

# MULTI-POINT TEMPERATURE SENSORS



Multi-Point Temperature Sensors  
Single-unit assemblies that incorporate multiple temperature sensors

Speed. Service. Solutions...  
Beyond Measure®

## Function & Basic Design

In any manufacturing operation, there are a variety of process variables that are monitored, measured and/or controlled. One of the most widely measured variables is temperature. The temperature of a material (be it gas, liquid or a solid) is seldom constant throughout the process. In some applications, small variations of a material temperature within the process may not be an issue, but in others, it is critical to monitor and/or control at a number of points. Measuring temperature of a process at multiple points can be accomplished by mounting an individual sensor at each location or by installing a single multi-point temperature sensor assembly. Both will provide the necessary information, however the multi-point sensor only requires one installation at one location with one control connection while measuring the material at numerous points along the process. Multi-point temperature sensors provide an economical and efficient way to handle several points of measure in a process.

In its simplest form a multi-point temperature sensor consists of a number of RTDs (Pt100s) or thermocouples encased at various points inside a sleeve, sheath, jacket or tube with a single access point at a junction enclosure. Multi-point sensors can be various lengths, sizes in diameter, made of a variety of materials, and constructed to measure a wide range of temperatures.

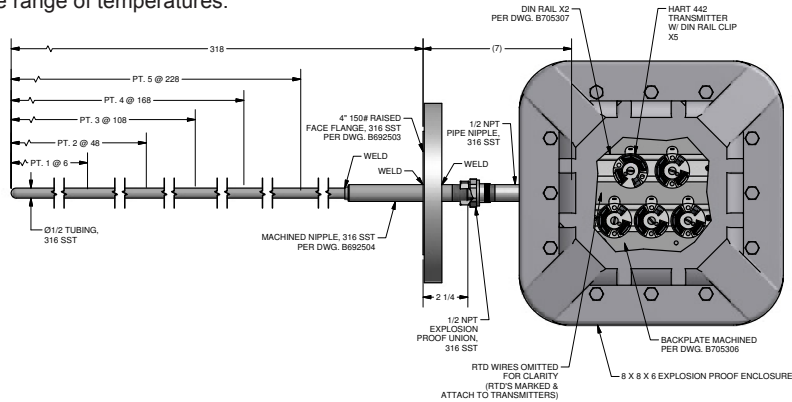
## Applications

Multi-point temperature sensors are utilized in many industries including but not limited to:

- chemical
- oil and gas
- petrochemical
- food and beverage
- dairy
- pharmaceutical
- power generation
- HVAC
- heat treating
- water and wastewater

These sensors are often used to measure multiple temperature points in storage tanks, piping systems, ovens/kilns/furnaces, air flow ducts, grain bins, heat exchangers, rail car and truck tanks, chemical vessels and others.

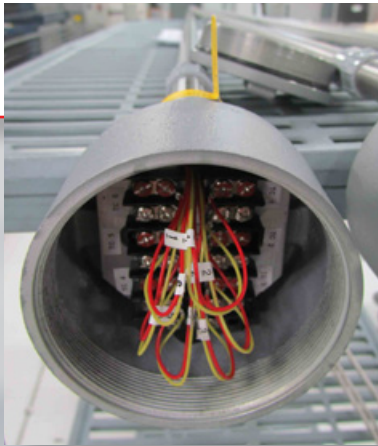
Depending on the application, multi-point temperature sensors provide detailed temperature profiles for optimized process control. They are often used to map temperatures over a large area, identify temperature gradients, or to detect hot spots within the process.



## Constructions/Options

Pyromation manufactures a variety of standard and custom-designed multi-point temperature sensor assemblies that are used in applications in many industries around the world. The various constructions include thermocouple and RTD (Pt100) types. This brochure provides information on the company's standard offering, however, Pyromation also designs and builds custom-designed types based on customer specifications.

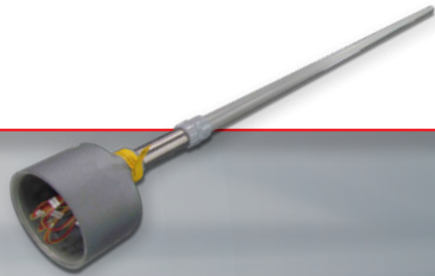
Multi-point sensors are available in a variety of RTD (Pt100s) or thermocouple options, with various connection fittings, terminations and/or enclosures. Pyromation also builds multi-point sensors with mounting flanges, armored cable jackets, protection tubes, temperature transmitters, and more.



## Support

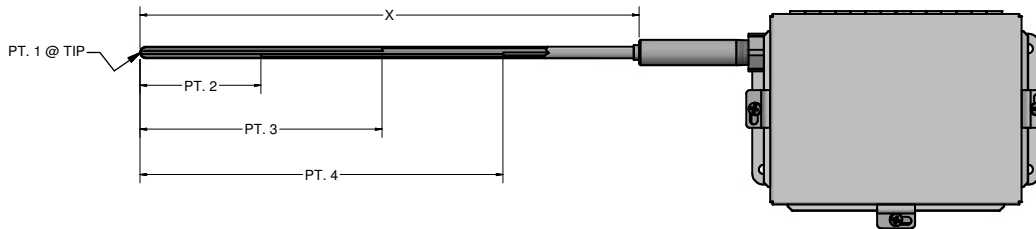
The Pyromation team is easy to reach and work with when communicating your multi-point temperature sensor needs. Our company's sales channel partners and in-house regional sales managers have decades of experience, and will work directly with you to understand your application and develop the optimal, cost-effective solution. Our team includes product engineers who produce detailed drawings for your review. In-house calibration service and product documentation is available at your request.

Depending on complexity and volume, Pyromation will ship within days of receiving your order, or quicker if required. We're ready when you are. Please contact us with your requirements, and let us show you how easy it is to get any of your temperature sensor needs fulfilled.



# MP01 MgO Multi-Point Sensors with Termination Enclosures

Pyromation's multi-point thermocouples with enclosures accurately measure temperatures at various points along the sheath allowing for a temperature profile across a specified length. The design consists of smaller diameter MgO thermocouples placed inside a single outer sheath, which allows for profiling the temperature at various points along a single line. Applications where these products are used include vessels, holding tanks, furnaces, ovens, reactors, heat exchangers, air ducts and more. The tables found on this page allow customer selection of standard thermocouple types, up to 16 temperature points, various sheath diameters, mounting fittings and termination enclosures. Custom-designed products are available upon request.



## Order Codes

**Example Order Number:** **K (4) 4 8 U - 072 - (0,4,8,12) - 00 - 8PN4 ,NT - 20**

### 1-0 Thermocouple Types

CODE	DESCRIPTION
J	Type J
K	Type K

### 1-1 Number of Points

CODE	DESCRIPTION
2 to 16 Points	

Specify number of points in parenthesis. Example: (6) = 6 points. Maximum number of points is based on sheath diameter, see table 1-2 for maximum number of points.

### 1-2 Sheath Diameters

CODE	DIAMETER (INCHES)	MAX NUMBER OF POINTS <sup>[1]</sup>
2	1/8"	8
3	3/16"	14
4	1/4"	16
6	3/8"	16
8	1/2"	16

[1] Maximum number of points apply to sensors 20 feet or less. For lengths above 20 feet, reduce the maximum number of points by 1. Consult factory for lengths above 50 feet.

### 1-3 Sheath Material

CODE	DESCRIPTION
8	316 Stainless Steel

### 1-4 Measuring Junctions

CODE	DESCRIPTION
U	Ungrounded junction

### 1-5 Special Options

CODE	DESCRIPTION
M	Special limits of error

### 2-0 "X" Dimension

Insert three digit sheath length ("X" Dimension) in inches

### 2-1 Sensor Location

Specify location of junctions from tip in inches where 0 = tip. Ex: 0,4,8,12

### 3-0 Sheath Mounting Fittings

CODE	DESCRIPTION
00	No Fitting

Compression Fittings		NPT SIZE (inches)
05A	316 Stainless steel	1/8
05B	316 Stainless steel	1/4
05C	316 Stainless steel	1/2
12A	316 SS Readjustable	1/8
12B	316 SS Readjustable	1/4
12C	316 SS Readjustable	1/2
19C	303 SS Spring-loaded well fitting	1/2

Fixed Bushings		NPT SIZE (inches)
8A_ _ <sup>[1]</sup>	316 SS welded bushing	1/8
8B_ _ <sup>[1]</sup>	316 SS welded bushing	1/4
8C_ _ <sup>[1]</sup>	316 SS welded bushing	1/2
8D_ _ <sup>[1]</sup>	316 SS welded bushing	3/4

[1] When ordering fixed bushings, specify order code above plus insert length "U", as measured from hot tip to bottom of threaded bushing. EXAMPLE: order code 8A06 is 1/8" NPT, 316 SS bushing located 6" from hot tip.

### 4-0 Head Mounting Fittings

CODE	DESCRIPTION	MAX NUMBER OF POINTS
8PN <sup>[1]</sup>	1/2" NPT Pipe nipple, 4" long minimum, 316 SS	Up to 8 points
8PND <sup>[1]</sup>	3/4" NPT Pipe nipple, 6" long minimum, 316 SS	Up to 16 points

**Options**

NT	No process threads
----	--------------------

[1] For longer lengths, insert the length in inches

### 5-0 Termination Enclosures

CODE	DESCRIPTION	MAX NUMBER OF POINTS
20	General-Purpose painted steel wall mount panel enclosure - 8"x6"x4" NEMA 4	16
30	General Purpose 316 SS wall mount panel enclosure - 8"x6"x4" NEMA 4X	16
31	Aluminum screw-cover head (NEMA 4X, IP66)	4
34	Cast iron screw-cover head (NEMA 4X, IP66)	4
91	316L stainless steel screw-cover head (NEMA 4X, IP66)	4
93	Aluminum explosion-proof connection head	4
94	316L stainless steel explosion-proof connection head	4
52	Malleable iron explosion-proof connection head	6

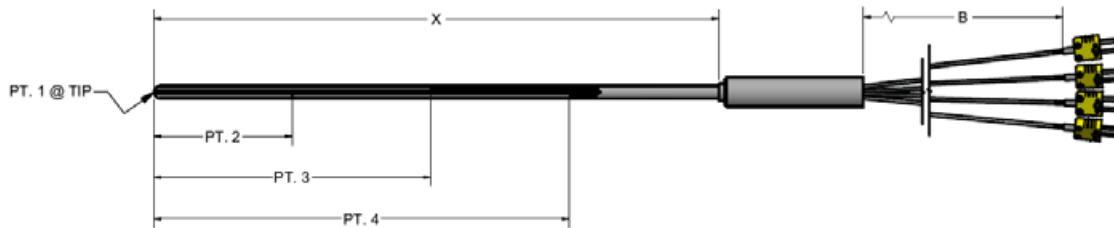
#### Options

I	Stainless steel tag
SB	1/2" NPT conduit reducer bushing
D2	Class 1 Div. 2 rating for termination 31, 34, 91
CHB <sup>[1]</sup>	3/4" NPT conduit hub located on bottom
CHR <sup>[1]</sup>	3/4" NPT conduit hub located on right
CHT <sup>[1]</sup>	3/4" NPT conduit hub located on top
CHL <sup>[1]</sup>	3/4" NPT conduit hub located on left

[1] Only applies to option 20 or 30

# MP02 MgO Multi-Point Sensors with Leadwire

Pyromation's multi-point thermocouples with leadwire extensions accurately measure temperatures at various points along the sheath allowing for a temperature profile across a specified length. The design consists of smaller diameter MgO thermocouples placed inside a single outer sheath, which allows for profiling the temperature at various points along a single line. Applications where these products are used include vessels, holding tanks, furnaces, ovens, reactors, heat exchangers, air ducts and more. The tables found on this page allow customer selection of standard thermocouple types, up to 16 temperature points, various sheath diameters, mounting fittings, transition options, leadwire types and terminations. Custom-designed products are available upon request.



## Order Codes

**Example Order Number:** 1-0 1-1 1-2 1-3 1-4 2-0 2-1 3-0 4-0 5-0 6-0  
**J (4) 6 8 U - 042 - (0,6,12,18) - 00 - 19 - T3072 - 6**

### 1-0 Thermocouple Types

CODE	DESCRIPTION
J	Type J
K	Type K

### 1-1 Number of Points

CODE
2 to 16 Points
Specify number of points in parenthesis. Example: (6) = 6 points. Maximum number of points is based on sheath diameter, see table 1-2 for maximum number of points.

### 1-2 Sheath Diameters

CODE	DIAMETER (INCHES)	MAX NUMBER OF POINTS <sup>[1]</sup>
2	1/8"	8
3	3/16"	14
4	1/4"	16
6	3/8"	16
8	1/2"	16

[1] Maximum number of points apply to sensors 20 feet or less. For lengths above 20 feet, reduce the maximum number of points by 1. Consult factory for lengths above 50 feet.

### 1-3 Sheath Material

CODE	DESCRIPTION
8	316 Stainless Steel

### 1-4 Measuring Junctions

CODE	DESCRIPTION
U	Ungrounded junction

### 1-5 Special Options

CODE	DESCRIPTION
M	Special limits of error

### 2-0 "X" Dimension

Insert three digit sheath length ("X" Dim) in inches
--

### 2-1 Sensor Location

Specify location of junctions from tip in inches where 0 = tip. Ex: 0,4,8,12
--

### 3-0 Sheath Mounting Fittings

CODE	DESCRIPTION	NPT SIZE (inches)
00	No Fitting	
<b>Compression Fittings</b>		
05A	316 Stainless steel	1/8
05B	316 Stainless steel	1/4
05C	316 Stainless steel	1/2
12A	316 SS Readjustable	1/8
12B	316 SS Readjustable	1/4
12C	316 SS Readjustable	1/2
19C	303 SS Spring-loaded well fitting	1/2
<b>Fixed Bushings</b>		
8A <sup>[1]</sup>	316 SS welded bushing	1/8
8B <sup>[1]</sup>	316 SS welded bushing	1/4
8C <sup>[1]</sup>	316 SS welded bushing	1/2
8D <sup>[1]</sup>	316 SS welded bushing	3/4
[1] When ordering fixed bushings, specify order code above plus insert length "U", as measured from hot tip to bottom of threaded bushing. EXAMPLE: order code 8A06 is 1/8" NPT, 316 SS bushing located 6" from hot tip.		

### 4-0 Leadwire Transitions 204 °C

CODE	DESCRIPTION	MAX NUMBER OF POINTS
19	Extension leadwire transition with no strain relief, 316 SS	See Note [1]
8PN23	1/2" NPT Pipe nipple, 0.840 OD x 4" long, 316 SS	Up to 8 points
8PND23	3/4" NPT Pipe nipple, 1.05 OD x 6" long, 316 SS	Up to 16 points
<b>Options</b>		
NT	No process threads	
[1] Transition size as follows: 2-6 points - 1/2" OD x 5" long 7-8 points - 0.840 OD x 4" long 9-16 points - 1.05 OD x 6" long		

### 5-0 Extension Leadwire Type B Dimension

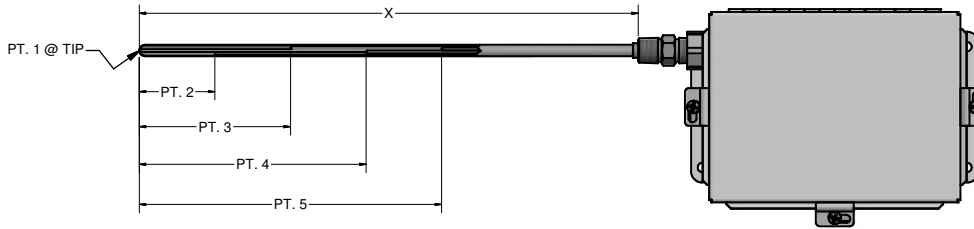
CODE	DESCRIPTION
F1	Fiberglass insulation - solid conductor
F1B	Fiberglass insulation - solid conductor - stainless steel overbraid
F3	Fiberglass insulation - stranded conductor
F3B	Fiberglass insulation - stranded conductor - stainless steel overbraid
T1	Fluoropolymer insulation - solid conductor
T1B	Fluoropolymer insulation - solid conductor - stainless steel overbraid
T3	Fluoropolymer insulation - stranded conductor
T3B	Fluoropolymer insulation - stranded conductor - stainless steel overbraid

### 6-0 Terminations

CODE	DESCRIPTION
0	Leads not stripped
2	2" split leads, 1/4" stripped
3	2" split leads, 1/4" spade lugs
4	Standard plug
5	Standard jack
6	Miniature plug
7	Miniature jack
<b>Options</b>	
CC	Plug or jack secured to leads with cable clamp

# MP03 RTD Multi-Point Sensors with Termination Enclosures

Pyromation's multi-point RTDs with enclosures accurately measure temperatures at various points along the sheath allowing for a temperature profile across a specified length. The design consists of multiple RTD sensors placed inside a single outer sheath, which allows for profiling the temperature at various points along a single line. Applications where these products are used include vessels, holding tanks, ovens, reactors, heat exchangers, air ducts and more. The tables found on this page allow customer selection of Class A or Class B accuracies, two temperature ranges and up to 10 temperature points. There are also options for various sheath diameters, mounting fittings and termination enclosures. Custom designed products are available upon request.



## Order Codes

**Example Order Number:**

1-0      1-1      1-2      1-3      2-0      2-1      3-0      4-0      5-0  
**RBF185L (5) 68 3 - 024 - (0,4,8,12,16) - 00 - 8HN 30**

### 1-0 Pt100 ( $\alpha=0.00385\text{ }^{\circ}\text{C}^{-1}$ )

CODE	TOLERANCE	TEMP. RANGE
RBF185L	Class B	(-50 to 200 °C)
RBF185K	Class B	(-50 to 315 °C)
RAF185L	Class A	(-50 to 200 °C)
RAF185K	Class A	(-50 to 315 °C)
R1T185L	Grade B	(-200 to 200 °C)
R1T185K	Grade B	(-200 to 315 °C)

### 1-1 Number of Points

CODE
2 to 10 Points

Specify number of points in parenthesis. Example: (6) = 6 points. Maximum number of points is based on sheath diameter, see table 1-2 for maximum number of points.

### 1-2 Sheath Diameters - 316 SS

CODE	DIAMETER (INCHES)	MAX NUMBER OF POINTS [1]	
		3-wire	4-wire
48	1/4"	3	2
68	3/8"	5	3
88	1/2"	10	8

[1] Maximum number of points apply to sensors 20 feet or less. For lengths above 20 feet, reduce the maximum number of points by 1. Consult factory for lengths above 50 feet.

### 1-3 Element Connection

CODE	DESCRIPTION
3	3-wire
4	4-wire

### 2-0 "X" Dimension

Insert three digit sheath length ("X" Dimension) in inches
--

### 2-1 Sensor Location

Specify location of junctions from tip in inches where 0 = tip. Ex: 0,4,8,12
--

### 3-0 Sheath Mounting Fittings

CODE	DESCRIPTION	NPT SIZE (inches)
00	No Fitting	
Compression Fittings		NPT SIZE (inches)
05A	316 Stainless steel	1/8
05B	316 Stainless steel	1/4
05C	316 Stainless steel	1/2
12A	316 SS Readjustable	1/8
12B	316 SS Readjustable	1/4
12C	316 SS Readjustable	1/2
19C	303 SS Spring-loaded well fitting	1/2

Fixed Bushings		NPT SIZE (inches)
8A_ _ [1]	316 SS welded bushing	1/8
8B_ _ [1]	316 SS welded bushing	1/4
8C_ _ [1]	316 SS welded bushing	1/2
8D_ _ [1]	316 SS welded bushing	3/4

[1] When ordering fixed bushings, specify order code above plus insert length "U", as measured from hot tip to bottom of threaded bushing. EXAMPLE: order code 8A06 is 1/8" NPT, 316 SS bushing located 6" from hot tip.

### 4-0 Head Mounting Fittings

CODE	DESCRIPTION
8HN	1/2" x 1/2" NPT stainless steel hex nipple, 1" "E" length
9HP	1/2" NPT stainless steel bushing (no process threads)
8PN_	1/2" NPT pipe nipple, 316 stainless steel, specify length
8PND_	3/4" NPT pipe nipple, 316 stainless steel, specify length
Options	
NT	No process threads – for 8PN only

### 5-0 Termination Enclosures

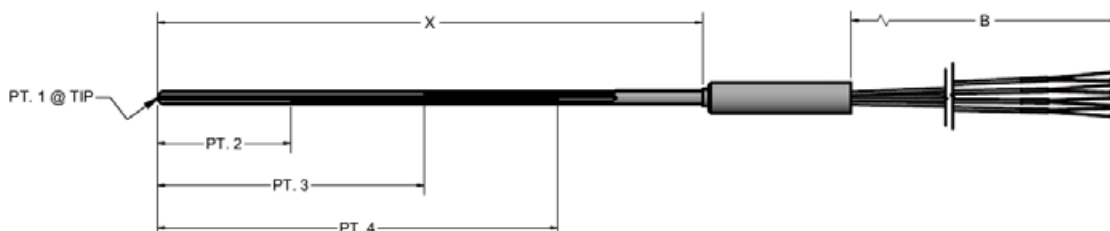
CODE	DESCRIPTION	MAX NUMBER OF POINTS	
		3-wire	4-wire
20	General Purpose painted steel wall mount panel enclosure - 8"x6"x4" - NEMA 4	10	8
30	General Purpose 316 SS wall mount panel enclosure - 8"x6"x4" - NEMA 4X	10	8
31	Aluminum screw-cover head (NEMA 4X, IP66)	2	2
34	Cast iron screw-cover head (NEMA 4X, IP66)	2	2
91	316L stainless steel screw-cover head (NEMA 4X, IP66)	2	2
93	Aluminum explosion-proof connection head, Group A	2	2
94	316L stainless steel explosion-proof connection head, Group A	2	2
52	Malleable iron explosion-proof connection head	4	3

Options	
I	Stainless steel tag
SB	1/2" NPT conduit reducer bushing
D2	Class 1 Div. 2 rating for termination 31, 34, 91
CHB <sup>[1]</sup>	3/4" NPT conduit hub located on bottom
CHR <sup>[1]</sup>	3/4" NPT conduit hub located on right
CHT <sup>[1]</sup>	3/4" NPT conduit hub located on top
CHL <sup>[1]</sup>	3/4" NPT conduit hub located on left

[1] Only applies to option 20 or 30

# MP04 RTD Multi-Point Sensors with Leadwire

Pyromation's multi-point RTDs with leadwire extensions accurately measure temperatures at various points along the sheath allowing for a temperature profile across a specified length. The design consists of multiple RTD sensors placed inside a single outer sheath, which allows for profiling the temperature at various points along a single line. Applications where these products are used include vessels, holding tanks, ovens, reactors, heat exchangers, air ducts and more. The tables found on this page allow customer selection of Class A or Class B accuracies, two temperature ranges and up to 10 temperature points. There are also options for various sheath diameters, mounting fittings, transition types, leadwire types and terminations. Custom designed products are available upon request.



## Order Codes

### Example

**Order Number:** **RAF185K (4) 88 4 - 024 - (0,3,8,15) - 05C - 19 - K3B072 - 2**

#### 1-0 Pt100 ( $\alpha=0.00385\text{ }^{\circ}\text{C}^{-1}$ )

CODE	TOLERANCE	TEMP. RANGE
RBF185L	Class B	(-50 to 200 °C)
RBF185K	Class B	(-50 to 315 °C)
RAF185L	Class A	(-50 to 200 °C)
RAF185K	Class A	(-50 to 315 °C)
R1T185L	Grade B	(-200 to 200 °C)
R1T185K	Grade B	(-200 to 315 °C)

#### 1-1 Number of Points

CODE
2 to 10 Points
Specify number of points in parenthesis. Example: (6) = 6 points. Maximum number of points is based on sheath diameter, see table 1-2 for maximum number of points.

#### 1-2 Sheath Diameters - 316 SS

CODE	DIAMETER (INCHES)	MAX NUMBER OF POINTS [1]	
		3-wire	4-wire
48	1/4"	3	2
68	3/8"	5	3
88	1/2"	10	8

[1] Maximum number of points apply to sensors 20 feet or less. For lengths above 20 feet, reduce the maximum number of points by 1. Consult factory for lengths above 50 feet.

#### 1-3 Element Connection

CODE	DESCRIPTION
3	3-wire
4	4-wire

#### 2-0 "X" Dimension

Insert three digit sheath length ("X" Dimension) in inches

#### 2-1 Sensor Location

Specify location of junctions from tip in inches where 0 = tip. Ex: 0,4,8,12

#### 3-0 Sheath Mounting Fittings

CODE	DESCRIPTION
00	No Fitting
Compression Fittings	
	NPT SIZE (inches)
05A	316 Stainless steel 1/8
05B	316 Stainless steel 1/4
05C	316 Stainless steel 1/2
12A	316 SS Readjustable 1/8
12B	316 SS Readjustable 1/4
12C	316 SS Readjustable 1/2
19C	303 SS Spring-loaded well fitting 1/2

Fixed Bushings		NPT SIZE (inches)
8A_	[1] 316 SS welded bushing	1/8
8B_	[1] 316 SS welded bushing	1/4
8C_	[1] 316 SS welded bushing	1/2
8D_	[1] 316 SS welded bushing	3/4

[1] When ordering fixed bushings, specify order code above plus insert length "U", as measured from hot tip to bottom of threaded bushing. EXAMPLE: order code 8A06 is 1/8" NPT, 316 SS bushing located 6" from hot tip.

#### 4-0 Leadwire Transitions 204 °C

CODE	DESCRIPTION
15	Extension leadwire transition with relief spring 204 °C [400 °F]
16	Extension leadwire transition with heat-shrink tubing 104 °C [220 °F]
18	Same size transition without heat-shrink tubing 204 °C [400 °F]
19	Extension leadwire transition without spring or heat-shrink tubing 204 °C [400 °F]
8HN23	1/2" x 1/2" NPT stainless steel hex nipple
8PN_23	1/2" NPT Pipe nipple, 316 SS, specify length

#### 5-0 Extension Leadwire Type B Dimension

CODE	DESCRIPTION
T3	Fluoropolymer insulation - stranded conductor
T3B	Fluoropolymer insulation - stranded conductor - stainless steel overbraid
K3	Polyimide insulation - stranded conductor
K3B	Polyimide insulation - stranded conductor - stainless steel overbraid

#### 6-0 Terminations

CODE	DESCRIPTION
0	Leads not stripped
2	2" split leads, 1/4" stripped
3	2" split leads, 1/4" spade lugs
4	Standard plug
5	Standard jack
6	Miniature plug
7	Miniature jack

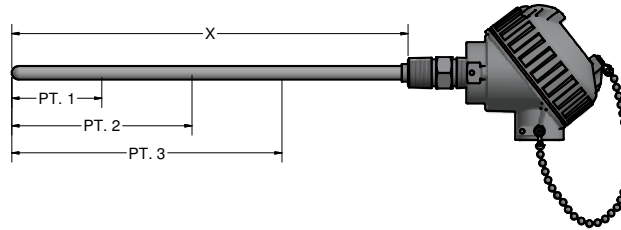
#### Options

CODE	DESCRIPTION
CC[1]	Plug or jack secured to leads with cable clamp

[1] Not available with 4-wire

# MP05 Tube & Wire Multi-Point Sensors with Termination Enclosures

Pyromation's tube and wire style multi-point thermocouples with termination enclosures accurately measure temperatures at various points along the sheath allowing for a temperature profile across a specified length. The design consists of either FEP or fiberglass insulated thermocouple wires placed inside a single outer sheath, which allows for profiling the temperature at various points along a single line. This design allows for a cost-effective alternative for lower temperature applications. Applications where these products are used include vessels, holding tanks, furnaces, ovens, reactors, heat exchangers, air ducts and more. The tables found on this page allow customer selection of standard thermocouple types up to 16 temperature points, various sheath diameters, mounting fittings and termination enclosures. Custom-built products are available upon request.



## Order Codes

**Example  
Order  
Number:**

1-0 1-1 1-2 1-3 1-4 2-0 2-1 3-0 4-0 5-0  
**KP T (3) 38 U - 072 - (12,24,36) - 00 - 8HN 31**

### 1-0 Thermocouple Types

CODE	DESCRIPTION
JP	Type J
KP	Type K

### 1-1 Insulation Types

CODE	DESCRIPTION	MAX TEMP
T	Fluoropolymer	200 °C
F	Fiberglass	482 °C

### 1-2 Number of Points

CODE
2 to 16 Points
Specify number of points in parenthesis. Example: (6) = 6 points. Maximum number of points is based on sheath diameter, see table 1-3 for maximum number of points.

### 1-3 Sheath Diameters - 316 SS

CODE	DIAMETER (INCHES)	MAX NUMBER OF POINTS <sup>[1]</sup>
38	3/16"	3
48	1/4"	4
68	3/8"	10
88	1/2"	16

[1] Maximum number of points apply to sensors 20 feet or less. For lengths above 20 feet, reduce the maximum number of points by 1. Consult factory for lengths above 50 feet.

### 1-4 Measuring Junctions

CODE	DESCRIPTION
U	Ungrounded junction

### 2-0 "X" Dimension

Insert three digit sheath length ("X" Dimension) in inches

### 2-1 Sensor Location

Specify location of junctions from tip in inches where 0 = tip. Ex: 0,4,8,12

### 3-0 Sheath Mounting Fittings

CODE	DESCRIPTION
00	No Fitting
Compression Fittings	
	NPT SIZE (inches)
05A	316 Stainless steel 1/8
05B	316 Stainless steel 1/4
05C	316 Stainless steel 1/2
12A	316 SS Readjustable 1/8
12B	316 SS Readjustable 1/4
12C	316 SS Readjustable 1/2
19C	303 SS Spring-loaded well fitting 1/2

Fixed Bushings	
	NPT SIZE (inches)
8A_ _ <sup>[1]</sup>	316 SS welded bushing 1/8
8B_ _ <sup>[1]</sup>	316 SS welded bushing 1/4
8C_ _ <sup>[1]</sup>	316 SS welded bushing 1/2
8D_ _ <sup>[1]</sup>	316 SS welded bushing 3/4

[1] When ordering fixed bushings, specify order code above plus insert length "U", as measured from hot tip to bottom of threaded bushing. EXAMPLE: order code 8A06 is 1/8" NPT, 316 SS bushing located 6" from hot tip.

### 4-0 Head Mounting Fittings

CODE	DESCRIPTION
8HN	1/2" x 1/2" NPT stainless steel hex nipple, 1" "E" length
9HP	1/2" NPT stainless steel bushing (no process threads)
8PN_	1/2" NPT pipe nipple, 316 stainless steel, specify length
8PND_	3/4" NPT pipe nipple, 316 stainless steel, specify length
Options	
NT	No process threads – for 8PN only

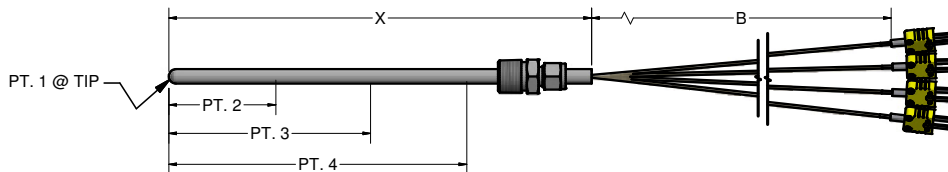
### 5-0 Termination Enclosures

CODE	DESCRIPTION	MAX NUMBER OF POINTS
20	General-Purpose painted steel wall mount panel enclosure - 8"x6"x4" NEMA 4	16
30	General Purpose 316 SS wall mount panel enclosure - 8"x6"x4" NEMA 4X	16
31	Aluminum screw-cover head (NEMA 4X, IP66)	4
34	Cast iron screw-cover head (NEMA 4X, IP66)	4
91	316L stainless steel screw-cover head (NEMA 4X, IP66)	4
93	Aluminum explosion-proof connection head	4
94	316L stainless steel explosion-proof connection head	4
52	Malleable iron explosion-proof connection head	6
Options		
I	Stainless steel tag	
SB	1/2" NPT conduit reducer bushing	
D2	Class 1 Div. 2 rating for termination 31, 34, 91	
CHB <sup>[1]</sup>	3/4" NPT conduit hub located on bottom	
CHR <sup>[1]</sup>	3/4" NPT conduit hub located on right	
CHT <sup>[1]</sup>	3/4" NPT conduit hub located on top	
CHL <sup>[1]</sup>	3/4" NPT conduit hub located on left	
[1] Only applies to option 20 or 30		



# MP06 Tube & Wire Multi-Point Sensors with Leadwire

Pyromation's tube and wire style multi-point thermocouples with extension leadwire accurately measure temperatures at various points along the sheath allowing for a temperature profile across a specified length. The design consists of either FEP or fiberglass insulated thermocouple wires placed inside a single outer sheath, which allows for profiling the temperature at various points along a single line. This design allows for a cost-effective alternative for lower temperature applications. Applications where these products are used include vessels, holding tanks, furnaces, ovens, reactors, heat exchangers, air ducts and more. The tables found on this page allow customer selection of standard thermocouple types up to 16 temperature points, various sheath diameters, mounting fittings, transition options, leadwire types and terminations. Custom-built products are available upon request.



## Order Codes

**Example Order Number:** 1-0 1-1 1-2 1-3 1-4 2-0 2-1 3-0 4-0 5-0 6-0  
**JP F (4) 48 U - 024 - (0,3,8,15) - 05C - 19 - T3072 - 6**

### 1-0 Thermocouple Types

CODE	DESCRIPTION
JP	Type J
KP	Type K

### 1-1 Insulation Types

CODE	DESCRIPTION	MAX TEMP
T	Fluoropolymer	200 °C
F	Fiberglass	482 °C

### 1-2 Number of Points

CODE
2 to 16 Points
Specify number of points in parenthesis. Example: (6) = 6 points. Maximum number of points is based on sheath diameter, see table 1-3 for maximum number of points.

### 1-3 Sheath Diameters - 316 SS

CODE	DIAMETER (INCHES)	MAX NUMBER OF POINTS <sup>[1]</sup>
38	3/16"	3
48	1/4"	4
68	3/8"	10
88	1/2"	16

[1] Maximum number of points apply to sensors 20 feet or less. For lengths above 20 feet, reduce the maximum number of points by 1. Consult factory for lengths above 50 feet.

### 1-4 Measuring Junctions

CODE	DESCRIPTION
U	Ungrounded junction

### 2-0 "X" Dimension

Insert three digit sheath length ("X" Dimension) in inches

### 2-1 Sensor Location

Specify location of junctions from tip in inches where 0 = tip. Ex: 0,4,8,12

### 3-0 Sheath Mounting Fittings

CODE	DESCRIPTION	
00	No Fitting	
Compression Fittings		NPT SIZE (inches)
05A	316 Stainless steel	1/8
05B	316 Stainless steel	1/4
05C	316 Stainless steel	1/2
12A	316 SS Readjustable	1/8
12B	316 SS Readjustable	1/4
12C	316 SS Readjustable	1/2
19C	303 SS Spring-loaded well fitting	1/2

Fixed Bushings		NPT SIZE (inches)
8A_ _ <sup>[1]</sup>	316 SS welded bushing	1/8
8B_ _ <sup>[1]</sup>	316 SS welded bushing	1/4
8C_ _ <sup>[1]</sup>	316 SS welded bushing	1/2
8D_ _ <sup>[1]</sup>	316 SS welded bushing	3/4

[1] When ordering fixed bushings, specify order code above plus insert length "U", as measured from hot tip to bottom of threaded bushing. EXAMPLE: order code 8A06 is 1/8" NPT, 316 SS bushing located 6" from hot tip.

### 4-0 Leadwire Transitions 204 °C

CODE	DESCRIPTION
15	Extension leadwire transition with relief spring 204 °C [400 °F]
16	Extension leadwire transition with heat-shrink tubing 104 °C [220 °F]
18	Same size transition without heat-shrink tubing 204 °C [400 °F]
19	Extension leadwire transition without spring or heat-shrink tubing 204 °C [400 °F]
8HN23	1/2" x 1/2" NPT stainless steel hex nipple
8PN_23	1/2" NPT Pipe nipple, 316 SS, specify length

### 5-0 Extension Leadwire Type B Dimension

CODE	DESCRIPTION
F1	Fiberglass insulation - solid conductor
F1B	Fiberglass insulation - solid conductor - stainless steel overbraid
F3	Fiberglass insulation - stranded conductor
F3B	Fiberglass insulation - stranded conductor - stainless steel overbraid
T1	Fluoropolymer insulation - solid conductor
T1B	Fluoropolymer insulation - solid conductor - stainless steel overbraid
T3	Fluoropolymer insulation - stranded conductor
T3B	Fluoropolymer insulation - stranded conductor - stainless steel overbraid

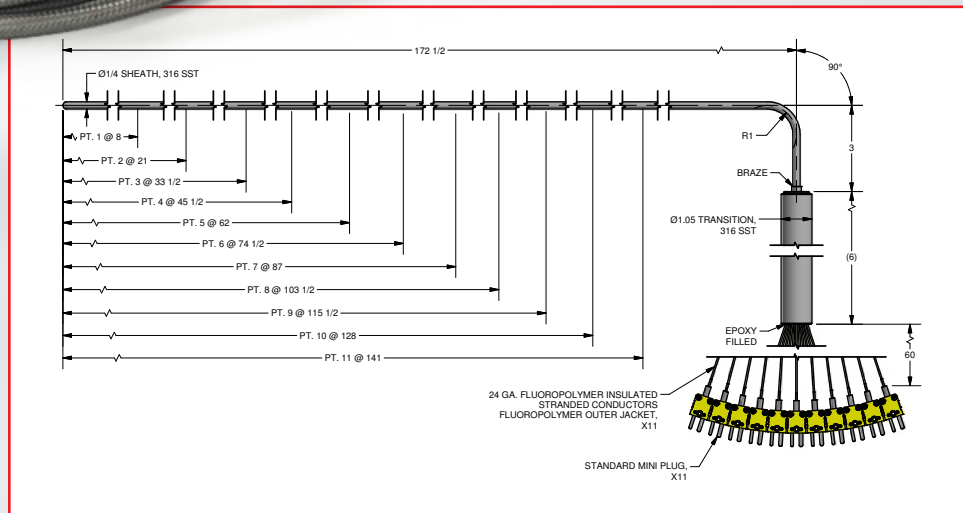
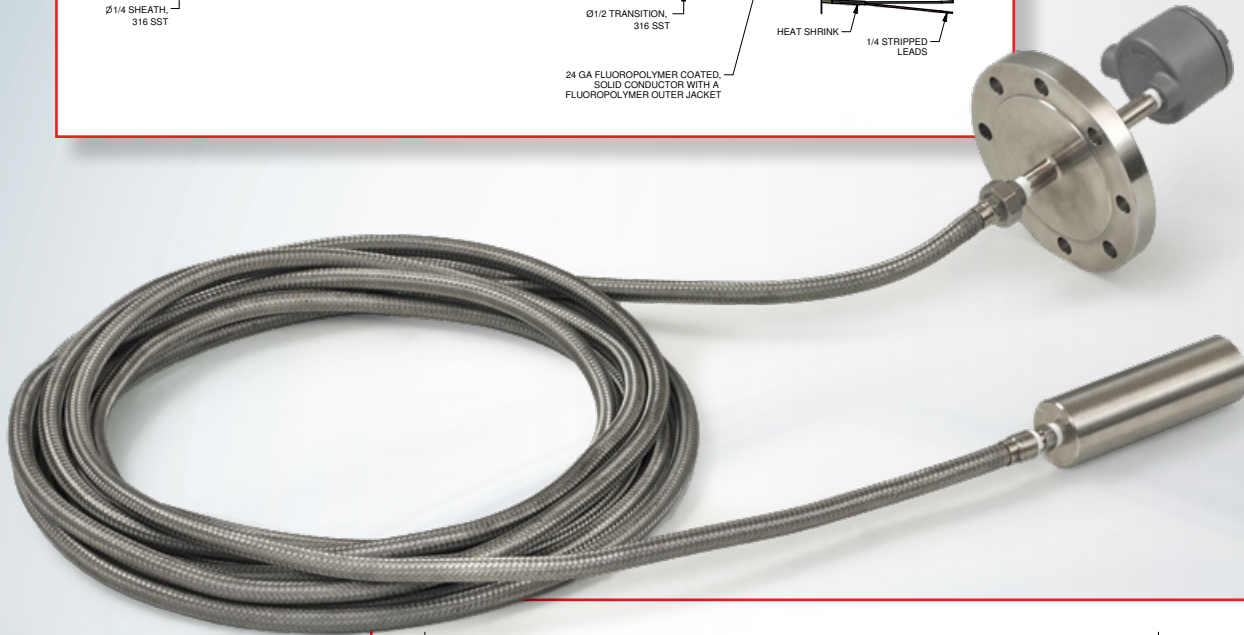
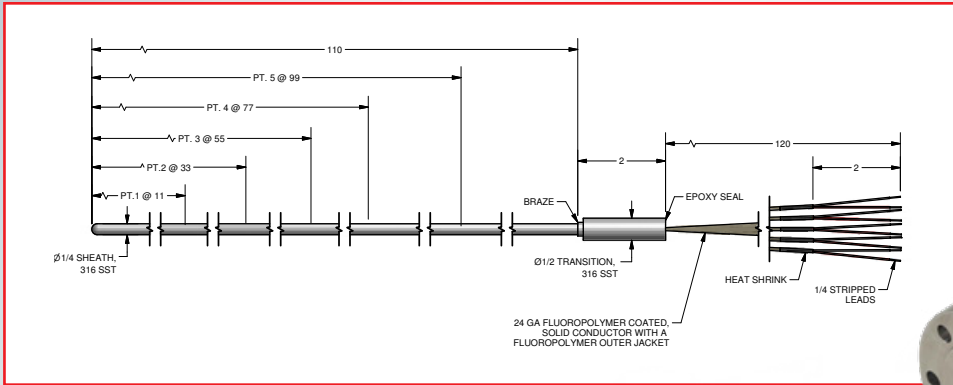
### 6-0 Terminations

CODE	DESCRIPTION
0	Leads not stripped
2	2" split leads, 1/4" stripped
3	2" split leads, 1/4" spade lugs
4	Standard plug
5	Standard jack
6	Miniature plug
7	Miniature jack

### Options

CC	Plug or jack secured to leads with cable clamp
----	--

# Pyromation Multi-Point Sensors



## Speed, Service, Solutions...Beyond Measure®

- Standard & Custom Designs
- Experienced Sales & Engineering Support
- Ease of Doing Business
- Quick Shipment
- Superior Quality
- Robust Construction
- Competitive Pricing
- Calibration & Documentation Available



// SPEED, SERVICE, SOLUTIONS...  
BEYOND MEASURE®

Operating since 1962, Pyromation is the premier temperature sensor manufacturer in North America. From RTDs and thermocouples to thermowells, connection heads, accessories and complete assemblies, Pyromation can make the right temperature sensor for your process and deliver it faster than anyone in the industry. A broad product line, industry experience, friendly customer service and quick delivery make Pyromation the best choice for your temperature measurement applications. For more information, please call us or visit [www.pyromation.com](http://www.pyromation.com).



5211 Industrial Road // Fort Wayne, IN 46825, USA  
260.484.2580 // [www.pyromation.com](http://www.pyromation.com)