# BI-METAL THERMOMETERS

Back-connected, general-purpose Bi-Metal Thermometers can be directly immersed into a process, or can be installed in a variety of thermowells. These thermometers are available in various dial sizes, temperature ranges, sheath diameters, sheath lengths and mounting options. A conical tip is standard for ¼" diameter stems in 2.5", 4", 6" and 9" lengths. All other sheath diameters and sheath lengths will be supplied with a rounded tip. Standard external component material consists of 304 stainless steel while 316 stainless steel wetted parts are available as an optional selection. The accuracy is ±1% full span per ASME B40.3 Grade A. These Bi-Metal Thermometer (BMI) series units come with a calibration feature, and each is easily calibrated by inserting an allen wrench into the reset opening.
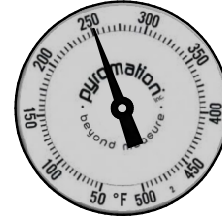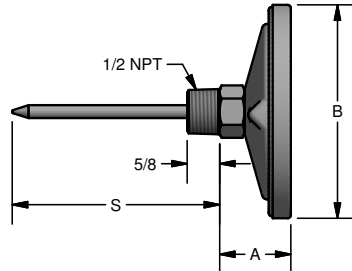
ORDER CODES

	1-0	1-1		2-0		3-0		4-0	4-1		5-0
Example Order Number:	BMI3B	49	-	004(1/2)	-	9HN	-	PC	,I,M2	-	0800

1-0 Back-Connected Type and Size

CODE	DIAL SIZE	"A" DIM	"B" DIM
BMI3B	3 Inch	1.375 Inch	3.187 Inch
BMI4B	4 Inch	1.375 Inch	4.115 Inch
BMI5B	5 Inch	1.718 Inch	5.040 Inch

1-1 Sheath

CODE	DIAMETER (INCHES)	MATERIAL
49	0.25	304 SS (42 Inch max length)
69	0.375	304 SS

2-0 Sheath Length

Specify 3 digit length in inches
2(1/2) Inch minimum length required
120 Inch maximum length

3-0 Process Connection (304 SS)

CODE	DIAMETER (INCHES)
9HP	No process connection
9HN	1/2 Inch NPT process connection
9PU	1/2 Inch NPT Union
9RH	R 1/2 Inch BSPT

4-0 Window Options

CODE	DESCRIPTION
G	Glass (Standard)
PC	Polycarbonate (up to 135 ºC [300 ºF])
AC	Acrylic
SG	Safety Glass
TG[1]	Tempered Glass
[1] Not available in 4 inch dial	

4-1 Additional Options

CODE	DESCRIPTION
P	Plain Dial (No company name)
I	Stainless Steel Tag
M1[1]	Minimum indicator or maximum indicator
M2[1]	Both minimum and maximum indicator
SF[2]	Silicon-filled

[1] Only available in a 3 inch or 5 inch dial size with glass or acrylic lens
[2] Only available with Safety Glass or Polycarbonate lens. Silicon filled thermometers are limited for use in process temperatures ranging from (-45 to 260) ºC

5-0 Temperature Range

CODE	RANGE	CODE	RANGE
0020	-75 to 175 °C	0500	-100 to 100 °F
0100	-50 to 100 °C	0740	0 to 200 °F
0240	-20 to 120 °C	0750	0 to 220 °F
0330	0 to 100 °C	0760	0 to 250 °F
0350	0 to 150 °C	0770	0 to 300 °F
0370	0 to 200 °C	0800	0 to 500 °F
0380	0 to 250 °C	0840	20 to 240 °F
0390	0 to 300 °C	0920	50 to 250 °F
0410	0 to 450 °C	1030	200 to 1000 °F

| Dual Temperature Range		
1100	-40 to 160 °F	-40 to 70 °C
1170	0 to 220 °F	-10 to 100 °C
1180	0 to 250 °F	-20 to 120 °C
1270	50 to 500 °F	0 to 250 °C
1310	200 to 1000 °F	100 to 550 °C
See page BM-7 for complete range list		

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BI-METAL THERMOMETERS

Side-connected, general purpose Bi-Metal Thermometers can be directly immersed into a process, or can be used with various thermowell types. These thermometers are available in various dial sizes, temperature ranges, sheath diameters, and sheath lengths. They are available with several process mounting options, window options and dial features. A conical tip is standard for ¼" diameter stems in 2.5", 4", 6" and 9" lengths. All other sheath diameters and sheath lengths will be supplied with a rounded tip. Standard external component material consists of 304 stainless steel while 316 stainless steel wetted parts are available as an optional selection. The stem position can be provided at 90° angles to accommodate various mounting conditions. The accuracy is ±1% full span per ASME B40.3 Grade A. These Bi-Metal Thermometer (BMI) series units come with a calibration feature, and each is easily calibrated by inserting an allen wrench into the reset opening.
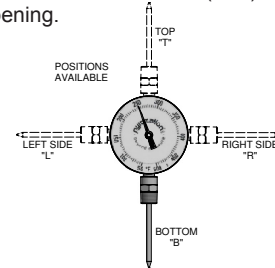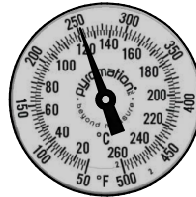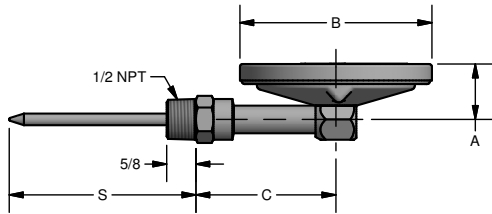
ORDER CODES

	1-0	1-1		2-0		3-0		4-0		5-0	5-1		6-0
Example Order Number:	BMI3S	49	-	B	-	007(1/2)	-	9PU	-	G	,SF	-	0410

1-0 Side-Connected Type and Size

CODE	DIAL SIZE	"A" DIM	"B" DIM	"C" DIM
BMI3S	3 Inch	1.187 Inch	3.187 Inch	2.3 Inch
BMI4S	4 Inch	1.187 Inch	4.115 Inch	3.0 Inch
BMI5S	5 Inch	1.625 Inch	5.040 Inch	3.0 Inch

1-1 Sheath

CODE	DIAMETER (INCHES)	MATERIAL
49	0.25	304 SS (42 Inch max length)
69	0.375	304 SS

2-0 Dial Location

CODE	DESCRIPTION
B	Bottom (Standard)
R	90 degree Right
L	90 degree Left
T	Top

3-0 Sheath Length

Specify 3 digit length in inches
2(1/2) Inch minimum length required
120 Inch maximum length

4-0 Process Connection (304 SS)

CODE	DIAMETER (INCHES)
9HP	No process connection
9HN	1/2 Inch NPT process connection
9PU	1/2 Inch NPT Union
9RH	R 1/2 Inch BSPT

5-0 Window Options

CODE	DESCRIPTION
G	Glass (Standard)
PC	Polycarbonate (up to 135 ºC [300 ºF])
AC	Acrylic
SG	Safety Glass
TG[1]	Tempered Glass
[1] Not available in 4 inch dial	

5-1 Additional Options

CODE	DESCRIPTION
P	Plain Dial (No company name)
I	Stainless Steel Tag
SF[1]	Silicon-filled

[1] Only available with Safety Glass or Polycarbonate lens. Silicon filled thermometers are limited for use in process temperatures ranging from (-45 to 260) ºC

6-0 Temperature Range

| CODE	RANGE	CODE	RANGE
0020	-75 to 175 °C	0500	-100 to 100 °F
0100	-50 to 100 °C	0740	0 to 200 °F
0240	-20 to 120 °C	0750	0 to 220 °F
0330	0 to 100 °C	0760	0 to 250 °F
0350	0 to 150 °C	0770	0 to 300 °F
0370	0 to 200 °C	0800	0 to 500 °F
0380	0 to 250 °C	0840	20 to 240 °F
0390	0 to 300 °C	0920	50 to 250 °F
0410	0 to 450 °C	1030	200 to 1000 °F

Dual Temperature Range		
1100	-40 to 160 °F	-40 to 70 °C
1170	0 to 220 °F	-10 to 100 °C
1180	0 to 250 °F	-20 to 120 °C
1270	50 to 500 °F	0 to 250 °C
1310	200 to 1000 °F	100 to 550 °C
See page BM-7 for complete range list		

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BI-METAL THERMOMETERS

Adjustable-Angle, general-purpose Bi-Metal Thermometers can be directly immersed into a process, or can be used with various thermowell types. These thermometers are available in various dial sizes, temperature ranges, sheath diameters, and sheath lengths. They are available with several process mounting options, window options and dial features. A conical tip is standard for ¼" diameter stems in 2.5", 4", 6" and 9" lengths. All other sheath diameters and sheath lengths will be supplied with a rounded tip. Standard external component material consists of 304 stainless steel while 316 stainless steel wetted parts are available as an optional selection. The adjustable harness consists of stainless steel brackets with screws that loosen to allow 360° rotation of the head and 180° adjustment of stem position. The accuracy is ±1% full span per ASME B40.3 Grade A. These Bi-Metal Thermometer (BMI) series units come with a calibration feature, and each is easily calibrated by inserting an allen wrench into the reset opening.
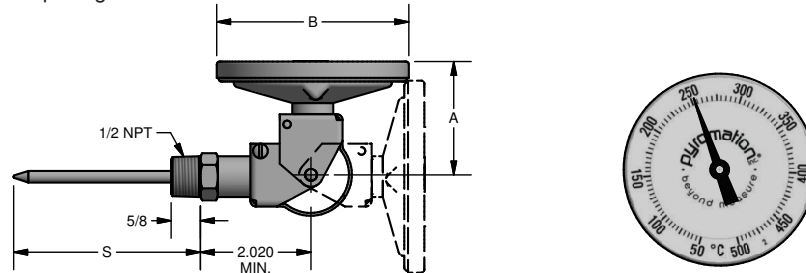
ORDER CODES

	1-0	1-1		2-0		3-0		4-0	4-1		5-0
Example Order Number:	BMI3A	49	-	006	-	9HN	-	PC	,P	-	0350

1-0 Adjustable-Angle Type and Size

CODE	DIAL SIZE	"A" DIM	"B" DIM
BMI3A	3 Inch	2.43 Inch	3.187 Inch
BMI4A	4 Inch	2.43 Inch	4.115 Inch
BMI5A	5 Inch	2.66 Inch	5.040 Inch

1-1 Sheath

CODE	DIAMETER (INCHES)	MATERIAL
49	0.25	304 SS (42 Inch max length)
69	0.375	304 SS

2-0 Sheath Length

Specify 3 digit length in inches
2(1/2) Inch minimum length required
120 Inch maximum length

3-0 Process Connection (304 SS)

CODE	DIAMETER (INCHES)
9HP	No process connection
9HN	1/2 Inch NPT process connection
9PU	1/2 Inch NPT Union
9RH	R 1/2 Inch BSPT

4-0 Window Options

CODE	DESCRIPTION
G	Glass (Standard)
PC	Polycarbonate (up to 135 ºC [300 ºF])
AC	Acrylic
SG	Safety Glass
TG[1]	Tempered Glass
[1] Not available in 4 inch dial	

4-1 Additional Options

CODE	DESCRIPTION
P	Plain Dial (No company name)
I	Stainless Steel Tag
SF[1]	Silicon-filled

[1] Only available with Safety Glass or Polycarbonate lens. Silicon filled thermometers are limited for use in process temperatures ranging from (-45 to 260) ºC

5-0 Temperature Range

CODE	RANGE	CODE	RANGE
0020	-75 to 175 °C	0500	-100 to 100 °F
0100	-50 to 100 °C	0740	0 to 200 °F
0240	-20 to 120 °C	0750	0 to 220 °F
0330	0 to 100 °C	0760	0 to 250 °F
0350	0 to 150 °C	0770	0 to 300 °F
0370	0 to 200 °C	0800	0 to 500 °F
0380	0 to 250 °C	0840	20 to 240 °F
0390	0 to 300 °C	0920	50 to 250 °F
0410	0 to 450 °C	1030	200 to 1000 °F

| Dual Temperature Range		
1100	-40 to 160 °F	-40 to 70 °C
1170	0 to 220 °F	-10 to 100 °C
1180	0 to 250 °F	-20 to 120 °C
1270	50 to 500 °F	0 to 250 °C
1310	200 to 1000 °F	100 to 550 °C
See page BM-7 for complete range list		

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Bi-Metal Thermometers

General-purpose, CIP sanitary, Back-Connected Bi-Metal thermometers are used in food, dairy, beverage, pharmaceutical, and chemical processing applications where corrosion and product contamination are critical factors. The sanitary Tri-Clamp® connections listed below are the most common types used in such processes and meet 3A Standard Number 74- . All wetted parts are 316 stainless steel, and the non-contact parts are supplied standard as 304 stainless steel. They are produced with a minimum surface finish of 32 µin Ra. Surface finishes of 15 µin R_a are available upon request. The accuracy is ±1% full span per ASME B40.3 Grade A.   These Sanitary Bi-Metal Thermometer (BMS) series units come with a calibration feature, and each is easily calibrated by inserting an allen wrench into the reset opening.
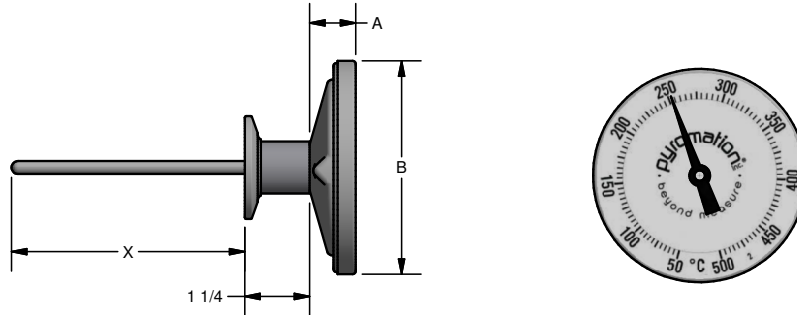
ORDER CODES

	1-0	1-1		2-0		3-0		4-0	4-1		5-0
Example Order Number:	BMS3B	68	-	002(1/2)	-	2-5	-	TG	,I	-	1180

1-0 Back-Connected Type and Size

CODE	DIAL SIZE	"A" DIM	"B" DIM
BMS3B	3 Inch	0.89 Inch	3.187 Inch
BMS4B	4 Inch	0.89 Inch	4.115 Inch
BMS5B	5 Inch	1.328 Inch	5.040 Inch

1-1 Sheath

CODE	DIAMETER (INCHES)	MATERIAL
48	0.25	316 SS (42 Inch max length)
68	0.375	316 SS

2-0 Sheath Length

Specify 3 digit length in inches
2(1/2) Inch minimum length required
120 Inch maximum length

3-0 Cap Size and Style

CODE	DIAMETER (INCHES)
075-5[1]	1/2 and 3/4 Inch Tri-Clamp®
1-5	1 and 1(1/2) Inch Tri-Clamp®
2-5	2 Inch Tri-Clamp®
3-5	2 1/2 Inch Tri-Clamp®
4-5	3 Inch Tri-Clamp®
5-5	4 Inch Tri-Clamp®

[1] Only available with 1/4 Inch sheath
Other cap styles available - consult factory

4-0 Window Options

CODE	DESCRIPTION
G	Glass (Standard)
PC	Polycarbonate (up to 135 ºC [300 ºF])
AC	Acrylic
SG	Safety Glass
TG[1]	Tempered Glass

[1] Not available in 4 inch dial

4-1 Additional Options

CODE	DESCRIPTION
P	Plain Dial (No company name)
I	Stainless Steel Tag
SF[1]	Silicon-filled

[1] Only available with Safety Glass or Polycarbinate lens. Silicon filled thermometers are limited for use in process temperatures ranging from (-45 to 260) ºC

5-0 Temperature Range

CODE	RANGE	CODE	RANGE
0100	-50 to 100 °C	0610	-40 to 160 °F
0140	-40 to 70 °C	0700	0 to 140 °F
0240	-20 to 120 °C	0740	0 to 200 °F
0270	-10 to 110 °C	0750	0 to 220 °F
0300	0 to 50 °C	0760	0 to 250 °F
0320	0 to 80 °C	0770	0 to 300 °F
0330	0 to 100 °C	0840	20 to 240 °F
0350	0 to 150 °C	0920	50 to 250 °F
0370	0 to 200 °C	0930	50 to 300 °F

| Dual Temperature Range		
1130	0 to 140 °F	-18 to 60 °C
1170	0 to 220 °F	-10 to 100 °C
1180	0 to 250 °F	-20 to 120 °C
1200	20 to 240 °F	-10 to 110 °C
1250	50 to 300 °F	10 to 150 °C
See page BM-7 for complete range list		

BI-METAL THERMOMETERS

Configuration Code BM02
Sanitary Side-Connected

General-purpose, CIP sanitary, Side-Connected Bi-Metal thermometers are used in food, dairy, beverage, pharmaceutical, and chemical processing applications where corrosion and product contamination are critical factors. The sanitary Tri-Clamp® connections listed below are the most common types used in such processes and meet 3A Standard Number 74- . All wetted parts are 316 stainless steel, and the non-contact parts are supplied standard as 304 stainless steel. They are produced with a minimum surface finish of 32 μin Ra. Surface finishes of 15 μin R_a are available upon request. The stem position can be provided at 90° angles to accommodate various mounting conditions. The accuracy is ±1% full span per ASME B40.3 Grade A. The Sanitary Bi-Metal Thermometer (BMS) series units come standard with a calibration feature, and each is easily calibrated by inserting an allen wrench into the reset opening.
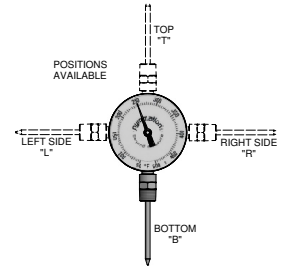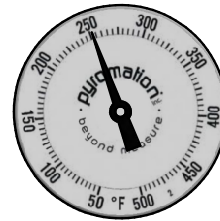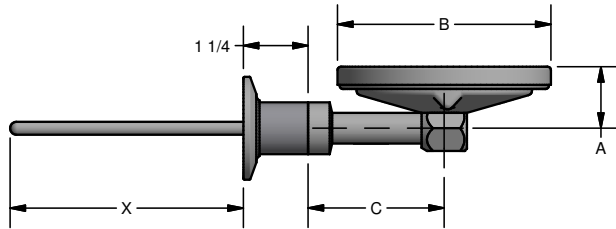
ORDER CODES

Example Order Number:

1-0	1-1	2-0	3-0	4-0	5-0	5-1	6-0
BMS4S	48	B	004	075-5	SG	,P	0770

1-0 Side-Connected Type and Size

CODE	DIAL SIZE	"A" DIM	"B" DIM	"C" DIM
BMS3S	3 Inch	1.187 Inch	3.187 Inch	1.875 Inch
BMS4S	4 Inch	1.187 Inch	4.115 Inch	2.625 Inch
BMS5S	5 Inch	1.625 Inch	5.040 Inch	2.625 Inch

1-1 Sheath

CODE	DIAMETER (INCHES)	MATERIAL
48	0.25	316 SS (42 Inch max length)
68	0.375	316 SS

2-0 Dial Location

CODE	DESCRIPTION
B	Bottom (Standard)
R	90 degree Right
L	90 degree Left
T	Top

3-0 Sheath Length

Specify 3 digit length in inches
2(1/2) Inch minimum length required
120 Inch maximum length

4-0 Cap Size and Style

CODE	DIAMETER (INCHES)
075-5[1]	1/2 and 3/4 Inch Tri-Clamp®
1-5	1 and 1(1/2) Inch Tri-Clamp®
2-5	2 Inch Tri-Clamp®
3-5	2 1/2 Inch Tri-Clamp®
4-5	3 Inch Tri-Clamp®
5-5	4 Inch Tri-Clamp®

[1] Only available with 1/4 Inch sheath
Other cap styles available - consult factory

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

5-0 Window Options

CODE	DESCRIPTION
G	Glass (Standard)
PC	Polycarbonate (up to 135 °C [300 °F])
AC	Acrylic
SG	Safety Glass
TG[1]	Tempered Glass

[1] Not available in 4 inch dial

5-1 Additional Options

CODE	DESCRIPTION
P	Plain Dial (No company name)
I	Stainless Steel Tag
SF[1]	Silicone-filled

[1] Only available with Safety Glass or Polycarbonate lens. Silicon filled thermometers are limited for use in process temperatures ranging from (-45 to 260) °C

6-0 Temperature Range

CODE	RANGE	CODE	RANGE
0100	-50 to 100 °C	0610	-40 to 160 °F
0140	-40 to 70 °C	0700	0 to 140 °F
0240	-20 to 120 °C	0740	0 to 200 °F
0270	-10 to 110 °C	0750	0 to 220 °F
0300	0 to 50 °C	0760	0 to 250 °F
0320	0 to 80 °C	0770	0 to 300 °F
0330	0 to 100 °C	0840	20 to 240 °F
0350	0 to 150 °C	0920	50 to 250 °F
0370	0 to 200 °C	0930	50 to 300 °F

| Dual Temperature Range		
1130	0 to 140 °F	-18 to 60 °C
1170	0 to 220 °F	-10 to 100 °C
1180	0 to 250 °F	-20 to 120 °C
1200	20 to 240 °F	-10 to 110 °C
1250	50 to 300 °F	10 to 150 °C
See page BM-7 for complete range list		

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528-1

BM-05

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Bi-Metal Thermometers

General-purpose, CIP sanitary, Adjustable-Angle Bi-Metal thermometers are used in food, dairy, beverage, pharmaceutical, and chemical processing applications where corrosion and product contamination are critical factors.   The sanitary Tri-Clamp® connections listed below are the most common types used in such processes and meet 3A Standard Number 74- . All wetted parts are 316 stainless steel, and the non-contact parts are supplied standard as 304 stainless steel. They are produced with a minimum surface finish of 32 µin Ra. Surface finishes of 15 µin R_a are available upon request. The adjustable harness consists of stainless steel brackets with screws that loosen to allow 360° rotation of the head and 180° adjustment of stem position. The accuracy is ±1% full span per ASME B40.3 Grade A.   These Sanitary Bi-Metal Thermometer (BMS) series units come with a calibration feature, and each is easily calibrated by inserting an allen wrench into the reset opening.
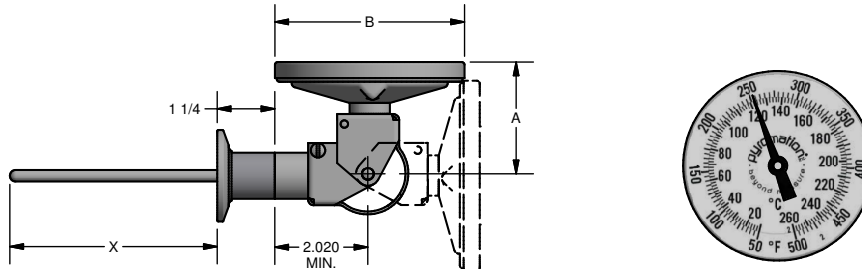
ORDER CODES

Example Order Number:

1-0	1-1	2-0	3-0	4-0	4-1	5-0
BMS5A	68	- 006	- 3-5	- TG	,I	- 1250

1-0 Adjustable-Angle Type and Size

CODE	DIAL SIZE	"A" DIM	"B" DIM
BMS3A	3 Inch	2.43 Inch	3.187 Inch
BMS4A	4 Inch	2.43 Inch	4.115 Inch
BMS5A	5 Inch	2.66 Inch	5.040 Inch

1-1 Sheath

CODE	DIAMETER (INCHES)	MATERIAL
48	0.25	316 SS (42 Inch max length)
68	0.375	316 SS

2-0 Sheath Length

Specify 3 digit length in inches
2(1/2) Inch minimum length required
120 Inch maximum length

3-0 Cap Size and Style

CODE	DIAMETER (INCHES)
075-5[1]	1/2 and 3/4 Inch Tri-Clamp®
1-5	1 and 1(1/2) Inch Tri-Clamp®
2-5	2 Inch Tri-Clamp®
3-5	2 1/2 Inch Tri-Clamp®
4-5	3 Inch Tri-Clamp®
5-5	4 Inch Tri-Clamp®

[1] Only available with 1/4 Inch sheath
Other cap styles available - consult factory

4-0 Window Options

CODE	DESCRIPTION
G	Glass (Standard)
PC	Polycarbonate (up to 135 ºC [300 ºF])
AC	Acrylic
SG	Safety Glass
TG[1]	Tempered Glass

[1] Not available in 4 inch dial

4-1 Additional Options

CODE	DESCRIPTION
P	Plain Dial (No company name)
I	Stainless Steel Tag
SF[1]	Silicon-filled

[1] Only available with Safety Glass or Polycarbonate lens. Silicon filled thermometers are limited for use in process temperatures ranging from (-45 to 260) ºC

5-0 Temperature Range

CODE	RANGE	CODE	RANGE
0100	-50 to 100 °C	0610	-40 to 160 °F
0140	-40 to 70 °C	0700	0 to 140 °F
0240	-20 to 120 °C	0740	0 to 200 °F
0270	-10 to 110 °C	0750	0 to 220 °F
0300	0 to 50 °C	0760	0 to 250 °F
0320	0 to 80 °C	0770	0 to 300 °F
0330	0 to 100 °C	0840	20 to 240 °F
0350	0 to 150 °C	0920	50 to 250 °F
0370	0 to 200 °C	0930	50 to 300 °F

Dual Temperature Range		
1130	0 to 140 °F	-18 to 60 °C
1170	0 to 220 °F	-10 to 100 °C
1180	0 to 250 °F	-20 to 120 °C
1200	20 to 240 °F	-10 to 110 °C
1250	50 to 300 °F	10 to 150 °C
See page BM-7 for complete range list		

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BI-METAL THERMOMETERS

Temperature Range - Degrees F

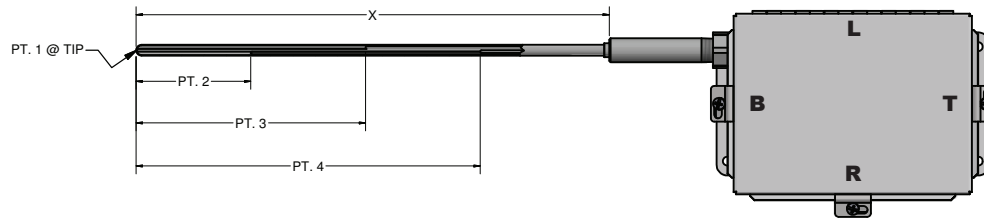| CODE	RANGE	°/DIV
0500	-100 to 100 °F	2°
0560	-50 to 120 °F	2°
0610	-40 to 160 °F	2°
0700	0 to 140 °F	2°
0730	0 to 180 °F	2°
0740	0 to 200 °F	2°
0750	0 to 220 °F	2°
0760	0 to 250 °F	2°
0770	0 to 300 °F	5°
0800	0 to 500 °F	10°
0840	20 to 240 °F	2°
0850	25 to 125 °F	1°
0920	50 to 250 °F	2°
0930	50 to 300 °F	2°
0940	50 to 400 °F	5°
0950	50 to 500 °F	5°
0960	50 to 550 °F	5°
1000	100 to 800 °F	10°
1010	150 to 750 °F	10°
1030	200 to 1000 °F	10°
Internal Ranges		
0480	-150 to 150 °F	2°
0490	-125 to 350 °F	5°
0510	-100 to 150 °F	2°
0520	-100 to 350 °F	5°
0530	-100 to 600 °F	5°
0540	-80 to 120 °F	2°
0550	-60 to 210 °F	2°
0570	-50 to 300 °F	5°
0580	-50 to 400 °F	5°
0590	-40 to 60 °F	1°
0600	-40 to 120 °F	2°
0620	-25 to 75 °F	1°
0630	-20 to 120 °F	1°
0640	-20 to 200 °F	2°
0650	-20 to 340 °F	5°
0660	-20 to 675 °F	10°
0670	-10 to 220 °F	2°
0680	0 to 60 °F	1°
0690	0 to 100 °F	1°
0710	0 to 150 °F	1°
0720	0 to 160 °F	1°
0780	0 to 350 °F	5°
0790	0 to 400 °F	5°
0810	0 to 550 °F	5°
0820	0 to 600 °F	10°
0830	0 to 800 °F	10°
0860	30 to 120 °F	1°
0870	30 to 130 °F	1°
0880	30 to 300 °F	2°
0890	32 to 212 °F	2°
0900	40 to 240 °F	2°
0910	50 to 150 °F	1°
0970	100 to 200 °F	1°
0980	100 to 600 °F	5°
0990	100 to 700 °F	10°
1020	200 to 700 °F	10°

Temperature Range - Degrees C

CODE	RANGE	°/DIV
0020	-75 to 175 °C	5°
0040	-70 to 70 °C	1°
0080	-50 to 25 °C	1°
0090	-50 to 50 °C	1°
0100	-50 to 100 °C	1°
0140	-40 to 70 °C	1°
0240	-20 to 120 °C	1°
0270	-10 to 110 °C	1°
0300	0 to 50 °C	1/2°
0310	0 to 60 °C	1°
0320	0 to 80 °C	1/2°
0330	0 to 100 °C	1°
0350	0 to 150 °C	1°
0370	0 to 200 °C	2°
0380	0 to 250 °C	2°
0390	0 to 300 °C	5°
0400	0 to 400 °C	5°
0410	0 to 450 °C	5°
0460	100 to 400 °C	5°
0470	100 to 550 °C	5°
Internal Ranges		
0010	-100 to 50 °C	2°
0030	-70 to 50 °C	1°
0050	-70 to 100 °C	2°
0060	-70 to 160 °C	2°
0070	-60 to 160 °C	2°
0110	-50 to 200 °C	5°
0120	-50 to 250 °C	5°
0130	-50 to 300 °C	5°
0150	-40 to 200 °C	2°
0160	-30 to 40 °C	1/2°
0170	-30 to 50 °C	1°
0180	-30 to 60 °C	1°
0190	-30 to 70 °C	1°
0200	-30 to 170 °C	2°
0210	-25 to 25 °C	1°
0220	-20 to 50 °C	1°
0230	-20 to 70 °C	1°
0250	-20 to 200 °C	2°
0260	-10 to 50 °C	1/2°
0280	-10 to 135 °C	2°
0290	-10 to 260 °C	2°
0340	0 to 120 °C	1°
0360	0 to 160 °C	2°
0420	0 to 500 °C	5°
0430	50 to 400 °C	5°
0440	50 to 450 °C	5°
0450	50 to 500 °C	5°

Dual Temperature Range - Degrees F & C

CODE	DUAL RANGE		°/DIV
1040	-100 to 100 °F	-75 to 40 °C	2,2°
1100	-40 to 160 °F	-40 to 70 °C	2,1°
1130	0 to 140 °F	-18 to 60 °C	2,1°
1150	0 to 180 °F	-18 to 82 °C	2,1°
1170	0 to 220 °F	-10 to 100 °C	2,1°
1180	0 to 250 °F	-20 to 120 °C	2,1°
1200	20 to 240 °F	-10 to 110 °C	2,1°
1210	25 to 125 °F	0 to 50 °C	1,(1/2)°
1250	50 to 300 °F	10 to 150 °C	2,2°
1260	50 to 400 °F	0 to 200 °C	5,2°
1270	50 to 500 °F	0 to 250 °C	5,2°
1300	150 to 750 °F	50 to 400 °C	10,5°
1310	200 to 1000 °F	100 to 550 °C	10,5°
Internal Ranges			
1050	-100 to 350 °F	-75 to 175 °C	5,5°
1060	-100 to 600 °F	-75 to 300 °C	5,5°
1070	-60 to 210 °F	-50 to 100 °C	2.1°
1080	-50 to 120 °F	-45 to 50 °C	2,1°
1090	-40 to 120 °F	-40 to 50 °C	2,1°
1110	-20 to 120 °F	-30 to 50 °C	1,1°
1120	0 to 100 °F	-18 to 38 °C	1,(1/2)°
1140	0 to 150 °F	-17 to 65 °C	1,1°
1160	0 to 200 °F	-10 to 90 °C	2,5°
1190	0 to 800 °F	-15 to 425 °C	10,5°
1220	30 to 130 °F	0 to 55 °C	1,(1/2)°
1230	30 to 300 °F	0 to 150 °C	1,1°
1240	32 to 212 °F	0 to 100 °C	2,1°
1280	50 to 550 °F	15 to 285 °C	5,5°
1290	100 to 600 °F	40 to 310 °C	5,5°

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BM-07

MULTI-POINT

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:

1-0	1-1	1-2	1-3	1-4		2-0		2-1		3-0		4-0		5-0
K	(4)	48	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
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[1]
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_ _ [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

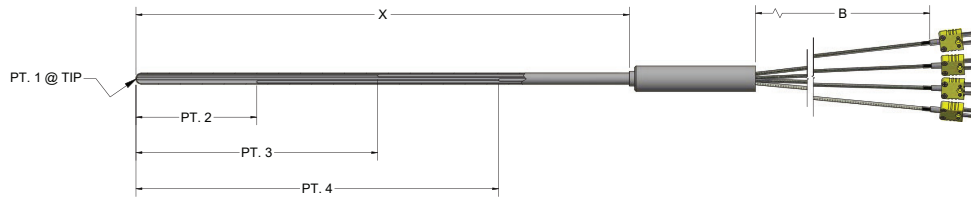| CODE	DESCRIPTION	MAX NUMBER OF POINTS
8PN_ [1]	1/2" NPT Pipe nipple, 4" long minimum, 316 SS	Up to 8 points
8PND_ [1]	3/4" NPT Pipe nipple, 6" long minimum, 316 SS	Up to 16 points
Options		
NT	No process threads	

[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[1]	3/4" NPT conduit hub located on bottom	
CHR[1]	3/4" NPT conduit hub located on right	
CHT[1]	3/4" NPT conduit hub located on top	
CHL[1]	3/4" NPT conduit hub located on left	

[1] Only applies to option 20 or 30

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MULTI-POINT

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

	1-0	1-1	1-2	1-3	1-4	2-0	2-1	3-0	4-0	5-0	6-0
Example Order Number:	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[1]
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	
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 ºC

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

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Pyromation's multi-point RTD's 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.
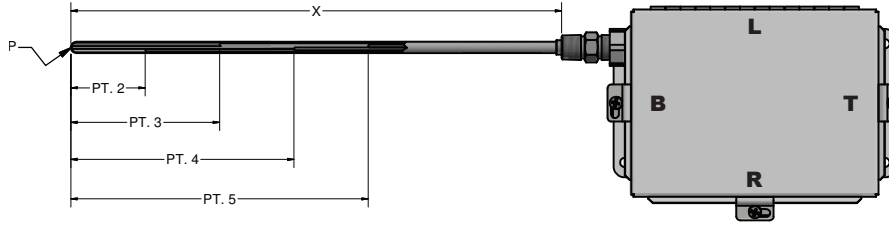
ORDER CODES

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 (α=0.003 85 °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   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 stainess 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 4	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[1]	3/4" NPT conduit hub located on bottom		
CHR[1]	3/4" NPT conduit hub located on right		
CHT[1]	3/4" NPT conduit hub located on top		
CHL[1]	3/4" NPT conduit hub located on left		

[1] Only applies to option 20 or 30

Pyromation's multi-point RTD's 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, 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.
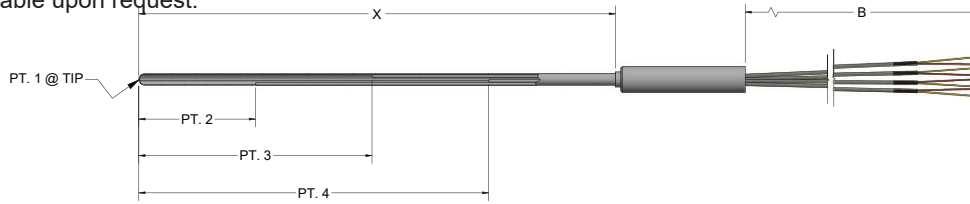
ORDER CODES

Example Order Number:

1-0	1-1	1-2	1-3	2-0	2-1	3-0	4-0	5-0	6-0
RAF185K	(4)	88	4	- 024 -	(0,3,8,15)	- 05C -	19 -	K3B072	- 2

1-0 Pt100 (α=0.003 85 °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
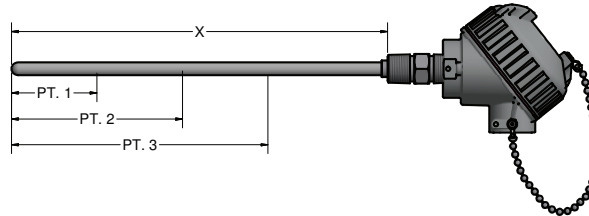
CODE	DESCRIPTION
0	Leads not stripped
2	2" split leads, 1/4" stripped
3	2" split leads, 1/4" spade lugs
4	Standard plug
5	Standard jack
6	Miniature plug
7	Miniature jack
Options	
CC[1]	Plug or jack secured to leads with cable clamp

[1] Not available with 4 wire

MULTI-POINT

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	Flourpolymer	200 ºC
F	Fiberglass	482 ºC

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 1-2 for maximum number of points.

1-3 Sheath Diameters - 316 SS

CODE	DIAMETER (INCHES)	MAX NUMBER OF POINTS[1]
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_ _ [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

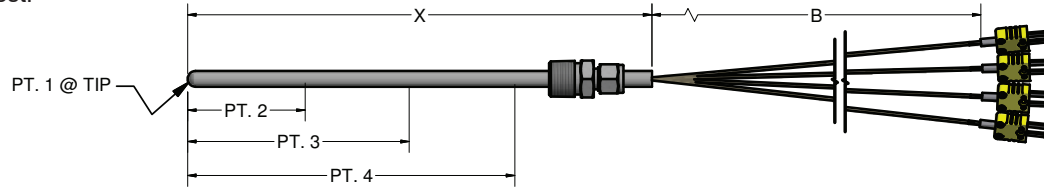| CODE	DESCRIPTION
8HN	1/2" x 1/2" NPT stainless steel hex nipple, 1" "E" length
9HP	1/2" NPT stainless steel bushing (no process threads)
8PN_	1/2" NPT pipe nipple, 316 stainless steel, specify length
8PND_	3/4" NPT pipe nipple, 316 stainess steel, specify length
Options	
NT	No process threads - for 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[1]	3/4" NPT conduit hub located on bottom	
CHR[1]	3/4" NPT conduit hub located on right	
CHT[1]	3/4" NPT conduit hub located on top	
CHL[1]	3/4" NPT conduit hub located on left	

[1] Only applies to option 20 or 30

Pyromation inc.

MULTI-POINT

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	Flourpolymer	200 ºC
F	Fiberglass	482 ºC

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 1-2 for maximum number of points

1-3   Sheath Diameters - 316 SS

CODE	DIAMETER (INCHES)	MAX NUMBER OF POINTS[1]
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_ _ [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 ºC

| CODE	DESCRIPTION
15	Extension leadwire transition with relief spring 204 ºC [400 ºF]
16	Extension leadwire transition with heat-shrink tubing 104 ºC [220 ºF]
18	Same size transition without heat-shrink tubing 204 ºC [400 ºF]
19	Extension leadwire transition without spring or heat-shrink tubing 204 ºC [400 ºF]
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

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Straight-Shank, Gas Sampling Threaded Thermowells are available in a variety of materials, process connection sizes, lengths, and optional lagging extensions. Thermowell specifications should be determined based on process conditions which include strength, temperature and corrosion-resistance requirements. They are designed with a standard 0.260" or 0.385" bore diameter. As a standard, these Gas Sampling Thermowells are provided with a 45º tip.
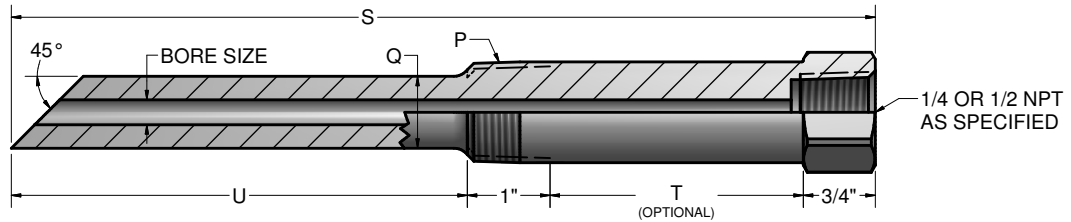
Wells are made from round bar with milled wrench hex. 1 1/4" NPT and 1 1/2" NPT wells are supplied as round bar with milled wrench flats.

("U" length for non-lagging wells) = "S" -1 3/4"
("U" length for lagging wells) = "S" -1 3/4" -"T"
(To solve for "T"), "T" = "S" -"U" -1 3/4" (When "U" and "S" are specified)

Thermowell Dimensions

"P"	"Q"
1/2" NPT	5/8" Dia.
3/4" NPT	3/4" Dia.
1" NPT	7/8" Dia.
1 1/4" NPT	1 1/4" Dia.
1 1/2" NPT	1 1/2" Dia.

ORDER CODES

	1-0	1-1	1-2	1-3	1-4	1-5	1-6
Example Order Number:	PST	4	D	09	08	T2	C8S

1-0 Well Type

CODE	DESCRIPTION
PST	Straight-shank threaded - 1/2" NPT - internal connection
PSTB	Straight-shank threaded - 1/4" NPT - internal connection

1-1 Bore Size

CODE	DESCRIPTION
4	0.260 Dia. bore
6	0.385" Dia. bore

1-2 Pipe Size "P"

CODE	DESCRIPTION
C	1/2" NPT
D	3/4" NPT
E	1" NPT
F	1 1/4" NPT
G	1 1/2" NPT

1-6 Options

CODE	DESCRIPTION
C8	316 stainless steel well cap and chain
C22	Brass well cap and chain
S	Well stamped with customer-specified part number

1-5 Optional "T" Lag Dimension

| CODE	DESCRIPTION
Leave blank if no lag is required	
T__	Specify "T" dimension in inches

1-4 Material

CODE	DESCRIPTION
XX	Specify two digit material code

1-3 "S" Length

CODE	DESCRIPTION
XX	Specify length in inches using two digits plus fractional length ("U" ≤ 1.5 inches)

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Straight-Shank, Gas Sampling Socket-Weld Thermowells are available in a variety of materials, process connection sizes, lengths, and optional lagging extensions. Thermowell specifications should be determined based on process conditions which include strength, temperature and corrosion-resistance requirements. The Straight-Shank, Gas Sampling Socket-Weld Thermowell is designed to be used with a 3000 class weld-o-let which allows the thermowell to be welded permanently into the process. They are designed with a standard 0.260" or 0.385" bore diameter. As a standard, these Gas Sampling Thermowells are provided with a 45° tip.
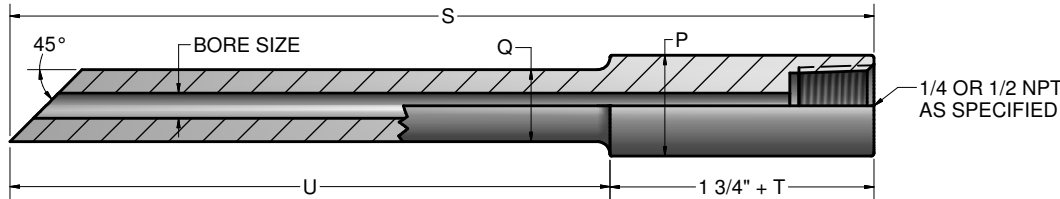
("U" length for non-lagging wells) = "S" -1 3/4"
("U" length for lagging wells) = "S" -1 3/4" -"T"
(To solve for "T"), "T" = "S" -"U" -1 3/4" (When "U" and "S" are specified)

Thermowell Dimensions

"P" PIPE SIZE		"Q"
NOM.	DIA.	
3/4"	1.050"	3/4" Dia.
1"	1.315"	7/8" Dia.
1 1/4"	1.660"	1 1/4" Dia.
1 1/2"	1.900"	1 1/2" Dia.

ORDER CODES

Example Order Number:

1-0	1-1	1-2	1-3	1-4	1-5	1-6
PSW	4	D	09	08	T2	C8S

1-0 Well Type

CODE	DESCRIPTION
PSW	Straight-shank socket-weld - 1/2" NPT - internal connection
PSWB	Straight-shank socket-weld - 1/4" NPT - internal connection

1-1 Bore Size

CODE	DESCRIPTION
4	0.260" Dia. bore
6	0.385" Dia. bore

1-2 Pipe Size "P"

CODE	DESCRIPTION
D	3/4" NPS
E	1" NPS
F	1 1/4" NPS
G	1 1/2" NPS

1-6 Options

CODE	DESCRIPTION
C8	316 stainless steel well cap and chain
C22	Brass well cap and chain
S	Well stamped with customer-specified part number

1-5 Optional "T" Lag Dimension

| CODE	DESCRIPTION
	Leave blank if no lag is required
T__	Specify "T" dimension in inches

1-4 Material

CODE	DESCRIPTION
XX	Specify two digit material code

1-3 "S" Length

CODE	DESCRIPTION
XX	Specify length in inches using two digits plus fractional length ("U" ≤ 1.5 inches)

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Standard Flanged, Gas Sampling Thermowells are available in a variety of materials, flange types, flange sizes, and pressure ratings. They are also available in various lengths and with optional lagging extensions. Thermowell specifications should be determined based on process conditions which include strength, temperature and corrosion-resistance requirements. Standard flanged thermowells are supplied with a straight shank and are designed with a 0.260" or 0.385" bore diameter. As a standard, these Gas Sampling Thermowells are provided with a 45° tip.
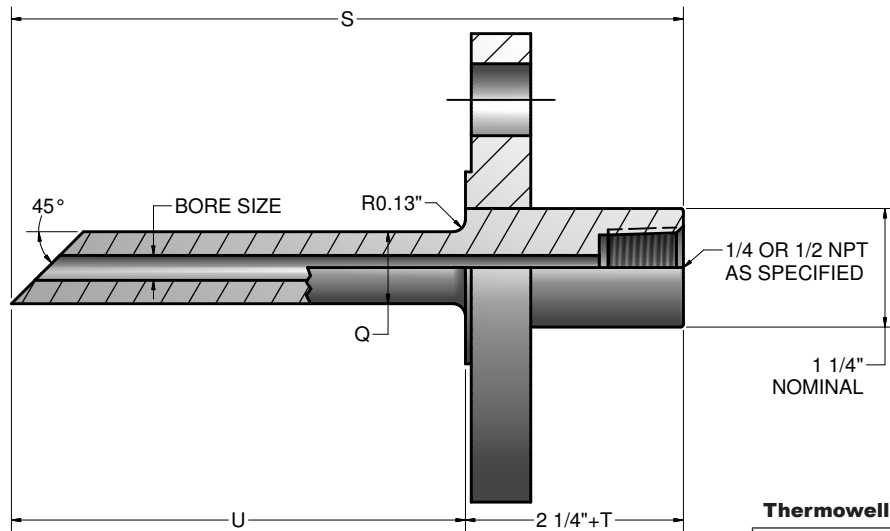
("U" length for non-lagging wells) = "S" - 2 1/4"
("U" length for lagging wells) = "S" - 2 1/4" - "T"
(To solve for "T"), "T" = "S" - "U" - 2 1/4" (When "U" and "S" are specified)

Thermowell Dimensions

BORE	"Q" Dim.
0.260	3/4"
0.385	7/8"

ORDER CODES

	1-0	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8
Example Order Number:	PSF	4	15	R	1	09	08	T2	C8S

1-0   Well Type

CODE	DESCRIPTION
PSF	Standard flanged - 1/2" NPT - internal connection
PSFB	Standard flanged - 1/4" NPT - internal connection

1-1   Bore Size

CODE	DESCRIPTION
4	0.260" Dia. bore
6	0.385" Dia. bore

1-2   Flange Size

CODE	DESCRIPTION
10	1" (DN 25)
13	1 1/4" (DN 32)
15	1 1/2" (DN 40)
20	2" (DN 50)
30	3" (DN 80)

1-3   Flange Type

CODE	DESCRIPTION
F	Flat face
J	Ring joint
R	Raised face

1-4   Pressure Rating

CODE	DESCRIPTION
1	150 Class
3	300 Class
6	600 Class
9	900 Class
15	1500 Class

1-5   "S" Length

CODE	DESCRIPTION
XX	Specify length in inches using two digits plus fractional length ("U" ≤ 1.5 inches)

1-6   Material

CODE	DESCRIPTION
XX	Specify two digit material code

1-7   Optional "T" Lag Dimension

| CODE	DESCRIPTION
	Leave blank if no lag is required
T__	Specify "T" dimension in inches using two digits plus any fractional length

1-8   Options

CODE	DESCRIPTION
C8	316 stainless steel well cap and chain
C22	Brass well cap and chain
F	Full penetration weld
S	Well stamped with customer-specified part number

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The replaceable element Heat-Tracing RTD assemblies are made for use in systems that measure the surface temperature of process pipe that is carrying products whose temperatures must be controlled to prevent freeze-up, or to maintain a viscosity level so that the inner medium will flow. The RHT assembly allows the sensing element to be easily removed and replaced without removing insulation, or disassembling the sensor from the piping system.   These RTDs are offered in two of temperature ranges and are supplied with a 316SS sheath and a 3/4" radius stainless steel mounting pad.
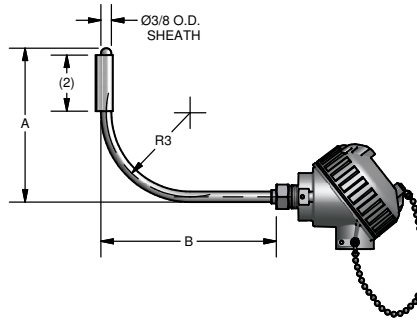
ORDER CODES

Example Order Number:

1-1	1-2	1-3	2	3	4	5
RBF185M	68	3	RHT	05(1/2)06	18RD	31

1-1   Pt100 (α = 0.003 85 ºC⁻¹) RTD Assemblies

CODE SINGLE	CODE DUPLEX	TOLERANCE	TEMPERATURE RANGE
RBF185L	RBF285L	Class B	(-50 to 200ºC)
RBF185M	N/A	Class B	(-50 to 450ºC)
RAF185L	RAF285L	Class A	(-50 to 200ºC)
RAF185M	N/A	ClassA	(-50 to 450ºC)

1-2   Sheath

CODE	DIAMETER (Inches)	MATERIAL
68	3/8"	3/16

1-3   Element Connection

CODE	DESCRIPTION
2	2 wire
3	3 wire
4	4 wire

2 Sheath Style

CODE	DESCRIPTION
RHT	Replaceable element

3   Sheath Length

CODE
Specify 2 digit hot leg and 2 digit cold leg in inches

Hot Leg "A" Dimension[1]	Cold Leg "B" Dimension[1]
05(1/2)	06
[1] 5(1/2) inch minimum hot leg and 6 inch minimum cold leg for RHT assembly	

5   Head Terminations

| CODE	DESCRIPTION
31	Aluminum screw-cover head
34	Cast Iron screw-cover head
35T-642A	(4-20) mA HART® Field transmitter with general-purpose aluminum housing
36T82-D10	(4 to 20) mA dual input HART® transmitter with digital display and general-purpose aluminum housing with glass lid
37T-662A	(4 to 20) mA HART® Field Transmitter with general-purpose aluminum housing
49	Flip-top Aluminum head
63	White Polypropylene screw-cover head
75T-642C	(4 to 20) mA HART® field transmitter with aluminum explosion-proof housing, Group A
76T82-D10	(4 to 20) mA dual input HART® Field Transmitter with digital display and explosion-proof aluminum housing, Group A
77T82-D10	(4 to 20) mA HART® Field Transmitter with dual cavity explosion-proof aluminum housing, Group A
91	316L stainless steel screw-cover head
93	Aluminum explosion-proof/flame-proof head, NEC, IEC, Atex approved
94	316L stainless steel explosion-proof/flame-proof head, NEC, IEC, Atex approved
Options	
D-2	Class I Div. 2 Rating for option 31, 34, 91
I	Stainless Steel Tag
SB	Steel conduit reducer bushing
NB	Nylon conduit reducer bushing
T-440	(4 to 20) mA head-mounted RTD transmitter
T-441	(4 to 20) mA isolated head-mounted transmitter
T-442	(4 to 20) mA isolated HART® head-mounted transmitter
T82-00	(4 to 20) mA isolated HART® dual Input head-mounted transmitter

4   Radius Mounting Pad

CODE	DESCRIPTION
18RD	1 inch wide x 2 inch long 18 Ga 304 stainless steel mounting pad with a 3/4 inch radius. Can be formed to fit pipe sizes from 1 inch NPT to 12 inch NPT

Pyromation inc.

The replaceable element Heat-Tracing thermocouple assemblies are made for use in systems that measure the surface temperature of process pipe that is carrying products whose temperatures must be controlled to prevent freeze-up, or to maintain a viscosity level so that the inner medium will flow. The RHT thermocouple assembly allows the sensing element to be easily removed and replaced without removing insulation, or disassembling the sensor from the piping system. These assemblies are offered in a variety of calibration types and are supplied with fiberglass insulated conductors, a 316SS sheath, and a 3/4" radius stainless steel mounting pad.
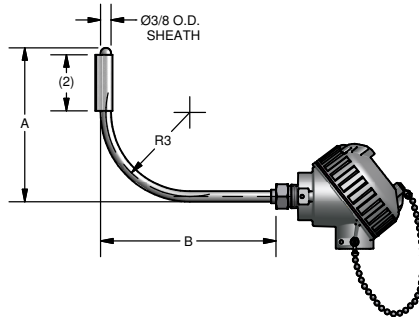
ORDER CODES

Example Order Number:

1-1	1-2	1-3		2		3		4		5
J	P68	G	-	RHT	-	05(1/2)06	-	18RD	-	31

1-1 Thermocouple Type

CODE			
Single	Duplex	Temperature Range
E	EE	0 to 480ºC
J	JJ	0 to 480ºC
K	KK	0 to 480ºC
T	TT	0 to 370ºC

1-2 316 SS Sheath Diameter

CODE	Diameter (Inches)
P68	3/8

1-3 Measuring Junction

CODE	DESCRIPTION
G	Grounded junction
U	Ungrounded junction

2 Sheath Style

CODE	DESCRIPTION
RHT	Replaceable element

3 Sheath Length

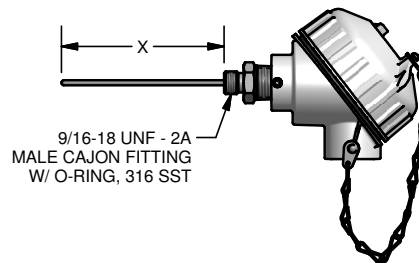| CODE	
Specify 2 digit hot leg and 2 digit cold leg in inches	
Hot Leg "A" Dimension[1]	Cold Leg "B" Dimension[1]
05(1/2)	06
[1] 5(1/2) inch minimum hot leg and 6 inch minimum cold leg for RHT assembly	

5 Head Terminations

CODE	DESCRIPTION
31	Aluminum screw-cover head
34	Cast Iron screw-cover head
35T-642A	(4-20) mA HART® Field transmitter with general-purpose aluminum housing
36T82-D10	(4 to 20) mA dual input HART® transmitter with digital display and general-purpose aluminum housing with glass lid
37T-662A	(4 to 20) mA HART® Field Transmitter with general-purpose aluminum housing
49	Flip-top Aluminum head
63	White Polypropylene screw-cover head
75T-642C	(4 to 20) mA HART® field transmitter with aluminum explosion-proof housing, Group A
76T82-D10	(4 to 20) mA dual input HART® Field Transmitter with digital display and explosion-proof aluminum housing, Group A
77T82-D10	(4 to 20) mA HART® Field Transmitter with dual cavity explosion-proof aluminum housing, Group A
91	316L stainless steel screw-cover head
93	Aluminum explosion-proof/flame-proof head, NEC, IEC, Atex approved
94	316L stainless steel explosion-proof/flame-proof head, NEC, IEC, Atex approved
Options	
D-2	Class I Div. 2 Rating for option 31, 34, 91
I	Stainless Steel Tag
SB	Steel conduit reducer bushing
NB	Nylon conduit reducer bushing
T-441	(4 to 20) mA isolated head-mounted transmitter
T-442	(4 to 20) mA isolated HART® head-mounted transmitter
T82-00	(4 to 20) mA isolated HART® dual Input head-mounted transmitter

4 Radius Mounting Pad

CODE	DESCRIPTION
18RD	1 inch wide x 2 inch long 18 Ga 304 stainless steel mounting pad with a 3/4 inch radius. Can be formed to fit pipe sizes from 1 inch NPT to 12 inch NPT

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The types listed below are RTD temperature sensor assemblies designed to meet the stringent requirements of ultra-high temperature (UHT) pasteurization systems. In the UHT process the products are pasteurized at a higher temperature, typically 138° C for a shorter period of time - usually 2-3 seconds. The RTD sensor assemblies are available in a variety of accuracies, wire configurations, and termination options. They are also available with a variety of (4-20) mA transmitter options. All wetted parts are supplied with a surface finish that meets or exceeds 32µin Ra. Surface finishes of 15µin Ra or better are available upon request. These assemblies are supplied with a 9/16" -18 UNF-2A process connection and Buna N O-ring on the face of the fitting. These RTD assemblies are designed to be used with a weld-in style thermowell as noted on the following page.

9/16-18 UNF - 2A
MALE CAJON FITTING
W/ O-RING, 316 SST

ORDER CODES

	1-1	1-2	1-3	2		3
Example Order Number:	RAF185L	28	3	- 004	- 00	- 8VCC63

1-1 Pt100 (α = 0.003 85 °C^{-1}) RTD Assemblies

CODE		TOLERANCE	TEMPERATURE RANGE
SINGLE	DUPLEX (3/16" OD ONLY)		
R1T185L	R1T285L	Grade B	(-200 to 200ºC)
R3T185L	R3T285L	Class AA	(-200 to 200ºC)
R5T185L	R5T285L	(1/5) Class B	(-200 to 200ºC)
RBF185L	RBF285L	Class B	(-50 to 200ºC)
RAF185L	RAF285L	Class A	(-50 to 200ºC)
R1T185H	R1T285H	Grade B	(-200 to 600ºC)
RAT185H	RAT285H	Class A	(-200 to 600ºC)

1-2 Sheath

CODE	DIAMETER (inches)	MATERIAL
28	1/8"	316 Stainless Steel
38	3/16"	316 Stainless Steel

1-3 Element Connection

CODE	DESCRIPTION
2	2 wires
3	3 wires
4	4 wires

2 Sheath Length

Specify 3 digit hot leg in inches

3 Head Mounting Fitting and Termination

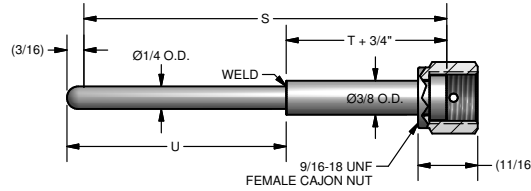| CODE	DESCRIPTION
8VCC22(XX)	9/16" - 18UNF-2A X 1/2" NPT with 3" individual leads and terminal pins (or specifed lead length)
8VCB22(XX)	9/16" - 18UNF-2A X 1/4" NPT with 3" individual leads and terminal pins (or specified lead length)
8VCC31	9/16" - 18UNF-2A process connection with Aluminum screw-cover head (NEMA 4X, IP66)
8VCC63	9/16" - 18UNF-2A process connection with White Polypropylene screw-cover head (NEMA 4X)
8VCC91	9/16" - 18UNF-2A process connection with 316L stainless steel screw-cover head (NEMA 4X, IP66)
8VCB17[1]	9/16" - 18UNF-2A process connection with Minature Plastic head (3/8" NPT conduit opening)
8VC45[2]	9/16" -18UNF-2A X M12
Head Options	
W[3]	Epoxy Coating
I	Stainless Steel Tag
SB	Steel conduit reducer bushing
NB	Nylon conduit reducer bushing
T-440	(4 to 20) mA head-mounted RTD transmitter
T-441	(4 to 20) mA isolated head-mounted transmitter
T-442	(4 to 20) mA isolated HART® head-mounted transmitter
T-450[2]	(4 to 20) mA integral RTD transmitter
See Transmitter ordering info in the transmitter section.	
[1] Only available with single element	
[2] Only available in single element, 4 wire construction	
[3] Only available with option 31	

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The VCB series thermowells are intended to be used in high pressure UHT process lines. They are installed by welding the 3/8" OD sleeve directly into the sanitary tubing. The thermowells are made of 316 SS and the wetted parts are supplied with a surface finish that meets or exceeds 32µin Ra. Surface finishes of 15µin Ra or better are available upon request. These thermowells are supplied with a 9/16" -18 UNF-2A female rotating instrument connection with weep hole for leak detection.

ORDER CODES

Example Order Number:

	1-1	1-2	1-3	1-4	1-5
	VCB	3	04	08	T1

1-1 Well Type

CODE	DESCRIPTION
VCB	9/16" -18UNF-2A CAJON Well

1-2 Bore Size

CODE	DESCRIPTION
2	0.134 Bore
3	0.194 Bore

1-3 "S" Length

CODE	DESCRIPTION
XX	Specify length in inches using two digits plus fractional length

1-5 Optional "T" Lag Dimension

| CODE	DESCRIPTION
T__	Specify length in inches
Leave blank if no lag is required	

1-4 Material

CODE	DESCRIPTION
08	316 Stainless Steel

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Remote-mounted RTD assemblies are designed for applications where space is limited, or where high ambient temperatures or excessive heat conduction exists. These assemblies are available in a variety of element types, accuracies, sheath diameters, process connections, and head options. These sensors can be mounted into a thermowell with the use of a spring-loaded well fitting, or directly into a process with a welded- or compression-style fitting. They are also available with a variety of optional head-mounted temperature transmitters.
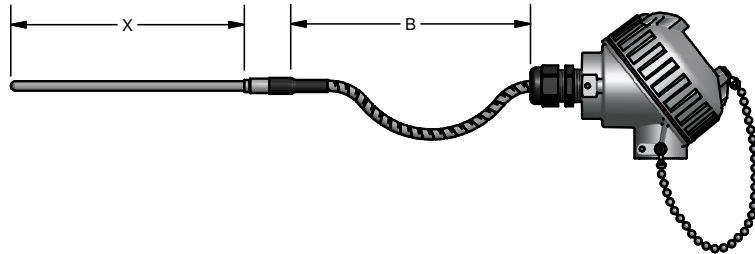
ORDER CODES

Example Order Number:

1-1	1-2	1-3	2	3	4	5	6-1	6-2
R1T185L	48	3	- 012 -	00	- 16 -	T3P048 -	AG 31-	D-2

1-1 Pt100 (α = 0.003 85 ºC⁻¹) RTD Assemblies

CODE		TOLERANCE	TEMPERATURE RANGE
SINGLE	DUPLEX		
R1T185L	R1T285L	Grade B	(-200 to 200ºC)
R5T185L	R5T285L	(1/5) Class B	(-200 to 200ºC)
RBF185L	RBF285L	Class B	(-50 to 200ºC)
RAF185L	RAF285L	Class A	(-50 to 200ºC)
R1T185H	R1T285H	Grade B	(-200 to 600ºC)
RAT185H	RAT285H	Class A	(-200 to 600ºC)

1-2 Sheath - 316 SS

CODE	DIAMETER (inches)
38	3/16"
48	1/4"
68	3/8"

1-3 Element Connection

CODE	DESCRIPTION
3	3 wires
4	4 wires

2 Sheath Length

Specify 3 digit "X" length in inches

3 Sheath Mounting Fittings

CODE	DESCRIPTION	NPT SIZE (inches)
00	No fitting or bushing	
COMPRESSION FITTINGS		
05A	316 SS One-time adjustable	1/8"
05B	316 SS One-time adjustable	1/4"
05C	316 SS One-time adjustable	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"

6-2 Head Terminations

CODE	DESCRIPTION
31	Aluminum screw-cover head
34	Cast Iron screw-cover head
49	Flip-top Aluminum head
63	White Polypropylene screw-cover head
91	316L stainless steel screw-cover head
Options	
D-2	FM/CSA Class I Div. 2 Rating for option 31, 34, 91
I	Stainless Steel Tag
SB	Steel conduit reducer bushing
T-440	(4 to 20) mA head-mounted RTD transmitter
T-441	(4 to 20) mA isolated head-mounted transmitter
T-442	(4 to 20) mA isolated HART® head-mounted transmitter
T82-00	(4 to 20) mA isolated HART® dual Input head-mounted transmitter

6-1 Head Mounting Fittings

CODE	DESCRIPTION
8HN	1/2" x 1/2" NPT Stainless steel hex nipple
9HP	1/2" x 1/2" NPT Stainless steel bushing (no process threads)
8RNDC	1/2" x 3/4" NPT Stainless steel hex nipple
CG	Nylon cord grip
AG	Aluminum cord grip

4 Leadwire Transitions

CODE	DESCRIPTION
15	Extension leadwire transition with relief spring 204ºC
16	Extension leadwire transition with heat-shrink tubing 104ºC
19	Extension leadwire transition with no strain relief 204ºC

5 Extension Leadwire "B" Dimensions

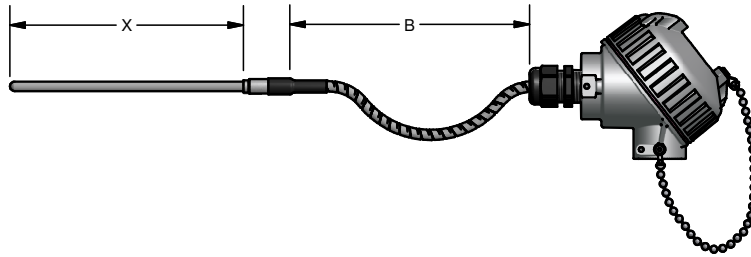| CODE	DESCRIPTION
T3A[1]	Fluoropolymer insulation, stranded conductor, flexible armor
T3P[1]	Fluoropolymer insulation, stranded conductor, PVC-coated flexible armor
T3T[1]	Fluoropolymer insulation, stranded conductor, FEP-coated flexible armor
[1] Insert 3 digit "B" length in inches.	

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Remote-mounted thermocouple sensor assemblies are designed for applications where space is limited, or where high ambient temperatures or excessive heat conduction exists. They may also be a good choice for applications where high vibrations exist. They are available in a variety of thermocouple types, sheath diameters, sheath materials, process connections, and head options. These sensors can be mounted into a thermowell with the use of a spring-loaded well fitting, or directly into a process with a welded- or compression-style fitting. They are also available with a variety of optional head-mounted temperature transmitters.

ORDER CODES

Example Order Number:

1-1	1-2	1-3	1-4		2		3		4		5		6-1	6-2
K	4	8	U	-	018	-	00	-	16	-	T3T120	-	CG 91-	D-2

1-1 Thermocouple Type

CODE	
SINGLE	*DUPLEX*
E	EE
J	JJ
K	KK
N	NN
T	TT

1-2 Sheath Diameter

CODE	DIAMETER (inches)
2	1/8"
3	3/16"
4	1/4"
6	3/8"

1-3 Sheath Material

CODE	DESCRIPTION	AVAILABLE SHEATH TYPES
3	Alloy 600	K, N
8	316 Stainless steel	E, J, K, T

1-4 Junction Type

CODE	DESCRIPTION
G	Grounded
U	Ungrounded
E	Exposed

2 Sheath Length

Specify 3 digit "X" length in inches

3 Sheath Mounting Fittings

CODE	DESCRIPTION	NPT SIZE (inches)
00	No fitting or bushing	
COMPRESSION FITTINGS		
05A	316 SS One-time adjustable	1/8"
05B	316 SS One-time adjustable	1/4"
05C	316 SS One-time adjustable	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"

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34	Cast Iron screw-cover head
49	Flip-top Aluminum head
63	White Polypropylene screw-cover head
91	316L stainless steel screw-cover head
Options	
D-2	FM/CSA Class I Div. 2 Rating for option 31, 34, 91
I	Stainless Steel Tag
SB	Steel conduit reducer bushing
T-441	(4 to 20) mA isolated head-mounted transmitter
T-442	(4 to 20) mA isolated HART® head-mounted transmitter
T82-00	(4 to 20) mA isolated HART® dual Input head-mounted transmitter

6-1 Head Mounting Fittings

CODE	DESCRIPTION
8HN	1/2" x 1/2" NPT Stainless steel hex nipple
9HP	1/2" x 1/2" NPT Stainless steel bushing (no process threads)
8RNDC	1/2" x 3/4" NPT Stainless steel hex nipple
CG	Nylon cord grip
AG	Aluminum cord grip

4 Leadwire Transitions

CODE	DESCRIPTION
15	Extension leadwire transition with relief spring 204°C
16	Extension leadwire transition with heat-shrink tubing 104°C
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5 Extension Leadwire "B" Dimensions

CODE	DESCRIPTION
T3A[1]	Fluoropolymer insulation, stranded conductor, flexible armor
T3P[1]	Fluoropolymer insulation, stranded conductor, PVC-coated flexible armor
T3T[1]	Fluoropolymer insulation, stranded conductor, FEP-coated flexible armor
[1] Insert 3 digit "B" length in inches.	

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Miniature Temperature Sensors
For miniature bearing and babbitt bearing applications

- General purpose and ATEX-certified designs available
- Supplied in multiple case styles
- Custom designs on request
- Rugged construction
- RTD and Thermocouple Types available
- Pass throughs, elastomer fill and accessories
- Standard four day delivery
- Application proven

ATEX Certification Available

Pyromation's miniature sensors are designed to measure the critical temperature of the metal bearing shoes operating in generators, turbines and other rotating equipment. Monitoring the bearing temperature of rotating equipment is very important in preventing machine failures caused by the breakdown of the lubricating oil when it becomes too hot. Pyromation not only provides a cost-effective line of miniature sensors for these applications, they have experienced sales and engineering support available to assist you in finding the best way to measure temperature in your equipment.

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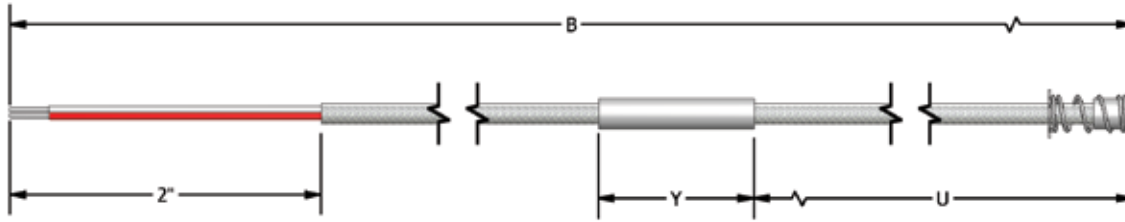
Example Order Number:

0-0	1-0	1-1	2-0	3-0	4-0	5-0
HL30	RBF185LBS	3	BST	3P02(1/2),24	T3120	2

0-0 OPTIONAL ATEX CERTIFICATION [1]

CODE	DESCRIPTION
HL30	ATEX Certified CE Ex II3G Ex ic IIC T4

[1] Selection not required for general purpose sensors

1-1 ELEMENT CONNECTION

CODE	DESCRIPTION
2	2 Wire
3	3 Wire

2-0 CASE OPTIONS

CASE STYLE

CODE	DESCRIPTION
A	0.275" OD x 0.250" Long
B	0.188" OD x 0.250" Long
BS	0.188" OD x 0.250" Long (Includes spring and washer)
C [1]	0.125" OD x 0.300" Long
D [1]	0.080" OD x 0.300" Long

CASE MATERIAL

CODE	DESCRIPTION
T	Tin plated copper
N	Nickel plated copper

[1] Not available in duplex

3-0 SEALING OPTIONS

CODE	DESCRIPTION
00	No sealing option
E "U"	Elastomer fill (must specify length of elastomer fill "U" dimension) 72" maximum fill length. T3BT wire type must be specified.
3P"Y", "U"	3/16" OD pass through (Must specify "Y" length and "U" length)
4P"Y", "U"	1/4" OD pass through (Must specify "Y" length and "U" length)

4-0 EXTENSION LEADWIRE TYPE ("B" DIMENSION)

CODE	DESCRIPTION
T3J	Teflon® insulation - individual leads - stranded conductor
T3	Teflon® insulation - stranded conductor
T3B	Teflon® insulation - stranded conductor - stainless steel overbraid
T3BT	Teflon® insulation - stranded conductor - stainless steel overbraid - Teflon® outer jacket

5-0 TERMINATION

CODE	DESCRIPTION
0	No termination
2	2" split leads 1/4" strip
3	2" split leads with spade lugs

### 1-0 100 Ω PLATINUM RTD ELEMENTS (-40 to 204° C)

SENSOR TYPE		DESCRIPTION		
CODE		TOLERANCE	TEMPERATURE COEFFICIENT	
SINGLE	DUPLEX			
RBF185LBS	RBF285LBS	± 0.30 °C [± 0.12% X R_0]	$\alpha = 0.003\,85$ °C^{-1}	
RBF192LBS	RBF292LBS	± 0.30 °C [± 0.12% X R_0]	$\alpha = 0.003\,92$ °C^{-1}	

100 Ω Platinum RTD
$\alpha = 0.00385$ °C^{-1}
$\alpha = 0.00392$ °C^{-1}

CODE	DESCRIPTION	CASE STYLE A Ø 0.275" OD x 0.250" L		CASE STYLE B Ø 0.188" OD x 0.250" L Flange 0.250" OD x 0.030" L		CASE STYLE C Ø 0.125" OD x 0.300" L		CASE STYLE D Ø 0.080" OD x 0.300" L	
		Single	Duplex	Single	Duplex	Single	Duplex	Single	Duplex
T3J	Teflon® insulation - individual leads - stranded conductor	2 or 3 wire 24 AWG	2 or 3 wire 28 AWG	2 or 3 wire 24 AWG	2 or 3 wire 28 AWG	2 or 3 wire 28 AWG	2 or 3 wire 30 AWG	2 or 3 wire 30 AWG	N/A
T3	Teflon® insulation - stranded conductor	2 or 3 wire 24 AWG	2 or 3 wire 28 AWG	2 or 3 wire 24 AWG	2 or 3 wire 28 AWG	2 or 3 wire 28 AWG	2 or 3 wire 28 AWG	N/A	N/A
T3B	Teflon® insulation - stranded conductor - stainless steel overbraid	2 or 3 wire 24 AWG	2 or 3 wire 28 AWG	2 or 3 wire 24 AWG	2 or 3 wire 28 AWG	N/A	N/A	N/A	N/A
T3BT	Teflon® insulation - stranded conductor - stainless steel overbraid - Teflon® outer jacket	2 or 3 wire 24 AWG	2 or 3 wire 30 AWG	2 or 3 wire 24 AWG	2 or 3 wire 30 AWG	N/A	N/A	N/A	N/A

Teflon® is a registered trademark of E.I. du Pont de Nemours and Company.
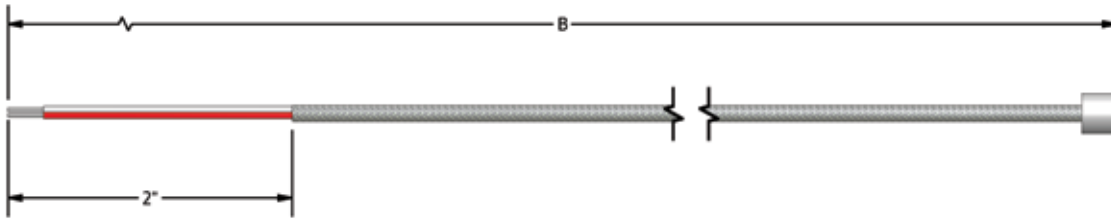
Example Order Number:

0-0	1-0	2-0	3-0	4-0	5-0
HL30	JBS U	AT	00	T3120	2

0-0 Optional ATEX Certification [1]

CODE	DESCRIPTION
HL30	ATEX Certified CE Ex II3G Ex ic IIC T4

[1] Selection not required for general purpose sensors

1-0 Thermocouple Type

CODE	
SINGLE	**DUPLEX**
JBSU	JJBSU
KBSU	KKBSU
TBSU	TTBSU
EBSU	EEBSU

3-0 Sealing Options

CODE	DESCRIPTION
00	No sealing option
3P"Y", "U"	3/16" OD pass through (Must specify "Y" length and "U" length)
4P"Y", "U"	1/4" OD pass through (Must specify "Y" length and "U" length)

2-0 Case Options

CASE STYLE

CODE	DESCRIPTION
A	0.275" OD x 0.250" Long
B	0.188" OD x 0.250" Long
BS	0.188" OD x 0.250" Long (Includes spring and washer)
C[1]	0.125" OD x 0.300" Long
D[1]	0.080" OD x 0.300" Long

CASE MATERIAL

CODE	DESCRIPTION
T	Tin plated copper
N	Nickel plated copper

[1] Not available in duplex

4-0 Extension Leadwire Type ("B" Dimension)

CODE	DESCRIPTION	AVAILABLE CALIBRATIONS			
		J	K	T	E
T1	Teflon® insulation - solid conductor	x	x	x	
T3J	Teflon® insulation - individual leads - stranded conductor	x	x	x	x
T3	Teflon® insulation - stranded conductor	x	x	x	x
T3B	Teflon® insulation - stranded conductor - stainless steel overbraid	x	x		

5-0 Termination

CODE	DESCRIPTION
0	No termination
2	2" split leads 1/4" strip
3	2" split leads with spade lugs

Thermocouple Types J, K, T, E

CODE	DESCRIPTION	CASE STYLE A Ø 0.275" OD x 0.250" L		CASE STYLE B Ø 0.188" OD x 0.250" L Flange 0.250" OD x 0.030" L		CASE STYLE C Ø 0.125" OD x 0.300" L		CASE STYLE D Ø 0.080" OD x 0.300" L	
		Single	*Duplex*	*Single*	*Duplex*	*Single*	*Duplex*	*Single*	*Duplex*
T1	Teflon® insulation - solid conductor	24 AWG	24 AWG	24 AWG	24 AWG	24 AWG	N/A	30 AWG	N/A
T3J	Teflon® insulation - individual leads - stranded conductor	24 AWG	24 AWG	24 AWG	24 AWG	24 AWG	N/A	N/A	N/A
T3	Teflon® insulation - individual leads - stranded conductor	24 AWG	24 AWG	24 AWG	24 AWG	24 AWG	N/A	N/A	N/A
T3B	Teflon® insulation - stranded conductor - stainless steel overbraid	24 AWG	24 AWG	24 AWG	N/A	24 AWG	N/A	N/A	N/A

Installation Instructions

CASE STYLE	INSTALLATION	ILLUSTRATION
A	Install sensor just below the babbitt layer – near bearing shoe surface, then puddle the babbitt metal over the sensor tip and smooth.	
B	This sensor is designed with a spring and retaining ring that allows for spring loading. Slide the spring and ring over the leads. Insert the sensor tip into a hole bored into the bearing shoe and push down on the retaining ring to compress the spring and secure the sensor.	
C & D	Bore the sensor hole in the bearing shoe near, but not touching, the babbitt surface. Insert sensor and secure by potting/bonding with epoxy.	

Accessories

PART NUMBER	DESCRIPTION	ILLUSTRATION
B067901	Spring	
B010602	Retaining Washer	
B010801	Retaining Ring	

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BEYOND MEASURE®

Operating since 1962, Pyromation is the premier temperature sensor manufacturer in North America. From RTDs and thermocouples to thermowells, connection heads, transmitters, 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.

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