INSTRUMENTS • CONTROLS • VALVES

Engineering, Inc.

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PRODUCTS:

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

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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

- 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

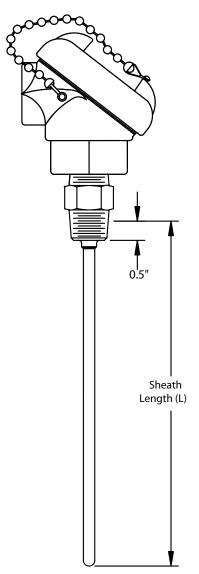
HOT JUNCTION

- **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



STYLE 15

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, s	crew cover with cha	in, NEMA 4			
HD10*	HD11*	1/2"	1/2"		
Std.*	HD13*	1/2"	3/4"		
Epoxy-coated alu	minum, screw cover	with chain, NEMA	4X		
HD50*	HD51*	1/2"	1/2"		
HD52*	HD53*	1/2"	3/4"		
Cast iron, screw c	over with chain, NE	MA 4			
HD20*	HD21*	1/2"	1/2"		
HD22* HD23*		1/2"	3/4"		
316 stainless stee	l, screw cover with	chain, NEMA 4X			
HD40* HD41* 1/2" 3/4"		3/4"			
White polypropyle	ene, screw cover wit	h chain, NEMA 4	1		
HD30	N/A	1/2"	3/4"		
Black polypropylene, screw cover with chain, NEMA 4					
HD31	N/A	1/2"	3/4"		
Nylon, screw cove	r	ı	1		
HD32	N/A	1/2"	1/2"		
*can be used with	n transmitters	1	1		

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 "15" for 304 stainless steel Add suffix "25" 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 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

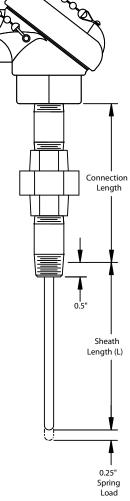
HOT JUNCTION

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	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

ASSEMBLY OPTIONS					
Description					
Stainless steel tag and wire					
NIST traceable calibration [specify point(s)]					
Certificate of conformance					
Wiring cable gland for 0.187 - 0.312 diameter cables, for terminal heads with 1/2" NPT conduit connections					
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, so	Cast aluminum, screw cover with chain, NEMA 4								
HD10	HD11	1/2"	1/2"						
Std.	HD13	1/2"	3/4"						
Epoxy-coated alur	minum, screw cover	with chain, NEMA	4X						
HD50	HD51	1/2"	1/2"						
HD52	HD53	1/2"	3/4"						
Cast iron, screw co	over with chain, NE	MA 4							
HD20	HD21	1/2"	1/2"						
HD22	HD23	1/2"	3/4"						
316 stainless stee	l, screw cover with o	chain, NEMA 4X							
HD40	HD41	1/2"	3/4"						

Notes:

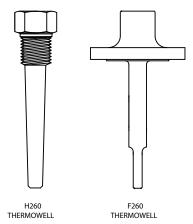
- 1. See Accessories for additional information
- 2. For former Style 46, use option HD20

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.



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

TC/45-02



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

- **3** 316 stainless steel
- **5** Inconel® 600

$\underline{\textbf{CALIBRATION}} - \text{Standard limits}$

 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

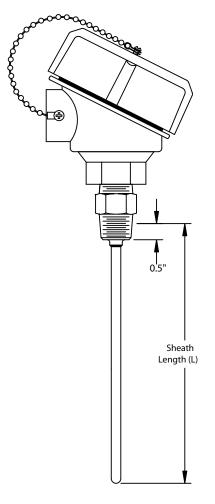
- $\textbf{G}- Grounded\ junction$
- U Ungrounded junction
- **E** Exposed junction

(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



TC/78-02

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 - F	or 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"						
Epoxy-coated, san	ne specs as HD71							
HD80 1/2" 1/2"								
HD81 1/2" 3/4"								

Note: See Accessories section for additional specs.

TC/78-02



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	e available – consult AST

HOT JUNCTION

G - Grounded junction

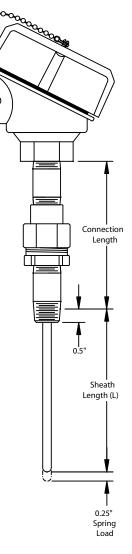
U – Ungrounded junction

STANDARD AVAILABLE CONNECTION LENGTHS 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

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



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

AVAILABLE OPTIONS and MODIFICATIONS

EXPLOSION-PROOF TERMINAL HEAD OPTIONS							
Option Code	Code Process Connection Conduit Conne						
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, excep	t epoxy-coated						
HD80	1/2"	1/2"					
HD81	1/2"	3/4"					

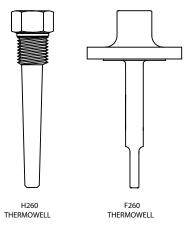
Note: See Accessories section for outline drawings and additional specs.

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.



TC/77-02



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

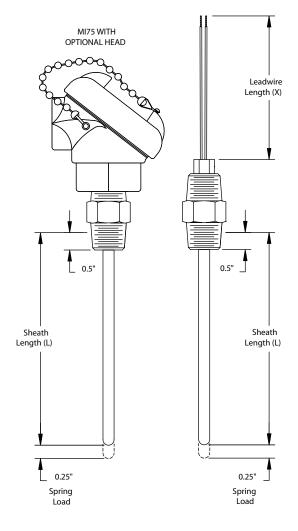
SHEATH LENGTH (Note: lengths over L84 will be shipped coiled unless otherwise specified at time of order)

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



ASSEMBLY OPTIO	ONS		
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 CONNEC	CTION 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*	HD13* 1/2"					
Epoxy-coated alur	ninum, screw cover	with chain	, NEMA	4X			
HD50*	HD51*	1/2"		1/2"			
HD52*	HD53*	1/2"		3/4"			
Cast iron, screw co	over with chain, NE	MA 4					
HD20*	HD21*	1/2"		1/2"			
HD22*	HD23*	1/2"		3/4"			
316 stainless stee	, screw cover with o	hain, NEM	A 4X				
HD40*	HD41*	1/2"		3/4"			
White polypropyle	ne, screw cover wit	h chain, Ni	MA 4				
HD30	N/A	1/2"		3/4"			
Black polypropyle	ne, screw cover with	ı chain, NE	MA 4				
HD31	N/A	1/2"	3/4"				
Nylon, screw cove	r	I					
HD32	N/A	1/2"		1/2"			
EXPLOSION-PRO	OF TERMINAL H	EAD OPTI	ONS				
Option Code	Process Connecti	on	Condui	t Connection			
ceramic terminal l	crew cover with cha block; FM/CSA app E E, F, G; internal gro	roved for C	lass I Di				
HD70*	1/2"		1/2"				
HD71*	1/2"		3/4"	3/4"			
Epoxy-coated (sar	ne spec as H6/H7)						
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"	_					
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.



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.

1	NSOR YPE	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)

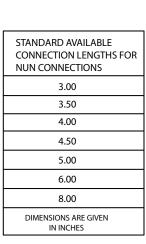
SHEATH MATERIAL

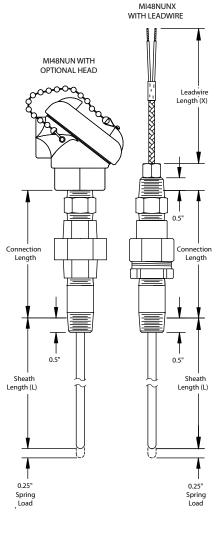
- 3 316 stainless steel
- **5** Inconel® 600

CALIBRATION – Standard limits

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

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





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 = 12.5 inch length)

LEADWIRE LENGTH

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

OPTIONS – see page 1-6b

180 Dexter Avenue, P.O. Box 9143, Watertown, MA 02471-9143

USA Telephone: 617 923-6966

Fax: 617 926-8411

http://www.appliedsensortech.com

ASSEMBLY OPTIO	NS
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 CONNEC	TION 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, so	crew cover with cha	in, NEMA 4	1	
HD10*	HD11*	1/2"		1/2"
HD12*	HD13*	1/2"		3/4"
Epoxy-coated alur	minum, screw cover	with chain	, NEMA	4X
HD50*	HD51*	1/2"		1/2"
HD52*	HD53*	1/2"		3/4"
Cast iron, screw co	over with chain, NE	MA 4		
HD20*	HD21*	1/2"		1/2"
HD22*	HD23*	1/2"		3/4"
316 stainless stee	l, screw cover with o	chain, NEM	A 4X	
HD40*	HD41*	1/2"		3/4"
White polypropyle	ene, screw cover wit	h chain, NE	MA 4	
HD30	N/A	1/2"		3/4"
Black polypropyle	opylene, screw cover with chain, NEMA 4			
HD31	N/A	1/2"		3/4"
Nylon, screw cove	r			I
HD32	N/A	1/2"		1/2"
EXPLOSION-PRO	OOF TERMINAL H	EAD OPTIC	ONS	
Option Code	Process Connecti	on	Condui	t Connection
ceramic terminal	crew cover with cha block; FM/CSA app s E, F, G; internal gro	roved for C	lass I Di	
HD70*	1/2"		1/2"	
HD71*	1/2"		3/4"	
Epoxy-coated (sar	ne specs as H6/H7	')	•	
HD80*	1/2"		1/2"	
HD81*	1/2"	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.		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	n 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

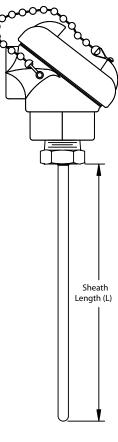
Special limits are available - consult AST

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

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USA Telephone: 617 923-6966

Fax: 617 926-8411

STYLE 21

ASSEMBLY OP	TIONS					
Option Code		Description				
TAG1		Stainless steel tag and wire				
B90-		1	90° bend in sheath [specify length from tip in inches e.g., B90-6)			
B45-		45° bend ir e.g., B45-6)	sheath (specify len	gth from tip in inches		
CAL1		NIST tracea	ble calibration [spec	cify point(s)]		
CRT1		Certificate o	of conformance			
WC20			e gland for 0.187 - (erminal heads with			
WC21		, ,	e gland for 0.125 - (erminal heads with			
COMPRESSION	I FITTIN	IGS (for diam	eters 4, 6, 7)			
Option Code	NP	T	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		
TRANSMITTER	S - for c	omplete spec	s, see Transmitters s	ection		
TR11	rar hea	ige, units of n	, single input, isolat neasure (e.g., 0-200 e Accessories sectio	°C) and optional		
TR12	out	put; specify r	transmitter, single i ange and units of m erminal head with *	neasure (e.g.,		
TR13	iso	lated output;	A, 2-wire transmitte specify range and u erminal head with *	nits of measure (e.g.,		
WELD PADS						
Option Code	Radi	us To Fit Pipe				
WP00	+	Horizontal pad/flat				
WP10	_	1" nominal pipe size				
WP15	1.5"	1.5" nominal pipe size				
WP20		2" nominal pipe size				
WP25	2.5"	2.5" nominal pipe size				
WP30	3" n	ominal pipe s	ize			
WP35	-	nominal pipe				
WP40	4" n	ominal pipe s	ize			

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 o	over with chain			
HD20*	HD21*	1/2"		1/2"
HD22*	HD23*	1/2"		3/4"
316 stainless stee	el, screw cover; NEM	A 4X		
HD40*	HD41*	1/2"		3/4"
Polypropylene, w	hite, screw cover			
HD30	N/A	1/2"		3/4"
Polypropylene, bl	, black screw cover			
HD31	N/A	1/2"		3/4"
Nylon, screw cove	er	ı		
HD32	N/A	1/2"		1/2"
EXPLOSION-PR	OOF TERMINAL H	EAD OPTI	ONS	
Option Code	Process Connecti	on	Condui	t Connection
ceramic terminal	crew cover with cha block; FM/CSA app s E, F, G; internal gr	roved for C	lass I Di	
HD70*	1/2"		1/2"	
HD71*	1/2"		3/4"	
Epoxy-coated	•		•	
HD80*	1/2"		1/2"	
HD81*	1/2"	1/2"		
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 wit	h 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 $^{\oplus}$ is a registered trademark of the HART Communication Foundation.



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., **OOA6** = 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)

<u>Protection tube diameter</u>

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")

 $\mathbf{1}$ – hex fitting only

- length of nipple

CALIBRATION

Single junction

R - Platinum and Platinum/13% Rhodium
S - Platinum and Platinum/10% Rhodium
B - Platinum/6% Rhodium and Platinum/30% Rhodium

WIRE GAUGE

24 – 24 AWG

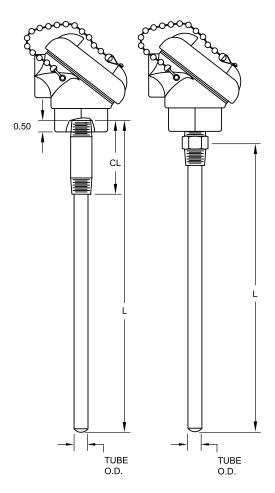
BEAD MATERIAL

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



Dual junctions

RR

SS

BB

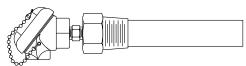
STYLE 81N

TERMINAL HEAD OPTIONS

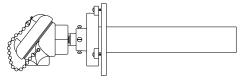
ASSEMBLY OPTIONS				
Option Code	Description			
TAG1	Stainless steel tag and wire			
CAL1	NIST traceable calibration [specify point(s)]			
CRT1	Certificate of conformance			
WC20	Wiring cable gland for 0.187 - 0.312 diameter cables, for terminal heads with 1/2" NPT conduit connections			
WC21	Wiring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



NEMA 4 OR 4X TERMINAL HEAD OPTIONS				
Head without ground screw	Head with internal ground screw	Process Connection	Conduit Connection	
Cast aluminum, s	crew cover with cha	in, NEMA 4		
HD10*	HD11*	1/2"	1/2"	
Std.*	HD13*	1/2"	3/4"	
Epoxy-coated alu	minum, screw cover	with chain, NEMA	4X	
HD50*	HD51*	1/2"	1/2"	
HD52*	HD53*	1/2"	3/4"	
Cast iron, screw c	over with chain, NE	MA 4		
HD20*	HD21*	1/2"	1/2"	
HD22*	HD23*	1/2"	3/4"	
316 stainless stee	l, screw cover with o	chain, NEMA 4X	•	
HD40*	HD41*	1/2"	3/4"	
White polypropyle	ene, screw cover wit	h chain, NEMA 4	I	
HD30	N/A	1/2"	3/4"	
Black polypropyle	ene, screw cover with	n chain, NEMA 4		
HD31	N/A	1/2"	3/4"	
Nylon, screw cove	er			
HD32	N/A	1/2"	1/2"	
*can be used wit	h transmitters			
TRANSMITTERS	– For complete spe	cs, 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 *.			

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.

TUBE O.D.

PROCESS THREAD (NPT)

	Carbon steel					
CODE	0 (1/2")	1 (3/4")	2 (1")	3 (1/2")	4 (3/4")	5 (1")
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.



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.

TC/81N-03



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

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

6 - 1-1/10" O.D.

Outer protection tube material

C - Silicon Carbide, oxide bonded* H - Hexalloy® S - Sialon® 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 **7** - 1-1/4" NPT **3** - 1-1/4" NPT 8 - 1-1/2" NPT 4 - 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 BB

B – Platinum/6% Rhodium and Platinum/30% Rhodium

WIRE GAUGE

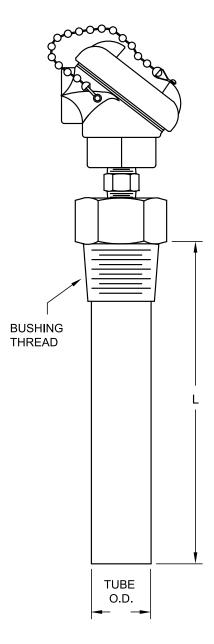
24 - 24 AWG

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)

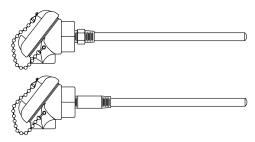
OPTIONS - see page 1-9b



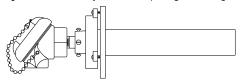
ASSEMBLY OPTIONS				
Option Code	Description			
TAG1	Stainless steel tag and wire			
CAL1	NIST traceable calibration [specify point(s)]			
CRT1	Certificate of conformance			
WC20	Wiring cable gland for 0.187 - 0.312 diameter cables, for terminal heads with 1/2" NPT conduit connections			
WC21	Wiring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

For additional Noble Metal Thermocouple styles, see:

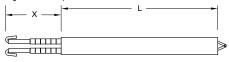
Style 81N – Single, primary protection tube only



Style 81F - Secondary tube with slip flange mounting



Style 51 - Replacement Sensor



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).

STYLE 81B

TERMINAL HEAD OPTIONS

Head without ground screw		Head with internal ground screw	Process Connection	Conduit Connection			
Cast alı	ıminum, scr	ew cover with chain, NI	EMA 4				
HD10*		HD11*	1/2"	1/2"			
Std.*		HD13*	1/2"	3/4"			
Ероху-с	oated alum	inum, screw cover with	chain, NEMA 4X	•			
HD50*		HD51*	1/2"	1/2"			
HD52*		HD53*	1/2"	3/4"			
Cast iro	n, screw cov	er with chain, NEMA 4		•			
HD20*		HD21*	1/2"	1/2"			
HD22*		HD23*	1/2"	3/4"			
316 stai	nless steel,	screw cover with chain	NEMA 4X				
HD40*		HD41*	1/2"	3/4"			
White p	olypropyler	ie, screw cover with cha	in, NEMA 4				
HD30		N/A	1/2"	3/4"			
Black po	olypropylen	e, screw cover with cha	in, NEMA 4				
HD31		N/A	1/2"	3/4"			
Nylon, s	crew cover		<u> </u>				
HD32		N/A	1/2"	1/2"			
*can be	used with	transmitters					
TRAN	SMITTER:	5 – For complete spe	cs, see Transmitter	s section			
TR11	range, ı	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	specify	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	output;	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 *					

rickandy (11) and Err (E).		PROCESS THREAD (NPT)									
			CARBOI	N STEEL		316 STAINLESS					
OUTER	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")		
TUBE O.D.	3 (3/4")	Н	Н	Н	Н	Н	Н	Н	Н		
	4 (7/8")	L,S	L,S	L,S	L,S	L,S	L,S	L,S	L,S		
	5 (1")		Н	Н	Н		Н	Н	Н		
	6 (1-1/10")		S	S	S		S	S	S		
	7 (1-1/4")			Н	Н			Н	Н		
	8 (1-1/2")			Н	Н			Н	Н		
	9 (1-3/4")				С				С		

- 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.



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.



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; $3/4^{\prime\prime}$ 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

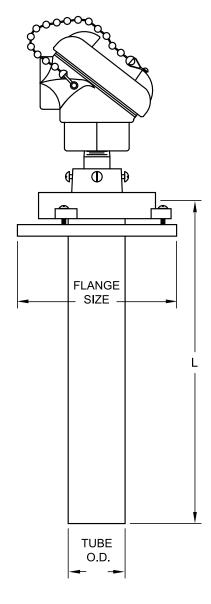
BEAD MATERIAL

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



TC/81F-03

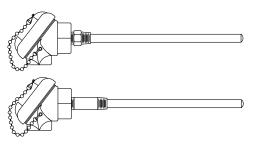
TERMINAL HEAD OPTIONS

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				

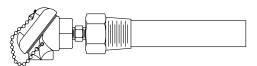
Option Code	Description
TAG1	Stainless steel tag and wire
CAL1	NIST traceable calibration [specify point(s)]
CRT1	Certificate of conformance
WC20	Wiring cable gland for 0.187 - 0.312 diameter cables, for terminal heads with 1/2" NPT conduit connections
WC21	Wiring cable gland for 0.125 - 0.187 diameter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

For additional Noble Metal Thermocouple styles, see:

Style 81 N – Single, primary protection tube only



Style 81B – Secondary tube with mounting bushing



Style 51 - Replacement Sensor



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"				
Ероху-с	oated alu	ninum, screw cover	with chain, NEMA	4X				
HD50*		HD51*	1/2"	1/2"				
HD52*		HD53*	1/2"	3/4"				
Cast irc	n, screw c	over with chain, NE	MA 4					
HD20*		HD21*	1/2"	1/2"				
HD22*		HD23*	1/2"	3/4"				
316 sta	inless stee	l, screw cover with	chain, NEMA 4X					
HD40*		HD41*	1/2"	3/4"				
White p	oolypropyle	ene, screw cover wit	h chain, NEMA 4	1				
HD30		N/A	1/2"	3/4"				
Black p	olypropyle	ne, screw cover witl	n chain, NEMA 4	•				
HD31		N/A	1/2"	3/4"				
Nylon,	screw cove	r						
HD32		N/A	1/2"	1/2"				
*can b	e used witl	n 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.

TC/81F-03

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

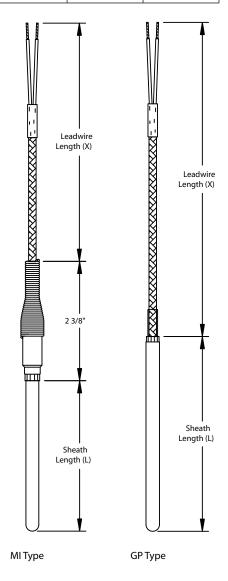
SHEATH LENGTH (Note: maximum L=96" for GP; for MI, lengths over L84 will be shipped coiled unless otherwise specified)

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



^{*}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.

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 CONN	ECTION	OPTIONS				
WC76		#6 spade terminals, plated copper				
WC70		#10 spade	terminals, plated co	opper		
WC84		1/4" push-	on insulated termin	nals, plated copper		
WC90		#10 ring te	rminals			
WC98		#8 ring ter	minals			
	For plug	gs and jacks,	see Styles 05, 07, 6	59.		
COMPRESSION	I FITTIN	IGS (for dian	neters 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	Hori	zontal pad/f	lat			
WP10	1" n	ominal pipe s	size			
WP15	1.5"	nominal pipe	pe size			
WP20	2" n	ominal pipe s	size			
WP25	2.5"	nominal pip	e size			
WP30	3" n	3" nominal pipe size				
WP35	3.5"	3.5" nominal pipe size				
WP40	4" n	ominal pipe s	size			

EXTENSION WIRE

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

TC/02,04,28-02

ARMOR CABLE

LENGTH

OPTIONS

SHEATH

LENGTH

SHEATH WITH LEADWIRE AND ARMOR

SHEATH

DIAMETER

How to build a part number:

ASSEMBLY

STYLE

SENSOR

TYPE

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!

CALIBRATION

JUNCTION

SHEATH

MATERIAL

1116	JIILL	DIAMETER	MAILMAL		JONCHON	LLINOTTI	LLINGIII	
MI – Mineral insula SSEMBLY STYLI	n leadwire and fl ass jacket. d armor ated armor	2	steel armor cabl	e ; fiberglass-insula		6"	9 - 6 - 6 - 6 - 6 - 6 - 6 - 6 - 6 - 6 -	
SHEATH MATERI. B - 316 stainless s - Inconel® 600 (teel			CC A		nor Cable ength (X)	Armor Cable Length (X)	Armor Cabl Length (X)
	JJ – Dual J KK – Dual K TT – Dual T EE – Dual E vailable – consult J	AST thermocouples in sl	heath diameter 4	MOISTURE SI (100°C MA)	EAL J	1.90	1.90	
oiled unless other	unction on [(Note: maximum wise specified)	L=96" for GP; for I	MI, lengths over L8	4 will be shipped		Sheath ength (L)	Sheath Length (L)	Sheath Length (L)
ARMOR CABLE L	<u>ENGTH</u>				<u>U</u>		<u> </u>	<u> </u>

180 Dexter Avenue, P.O. Box 9143, Watertown, MA 02471-9143

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

OPTIONS – see page 1-12b

USA Telephone: 617 923-6966

Fax: 617 926-8411

Style

MI03P & MI03T

Style GP03

Style

^{*}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.

ASSEMBLY OPTIONS							
Option Code		Description					
TAG1		Stainless stee	el tag and wire				
B90-		90° bend in inches e.g., E	sheath (specify len 390-6)	gth from tip in			
B45-		1	45° bend in sheath (specify length from tip in inches e.g., B45-6)				
CAL1		NIST traceab	le calibration [spec	cify 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	3"	Stainless steel	Stainless steel			
CF11	1/8	3"	Stainless steel	Teflon®			
CF12	1/8	8"	Brass	Brass			
CF20	1/4	! "	Stainless steel	Stainless steel			
CF21	1/4	."	Stainless steel	Teflon®			
CF22	1/4	."	Brass	Brass			
CF30	1/2	2"	Stainless steel	Stainless steel			
CF31	1/2	"	Stainless steel	Teflon®			
CF32	1/2	2"	Brass	Brass			
LEADWIRE AN	D ARM	OR 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			
assemblies. Jack option	ote: plug is designed to be attached to sensor s – for customer wiring – should only be specified luded. Cable clamp is included for both plug and			
РJ10	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.

TC/03-02

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

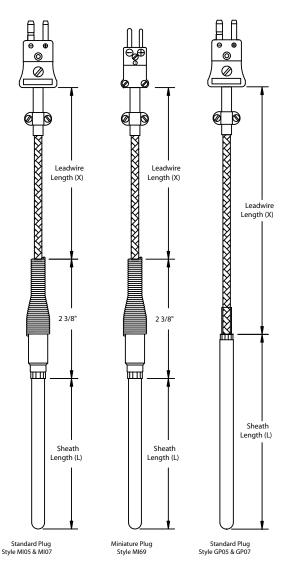
SHEATH LENGTH (Note: maximum L=96" for GP; for MI, lengths over L84 will be shipped coiled unless otherwise specified)

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



^{*}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.

ASSEMBLY OPTIONS				
Option Code	Description			
TAG1	Stainless steel tag and wire			
В90-	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)			
assemblies. Jack options	IONS (Note: plug is designed to be attached to sensor is – for customer wiring – should only be specified if ded. Cable clamp is included for both plug and jack			
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)			

EXTENSION WIRE

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

COMPRESSION I	COMPRESSION FITTINGS (for diameters 4, 6, 7)					
Option Code	NPT	Material	Ferrule			
CF10	1/8"	1/8" Stainless steel Stainless				
CF11	1/8"	1/8" Stainless steel Teflo				
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®		Teflon®			
CF32	1/2" Brass Brass					
WELD PADS						
WP00	Horizontal pad/flat					
WP10	1" nominal pipe s	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					

TC/05,07,69-02



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

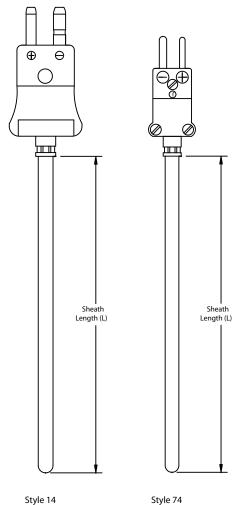
E – Exposed junction

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

*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.



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)			

ASSEMBLY OPTION	ASSEMBLY UPITONS					
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 WI	Kt	•
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A selection of extension-grade thermocouple wire is available to connect the sensor to its input device. Consult Accessories section.

COMPRESSION	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				

TC/14,74-02

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")

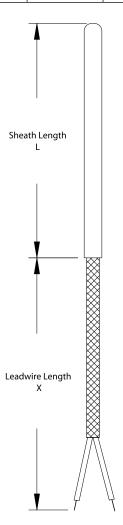
L# – (e.g., L24 = 24 inch sheath)

LEADWIRE LENGTH

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

OPTION

TAG1 - stainless steel tag and wire





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.



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

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)

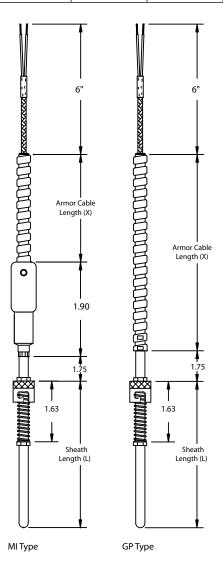
L# – (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)

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.



STYLE 71

AVAILABLE OPTIONS and MODIFICATIONS

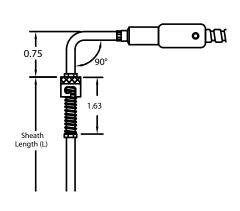
ASSEMBLY OPTIO	NS					
Option Code	Description	Description				
TAG1	Stainless steel tag and	wire				
BD90	90° bend in sheath, 3. Formerly Style 35	/4" from back end of cap				
BD45	45° bend in sheath, 3/ Formerly Style 70	45° bend in sheath, 3/4" from back end of cap Formerly Style 70				
CAL1	NIST traceable calibrat	NIST traceable calibration [specify point(s)]				
CRT1	Certificate of conforma	Certificate of conformance				
HT10	, , ,	High temperature (900°F) transition. (Standard transition rated 500°F/260°C)				
BAYONET ADAPTI	PTERS (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 (I)				
BA30	11/16" to 1-1/4"	2"				
BA31	1-1/16" to 2"	2"				
BA32	2-1/16" to 3"	2-1/16" to 3" 2"				
BA33	3-5/16" to 4-1/4"	2"				
BA34	4-1/8" to 5"	2"				

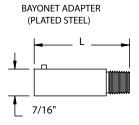
WIRING CONNECTION OPTIONS					
Option Code	Description				
WC76	#6 spade terminals, plated copper				
WC70	#10 spade terminals, plated copper				
WC84	1/4" push-on insulated terminals, plated copper				
WC90	#10 ring terminals				
WC98	#8 ring terminals				
PLUGS AND JACKS (Note: plug is designed to 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.)					
РЈ10	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

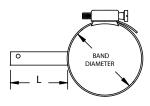
A selection of extension-grade thermocouple wire is available to connect the sensor to its input device. Consult Accessories section.

BD90 OPTION VIEW ON MI71 STYLE









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.

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

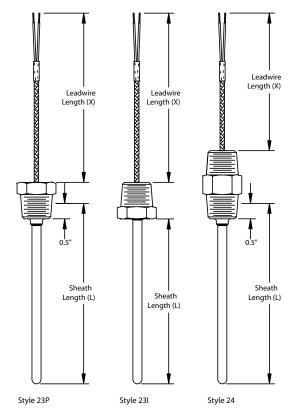
SHEATH LENGTH (Note: lengths over L84 will be shipped coiled unless otherwise specified at time of order)

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 23I, 23P, 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				

TC/23I,23P,24-02

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 otherwiese specified)

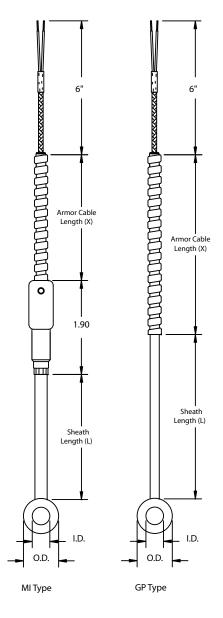
L# – (e.g., L6 = 6 inch sheath, L12.5 = 12.5 inch length)

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 OPTIO	ONS
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 CONNE	CTION 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				
assemblies. Jack	CKS (Note: plug is designed to be attached to sensor options – for customer wiring – should only be specified lso included. Cable clamp is included for both plug and				
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 CONNECTOR	S.				
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.

TC/32-02

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

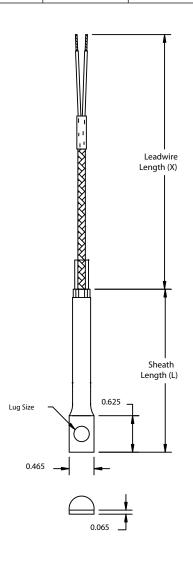
SHEATH LENGTH (Maximum L=96")

L# - (e.g., L6 = 6 inch sheath)

LEADWIRE LENGTH

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

OPTIONS – see page 1-19b



STYLES 41F & 41T

AVAILABLE OPTIONS and MODIFICATIONS

SSEMBLY OPTIONS WIRING CONNECTION OPTIONS

ASSEMBLY OPTIO	NS
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
assemblies. Jack options	ote: plug is designed to be attached to sensor – for customer wiring – should only be specified uded. Cable clamp is included for both plug and
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.

TC/41-02



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

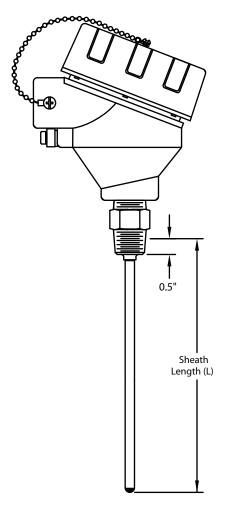
- **G** Grounded junction
- **U** Ungrounded junction
- E-Exposed junction

(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



STYLE 22

AVAILABLE OPTIONS and MODIFICATIONS

TERMINAL HEAD	OOPTION				
Same specification	as standard head				
Option Code	Process Connection	Conduit Connection			
HD72	1/2"	1/2"			
ASSEMBLY OPTI	ONS				
Option Code	Description				
TAG1	Stainless steel tag and v	vire			
PC25	1/4" NPT process connection				
PC75	3/4" NPT process connection				
CAL1	Calibration, NIST traceable calibration [specify point(s)]				
CRT1	Certificate of conforman	се			
TRANSMITTERS	– For complete specs, see	Transmitters section			
TR11	4-20 mA, 2-wire transmi output; specify range an 0-200°C)	itter, single input, isolated d units of measure (e.g.,			
TR12	4-20 mA, 2-wire transmi output; specify range an 0-200°C) and terminal				
TR13		re transmitter, single input, range and units of measure ninal head with *.			

TC/22-02



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

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 page 2-1b 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

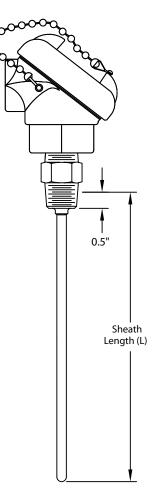
TEMPERATURE RANGE - Minimum and maximum operating temperatures

- **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



AVAILABLE OPTIONS and MODIFICATIONS

NEMA 4	4 OR 4X	TERMIN/	AL HEAD	OPTION	5			
Head without ground screw		Head with internal ground screw		Process Connection		Conduit Connection		
Cast alu	minum, so	crew cove	r with cha	in, NEMA	4			
HD10*		HD11*		1/2"		1/2"		
Std.*		HD13*		1/2"		3/4"		
Ероху-со	oated alur	minum, sc	rew cover	with chai	n, NEMA	4X		
HD50*		HD51*		1/2"		1/2"		
HD52*		HD53*		1/2"		3/4"		
Cast iron	1, screw co	over with	chain, NE	MA 4				
HD20*		HD21*		1/2"		1/2"		
HD22*		HD23*		1/2"		3/4"		
316 stai	nless stee	l, screw co	over with	chain, NE <i>l</i>	MA 4X			
HD40*		HD41*		1/2"		3/4"		
White po	olypropyle	ene, screw	cover wit	h chain, N	IEMA 4			
HD30		N/A	N/A		1/2"		3/4"	
Black po	lypropyle	ne, screw	cover witl	n chain, N	EMA 4	1		
HD31		N/A 1/2"		1/2"	3/4"			
Nylon, s	crew cove	r		1		ı		
HD32		N/A		1/2"		1/2"		
*can be	used with	ı transmit	ters					
Smallest	Diamete	Sheath A	vailable B	y Sensor T	ype and T	emperatu	re Rang	
			SIN	GLE				
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			
		1		JAL	Ī	1	ı	
Temp Range	DRTP 1	DRTP 1A	DRTP 1AA	DRTP 6	DRTP 7	DRTP 7A	DRTI 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				

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

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 0.18 cables, for terminal heads v connections				
WC21	Wiring cable gland for 0.12 cables, for terminal heads v connections				
TRANSMITTERS - For o	complete specs, see Transmit	ters section			
TR11	4-20 mA, 2-wire transmitte output; specify range, units 0-200°C) and optional ten	of measure (e.g.,			
TR12	4-20 mA, 2-wire transmitte isolated output; specify ran (e.g., 0-200°C) and termin	ge and units of measure			
TR13	HART® / 4-20 mA, 2-wire t isolated output; specify ran (e.g., 0-200°C) and termin	ge and units of measure			
OPTIONAL ELEMENTS					
RTDs are standardly plat alpha.	cinum, 100-ohm, DIN-curve ε	elements with a 0.00385			
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			
	add prefix "D" (e.g., DRTP6) ils, curves and resistance val	ues are available - see			

TIE	_ APPLIED	SENSOR	TECHNOL	OGIES
	A Division of I	UNITED ELECT	RIC CONTROLS	

Capabilities brochure.

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.

RTD/15-02



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 "15" for 304 stainless steel

Add suffix "25" 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 page 2-2b 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

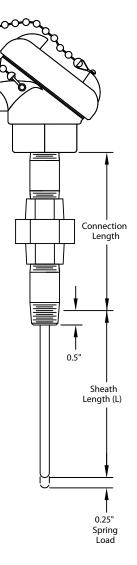
- **1** -45 to 260°C (-50 to 500°F)
- $2 -45 \text{ to } 482^{\circ}\text{C} \text{ (-50 to } 900^{\circ}\text{F)}$
- 3 -45 to 788°C (-50 to 1450°F)
- **4** -200 to 260°C (-328 to 500°F)

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				
	OPTION AVAIL ENGTHS ONL					
DIMENS	IONS ARE GIV	EN				



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 Wiring cable gland for 0.125 - 0.187 diameter WC21 cables, for terminal heads with 1/2" NPT conduit connections Transmitters: see 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 3-wire RTP1 (std.) ±0.12% 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

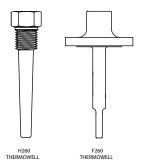
AVAILABLE OPTIONS and MODIFICATIONS

NEMA 4	OR 4X	TERMINA	L HEAD	OPTIONS	5		
Head v ground		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"	
Ероху-со	ated alur	ninum, sc	rew cover	with chai	n, NEMA	4X	
HD50		HD51		1/2"		1/2"	
HD52		HD53		1/2"		3/4"	
Cast iron	ı, screw co	over with	chain, NEI	MA 4			
HD20		HD21		1/2"		1/2"	
HD22		HD23		1/2"		3/4"	
316 stai	nless stee	l, screw co	ver with o	hain, NE <i>l</i>	MA 4X	l	
HD40		HD41		1/2"		3/4"	
Smallest	Diameter	Sheath A	vailable B	y Sensor 1	ype and T	emperatu	re Range
			SIN	GLE			
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		
			DL	JAL			
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			
3	1/4						

Note:

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.



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

Capabilities brochure.

^{1.} For former Style 46, use option HD20



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

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 page 2-3b 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

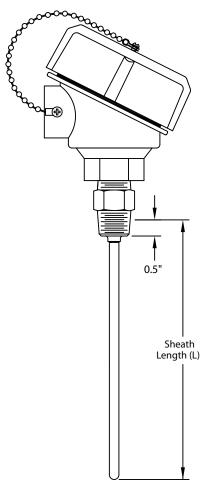
TEMPERATURE RANGE - Minimum and maximum operating temperatures

- **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



RTD/78-02

AVAILABLE OPTIONS and MODIFICATIONS

EXPLOSION-PROOF TERMINAL HEAD OPTIONS										
Option Code Process Connection Conduit Connection Cast aluminum: screw cover with chain: o-ring gasket (Casket rated to										
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'	,				
Ероху-со	oated, san	ne specs	as HD71							
HD80			1/2"		1/2'	'				
HD81			1/2"		3/4'	,				
Smalles	t Diamete	r Sheath	Available B	y Sensor 1	Гуре and Т	emperatu	re Range			
			SIN	GLE						
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					
			DU	JAL						
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						

Note: See Accessories section for additional specs.

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

OPTIONAL ELEMENTS

RTDs are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385

Accuracy (at 0°C)	Construction
±0.12%	3-wire
±0.06%	3-wire
±0.01%	3-wire
±0.12%	2-wire
±0.12%	4-wire
±0.06%	4-wire
±0.01%	4-wire
	±0.12% ±0.06% ±0.01% ±0.12% ±0.12% ±0.06%

Notes:

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

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 *.					

RTD/78-02



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 "15" for 304 stainless steel nipples

CONNECTION LENGTH

- (e.g., 006=6 inch)

See chart below for standard available lengths.

SHEATH DIAMETER (in inches) (see page 2-4b 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

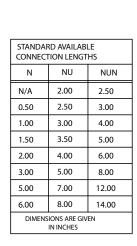
 $\underline{\textbf{TEMPERATURE RANGE}} - \text{Minimum and maximum operating temperatures}$

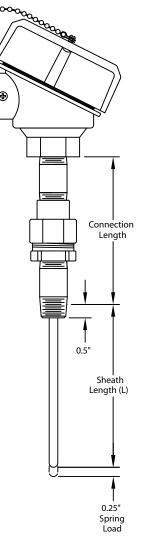
- **1** -45 to 260°C (-50 to 500°F)
- **2** -45 to 482°C (-50 to 900°F)
- **3** -45 to 788°C (-50 to 1450°F)
- **4** -200 to 260°C (-328 to 500°F)

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

L# – (e.g., L6 = 6 inch sheath)

OPTIONS – see page 2-4b





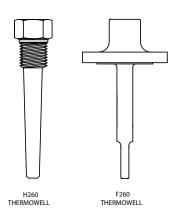
AVAILABLE OPTIONS and MODIFICATIONS

SEMBLY OPTIO	NS		EXPLOS	ION-PRO	OOF TERM	MINAL H	EAD OPT	IONS		
ion Codes	Description		Option (Code	Pi	ocess Cor	nection	Cond	luit Conne	ection
i1	Stainless steel tag and v	vire							ramic terr	
.1	NIST traceable calibration	on [specify point(s)]							and D; Cla ernal grou	
1	Certificate of conformar	nce	screw	-, i aliu C	(Gasket I	aleu lo II	JO C EXP	osuiej, iiii	emai giot	anu
ANSMITTERS			HD71		1.	/2"		3/4"	1	
Style 48 for avai	lable transmitters		Same as	above, ex	cept epo	ky-coated				
TIONAL ELEMENTS			HD80		1.	/2"		1/2"	,	
Os are standardly platinum, 100-ohm, DIN-curve elements with a 0.00385		ve elements with a 0.00385	HD81		1.	/2"		3/4"	,	
na.			Smallest	Diamete	r Sheath A	vailable B	y Sensor 1	ype and T	emperatu	re Rang
ion Code	Accuracy (at 0°C)	Construction				SIN	GLE			
1 (std.)	±0.12%	3-wire	Temp	RTP	RTP	RTP	RTP	RTP	RTP	RTP
1A	±0.06%	3-wire	Range	1	1A	1AA	6	7	7A	7AA
1AA	±0.01%	3-wire	1	1/8	1/8	1/8	1/8	3/16	3/16	3/16
6	±0.12%	2-wire	2	3/16	3/16	3/16	3/16	3/16	3/16	3/16
7	±0.12%	4-wire	3	3/16			3/16	3/16		
7A	±0.06%	4-wire	4	1/8			1/8	3/16		
7AA	±0.01%	4-wire				DL	JAL			
es: For dual eleme	ent, add prefix "D" (e.g., DRTP	6)	Temp Range	DRTP 1	DRTP 1A	DRTP 1AA	DRTP 6	DRTP 7	DRTP 7A	DRTP 7AA
Additional materials, curves and resistance values are available - see Capabilities brochure.		values are available - see	1	3/16	3/16	3/16	3/16			
p			2	1/4	1/4	1/4	3/16			
			3	1/4			1/4			
			4	3/16			3/16			

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.



ASSEMBLY OPTIONS						
Option Codes	Description					
TAG1	Stainless steel tag and v	vire				
CAL1	NIST traceable calibration	on [specify point(s)]				
CRT1	Certificate of conformar	nce				
TRANSMITTERS						
See Style 48 for availa	ble transmitters					
OPTIONAL ELEMENT	rs					
RTDs are standardly palpha.	latinum, 100-ohm, DIN-cun	ve elements with a 0.00385				
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%	±0.01% 4-wire				
Notes:						

1.

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.

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 page 2-5b 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

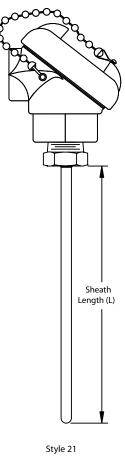
TEMPERATURE RANGE - Minimum and maximum operating temperatures

- **1** -45 to 260°C (-50 to 500°F)
- $2 -45 \text{ to } 482^{\circ}\text{C} \text{ (-50 to } 900^{\circ}\text{F)}$
- **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



ASSEMBLY OPTIO	ONS			
Option Code		Description		
TAG1		Stainless steel ta	g and wire	
B90-		90° bend in shea B90-6)	ath [specify length fron	n tip in inches e.g.,
B45-		45° bend in shea B45-6)	ath (specify length fron	n tip in inches e.g.,
CAL1		NIST traceable ca	alibration [specify poin	t(s)]
CRT1		Certificate of con	formance	
WC20		Wiring cable glar terminal heads w	nd for 0.187 - 0.312 dia rith 1/2" NPT conduit	ameter cables, for connections
WC21			nd for 0.125 - 0.187 dia vith 1/2" NPT conduit	
TRANSMITTERS	for comp	olete specs, see Tra	nsmitters section	
TR11			single input, isolated (e.g., 0-200°C) and op	
TR12			, , ,	ut, non-isolated output; ., 0-200°C) and terminal
TR13				ingle input, isolated sure (e.g., 0-200°C) and
COMPRESSION F	ITTINGS	(for diameters 4, 6	i, 7)	
Option Code	NPT	-	Material	Ferrule
CF10	1/8	3"	Stainless steel	Stainless steel
CF11	1/8	3"	Stainless steel	Teflon®
CF12	1/8	3"	Brass	Brass
CF20	1/4	!"	Stainless steel	Stainless steel
CF21	1/4		Stainless steel	Teflon®
CF22	1/4	!"	Brass	Brass
CF30	1/2	2"	Stainless steel	Stainless steel
CF31	1/2	2"	Stainless steel	Teflon®
CF32	1/2	2"	Brass	Brass
NEMA 4 OR 4X T	ERMINA	L HEAD OPTIONS	5	-1
Head without ground screw	- 1	ad with internal ground screw	Process Connection	Conduit Connection
Cast aluminum, scr	ew cover	with chain, NEMA	4	<u> </u>
HD10*	HD	11*	1/2"	1/2"
Std.*	HD.	13*	1/2"	3/4"
Epoxy-coated alum	inum, scr	ew cover with chai	n, NEMA 4X	
HD50*	HD!	51*	1/2"	1/2"
HD52*	HD:	53*	1/2"	3/4"
Cast iron, screw cov	ver with c	hain, NEMA 4		
HD20*	HD:	21*	1/2"	1/2"
HD22*	HD:	23*	1/2"	3/4"
316 stainless steel,	screw co	ver with chain, NEN	MA 4X	•
HD40*	HD4	41 *	1/2"	3/4"
White polypropyler	ne, screw	cover with chain, N	IEMA 4	
HD30	N/A	A	1/2"	3/4"
Black polypropylen	e, screw o	cover with chain, N	EMA 4	•
HD31 N/A			1/2"	3/4"
Nylon, screw cover				
	N/A	A	1/2"	1/2"

STYLE 21

AVAILABLE OPTIONS and MODIFICATIONS

Description	AVAILABLE OF HONS allu MODIFICATIONS								
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" 3/4" Epoxy-coated (same specs as HD70) HD80* 1/2" 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" 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" 3/4" Smallest Diameter Sheath Available By Sensor Type and Temperature Range SINGLE Temp RTP	EXPLOSION-PROOF TERMINAL HEAD OPTIONS								
terminal block; FM/CSA approved for Class I Div. 1, Groups B, C, D; Class II, Groups E, F, G; internal ground screw HD70*	Option Co	ode	Process C	onnection		Conduit Connection			
HD71*	terminal l	terminal block; FM/CSA approved for Class I Div. 1, Groups B, C, D; Class II, Groups							
Epoxy-coated (same specs as HD70)	HD70*		1/2"			1/2"			
HD80*	HD71*		1/2"			3/4"			
HD81*	Epoxy-coa	ated (same	specs as H	D70)					
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" 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" Smallest Diameter Sheath Available By Sensor Type and Temperature Range SINGLE Temp RTP	HD80*		1/2"			1/2"			
O-ring gasket; ceramic terminal block; rated for NEMA 4X, IP66 to IP68; internal and external ground screws HD72*	HD81*		1/2"			3/4"			
HD73* 1/2" 3/4"	o-ring gas	sket; ceram	ic terminal						
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	HD72*		1/2"			1/2"			
Proved for Class I Div. 1, Groups C and D; Class II Groups E, F and G.	HD73*		1/2"			3/4"			
HD61								CSA ap-	
Smallest Diameter Sheath Available By Sensor Type and Temperature Range	HD60		1/2"			1/2"			
SINGLE Temp RTP RTP RTP RTP RTP RTP RANGE 1	HD61		1/2"			3/4"			
Temp Range RTP Range RTP 1 1A RTP 1AA RTP 1AA RTP 7AA RTP 8AA RTP 8AA RTP 8AA RTP 7AA RTP 8AA RTP 8AA RTP 7AA RTP 8AA RTP 7AA RTP 7AA RTP 8AA RTP 8AAA RTP 8AAA RTP 8AAA RTP 8AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	Smallest	Diameter	r Sheath A	vailable B	y Senso	Type and T	emperatu	re Range	
Range 1 1A 1AA 6 7 7A 7AA 1 1/8 1/8 1/8 3/16				SIN	GLE				
2 3/16 DRTP DRTP DRTP DRTP TAA					1				
3 3/16 3/16 3/16 4 1/8 1/8 3/16 DUAL Temp DRTP DRTP DRTP DRTP DRTP 7A 7AA 1 3/16 3/16 3/16 3/16 2 1/4 1/4 1/4 3/16 3 1/4 1/4 1/4 3/16	1	1/8	1/8	1/8	1/8	3/16	3/16	3/16	
4 1/8 1/8 3/16 DUAL Temp DRTP DRTP DRTP DRTP DRTP TAME DRTP DRTP DRTP DRTP TAME DRTP DRTP TAME TAME	2	3/16	3/16	3/16	3/16	3/16	3/16	3/16	
DUAL Temp Range DRTP 1 1A DRTP 1AA DRTP 6 DRTP 7 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 1/4 1/4	3	3/16			3/16	3/16			
Temp Range DRTP 1 DRTP 1AA DRTP 1AA DRTP 66 DRTP 7 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 1/4 1/4	4	1/8			1/8	3/16			
Range 1 1A 1AA 6 7 7A 7AA 1 3/16 <				DL	JAL				
2 1/4 1/4 1/4 3/16 3 1/4 1/4 1/4									
3 1/4 1/4	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	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)
- Additional materials, curves and resitance values are available see Capabilities brochure.

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





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

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 page 2-6b 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

$\underline{\textbf{TEMPERATURE RANGE}} \text{ - Minimum and maximum operating temperatures}$

- **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)

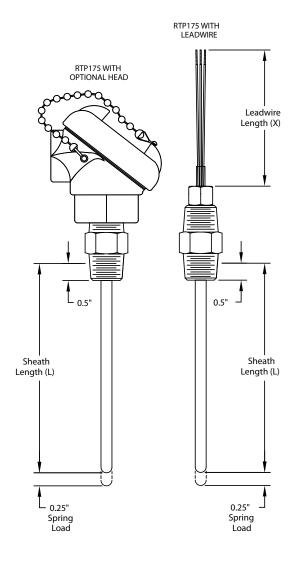
SHEATH LENGTH (for lengths greater than L=36", consult AST)

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



opiion couc		50501,5001			
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 - heads with 1/2" NPT conduit	0.187 diameter cables, for terminal connections		
WIRING CONNECTIO	N OP	TIONS			
Option Code		Description			
WC76		#6 spade terminals, plated cop	pper		
WC70		#10 spade terminals, plated co	ppper		
WC84		1/4" push-on insulated termin	als, plated copper		
WC90		#10 ring terminals			
WC98		#8 ring terminals			
TRANSMITTERS					
TR11			isolated output; specify range, units d terminal head with *. See Accesformation.		
TR12			ngle input, non-isolated output; isure (e.g., 0-200°C) and terminal		
TR13		HART® / 4-20 mA, 2-wire transoutput; specify range and unite terminal head with *.	smitter, single input, isolated s of measure (e.g., 0-200°C) and		
OPTIONAL ELEMENT	s				
RTDs are standardly pla	atinun	n, 100-ohm, DIN-curve element	s 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		
		±0.12%	4-wire		
RTP7			4-wire		
RTP7A		±0.06%	4-wire		
		±0.06% ±0.01%	4-wire		
RTP7A RTP7AA Notes: 1. For dual element, ac	s, curv	±0.01%	4-wire		
RTP7A RTP7AA Notes: 1. For dual element, ac 2. Additional materials Capabilities brochure	s, curvi e.	±0.01% fix "D" (e.g., DRTP6)	4-wire		
RTP7A RTP7AA Notes: 1. For dual element, ac 2. Additional materials Capabilities brochure	s, curve e. FERMI	±0.01% fix "D" (e.g., DRTP6) es and resistance values are av	4-wire		
RTP7A RTP7AA Notes: 1. For dual element, ac 2. Additional materials Capabilities brochure EXPLOSION-PROOF 1 Option Code Cast aluminum, screw of	rendi Proc	to.01% fix "D" (e.g., DRTP6) es and resistance values are average values and resistance values are average values values are average values are average values are average values va	4-wire ailable - see		
RTP7A RTP7AA Notes: 1. For dual element, ac 2. Additional materials Capabilities brochur EXPLOSION-PROOF 1 Option Code Cast aluminum, screw of FM/CSA approved for the second code.	rendi Proc	to.01% fix "D" (e.g., DRTP6) es and resistance values are avalues are avalues are avalues are avalues are avalues are avalues. INAL HEAD OPTIONS cess Connection C with chain; o-ring gasket rated in Div. 1, Groups B, C, D; Class II	4-wire ailable - see onduit Connection to 100°C; ceramic terminal block;		
RTP7A RTP7AA Notes: 1. For dual element, ac 2. Additional materials Capabilities brochure EXPLOSION-PROOF 1 Option Code Cast aluminum, screw of FM/CSA approved for screw	Processor values of the cover values of the co	±0.01% fix "D" (e.g., DRTP6) es and resistance values are av INAL HEAD OPTIONS cess Connection C with chain; o-ring gasket rated of Div. 1, Groups B, C, D; Class II	4-wire ailable - see onduit Connection to 100°C; ceramic terminal block; , Groups E, F, G, internal ground		
RTP7A RTP7AA Notes: 1. For dual element, ac 2. Additional materials Capabilities brochure EXPLOSION-PROOF 1 Option Code Cast aluminum, screw of FM/CSA approved for screw HD70*	Process I	±0.01% fix "D" (e.g., DRTP6) es and resistance values are av INAL HEAD OPTIONS cess Connection Convith chain; o-ring gasket rated in Div. 1, Groups B, C, D; Class II 2"	4-wire ailable - see onduit Connection to 100°C; ceramic terminal block; , Groups E, F, G; internal ground		
RTP7A RTP7AA Notes: 1. For dual element, ac 2. Additional materials Capabilities brochur EXPLOSION-PROOF 1 Option Code Cast aluminum, screw of FM/CSA approved for screw HD70* HD71*	Process I	±0.01% fix "D" (e.g., DRTP6) es and resistance values are av INAL HEAD OPTIONS cess Connection With chain; o-ring gasket rated in Div. 1, Groups B, C, D; Class II 2" HD70/HD71)	4-wire ailable - see onduit Connection to 100°C; ceramic terminal block; , Groups E, F, G; internal ground		
RTP7A RTP7AA Notes: 1. For dual element, ac 2. Additional materials Capabilities brochure EXPLOSION-PROOF 1 Option Code Cast aluminum, screw of FM/CSA approved for screw HD70* HD71* Epoxy-coated (same sp	Processor values I 1/2 1/2 ecc as H	±0.01% fix "D" (e.g., DRTP6) es and resistance values are av INAL HEAD OPTIONS cess Connection with chain; o-ring gasket rated of Div. 1, Groups B, C, D; Class II 2" HD70/HD71)	4-wire ailable - see onduit Connection to 100°C; ceramic terminal block; , Groups E, F, G, internal ground 1/2" 3/4"		
RTP7A RTP7AA Notes: 1. For dual element, ac 2. Additional materials Capabilities brochure EXPLOSION-PROOF 1 Option Code Cast aluminum, screw of FM/CSA approved for oscrew HD70* HD71* Epoxy-coated (same sp HD80* HD81* Cast aluminum; ATEX a	Proc. Proc	±0.01% fix "D" (e.g., DRTP6) es and resistance values are average values values are average values va	4-wire ailable - see onduit Connection to 100°C; ceramic terminal block; , Groups E, F, G; internal ground 1/2" 3/4"		
RTP7A RTP7AA Notes: 1. For dual element, ac 2. Additional materials Capabilities brochure EXPLOSION-PROOF 1 Option Code Cast aluminum, screw of FM/CSA approved for screw HD70* HD71* Epoxy-coated (same sp HD80* HD81* Cast aluminum; ATEX a gasket; ceramic termina	Proc. Proc	±0.01% fix "D" (e.g., DRTP6) es and resistance values are av INAL HEAD OPTIONS cess Connection C with chain; o-ring gasket rated of Div. 1, Groups B, C, D; Class II 2" HD70/HD71) 2" ed for EEx d IIC; screw cover wik; rated for NEMA 4X, IP66 to	4-wire ailable - see onduit Connection to 100°C; ceramic terminal block; , Groups E, F, G; internal ground 1/2" 3/4" 1/2" 3/4" th chain; silicone rubber o-ring		
RTP7A RTP7AA Notes: 1. For dual element, ac 2. Additional materials Capabilities brochure EXPLOSION-PROOF 1 Option Code Cast aluminum, screw of FM/CSA approved for screw HD70* HD71* Epoxy-coated (same sp HD80* HD81* Cast aluminum; ATEX a gasket; ceramic termina screws	Process I 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2	±0.01% fix "D" (e.g., DRTP6) es and resistance values are av INAL HEAD OPTIONS cess Connection Convith chain; o-ring gasket rated in Div. 1, Groups B, C, D; Class II 2" HD70/HD71) 2" ed for EEx d IIC; screw cover wink; rated for NEMA 4X, IP66 to	4-wire ailable - see onduit Connection to 100°C; ceramic terminal block; , Groups E, F, G; internal ground 1/2" 3/4" 1/2" 3/4" th chain; silicone rubber o-ring IP68; internal and external ground		
RTP7A RTP7AA Notes: 1. For dual element, ac 2. Additional materials Capabilities brochure EXPLOSION-PROOF 1 Option Code Cast aluminum, screw of FM/CSA approved for screw HD70* HD71* Epoxy-coated (same spinsor) HD80* HD81* Cast aluminum; ATEX ac gasket; ceramic terminal screws HD72* HD73* Cast aluminum (former	FERMI Processor I 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2	±0.01% fix "D" (e.g., DRTP6) es and resistance values are av INAL HEAD OPTIONS cess Connection With chain; o-ring gasket rated of Div. 1, Groups B, C, D; Class II 2" HD70/HD71) ced for EEx d IIC; screw cover with chain of NEMA 4X, IP66 to 2" 2"	4-wire ailable - see onduit Connection to 100°C; ceramic terminal block; , Groups E, F, G; internal ground 1/2" 3/4" 1/2" 3/4" th chain; silicone rubber o-ring IP68; internal and external ground		
RTP7A RTP7AA Notes: 1. For dual element, ac 2. Additional materials Capabilities brochure EXPLOSION-PROOF 1 Option Code Cast aluminum, screw of FM/CSA approved for screw HD70* HD71* Epoxy-coated (same spinsor) HD80* HD81* Cast aluminum; ATEX ac gasket; ceramic terminal screws HD72* HD73* Cast aluminum (former	FERMI Processor I 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2 1/2	±0.01% fix "D" (e.g., DRTP6) es and resistance values are avance values va	4-wire ailable - see onduit Connection to 100°C; ceramic terminal block; , Groups E, F, G; internal ground 1/2" 3/4" th chain; silicone rubber o-ring IP68; internal and external ground 1/2" 3/4"		

ASSEMBLY OPTIONS

Description

Option Code

STYLE 75

AVAILABLE OPTIONS and MODIFICATIONS

NEMA 4 OR 4X TERMINAL HEAD OPTIONS							
	Head without Head with internal ground screw ground screw		Process Connection		Conduit Connection		
Cast alun	ninum, scre	w cover wit	th chain, NI	EMA 4			
HD10*		HD11*		1/2"		1/2"	
HD12*		HD13*		1/2"		3/4"	
Epoxy-coa	ated alumii	num, screw	cover with	chain, NEM	1A 4X		
HD50*		HD51*		1/2"		1/2"	
HD52*		HD53*		1/2"		3/4"	
Cast iron,	screw cove	er with chai	n, NEMA 4				
HD20*		HD21*		1/2"		1/2"	
HD22*		HD23*		1/2"		3/4"	
316 stain	less steel, s	crew cover	with chain	, NEMA 4X			
HD40*		HD41*		1/2"		3/4"	
White po	lypropylene	e, screw cov	er with cha	in, NEMA 4	1		
HD30		N/A		1/2"		3/4"	
Black pol	ypropylene	, screw cove	er with cha	in, NEMA 4			
HD31		N/A		1/2"		3/4"	
Nylon, sc	rew cover						
HD32		N/A		1/2"		1/2"	
*can be ı	used with t	ransmitterS					
Smallest	t Diamete	r Sheath A	vailable B	y Sensor 1	Type and T	emperatu	re Range
			SIN	GLE			
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			

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.

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.





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 page 2-7b 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)

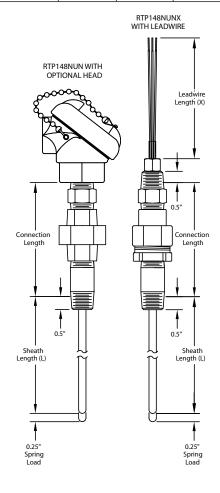
SHEATH LENGTH (for lengths greater than L=36", consult AST)

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

ASSEMBLY O	PTIONS		
Option Code	Description		
TAG1	Stainless steel	tag and wire	
CAL1	+	e calibration [specify point	(s)]
CRT1	Certificate of		-11
WC20		gland for 0.187 - 0.312 dia duit connections	meter cables, for terminal heads with
WC21		gland for 0.125 - 0.187 dia duit connections	meter cables, for terminal heads with
WIRING CON	NECTION OPTI	ONS	
Option Code	Description		
WC76	#6 spade tern	ninals, plated copper	
WC70	#10 spade ter	minals, plated copper	
WC84	1/4" push-on	insulated terminals, plated	l copper
WC90	#10 ring term	inals	
WC98	#8 ring termir	nals	
TRANSMITTE	RS - for complet	e specs, see Transmitters se	ection
TR11		and terminal head with	utput; specify range, units of measure . See Accessories section for ad-
TR12		ire transmitter, single input neasure (e.g., 0-200°C) and	, non-isolated output; specify range I terminal head with *.
TR13			gle input, isolated output; specify C) and terminal head with *.
OPTIONAL EI	EMENTS		
RTDs are stand	dardly platinum,	100-ohm, DIN-curve eleme	nts 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:			
NOTES.			

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

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"			
Epoxy-coated (same s	specs as HD70/HD71)				
HD80*	1/2"	1/2"			
HD81*	1/2"	3/4"			
		er with chain; silicone rubber o-ring 6 to IP68; internal and external ground			
HD72*	1/2"	1/2"			
HD73*	1/2"	3/4"			
Cast aluminum (Formerly Style 60); screw cover; plastic terminal block; UL/CSA approved 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"			

STYLE 48

AVAILABLE OPTIONS and MODIFICATIONS

NEMA 4	OR 4X TE	RMINAL H	IEAD OPTI	ONS				
	vithout I screw	1	h internal d screw	Process Connection		1	Conduit Connection	
Cast alun	ninum, scre	w cover wit	h chain, NE	MA 4				
HD10*		HD11*		1/2"		1/2"		
HD12*		HD13*		1/2"		3/4"		
Epoxy-coa	ated alumin	num, screw	cover with	chain, NEM	1A 4X			
HD50*		HD51*		1/2"		1/2"		
HD52*		HD53*		1/2"		3/4"		
Cast iron,	screw cove	er with chai	n, NEMA 4					
HD20*		HD21*		1/2"		1/2"		
HD22*		HD23*		1/2"		3/4"		
316 stain	less steel, s	crew cover	with chain,	NEMA 4X				
HD40*		HD41*		1/2"		3/4"		
White po	lypropylene	e, screw cov	er with cha	in, NEMA 4	1			
HD30		N/A		1/2"		3/4"		
Black polypropylene, screw cover with chain, NEMA 4								
HD31		N/A		1/2"		3/4"		
Nylon, sci	rew cover	- '						
HD32		N/A		1/2"		1/2"		
*can be ı	ısed with t	ransmitters						
Smallest	Diamete	r Sheath A	vailable B	y Sensor 1	Type and T	emperatu	re Range	
			SIN	GLE				
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				

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

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.

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.





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

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*	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

6 - 3/16 (0.188)

7 - 1/4 (0.250)

SHEATH MATERIAL

3 - 316 stainless steel

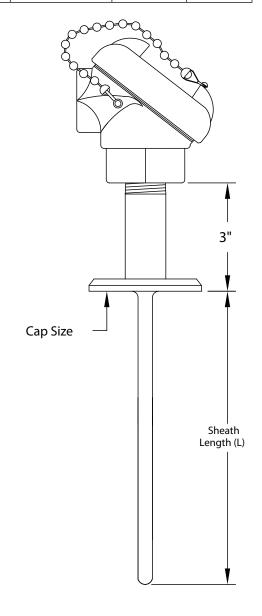
 $\underline{\textbf{TEMPERATURE RANGE}} \cdot \ \text{Minimum and maximum operating temperatures}$

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



 $\mbox{Tri Clamp}^{\mbox{\scriptsize @}}$ is a registered trademark of Alfa-Laval, Inc.

AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIC	ONS				
Option Code	Description				
TAG1	Stainless steel tag and	Stainless steel tag and wire			
CAL1	NIST traceable calibra	tion [specify point(s)]			
CRT1	Certificate of conform	ance			
WC20	, ,	r 0.187 - 0.312 diameter eads with 1/2" NPT conduit			
WC21		Wiring cable gland for 0.125 - 0.187 diameter cables, for terminal heads with 1/2" NPT conduit connections			
TRANSMITTERS					
TR11	output; specify range,	4-20 mA, 2-wire transmitter, single input, isolated output; specify range, units of measure (e.g., 0-200°C) and head with *.			
TR12	isolated output; specif	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	isolated output; specif	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 *.			
OPTIONAL ELEM	ENTS				
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:					

NEMA 4 OR 4X	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 alur	minum, screw cover wit	h chain, NEMA 4X						
HD50*	HD51*	1/2"	1/2"					
HD52*	HD53*	1/2"	3/4"					
316 stainless stee	l, screw cover with chai	n, 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	n TR11 transmitter	•	•					

Additional materials, curves and resistance values are available - see

For dual element, add prefix "D" (e.g., DRTP1)

Capabilities brochure.

RTD/33-02



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

 $\underline{\textbf{TEMPERATURE RANGE}} - \text{Minimum and maximum operating temperatures}$

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

Leadwire Length (X) Cap Size Sheath Length (L)

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

STYLE 58

AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIONS					
Option Code Description					
TAG1 Stainless steel tag and wire					
CAL1	NIST traceable calibration [specify points]				
CRT1 Certificate of conformance					
OPTIONAL ELEMENTS					
PTDs are standardly platinum 100 abm. DIN suns alaments with a 0.0029E					

alpha.	RTDs are standardly platinum, 10	-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.

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			

RTD/58-02



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 page 2-10b 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)

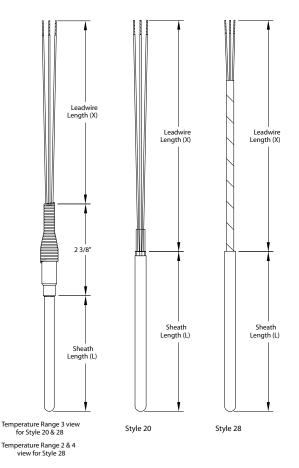
$\underline{\textbf{SHEATH LENGTH}} \text{ (for lengths greater than L=36", consult AST)}$

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



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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 (specifield) e.g., B45-6 [minimum length			
B90-	90° bend in sheath (specifield) e.g., B90-6 [minimum length			
WIRING CONNECTION	OPTIONS			
Option Code	Description			
WC76	#6 spade terminals, plated	copper		
WC70	#10 spade terminals, plate	d copper		
WC84	1/4" push-on insulated ter	minals, plated copper		
WC90	#10 ring terminals			
WC98	#8 ring terminals			
designed to be attached	or 2 and 3 wire constructions to sensor assemblies. Jack of pecified if plug option is als and jack options.)	options – for customer		
РЈ10	Standard plug, rated to 177	7°C (350°F)		
PJ20	Standard jack, rated to 177	°C (350°F)		
For flexibl	e stainless steel armor, s	ee Style 03		
OPTIONAL ELEMENTS				
RTDs are standardly plat alpha.	inum, 100-ohm, DIN-curve e	elements with a 0.00385		
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		
11110				
RTP7	±0.12%	4-wire		
	±0.12% ±0.06%	4-wire		

Notes:

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

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				

STYLES 20 & 28

AVAILABLE OPTIONS and MODIFICATIONS

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 A	vailable B	y Sensor T	ype and T	emperatu	re Range			
		St	yle 28, SI	NGLE ON	LY					
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				·					



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

Fax: 617 926-8411



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

O3T - Teflon® coated armor

SHEATH DIAMETER (in inches) (see page 2-11b 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)

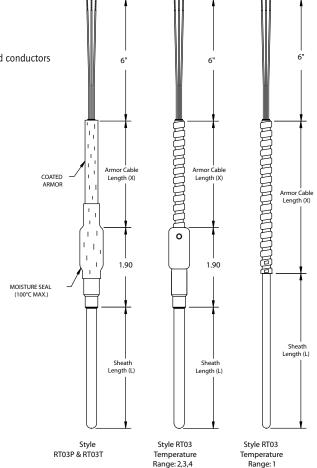
SHEATH LENGTH (for lengths greater than L=36", consult AST)

L# – (e.g., L6 = 6 inch sheath)

ARMOR CABLE LENGTH

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

OPTIONS – see page 2-11b



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AVAILABLE OPTIONS AND MODIFICATIONS

ASSEMBLY OP	TIONS				
Option Code		Description			
TAG1		Stainless steel t	ag and wire		
CAL1		NIST traceable of point(s)]	calibration [specify		
CRT1		Certificate of co	nformance		
B45-		45° bend in she from tip in inch	eath (specify length es e.g., B45-6)		
B90-		90° bend in she from tip in inch	eath (specify length es e.g., B90-6)		
ARMOR OPTIO	NS				
BA50			armor (Style 03, nge 1 only) – formerly		
to be attached t - should only be included for bot	o sensor assemb specified if plu	· ' '	customer wiring . Cable clamp is		
PJ10		Standard plug, (350°F)	Standard plug, rated to 177°C (350°F)		
PJ20		Standard jack, r (350°F)	Standard jack, rated to 177°C (350°F)		
WELD PADS		·			
WP00		Horizontal pad	⁄flat		
WP10		1" nominal pipe	1" nominal pipe size		
WP15		1.5" nominal pi	1.5" nominal pipe size		
WP20		2" nominal pipe	2" nominal pipe size		
WP25		2.5" nominal pi	2.5" nominal pipe size		
WP30		3" nominal pipe	3" nominal pipe size		
WP35		3.5" nominal pi	3.5" nominal pipe size		
WP40		4" nominal pipe	e 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®		

				SIN	GLE				
Temp Range	RTP 1	RTF 1A		RTP 1AA	RTP 6	F	RTP 7	RTP 7A	RTP 7AA
1	1/8	1/8	3	1/8	1/8	3,	/16	3/16	3/16
2	3/16	3/1	6	3/16	3/16	3,	/16	3/16	3/16
3	3/16				3/16	3,	/16		
4	1/8				1/8	3,	/16		
	•			DL	JAL				•
Temp Range	DRTP 1	DRT 1A		DRTP 1AA	DRTP 6	D	RTP 7	DRTP 7A	DRTF 7AA
1	3/16	3/1	6	3/16	3/16	1	/4	1/4	1/4
2	1/4	1/4	1	1/4	3/16	3	/8	3/8	3/8
3	1/4				1/4	1	/4		
4	3/16				3/16	1	/4		
OPTION	IAL ELEM	IENTS			•				•
RTDs are 0.00385		dly pla	tinu	ım, 100-o	hm, DIN-o	curve	e elen	nents with	а
Option (Code		Accuracy (at 0°C) Construction			truction			
RTP1 (st	:d.)		±(±0.12% 3			3-wire		
RTP1A			±(±0.06%			3-wire		
RTP1AA	ı		±(±0.01%			3-wire		
RTP6			±(±0.12%			2-wire		
RTP7			±(±0.12%		ĺ	4-wire		
RTP7A			±(0.06%			4-wi	re	
RTP7AA			±	±0.01% 4-wire					

 Additional materials, curves and resistance values are available - see Capabilities brochure.

WIRING CONNECTION	N 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.		



Brass

Brass

1/2"

CF32

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

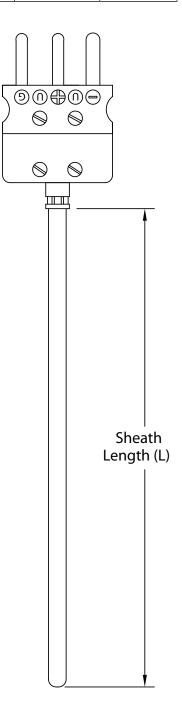
1 - -45 to 260°C (-50 to 500°F)

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



STYLE 14

AVAILABLE OPTIONS and MODIFICATIONS

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

COMPRESSION FITTINGS							
Option Code	Option Code NPT		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	CF32 1/2" Bra		Brass				



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

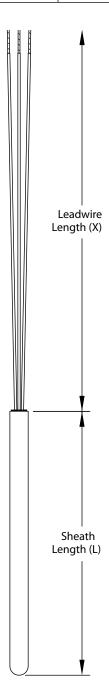
L# - (e.g., L6 = 6 inch sheath)

LEADWIRE LENGTH

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

OPTION

TAG1 - stainless steel tag and wire



 $Teflon \hbox{$^{\circledcirc}$ is a registered trademark of DuPont} \\$



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.



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)

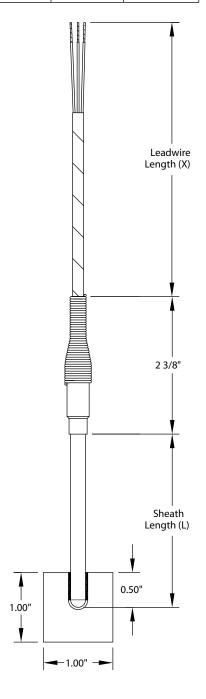
SHEATH LENGTH (for lengths greater than L=36", consult AST)

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

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 CONNECTIO	N OPTIONS					
Option Code	Description	Description				
WC76	#6 spade terminals, plat	#6 spade terminals, plated copper				
WC70	#10 spade terminals, pla	#10 spade terminals, plated copper				
WC84	1/4" push-on insulated terminals, plated copper					
WC90	#10 ring terminals					
WC98	#8 ring terminals					
blies. Jack options - fo	r customer wiring – should	e attached to sensor assem- only be specified if plug op- both plug and jack options.)				
РЈ10	Standard plug, rated to 177°C (350°F)					
PJ20	Standard jack, rated to 177°C (350°F)					
OPTIONAL ELEMENT	s					
RTDs are standardly plants	atinum, 100-ohm, DIN-curv	e elements with a 0.00385				
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 mater	ials, curves and resistance v	ralues are available - see				

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				

Capabilities brochure.

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

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 page 2-15b 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)

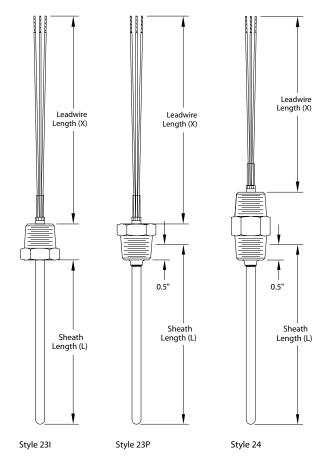
SHEATH LENGTH (for lengths greater than L=36", consult AST)

L# - (e.g., L6 = 6 inch sheath)

LEADWIRE LENGTH

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

OPTIONS - see page 2-15b



AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIO	DNS	Smalles	Diamete	r Sheath A	vailable E	By Sensor	Type and 1	Гетрегаtu	re Rang
Option Code	Description	SINGLE							
TAG1	Stainless steel tag and wire	Temp	RTP	RTP	RTP	RTP	RTP	RTP	RTF
CAL1	NIST traceable calibration [specify point(s)]	Range	1	1A	1AA	6	7	7A	7A/
CRT1	Certificate of conformance	1	1/8	1/8	1/8	1/8	3/16	3/16	3/1
B45-	45° bend in sheath (specify length from tip in inches e.g., B45-6)	3	3/16 3/16	3/16	3/16	3/16 3/16	3/16 3/16	3/16	3/1
B90-	90° bend in sheath (specify length from tip in inches e.g., B90-6)	4 1/8			1/8		3/16		
For spring-loaded design, see Style 75		Temp	DRTP	DRTP	DRTP	DRTP	DRTP	DRTP	DRT
For terminal heads, see Styles 15 and 21		Range	1	1A	1AA	6	7	7A	7A
WIRING CONNECTION OPTIONS		1	3/16	3/16	3/16	3/16	1/4	1/4	1/4
Option Code	Description	2	1/4	1/4	1/4	3/16	3/8	3/8	3/
WC76	#6 spade terminals, plated copper	3	1/4			1/4	1/4		
WC70	#10 spade terminals, plated copper	4	3/16			3/16	1/4		
WC84	1/4" push-on insulated terminals, plated copper	WELD I	PADS (St	yle 23I o	nly)				
WC90	#10 ring terminals	WP00 Horizontal pad/flat							
WC98	#8 ring terminals	WP10		1" nominal pipe size					
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.)		WP15	WP15 1.5" nominal pipe size						
		WP20	WP20		2" nominal pipe size				
		WP25	WP25 2.5" nominal pipe size						
РЈ10	Standard plug, rated to 177°C (350°F)	WP30		3" nominal pipe size					
PJ20	Standard jack, rated to 177°C (350°F)	WP35		3.5" nominal pipe size					
OPTIONAL ELEMENTS		WP40	WP40 4" nominal pipe size						
RTDs are standardl alpha.	y platinum, 100-ohm, DIN-curve elements with a 0.00385								

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 term	ninal heads, see Styles 1	5 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				
Note: plug is designed to customer wiring – should	railable on 23P only, 2 and be attached to sensor asse only be specified if plug op for both plug and jack option	mblies. Jack options – for otion is also included.			
РЈ10	Standard plug, rated to 177°C (350°F)				
PJ20	Standard jack, rated to 177°C (350°F)				
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: For dual element, add prefix "D" (e.g., DRTP6)
- Additional materials, curves and resistance values are available see Capabilities brochure.

Fax: 617 926-8411



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)	Was	her
	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 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)

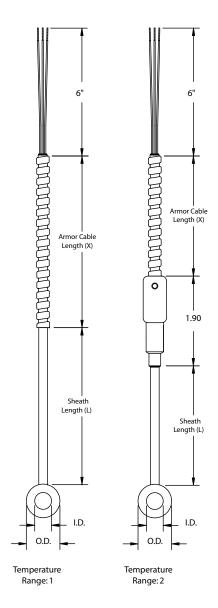
SHEATH LENGTH (for lengths greater than L=36", consult AST)

L# – (e.g., L6 = 6 inch sheath)

LEADWIRE LENGTH

X# - (e.g., X6 = 6 inch length)

OPTIONS – see page 2-16b



 $Teflon \hbox{$^{\circledcirc}$ is a registered trademark of DuPont} \\$

STYLE 32

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			
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			
blies. Jack options - for	lote: plug is designed to be attached to sensor assem- customer wiring – should only be specified if plug op- able 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"			

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:

- 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.



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

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)

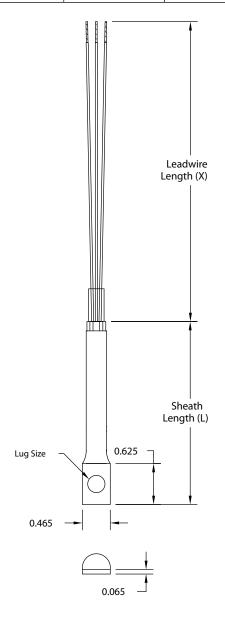
SHEATH LENGTH (for lengths greater than L=36", consult AST)

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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STYLE 41

AVAILABLE OPTIONS and MODIFICATIONS

ASSEMBLY OPTIO	NS		
Option Code	Description		
TAG1	Stainless steel tag and wire		
CAL1	NIST traceable calibration [specify point(s)]		
CRT1	Certificate of conformance		
WIRING CONNEC	TION 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 assen blies. Jack options – for customer wiring – should only be specified if plug of tion is also included. Cable clamp is included for both plug and jack options.			
PJ10	Standard plug, rated to 177°C (350°F)		

Standard jack, rated to 177°C (350°F)

PJ20

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)
- Additional materials, curves and resistance values are available see Capabilities brochure.



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

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 page 2-18b 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)

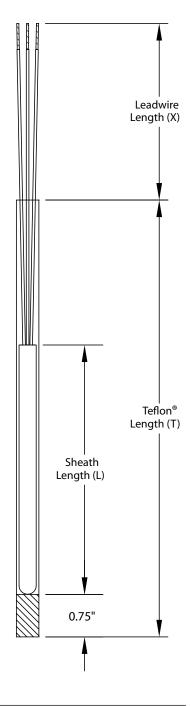
TEFLON® SLEEVE

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



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STYLE 42

AVAILABLE OPTIONS and MODIFICATIONS

Smallest Diameter Sheath Available By Sensor Type and Temperature Range								
			SIN	GLE				
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	
		•	DL	IAL				
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	

ASSEMBLY OPTIO	DNS				
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					

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				
DILICS AND LACKS (Networks in designed to be obtained to					

 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)

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:

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



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

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 page 2-3b 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

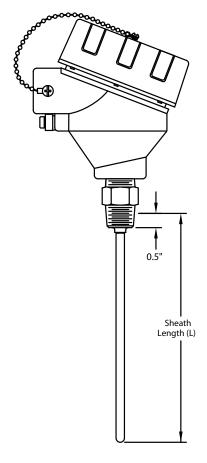
$\underline{\textbf{TEMPERATURE RANGE}} \text{ - Minimum and maximum operating temperatures}$

- **1** -45 to 260°C (-50 to 500°F)
- $2 -45 \text{ to } 482^{\circ}\text{C} \text{ (-50 to } 900^{\circ}\text{F)}$
- **3** -45 to 788° C (-50 to 1450° F)
- 4 -200 to 260°C (-328 to 500°F)

$\underline{\textbf{SHEATH LENGTH}} \text{ (for lengths greater than L=36", consult AST)}$

L# – (e.g., L6 = 6 inch sheath)

OPTIONS - see page 2-19b



AVAILABLE OPTIONS and MODIFICATIONS

EXPLOS	EXPLOSION-PROOF TERMINAL HEAD OPTIONS								
Option (Code		Process Connection			Conduit Connection			
Same specifications as standard									
HD72			1/2	"			1/2"	•	
Smalles	t Diamete	r Sheatl	ı Ava	ilable B	y Sensor 1	уре	and T	emperatu	re Range
				SIN	GLE				
Temp Range	RTP 1	RTP 1A		RTP 1AA	RTP 6	F	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	5 .	3/16	3/16	3.	/16	3/16	3/16
3	3/16				3/16	3.	/16		
4	1/8				1/8	3	/16		
				DL	JAL				
Temp Range	DRTP 1	DRTI 1A	o l	DRTP 1AA	DRTP 6	D	RTP 7	DRTP 7A	DRTP 7AA
1	3/16	3/16	5 .	3/16	3/16				
2	1/4	1/4		1/4	3/16				
3	1/4				1/4				
4	3/16				3/16				

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					
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:

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

'						
TRANSMITTERS – For	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 *.					

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

316 − 316 stainless steel **317** ← 316 stainless steel **318** ← 316 stainless steel **319** ← 316 stainless steel

INC – Inconel 600® F11 – F11 carbon steel (forged)
321 – 321 stainless steel F22 – F22 carbon steel (forged)
ALUM – Aluminum F91 – F91 carbon steel (forged)

HAST – Hastelloy C[®] **A20** – Alloy 20 **TTNM** – Titanium **BRASS** – Brass

OPTIONS

TW01 - Stainless steel cap and chain assembly

TWO2 - Brass cap and chain assembly

TAG2 - Stamped tag #

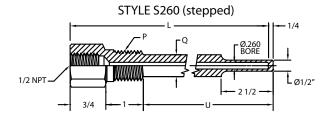
STRT – Straight stem

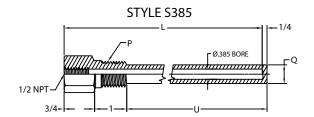
MTR1 - Material Test Report

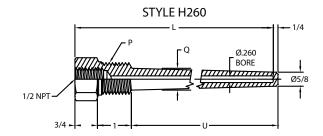
WFC1 - Wake Frequency Calculation

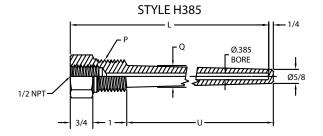
Root Diameter (Q)

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"









(*) 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, 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 **316L** − 316L stainless steel

 310 - 310 stainless steel
 400 - Monel 400°

 316 - 316 stainless steel
 CS - Carbon steel

INC - Inconel 600°F11 - F11 carbon steel (forged)321 - 321 stainless steelF22 - F22 carbon steel (forged)ALUM - AluminumF91 - F91 carbon steel (forged)

HAST – Hastelloy C[®] **A20** – Alloy 20 **TTNM** – Titanium **BRASS** – Brass

OPTIONS

TW01 – Stainless steel cap and chain assembly

TWO2 - Brass cap and chain assembly

TAG2 - Stamped tag #

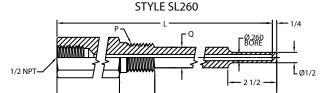
STRT - Straight stem

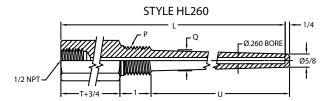
MTR1 - Material Test Report

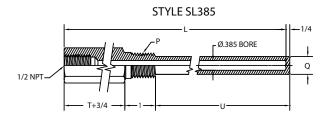
WFC1 – Wake Frequency Calculation

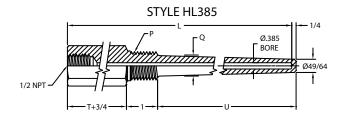
Root Diameter (Q)

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"









(*) 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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TW/HL,SL-02

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 316 L − 316L stainless steel 400 − Monel 400® 316 − 316 stainless steel CS − Carbon steel

INC - Inconel 600®F11 - F11 carbon steel (forged)321 - 321 stainless steelF22 - F22 carbon steel (forged)ALUM - AluminumF91 - F91 carbon steel (forged)

HAST – Hastelloy C® **A20** – Alloy 20 **TTNM** – Titanium **BRASS** – Brass

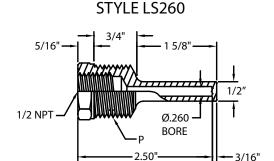
OPTIONS

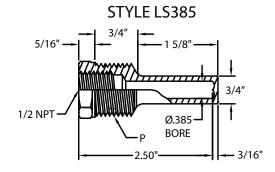
TW01 - Stainless steel cap and chain assembly

TWO2 - Brass cap and chain assembly

TAG2 - Stamped tag #

MTR1 - Material Test Report







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

<u>STYLE</u>

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

316 − 316 stainless steel **316** − 310 stainless steel **316** − 316 stainless steel

INC - Inconel 600®F11 - F11 carbon steel (forged)321 - 321 stainless steelF22 - F22 carbon steel (forged)ALUM - AluminumF91 - F91 carbon steel (forged)

HAST – Hastelloy C[®] **A20** – Alloy 20 **TTNM** – Titanium **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

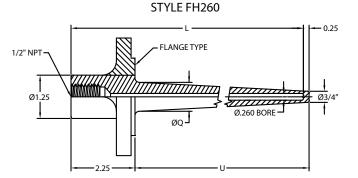
TAG2 - Stamped tag #

STRT – Straight stem

MTR1 - Material Test Report

WFC1 – Wake Frequency Calculation

TFLN – Teflon sleeve or coating



	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.

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 **316L** − 316L stainless steel **310** − 310 stainless steel **400** − Monel 400®

316 – 316 stainless steel **CS** – Carbon steel

INC - Inconel 600°F11 - F11 carbon steel (forged)321 - 321 stainless steelF22 - F22 carbon steel (forged)ALUM - AluminumF91 - F91 carbon steel (forged)

HAST – Hastelloy C[®] **A20** – Alloy 20 **TTNM** – Titanium **BRASS** – Brass

OPTIONS

TW01 – Stainless steel cap and chain assembly

TWO2 – Brass cap and chain assembly

TAG2 - Stamped tag #

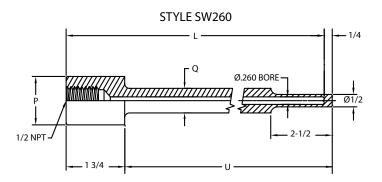
STRT - Straight stem

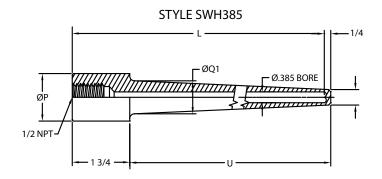
MTR1 - Material Test Report

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"





(*) 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, 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"	18" 14.5" 13.		
L24	24"	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

316L – 316L stainless steel

310 – 310 stainless steel **400** – Monel 400® **316** – 316 stainless steel **CS** – Carbon steel

INC – Inconel 600®F11 – F11 carbon steel (forged)321 – 321 stainless steelF22 – F22 carbon steel (forged)ALUM – AluminumF91 – F91 carbon steel (forged)

HAST – Hastelloy C® **A20** – Alloy 20 **TTNM** – Titanium **BRASS** – Brass

OPTIONS

TW01 - Stainless steel cap and chain assembly

TWO2 - Brass cap and chain assembly

MTR1 - Material Test Report

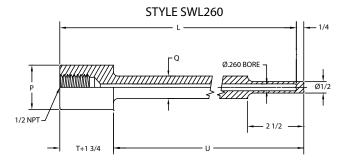
TAG2 - Stamped tag #

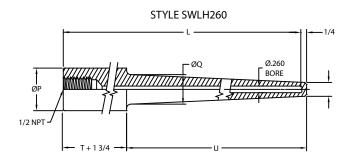
WFC1 – Wake Frequency Calculations

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"





(*) 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, 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" **L9** – L=9"; U=7.5" **L6** - L=6"; U=4.5"

L15 – L=15"; U=13.5"

L12 – L=12"; U=10.5"

L24 – L=24"; U=22.5"

L18 – L18"; U16.5"

LZ-7 L Z-7, O ZZ.5

Specify other (L = U+1.5")

WELL MATERIAL

--- 304 stainless steel **316L** − 316L stainless steel

310 – 310 stainless steel **400** – Monel 400® **316** – 316 stainless steel **CS** – Carbon steel

INC - Inconel 600®F11 - F11 carbon steel (forged)321 - 321 stainless steelF22 - F22 carbon steel (forged)ALUM - AluminumF91 - F91 carbon steel (forged)

HAST – Hastelloy C[®] **A20** – Alloy 20 **TTNM** – Titanium **BRASS** – Brass

OPTIONS

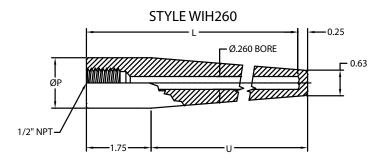
TW01 – Stainless steel cap and chain assembly

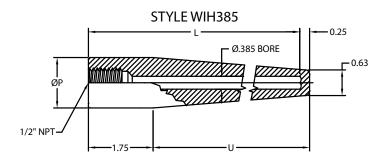
TWO2 - Brass cap and chain assembly

TAG2 - Stamped tag #

MTR1 - Material Test Report

WFC1 – Wake Frequency Calculations





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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 316L − 316L stainless steel 400 − Monel 400® CS − Carbon steel

INC – Inconel 600®F11 – F11 carbon steel (forged)321 – 321 stainless steelF22 – F22 carbon steel (forged)ALUM – AluminumF91 – F91 carbon steel (forged)

HAST – Hastelloy C[®] **A20** – Alloy 20 **TTNM** – Titanium **BRASS** – Brass

OPTIONS

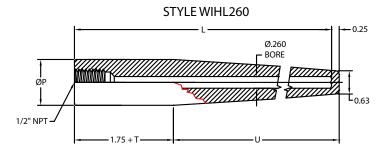
TW01 - Stainless steel cap and chain assembly

TWO2 - Brass cap and chain assembly

TAG2 - Stamped tag #

MTR1 - Material Test Report

WFC1 - Wake Frequency Calculations



(*) 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, 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")

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'')

WELL MATERIAL

--- 304 stainless steel 316L - 316L stainless steel 310 - 310 stainless steel 400 - Monel 400®

316 - 316 stainless steel CS - Carbon steel INC - Inconel 600®

F11 - F11 carbon steel (forged) **321** – 321 stainless steel F22 - F22 carbon steel (forged) **ALUM** - Aluminum F91 - F91 carbon steel (forged)

HAST - Hastelloy C® **A20** – Alloy 20 TTNM - Titanium **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

STYLE VS260 0.25 FI ANGE Ø.260 **BORE** Ø1/2 - 2-1/2 -1/2" NPT-

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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

0.D.

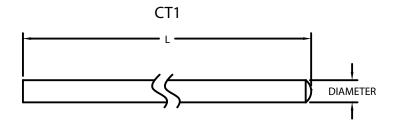
- **0** 0.375"
- 1 0.5"
- **2** 0.688"
- **3** 0.75"
- **4** 0.875"
- **5** 1"
- **6** 1.1"
- **7** 1.25"
- **8** 1.5"
- **9** 1.75"

TUBE MATERIAL

- A Alumina
- $\boldsymbol{\mathsf{M}}$ 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

0.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

304 – 304 stainless steel

316 - 316 stainless steel

CS - Carbon steel

CONNECTION LENGTH

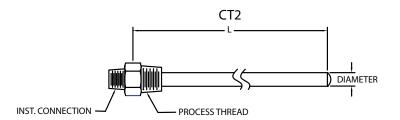
1 - CT2 only (hex fitting length)

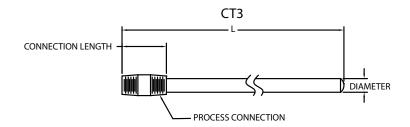
- CT3 only (length of nipple in inches; e.g., 6 = 6" nipple)

LENGTH (in inches)

L# – Specify length (For CT2, U is approximately L – 1"; for CT3, U is approximately L – the nipple length)

*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

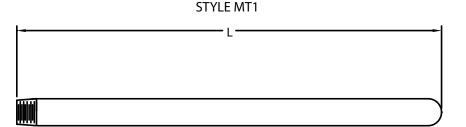
7 – 2" NPT

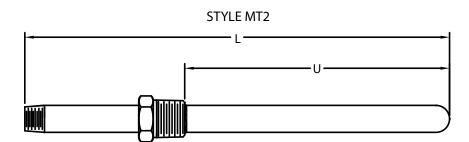
OVERALL LENGTH (in inches)

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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STYLE MT4

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

MT4 - Metal protection tube, threaded, with flange

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)

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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

SC - Silicon carbide, oxide bonded

SI - Sialon

HX – Hexalloy

LT - 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

- **C** Carbon steel
- S 316 stainless steel

OVERALL LENGTH (in inches)

L# – Specify length of tube including threads

(e.g., L24=24" long tube)

	PT2
	A
	0.50 TO 1.00
	TUBE DIAMETER
*INST. CONNECTION —	INNER TUBE
	PROCESS CONNECTION

OUTER TUBE O.D.	INNER TUBE O.D.
3/4"	.375"
7/8"	.375"
1"	.375"
1.10"	.375"
1-1/4"	.688"

Use CT2/CT3 spec sheet to specify inner

chart below:

protection tube, using appropriate O.D. from

Note: to match inner tube length to outer, inner length (A) = outer tube length (L) + 0.75''

.688"

1-1/2"

1-3/4"

PROCESS THREAD (NPT)

	CODE	2 (1")	3 (1-1/4")	4 (1-1/2")	5 (2")
	3 (3/4")	Н	Н	Н	Н
0.D	4 (7/8")	L,S	L,S	L,S	L,S
	5 (1")		Н	Н	Н
ER T	6 (1-1/10")		S	S	S
OUTER TUBE	7 (1-1/4")			Н	Н
•	8 (1-1/2")			Н	Н
	9 (1-3/4")				С

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

SC - Silicon carbide, oxide bonded

SLIP FLANGE SIZE

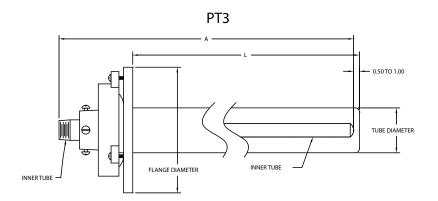
5 - 4-7/8"

OVERALL LENGTH (in inches)

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

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.
- 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".
- 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	00-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.



Fax: 617 926-8411

*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.

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 Se	nsor Pods* (standard limits of error with 48" leads)
Pods for 0.250" O.D.	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	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 (stainle	ess 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 Fitt	-
For 0.250" housing	
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" NP	<u>·</u>
UC1011	Carbon steel, ordinary location
US1011	Stainless steel, ordinary location
HF1091	Plated steel, explosion-proof



THE SENSOR BOX™ EK1000

AVAILABLE ACCESSORIES

Terminal Head conn.)	ls with 4-Post Termin	nal Block Included (1/2" NPT process		
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 Block	cs			
Part Number	Description			
PH44	4-post, ceramic			
PH48	3-post, ceramic, for PI	H50 and PH51 heads		
Carbon Steel N	Nipples (1/2" NPT)			
NC1001	1" long			
NC1002	2" long			
NC1003	3" long			
NC1004	4" long			
NC1006	6" long			
Stainless Stee	l Nipples (1/2" NPT)			
NS1001	1" long			
NS1002	2" long			
NS1003	3" long			
NS1004	4" long			
NS1006	6" long			
Spring-Loaded	l Kits			
AC1088	For 0.188" housings			
AC1087	For 0.250" housings			
Spring-Loaded	Hex Fittings			
PF14	Stainless steel, for 0.2	50" housings		
PF13	Stainless steel, for 0.1	88" housings		
Plugs and Jacl	ks			
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			
	Wire clamp			
PT10	Brass crimp insert, for 0.250" housings			
	Brass crimp insert, for	Brass crimp insert, for 0.230 flousings		
B1250				
B1250 B1188	Brass crimp insert, for			
PT10 B1250 B1188 Strain Reliefs TS1092	Brass crimp insert, for	0.188" housings		
B1250 B1188 Strain Reliefs	Brass crimp insert, for (Bag of 10) Nylon grommet for 0.	0.188" housings 250" housings		
B1250 B1188 Strain Reliefs TS1092	Brass crimp insert, for (Bag of 10) Nylon grommet for 0. Teflon® strain relief for	0.188" housings 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.



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

INPUT

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

Specifications

Isolation (I/O): 500 VDC
Supply Voltage: 10-40 VDC, polarity protected

rupply voltage. 10-40 vbc, polanty protected

Sensor Lead Resistance: RTD: 500 ohms max.

T/C: 10,000 ohms max. Effect: 0.001 °C/ohm

Maximum Load: $R_{max} = (V_{supply} -10V)/20 \text{ mA}$

Stability: Zero drift: 0.02°C/°C

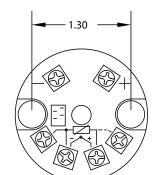
Span drift: 0.01°C/°C

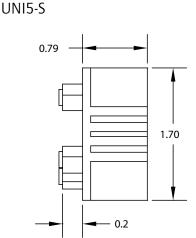
Ambient Temperature: -40 to + 85°C

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
JT/C	-200°C	1200°C	50°C
K T/C	-270°C	1370°C	50°C
ET/C	-270°C	1000°C	50°C
TT/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 #.

^{*}See chart below for available sensor ranges and minimum spans



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

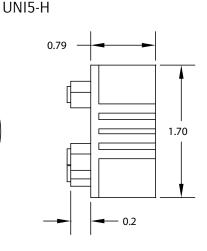
Specify °F or °C

OPTION

DS01 – Downscale open circuit protection

^{*}See chart below for available sensor ranges and minimum spans





Specifications

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: $R_{max} = (V_{supply} - 10)/20 \text{ mA}$ 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

1.30

Sensor Type	Min. Temp.	Max. Temp.	Min. Span
JT/C	-200°C	1200°C	50°C
K T/C	-270°C	1370°C	50°C
ET/C	-270°C	1000°C	50°C
TT/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 thermocoupleR - R type thermocoupleK - K type thermocoupleS - S type thermocoupleE - E type thermocoupleB - B type thermocouple

T – T 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

Specifications

Supply Voltage: 8-38 VDC, polarity protected Maximum Load: $R_{max} = (V_{supply} - 8V)/20 \text{ mA}$

Stability (both zero and span drift): RTD: 0.03% of span/°C (100°C span) span drift): T/C: 0.04% of span/°C (25 mV span) Linearity: RTD: better than +/- 0.05% of span

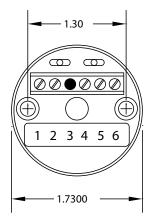
T/C: better than +/- 0.03% of span

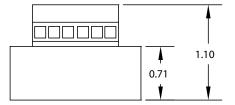
Ambient Temperature: -20 to + 70°C

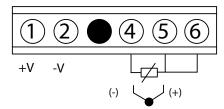
Humidity: 0-95% RH, non-condensing
*Input span: RTD: 20°C min., 500°C max.

T/C: 10 mV min.

RTD2 AND TC2







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"

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"

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"

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"

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

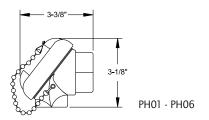
Gasketed screw cover, 4-post ceramic terminal block included.

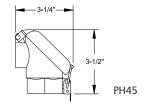
Ordering Code	Process Conn.	Conduit Conn.
PH26	1/2"	1/2"

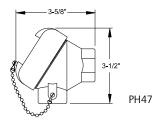
CERAMIC TERMINAL BLOCK REPLACEMENTS

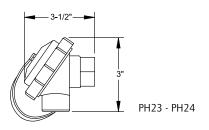
For NEMA 4 heads, brass terminals

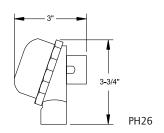
Ordering Code	No. of Terminals	Max. Wire Size
PH39	2	8 AWG.
PH40	3	8 AWG.
PH41	4	8 AWG.
PH42	6	14 AWG.

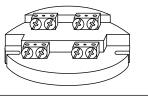












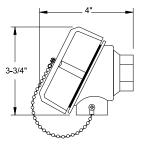
PH41

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"

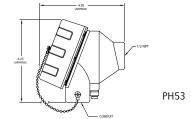


PH50-52

CAST ALUMINUM - ATEX approved

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

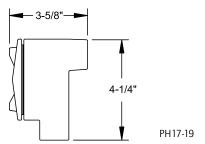
Ordering Code	Process Conn.	Conduit Conn.
PH53	1/2"	3/4"



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)

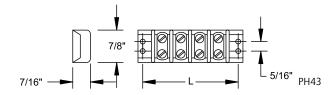
Ordering Code	Process Conn.	Conduit Conn.
PH17	1/2"	1/2"
PH18	1/2"	3/4"
PH19	3/4"	3/4"



PLASTIC TERMINAL STRIP REPLACEMENTS

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

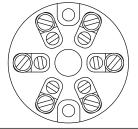
Ordering Code	No. of Terminals	Length of Strip
PH43-4	4	2.16"
PH43-6	6	2.91"



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.

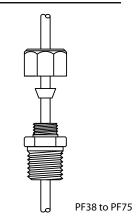


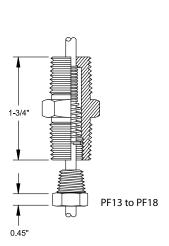
PH49

ACC/EXP-TH-02

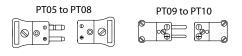
PARTS TO CONNECT TO WIRING OR THE PROCESS

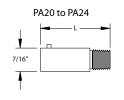
	COMPRESSION	ON FITTINGS	
For 1/8" diam	eter sheath		
Part Number	NPT	Body/Nut	Ferrule
PF38	1/8"	304 stst	304 stst
PF39	1/8"	304 stst	Teflon®
PF40	1/4"	304 stst	304 stst
PF41	1/4"	304 stst	Teflon®
For 3/16" dia	meter sheath		
PF52	1/8"	304 stst	304 stst
PF53	1/8"	304 stst	Teflon®
PF54	1/8"	Brass	Brass
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" diam	eter 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





PLUGS AND JACKS			
(Note: specif	(Note: specify J, K, E or T calibration. e.g., PT05-J)		
PTO5	Standard plug, rated to 177°C (350°F)		
PTO6	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		



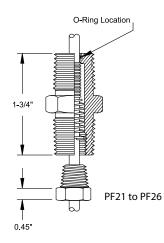




SPRING-LOADED FITTINGS			
Standard, Non	Standard, Non-sealed		
Part Number	Process Conn.	Conduit Conn.	Sensor Diameter
PF13	1/2" NPT	1/2" NPT	3/16"
PF14	1/2" NPT	1/2" NPT	1/4"
PF17	3/4" NPT	3/4" NPT	3/16"
PF18	3/4" NPT	3/4" NPT	1/4"
O-Ring Sealed*			
PF21	1/2" NPT	1/2" NPT	3/16"
PF22	1/2" NPT	1/2" NPT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

Maximum pressure rating 15 psi

1.



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"	

Buna N O-ring rated for -23 to 93°C (-10 to 200°F)

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 Gaug	je		·	
Type J	20JST58	20JS58	20JXST58	
Type K	20KST58	20KS58	20KXST58	
Туре Т	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	
Туре Т	20TST60	20TS60	20TXST60	
Type E	20EST60	20ES60	20EXST60	
Fiberglass/Fiberglass insulated, 20 Gau	ıge		·	
Type J	20JST57	20JS57	20JXST57	
Type K	20KST57	20KS57	20KXST57	
Type T	20TST57	20TS57	20TXST57	
Type E	20EST57	20ES57	20EXST57	
Fiberglass (Filaflex®)/Fiberglass (Filafle	ex®) 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 (Filafl	ex®) insulated, stainless steel overbraid	l, 20 Gauge	·	
Type J	20JST71	20JS71	20JXST71	
Туре К	20KST71	20KS71	20KXST71	
Туре Т	20TST71	20TS71	20TXST71	
Type E	20EST71	20ES71	20EXST71	

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