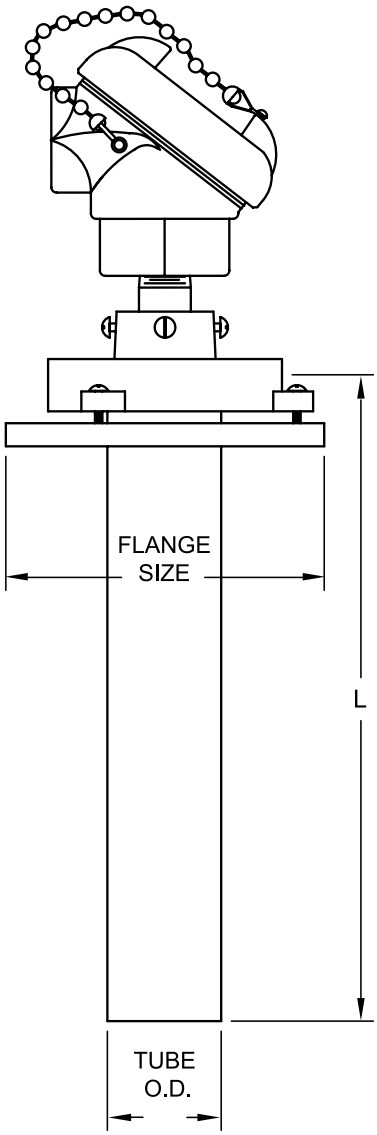
Single junction	Dual junctions
R – Platinum and Platinum/13% Rhodium	**RR**
S – Platinum and Platinum/10% Rhodium	**SS**
B – Platinum/6% Rhodium and Platinum/30% Rhodium	**BB**

WIRE GAUGE
24 – 24 AWG

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

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

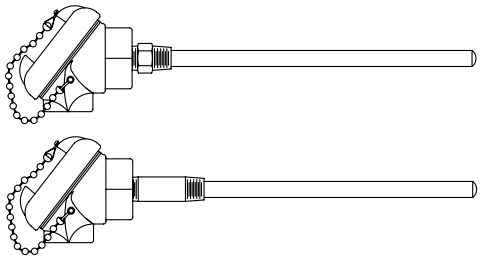
OPTIONS – see page 1-10b



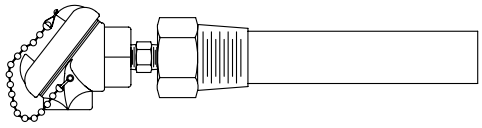
ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
WC20	Wiring cable gland for 0.187 - 0.312 diameter cables, for terminal heads with 1/2" NPT conduit connections
WC21	Wiring cable gland for 0.125 - 0.187 diameter cables, for terminal heads with 1/2" NPT conduit connections

For additional Noble Metal Thermocouple styles, see:

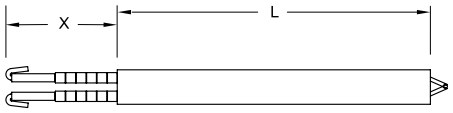
Style 81N – Single, primary protection tube only



Style 81B – Secondary tube with mounting bushing



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. 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.
2. In many cases platinum thermocouples can be recycled, thereby reducing the long-term overall cost. Please contact Applied Sensor Technologies for further information.
3. 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.

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.

180 Dexter Avenue, P.O. Box 9143, Watertown, MA 02471-9143 USA Telephone: 617 923-6966 Fax: 617 926-8411 http://www.appliedsensortech.com

SHEATH WITH LEADWIRE

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE*
GP – General purpose thermocouple
MI – Mineral insulated thermocouple

ASSEMBLY STYLE
02 – **Sheath with leadwire**; fiberglass insulated conductors; fiberglass jacket
04 – **Sheath with leadwire**; fiberglass insulated conductors; fiberglass jacket; stainless steel overbraid overall
28 – **Sheath with Teflon® insulated conductors**; Teflon® jacketed cable

SHEATH DIAMETER (in inches)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
3 – 316 stainless steel
5 – Inconel® 600 (MI only)

CALIBRATION - Standard limits

J – Single J	**JJ** – Dual J
K – Single K	**KK** – Dual K
T – Single T	**TT** – Dual T
E – Single E	**EE** – Dual E

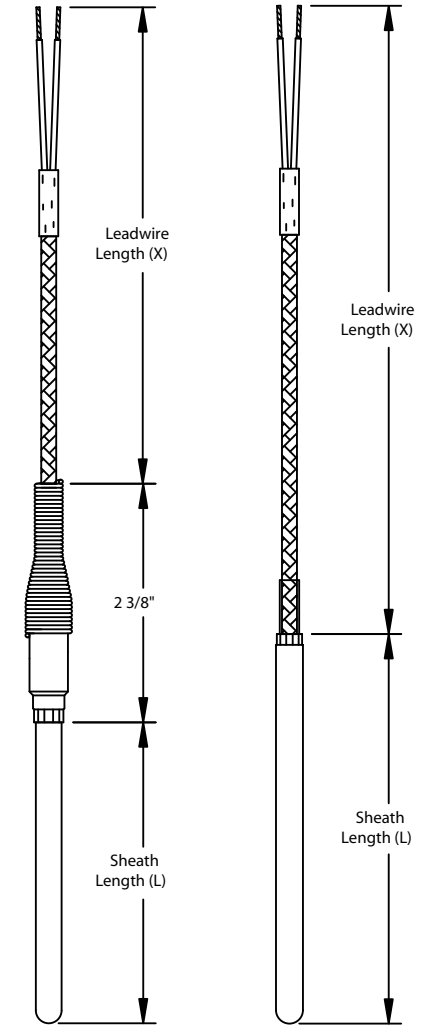
Special limits are available – consult AST
Dual junction not available with all GP Thermocouples in sheath diameter 4 and GP04 diameter 6

HOT JUNCTION
G – Grounded junction
U – Ungrounded junction
E – Exposed junction

SHEATH LENGTH (Note: maximum L=96" for GP; for MI, lengths over L84 will be shipped coiled unless otherwise specified)
L# – (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)

LEADWIRE LENGTH
X# – (e.g., X72 = 72 inch length)

OPTIONS – see page 1-11b



MI Type GP Type

*Note: GP thermocouples, manufactured using hollow tubing and wire, tend to be lower cost than MI, but cannot be bent in the field and are standardly designed for sensing temperatures below 500°F. MI thermocouples are more rugged than GP due to compacted magnesium-oxide powder insulation, can be bent in the field, and are appropriate for the temperature range of the sensor and sheath.

AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
B90-	90° bend in sheath (specify length from tip in inches e.g., B90–6)
B45-	45° bend in sheath (specify length from tip in inches e.g., B45–6)
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
HT10	High temperature (900°F) transition. (Standard transition on Styles 02 and 04 is 500°F/260°C)

WIRING CONNECTION OPTIONS	
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals
For plugs and jacks, see Styles 05, 07, 69.	

COMPRESSION FITTINGS (for diameters 4, 6, 7)			
Option Code	NPT	Material	Ferrule
CF10	1/8"	Stainless steel	Stainless steel
CF11	1/8"	Stainless steel	Teflon®
CF12	1/8"	Brass	Brass
CF20	1/4"	Stainless steel	Stainless steel
CF21	1/4"	Stainless steel	Teflon®
CF22	1/4"	Brass	Brass
CF30	1/2"	Stainless steel	Stainless steel
CF31	1/2"	Stainless steel	Teflon®
CF32	1/2"	Brass	Brass

WELD PADS	
WP00	Horizontal pad/flat
WP10	1" nominal pipe size
WP15	1.5" nominal pipe size
WP20	2" nominal pipe size
WP25	2.5" nominal pipe size
WP30	3" nominal pipe size
WP35	3.5" nominal pipe size
WP40	4" nominal pipe size

EXTENSION WIRE

A selection of extension-grade thermocouple wire is available to connect the sensor to its input device. Consult Accessories section.

SHEATH WITH LEADWIRE AND ARMOR

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	ARMOR CABLE LENGTH	OPTIONS

SENSOR TYPE*
GP – General purpose thermocouple
MI – Mineral insulated thermocouple

ASSEMBLY STYLE
03 – **Sheath with leadwire and flexible stainless steel armor cable**; fiberglass-insulated conductors; fiberglass jacket.
03P – **PVC-coated armor**, Teflon®-insulated conductors
03T – **Teflon® coated armor**, Teflon®-insulated conductors

SHEATH DIAMETER (in inches)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
3 – 316 stainless steel
5 – Inconel® 600 (MI only)

CALIBRATION Standard limits

J – Single J	**JJ** – Dual J
K – Single K	**KK** – Dual K
T – Single T	**TT** – Dual T
E – Single E	**EE** – Dual E

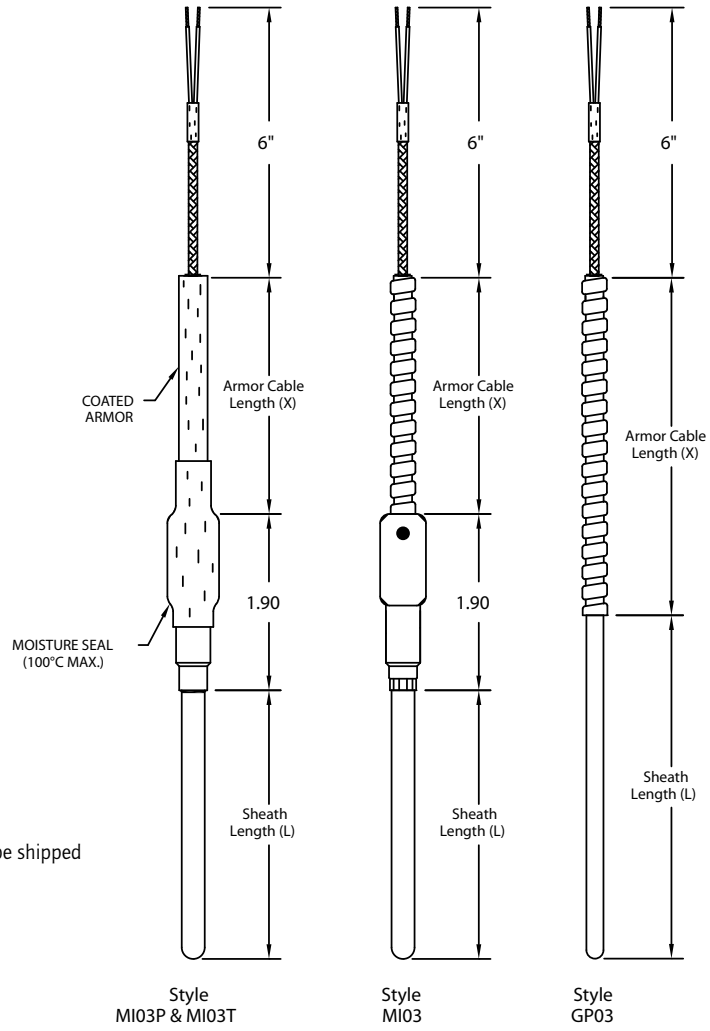
Special limits are available – consult AST
Dual junction not available with GP thermocouples in sheath diameter 4

HOT JUNCTION
G – Grounded junction
U – Ungrounded junction
E – Exposed junction

SHEATH LENGTH (Note: maximum L=96" for GP; for MI, lengths over L84 will be shipped coiled unless otherwise specified)
L# – (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)

ARMOR CABLE LENGTH
X# - (e.g., X72 = 72 inch length)

OPTIONS – see page 1-12b



*Note: GP thermocouples, manufactured using hollow tubing and wire, tend to be lower cost than MI, but cannot be bent in the field and are standardly designed for sensing temperatures below 500°F. MI thermocouples are more rugged than GP due to compacted magnesium-oxide powder insulation, can be bent in the field, and are appropriate for the temperature range of the sensor and sheath.

AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
B90-	90° bend in sheath (specify length from tip in inches e.g., B90-6)
B45-	45° bend in sheath (specify length from tip in inches e.g., B45-6)
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
HT10	High temperature (900°F) transition. (Standard transition rated 500°F/260°C)

COMPRESSION FITTINGS			
Option Code	NPT	Material	Ferrule
CF10	1/8"	Stainless steel	Stainless steel
CF11	1/8"	Stainless steel	Teflon®
CF12	1/8"	Brass	Brass
CF20	1/4"	Stainless steel	Stainless steel
CF21	1/4"	Stainless steel	Teflon®
CF22	1/4"	Brass	Brass
CF30	1/2"	Stainless steel	Stainless steel
CF31	1/2"	Stainless steel	Teflon®
CF32	1/2"	Brass	Brass

LEADWIRE AND ARMOR OPTIONS	
BA50	Bayonet cap on armor, no spring (**formerly Style 25**)
Note: For assembly with sheath, armor and terminal head, see Style 66.	

WIRING CONNECTION OPTIONS	
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals
PLUGS AND JACKS (Note: plug is designed to be attached to sensor assemblies. Jack options – for customer wiring – should only be specified if plug option is also included. Cable clamp is included for both plug and jack options.)	
PJ10	Standard plug, rated to 177°C (350°F)
PJ20	Standard jack, rated to 177°C (350°F)
PJ30	Miniature plug, rated to 177°C (350°F)
PJ40	Miniature jack, rated to 177°C (350°F)
PJ50	High temp. plug, rated to 260°C (500°F)
PJ60	High temp. jack, rated to 260°C (500°F)
BX CONNECTORS	
WC40	1/2"
WC50	3/4"
WELD PADS	
WP00	Horizontal pad/flat
WP10	1" nominal pipe size
WP15	1.5" nominal pipe size
WP20	2" nominal pipe size
WP25	2.5" nominal pipe size
WP30	3" nominal pipe size
WP35	3.5" nominal pipe size

EXTENSION WIRE

A selection of extension-grade thermocouple wire is available to connect the sensor to its input device. Consult Accessories section.

SHEATH WITH LEADWIRE AND PLUG

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE*
GP – General purpose thermocouple
MI – Mineral insulated thermocouple

ASSEMBLY STYLE
05 – **Sheath with leadwire; standard male plug**; fiberglass insulated conductors; fiberglass jacket
07 – **Sheath with leadwire; stainless steel overbraid; standard male plug**; fiberglass insulated conductors; fiberglass jacket
69 – **Sheath with leadwire; miniature plug**; fiberglass insulated conductors; fiberglass jacket

SHEATH DIAMETER (in inches)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
3 – 316 stainless steel
5 – Inconel® 600 (MI only)

CALIBRATION – Standard limits

J – Single J	**JJ** – Dual J
K – Single K	**KK** – Dual K
T – Single T	**TT** – Dual T
E – Single E	**EE** – Dual E

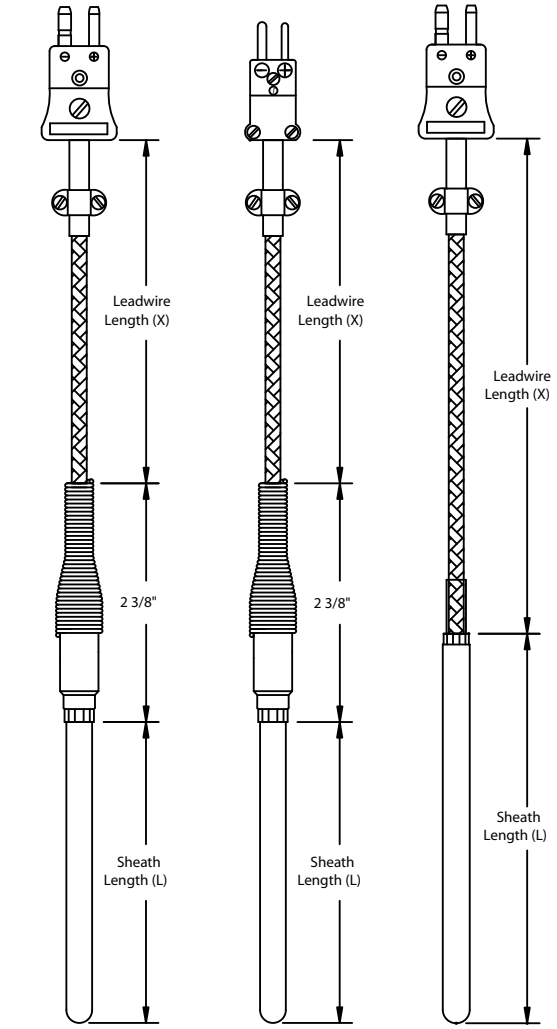
Special limits are available – consult AST
Dual junctions not available with all GP Thermocouples in sheath diameter 4 and GP07 diameter 6

HOT JUNCTION
G – Grounded junction
U – Ungrounded junction
E – Exposed junction

SHEATH LENGTH (Note: maximum L=96" for GP; for MI, lengths over L84 will be shipped coiled unless otherwise specified)
L# – (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)

LEADWIRE LENGTH
X# – (e.g., X72 = 72 inch length)

OPTIONS – see page 1-13b



Standard Plug Style MI05 & MI07 | Miniature Plug Style MI69 | Standard Plug Style GP05 & GP07

*Note: GP thermocouples, manufactured using hollow tubing and wire, tend to be lower cost than MI, but cannot be bent in the field and are standarly designed for sensing temperatures below 500°F. MI thermocouples are more rugged than GP due to compacted magnesium-oxide powder insulation, can be bent in the field, and are appropriate for the temperature range of the sensor and sheath.

AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
B90-	90° bend in sheath (specify length from tip in inches e.g., B90-6)
B45-	45° bend in sheath (specify length from tip in inches e.g., B45-6)
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
HT10	High temperature (900°F) transition. (Standard transition rated 500°F/260°C)
PLUG AND JACK OPTIONS (Note: plug is designed to be attached to sensor assemblies. Jack options – for customer wiring – should only be specified if plug option is also included. Cable clamp is included for both plug and jack options.)	
PJ20	Standard jack, rated to 177°C (350°F)
PJ40	Miniature jack, rated to 177°C (350°F)
PJ50	High temp. standard plug, rated to 260°C (500°F)
PJ60	High temp. standard jack, rated to 260°C (500°F)

EXTENSION WIRE

A selection of extension-grade thermocouple wire is available to connect the sensor to its input device. Consult Accessories section.

COMPRESSION FITTINGS (for diameters 4, 6, 7)			
Option Code	NPT	Material	Ferrule
CF10	1/8"	Stainless steel	Stainless steel
CF11	1/8"	Stainless steel	Teflon®
CF12	1/8"	Brass	Brass
CF20	1/4"	Stainless steel	Stainless steel
CF21	1/4"	Stainless steel	Teflon®
CF22	1/4"	Brass	Brass
CF30	1/2"	Stainless steel	Stainless steel
CF31	1/2"	Stainless steel	Teflon®
CF32	1/2"	Brass	Brass
WELD PADS			
WP00	Horizontal pad/flat		
WP10	1" nominal pipe size		
WP15	1.5" nominal pipe size		
WP20	2" nominal pipe size		
WP25	2.5" nominal pipe size		
WP30	3" nominal pipe size		
WP35	3.5" nominal pipe size		
WP40	4" nominal pipe size		

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

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SHEATH WITH MALE PLUG

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	OPTIONS

SENSOR TYPE*
GP – General purpose thermocouple
MI – Mineral insulated thermocouple

ASSEMBLY STYLE
14 – **Sheath with standard male plug**; maximum termination temperature 177˚C (350˚F)
74 – **Sheath with miniature male plug**; maximum sheath diameter 3/16" OD; maximum termination temperature 177˚C (350˚F)

SHEATH DIAMETER (in inches)
3 – 1/16 (0.063) (Style MI 74 only)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250) (Style 14 only)

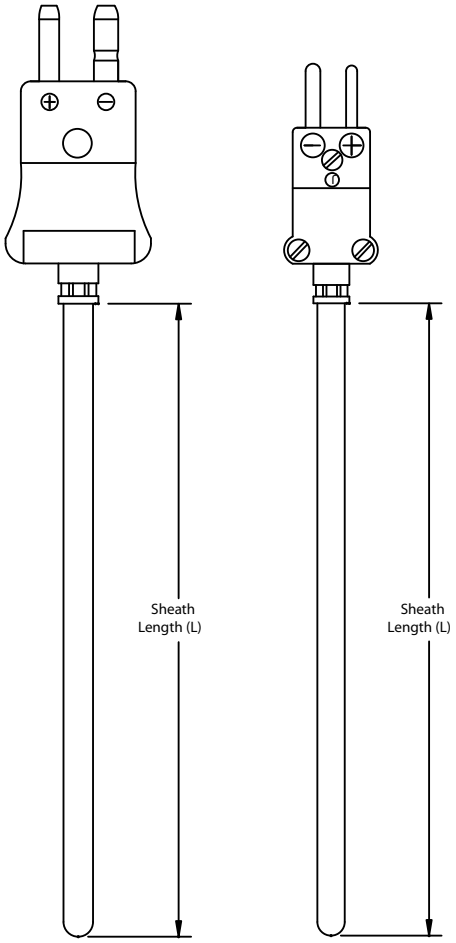
SHEATH MATERIAL
3 – 316 stainless steel
5 – Inconel® 600 (MI only)

CALIBRATION – Standard limits
J – Single J
K – Single K
T – Single T
E – Single E
Special limits are available – consult AST

HOT JUNCTION
G – Grounded junction
U – Ungrounded junction
E – Exposed junction

SHEATH LENGTH (Note: maximum L=96" for GP; for MI, lengths over L84 will be shipped coiled unless otherwise specified)
L# – (e.g., L6 = 6" sheath, L12.5 = 12.5" length)

OPTIONS – see page 1-14b



Style 14 Style 74

*Note: GP thermocouples, manufactured using hollow tubing and wire, tend to be lower cost than MI, but cannot be bent in the field and are standardly designed for sensing temperatures below 500°F. MI thermocouples are more rugged than GP due to compacted magnesium-oxide powder insulation, can be bent in the field, and are appropriate for the temperature range of the sensor and sheath.

AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
PLUGS AND JACKS	
PJ20	Standard jack, rated to 177°C (350°F) (Style 14 only)
PJ40	Miniature jack, rated to 177°C (350°F) (Style 74 only)

EXTENSION WIRE
A selection of extension-grade thermocouple wire is available to connect the sensor to its input device. Consult Accessories section.

COMPRESSION FITTINGS (for diameters 4, 6, 7)			
Option Code	NPT	Material	Ferrule
CF10	1/8"	Stainless steel	Stainless steel
CF11	1/8"	Stainless steel	Teflon®
CF12	1/8"	Brass	Brass
CF20	1/4"	Stainless steel	Stainless steel
CF21	1/4"	Stainless steel	Teflon®
CF22	1/4"	Brass	Brass
CF30	1/2"	Stainless steel	Stainless steel
CF31	1/2"	Stainless steel	Teflon®
CF32	1/2"	Brass	Brass

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

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CUTABLE SHEATH WITH LEADWIRE

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE
GP – General purpose thermocouple

ASSEMBLY STYLE
38 – **Field cutable sheath length with leadwire**; fiberglass insulated conductors; fiberglass jacket; stainless steel overbraid; (cannot be shortened to less than 4")

SHEATH DIAMETER (in inches)
6 – 3/16 (0.188)
7 – 1/4 (0.250)

SHEATH MATERIAL
3 – 316 stainless steel

CALIBRATION - Standard limits

J – Single J	**JJ** – Dual J
K – Single K	**KK** – Dual K
T – Single T	**TT** – Dual T
E – Single E	**EE** – Dual E

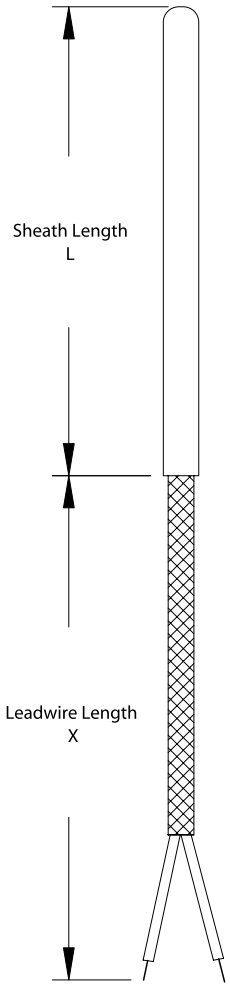
Special limits are available- consult AST

HOT JUNCTION
G – Grounded junction
U – Ungrounded junction

SHEATH LENGTH (Maximum L=96")
L# – (e.g., L24 = 24 inch sheath)

LEADWIRE LENGTH
X# – (e.g., X72 = 72 inch length)

OPTION
TAG1 – stainless steel tag and wire



STYLE 38

EXTENSION WIRE

A selection of extension-grade thermocouple wire is available to connect the sensor to its input device. Consult Accessories section.

Many additional components are available in our Sensor Box program, including spring-loaded fittings and plugs and jacks.

The Sensor Box allows you to build sensor assemblies on-site, saving time and expense. See the Sensor Box literature for further details.

UE APPLIED SENSOR TECHNOLOGIES
A Division of UNITED ELECTRIC CONTROLS

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

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SPRING LOADED BAYONET FITTING WITH ARMOR

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	ARMOR CABLE LENGTH	OPTIONS

SENSOR TYPE*
GP – General purpose thermocouple
MI – Mineral insulated thermocouple

ASSEMBLY STYLE
71 – **Sheath with stainless steel armor**; fiberglass insulated conductors; fiberglass jacket; spring-loaded bayonet cap; (use with Bayonet Adapter- see options on page 1-16b)

SHEATH DIAMETER (in inches)
6 – 3/16 (0.188)

SHEATH MATERIAL
3 – 316 stainless steel

CALIBRATION - Standard limits

J – Single J	**JJ** – Dual J
K – Single K	**KK** – Dual K
T – Single T	**TT** – Dual T
E – Single E	**EE** – Dual E

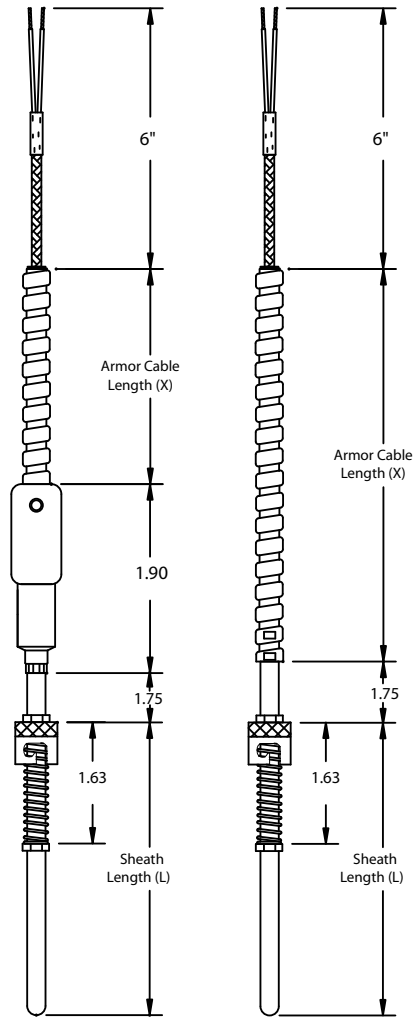
HOT JUNCTION
G – Grounded junction
U – Ungrounded junction

SHEATH LENGTH (Note: maximum L=96" for GP; for MI, lengths over L84 will be shipped coiled unless otherwise specified)
L# – (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)

ARMOR CABLE LENGTH
X# – (e.g., X72 = 72 inch length)

OPTIONS – see page 1-16b

*Note: GP thermocouples, manufactured using hollow tubing and wire, tend to be lower cost than MI, but cannot be bent in the field and are standardly designed for sensing temperatures below 500°F. MI thermocouples are more rugged than GP due to compacted magnesium-oxide powder insulation, can be bent in the field, and are appropriate for the temperature range of the sensor and sheath.



MI Type GP Type

STYLE 71

AVAILABLE OPTIONS and MODIFICATIONS

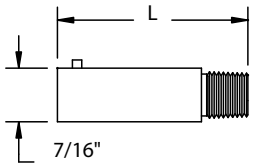
ASSEMBLY OPTIONS		
Option Code	Description	
TAG1	Stainless steel tag and wire	
BD90	90° bend in sheath, 3/4" from back end of cap **Formerly Style 35**	
BD45	45°bend in sheath, 3/4" from back end of cap **Formerly Style 70**	
CAL1	NIST traceable calibration [specify point(s)]	
CRT1	Certificate of conformance	
HT10	High temperature (900°F) transition. (Standard transition rated 500°F/260°C)	
BAYONET ADAPTERS (PLATED STEEL)		
Option Code	Thread Size	Length (L)
BA20	1/8" - 27 NPT	7/8"
BA22	1/8" - 27 NPT	1–1/2"
BA24	1/8" - 27 NPT	2–1/2"
PIPE CLAMP AND BAYONET ADAPTERS		
Option Code	Band Diameter	Adapter Length (l)
BA30	11/16" to 1–1/4"	2"
BA31	1–1/16" to 2"	2"
BA32	2–1/16" to 3"	2"
BA33	3–5/16" to 4–1/4"	2"
BA34	4–1/8" to 5"	2"

WIRING CONNECTION OPTIONS	
Option Code	Description
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals
PLUGS AND JACKS (Note: plug is designed to be attached to sensor assemblies. Jack options – for customer wiring – should only be specified if plug option is also included. Cable clamp is included for both plug and jack options.)	
PJ10	Standard plug, rated to 177°C (350°F)
PJ20	Standard jack, rated to 177°C (350°F)
PJ30	Miniature plug, rated to 177°C (350°F)
PJ40	Miniature jack, rated to 177°C (350°F)
PJ50	High temp. standard plug, rated to 260°C (500°F)
PJ60	High temp. standard jack, rated to 260°C (500°F)
BX CONNECTORS	
WC40	1/2"
WC50	3/4"

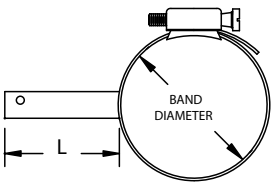
EXTENSION WIRE

A selection of extension-grade thermocouple wire is available to connect the sensor to its input device. Consult Accessories section.

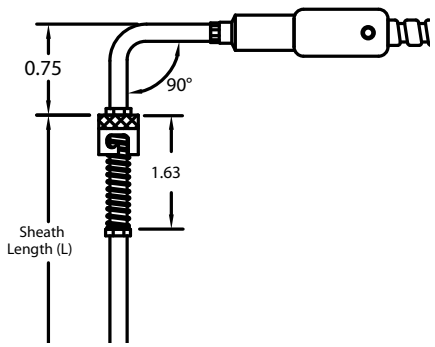
BAYONET ADAPTER
(PLATED STEEL)



PIPE CLAMP WITH
BAYONET ADAPTER



BD90 OPTION VIEW
ON MI71 STYLE



Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

UE APPLIED SENSOR TECHNOLOGIES
A Division of UNITED ELECTRIC CONTROLS

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SHEATH WITH WELDED PROCESS MOUNTING

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE
MI – Mineral insulated thermocouple

ASSEMBLY STYLE
23P – **Sheath with single-sided process mounting**; fiberglass insulated conductors; fiberglass jacket; 1/2" NPT stainless steel connection with leadwire
23I – **Sheath with single-sided instrument mounting**; fiberglass insulated conductors; fiberglass jacket; 1/2" NPT stainless steel connection with leadwire
24 – **Sheath with double-sided hex fitting**; fiberglass insulated conductors and jacket; 1/2" NPT stainless steel connection with leadwire

SHEATH DIAMETER (in inches)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
3 – 316 stainless steel
5 – Inconel® 600

CALIBRATION – Standard limits

J – Single J	**JJ** – Dual J
K – Single K	**KK** – Dual K
T – Single T	**TT** – Dual T
E – Single E	**EE** – Dual E

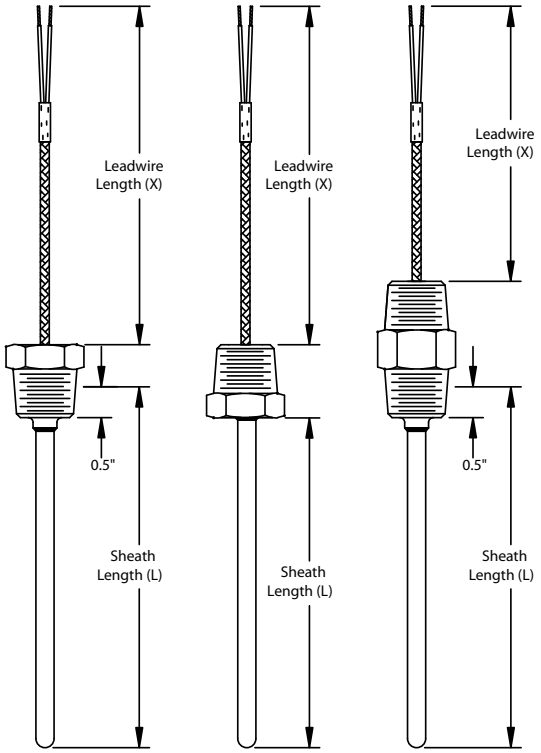
Special limits are available – consult AST

HOT JUNCTION
G – Grounded junction
U – Ungrounded junction
E – Exposed junction

SHEATH LENGTH (Note: lengths over L84 will be shipped coiled unless otherwise specified at time of order)
L# – (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)

LEADWIRE LENGTH
X# – (e.g., X72 = 72 inch length)

OPTIONS – see page 1-17b



Style 23P Style 23I Style 24

AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
B90-	90° bend in sheath [specify length from tip in inches e.g., B90-6)
B45-	45° bend in sheath (specify length from tip in inches e.g., B45-6)
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
HT10	High temperature (900°F) transition. (Standard transition rated 500°F/260°C)

WIRING CONNECTION OPTIONS	
Option Code	Description
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals
PLUGS AND JACKS (Note: plug is designed to be attached to sensor assemblies. Jack options – for customer wiring – should only be specified if plug option is also included. Cable clamp is included for both plug and jack options.)	
PJ10	Standard plug, rated to 177°C (350°F)
PJ20	Standard jack, rated to 177°C (350°F)
PJ30	Miniature plug, rated to 177°C (350°F)
PJ40	Miniature jack, rated to 177°C (350°F)
PJ50	High temp. standard plug, rated to 260°C (500°F)
PJ60	High temp. standard jack, rated to 260°C (500°F)
WELD PADS (**Style 23I only**)	
WP00	Horizontal pad/flat
WP10	1" nominal pipe size
WP15	1.5" nominal pipe size
WP20	2" nominal pipe size
WP25	2.5" nominal pipe size
WP30	3" nominal pipe size
WP35	3.5" nominal pipe size
WP40	4" nominal pipe size

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

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WASHER WITH LEADWIRE AND ARMOR

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	ASSEMBLY STYLE	WASHER SIZE	MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	ARMOR CABLE LENGTH	OPTIONS

SENSOR TYPE*
GP – General purpose thermocouple
MI – Mineral insulated thermocouple

ASSEMBLY STYLE
32 – **Washer with leadwire; fiberglass insulated conductors**; fiberglass jacket; armor cable; stainless steel washer thickness 1/4" (0.250); sheath diameter 0.188" only

WASHER SIZE (in inches)

FOR BOLT SIZE	ID	OD
6 – 3/16 (0.188)	0.193	0.375
7 – 1/4 (0.250)	0.255	0.500
9 – 3/8 (0.375)	0.380	0.750
10 – 1/2 (0.500)	0.510	1.000

WASHER AND SHEATH MATERIAL
3 – 316 stainless steel

CALIBRATION Standard limits
J – Single J **JJ** – Dual J
K – Single K **KK** – Dual K
T – Single T **TT** – Dual T
E – Single E **EE** – Dual E
Special limits are available – consult AST

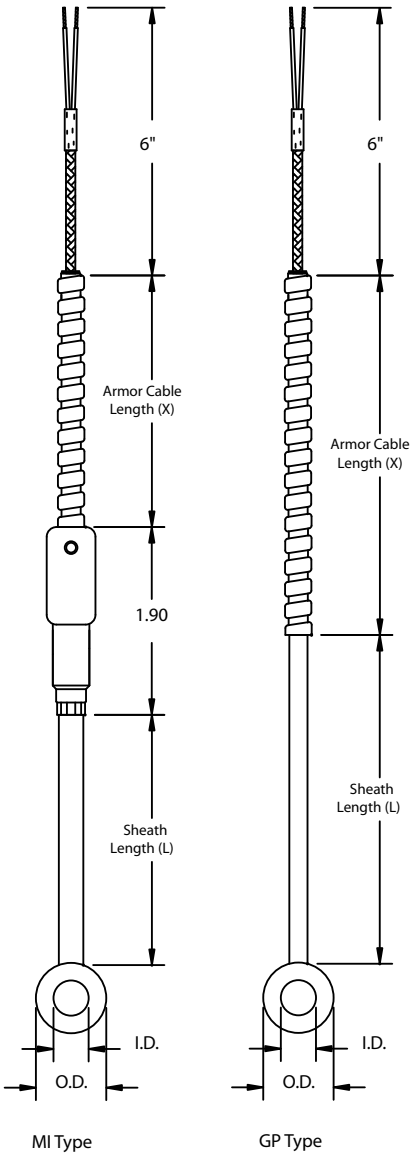
HOT JUNCTION
G – Grounded junction
U – Ungrounded junction

SHEATH LENGTH (Note: maximum L=96" for GP; for MI, lengths over L84 will be shipped coiled unless otherwise specified)
L# – (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)

ARMOR CABLE LENGTH
X# – (e.g., X72 = 72 inch length)

OPTIONS – see page 1-18b

*Note: GP thermocouples, manufactured using hollow tubing and wire, tend to be lower cost than MI, but cannot be bent in the field and are standardly designed for sensing temperatures below 500°F. MI thermocouples are more rugged than GP due to compacted magnesium-oxide powder insulation, can be bent in the field, and are appropriate for the temperature range of the sensor and sheath.



AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
B90-	90° bend in sheath [specify length from tip in inches e.g., B90-6)
B45-	45° bend in sheath (specify length from tip in inches e.g., B45-6)
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
HT10	High temperature (900°F) transition. (Standard transition rated 500°F/260°C)

WIRING CONNECTION OPTIONS	
Option Code	Description
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals
PLUGS AND JACKS (Note: plug is designed to be attached to sensor assemblies. Jack options – for customer wiring – should only be specified if plug option is also included. Cable clamp is included for both plug and jack options.)	
PJ10	Standard plug, rated to 177°C (350°F)
PJ20	Standard jack, rated to 177°C (350°F)
PJ30	Miniature plug, rated to 177°C (350°F)
PJ40	Miniature jack, rated to 177°C (350°F)
PJ50	High temp. plug, rated to 260°C (500°F)
PJ60	High temp. jack, rated to 260°C (500°F)
BX CONNECTORS	
WC40	1/2"
WC50	3/4"

EXTENSION WIRE

A selection of extension-grade thermocouple wire is available to connect the sensor to its input device. Consult Accessories section.

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

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MOUNTING LUG WITH LEADWIRE

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	ASSEMBLY STYLE	LUG HOLE SIZE	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE
GP – General purpose thermocouple

ASSEMBLY STYLE
41F – **Stainless steel mounting lug with fiberglass leadwire**; diameter 0.312" only; 500°F max.
41T – **Stainless steel mounting lug with Teflon® leadwire**; diameter 0.312" only; 400°F max.

LUG HOLE SIZE - diameter of hole (in inches)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

CALIBRATION - Standard limits

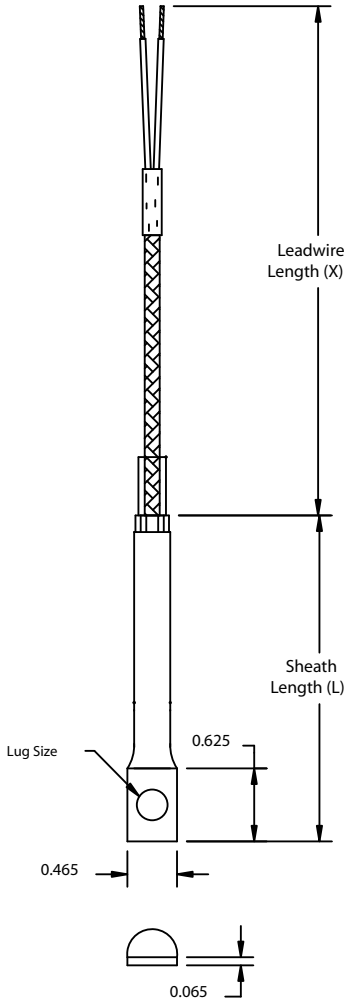
J – Single J	**JJ** – Dual J
K – Single K	**KK** – Dual K
T – Single T	**TT** – Dual T
E – Single E	**EE** – Dual E

HOT JUNCTION
G – Grounded junction
U – Ungrounded junction

SHEATH LENGTH (Minimum L=1.75"; maximum L=96")
L# - (e.g., L6 = 6 inch sheath)

LEADWIRE LENGTH
X# - (e.g., X72 = 72 inch length)

OPTIONS – see page 1-19b



AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance

WIRING CONNECTION OPTIONS	
Option Code	Description
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals
PLUGS AND JACKS (Note: plug is designed to be attached to sensor assemblies. Jack options – for customer wiring – should only be specified if plug option is also included. Cable clamp is included for both plug and jack options.)	
PJ10	Standard plug, rated to 177°C (350°F)
PJ20	Standard jack, rated to 177°C (350°F)
PJ30	Miniature plug, rated to 177°C (350°F)
PJ40	Miniature jack, rated to 177°C (350°F)
PJ50	High temp. standard plug, rated to 260°C (500°F)
PJ60	High temp. standard jack, rated to 260°C (500°F)

EXTENSION WIRE

A selection of extension-grade thermocouple wire is available to connect the sensor to its input device. Consult Accessories section.

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

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ATEX-APPROVED, CONNECTION HEAD WITH WELDED NPT PROCESS CONNECTION

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	CALIBRATION	HOT JUNCTION	SHEATH LENGTH	OPTIONS

SENSOR TYPE
MI – Mineral insulated thermocouple

ASSEMBLY STYLE
22 – **Sheath with cast aluminum head and 1/2" NPT welded stainless steel process connection**; head ATEX approved for EEx d IIC; IP66 to 68; screw cover with chain and gasketed o-ring, meets NEMA 4X; ceramic terminal block; 3/4" NPT conduit connection; internal and external ground screws (Note: for spring-loaded fitting, see Style 75 and add optional head).

SHEATH DIAMETER (in inches)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
3 – 316 stainless steel
5 – Inconel® 600

CALIBRATION – Standard limits

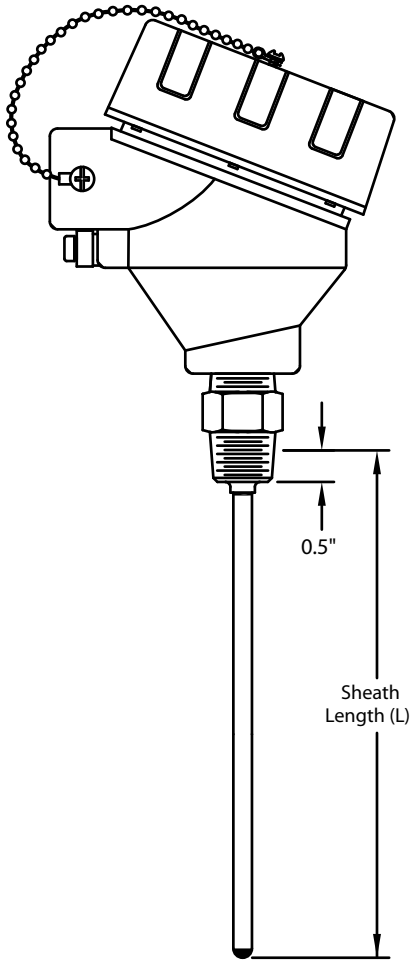
J – Single J	**JJ** – Dual J
K – Single K	**KK** – Dual K
T – Single T	**TT** – Dual T
E – Single E	**EE** – Dual E

Special limits are available – consult AST

HOT JUNCTION
G – Grounded junction
U – Ungrounded junction
E – Exposed junction
(Note: lengths over L84 will be shipped coiled unless otherwise specified at time of order)

SHEATH LENGTH
L# – (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)

OPTIONS – see page 1-20b



AVAILABLE OPTIONS and MODIFICATIONS

TERMINAL HEAD OPTION		
Same specification as standard head		
Option Code	Process Connection	Conduit Connection
HD72	1/2"	1/2"
ASSEMBLY OPTIONS		
Option Code	Description	
TAG1	Stainless steel tag and wire	
PC25	1/4" NPT process connection	
PC75	3/4" NPT process connection	
CAL1	Calibration, NIST traceable calibration [specify point(s)]	
CRT1	Certificate of conformance	
TRANSMITTERS – For complete specs, see Transmitters section		
TR11	4-20 mA, 2-wire transmitter, single input, isolated output; specify range and units of measure (e.g., 0-200°C)	
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 *.	

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NOBLE METAL THERMOCOUPLE WITH SECONDARY PROTECTION TUBE & MOUNTING COLLAR

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	OUTER PROTECTION TUBE LENGTH	OPTIONS

SENSOR TYPE
BTC – Beaded construction

STYLE
81C – **Noble metal element with primary and secondary protection tubes**; mounting collar process attachment; 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., **9CA** = 1.75" O.D. silicon carbide protection tube with collar and alumina inner protection tube)
Outer protection tube diameter
9 - 1-3/4" O.D.
Outer protection tube material
C - Silicon carbide, oxide bonded*
***** Other grades of silicon carbide available upon request. Consult AST.
Inner protection tube material
A – Alumina (98.8% aluminum oxide)
M – Mullite (not recommended over 1200°C)

CALIBRATION

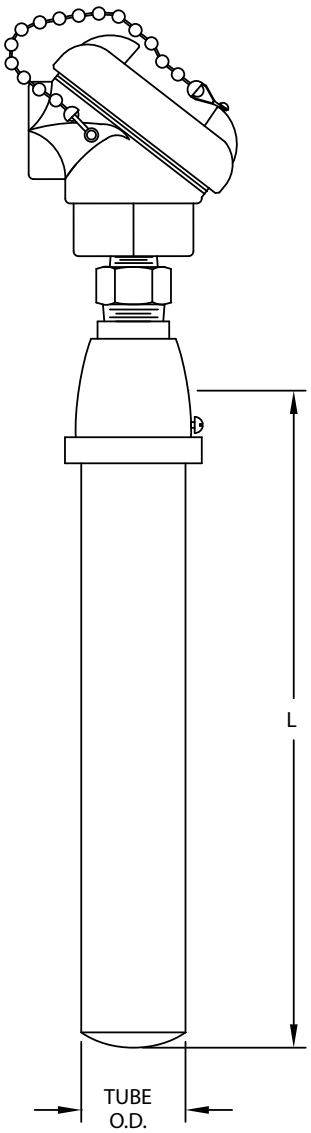
Single junction	Dual junctions
R – Platinum and Platinum/13% Rhodium	**RR**
S – Platinum and Platinum/10% Rhodium	**SS**
B – Platinum/6% Rhodium and Platinum/30% Rhodium	**BB**

WIRE GAUGE
24 – 24 AWG

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

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

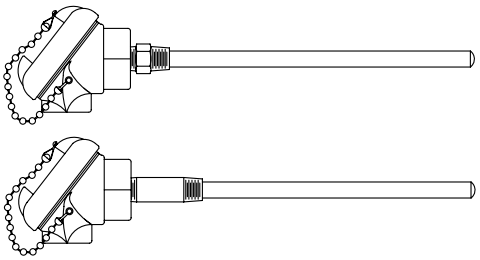
OPTIONS – see page 1-21b



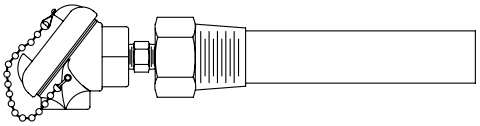
ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
WC20	Wiring cable gland for 0.187 - 0.312 diameter cables, for terminal heads with 1/2" NPT conduit connections
WC21	Wiring cable gland for 0.125 - 0.187 diameter cables, for terminal heads with 1/2" NPT conduit connections
HW10	Split flange for mounting

For additional Noble Metal Thermocouple styles, see:

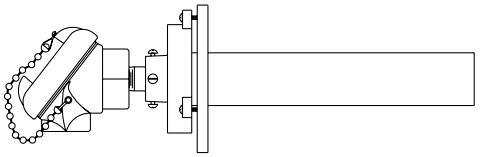
Style 81N – Single, primary protection tube only



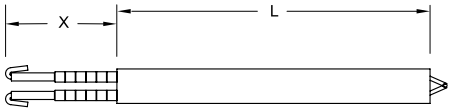
Style 81B – Secondary tube with mounting bushing



Style 81F – Secondary tube with mounting flange



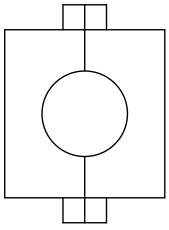
Style 51 – Replacement Sensor



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 *.



Split flange option HW10

Notes:

1. 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.
2. In many cases platinum thermocouples can be recycled, thereby reducing the long-term overall cost. Please contact Applied Sensor Technologies for further information.
3. 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.

UE APPLIED SENSOR TECHNOLOGIES
A Division of UNITED ELECTRIC CONTROLS

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

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BEADED REPLACEMENT ELEMENT FOR BASE-METAL THERMOCOUPLES

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	ASSEMBLY STYLE	WIRE GAUGE	BEAD SHAPE	CALIBRATION	HOT JUNCTION	INSULATOR MATERIAL	BEAD LENGTH	LEADWIRE LENGTH

SENSOR TYPE
BTC – Beaded thermocouple

ASSEMBLY STYLE
50 – **Replacement element** for beaded base-metal thermocouple styles (such as Style 80)

WIRE GAUGE
08 – 0.128" diameter (K and KK calibrations only)
14 – 0.064" diameter

BEAD SHAPE
R – Round

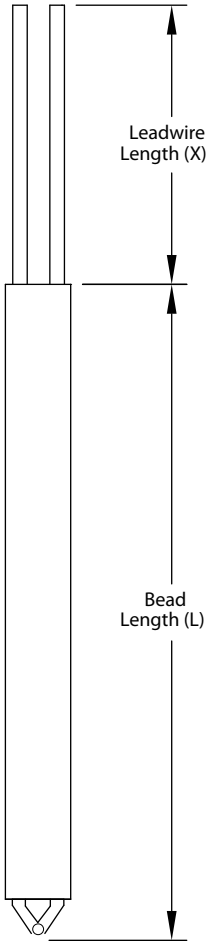
CALIBRATION
J – Single J
K – Single K
JJ – Dual J
KK – Dual K

HOT JUNCTION
U – Ungrounded junction
E – Exposed junction
TE – Twisted, exposed junction

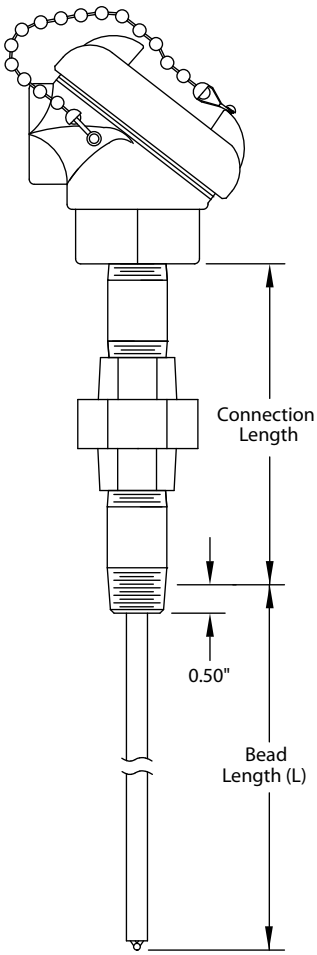
INSULATOR MATERIAL
M – Mullite

BEAD LENGTH (length of insulator + junction)
L# – (e.g., L12=12" insulator, including junction end)

LEADWIRE EXTENSION LENGTH (length of wires at cold end)
X# – (e.g., X3=3" leadwire extension)



STYLE 50



Applied Sensor Technologies offers a wide variety of contructions using the Style 50 element. Many are based on the common Style 80 shown at the right. Many others are available to meet your requirements.

Give us a call!

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

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BEADED REPLACEMENT ELEMENT FOR NOBLE-METAL THERMOCOUPLES

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	ASSEMBLY STYLE	WIRE GAUGE	BEAD SHAPE	CALIBRATION	HOT JUNCTION	INSULATOR MATERIAL	BEAD LENGTH	LEADWIRE LENGTH

SENSOR TYPE
BTC – Beaded thermocouple

ASSEMBLY STYLE
51 – **Replacement element** for beaded noble-metal thermocouple styles (such as Style 81)

WIRE GAUGE
24 – 0.020" diameter

BEAD SHAPE
R – Round

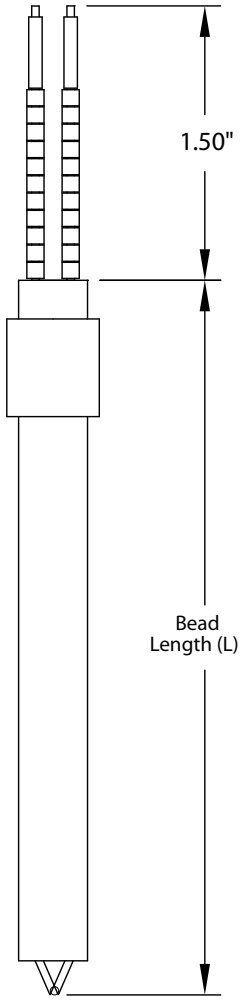
CALIBRATION
R – Single R
S – Single S
B – Single B
RR – Dual R
SS – Dual S
BB – Dual B

HOT JUNCTION
E – Exposed junction

INSULATOR MATERIAL
A – Alumina

BEAD LENGTH (length of insulator + junction)
L# – (e.g., L12=12" insulator, including junction end)

LEADWIRE EXTENSION LENGTH (length of wires at cold end)
X# – (e.g., X3=3" leadwire extension)



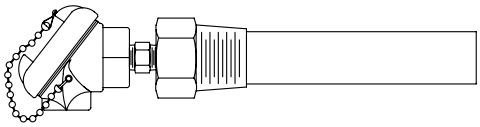
STYLE 51

Applied Sensor Technologies offers a wide variety of contructions using the Style 51 element. Some of the more common Styles are listed at the right. Many others are available to meet your requirements.

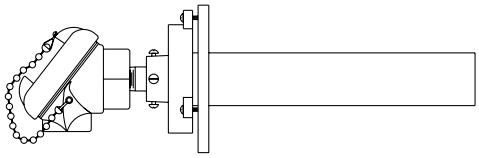
Give us a call!

For additional Noble Metal Thermocouple styles, see:

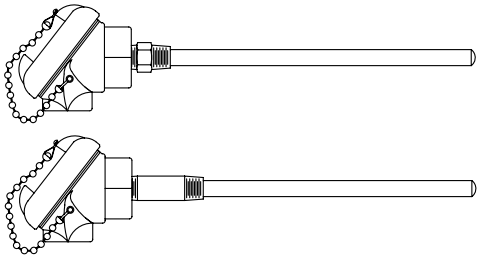
Style 81B – Secondary tube with mounting bushing



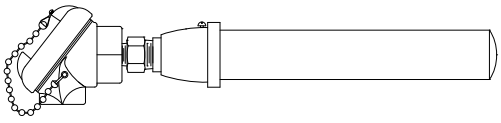
Style 81F – Secondary tube with mounting flange



Style 81N – Single, primary protection tube only



Style 81C – Secondary tube with mounting collar



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Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

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CONNECTION HEAD WITH BEADED THERMOCOUPLE AND MOUNTING HARDWARE

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	ASSEMBLY STYLE	CONNECTION	CONNECTION LENGTH	WIRE GAUGE	BEAD SHAPE	CALIBRATION	HOT JUNCTION	INSULATOR MATERIAL	BEAD LENGTH	OPTIONS

SENSOR TYPE
BTC – Beaded thermocouple

ASSEMBLY STYLE
80 – **Sheath with cast aluminum head and beaded base-metal thermocouple**; head conforms to NEMA 4 requirements; 3/4" NPT conduit connection; ceramic terminal block; 1/2" NPT carbon steel process connection; gasketed screw cover with stainlesss steel chain; maximum head temperature 100°C

CONNECTION
H – Head only, no mounting hardware; 1/2" NPT (female) instrument connection
N – 1/2" NPT carbon steel nipple
NU – 1/2" NPT carbon steel nipple and union
NUN – 1/2" NPT carbon steel nipple, union and nipple
Add suffix "**1S**" for 304 stainless steel
Add suffix "**2S**" for 316 stainless steel
See chart below for restrictions

CONNECTION LENGTH
(e.g., 006 = 6 inch)
(See chart below for standard available lengths)

WIRE GAUGE
14 – 0.064" diameter
08 – 0.128" diameter *(K & KK calibrations only)*

BEAD SHAPE
R – Round

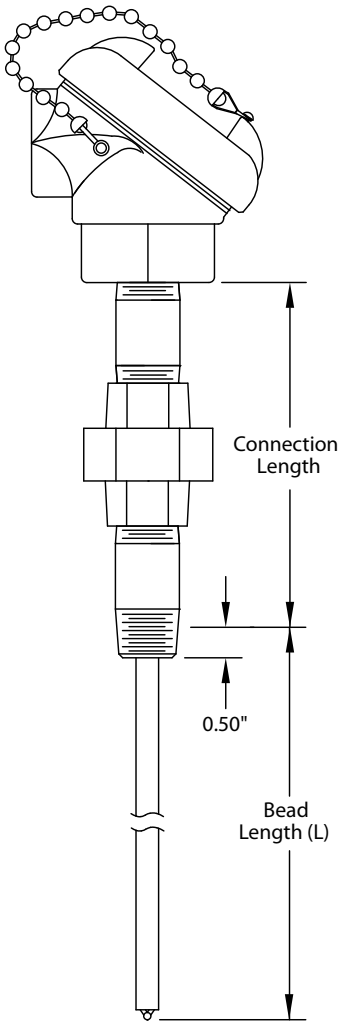
CALIBRATION – Standard limits
J – Single J **JJ –** Dual J
K – Single K **KK –** Dual K

HOT JUNCTION
E – Exposed junction
TE – Twisted exposed

INSULATOR MATERIAL
M – Mullite

BEAD LENGTH
L# – (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)

OPTIONS – see page 1-24b



STANDARD AVAILABLE CONNECTION LENGTHS		
N	NU	NUN
N/A	2.00	2.50
0.50	2.50	3.00 *
1.00	3.00	4.00 *
1.50	3.50	5.00
2.00	4.00	6.00 *
3.00	5.00	8.00
5.00	7.00	12.00
6.00	8.00	14.00
* NUN 2S OPTION AVAILABLE IN THESE LENGTHS ONLY.		
DIMENSIONS ARE GIVEN IN INCHES		

AVAILABLE OPTIONS and MODIFICATIONS

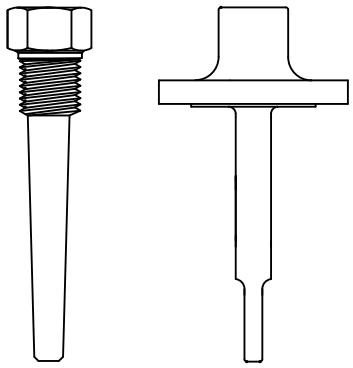
ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
WC20	Wiring cable gland for 0.187 - 0.312 diameter cables, for terminal heads with 1/2" NPT conduit connections
WC21	Wiring cable gland for 0.125 - 0.187 diameter cables, for terminal heads with 1/2" NPT conduit connections

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"

Notes:
1. See Accessories for additional information

EXTENSION WIRE
A selection of extension-grade thermocouple wire is available to connect the sensor to its input device. Consult Accessories section.

THERMOWELLS & PROTECTION TUBES
For a complete offering of metal, ceramic and composite material thermowells and protection tubes, please see the Thermowell and Protection Tube sections.



H260 THERMOWELL F260 THERMOWELL

REPLACEMENT ELEMENT – see Style 50

Style 50 – Beaded replacement for base-metal thermocouple

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Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

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NEMA 4 CONNECTION HEAD WITH WELDED PROCESS CONNECTION

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	OPTIONS

SENSOR TYPE (See page 2-1b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction **(For dual element, add prefix "D", e.g., DRTP1)**

ASSEMBLY STYLE
15 – **Sheath with cast aluminum head and 1/2" NPT welded stainless steel process connection**; head conforms to NEMA 4 requirements; 3/4" NPT conduit connection; ceramic terminal block; gasketed screw cover with stainless steel chain

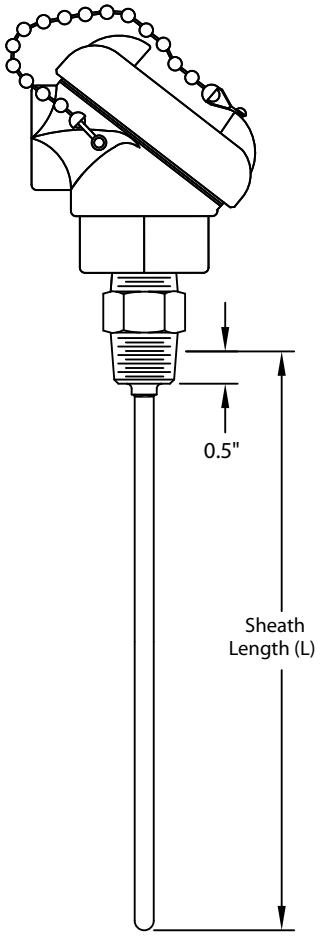
SHEATH DIAMETER (in inches) (see below for restrictions)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)
2 – -45 to 482°C (-50 to 900°F)
3 – -45 to 788°C (-50 to 1450°F)
4 – -200 to 260°C (-328 to 500°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

OPTIONS – see page 2-1b



Smallest Diameter Sheath Available By Sensor Type and Temperature Range							
SINGLE							
Temp Range	RTP 1	RTP 1A	RTP 1AA	RTP 6	RTP 7	RTP 7A	RTP 7AA
1	1/8	1/8	1/8	1/8	3/16	3/16	3/16
2	3/16	3/16	3/16	3/16	3/16	3/16	3/16
3	3/16			3/16	3/16		
4	1/8			1/8	3/16		
DUAL							
Temp Range	DRTP 1	DRTP 1A	DRTP 1AA	DRTP 6	DRTP 7	DRTP 7A	DRTP 7AA
1	3/16	3/16	3/16	3/16			
2	1/4	1/4	1/4	3/16			
3	1/4			1/4			
4	3/16			3/16			

AVAILABLE OPTIONS and MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
RTP6	±0.12%	**2-wire**
RTP7	±0.12%	**4-wire**
RTP7A	**±0.06%**	**4-wire**
RTP7AA	**±0.01%**	**4-wire**
Notes: 1. For dual element, add prefix "D" (e.g., DRTP6) 2. Additional materials, curves and resistance values are available - see Capabilities brochure.		

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
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
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 *.

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			

Notes:
1. See Accessories for additional information
2. For former Style 16, use option HD20
3. For former Style 29, use option HD32

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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NEMA 4 CONNECTION HEAD WITH SPRING-LOADED ASSEMBLY AND MOUNTING HARDWARE

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	ASSEMBLY STYLE	CONNECTION	CONNECTION LENGTH	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	OPTIONS

SENSOR TYPE (See page 2-2b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction
(For dual element, add prefix "D"- e.g., DRTP1)

ASSEMBLY STYLE
45 – **Sheath with cast aluminum head; spring-loaded in head**; conforms to NEMA 4 requirements; 3/4" NPT conduit connection; ceramic terminal block; 1/2" NPT process connection; gasketed screw cover with stainless steel chain

CONNECTION
H – Head only; 1/2" NPT (female) instrument connection
N – 1/2" NPT carbon steel nipple only
NU – 1/2" NPT carbon steel nipple and union
NUN – 1/2" NPT carbon steel nipple, union and nipple
Add suffix "**1S**" for 304 stainless steel
Add suffix "**2S**" for 316 stainless steel
See chart below for restrictions

CONNECTION LENGTH
– (e.g., 006 = 6 inch)
See chart below for standard available lengths

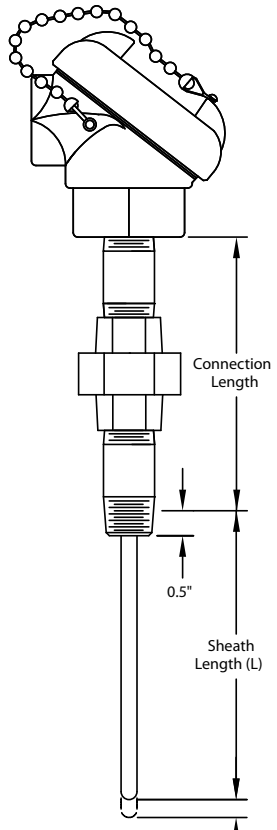
SHEATH DIAMETER (in inches) (see below for restrictions)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)
2 – -45 to 482°C (-50 to 900°F)
3 – -45 to 788°C (-50 to 1450°F)
4 – -200 to 260°C (-328 to 500°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

OPTIONS – see page 2-2b



STANDARD AVAILABLE CONNECTION LENGTHS		
N	NU	NUN
N/A	2.00	2.50
0.50	2.50	3.00 *
1.00	3.00	4.00 *
1.50	3.50	5.00
2.00	4.00	6.00 *
3.00	5.00	8.00
5.00	7.00	12.00
6.00	8.00	14.00
* NUN 2S OPTION AVAILABLE IN THESE LENGTHS ONLY.		
DIMENSIONS ARE GIVEN IN INCHES		

Smallest Diameter Sheath Available By Sensor Type and Temperature Range							
SINGLE							
Temp Range	RTP 1	RTP 1A	RTP 1AA	RTP 6	RTP 7	RTP 7A	RTP 7AA
1	1/8	1/8	1/8	1/8	3/16	3/16	3/16
2	3/16	3/16	3/16	3/16	3/16	3/16	3/16
3	3/16			3/16	3/16		
4	1/8			1/8	3/16		
DUAL							
Temp Range	DRTP 1	DRTP 1A	DRTP 1AA	DRTP 6	DRTP 7	DRTP 7A	DRTP 7AA
1	3/16	3/16	3/16	3/16			
2	1/4	1/4	1/4	3/16			
3	1/4			1/4			
4	3/16			3/16			

AVAILABLE OPTIONS and MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
RTP6	±0.12%	**2-wire**
RTP7	±0.12%	**4-wire**
RTP7A	**±0.06%**	**4-wire**
RTP7AA	**±0.01%**	**4-wire**
Notes: 1. For dual element, add prefix "D" (e.g., DRTP6) 2. Additional materials, curves and resistance values are available - see Capabilities brochure.		

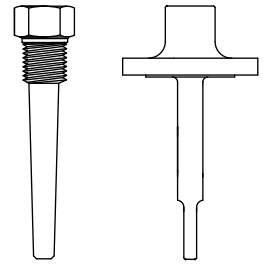
ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
WC20	Wiring cable gland for 0.187 - 0.312 diameter cables, for terminal heads with 1/2" NPT conduit connections
WC21	Wiring cable gland for 0.125 - 0.187 diameter cables, for terminal heads with 1/2" NPT conduit connections
Transmitters: see Style 48	

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"

Note:
1. For former Style 46, use option HD20

THERMOWELLS & PROTECTION TUBES

For a complete offering of metal, ceramic and composite material thermowells and protection tubes, please see the Thermowell and Protection Tube sections.



H260 THERMOWELL F260 THERMOWELL

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

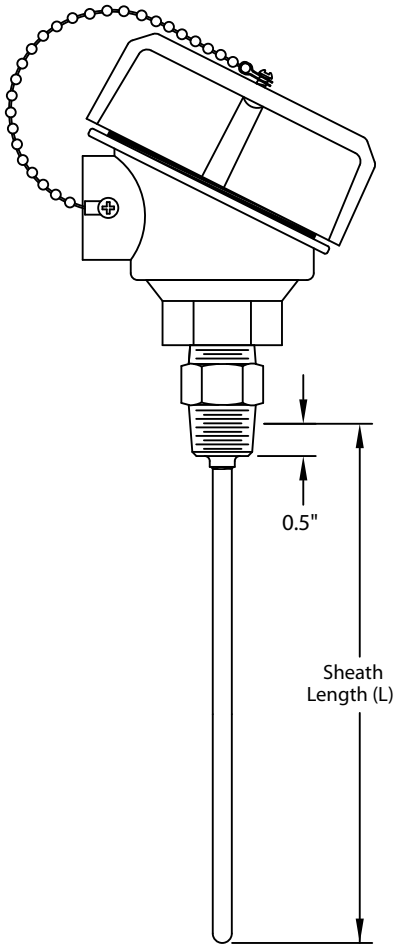
EXPLOSION-PROOF CONNECTION HEAD WITH WELDED PROCESS CONNECTION

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	OPTIONS

SENSOR TYPE (See page 2-3b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction
(For dual element, add prefix "D" - e.g., DRTP1)



ASSEMBLY STYLE
78 – **Sheath with cast aluminum head** and 1/2" NPT welded stainless steel process connection; head CSA/FM approved for Class I, Division I, Groups B, C, D; Class II, Groups E, F, G; screw cover with chain and gasketed o-ring; meets NEMA 4; ceramic terminal block; 1/2" NPT conduit connection

SHEATH DIAMETER (in inches) (see below for restrictions)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)
2 – -45 to 482°C (-50 to 900°F)
3 – -45 to 788°C (-50 to 1450°F)
4 – -200 to 260°C (-328 to 500°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

OPTIONS – see page 2-3b

Smallest Diameter Sheath Available By Sensor Type and Temperature Range							
SINGLE							
Temp Range	RTP 1	RTP 1A	RTP 1AA	RTP 6	RTP 7	RTP 7A	RTP 7AA
1	1/8	1/8	1/8	1/8	3/16	3/16	3/16
2	3/16	3/16	3/16	3/16	3/16	3/16	3/16
3	3/16			3/16	3/16		
4	1/8			1/8	3/16		
DUAL							
Temp Range	DRTP 1	DRTP 1A	DRTP 1AA	DRTP 6	DRTP 7	DRTP 7A	DRTP 7AA
1	3/16	3/16	3/16	3/16			
2	1/4	1/4	1/4	3/16			
3	1/4			1/4			
4	3/16			3/16			

AVAILABLE OPTIONS and MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
RTP6	±0.12%	**2-wire**
RTP7	±0.12%	**4-wire**
RTP7A	**±0.06%**	**4-wire**
RTP7AA	**±0.01%**	**4-wire**
Notes: 1. For dual element, add prefix "D" (e.g., DRTP6) 2. Additional materials, curves and resistance values are available - see Capabilities brochure.		

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
PC25	1/4" NPT process connection
PC75	3/4" NPT process connection
CAL1	Calibration, NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
TRANSMITTERS – For complete specs, see Transmitters section	
TR11	4-20 mA, 2-wire transmitter, single input, isolated output; specify range and units of measure (e.g., 0-200°C)
TR12	4-20 mA, 2-wire transmitter, single input, non-isolated ouput; 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 *.

EXPLOSION-PROOF TERMINAL HEAD OPTIONS		
Option Code	Process Connection	Conduit Connection
Cast aluminum; screw cover with chain; o-ring gasket (Gasket rated to 100°C exposure); ceramic terminal block; FM/CSA approved for Class I Div. 1, Groups B, C and D; Class II Groups E, F and G; internal ground screw.		
HD71	1/2"	3/4"
Stainless steel (same specs as HD71)		
HD74	1/2"	1/2"
HD75	1/2"	3/4"
Epoxy-coated (same specs as HD71)		
HD80	1/2"	1/2"
HD81	1/2"	3/4"

Note: See Accessories section for additional specs.

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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EXPLOSION-PROOF CONNECTION HEAD WITH SPRING-LOADED ASSEMBLY AND MOUNTING HARDWARE

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	ASSEMBLY STYLE	CONNECTION	CONNECTION LENGTH	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	OPTIONS

SENSOR TYPE (See page 2-4b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction
(For dual element, add prefix "D"- e.g., DRTP1)

ASSEMBLY STYLE
77 – **Sheath with cast aluminum head**; spring-loaded in head; head CSA/FM approved for Class I, Division I, Groups B, C, D; Class II, Groups E, F, G, including union; screw cover with chain and gasketed o-ring. Ceramic terminal block; 1/2" NPT conduit and process connections

CONNECTION
H – Head only; 1/2" NPT (female) instrument connection
N – 1/2" NPT carbon steel nipple only
NU – 1/2" NPT carbon steel nipple and plated steel union
NUN – 1/2" NPT carbon steel nipples and plated steel union
Add suffix "**1S**" for 304 stainless steel nipples

CONNECTION LENGTH
– (e.g., 006=6 inch)
See chart below for standard available lengths.

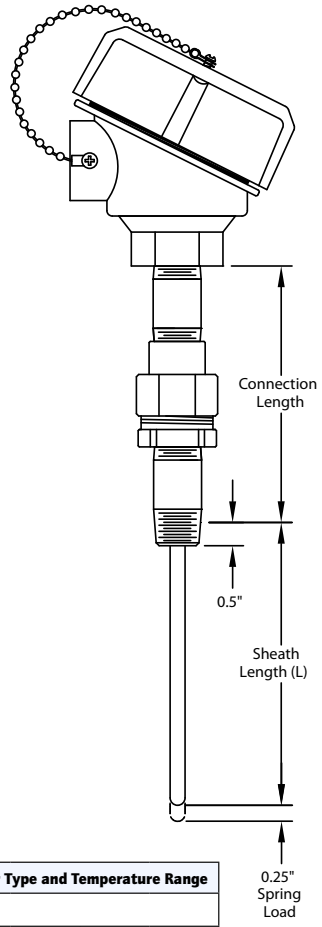
SHEATH DIAMETER (in inches) (see below for restrictions)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)
2 – -45 to 482°C (-50 to 900°F)
3 – -45 to 788°C (-50 to 1450°F)
4 – -200 to 260°C (-328 to 500°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

OPTIONS – see page 2-4b



STANDARD AVAILABLE CONNECTION LENGTHS		
N	NU	NUN
N/A	2.00	2.50
0.50	2.50	3.00
1.00	3.00	4.00
1.50	3.50	5.00
2.00	4.00	6.00
3.00	5.00	8.00
5.00	7.00	12.00
6.00	8.00	14.00
DIMENSIONS ARE GIVEN IN INCHES		

Smallest Diameter Sheath Available By Sensor Type and Temperature Range

SINGLE							
Temp Range	RTP 1	RTP 1A	RTP 1AA	RTP 6	RTP 7	RTP 7A	RTP 7AA
1	1/8	1/8	1/8	1/8	3/16	3/16	3/16
2	3/16	3/16	3/16	3/16	3/16	3/16	3/16
3	3/16			3/16	3/16		
4	1/8			1/8	3/16		
DUAL							
Temp Range	DRTP 1	DRTP 1A	DRTP 1AA	DRTP 6	DRTP 7	DRTP 7A	DRTP 7AA
1	3/16	3/16	3/16	3/16			
2	1/4	1/4	1/4	3/16			
3	1/4			1/4			
4	3/16			3/16			

AVAILABLE OPTIONS and MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
RTP6	±0.12%	**2-wire**
RTP7	±0.12%	**4-wire**
RTP7A	**±0.06%**	**4-wire**
RTP7AA	**±0.01%**	**4-wire**
Notes: 1. For dual element, add prefix "D" (e.g., DRTP6) 2. Additional materials, curves and resistance values are available - see Capabilities brochure.		

ASSEMBLY OPTIONS	
Option Codes	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance

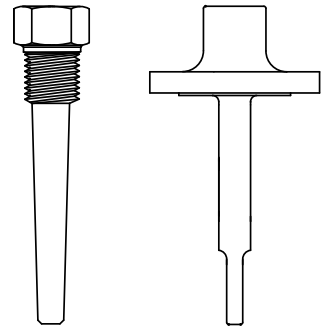
TRANSMITTERS
See Style 48 for available transmitters

EXPLOSION-PROOF TERMINAL HEAD OPTIONS		
Option Code	Process Connection	Conduit Connection
Cast aluminum; screw cover with chain; o-ring gasket; ceramic terminal block; FM/CSA approved for Class I Div. 1, Groups B, C and D; Class II Groups E, F and G (Gasket rated to 100°C exposure); internal ground screw		
HD71	1/2"	3/4"
Same as above, except epoxy-coated		
HD80	1/2"	1/2"
HD81	1/2"	3/4"

Note: See Accessories section for outline drawings and additional specs.

THERMOWELLS & PROTECTION TUBES

For a compete offering of metal, ceramic and composite material thermowells and protection tubes, please see the Thermowell and Protection Tube sections.



H260 THERMOWELL

F260 THERMOWELL

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

CONNECTION HEAD WITH WELDED HEX FITTING

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	OPTIONS

SENSOR TYPE (See page 2-5b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction
(For dual element, add prefix "D"- e.g., DRTP1)

ASSEMBLY STYLE
21 – **Sheath with head**; for use as ambient sensor or with compression fitting for process mounting. See page 2-5b for head options.

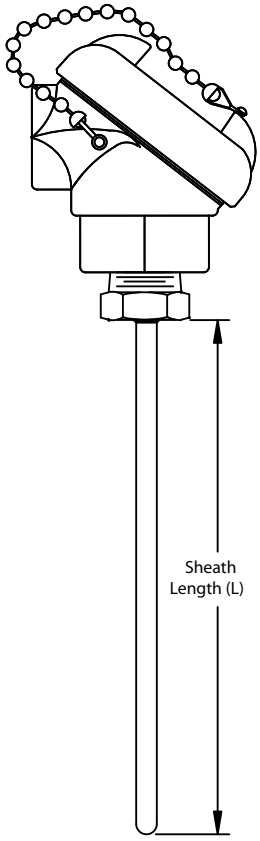
SHEATH DIAMETER (in inches) (see below for restrictions)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)
2 – -45 to 482°C (-50 to 900°F)
3 – -45 to 788°C (-50 to 1450°F)
4 – -200 to 260°C (-328 to 500°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6" sheath)

OPTIONS – see page 2-5b



Style 21

Smallest Diameter Sheath Available By Sensor Type and Temperature Range							
SINGLE							
Temp Range	RTP 1	RTP 1A	RTP 1AA	RTP 6	RTP 7	RTP 7A	RTP 7AA
1	1/8	1/8	1/8	1/8	3/16	3/16	3/16
2	3/16	3/16	3/16	3/16	3/16	3/16	3/16
3	3/16			3/16	3/16		
4	1/8			1/8	3/16		
DUAL							
Temp Range	DRTP 1	DRTP 1A	DRTP 1AA	DRTP 6	DRTP 7	DRTP 7A	DRTP 7AA
1	3/16	3/16	3/16	3/16			
2	1/4	1/4	1/4	3/16			
3	1/4			1/4			
4	3/16			3/16			

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
RTP6	±0.12%	**2-wire**
RTP7	±0.12%	**4-wire**
RTP7A	**±0.06%**	**4-wire**
RTP7AA	**±0.01%**	**4-wire**

Notes:
1. For dual element, add prefix "D" (e.g., DRTP6)
2. Additional materials, curves and resitance values are available - see Capabilities brochure.

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
B90-	90° bend in sheath [specify length from tip in inches e.g., B90-6)
B45-	45° bend in sheath (specify length from tip in inches e.g., B45-6)
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
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
TRANSMITTERS - for complete specs, see Transmitters section	
TR11	4-20 mA, 2-wire, single input, isolated output; specify range, units of measure (e.g., 0-200°C) and optional 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 *.

COMPRESSION FITTINGS (for diameters 4, 6, 7)			
Option Code	NPT	Material	Ferrule
CF10	1/8"	Stainless steel	Stainless steel
CF11	1/8"	Stainless steel	Teflon®
CF12	1/8"	Brass	Brass
CF20	1/4"	Stainless steel	Stainless steel
CF21	1/4"	Stainless steel	Teflon®
CF22	1/4"	Brass	Brass
CF30	1/2"	Stainless steel	Stainless steel
CF31	1/2"	Stainless steel	Teflon®
CF32	1/2"	Brass	Brass

STYLE 21

AVAILABLE OPTIONS and MODIFICATIONS

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"

EXPLOSION-PROOF TERMINAL HEAD OPTIONS		
Option Code	Process Connection	Conduit Connection
Cast aluminum, screw cover with chain; o-ring gasket rated to 100°C; ceramic terminal block; FM/CSA approved for Class I Div. 1, Groups B, C, D; Class II, Groups E, F, G; internal ground screw		
HD70*	1/2"	1/2"
HD71*	1/2"	3/4"
Stainless steel (same specs as HD70/71)		
HD74*	1/2"	1/2"
HD75*	1/2"	3/4"
Epoxy-coated (same specs as HD70/71)		
HD80*	1/2"	1/2"
HD81*	1/2"	3/4"
Cast aluminum; ATEX approved for EEx d IIC; screw cover with chain; silicone rubber o-ring gasket; ceramic terminal block; rated for NEMA 4X, IP66 to IP68; internal and external ground screws		
HD72*	1/2"	1/2"
HD73*	1/2"	3/4"
Cast aluminum (formerly Style 60); screw cover; plastic terminal block; UL/CSA approved for Class I Div. 1, Groups C and D; Class II Groups E, F and G.		
HD60	1/2"	1/2"
HD61	1/2"	3/4"
*can be used with transmitters		

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.

UE APPLIED SENSOR TECHNOLOGIES
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DOUBLE-SIDED, SPRING-LOADED PROCESS MOUNTING WITH TERMINAL HEAD OPTIONS

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE (See page 2-6b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction
(For dual element, add prefix "D"- e.g., DRTP1)

ASSEMBLY STYLE
75 – **Sheath with double-sided, spring-loaded fitting**; Teflon® insulated conductors; 1/2" NPT stainless steel connection. (Note: a variety of terminal heads may be added to this style – see page 2-6b)

SHEATH DIAMETER (in inches) (see below for restrictions)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

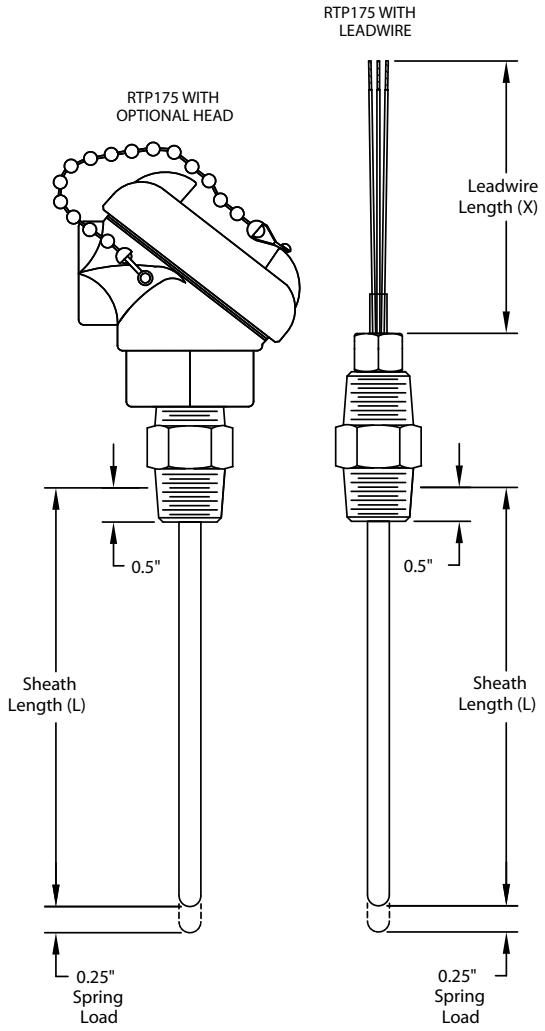
SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)
2 – -45 to 482°C (-50 to 900°F)
3 – -45 to 788°C (-50 to 1450°F)
4 – -200 to 260°C (-328 to 500°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

LEADWIRE LENGTH
X# – (e.g., X3=3 inch length; X3 is standard if specifying a terminal head)

OPTIONS – see page 2-6b



Smallest Diameter Sheath Available By Sensor Type and Temperature Range							
SINGLE							
Temp Range	RTP 1	RTP 1A	RTP 1AA	RTP 6	RTP 7	RTP 7A	RTP 7AA
1	1/8	1/8	1/8	1/8	3/16	3/16	3/16
2	3/16	3/16	3/16	3/16	3/16	3/16	3/16
3	3/16			3/16	3/16		
4	1/8			1/8	3/16		
DUAL							
Temp Range	DRTP 1	DRTP 1A	DRTP 1AA	DRTP 6	DRTP 7	DRTP 7A	DRTP 7AA
1	3/16	3/16	3/16	3/16			
2	1/4	1/4	1/4	3/16			
3	1/4			1/4			
4	3/16			3/16			

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
RTP6	±0.12%	**2-wire**
RTP7	±0.12%	**4-wire**
RTP7A	**±0.06%**	**4-wire**
RTP7AA	**±0.01%**	**4-wire**

Notes:
1. For dual element, add prefix "D" (e.g., DRTP6)
2. Additional materials, curves and resistance values are available - see Capabilities brochure.

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
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

WIRING CONNECTION OPTIONS	
Option Code	Description
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals

TRANSMITTERS	
TR11	4-20 mA, 2-wire; single input; isolated output; specify range, units of measure (e.g., 0-200°C) and terminal head with *. See Accessories section for additional information.
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 *.

THERMOWELLS & PROTECTION TUBES

For a complete offering of metal, ceramic and composite material thermowells and protection tubes, please see the Thermowell and Protection Tube sections.

STYLE 75

AVAILABLE OPTIONS and MODIFICATIONS

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"
HD12*	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"

EXPLOSION-PROOF TERMINAL HEAD OPTIONS		
Option Code	Process Connection	Conduit Connection
Cast aluminum, screw cover with chain; o-ring gasket rated to 100°C; ceramic terminal block; FM/CSA approved for Class I Div. 1, Groups B, C, D; Class II, Groups E, F, G; internal ground screw		
HD70*	1/2"	1/2"
HD71*	1/2"	3/4"
Stainless steel (same spec as HD70/HD71)		
HD74*	1/2"	1/2"
HD75*	1/2"	3/4"
Epoxy-coated (same spec as HD70/HD71)		
HD80*	1/2"	1/2"
HD81*	1/2"	3/4"
Cast aluminum; ATEX approved for EEx d IIC; screw cover with chain; silicone rubber o-ring gasket; ceramic terminal block; rated for NEMA 4X, IP66 to IP68; internal and external ground screws		
HD72*	1/2"	1/2"
HD73*	1/2"	3/4"
Cast aluminum (formerly Style 60); screw cover; plastic terminal block; UL/CSA approved for Class I Div. 1, Groups C and D; Class II Groups E, F and G.		
HD60	1/2"	1/2"
HD61	1/2"	3/4"
*can be used with transmitters		

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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SPRING-LOADED PROCESS MOUNTING HARDWARE WITH OPTIONAL TERMINAL HEAD

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.

SENSOR TYPE	ASSEMBLY STYLE	CONNECTION TYPE AND MATERIAL	CONNECTION LENGTH	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE (See page 2-7b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction
(For dual element, add prefix "D"- e.g., DRTP1)

ASSEMBLY STYLE
48 – **Sheath with spring-loaded hex connector and connection hardware**; head as option

CONNECTION TYPE AND MATERIAL

Code	Union Type	Union Material	Lower Nipple Material
NU	Ordinary location	Carbon steel	None
NUS	Ordinary location	Stainless steel	None
NUX	Explosion-proof	Electroplated steel	None
NUN	Ordinary location	Carbon steel	Carbon steel
NUNS	Ordinary location	Stainless steel	Stainless steel
NUNX	Explosion-proof	Electroplated steel	Carbon steel
NUNXS	Explosion-proof	Electroplated steel	Stainless steel

CONNECTION LENGTH (For NU, NUX, NUS, use 002.5)
(e.g., 006 = 6 inch)
(See chart below for available standard lengths)

SHEATH DIAMETER (in inches) (see below for restrictions)
4 – 1/8" (0.125)
6 – 3/16" (0.188)
7 – 1/4" (0.250)
9 – 3/8" (0.375)

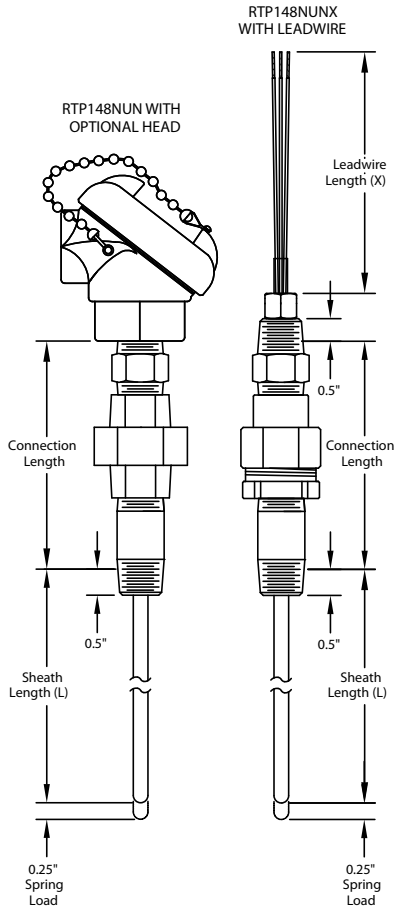
SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)
2 – -45 to 482°C (-50 to 900°F)
3 – -45 to 788°C (-50 to 1450°F)
4 – -200 to 260°C (-328 to 500°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

LEADWIRE LENGTH
X# – (e.g., X3 = 3 inch length; X3 is standard if specifying optional head)

OPTIONS – see page 2-7b



STANDARD AVAILABLE CONNECTION LENGTHS FOR NUN CONNECTIONS
3.00
3.50
4.00
4.50
5.00
6.00
8.00
DIMENSIONS ARE GIVEN IN INCHES

Smallest Diameter Sheath Available By Sensor Type and Temperature Range

SINGLE							
Temp Range	RTP 1	RTP 1A	RTP 1AA	RTP 6	RTP 7	RTP 7A	RTP 7AA
1	1/8	1/8	1/8	1/8	3/16	3/16	3/16
2	3/16	3/16	3/16	3/16	3/16	3/16	3/16
3	3/16			3/16	3/16		
4	1/8			1/8	3/16		
DUAL							
Temp Range	DRTP 1	DRTP 1A	DRTP 1AA	DRTP 6	DRTP 7	DRTP 7A	DRTP 7AA
1	3/16	3/16	3/16	3/16			
2	1/4	1/4	1/4	3/16			
3	1/4			1/4			
4	3/16			3/16			

STYLE 48

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
RTP6	±0.12%	**2-wire**
RTP7	±-0.12%	**4-wire**
RTP7A	**±0.06%**	**4-wire**
RTP7AA	**±0.01%**	**4-wire**

Notes:
1. For dual element, add prefix "D" (e.g., DRTP6)
2. Additional materials, curves and resistance values are available - see Capabilities brochure.

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
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
WIRING CONNECTION OPTIONS	
Option Code	Description
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals
TRANSMITTERS - for complete specs, see Transmitters section	
TR11	4-20 mA, 2-wire; single input; isolated output; specify range, units of measure (e.g., 0-200°C) and terminal head with *. See Accessories section for additional information.
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 *.

THERMOWELLS & PROTECTION TUBES

For a complete offering of metal, ceramic and composite material thermowells and protection tubes, please see the Thermowell and Protection Tube sections.

AVAILABLE OPTIONS and MODIFICATIONS

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"
HD12*	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"

EXPLOSION-PROOF TERMINAL HEAD OPTIONS		
Option Code	Process Connection	Conduit Connection
Cast aluminum, screw cover with chain; o-ring gasket rated to 100°C; ceramic terminal block; FM/CSA approved for Class I Div. 1, Groups B, C, D; Class II, Groups E, F, G; internal ground screw		
HD70*	1/2"	1/2"
HD71*	1/2"	3/4"
Stainless steel (same specs as HD70/HD71)		
HD74*	1/2"	1/2"
HD75*	1/2"	3/4"
Epoxy-coated (same specs as HD70/HD71)		
HD80*	1/2"	1/2"
HD81*	1/2"	3/4"
Cast aluminum; ATEX approved for EEx d IIC; screw cover with chain; silicone rubber o-ring gasket; ceramic terminal block; rated for NEMA 4X, IP66 to IP68; internal and external ground screws		
HD72*	1/2"	1/2"
HD73*	1/2"	3/4"
Cast aluminum (Formerly Style 60); screw cover; plastic terminal block; UL/CSA approved for Class I Div. 1, Groups C and D; Class II Groups E, F and G.		
HD60	1/2"	1/2"
HD61	1/2"	3/4"
*can be used with transmitters		

Note: See Accessories section for outline drawings and additional specs.

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.

UE APPLIED SENSOR TECHNOLOGIES
A Division of UNITED ELECTRIC CONTROLS

180 Dexter Avenue, P.O. Box 9143, Watertown, MA 02471-9143 USA Telephone: 617 923-6966 Fax: 617 926-8411 http://www.appliedsensortech.com

SANITARY PROCESS CONNECTION WITH TERMINAL HEAD

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	ASSEMBLY STYLE	CAP SIZE	CAP STYLE	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	OPTIONS

SENSOR TYPE (See page 2-8b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction
(For dual element, add prefix "D"- e.g., DRTP1)

ASSEMBLY STYLE
33 – **Sheath with sanitary process connection and white polypropylene head**; 3/4" NPT conduit connection; ceramic terminal block; maximum termination temperature 104°C (220°F)

CAP SIZE
A – 0.50*
B – 0.75*
C – 1.00
D – 1.50
E – 2.00
F – 2.50
G – 3.00
H – 4.00
*Available in cap style C only

CAP STYLE
A – 16 A Tri Clamp® cap
C – 16AMP Tri Clamp® cap

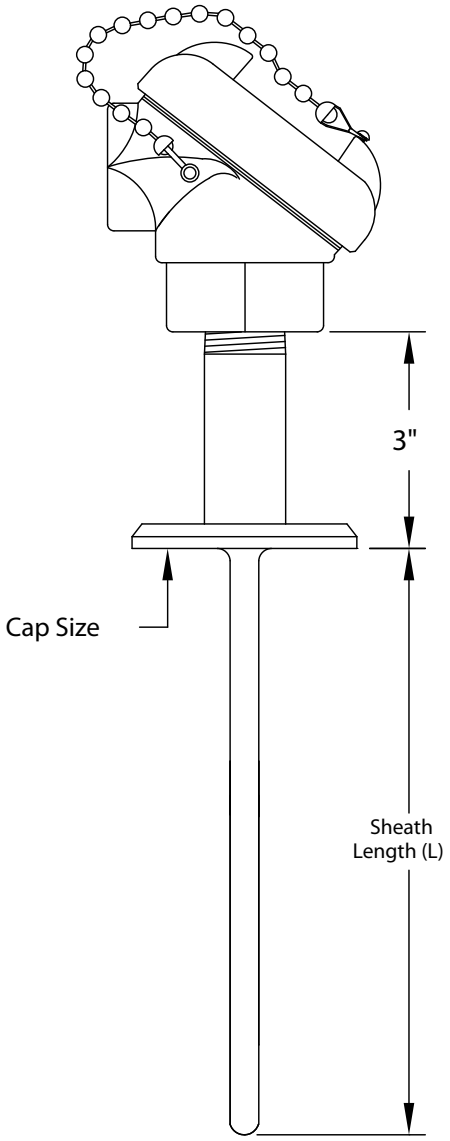
SHEATH DIAMETER
6 – 3/16 (0.188)
7 – 1/4 (0.250)

SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 200°C (-50 to 400°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

OPTIONS – see page 2-8b



Tri Clamp® is a registered trademark of Alfa-Laval, Inc.

STYLE 33

AVAILABLE OPTIONS and MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
Notes: 1. For dual element, add prefix "D" (e.g., DRTP1) 2. Additional materials, curves and resistance values are available - see Capabilities brochure.		

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
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
TRANSMITTERS	
TR11	4-20 mA, 2-wire transmitter, single input, isolated output; specify range, units of measure (e.g., 0-200°C) and 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 *.

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 (Formerly Style 67)			
HD10*	HD11*	1/2"	1/2"
HD12*	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"
316 stainless steel, screw cover with chain, NEMA 4X			
HD40*	HD41*	1/2"	3/4"
Black polypropylene, screw cover with chain, NEMA 4			
HD31	N/A	1/2"	3/4"
*can be used with TR11 transmitter			

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.

180 Dexter Avenue, P.O. Box 9143, Watertown, MA 02471-9143 USA Telephone: 617 923-6966 Fax: 617 926-8411 http://www.appliedsensortech.com

SANITARY CONNECTION WITH LEADWIRE

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	ASSEMBLY STYLE	CAP SIZE	CAP STYLE	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE (See page 2-9b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction

ASSEMBLY STYLE
58 – **Sheath with leadwire; sanitary process connection**; Teflon® insulated conductors; Teflon® jacketed cable

CAP SIZE (in inches)
A – 0.50* **E** – 2.00
B – 0.75* **F** – 2.50
C – 1.00 **G** – 3.00
D – 1.50 **H** – 4.00
*Available in Cap Style C only.

CAP STYLE
A – 16 A Tri Clamp® cap
C – 16AMP Tri Clamp® cap

SHEATH DIAMETER (in inches)
6 – 3/16 (0.188)
7 – 1/4 (0.250)

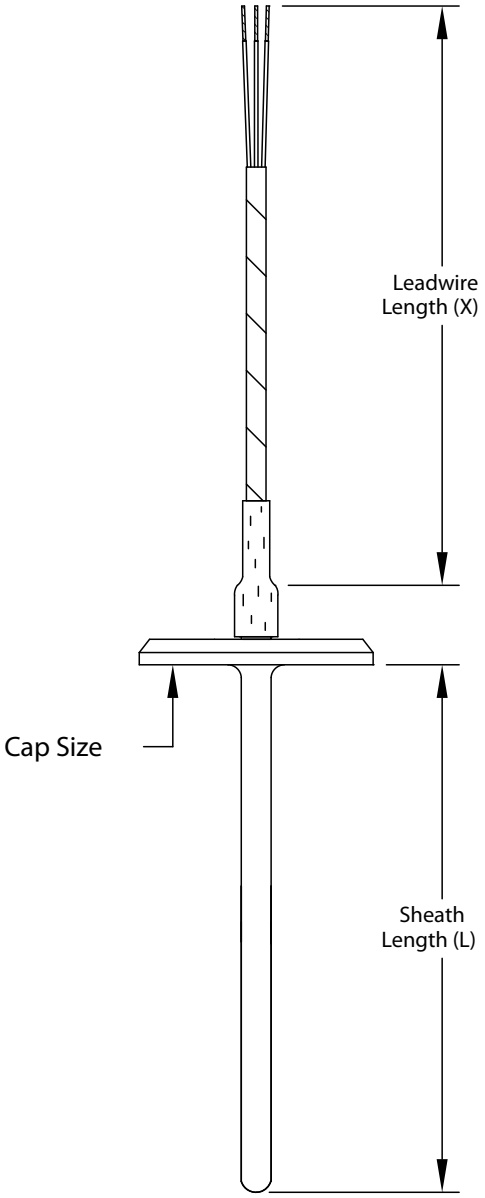
SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 200°C (-50 to 400°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

LEADWIRE LENGTH
X# – (e.g., X72 = 72 inch length)

OPTIONS – see page 2-9b



Teflon® is a registered trademark of DuPont
Tri Clamp® is a registered trademark of Alfa-Laval, Inc.

AVAILABLE OPTIONS and MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
Note: additional materials, curves and resistance values are available - see Capabilities brochure.		

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify points]
CRT1	Certificate of conformance

WIRING CONNECTION OPTIONS	
Option Code	Description
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminal
WC98	#8 ring terminal

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

180 Dexter Avenue, P.O. Box 9143, Watertown, MA 02471-9143 USA Telephone: 617 923-6966 Fax: 617 926-8411 http://www.appliedsensortech.com

SHEATH WITH LEADWIRE

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE (See page 2-10b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction
(For dual element, add prefix "D"- e.g., DRTP1)

ASSEMBLY STYLE
20 – **Sheath with leadwire**; Teflon® insulated conductors; no jacket
28 – **Sheath with Teflon® jacketed cable**; Teflon® insulated conductors

SHEATH DIAMETER (in inches) (see below for restrictions)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

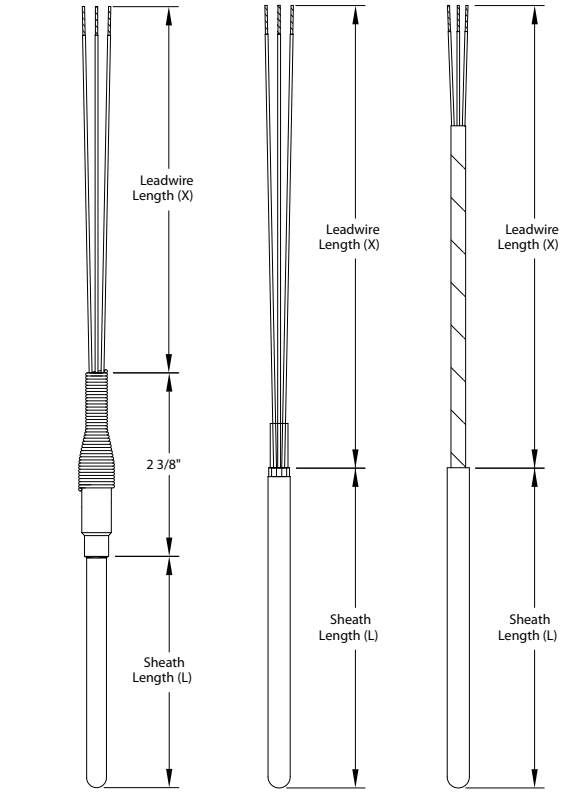
SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)
2 – -45 to 482°C (-50 to 900°F)
3 – -45 to 788°C (-50 to 1450°F)
4 – -200 to 260°C (-328 to 500°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)

LEADWIRE LENGTH
X# – (e.g., X72 = 72 inch length)

OPTIONS – see page 2-10b



Temperature Range 3 view for Style 20 & 28
Temperature Range 2 & 4 view for Style 28
Style 20
Style 28

Smallest Diameter Sheath Available By Sensor Type and Temperature Range

Style 20, SINGLE

Temp Range	RTP 1	RTP 1A		RTP 6	RTP 7	RTP 7A	
1	1/8	1/8	1/8	1/8	3/16	3/16	3/16
2	3/16	3/16	3/16	3/16	3/16	3/16	3/16
3	3/16			3/16	3/16		
4	1/8			1/8	3/16		

Style 20, DUAL

Temp Range	DRTP 1			DRTP 6	DRTP 7		
1	3/16	3/16	3/16	3/16	1/4	1/4	1/4
2	1/4	1/4	1/4	3/16	3/8	3/8	3/8
3	1/4			1/4	1/4		
4	3/16			3/16	1/4		

Smallest Diameter Sheath Available By Sensor Type and Temperature Range

Style 28, SINGLE ONLY

Temp Range	RTP 1	RTP 1A	RTP 1AA	RTP 6	RTP 7	RTP 7A	RTP 7AA
1	1/8	1/8	1/8				
2	3/16	3/16	3/16				
3	3/16						
4	1/8						

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AVAILABLE OPTIONS and MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
RTP6	±0.12%	**2-wire**
RTP7	±0.12%	**4-wire**
RTP7A	**±0.06%**	**4-wire**
RTP7AA	**±0.01%**	**4-wire**
Notes: 1. For dual element, add prefix "D" (e.g., DRTP6) 2. Additional materials, curves and resistance values are available - see Capabilities brochure.		
ASSEMBLY OPTIONS		
Option Code	Description	
TAG1	Stainless steel tag and wire	
CAL1	NIST traceable calibration [specify point(s)]	
CRT1	Certificate of conformance	
B45-	45° bend in sheath (specify length from tip in inches e.g., B45-6 [minimum length = 3"])	
B90-	90° bend in sheath (specify length from tip in inches e.g., B90-6 [minimum length = 3"])	
WIRING CONNECTION OPTIONS		
Option Code	Description	
WC76	#6 spade terminals, plated copper	
WC70	#10 spade terminals, plated copper	
WC84	1/4" push-on insulated terminals, plated copper	
WC90	#10 ring terminals	
WC98	#8 ring terminals	
PLUGS AND JACKS (For 2 and 3 wire constructions only. Note: plug is designed to be attached to sensor assemblies. Jack options – for customer wiring – should only be specified if plug option is also included. Cable clamp is included for both plug and jack options.)		
PJ10	Standard plug, rated to 177°C (350°F)	
PJ20	Standard jack, rated to 177°C (350°F)	
For flexible stainless steel armor, see Style 03		

COMPRESSION FITTINGS (for diameters 4, 6, 7)			
Option Code	NPT	Material	Ferrule
CF10	1/8"	Stainless steel	Stainless steel
CF11	1/8"	Stainless steel	Teflon®
CF12	1/8"	Brass	Brass
CF20	1/4"	Stainless steel	Stainless steel
CF21	1/4"	Stainless steel	Teflon®
CF22	1/4"	Brass	Brass
CF30	1/2"	Stainless steel	Stainless steel
CF31	1/2"	Stainless steel	Teflon®
CF32	1/2"	Brass	Brass

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

SHEATH WITH LEADWIRE AND ARMOR CABLE

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE (See page 2-11b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction
(For dual element, add prefix "D"- e.g., DRTP1)

ASSEMBLY STYLE
03 – **Sheath with leadwire and flexible stainless steel armor cable**; Teflon® insulated conductors
03P – **PVC coated armor**
03T – **Teflon® coated armor**

SHEATH DIAMETER (in inches) (see below for restrictions)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

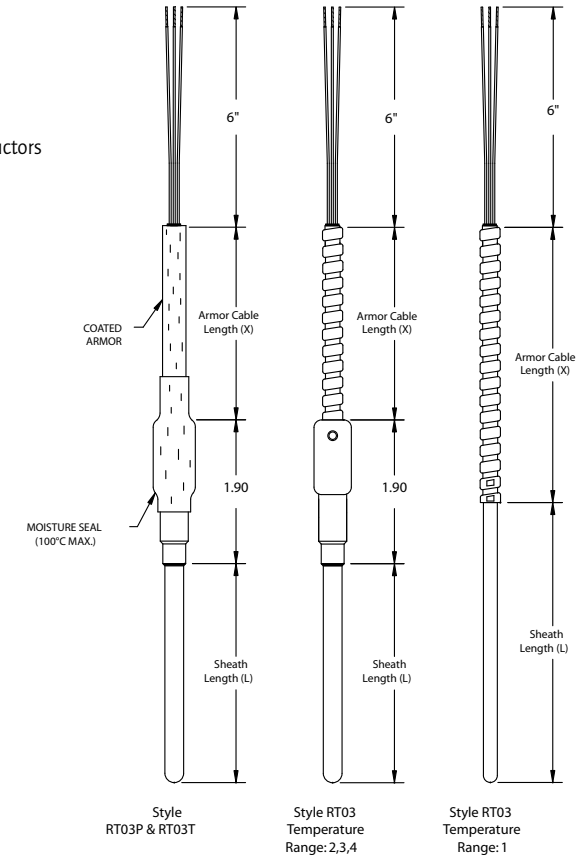
SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)
2 – -45 to 482°C (-50 to 900°F)
3 – -45 to 788°C (-50 to 1450°F)
4 – -200 to 260°C (-328 to 500°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

ARMOR CABLE LENGTH
X# – (e.g., X72 = 72 inch length)

OPTIONS – see page 2-11b



Smallest Diameter Sheath Available By Sensor Type and Temperature Range							
SINGLE							
Temp Range	RTP 1	RTP 1A	RTP 1AA	RTP 6	RTP 7	RTP 7A	RTP 7AA
1	1/8	1/8	1/8	1/8	3/16	3/16	3/16
2	3/16	3/16	3/16	3/16	3/16	3/16	3/16
3	3/16			3/16	3/16		
4	1/8			1/8	3/16		
DUAL							
Temp Range	DRTP 1	DRTP 1A	DRTP 1AA	DRTP 6	DRTP 7	DRTP 7A	DRTP 7AA
1	3/16	3/16	3/16	3/16	1/4	1/4	1/4
2	1/4	1/4	1/4	3/16	3/8	3/8	3/8
3	1/4			1/4	1/4		
4	3/16			3/16	1/4		

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STYLE 03

AVAILABLE OPTIONS AND MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
RTP6	±0.12%	**2-wire**
RTP7	±0.12%	**4-wire**
RTP7A	**±0.06%**	**4-wire**
RTP7AA	**±0.01%**	**4-wire**
Notes: 1. For dual element, add prefix "D" (e.g., DRTP6) 2. Additional materials, curves and resistance values are available - see Capabilities brochure.		

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
B45–	45° bend in sheath (specify length from tip in inches e.g., B45-6)
B90–	90° bend in sheath (specify length from tip in inches e.g., B90-6)
ARMOR OPTIONS	
BA50	Bayonet cap on armor (Style 03, temperature range 1 only) – formerly Style 25
PLUGS AND JACKS (2 and 3-wire construction only. Note: plug is designed to be attached to sensor assemblies. Jack options – for customer wiring – should only be specified if plug option is also included. Cable clamp is included for both plug and jack options.)	
PJ10	Standard plug, rated to 177°C (350°F)
PJ20	Standard jack, rated to 177°C (350°F)
WELD PADS	
WP00	Horizontal pad/flat
WP10	1" nominal pipe size
WP15	1.5" nominal pipe size
WP20	2" nominal pipe size
WP25	2.5" nominal pipe size
WP30	3" nominal pipe size
WP35	3.5" nominal pipe size
WP40	4" nominal pipe size

COMPRESSION FITTINGS			
Option Code	NPT	Material	Ferrule
CF10	1/8"	Stainless steel	Stainless steel
CF11	1/8"	Stainless steel	Teflon®
CF12	1/8"	Brass	Brass
CF20	1/4"	Stainless steel	Stainless steel
CF21	1/4"	Stainless steel	Teflon®
CF22	1/4"	Brass	Brass
CF30	1/2"	Stainless steel	Stainless steel
CF31	1/2"	Stainless steel	Teflon®
CF32	1/2"	Brass	Brass

WIRING CONNECTION OPTIONS	
Option Code	Description
WC76	#6 spade terminals
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals
BX CONNECTORS	
WC40	1/2"
WC50	3/4"
Note: for assembly with sheath, armor and terminal head, see Style 66.	

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

SHEATH WITH MALE PLUG

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	OPTIONS

SENSOR TYPE (See page 2-12b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction

ASSEMBLY STYLE
14 – **Sheath with standard male plug**; hollow pins; maximum termination temperature 177°C (350°F)

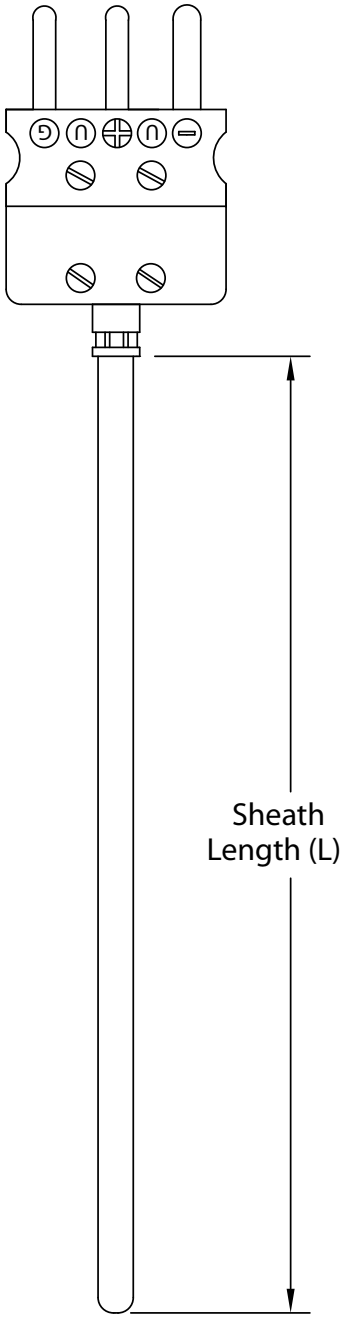
SHEATH DIAMETER (in inches)
6 – 3/16 (0.188)
7 – 1/4 (0.250)

SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)
2 – -45 to 482°C (-50 to 900°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

OPTIONS – see page 2-12b



AVAILABLE OPTIONS and MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
Note: additional materials, curves and resistance values are available - see Capabilities brochure.		

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
PJ20	Standard jack included

COMPRESSION FITTINGS			
Option Code	NPT	Material	Ferrule
CF10	1/8"	Stainless steel	Stainless steel
CF11	1/8"	Stainless steel	Teflon®
CF12	1/8"	Brass	Brass
CF20	1/4"	Stainless steel	Stainless steel
CF21	1/4"	Stainless steel	Teflon®
CF22	1/4"	Brass	Brass
CF30	1/2"	Stainless steel	Stainless steel
CF31	1/2"	Stainless steel	Teflon®
CF32	1/2"	Brass	Brass

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

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CUTABLE SHEATH WITH LEADWIRE

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	LEADWIRE LENGTH

SENSOR TYPE

RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction

ASSEMBLY STYLE

38 – **Field cutable sheath length with leadwire**; Teflon® insulated conductors for temperature range 1; Fiberglass insulated conductors for temperature range 2; cannot be cut to less than 4"

SHEATH DIAMETER

6 – 3/16 (0.188)

7 – 1/4 (0.250)

SHEATH MATERIAL

3 – stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures

1 – -45 to 260°C (-50 to 500°F)

2 – -45 to 482°C (-50 to 900°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)

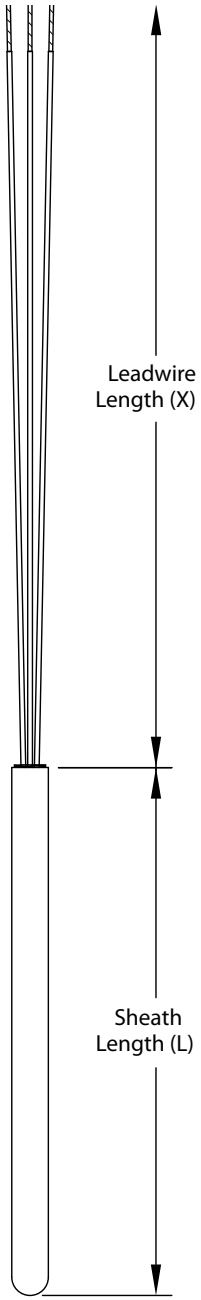
L# – (e.g., L6 = 6 inch sheath)

LEADWIRE LENGTH

X# – (e.g., X72 = 72 inch length)

OPTION

TAG1 – stainless steel tag and wire



Style 38

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STYLE 38

Many additional components are available in our Sensor Box program, including spring-loaded fittings and plugs and jacks.

The Sensor Box allows you to build sensor assemblies on-site, saving time and expense. See the Sensor Box literature for further details.

UE APPLIED SENSOR TECHNOLOGIES
A Division of UNITED ELECTRIC CONTROLS

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WELD PAD WITH LEADWIRE

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE (See page 2-14b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction

ASSEMBLY STYLE
39 – **Sheath with flat weld pad and leadwire**; Teflon® insulated conductors; Teflon® jacket; pad same material as sheath, 1" X 1" pad size; 1/8" pad thickness; radiused pad available as an option.

SHEATH DIAMETER
6 – 3/16 (0.188)
7 – 1/4 (0.250)

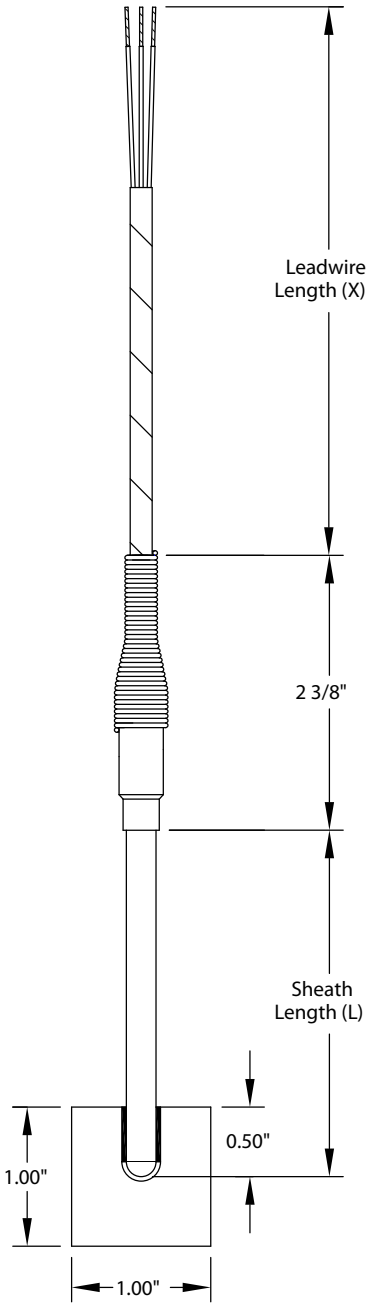
SHEATH MATERIAL
3 – stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)
2 – -45 to 482°C (-50 to 900°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

LEADWIRE LENGTH
X# – (e.g., X72 = 72 inch length)

OPTIONS – see page 2-14b



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AVAILABLE OPTIONS and MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
Note: additional materials, curves and resistance values are available - see Capabilities brochure.		

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
B45-	45° bend in sheath (specify length from tip in inches e.g., B45-6)
B90-	90° bend in sheath (specify length from tip in inches e.g., B90-6)

WIRING CONNECTION OPTIONS	
Option Code	Description
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals

PLUGS AND JACKS (Note: plug is designed to be attached to sensor assemblies. Jack options – for customer wiring – should only be specified if plug option is also included. Cable clamp is included for both plug and jack options.)	
PJ10	Standard plug, rated to 177°C (350°F)
PJ20	Standard jack, rated to 177°C (350°F)

WELD PADS	
Pads are normally supplied flat. For matching a pipe radius, use the codes below:	
WP10	1" nominal pipe size
WP15	1.5" nominal pipe size
WP20	2" nominal pipe size
WP25	2.5" nominal pipe size
WP30	3" nominal pipe size
WP35	3.5" nominal pipe size
WP40	4" nominal pipe size

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

SHEATH WITH WELDED PROCESS MOUNTING

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE (See page 2-15b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction
(For dual element, add prefix "D"- e.g., DRTP1)

ASSEMBLY STYLE
23I – **Sheath with single sided instrument mounting**; Teflon® insulated conductors; 1/2" NPT stainless steel connection with leadwire
23P – **Sheath with single sided process mounting**; Teflon® insulated conductors; 1/2" NPT stainless steel connection with leadwire
24 – **Sheath with double-sided mounting**; Teflon® insulated conductors; 1/2" NPT stainless steel connection

SHEATH DIAMETER (in inches) (see below for restrictions)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

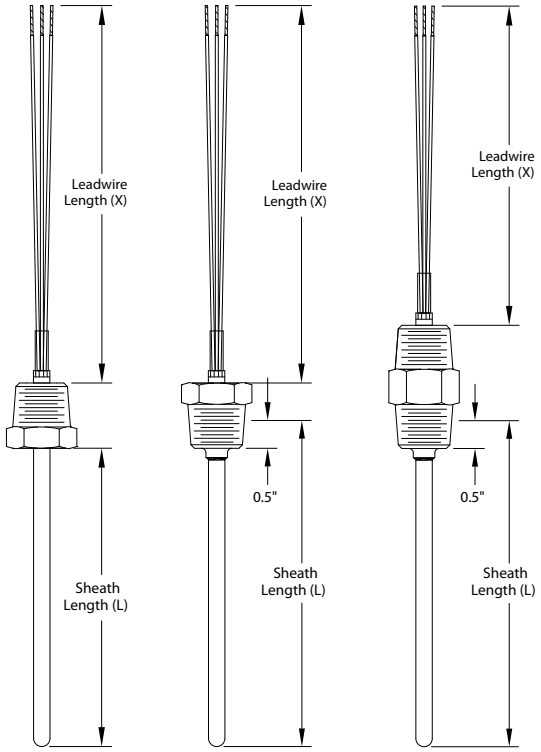
SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)
2 – -45 to 482°C (-50 to 900°F)
3 – -45 to 788°C (-50 to 1450°F)
4 – -200 to 260°C (-328 to 500°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

LEADWIRE LENGTH
X# – (e.g., X72 = 72 inch length)

OPTIONS – see page 2-15b



Style 23I Style 23P

Smallest Diameter Sheath Available By Sensor Type and Temperature Range

	SINGLE					Style 24	
Temp Range	RTP 1	RTP 1A	RTP 1AA	RTP 6	RTP 7	RTP 7A	RTP 7AA
1	1/8	1/8	1/8	1/8	3/16	3/16	3/16
2	3/16	3/16	3/16	3/16	3/16	3/16	3/16
3	3/16			3/16	3/16		
4	1/8			1/8	3/16		
	DUAL						
Temp Range	DRTP 1	DRTP 1A	DRTP 1AA	DRTP 6	DRTP 7	DRTP 7A	DRTP 7AA
1	3/16	3/16	3/16	3/16	1/4	1/4	1/4
2	1/4	1/4	1/4	3/16	3/8	3/8	3/8
3	1/4			1/4	1/4		
4	3/16			3/16	1/4		

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AVAILABLE OPTIONS and MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
RTP6	±0.12%	**2-wire**
RTP7	±0.12%	**4-wire**
RTP7A	**±0.06%**	**4-wire**
RTP7AA	**±0.01%**	**4-wire**
Notes: 1. For dual element, add prefix "D" (e.g., DRTP6) 2. Additional materials, curves and resistance values are available - see Capabilities brochure.		

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
B45-	45° bend in sheath (specify length from tip in inches e.g., B45-6)
B90-	90° bend in sheath (specify length from tip in inches e.g., B90-6)
For spring-loaded design, see Style 75	
For terminal heads, see Styles 15 and 21	

WIRING CONNECTION OPTIONS	
Option Code	Description
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals
PLUGS AND JACKS (Available on 23P only, 2 and 3 wire constructions only. Note: plug is designed to be attached to sensor assemblies. Jack options – for customer wiring – should only be specified if plug option is also included. Cable clamp is included for both plug and jack options.)	
PJ10	Standard plug, rated to 177°C (350°F)
PJ20	Standard jack, rated to 177°C (350°F)

WELD PADS (**Style 23I only**)	
WP00	Horizontal pad/flat
WP10	1" nominal pipe size
WP15	1.5" nominal pipe size
WP20	2" nominal pipe size
WP25	2.5" nominal pipe size
WP30	3" nominal pipe size
WP35	3.5" nominal pipe size
WP40	4" nominal pipe size

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

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WASHER STYLE WITH LEADWIRE

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	ASSEMBLY STYLE	WASHER SIZE	WASHER MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE (See page 2-16b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction
(For dual element, add prefix "D"- e.g., DRTP1) (see page 2-16b for restrictions)

ASSEMBLY STYLE
32 – **Washer with leadwire**; Teflon® insulated conductors; armor cable; washer thickness 3/16" (0.188"); Sheath diameter 0.188" only

WASHER SIZE (in inches)

	Washer ID	Washer OD
6 – 3/16 (0.188)	0.193	0.375
7 – 1/4 (0.250)	0.255	0.500
9 – 3/8 (0.375)	0.380	0.750
10 – 1/2 (0.500)	0.510	1.000

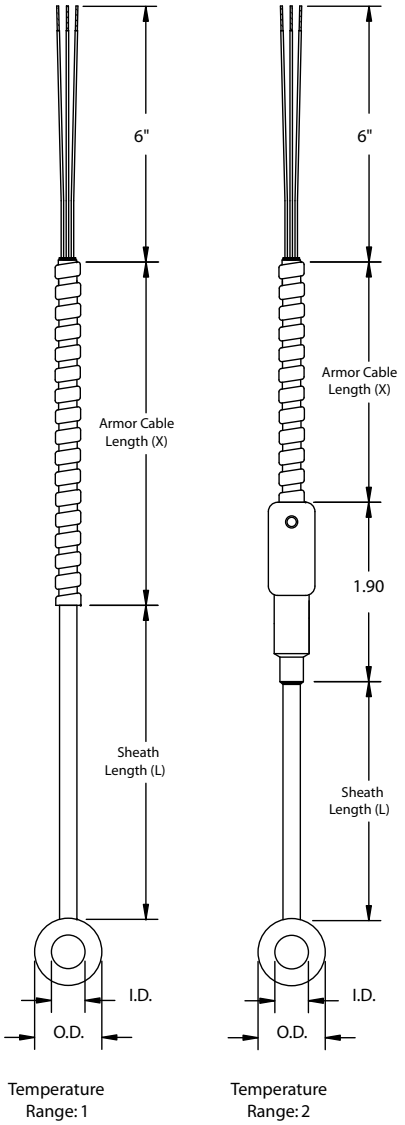
WASHER MATERIAL
3 – stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)
2 – -45 to 482°C (-50 to 900°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

LEADWIRE LENGTH
X# – (e.g., X6 = 6 inch length)

OPTIONS – see page 2-16b



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AVAILABLE OPTIONS and MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
RTP6	±0.12%	**2-wire**
RTP7	±0.12%	**4-wire**
RTP7A	**±0.06%**	**4-wire**
RTP7AA	**±0.01%**	**4-wire**
Notes: 1. For dual element, add prefix "D" (e.g., DRTP6). Dual available on 2 and 3-wire constructions only. 2. Additional materials, curves and resistance values are available - see Capabilities brochure.		

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
B45-	45° bend in sheath (specify length from tip in inches e.g., B45-6)
B90-	90° bend in sheath (specify length from tip in inches e.g., B90-6)

WIRING CONNECTION OPTIONS	
Option Code	Description
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals
PLUGS AND JACKS (Note: plug is designed to be attached to sensor assemblies. Jack options – for customer wiring – should only be specified if plug option is also included. Cable clamp is included for both plug and jack options.)	
PJ10	Standard plug, rated to 177°C (350°F)
PJ20	Standard jack, rated to 177°C (350°F)
BX CONNECTORS	
WC40	1/2"
WC50	3/4"

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

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MOUNTING LUG WITH LEADWIRE

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	ASSEMBLY STYLE	LUG HOLE SIZE	TEMPERATURE RANGE	SHEATH LENGTH	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE (See page 2-17b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction
(For dual element, add prefix "D"- e.g., DRTP1)

ASSEMBLY STYLE
41 – **Stainless steel mounting lug with Teflon® leadwire**; diameter 0.312" only

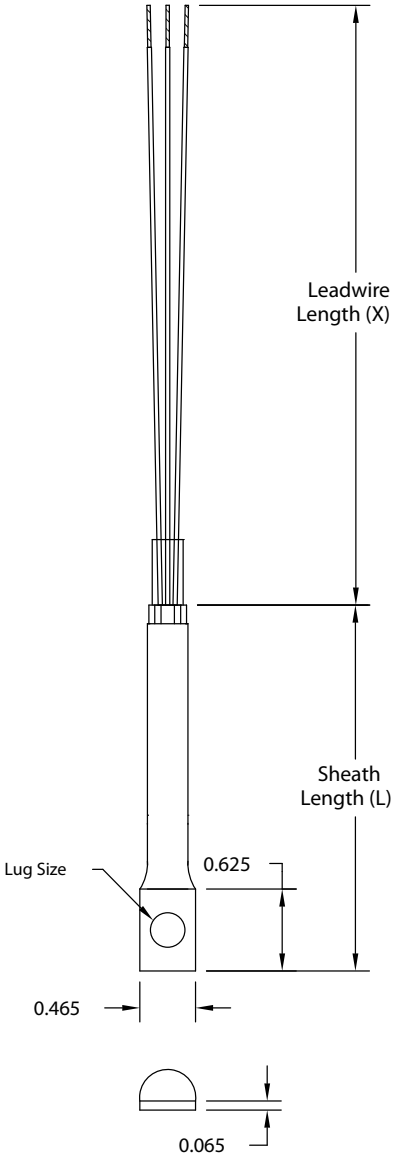
LUG HOLE SIZE (in inches)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)

SHEATH LENGTH (Minimum L=1.75"; for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

LEADWIRE LENGTH
X# – (e.g., X72 = 72 inch length)

OPTIONS – see page 2-17b



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AVAILABLE OPTIONS and MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP6	±0.12%	**2-wire**
RTP7	±0.12%	**4-wire**
Notes: 1. For dual element, add prefix "D" (e.g., DRTP6) 2. Additional materials, curves and resistance values are available - see Capabilities brochure.		
ASSEMBLY OPTIONS		
Option Code	Description	
TAG1	Stainless steel tag and wire	
CAL1	NIST traceable calibration [specify point(s)]	
CRT1	Certificate of conformance	
WIRING CONNECTION OPTIONS		
Option Code	Description	
WC76	#6 spade terminals, plated copper	
WC70	#10 spade terminals, plated copper	
WC84	1/4" push-on insulated terminals, plated copper	
WC90	#10 ring terminals	
WC98	#8 ring terminals	
PLUGS AND JACKS (Note: plug is designed to be attached to sensor assemblies. Jack options – for customer wiring – should only be specified if plug option is also included. Cable clamp is included for both plug and jack options.)		
PJ10	Standard plug, rated to 177°C (350°F)	
PJ20	Standard jack, rated to 177°C (350°F)	

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

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SHEATH WITH LEADWIRE AND PROTECTIVE TEFLON® SLEEVE

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	TEFLON® SLEEVE	LEADWIRE LENGTH	OPTIONS

SENSOR TYPE (See page 2-18b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction
(For dual element, add prefix "D"- e.g., DRTP1)

ASSEMBLY STYLE
42 – **Sheath with protective Teflon® sleeve**; Teflon® insulated leadwire extension beyond Teflon® sleeve

SHEATH DIAMETER (in inches) (see below for restrictions)
6 – 3/16 (0.188) Finished OD = 0.240
7 – 1/4 (0.250) Finished OD = 0.300

SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)

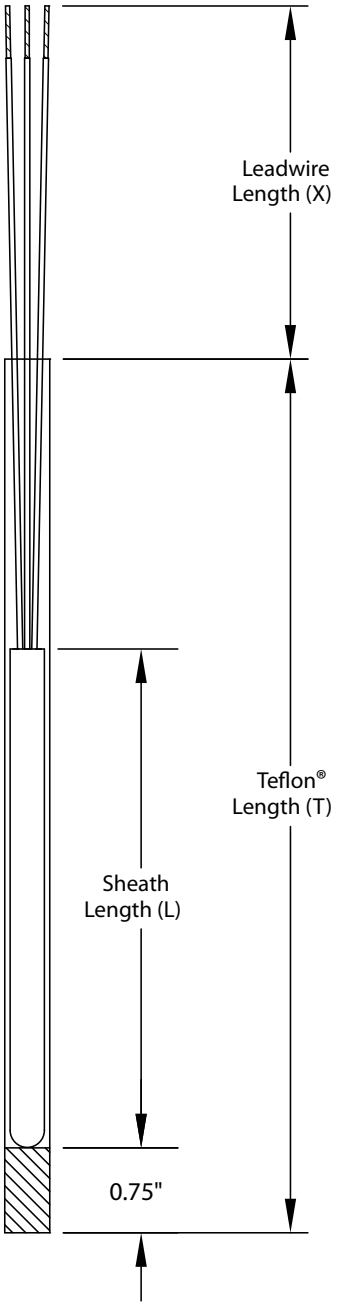
SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

TEFLON® SLEEVE
T# – (e.g., T12 = 12" of Teflon®)

LEADWIRE LENGTH
X# – (e.g., X12.5 = 12.5 inch length beyond Teflon® sleeve)

OPTIONS – see page 2-18b

Smallest Diameter Sheath Available By Sensor Type and Temperature Range							
SINGLE							
Temp Range	RTP 1	RTP 1A	RTP 1AA	RTP 6	RTP 7	RTP 7A	RTP 7AA
1	3/16	3/16	3/16	3/16	3/16	3/16	3/16
DUAL							
Temp Range	DRTP 1	DRTP 1A	DRTP 1AA	DRTP 6	DRTP 7	DRTP 7A	DRTP 7AA
1	3/16	3/16	3/16	3/16	1/4	1/4	1/4



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AVAILABLE OPTIONS and MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
RTP6	±0.12%	**2-wire**
RTP7	±0.12%	**4-wire**
RTP7A	**±0.06%**	**4-wire**
RTP7AA	**±0.01%**	**4-wire**
Notes: 1. For dual element, add prefix "D" (e.g., DRTP6) 2. Additional materials, curves and resistance values are available - see Capabilities brochure.		

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
B45-	45° bend in sheath (specify length from tip in inches e.g., B45-6)
B90-	90° bend in sheath (specify length from tip in inches e.g., B90-6)

WIRING CONNECTION OPTIONS	
Option Code	Description
WC76	#6 spade terminals, plated copper
WC70	#10 spade terminals, plated copper
WC84	1/4" push-on insulated terminals, plated copper
WC90	#10 ring terminals
WC98	#8 ring terminals
PLUGS AND JACKS (Note: plug is designed to be attached to sensor assemblies. Jack options – for customer wiring – should only be specified if plug option is also included. Cable clamp is included for both plug and jack options.)	
PJ10	Standard plug, rated to 177°C (350°F)
PJ20	Standard jack, rated to 177°C (350°F)

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

ATEX APPROVED CONNECTION HEAD WITH WELDED PROCESS CONNECTION

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	ASSEMBLY STYLE	SHEATH DIAMETER	SHEATH MATERIAL	TEMPERATURE RANGE	SHEATH LENGTH	OPTIONS

SENSOR TYPE (See page 2-3b for optional elements)
RTP1 – Platinum; DIN 0.00385; 100 ohm +/– 0.12% @ 0°C; 3-wire construction
(For dual element, add prefix "D" - e.g., DRTP1)

ASSEMBLY STYLE
22 – **Sheath with cast aluminum head and 1/2" NPT welded stainless steel process connection**; head ATEX approved for EEx d IIC; IP66 to 68; screw cover with chain and gasketed o-ring; meets NEMA 4X; ceramic terminal block; 3/4" NPT conduit connection; internal and external ground screws (Note: For spring-loaded fitting, see Style 75 and add optional head).

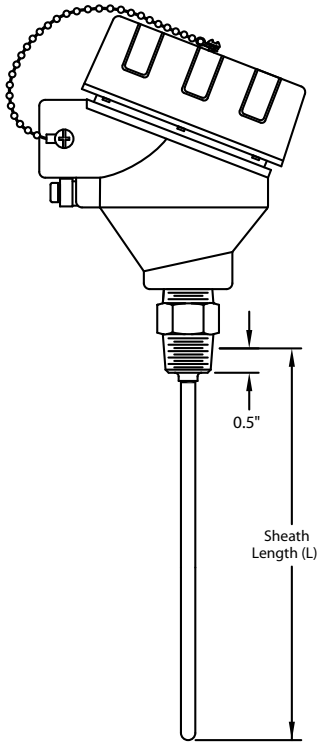
SHEATH DIAMETER (in inches) (see below for restrictions)
4 – 1/8 (0.125)
6 – 3/16 (0.188)
7 – 1/4 (0.250)
9 – 3/8 (0.375)

SHEATH MATERIAL
3 – 316 stainless steel

TEMPERATURE RANGE - Minimum and maximum operating temperatures
1 – -45 to 260°C (-50 to 500°F)
2 – -45 to 482°C (-50 to 900°F)
3 – -45 to 788°C (-50 to 1450°F)
4 – -200 to 260°C (-328 to 500°F)

SHEATH LENGTH (for lengths greater than L=36", consult AST)
L# – (e.g., L6 = 6 inch sheath)

OPTIONS – see page 2-19b



Smallest Diameter Sheath Available By Sensor Type and Temperature Range							
SINGLE							
Temp Range	RTP 1	RTP 1A	RTP 1AA	RTP 6	RTP 7	RTP 7A	RTP 7AA
1	1/8	1/8	1/8	1/8	3/16	3/16	3/16
2	3/16	3/16	3/16	3/16	3/16	3/16	3/16
3	3/16			3/16	3/16		
4	1/8			1/8	3/16		
DUAL							
Temp Range	DRTP 1	DRTP 1A	DRTP 1AA	DRTP 6	DRTP 7	DRTP 7A	DRTP 7AA
1	3/16	3/16	3/16	3/16			
2	1/4	1/4	1/4	3/16			
3	1/4			1/4			
4	3/16			3/16			

AVAILABLE OPTIONS and MODIFICATIONS

OPTIONAL ELEMENTS		
RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385 alpha.		
Option Code	Accuracy (at 0°C)	Construction
RTP1 (std.)	±0.12%	3-wire
RTP1A	**±0.06%**	3-wire
RTP1AA	**±0.01%**	3-wire
RTP6	±0.12%	**2-wire**
RTP7	±0.12%	**4-wire**
RTP7A	**±0.06%**	**4-wire**
RTP7AA	**±0.01%**	**4-wire**
Notes: 1. For dual element, add prefix "D" (e.g., DRTP6) 2. Additional materials, curves and resistance values are available - see Capabilities brochure.		

ASSEMBLY OPTIONS	
Option Code	Description
TAG1	Stainless steel tag and wire
PC25	1/4" NPT process connection
PC75	3/4" NPT process connection
CAL1	Calibration, NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
TRANSMITTERS – For complete specs, see Transmitters section	
TR11	4-20 mA, 2-wire transmitter, single input, isolated output; specify range and units of measure (e.g., 0-200°C)
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 *.

EXPLOSION-PROOF TERMINAL HEAD OPTIONS		
Option Code	Process Connection	Conduit Connection
Same specifications as standard		
HD72	1/2"	1/2"

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.

180 Dexter Avenue, P.O. Box 9143, Watertown, MA 02471-9143 USA Telephone: 617 923-6966 Fax: 617 926-8411 http://www.appliedsensortech.com

BAR STOCK, NPT CONNECTION, NO LAG

How to build a part number:

To order an Applied Sensor Technologies thermowell, 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!

PROCESS CONNECTION	STYLE	BORE	WELL LENGTH	WELL MATERIAL	OPTIONS

PROCESS CONNECTION (P)
1 – 1/2" NPT
2 – 3/4" NPT
3 – 1" NPT
5 – 1-1/2" NPT

STYLE
S – Stepped stem (0.260" bore only; for straight stem, see Options)
H – Tapered stem

BORE
260 – 0.260" bore
385 – 0.385" bore

WELL LENGTH (in inches)*
L# – Specify length of thermowell (e.g., L4=4")
Standard lengths:
L4 – L=4"; U=2.5"
L6 – L=6"; U=4.5"
L9 – L=9"; U=7.5"
L12 – L=12"; U=10.5"
L15 – L=15"; U=13.5"
L18 – L=18"; U=16.5"
L24 – L=24"; U=22.5"
Specify other (L = U + 1.5")

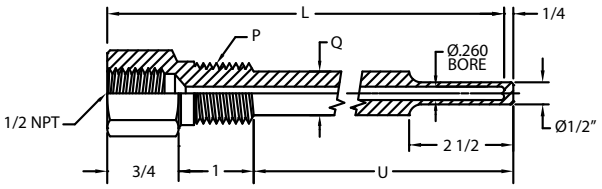
WELL MATERIAL
– – – – 304 stainless steel
310 – 310 stainless steel
316 – 316 stainless steel
INC – Inconel 600®
321 – 321 stainless steel
ALUM – Aluminum
HAST – Hastelloy C®
TTNM – Titanium
316L – 316L stainless steel
400 – Monel 400®
CS – Carbon steel
F11 – F11 carbon steel (forged)
F22 – F22 carbon steel (forged)
F91 – F91 carbon steel (forged)
A20 – Alloy 20
BRASS – Brass

OPTIONS
TW01 – Stainless steel cap and chain assembly
TWO2 – Brass cap and chain assembly
TAG2 – Stamped tag #
STRT – Straight stem
MTR1 – Material Test Report
WFC1 – Wake Frequency Calculation

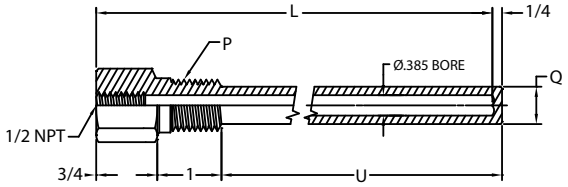
Root Diameter (Q)

Process Connection =	1/2" NPT	3/4" NPT	1" NPT	1-1/2" NPT
S260 and S385	.63"	.75"	.88"	.88"
H260 and H385	.63"	.88"	1.06"	1.63"

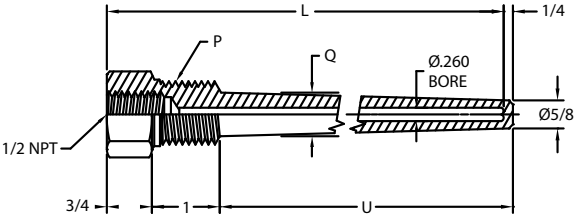
STYLE S260 (stepped)



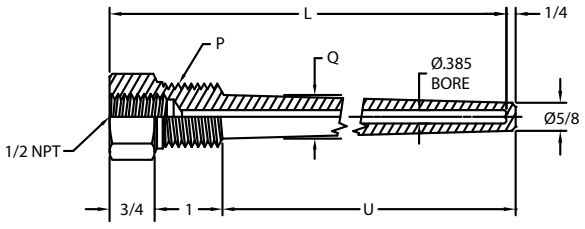
STYLE S385



STYLE H260



STYLE H385



(*) Thermowells with an overall length of 42" or less are machined from SOLID BAR STOCK. Thermowells with an overall length greater than 42" are constructed using a welded design and are available in straight, stepped or tapered design. However, for tapered only the last 16" are tapered.

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Hastelloy® is a registered trademark of Haynes Int'l.

BAR STOCK, NPT CONNECTION WITH LAG

How to build a part number:

To order an Applied Sensor Technologies thermowell, 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!

PROCESS CONNECTION	STYLE	BORE	WELL LENGTH	LAG EXTENSION	WELL MATERIAL	OPTIONS

PROCESS CONNECTION (P)

1 – 1/2" NPT
2 – 3/4" NPT
3 – 1" NPT
5 – 1-1/2" NPT

STYLE

SL – NPT connection, stepped stem with lag extension (for straight stem, see Options)
HL – NPT connection, tapered stem, with lag extension

BORE

260 – 0.260" bore
385 – 0.385" bore

WELL LENGTH (in inches)*

L# – Specify length of thermowell (e.g., L9=9")
Standard lengths:

		U =	
	Length (L) =	If T = 2"	If T = 3"
L6	6"	2.5"	1.5"
L9	9"	5.5"	4.5"
L12	12"	8.5"	7.5"
L15	15"	11.5"	10.5"
L18	18"	14.5"	13.5"
L24	24"	20.5"	19.5"

Specify other (L = U+T+1.5")

LAG EXTENSION (in inches)

T# – Specify length of lagging (e.g., T2 = 2" lag)
T2 – 2" **T3** – 3"
Specify other

WELL MATERIAL

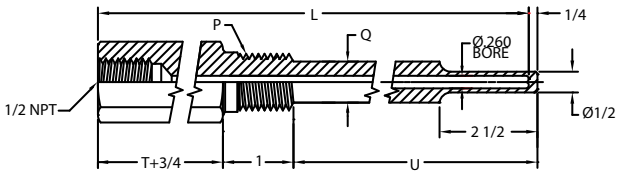
– – – – 304 stainless steel
310 – 310 stainless steel
316 – 316 stainless steel
INC – Inconel 600®
321 – 321 stainless steel
ALUM – Aluminum
HAST – Hastelloy C®
TTNM – Titanium
316L – 316L stainless steel
400 – Monel 400®
CS – Carbon steel
F11 – F11 carbon steel (forged)
F22 – F22 carbon steel (forged)
F91 – F91 carbon steel (forged)
A20 – Alloy 20
BRASS – Brass

OPTIONS

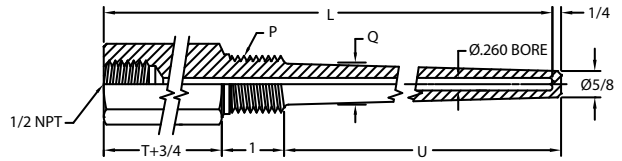
TW01 – Stainless steel cap and chain assembly
TWO2 – Brass cap and chain assembly
TAG2 – Stamped tag #
STRT – Straight stem
MTR1 – Material Test Report
WFC1 – Wake Frequency Calculation
Root Diameter (Q)

Process Connection =	1/2" NPT	3/4" NPT	1" NPT	1-1/2" NPT
SL260 and SL385	.63"	.75"	.88"	.88"
HL260 and HL385	.68"	.88"	1.06"	1.63"

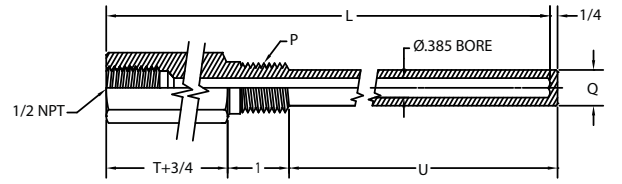
STYLE SL260



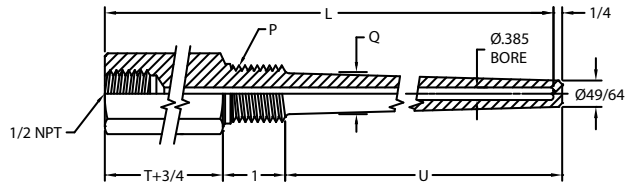
STYLE HL260



STYLE SL385



STYLE HL385



(*) Thermowells with an overall length of 42" or less are machined from SOLID BAR STOCK. Thermowells with an overall length greater than 42" are constructed using a welded design and are available in straight, stepped or tapered design. However, for tapered only the last 16" are tapered.

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BAR STOCK, NPT CONNECTION, LIMITED SPACE

How to build a part number:

To order an Applied Sensor Technologies thermowell, 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!

PROCESS CONNECTION	STYLE	BORE	WELL MATERIAL	OPTIONS

PROCESS CONNECTION (P)

1 – 1/2" NPT
2 – 3/4" NPT
3 – 1" NPT

STYLE

LS – Limited space, straight stem

BORE

260 – 0.260" bore
385 – 0.385" bore

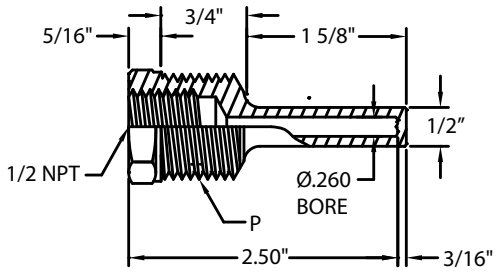
WELL MATERIAL

– – – – 304 stainless steel
310 – 310 stainless steel
316 – 316 stainless steel
INC – Inconel 600®
321 – 321 stainless steel
ALUM – Aluminum
HAST – Hastelloy C®
TTNM – Titanium
316L – 316L stainless steel
400 – Monel 400®
CS – Carbon steel
F11 – F11 carbon steel (forged)
F22 – F22 carbon steel (forged)
F91 – F91 carbon steel (forged)
A20 – Alloy 20
BRASS – Brass

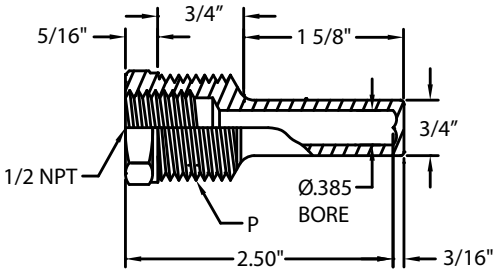
OPTIONS

TW01 – Stainless steel cap and chain assembly
TWO2 – Brass cap and chain assembly
TAG2 – Stamped tag #
MTR1 – Material Test Report

STYLE LS260



STYLE LS385



BAR STOCK, FLANGE CONNECTION

How to build a part number:

To order an Applied Sensor Technologies thermowell, 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!

STYLE	BORE	INSERTION LENGTH	WELL & FLANGE MATERIAL	FLANGE SIZE	FLANGE RATING	FLANGE TYPE	OPTIONS

STYLE
F – Flanged connection, stepped stem (for straight stem, see Options)
FH – Flanged connection, tapered stem

BORE
260 – 0.260" bore
385 – 0.385" bore

INSERTION LENGTH (in inches)*
U# – Specify length below the flange (e.g., U4 = 4")
Standard lengths:
U4 – U=4"; L=6" **U7** – U=7"; L=9"
U10 – U=10"; L=12" **U13** – U=13"; L=15"
U16 – U=16"; L=18" **U22** – U=22"; L=24"
Specify other (L = U + 2")

WELL AND FLANGE MATERIAL
– – – – 304 stainless steel
310 – 310 stainless steel
316 – 316 stainless steel
INC – Inconel 600®
321 – 321 stainless steel
ALUM – Aluminum
HAST – Hastelloy C®
TTNM – Titanium
316L – 316L stainless steel
400 – Monel 400®
CS – Carbon steel
F11 – F11 carbon steel (forged)
F22 – F22 carbon steel (forged)
F91 – F91 carbon steel (forged)
A20 – Alloy 20
BRASS – Brass

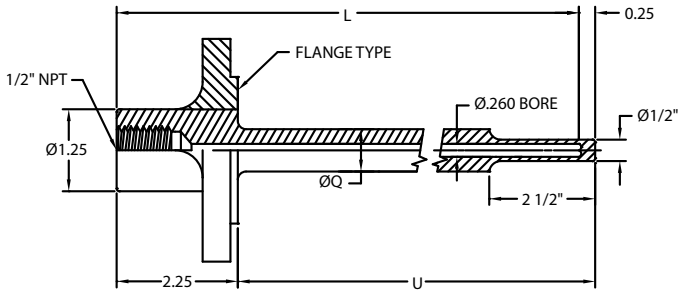
FLANGE SIZE
1 – 1" flange
1.5 – 1.5" flange
2 – 2" flange
3 – 3" flange
4 – 4" flange

FLANGE RATING
150 – 150# rating
300 – 300# rating
600 – 600# rating
900/1500 – 900/1500# rating

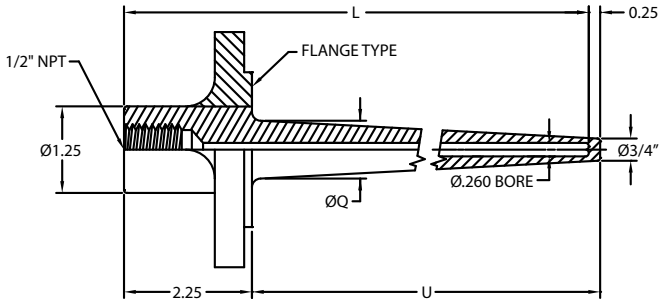
FLANGE TYPE
RF – Welded, raised face (standard)
FF – Welded, flat face
RTJ – Ring type joint

OPTIONS
TW01 – Stainless steel cap and chain assembly
TWO2 – Brass cap and chain assembly
TAG2 – Stamped tag #
STRT – Straight stem
MTR1 – Material Test Report
WFC1 – Wake Frequency Calculation
TFLN – Teflon sleeve or coating

STYLE F260



STYLE FH260



	Root Diameter (Q)
F260	0.75"
F385	0.75"
FH260 & 385	1" flange = .88" 1.5" flange = 1.06" All others = 1.25"

(*) Thermowells with an overall length of 42" or less are machined from SOLID BAR STOCK. Thermowells with an overall length greater than 42" are constructed using a welded design and are available in straight, stepped or tapered design. However, for tapered only the last 16" are tapered.

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BAR STOCK, SOCKET-WELD CONNECTION, NO LAG

How to build a part number:

To order an Applied Sensor Technologies thermowell, 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!

PROCESS CONNECTION	STYLE	BORE	WELL LENGTH	WELL MATERIAL	OPTIONS

PROCESS CONNECTION (P)

2 – 3/4" pipe (OD = 1.05")
3 – 1" pipe (OD = 1.315")
5 – 1-1/2" pipe (OD = 1.90")

STYLE

SW – Socket-weld connection, stepped stem, no lag (for straight stem, see Options)
SWH – Socket-weld connection, tapered stem, no lag

BORE

260 – 0.260" bore
385 – 0.385" bore

WELL LENGTH (in inches)*

L# – Specify length of thermowell (e.g., L4 = 4")

Standard lengths:

L4 – L=4"; U=2.5"
L6 – L=6"; U=4.5"
L9 – L=9"; U=7.5"
L12 – L=12"; U=10.5"
L15 – L=15"; U=13.5"
L18 – L=18"; U=16.5"
L24 – L=24"; U=22.5"

Specify other (L = U+1.5")

WELL MATERIAL

– – – – 304 stainless steel
310 – 310 stainless steel
316 – 316 stainless steel
INC – Inconel 600®
321 – 321 stainless steel
ALUM – Aluminum
HAST – Hastelloy C®
TTNM – Titanium
316L – 316L stainless steel
400 – Monel 400®
CS – Carbon steel
F11 – F11 carbon steel (forged)
F22 – F22 carbon steel (forged)
F91 – F91 carbon steel (forged)
A20 – Alloy 20
BRASS – Brass

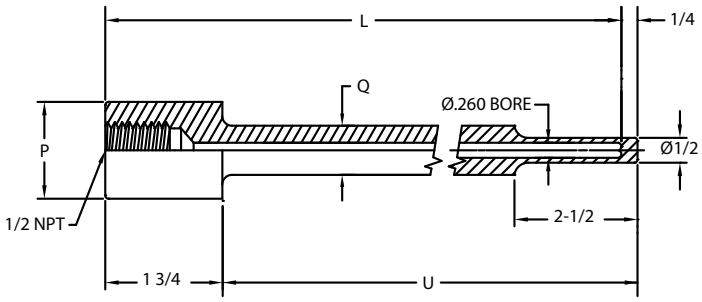
OPTIONS

TW01 – Stainless steel cap and chain assembly
TWO2 – Brass cap and chain assembly
TAG2 – Stamped tag #
STRT – Straight stem
MTR1 – Material Test Report
WFC1 – Wake Frequency Calculations

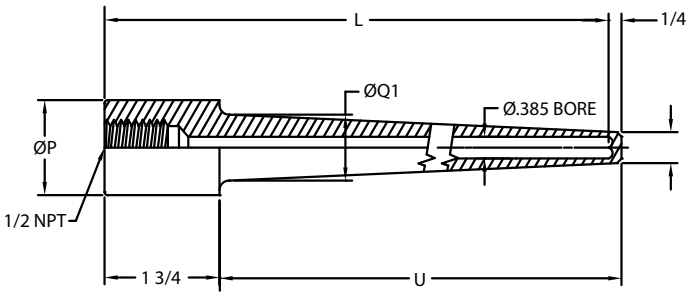
Root Diameter (Q)

Process Connection =	3/4" pipe	1" pipe	1.5" pipe
SW260 & 385	.75"	.88"	1.13"
SWH260 & 385	.75"	1.00"	1.25"
SWH Tip Diameter	.63"	.75"	.75"

STYLE SW260



STYLE SWH385



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BAR STOCK, SOCKET-WELD CONNECTION WITH LAG

How to build a part number:

To order an Applied Sensor Technologies thermowell, 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!

PROCESS CONNECTION	STYLE	BORE	WELL LENGTH	LAG EXTENSION	WELL MATERIAL	OPTIONS

PROCESS CONNECTION (P)

2 – 3/4" pipe (OD = 1.05")
3 – 1" pipe (OD = 1.315")
5 – 1-1/2" pipe (OD = 1.90")

STYLE

SWL – Socket-weld connection, stepped stem, no lag (for straight stem, see Options)
SWLH – Socket-weld connection, tapered stem, no lag

BORE

260 – 0.260" bore
385 – 0.385" bore

WELL LENGTH (in inches)*

L# – Specify length of thermowell (e.g., L9 = 9")

Standard lengths:

		U =	
	Length (L) =	If T = 2"	If T = 3"
L6	6"	2.5"	1.5"
L9	9"	5.5"	4.5"
L12	12"	8.5"	7.5"
L15	15"	11.5"	10.5"
L18	18"	14.5"	13.5"
L24	24"	20.5"	19.5"

Specify other (L = U+T+1.5")

LAG EXTENSION (in inches)

T# – Specify length of lagging (e.g., T2=2" lag)

T2 – 2" **T3** – 3" Specify other

WELL MATERIAL

– – – – 304 stainless steel
310 – 310 stainless steel
316 – 316 stainless steel
INC – Inconel 600®
321 – 321 stainless steel
ALUM – Aluminum
HAST – Hastelloy C®
TTNM – Titanium
316L – 316L stainless steel
400 – Monel 400®
CS – Carbon steel
F11 – F11 carbon steel (forged)
F22 – F22 carbon steel (forged)
F91 – F91 carbon steel (forged)
A20 – Alloy 20
BRASS – Brass

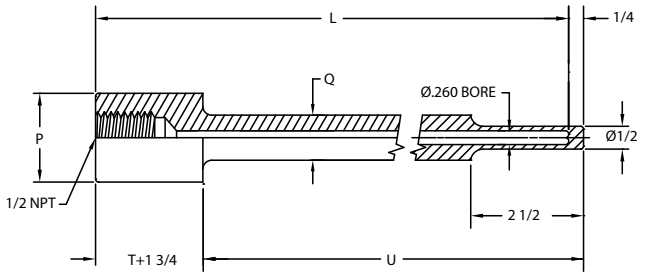
OPTIONS

TW01 – Stainless steel cap and chain assembly
TWO2 – Brass cap and chain assembly
MTR1 – Material Test Report
TAG2 – Stamped tag #
WFC1 – Wake Frequency Calculations
STRT – Straight stem

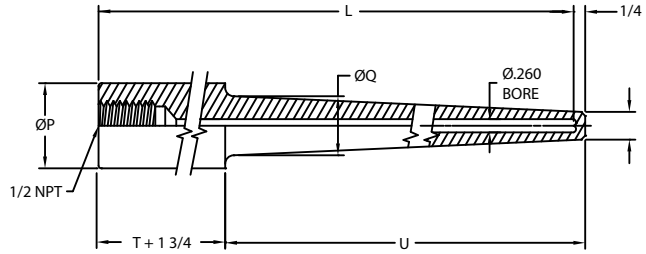
Root Diameter (Q)

Process Connection =	3/4" pipe	1" pipe	1.5" pipe
SWL260 & 385	.75"	.88"	1.25"
SWLH260 & 385	.75"	1.00"	1.25"
SWLH Tip Diameter	.63"	.75"	.75"

STYLE SWL260



STYLE SWLH260



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BAR STOCK, WELD-IN CONNECTION, NO LAG

How to build a part number:

To order an Applied Sensor Technologies thermowell, 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!

PROCESS CONNECTION	STYLE	BORE	WELL LENGTH	WELL MATERIAL	OPTIONS

PROCESS CONNECTION (P)
2 – 3/4" pipe (OD = 1.05")
3 – 1" pipe (OD = 1.315")
5 – 1-1/2" pipe (OD = 1.90")

STYLE
WIH – Weld-in, tapered stem, no lag

BORE
260 – 0.260" bore
385 – 0.385" bore

WELL LENGTH (in inches)*
L# – Specify length of thermowell (e.g., L4 = 4")

Standard lengths:

L4 – L=4"; U=2.5"
L6 – L=6"; U=4.5"
L9 – L=9"; U=7.5"
L12 – L=12"; U=10.5"
L15 – L=15"; U=13.5"
L18 – L18"; U16.5"
L24 – L=24"; U=22.5"

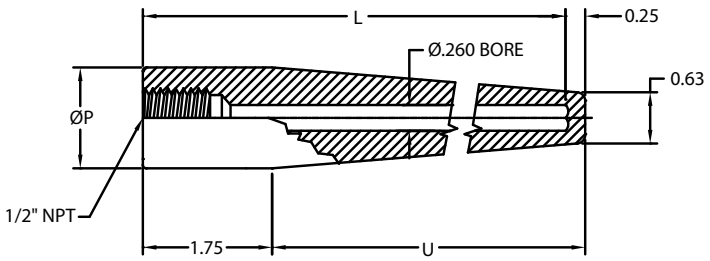
Specify other (L = U+1.5")

WELL MATERIAL

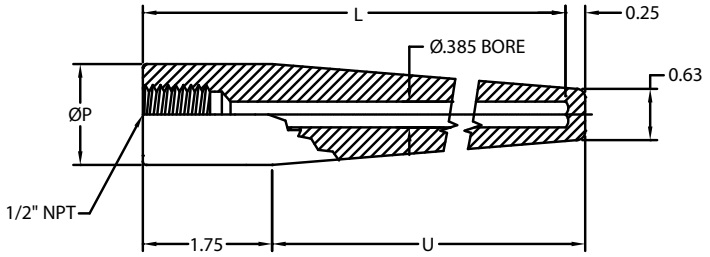
– – – – 304 stainless steel
310 – 310 stainless steel
316 – 316 stainless steel
INC – Inconel 600®
321 – 321 stainless steel
ALUM – Aluminum
HAST – Hastelloy C®
TTNM – Titanium
316L – 316L stainless steel
400 – Monel 400®
CS – Carbon steel
F11 – F11 carbon steel (forged)
F22 – F22 carbon steel (forged)
F91 – F91 carbon steel (forged)
A20 – Alloy 20
BRASS – Brass

OPTIONS
TW01 – Stainless steel cap and chain assembly
TWO2 – Brass cap and chain assembly
TAG2 – Stamped tag #
MTR1 – Material Test Report
WFC1 – Wake Frequency Calculations

STYLE WIH260



STYLE WIH385



(*) Thermowells with an overall length of 42" or less are machined from SOLID BAR STOCK. Thermowells with an overall length greater than 42" are constructed using a welded design and are available in straight, stepped or tapered design. However, for tapered only the last 16" are tapered.

BAR STOCK, WELD-IN CONNECTION WITH LAG

How to build a part number:

To order an Applied Sensor Technologies thermowell, 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!

PROCESS CONNECTION	STYLE	BORE	WELL LENGTH	LAG EXTENSION	WELL MATERIAL	OPTIONS

PROCESS CONNECTION (P)

2 – 3/4" pipe (OD = 1.05")
3 – 1" pipe (OD = 1.315")
5 – 1-1/2" pipe (OD = 1.90")

STYLE
WIHL – Weld-in, tapered stem with lag extension

BORE
260 – 0.260" bore
385 – 0.385" bore

WELL LENGTH (in inches)*
L# – Specify length of thermowell (e.g., L9 = 9")
Standard lengths:

		U =	
	Length (L) =	If T = 2"	If T = 3"
L6	6"	2.5"	1.5"
L9	9"	5.5"	4.5"
L12	12"	8.5"	7.5"
L15	15"	11.5"	10.5"
L18	18"	14.5"	13.5"
L24	24"	20.5"	19.5"

Specify other (L = U+T+1.5")

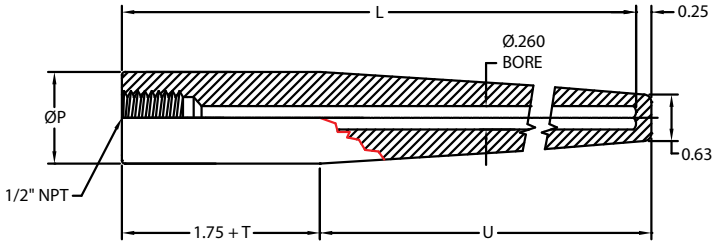
LAG EXTENSION (in inches)
T# – Specify length of lagging (e.g., T2=2" lag)
T2 – 2" **T3** – 3" **Specify other**

WELL MATERIAL

– – – – 304 stainless steel
310 – 310 stainless steel
316 – 316 stainless steel
INC – Inconel 600®
321 – 321 stainless steel
ALUM – Aluminum
HAST – Hastelloy C®
TTNM – Titanium
316L – 316L stainless steel
400 – Monel 400®
CS – Carbon steel
F11 – F11 carbon steel (forged)
F22 – F22 carbon steel (forged)
F91 – F91 carbon steel (forged)
A20 – Alloy 20
BRASS – Brass

OPTIONS
TW01 – Stainless steel cap and chain assembly
TWO2 – Brass cap and chain assembly
TAG2 – Stamped tag #
MTR1 – Material Test Report
WFC1 – Wake Frequency Calculations

STYLE WIHL260



(*) Thermowells with an overall length of 42" or less are machined from SOLID BAR STOCK. Thermowells with an overall length greater than 42" are constructed using a welded design and are available in straight, stepped or tapered design. However, for tapered only the last 16" are tapered.

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BAR STOCK, VAN STONE FLANGE CONNECTION

How to build a part number:

To order an Applied Sensor Technologies thermowell, 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!

PROCESS CONNECTION	STYLE	BORE	INSERTION LENGTH	WELL MATERIAL	FLANGE MATERIAL	FLANGE RATING	OPTIONS

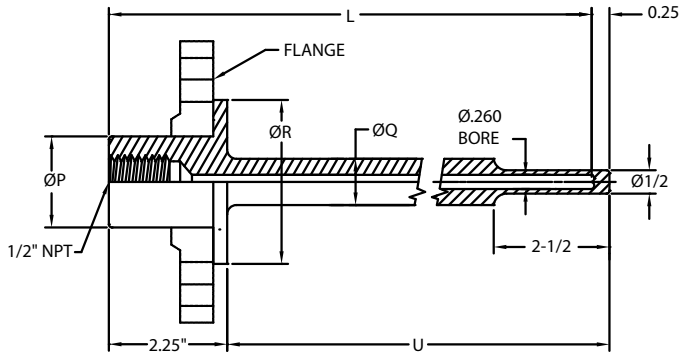
PROCESS CONNECTION (P)
3 – 1" pipe (OD = 1.315", R = 2")
5 – 1-1/2" pipe (OD = 1.90", R = 2-7/8")

STYLE
VS – Van Stone Flange, straight stem with step

BORE
260 – 0.260" bore (Q = 3/4")
385 – 0.385" bore (Q = 7/8")

INSERTION LENGTH (in inches)*
U# – Specify length below the flange (e.g., U4 = 4")
Standard lengths:
U2 – U=2"; L=4" **U4** – U=4"; L=6"
U7 – U=7"; L=9" **U10** – U=10"; L=12"
U13 – U=13"; L=14" **U16** – U=16"; L=18"
U22 – U=22"; L=24"
Specify other (U = L–2")

STYLE VS260



WELL MATERIAL
– – – – 304 stainless steel
310 – 310 stainless steel
316 – 316 stainless steel
INC – Inconel 600®
321 – 321 stainless steel
ALUM – Aluminum
HAST – Hastelloy C®
TTNM – Titanium
316L – 316L stainless steel
400 – Monel 400®
CS – Carbon steel
F11 – F11 carbon steel (forged)
F22 – F22 carbon steel (forged)
F91 – F91 carbon steel (forged)
A20 – Alloy 20
BRASS – Brass

FLANGE MATERIAL
304 – 304 stainless steel
316 – 316 stainless steel

FLANGE RATING
150 – 150# rating
300 – 300# rating
600 – 600# rating
900/1500 – 900/1500# rating

OPTIONS
TW01 – Stainless steel cap and chain assembly
TWO2 – Brass cap and chain assembly
TAG2 – Stamped tag #
MTR1 – Material Test Report
WFC1 – Wake Frequency Calculations
TFLN – Teflon coating

(*) Thermowells with an overall length of 42" or less are machined from SOLID BAR STOCK. Thermowells with an overall length greater than 42" are constructed using a welded design and are available in straight, stepped or tapered design. However, for tapered only the last 16" are tapered.

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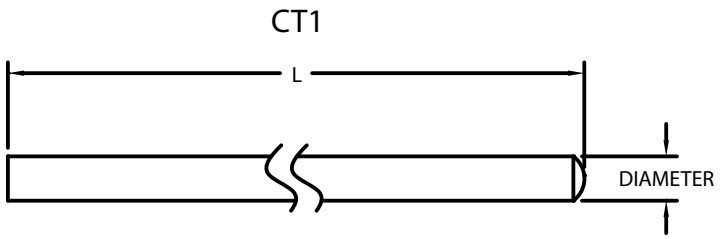
CERAMIC TUBE, NO MOUNTING FITTING

How to build a part number:

To order an Applied Sensor Technologies protection tube, 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!

STYLE	TUBE DIAMETER	TUBE MATERIAL	LENGTH

STYLE
CT1 – Ceramic protection tube, no mounting fitting



TUBE DIAMETER

O.D.
0 – 0.375″
1 – 0.5″
2 – 0.688″
3 – 0.75″
4 – 0.875″
5 – 1″
6 – 1.1″
7 – 1.25″
8 – 1.5″
9 – 1.75″

TUBE MATERIAL
A – Alumina
M – Mullite – not recommended for noble metal thermocouples
H – Hexalloy
L – LT-1
S – Sialon
C – Silicon carbide, oxide bonded

LENGTH (in inches)
L# – Specify length (e.g., L6 = 6″ overall length)

CERAMIC TUBE, WITH MOUNTING FITTING OR NIPPLE

How to build a part number:

To order an Applied Sensor Technologies protection tube, 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!

STYLE	TUBE DIAMETER	TUBE MATERIAL	INSTRUMENT CONNECTION	PROCESS CONNECTION	CONNECTION MATERIAL	CONNECTION LENGTH	LENGTH

STYLE
CT2 – Ceramic protection tube with threaded hex fitting
CT3 – Ceramic protection tube with pipe nipple

TUBE DIAMETER

O.D.
0 – 0.375″
1 – 0.5″
2 – 0.688″
3 – 0.75″
4 – 0.875″
5 – 1″
7 – 1.25″

TUBE MATERIAL
A – Alumina
M – Mullite – not recommended for noble metal thermocouples
H – Hexalloy
L – LT-1

INSTRUMENT CONNECTION*
0 – 1/2″ NPT
1 – 3/4″ NPT
2 – 1″ NPT
3 – 1-1/4″ NPT

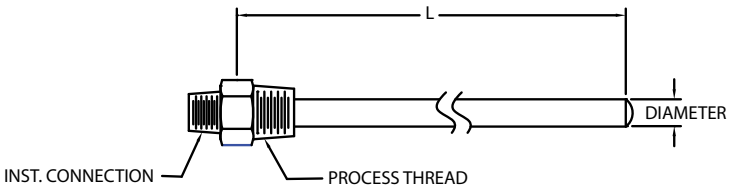
PROCESS CONNECTION*
0 – 1/2″ NPT
1 – 3/4″ NPT
2 – 1″ NPT
3 – 1-1/4″ NPT

CONNECTION MATERIAL
Y – 304 stainless steel
W – 316 stainless steel
G – Carbon steel

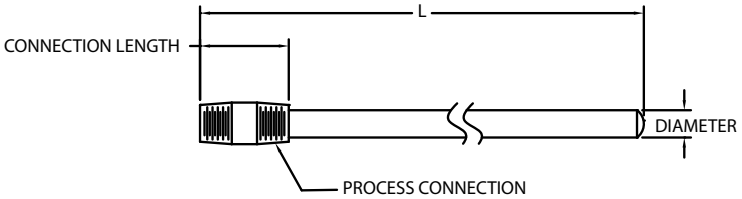
CONNECTION LENGTH
1 – CT2 only (hex fitting length)
– CT3 only (length of nipple in inches; e.g., 6 = 6″ nipple)

LENGTH (in inches)
L# – Specify length (For CT2, U is approximately L – 1″; for CT3, U is approximately L – the nipple length)

CT2



CT3



*Note: For CT3, Instrument and Process Connection sizes must be the same.

METAL TUBE, PLAIN OR WITH MOUNTING BUSHING

How to build a part number:

To order an Applied Sensor Technologies protection tube, 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!

STYLE	PIPE SIZE/ INSTRUMENT CONNECTION	PIPE SCHEDULE	PIPE & BUSHING MATERIAL	BUSHING SIZE	OVERALL LENGTH	INSERTION LENGTH

STYLE
MT1 – Metal protection tube, threaded, no bushing
MT2 – Metal protection tube, threaded, with bushing

PIPE SIZE/INSTRUMENT CONNECTION

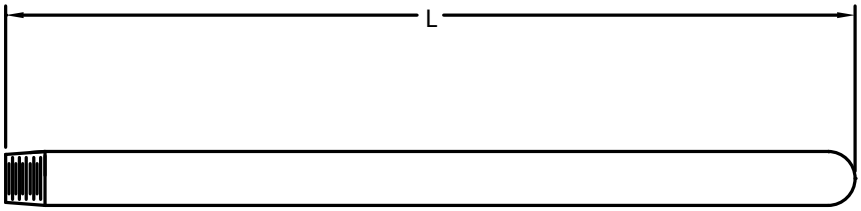
	Pipe Size	Connection
1 –	1/2" pipe (0.840" dia.)	1/2" NPT
2 –	3/4" pipe (1.050" dia.)	3/4" NPT
3 –	1" pipe (1.315" dia.)	1" NPT

PIPE SCHEDULE
40 – Schedule 40
80 – Schedule 80
160 – Schedule 160

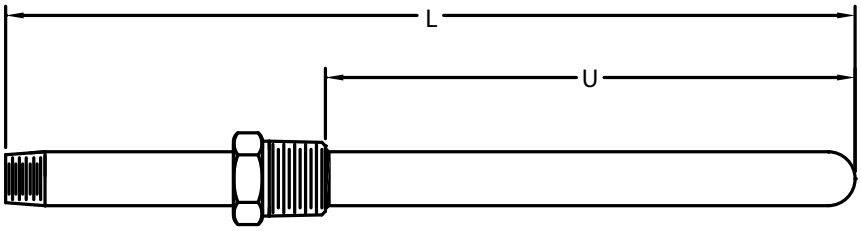
PIPE AND BUSHING MATERIAL
304 – 304 stainless steel
310 – 310 stainless steel
316 – 316 stainless steel
316L – 316L stainless steel
321 – 321 stainless steel
A20 – Alloy 20
INC – Inconel 600®
400 – Monel 400®

BUSHING SIZE
1 – 1/2" NPT
2 – 3/4" NPT
3 – 1" NPT
4 – 1-1/4" NPT
5 – 1-1/2" NPT
7 – 2" NPT

STYLE MT1



STYLE MT2



OVERALL LENGTH (in inches)
L# – Specify overall length of tube (e.g., L24 = 24" long tube)

INSERTION LENGTH (MT2 only, in inches)
U# – Specify length below bushing connection (e.g., U6 = 6" below thread)

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METAL TUBE WITH MOUNTING FLANGE

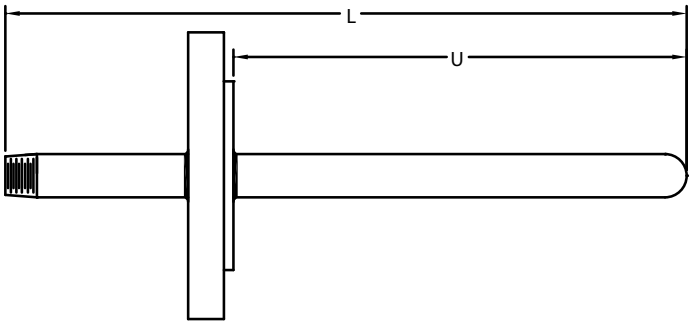
How to build a part number:

To order an Applied Sensor Technologies protection tube, 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!

STYLE	PIPE SIZE/ INSTRUMENT CONNECTION	PIPE SCHEDULE	PIPE & FLANGE MATERIAL	FLANGE SIZE	FLANGE RATING	FLANGE TYPE	OVERALL LENGTH	INSERTION LENGTH

STYLE
MT4 – Metal protection tube, threaded, with flange

STYLE MT4



PIPE SIZE/INSTRUMENT CONNECTION

Pipe Size	Connection
1 – 1/2" pipe (0.840" dia.)	1/2" NPT
2 – 3/4" pipe (1.050" dia.)	3/4" NPT
3 – 1" pipe (1.315" dia.)	1" NPT

PIPE SCHEDULE
40 – Schedule 40
80 – Schedule 80
160 – Schedule 160

PIPE AND FLANGE MATERIAL
304 – 304 stainless steel
310 – 310 stainless steel
316 – 316 stainless steel
316L – 316L stainless steel
321 – 321 stainless steel
A20 – Alloy 20
INC – Inconel 600®
400 – Monel 400®

FLANGE SIZE
1 – 1" flange
1.5 – 1.5" flange
2 – 2" flange
3 – 3" flange
4 – 4" flange

FLANGE RATING
150 – 150# flange rating
300 – 300# flange rating
600 – 600# flange rating
900/1500 – 900/1500# flange rating

FLANGE TYPE
RF – Raised face
FF – Flat face
RTJ – Ring type joint

OVERALL LENGTH (in inches)
L# – Specify overall length of tube (e.g., L24 = 24" long tube)

INSERTION LENGTH (in inches)
U# – Specify length below flange (e.g., U6 = 6" below flange)

SPECIAL SECONDARY (OUTER) TUBE WITH MOUNTING BUSHING

How to build a part number:

To order an Applied Sensor Technologies protection tube, 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!

STYLE	TUBE DIAMETER	TUBE MATERIAL	INSTRUMENT CONNECTION	PROCESS CONNECTION	BUSHING MATERIAL	OVERALL LENGTH

STYLE
PT2 – Outer protection tube, with bushing, to be used with inner ceramic protection tube (Style CT2 or CT3)

TUBE DIAMETER
3 – 3/4" O.D.
4 – 7/8" O.D.
5 – 1" O.D.
6 – 1-1/10" O.D.
7 – 1-1/4" O.D.
8 – 1-1/2" O.D.
9 – 1-3/4" O.D.

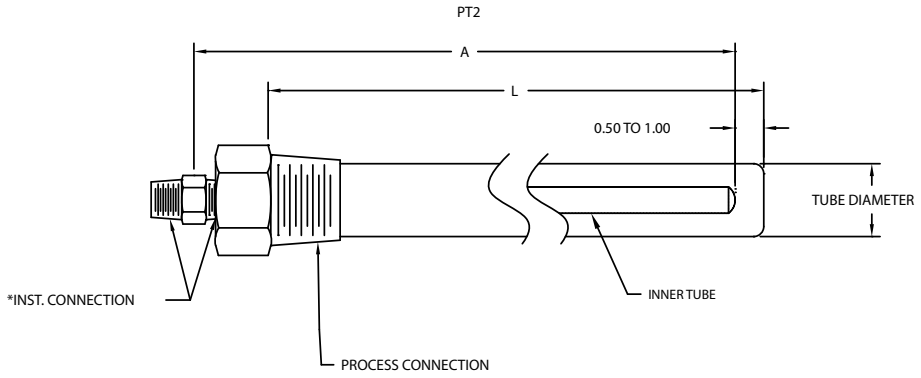
TUBE MATERIAL
C – Silicon carbide, oxide bonded
S – Sialon
H – Hexalloy
L – LT1 metal ceramic

INSTRUMENT CONNECTION
0 – 1/2" NPT
1 – 3/4" NPT

PROCESS CONNECTION
2 – 1" NPT
3 – 1-1/4" NPT
4 – 1-1/2 NPT
5 – 2" NPT

BUSHING MATERIAL
G – Carbon steel
W – 316 stainless steel

OVERALL LENGTH (in inches)
L# – Specify length of tube including threads
(e.g., L24=24" long tube)



Use CT2/CT3 spec sheet to specify inner protection tube, using appropriate O.D. from chart below:	
OUTER TUBE O.D.	INNER TUBE O.D.
3/4"	.375"
7/8"	.375"
1"	.375"
1.10"	.375"
1-1/4"	.688"
1-1/2"	.688"
1-3/4"	.75"
Note: to match inner tube length to outer, inner length (A) = outer tube length (L) + 0.75"	

PROCESS THREAD (NPT)

OUTER TUBE O.D. CODE	**2** (1")	**3** (1-1/4")	**4** (1-1/2")	**5** (2")
3 (3/4")	H	H	H	H
4 (7/8")	L,S	L,S	L,S	L,S
5 (1")		H	H	H
6 (1-1/10")		S	S	S
7 (1-1/4")			H	H
8 (1-1/2")			H	H
9 (1-3/4")				C

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. For each combination of thread and O.D., available materials are noted – Silicon Carbide (C), Sialon® (S), Hexalloy® (H) and LT1 (L).

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.

SPECIAL SECONDARY (OUTER) TUBE WITH MOUNTING FLANGE

How to build a part number:

To order an Applied Sensor Technologies protection tube, 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!

STYLE	TUBE DIAMETER	TUBE MATERIAL	SLIP FLANGE SIZE	OVERALL LENGTH

STYLE

PT3 – Outer protection tube, with 4-7/8" mounting flange for mounting, to be used with inner ceramic protection tube (Style CT2 or CT3)

TUBE DIAMETER

9 – 1-3/4" O.D.

TUBE MATERIAL

C – Silicon carbide, oxide bonded

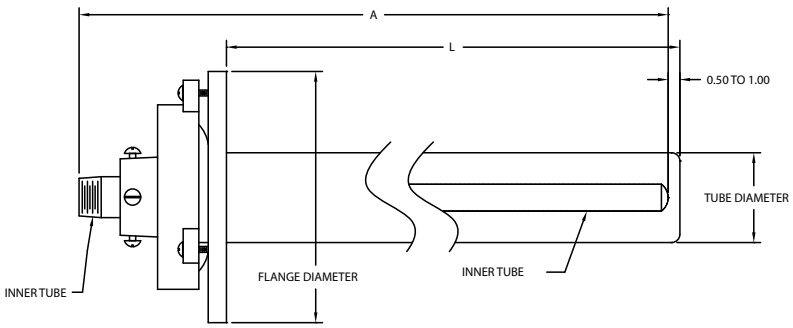
SLIP FLANGE SIZE

5 – 4-7/8"

OVERALL LENGTH (in inches)

L# – Specify length of tube below flange
(e.g., L24=24" long tube)

PT3



Notes – when inner protection tube is required:
1. Use CT2/CT3 spec sheet to specify inner tube. 2. Style should be CT3 with a 3/4" diameter to match up with 1-3/4" outer tube. 3. Minimum nipple length should be 4" in order to extend past the collar. 4. Length of inner tube (A) should be equal to outer tube length (L) + 2.5". 5. Applied Sensor Technologies recommends alumina inner protection tubes when using platinum thermocouples. Mullite, although less expensive when compared to alumina, can contaminate the platinum, causing drift.

TEMPERATURE SENSOR ASSEMBLY SYSTEM FOR THE MAINTENANCE PROFESSIONAL

How to build a part number:

The basic Sensor Box™, part number EK1000, comes complete with the common parts listed below, along with your choice of any 6 of the sensor pods listed on this page, e.g., "EK1000 with (3) RT1260, (1) MI1113JU and (2) MI1113KU."

EK1000 Common Parts:

Part Number	Description	Quantity
HS2524	Housing, 0.250" O.D. x 24" long, 316 stainless steel	6
PH02	Aluminum terminal head for NEMA 4, 1/2" NPT process connection and 3/4" conduit connection with 4-post ceramic terminal block.	3
AC1087	Spring-loading kit for PH02 head	6
NC1002	Nipple, 1/2" NPT x 2" long, carbon steel	6
UC1011	Union, 1/2" NPT, carbon steel	3
TS1092	Wire guide grommet for housing	1 bag of 10
Tools:	Crimper, tube cutter, screwdriver, tape measure, wire stripper	1 each

Standard Sensor Pods* (pick 6, any combination)

Part Number	Description
RT1260	100-ohm platinum RTD, 3-wire, Teflon® insulation
RT1254	100-ohm platinum RTD, 3-wire, fiberglass insulation
MI1113_U	Ungrounded thermocouple, fiberglass leads, specify calibration (J, K, E, T) – e.g., MI1113JU
MI1113_G	Grounded thermocouple, fiberglass leads, specify calibration (J, K, E, T) – e.g., MI1113JG
MI1113TF_U	Ungrounded thermocouple, Teflon® leads, specify calibration (J, K, E, T) – e.g., MI1113TFJU
MI1113TF_G	Grounded thermocouple, Teflon® leads, specify calibration (J, K, E, T) – e.g., MI1113TFJG

Options:
Many parts can be added to the basic EK1000 to address specific needs. See page 4-1b for a listing of additional parts.

*Notes:
1. Standard pods are 4" long and have 48" leads; designed to fit into 0.250" housings.
2. Pods with fiberglass leads are rated to 900°F; those with Teflon® leads are rated to 400°F.

THE SENSOR BOX™ EK1000

AVAILABLE ACCESSORIES

RTD Sensor Pods (100-ohm, Class B, 0.00385 alpha with 48" leads)	
Part Number	Description
Pods for 0.250" O.D. Housings	
RT1254	3-wire, fiberglass insulation (std)
RT1260	3-wire, Teflon® insulation (std)
RT1257	4-wire, Teflon® insulation
RT1276	4-wire, fiberglass insulation
Pods for 0.188" O.D. Housings	
RT1184	3-wire, fiberglass insulation
RT1256	3-wire, Teflon® insulation
Thermocouple Sensor Pods* (standard limits of error with 48" leads)	
Pods for 0.250" O.D. Housings	
MI1113_U	Ungrounded junction, fiberglass insulation (specify J, K, E or T calibration; e.g., MI1113KU)
MI1113_G	Grounded junction, fiberglass insulation (specify J, K, E or T calibration; e.g., MI1113KG)
MI1113TF_U	Ungrounded junction, Teflon® insulation (specify J, K, E or T calibration; e.g., MI1113TFJU)
MI1113TF_G	Grounded junction, Teflon® insulation (specify J, K, E or T calibration; e.g., MI1113TFJG)
Pods for 0.188" O.D. Housings	
MI1115_U	Ungrounded junction, fiberglass insulation (specify J, K, E or T calibration; e.g., MI1115KU)
MI1115_G	Grounded junction, fiberglass insulation (specify J, K, E or T calibration; e.g., MI1115KG)
MI1115TF_U	Ungrounded junction, Teflon® insulation (specify J, K, E or T calibration; e.g., MI1115TFJU)
MI1115TF_G	Grounded junction, Teflon® insulation, 48" long (specify J, K, E or T calibration; e.g., MI1115TFJG)
*For dual element, specify as JJ, KK, EE or TT	
Housings (stainless steel, one closed end)	
HS2512	0.250" O.D. x 12" long
HS2524	0.250" O.D. x 24" long (std. with kit)
HS2536	0.250" O.D. x 36" long
HS2548	0.250" O.D. x 48" long
HS1812	0.188" O.D. x 12" long
HS1824	0.188" O.D. x 24" long
HS1836	0.188" O.D. x 36" long
HS1848	0.188" O.D. x 48" long
Compression Fittings	
For 0.250" housings	
PF65	1/4" NPT, 316 stainless steel body and ferrule
PF66	1/4" NPT, 316 stainless steel body; Teflon® ferrule
PF73	1/2" NPT, 316 stainless steel body and ferrule
PF74	1/2" NPT, 316 stainless steel body; Teflon® ferrule
For 0.188" housings	
PF55	1/4" NPT, 316 stainless steel body and ferrule
PF56	1/4" NPT, 316 stainless steel body; Teflon® ferrule
PF59	1/2" NPT, 316 stainless steel body and ferrule
PF60	1/2" NPT, 316 stainless steel body; Teflon® ferrule
Unions (1/2" NPT)	
UC1011	Carbon steel, ordinary location
US1011	Stainless steel, ordinary location
HF1091	Plated steel, explosion-proof

Terminal Heads with 4-Post Terminal Block Included (1/2" NPT process conn.)		
Part Number	Conduit Connection	Description
PH01	1/2"	Aluminum, ordinary locations
PH02	3/4"	Aluminum, ordinary locations (Std. with kit)
PH04	1/2"	Cast iron, ordinary locations
PH05	3/4"	Cast iron, ordinary locations
PH23	3/4"	Black polypropylene, ordinary locations
PH24	3/4"	White polypropylene, ordinary locations
PH47	3/4"	316 stainless steel, ordinary locations
PH50	1/2"	Aluminum, explosion-proof, 3-post block
PH51	3/4"	Aluminum, explosion-proof, 3-post block
Terminal Blocks		
Part Number	Description	
PH44	4-post, ceramic	
PH48	3-post, ceramic, for PH50 and PH51 heads	
Carbon Steel Nipples (1/2" NPT)		
NC1001	1" long	
NC1002	2" long	
NC1003	3" long	
NC1004	4" long	
NC1006	6" long	
Stainless Steel Nipples (1/2" NPT)		
NS1001	1" long	
NS1002	2" long	
NS1003	3" long	
NS1004	4" long	
NS1006	6" long	
Spring-Loaded Kits		
AC1088	For 0.188" housings	
AC1087	For 0.250" housings	
Spring-Loaded Hex Fittings		
PF14	Stainless steel, for 0.250" housings	
PF13	Stainless steel, for 0.188" housings	
Plugs and Jacks		
PT05-	Thermocouple plug (specify J, K, E or T); e.g., PT05-J	
PT05-3	3-pin RTD plug	
PT06-	Thermocouple jack (specify J, K, E or T); e.g., PT06-K	
PT06-3	3-pin RTD jack	
PA10	Wire clamp	
B1250	Brass crimp insert, for 0.250" housings	
B1188	Brass crimp insert, for 0.188" housings	
Strain Reliefs (Bag of 10)		
TS1092	Nylon grommet for 0.250" housings	
TS1094	Teflon® strain relief for 0.188" housings	
Armor Cable Kit		
TS1093	3' stainless armor and adaptor for 0.250" housings	

Note: Pods with fiberglass insulation are rated to 900°F; those with Teflon® leads are rated to 400°F.

Note: Many non-standard options, including additional sheath diameters and materials, may also be available – consult AST for specific requirements.

UE APPLIED SENSOR TECHNOLOGIES
A Division of UNITED ELECTRIC CONTROLS

180 Dexter Avenue, P.O. Box 9143, Watertown, MA 02471-9143 USA Telephone: 617 923-6966 Fax: 617 926-8411 http://www.appliedsensortech.com

4-20 MA OUTPUT, ISOLATED

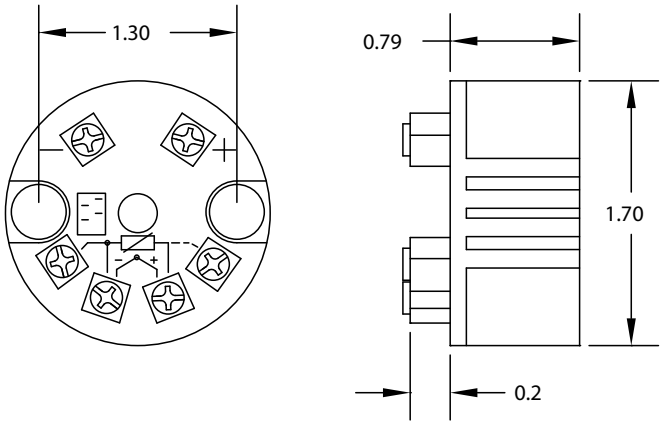
How to build a part number:

To order an Applied Sensor Technologies transmitter, 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!

TRANSMITTER TYPE	INPUT	RANGE	UNITS OF MEASURE	OPTION

TRANSMITTER TYPE*
UNI5-S – Isolated transmitter with single 4-20mA output for terminal head mounting

UNI5-S



INPUT
J – J type thermocouple
K – K type thermocouple
E – E type thermocouple
T – T type thermocouple
Pt100 – 100-ohm platinum RTD
Pt250 – 250-ohm platinum RTD
Pt500 – 500-ohm platinum RTD
Pt1000 – 1000-ohm platinum RTD
R – R type thermocouple
S – S type thermocouple
B – B type thermocouple
Ni100 – 100-ohm nickel RTD
Ni500 – 500-ohm nickel RTD
Ni1000 – 1000-ohm nickel RTD
Cu10 – 10-ohm copper RTD
Cu100 – 100-ohm copper RTD

RANGE (specify minimum and maximum values, e.g., 0-100)*
– **Minimum Range Value** (temperature value that equals 4 mA)
– **Maximum Range Value** (temperature value that equals 20 mA)

UNITS OF MEASURE
Specify °F or °C

OPTION
DS01 – Downscale open circuit protection

*See chart below for available sensor ranges and minimum spans

Specifications

Isolation (I/O):	500 VDC
Supply Voltage:	10-40 VDC, polarity protected
Sensor Lead Resistance:	RTD: 500 ohms max. T/C: 10,000 ohms max. Effect: 0.001°C/ohm
Maximum Load:	$R_{max} = (V_{supply} - 10V)/20$ mA
Stability:	Zero drift: 0.02°C/°C Span drift: 0.01°C/°C
Ambient Temperature:	-40 to + 85°C
Housing:	Epoxy-coated zinc alloy
Start-up Time:	20 seconds
Warm-up Time:	5 minutes
Open Circuit Detection:	Upscale standard

***Available sensor ranges and limitations**

Sensor Type	Min. Temp.	Max. Temp.	Min. Span
J T/C	-200°C	1200°C	50°C
K T/C	-270°C	1370°C	50°C
E T/C	-270°C	1000°C	50°C
T T/C	-270°C	400°C	50°C
R or S T/C	-60°C	1760°C	250°C
B T/C	0°C	1820°C	600°C
Pt100, Pt250, Pt500 and Pt1000 RTD	-200°C	850°C	25°C
Ni100, Ni500 and Ni1000 RTD	-60°C	250°C	25°C
Cu10 and Cu100 RTD	-200°C	250°C	25°C

Note: when used as an option in combination with a temperature sensor assembly, use option code **TR11** at end of assembly part #.

4-20 MA/HART® OUTPUT, ISOLATED

How to build a part number:

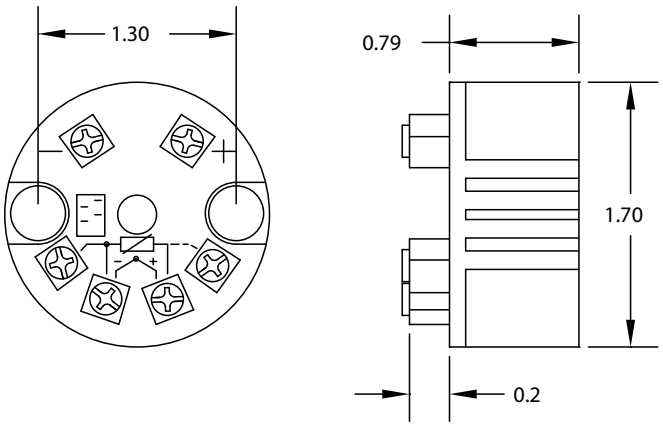
To order an Applied Sensor Technologies transmitter, select the requirements for the categories listed below and fill in the corresponding boxes with your selection. Don't see exactly what you need? Give us a call!

TRANSMITTER TYPE	INPUT	RANGE	UNITS OF MEASURE	OPTION

TRANSMITTER TYPE
UNI5-H – Isolated transmitter with single 4-20mA/HART® output for terminal head mounting

INPUT
J – J type thermocouple
K – K type thermocouple
E – E type thermocouple
T – T type thermocouple
Pt100 – 100-ohm platinum RTD
Pt250 – 250-ohm platinum RTD
Pt500 – 500-ohm platinum RTD
Pt1000 – 1000-ohm platinum RTD
R – R type thermocouple
S – S type thermocouple
B – B type thermocouple
Ni100 – 100-ohm nickel RTD
Ni500 – 500-ohm nickel RTD
Ni1000 – 1000-ohm nickel RTD
Cu10 – 10-ohm copper RTD
Cu100 – 100-ohm copper RTD

UNI5-H



RANGE (specify minimum and maximum values, e.g., 0-100)*
– **Minimum Range Value** (temperature value that equals 4 mA)
– **Maximum Range Value** (temperature value that equals 20 mA)

UNITS OF MEASURE
Specify °F or °C

OPTION
DS01 – Downscale open circuit protection

*See chart below for available sensor ranges and minimum spans

Specifications

Input:	Thermocouple or 3-wire/4-wire RTD
Isolation (I/O):	500 VDC
Supply Voltage:	10-40 VDC, polarity protected
Output:	4-20mA or 20-4 mA
Digital Output:	HART® protocol
Sensor Lead Resistance:	RTD: 500 ohms max. T/C: 10,000 ohms max.
Maximum Load:	$R_{max} = (V_{supply} - 10)/20$ mA
Stability:	0.005%/°C (zero & span drift)
Ambient Temperature:	-40 to + 85°C
Housing:	Epoxy-coated zinc alloy
Open Circuit Detection:	Upscale standard

***Available sensor ranges and limitations**

Sensor Type	Min. Temp.	Max. Temp.	Min. Span
J T/C	-200°C	1200°C	50°C
K T/C	-270°C	1370°C	50°C
E T/C	-270°C	1000°C	50°C
T T/C	-270°C	400°C	50°C
R or S T/C	-60°C	1760°C	250°C
B T/C	0°C	1820°C	600°C
Pt100, Pt250, Pt500 and Pt1000 RTD	-200°C	850°C	25°C
Ni100, Ni500 and Ni1000 RTD	-60°C	250°C	25°C
Cu10 and Cu100 RTD	-200°C	250°C	25°C

Note: when used as an option in combination with a temperature sensor assembly, use option code **TR13** at end of assembly part #.

4-20 MA OUTPUT, NON-ISOLATED

How to build a part number:

To order an Applied Sensor Technologies transmitter, 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!

TRANSMITTER TYPE	INPUT	RANGE	UNITS OF MEASURE

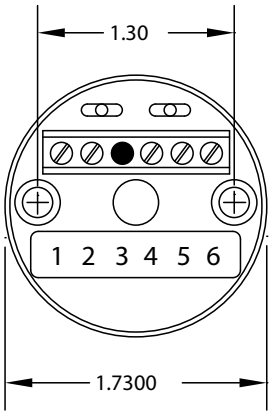
TRANSMITTER TYPE
TC2 – Non-isolated transmitter with thermocouple input and single 4-20 mA output for terminal head mounting
RTD2 – Non-isolated transmitter with RTD input and single 4-20 mA output for terminal head mounting

INPUT
J – J type thermocouple
K – K type thermocouple
E – E type thermocouple
T – T type thermocouple
R – R type thermocouple
S – S type thermocouple
B – B type thermocouple
Pt100 – 100-ohm platinum RTD (RTD2 only)

RANGE (specify minimum and maximum values, e.g., 0-100)*
– **Minimum Range Value** (temperature value that equals 4 mA)
– **Maximum Range Value** (temperature value that equals 20 mA)

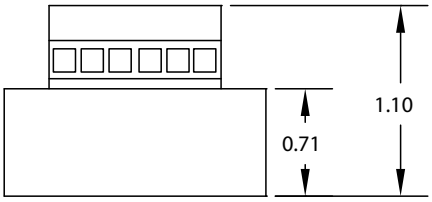
UNITS OF MEASURE
Specify °F or °C

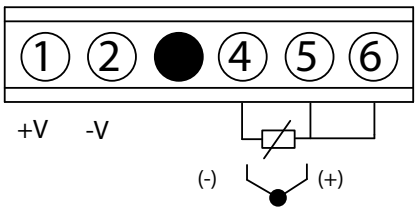
RTD2 AND TC2



Specifications

Supply Voltage:	8-38 VDC, polarity protected
Maximum Load:	$R_{max} = (V_{supply} - 8V)/20$ mA
Stability (both zero and span drift):	RTD: 0.03% of span/°C (100°C span) T/C: 0.04% of span/°C (25 mV span)
Linearity:	RTD: better than +/- 0.05% of span T/C: better than +/- 0.03% of span
Ambient Temperature:	-20 to + 70°C
Humidity:	0-95% RH, non-condensing
*Input span:	RTD: 20°C min., 500°C max. T/C: 10 mV min.





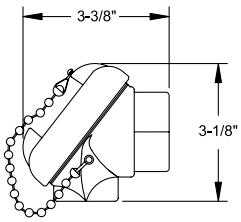
Note: when used as an option in combination with a temperature sensor assembly, use option code **TR12** at end of assembly part #.

NEMA 4 & 4X REPLACEMENT HEADS AND TERMINAL BLOCKS

CAST ALUMINUM – gasketed screw cover

NEMA 4 with gasketed screw cover and stainless steel chain; 4-post ceramic terminal block included. For epoxy-coated, NEMA 4X, add suffix-E to part#. (e.g., PH01E)

Ordering Code	Process Conn.	Conduit Conn.
PH01	1/2"	1/2"
PH02	1/2"	3/4"
PH03	3/4"	3/4"

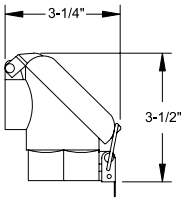


PH01 - PH06

CAST IRON – NEMA 4, gasketed screw cover

NEMA 4 with gasketed screw cover and stainless steel chain; 4-post ceramic terminal block included. For epoxy-coated, NEMA 4X, add suffix-E to part #. (e.g., PH04E)

Ordering Code	Process Conn.	Conduit Conn.
PH04	1/2"	1/2"
PH05	1/2"	3/4"
PH06	3/4"	3/4"

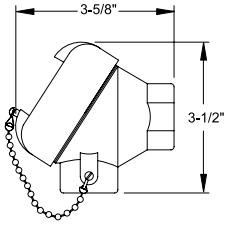


PH45

CAST ALUMINUM – flip-top cover

NEMA 4 with flip-top cover and latching closure, 4-post ceramic terminal block included.

Ordering Code	Process Conn.	Conduit Conn.
PH45	1/2"	3/4"



PH47

316 STAINLESS STEEL – NEMA 4X, gasketed screw cover

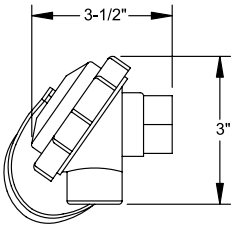
NEMA 4X with gasketed screw cover and stainless steel chain; 4-post ceramic terminal block included.

Ordering Code	Process Conn.	Conduit Conn.
PH47	1/2"	3/4"

BLACK POLYPROPYLENE – NEMA 4, gasketed screw cover

NEMA 4 with gasketed screw cover, 4-post ceramic terminal block included.

Ordering Code	Process Conn.	Conduit Conn.
PH23	1/2"	3/4"



PH23 - PH24

WHITE POLYPROPYLENE – NEMA 4, gasketed screw cover

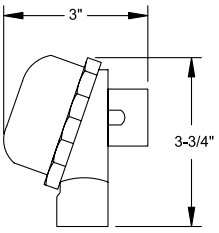
NEMA 4 with gasketed screw cover and stainless steel chain; 4-post ceramic terminal block included.

Ordering Code	Process Conn.	Conduit Conn.
PH24	1/2"	3/4"

NYLON – NEMA 4, gasketed screw cover

Gasketed screw cover, 4-post ceramic terminal block included.

Ordering Code	Process Conn.	Conduit Conn.
PH26	1/2"	1/2"

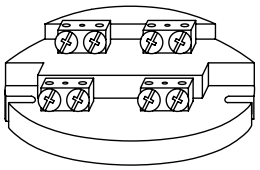


PH26

CERAMIC TERMINAL BLOCK REPLACEMENTS

For NEMA 4 heads, brass terminals

Ordering Code	No. of Terminals	Max. Wire Size
PH39	2	8 AWG.
PH40	3	8 AWG.
PH41	4	8 AWG.
PH42	6	14 AWG.

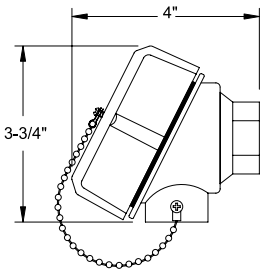

PH41

EXPLOSION-PROOF REPLACEMENT HEADS AND TERMINAL BLOCKS

CAST ALUMINUM – FM/CSA approved

FM/CSA approved for Class I, Div. 1, Groups B, C, D; Class II, Groups E, F, G; gasketed screw cover and stainless steel chain; 6-post ceramic terminal block included. For epoxy-coated, add suffix–E to part #. (e.g., PH50E)

Ordering Code	Process Conn.	Conduit Conn.
PH50	1/2"	1/2"
PH51	1/2"	3/4"
PH52	3/4"	3/4"
PH56	1/2"	1/2"
PH57	1/2"	3/4"

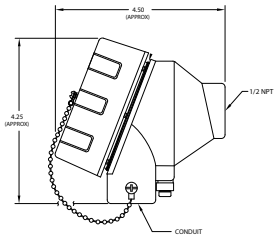


PH50-52, PH56-57

CAST ALUMINUM – ATEX approved

ATEX approved for EEx d IIC, gasketed screw cover and stainless steel chain; 3-post ceramic terminal block included.

Ordering Code	Process Conn.	Conduit Conn.
PH53	1/2"	3/4"

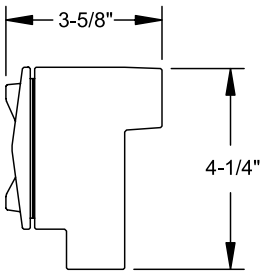


PH53

CAST ALUMINUM – UL/CSA approved

UL/CSA approved for Class I, Div. 1, Groups C, D; Class II, Groups E, F, G; screw cover; 4-post plastic terminal strip included. For epoxy-coated, add suffix–E to part #. (e.g., PH17E)

Ordering Code	Process Conn.	Conduit Conn.
PH17	1/2"	1/2"
PH18	1/2"	3/4"
PH19	3/4"	3/4"

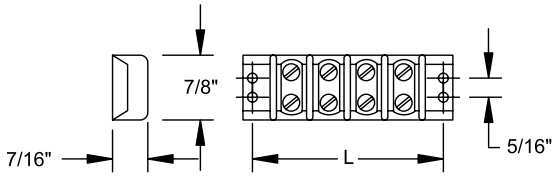


PH17-19

PLASTIC TERMINAL STRIP REPLACEMENTS

For explosion-proof heads (PH17-PH22), brass terminals

Ordering Code	No. of Terminals	Length of Strip
PH43-4	4	2.16"
PH43-6	6	2.91"

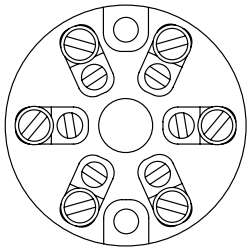


PH43

CERAMIC TERMINAL BLOCK REPLACEMENTS

For explosion-proof heads (PH50-PH52), brass terminals

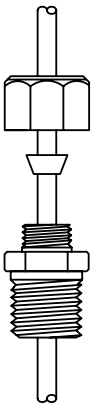
Ordering Code	No. of Terminals	Max. Wire Size
PH48	3	8 AWG.
PH49	6	14 AWG.



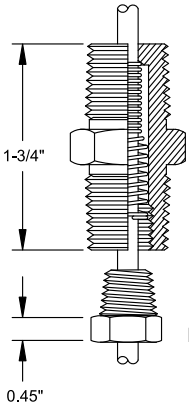
PH49

PARTS TO CONNECT TO WIRING OR THE PROCESS

COMPRESSION FITTINGS			
For 1/8" diameter sheath			
Part Number	NPT	Body/Nut	Ferrule
PF38	1/8"	304 stst	304 stst
PF39	1/8"	304 stst	Teflon®
PF40	1/4"	304 stst	304 stst
PF41	1/4"	304 stst	Teflon®
For 3/16" diameter sheath			
PF52	1/8"	304 stst	304 stst
PF53	1/8"	304 stst	Teflon®
PF54	1/8"	Brass	Brass
PF55	1/4"	304 stst	304 stst
PF56	1/4"	304 stst	Teflon®
PF59	1/2"	304 stst	304 stst
PF60	1/2"	304 stst	Teflon®
For 1/4" diameter sheath			
PF63	1/8"	304 stst	304 stst
PF65	1/4"	304 stst	304 stst
PF66	1/4"	304 stst	Teflon®
PF67	1/4"	Teflon®	Teflon®
PF68	1/4"	Brass	Brass
PF73	1/2"	304 stst	304 stst
PF74	1/2"	304 stst	Teflon®
PF75	1/2"	Brass	Brass



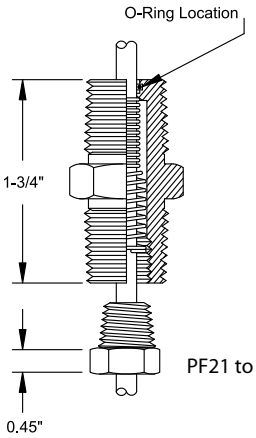
PF38 to PF75



PF13 to PF18

SPRING-LOADED FITTINGS			
Standard, Non-sealed			
Part Number	Process Conn.	Conduit Conn.	Sensor Diameter
PF13	1/2" NPT	1/2" NPT	3/16"
PF14	1/2" NPT	1/2" NPT	1/4"
PF17	3/4" NPT	3/4" NPT	3/16"
PF18	3/4" NPT	3/4" NPT	1/4"
O-Ring Sealed*			
PF21	1/2" NPT	1/2" NPT	3/16"
PF22	1/2" NPT	1/2" NPT	1/4"
PF25	3/4" NPT	3/4" NPT	3/16"
PF26	3/4" NPT	3/4" NPT	1/4"

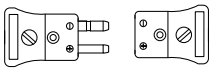
Notes:
1. Maximum pressure rating 15 psi
2. Buna N O-ring rated for -23 to 93°C (-10 to 200°F)



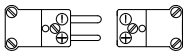
PF21 to PF26

PLUGS AND JACKS	
(Note: specify J, K, E or T calibration. e.g., PT05-J)	
PT05	Standard plug, rated to 177°C (350°F)
PT06	Standard jack, rated to 177°C (350°F)
PT07	High Temp. plug, rated to 260° (500°F)
PT08	High Temp. jack, rated to 260° (500°F)
PT09	Miniature plug, rated to 177°C (350°F)
PT10	Miniature jack, rated to 177°C (350°F)
PA9	Rubber boot for use with PT05/PT06
PA10	Cable clamp for PT05 to PT08
PA11	Neoprene bushing for use with PA10 to prevent wire abrasion

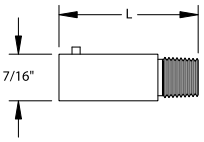
PT05 to PT08



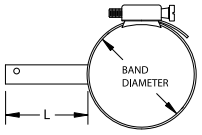
PT09 to PT10



PA20 to PA24



PA30 to PA37



PIPE CLAMP WITH BAYONET ADAPTOR

BAYONET ADAPTERS (PLATED STEEL)		
Part Number	Thread Size	Length (L)
PA20	1/8" – 27 NPT	7/8"
PA21	1/8" – 27 NPT	1"
PA22	1/8" – 27 NPT	1-1/2"
PA23	1/8" – 27 NPT	2"
PA24	1/8" – 27 NPT	2-1/2"
PIPE CLAMP AND BAYONET ADAPTERS		
Part Number	Band Diameter	Adapter Length (L)
PA30	1-1/4" to 2-1/4"	1"
PA31	1-1/4" to 2-1/4"	2"
PA32	2-1/4" to 3-1/4"	1"
PA33	2-1/4" to 3-1/4"	2"
PA34	3-1/4" to 4-1/4"	1"
PA35	3-1/4" to 4-1/4"	2"
PA36	4-1/4" to 5"	1"
PA37	4-1/4" to 5"	2"

THERMOCOUPLE AND EXTENSION-GRADE WIRE

THERMOCOUPLE GRADE WIRE

Used to either fabricate thermocouples by creating a junction in one end of the wire pair, or as extension wire between the thermocouple and the measuring device. The conditions of measurement determine the type of thermocouple wire and insulation that should be used. Temperature range, wire gauge, environment, protection, insulation requirements, response and service life should all be considered.

THERMOCOUPLE EXTENSION WIRE

Has approximately the same thermoelectric characteristics as thermocouple grade wire, but its purpose is only to carry the signal, not to measure temperature. Thermocouple extension wire is usually lower in cost.

Insulation Characteristics			
Description (individual conductors/overall)	**Temperature Limits**	**Moisture Resistance**	**Abrasion Resistance**
Teflon®/Teflon® FEP	204°C (400°F)	Excellent	Excellent
Teflon®/ Teflon® TFE or PFA Tape	260°C (500°F)	Excellent	Excellent
Fiberglass/Fiberglass	482°C (900°F)	Fair	Fair
Fiberglass (Filaflex®)/Fiberglass (Filaflex®) High Temp	760°C (1400°F)	Fair	Fair

Calibration	**Part Number**		
	TC Grade, Stranded Wire	**TC Grade, Solid Wire**	**Extension Grade, Stranded**
Teflon®/ Teflon® FEP insulated, 20 Gauge			
Type J	20JST58	20JS58	20JXST58
Type K	20KST58	20KS58	20KXST58
Type T	20TST58	20TS58	20TXST58
Type E	20EST58	20ES58	20EXST58
Teflon®/ Teflon® TFE Tape insulated, 20 Gauge			
Type J	20JST60	20JS60	20JXST60
Type K	20KST60	20KS60	20KXST60
Type T	20TST60	20TS60	20TXST60
Type E	20EST60	20ES60	20EXST60
Fiberglass/Fiberglass insulated, 20 Gauge			
Type J	20JST57	20JS57	20JXST57
Type K	20KST57	20KS57	20KXST57
Type T	20TST57	20TS57	20TXST57
Type E	20EST57	20ES57	20EXST57
Fiberglass (Filaflex®)/Fiberglass (Filaflex®) insulated, 20 Gauge			
Type J	20JST70	20JS70	20JXST70
Type K	20KST70	20KS70	20KXST70
Type T	20TST70	20TS70	20TXST70
Type E	20EST70	20ES70	20EXST70
Fiberglass (Filaflex®)/ Fiberglass (Filaflex®) insulated, stainless steel overbraid, 20 Gauge			
Type J	20JST71	20JS71	20JXST71
Type K	20KST71	20KS71	20KXST71
Type T	20TST71	20TS71	20TXST71
Type E	20EST71	20ES71	20EXST71

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