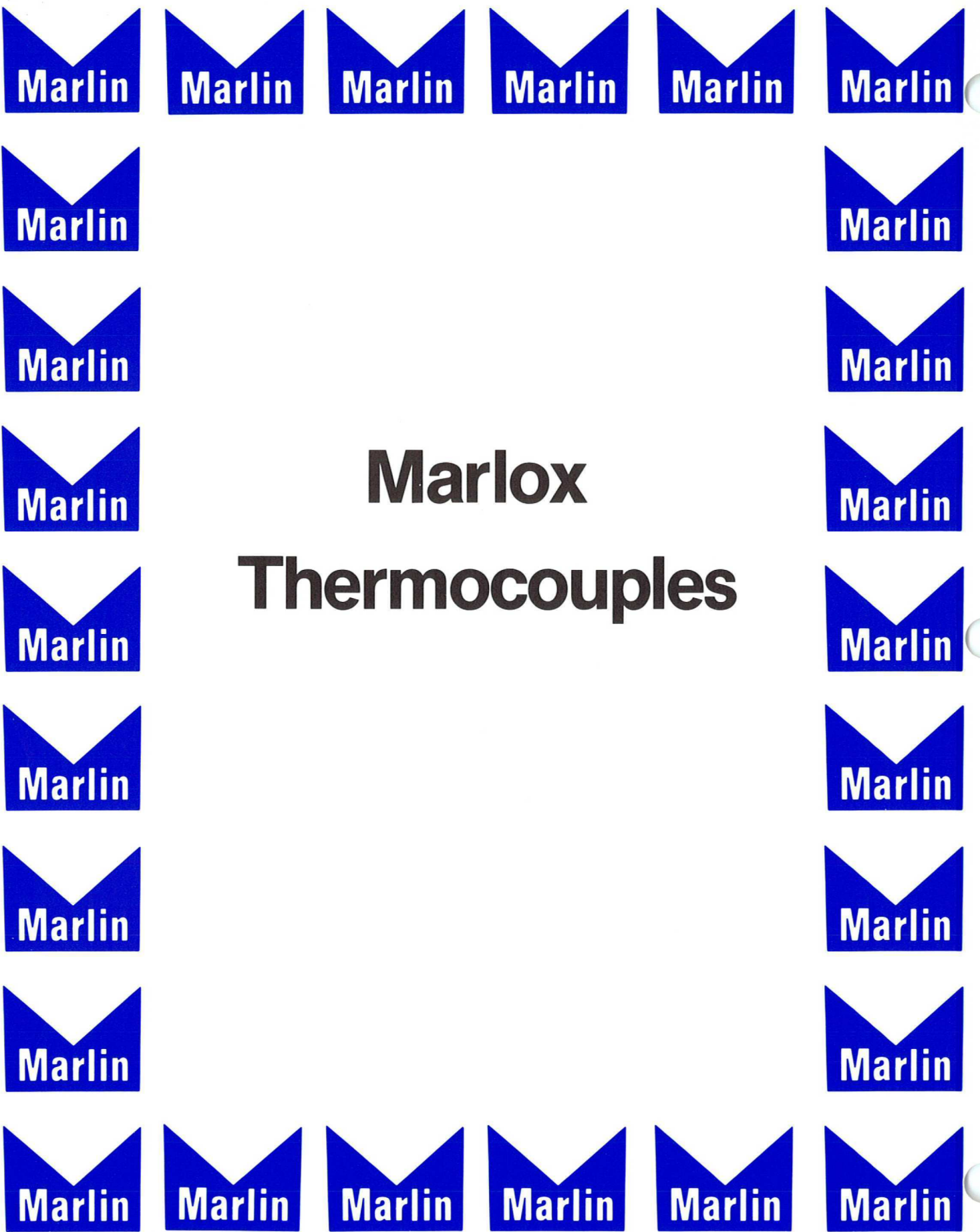


NOTICE:

Prices and availability are subject to change without notice.

Please contact Marlin Manufacturing before ordering for updated pricing.

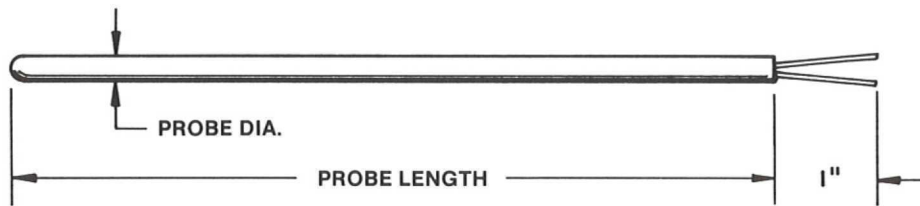


Marlox Thermocouples



MANUFACTURING CORPORATION 12404 TRISKETT ROAD CLEVELAND, OHIO 44111 (216) 941-6200
FAX: (216) 941-6207

SENSORS STOCK MARLOX® THERMOCOUPLES



DESCRIPTION				PROBE LENGTH INCHES	MARLIN STOCK NO.	PRICE \$/EA.
PROBE DIA.	SHEATH MATERIAL	ANSI TYPE	JUNCTION TYPE			
1/8	Inconel 600	K	Grounded	6"	M009 - 6	12
				12"	M009 -12	14
				18"	M009 -18	15
1/4				6"	M012 - 6	15
				12"	M012 -12	19
				18"	M012 -18	23
1/8	Inconel 600	K	Ungrounded	6"	M014 - 6	14
				12"	M014 -12	16
				18"	M014 -18	18
1/4				6"	M016 - 6	17
				12"	M016 -12	21
				18"	M016 -18	25

One Week Shipments for orders of stock Marlox Thermocouples.

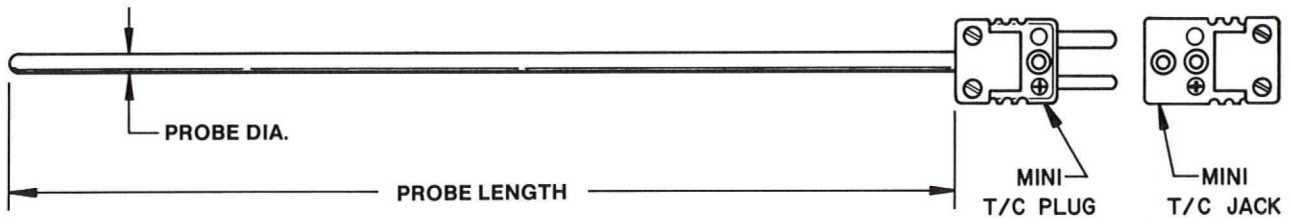
- Order by Stock Number or Part Number
- Quantity based on total stock Thermocouples per order

DISCOUNT SCHEDULE	
QUANTITY	DISCOUNT FACTOR
1-9	NET
10-24	.95
25-49	.90
50-99	.85
100-199	.80
200 +	.75



MANUFACTURING CORPORATION 12404 TRISKETT ROAD CLEVELAND, OHIO 44111 (216) 941-6200 FAX: (216) 941-6207

SENSORS STOCK MARLOX® THERMOCOUPLES



DESCRIPTION				PROBE LENGTH INCHES	MARLIN STOCK NO.	PRICE \$/EA.
PROBE DIA.	SHEATH MATERIAL	ANSI TYPE	JUNCTION TYPE			
1/16	Inconel 600	K	Grounded	6"	M111 - 6	23
				12"	M111 - 12	24
				18"	M111 - 18	25
1/8	Inconel 600	K	Grounded	6"	M112 - 6	23
				12"	M112 - 12	24
				18"	M112 - 18	25
1/16	Inconel 600	K	Ungrounded	6"	M115 - 6	25
				12"	M115 - 12	26
				18"	M115 - 18	27
1/8	Inconel 600	K	Ungrounded	6"	M116 - 6	25
				12"	M116 - 12	26
				18"	M116 - 18	27

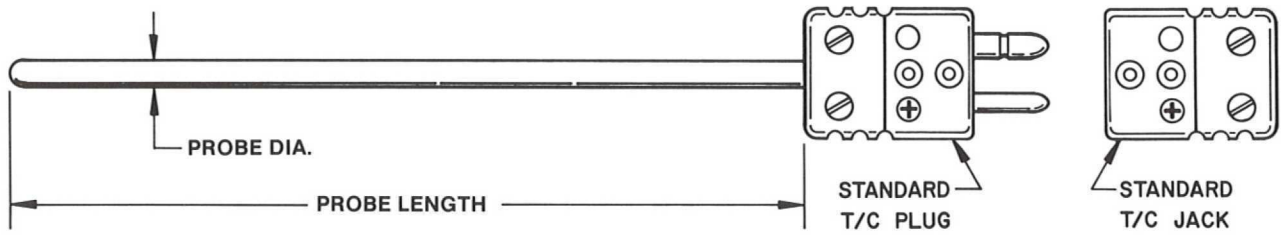
One Week Shipments for orders of stock Marlox Thermocouples.

- Order by Stock Number or Part Number
- Quantity based on total stock Thermocouples per order

DISCOUNT SCHEDULE	
QUANTITY	DISCOUNT FACTOR
1-9	NET
10-24	.95
25-49	.90
50-99	.85
100-199	.80
200 +	.75



SENSORS STOCK MARLOX® THERMOCOUPLES



DESCRIPTION				PROBE LENGTH INCHES	MARLIN STOCK NO.	PRICE \$/EA.
PROBE DIA.	SHEATH MATERIAL	ANSI TYPE	JUNCTION TYPE			
1/8	Inconel 600	K	Grounded	6"	M209 - 6	24
				12"	-12	26
				18"	-18	28
1/4	Inconel 600	K	Grounded	6"	M212 - 6	30
				12"	-12	34
				18"	-18	39
1/8	Inconel 600	K	Ungrounded	6"	M214 - 6	26
				12"	-12	28
				18"	-18	30
1/4	Inconel 600	K	Ungrounded	6"	M216 - 6	32
				12"	-12	36
				18"	-18	41

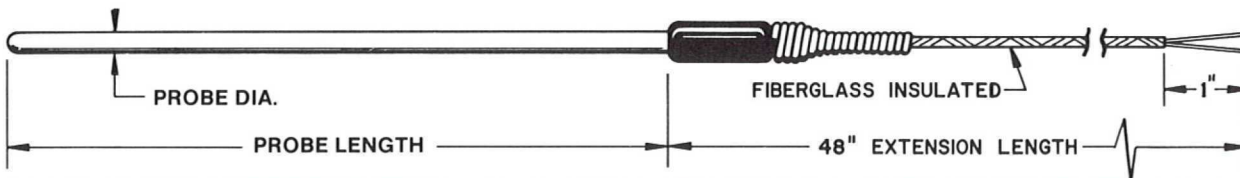
One Week Shipments for orders of stock Marlox Thermocouples.

- Order by Stock Number or Part Number
- Quantity based on total stock Thermocouples per order

DISCOUNT SCHEDULE	
QUANTITY	DISCOUNT FACTOR
1-9	NET
10-24	.95
25-49	.90
50-99	.85
100-199	.80
200 +	.75



SENSORS STOCK MARLOX® THERMOCOUPLES



DESCRIPTION						
PROBE DIA.	SHEATH MATERIAL	ANSI TYPE	JUNCTION TYPE	PROBE LENGTH INCHES	MARLIN STOCK NO.	PRICE \$/EA.
1/16	Inconel 600	K	Grounded	6"	M415 - 6	25
				12"	M415 - 12	27
				18"	M415 - 18	29
1/8	Inconel 600	K	Grounded	6"	M416 - 6	26
				12"	M416 - 12	28
				18"	M416 - 18	30
1/16	Inconel 600	K	Ungrounded	6"	M422 - 6	27
				12"	M422 - 12	29
				18"	M422 - 18	30
1/8	Inconel 600	K	Ungrounded	6"	M423 - 6	28
				12"	M423 - 12	30
				18"	M423 - 18	32

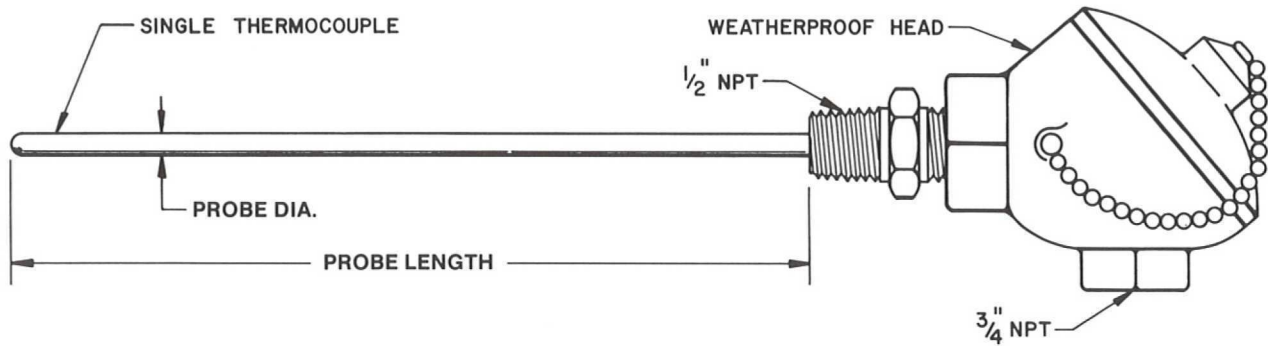
One Week Shipments for orders of stock Marlox Thermocouples.

- Order by Stock Number or Part Number
- Quantity based on total stock Thermocouples per order

DISCOUNT SCHEDULE	
QUANTITY	DISCOUNT FACTOR
1-9	NET
10-24	.95
25-49	.90
50-99	.85
100-199	.80
200 +	.75



SENSORS STOCK MARLOX® THERMOCOUPLES



DESCRIPTION				PROBE LENGTH INCHES	MARLIN STOCK NO.	PRICE \$/EA.
PROBE DIA.	SHEATH MATERIAL	ANSI TYPE	JUNCTION TYPE			
1/4	Inconel 600	K	Grounded	6"	M708 - 6	46
				12"	-12	50
				18"	-18	54
1/4	Inconel 600	K	Ungrounded	6"	M712 - 6	50
				12"	-12	54
				18"	-18	58

One Week Shipments for orders of stock Marlox Thermocouples.

- Order by Stock Number or Part Number
- Quantity based on total stock Thermocouples per order

DISCOUNT SCHEDULE	
QUANTITY	DISCOUNT FACTOR
1-9	NET
10-24	.95
25-49	.90
50-99	.85
100-199	.80
200 +	.75



GENERAL INSTALLATION PARAMETERS:

Handling:

There are many variations of T/C's and T/C assemblies. Even though some may appear to have heavy duty protecting tubes or thermowells, the internal parts can be delicate. Care in handling is a must to insure the sensor integrity. DO NOT DROP. T/C's are carefully packed at the factory. Inspect the package when receiving for indications of shipping damage. If shipping damage is noticed report it immediately to the shipping company and make the necessary reports. Marlin ships on a FOB factory basis therefore it is your responsibility to file any claims. Hidden shipping damage can also occur (no evident sign of mishandling). If after carefully opening the package, damage is discovered, save all product and shipping material then notify and file the proper claims with the shipping company immediately.

Storage:

Store in a dry, clean place. Avoid areas where dropping or stacking may occur.

Location:

The T/C should "see", as closely as possible, what the product in the process is experiencing in order to get meaningful temperature measurements. Locate the T/C as close to the product as possible. A rule of thumb is to have at least 10 tube diameters immersion in the hot zone. Avoid direct flame impingement or stagnant areas.

Installation:

DO NOT ATTEMPT to mechanically connect the assembly into the process by tightening at the terminal or connecting head. USE ONLY THE PROCESS FITTING OR THE THERMOWELL FLATS FOR THIS PURPOSE. Terminals or connecting heads that are twisted can be damaged or cause shorts that can adversely affect the operation of the T/C. If thermowell or protecting tube must be welded into the process, carefully remove T/C sensor before welding and be sure to handle carefully, keep clean and replace without forcing or stressing any components. Assemblies with ceramic tubes should be preheated before immersion into high heat in order to avoid any thermal shock.

Wire Extension:

Use wire extensions of the same thermocouple material type (i.e. "J", "K", "T", "E", "R", "S", "B", etc.) of the installed T/C throughout the circuit. The use of thermocouple grade or thermocouple extension grade wire and the selection of conductor insulation depends on what the environmental conditions dictate. "RED" color code is always negative in T/C circuits. Ideally run T/C circuit wires in separate conduits at least one foot away from power lines. Twisted and shielded constructions may be required to avoid noise in the T/C circuit. The overall impedance of the T/C circuit must be compatible with your instrumentation. If there is a reversal in the T/C circuit the indication will be down scale. A "double-reversal" in the circuit will give an upscale but erroneous reading. Keep the "RED" color coded leg negative throughout the circuit to avoid these reversals.

GENERAL MAINTENANCE PARAMETERS:

Regularly scheduled maintenance procedures should include inspection and calibration intervals so that life and reliability of the instrumentation is improved and the likelihood of sudden serious failure is reduced. These procedures should be set up by the responsible engineering department and performed by personnel that are familiar with the operating principles upon which the system is based. DO NOT LUBRICATE.

T/C's often deteriorate with time, exhibiting a drift from actual temperatures. Deterioration usually is more rapid at higher temperatures and depends on the integrity of the protecting tube or sheath to isolate it from contaminants. T/C's should be checked at regular maintenance intervals based on recommendations or on experience.

THERMOCOUPLE DO's

- DO check in place.
- DO replace at established, proper intervals.
- DO have good connections throughout the circuit.

THERMOCOUPLE DO NOT's

- DON'T reinsert at different immersions. (Avoid decreasing the immersion.)
- DON'T use for accurate measurements at lower temperatures after being exposed to higher temperatures.
- DON'T use in defective protecting tubes.
- DON'T insulate with used insulators.
- DON'T use oils or solvents on or in T/C's or T/C assemblies.



Metal Sheathed — Inert Oxide Insulated
THERMOCOUPLE ASSEMBLIES
Customized Thermocouples — Built to your design
Stock Thermocouples — Off-the-shelf availability
RANDOM LENGTH THERMOCOUPLE CABLE
HIGH TEMPERATURE THERMOCOUPLES

DESCRIPTION

Marlox is metal sheathed, inert oxide insulated thermocouple cable from Marlin Manufacturing Corporation. Available in ANSI calibrations with various types of sheath alloys, Marlox can be ordered as complete fabricated assemblies or in random lengths. Drawn to final size and fully annealed standard Marlox, single or dual thermocouple element, is moistureproof, pressure resistant, accurate, bendable and weldable. Quality control procedures insure that all thermocouple material is tested for adequate insulation resistance. All certified Marlox stock is checked for ANSI limits of error conformance by lot sampling in our quality control laboratory which is certified traceable to the NIST. Post assembly certified traceable calibration, is available upon request.

General Selection Parameters

The conditions of measurement determine the type of thermocouple used. Temperature, atmosphere, protection, response, and service life should be considered. The following descriptions serve as a guide to selection.

Thermocouple Type:

Select the thermocouple type that will be capable of operating in your application temperature range.

Sheath Alloy:

Select a sheath alloy that will withstand the temperature and possible corrosives of your application.

Sheath Size:

Use the thermocouple size that will withstand the rigors of your application but with minimal effect on it. See response chart below.

Junction Type:

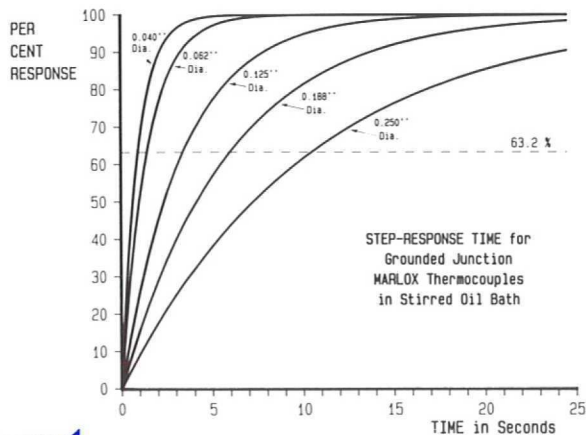
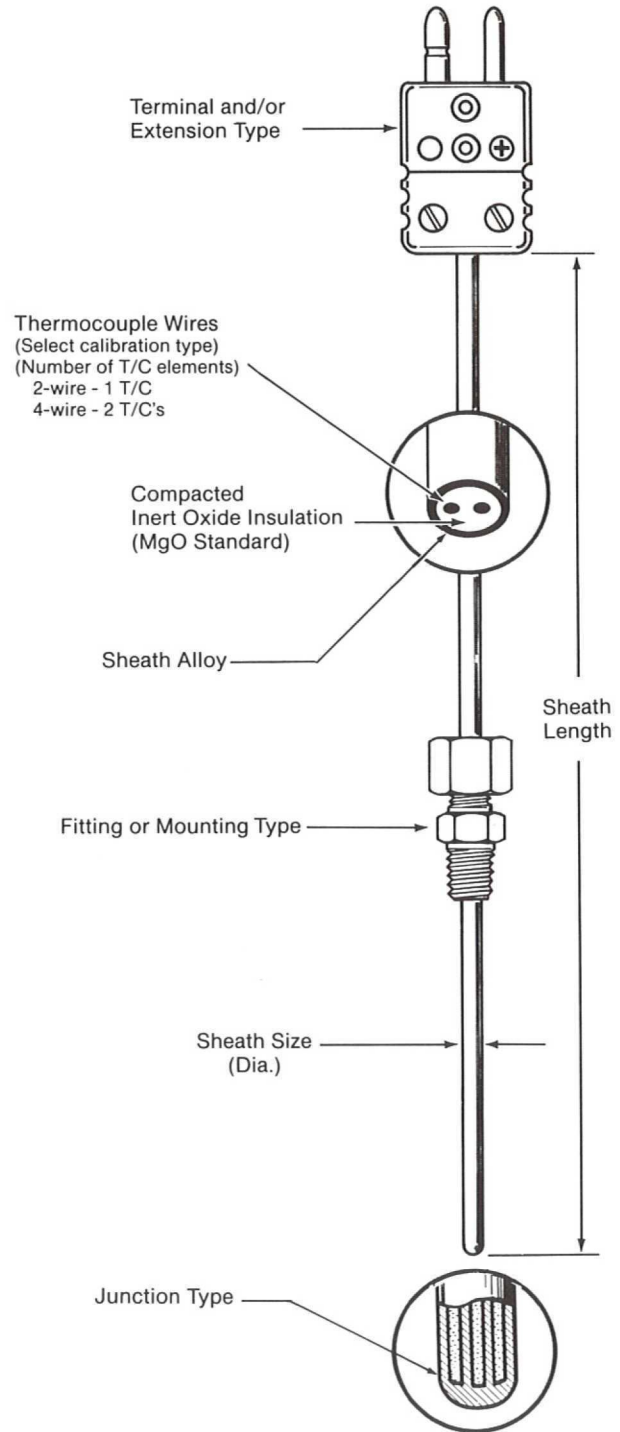
Select the junction that will give the protection and response characteristics that you require.

Fitting or Mounting Type:

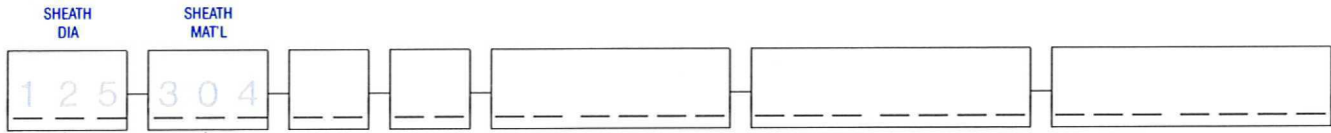
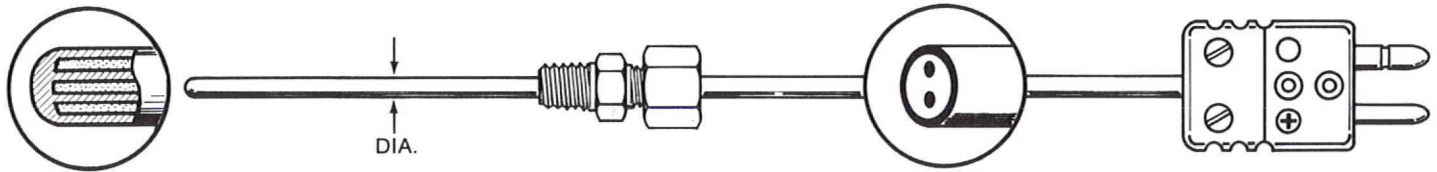
In order to attach and/or seal the thermocouple in your application you can use a fitting, braze, weld or solder it in place.

Terminal and/or Extension Type:

For connection to instruments various terminations and extensions are available.



SENSORS CUSTOM MARLOX® THERMOCOUPLES



CODE	SHEATH SIZE DIA. INCHES	CODE	SHEATH SIZE DIA. INCHES
010	.010	187	.187
020	.020	250	.250
032	.032	312	.312
040	.040	375	.375
062	.062	500	.500
125	.125		

CODE	SHEATH MAT'L.
304	304SS
310	310SS
316	316SS
600	INCONEL™ "600"
230	2300™

Temperature Recommendation

The temperature limits for continuous duty, grounded junction thermocouples are shown for available sheath sizes and thermocouple calibrations. Exposed junction thermocouples should be used at lower temperatures for equivalent service life.

LIMIT TEMPERATURE °F CONTINUOUS DUTY							
SHEATH DIAMETER INCHES	NOMINAL TUBE WALL THICKNESS INCHES	WIRE GAUGE AWG.		ANSI THERMOCOUPLE TYPE			
		SINGLE TC ELEMENT	DUAL TC ELEMENT	J	T	K	E
.020	.003	38		700	400	1600	800
.032	.004	34		700	400	1600	800
.040	.006	33		700	400	1600	800
1/16	.009	28	30	700	400	1600	800
1/8	.017	22	24	700	400	1600	800
3/16	.025	20	21	900	500	2000	1000
1/4	.033	16	18	1000	600	2000	1100
5/16	.041	16		1000	600	2000	1100
3/8	.052	15		1100	700	2000	1200
1/2	.070	10					

DIM. TOLERANCE: Up to .062 ±.001; .125 to .500 ±.003"

Sheath Alloys

304 Stainless Steel (18% Chromium-8% Nickel) is a general purpose, economical, readily available sheath material that has good corrosion and oxidation resistance. Maximum operating temperature 1650°F.

310 Stainless Steel (24% Chromium-19% Nickel) is a material that has improved resistance to corrosion as compared to 304 SS and the best resistance to oxidation of the "300" series stainless steels. Maximum operating temperature 2100°F.

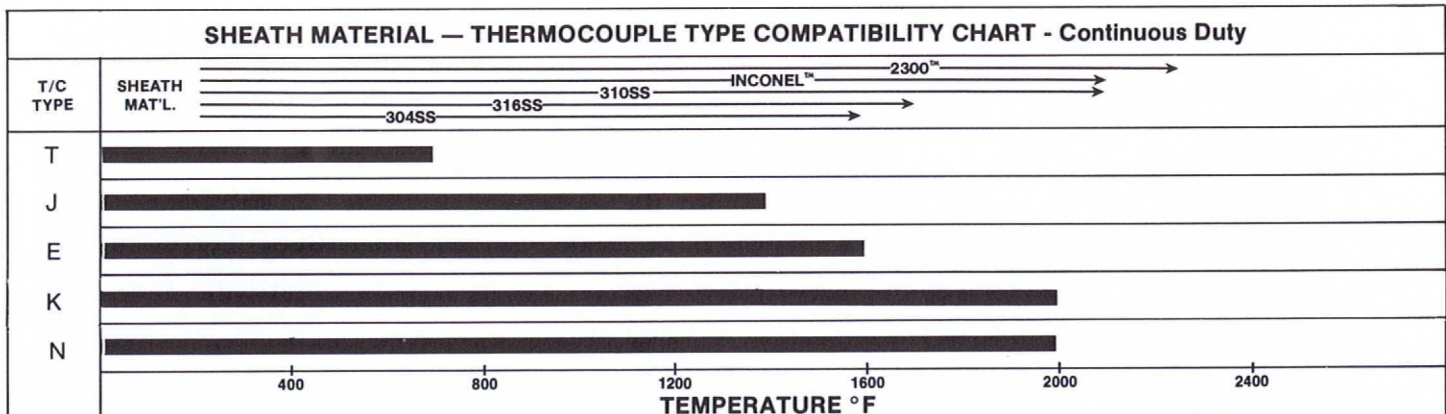
316 Stainless Steel (16% Chromium-10% Nickel) is a material that has superior corrosion resistance as compared to 304 SS or 310 SS with improved oxidation resistance and a higher hot strength than 304 SS. Maximum operating temperature 1700°F.

Inconel™600 (72% Nickel-17% Chromium) is a material that is readily available and has outstanding resistance to oxidation, corrosion and scaling. Should not be used in the presence of sulfur above 1600°F. Maximum operating temperature 2100°F.

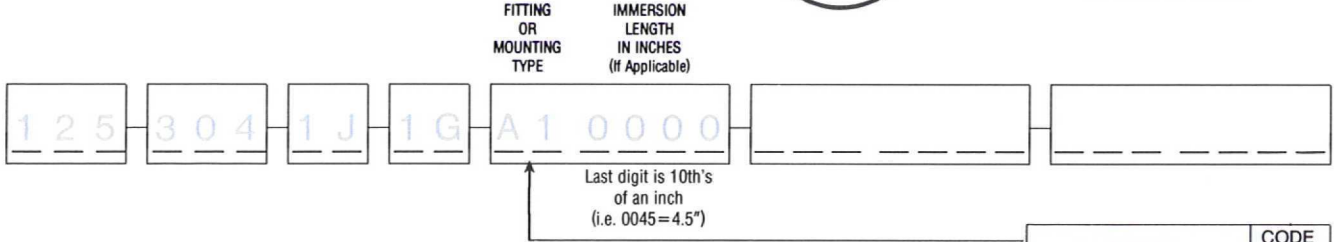
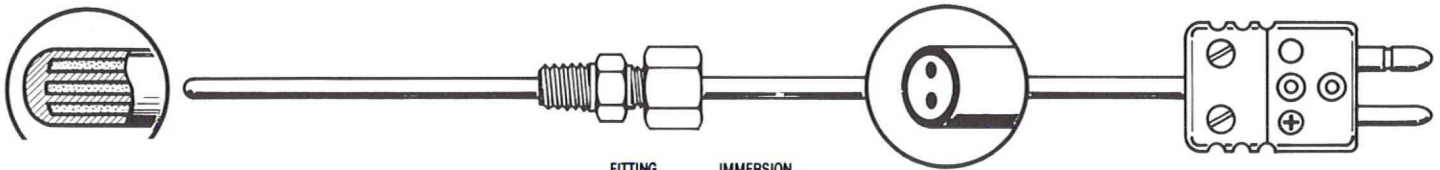
™International Nickel Co.

2300™ This nickel/chrome alloy is a superior alloy for sheathing applications. It is more effective in resisting oxidation at high temperatures than other available alloys as tested in air at 2300°F. Maximum operating temperature 2300°F.

™-Hoskins Mfg. Co.



SENSORS CUSTOM MARLOX® THERMOCOUPLES

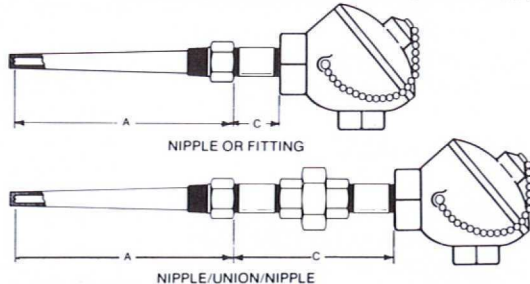
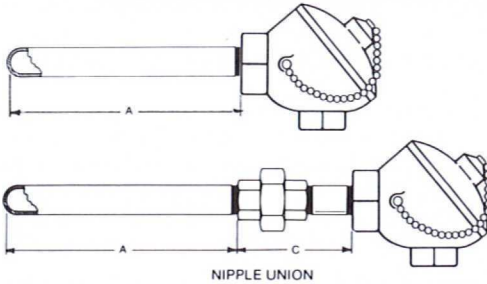


Mounting Fittings — See Selection Summaries for Details

		NONE	CODE
			XX
<p>Compression Fittings allow a field positionable setting of the immersion length of the Marlox. Standard fittings are stainless steel, 1/8 NPT or 1/4 NPT thread size, and are supplied with metal ferrules that are not relocatable after compression. Teflon ferrules allow relocation after compression but have a limited temperature and pressure range. Lava ferrules are crushed with compression and must be replaced if Marlox is removed or readjusted.</p>	<p style="text-align: center;">FIELD POSITIONABLE IMMERSION LENGTH</p>	S.S. Fitting 1/8 NPT 1/4 NPT	A1 A2
		<p>NOTES: C1=Stl, B1=Brass Ferrules: Metal Std. (Non-readjustable) "T" for Teflon, e.g. T1 "L" for Lava, e.g. L1</p>	
<p>Fixed Fittings are stainless steel, NPT thread sizes, and are brazed to the sheath. Additional sizes, materials and welded mountings are also available.</p>	<p style="text-align: center;">FIXED IMMERSION LENGTH*</p> <p style="text-align: center;">* must be specified</p>	1/8 NPT 1/4 NPT 3/8 NPT 1/2 NPT 3/4 NPT 1 NPT	F1 F2 F3 F4 F6 F8
<p>Spring Loaded, Adjustable, Bayonet Type Fittings are compression type which allows a variable Marlox immersion length and also has bayonet mounting feature. Standard fittings are stainless steel and are supplied with metal ferrules for 1/8" or 1/16" Marlox sizes. Teflon ferrules are available which allow relocation after compression.</p>		ADJUSTABLE BAYONET	AB
<p>Fixed Spring Loaded Bayonet Mounting for 3/16" Dia. Marlox (See Plastic Industry Thermocouple section for bayonet adapters and dimension selection guide for immersion placement.)</p>		FIXED BAYONET	FB() ↑ "A" Dim.
<p>Fixed Double Fittings (Back to Back Threads) are stainless steel, NPT thread sizes, and are brazed to the sheath. Generally used with terminal heads this arrangement provides a process connection.</p>	<p style="text-align: center;">IMMERSION LENGTH*</p> <p style="text-align: center;">* must be specified</p>	1/4 x 1/4 NPT 1/2 x 1/2 NPT 3/4 x 3/4 NPT	D2 D4 D6
<p>Spring Loaded Epoxy Sealed Fitting provides NPT mounting for terminal head and process connection for bearing applications. For 3/16" Dia. Marlox only select immersion that allows at least a 1/4" interference for spring loading. Utilize a AWA3 or AWC3 weatherproof terminal head and terminal block.</p>		SPRING LOADED EPOXY SEALED FITTING	W1
<p>Spring Loaded O-Ring Sealed Fitting provides NPT mounting for terminal head and process connection for bearing applications. For 3/16" Dia. Marlox only select immersion that allows at least a 1/4" interference for spring loading. Marlox element may be easily removed from fitting by bayonet mounting. Utilizes a 6WA2 or 6WC2 weatherproof and terminal block.</p>		SPRING LOADED O-RING SEALED, SS FITTING	S1

TYPICAL ASSEMBLY w/PROTECTING TUBE

TYPICAL ASSEMBLY w/THERMOWELL (Notes 1-5 apply)

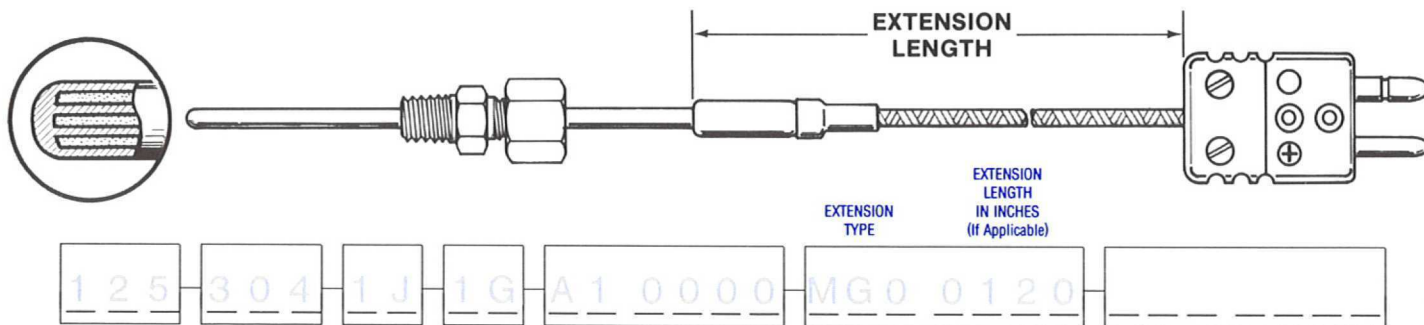


	"C" DIM.	Stl.(1)	SS
NIPPLE	2"	12	42
	5"	15	45
	6"	16	46
NIPPLE/ UNION	2 3/4"	23	53
	3 3/4"	26	56
NIPPLE/ UNION/ NIPPLE	3"	33	63
	6"	36	66

NOTES: 1) Galvanized Steel Standard



SENSORS CUSTOM MARLOX® THERMOCOUPLES

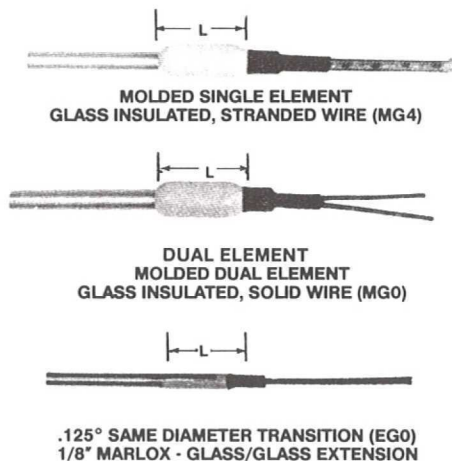


The Marlox Transition

The Marlox transition is an exclusive development from Marlin Manufacturing Corporation. After the wire extension has been spliced to the sheathed thermocouple wire, the transition is molded with a thermoset compound. This transition exhibits the characteristics of high strength and resistivity and protects and splice against moisture, vibration and mechanical damage and also incorporates a strain relief for the wires that obsoletes springs and adapters. Standard transitions can be used in ambient temperatures to 400°F (205°C). High temperature transitions are available for use in ambient temperatures to 800°F (425°C).

MARLOX TRANSITION DIMENSIONS				
MARLOX SIZE DIA. INCHES	TRANSITION* SIZE DIA. INCHES	TRANSITION LENGTH "L" DIMENSION INCHES	WIRE EXTENSION GAUGE (AWG.)	
			SINGLE	DUAL
.020	.190	.875	28	N/A
.032	.190	.875	28	N/A
.040	.190	.875	28	N/A
.062	.190	.875	24	28
.125	.250	1.000	20	24
.187	.312	1.000	20	24
.250	.437	1.000	16	20

* Same diameter transitions are available in .125" Dia. and larger Marlox.
* Dual element transitions are available in .062" Dia. and larger Marlox.



EXTENSION TYPE	
EXTENSION	CODE
NONE	XXX
TEFLON INSULATED 260°C (500°F)	ME0
FIBERGLASS INSULATED 482°C (900°F)	MG0

*Extension length in inches

NOTES:

- 1) For SS flex Armor Cable over Exten. add "3" to code: e.g. "MG3"
 - 2) SS Overbraid over Exten. add "1" to code: e.g. "MG1"
- TRANSITIONS
- 3) Extension includes transitions for use to 205°C (400°F)
 - 4) For Hi-Temp transition 425°C (800°F) add "H" to code: e.g. "HG0"
 - 5) For transition "same size" as Sheath O.D. add "E" to code e.g. "EG0"
 - 6) For "Probe Handle" transition use code "P" e.g. "PT7" (good for 350°F — not available in hi-temp).

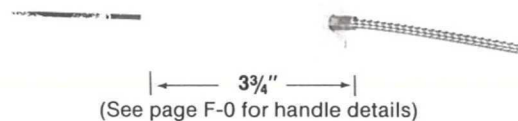
Teflon-Teflon Teflon insulates individual conductors followed by an overall teflon jacket. Superior abrasion and moisture resistance. Resists most acids and vapors. Recommended operating temperature -90°F to 500°F.

Glass-Glass Glass yarn is applied over each conductor then impregnated with silicone varnish plus both conductors are covered with a braid of glass yarn also with silicone varnish. Fair resistance to abrasion and moisture. Recommended operating temperature to 900°F. Varnish is destroyed above 400°F.

Glass-Glass with SS Overbraid Same as Glass-Glass With added abrasion resistance.



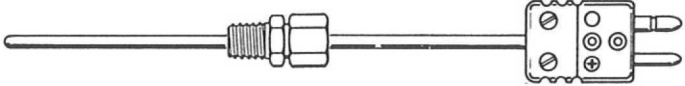
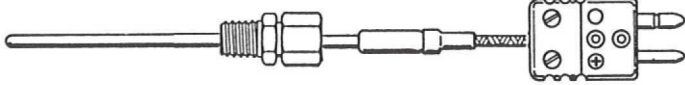
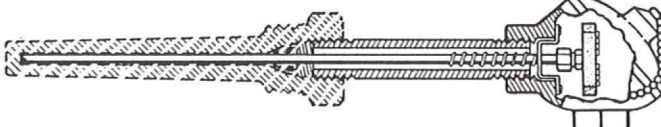
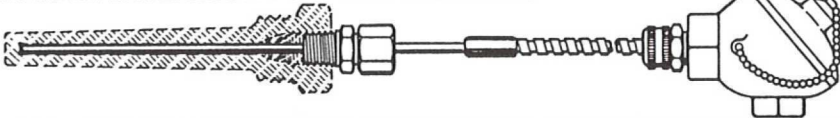

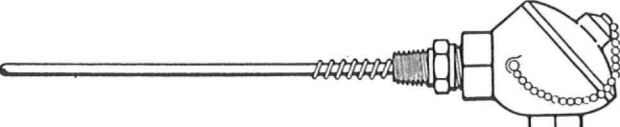

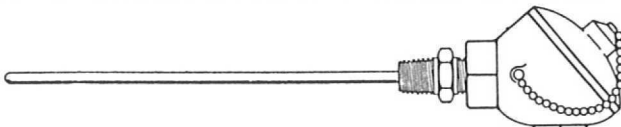
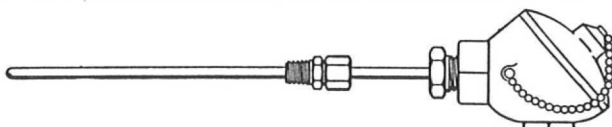
SS Armor Tubing Can be used over any wire extension for added mechanical damage and abrasion resistance.



(See page F-0 for handle details)
PROBE HANDLE TRANSITION W/SS FLEX ARMOR (PT7)
(216) 941-6200



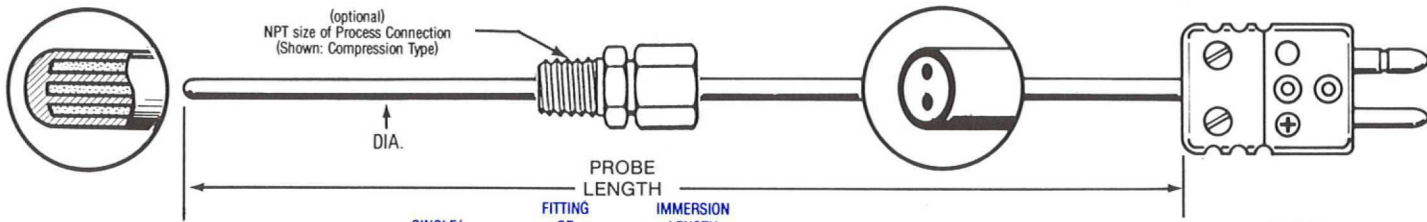
SENSORS
TABLE OF SUMMARY SELECTION — CUSTOM MARLOX THERMOCOUPLES

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	CUSTOM MARLOX™ THERMOCOUPLES FOR THERMOWELLS 	C-35
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	CUSTOM MARLOX™ THERMOCOUPLES FOR PROTECTING TUBE 	C-37
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See Pages C-20 to C-25 For Stock Marlox Thermocouples



SENSORS — SELECTION SUMMARY CUSTOM MARLOX® THERMOCOUPLES



PROBE DIA. SHEATH MAT'L T/C TYPE SINGLE/ DUAL T/C JUNCTION MOUNTING TYPE FITTING OR JUNCTION MOUNTING TYPE IMMERSION LENGTH IN INCHES (If Applicable) XXX 0000 TERMINAL TYPE PROBE LENGTH IN INCHES

PROBE DIA. CODE
010
020
032
040
062
125
187
250
312
375
500

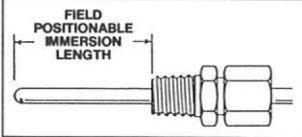
SHEATH MAT'L CODE
304
310
316
600
230

ANSI TYPE
1T
1J
1E
1K
1N

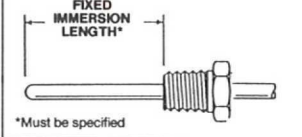
Special tolerance. Use "2" i.e. 2K

MOUNTING FITTING	CODE
NONE	XX
*COMPRESSION FITTING	
SS Fittings 1/8 NPT 1/4 NPT	A1 A2

*Not readjustable with metal ferrule
 NOTES:
 C1=Stl. B1=Brass
 Ferrules:
 Metal Standard (Non-readjustable)
 "T" for Teflon (Readjustable)
 e.g. T1
 "L" for Lava (Non-reusable)
 e.g. L1



FIXED IMMERSION, SS	
1/8 NPT	F1
1/4 NPT	F2
3/8 NPT	F3
1/2 NPT	F4
3/4 NPT	F6
1 NPT	F8



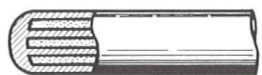
*Must be specified

JUNCTION TYPE	ORDER CODE
Single Thermocouple Element Marlox	
Exposed	1X
Grounded	1G
Ungrounded	1U
*Weld Pad, Grounded Perpendicular	1A
Parallel	1B
Tube Skin	1C
Dual Thermocouple Element Marlox	
Exposed	2X
Grounded	2G
Ungrounded	2U
Weld Pad, Grounded Perpendicular	2A
Parallel	2B
Tube Skin	2C

TERMINAL TYPE	ORDER CODE
BARE LEADS	B10
MINIATURE PLUG — Max Sheath DIA. .125"	M12
STANDARD 2-POLE PLUG — Max Sheath DIA. .250"	P51
STANDARD 2-POLE PLUG W/EXTERNAL STRAIN RELIEF — Max Sheath DIA. .375"	P11
DUAL-STD. 2-POLE PLUG W/EXTERNAL STRAIN RELIEF — Max Sheath DIA. .375"	P12
STANDARD 3-POLE PLUG W/EXTERNAL STRAIN RELIEF — Max Sheath DIA. .375"	P31
NOTES FOR ABOVE CONNECTORS a) Connectors for use to 205°C (400°F) For other option consult factory	
SINGLE ELEMENT MICRO CONNECTOR HEAD — Max Sheath DIA. .250"	500
DUAL ELEMENT MICRO CONNECTOR HEAD — Max Sheath DIA. .250"	504



EXPOSED



GROUND



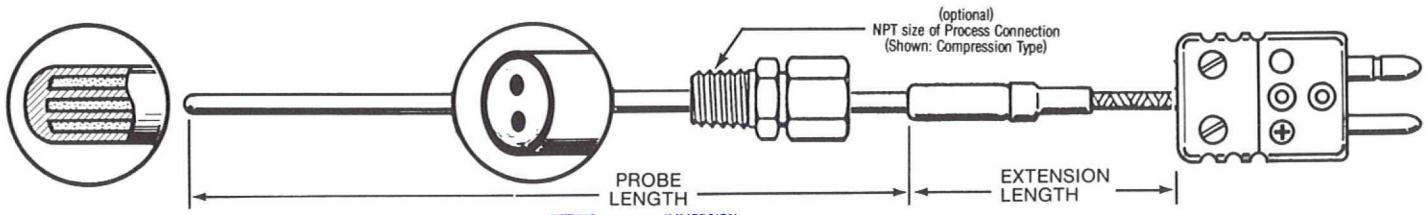
UNGROUND

FOR / TITLE:		
DATE:	BY:	REFERENCE



SENSORS — SELECTION SUMMARY

CUSTOM MARLOX® THERMOCOUPLES WITH EXTENSION



PROBE DIA.	SHEATH MAT'L	T/C TYPE	SINGLE/DUAL T/C	JUNCTION MOUNTING TYPE	FITTING OR IMMERSION LENGTH IN INCHES (If Applicable)	EXTENSION TYPE	EXTENSION LENGTH IN INCHES	TERMINAL TYPE	PROBE LENGTH IN INCHES

PROBE DIA. CODE
010
020
032
040
062
125
187
250
312
375
500

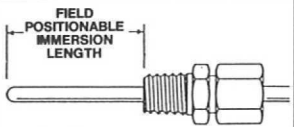
SHEATH MAT'L CODE
304
310
316
600
230

ANSI TYPE
1T
1J
1E
1K
1N

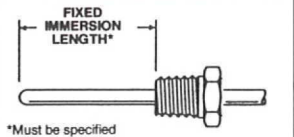
Special tolerance. Use "2" i.e. 2K

MOUNTING FITTING	CODE
NONE	XX
*COMPRESSION FITTING	
SS Fittings	
1/8 NPT	A1
1/4 NPT	A2

*Not readjustable with metal ferrule
 NOTES:
 C1=Stl. B1=Brass
 Ferrules:
 Metal Standard (Non-readjustable)
 "T" for Teflon (Readjustable)
 e.g. T1
 "L" for Lava (Non-reusable)
 e.g. L1



FIXED IMMERSSION, SS	
1/8 NPT	F1
1/4 NPT	F2
3/8 NPT	F3
1/2 NPT	F4
3/4 NPT	F6
1 NPT	F8



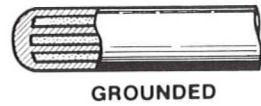
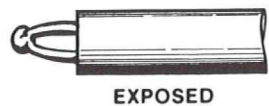
EXTENSION TYPE	CODE
TEFLON INSULATED 260°C (500°F)	MEO
FIBERGLASS INSULATED 482°C (900°F)	MGO

- *Extension length in inches
- NOTES:
- 1) For SS flex Armor Cable over Exten. add "3" to code: e.g. "MG3"
 - 2) SS Overbraid over Exten. add "1" to code: e.g. "MG1"
 - TRANSITIONS
3) Extension includes transitions for use to 205°C (400°F)
 - 4) For Hi-Temp transition 425°C (800°F) add "H" to code: e.g. "HG0"
 - 5) For transition "same size" as Sheath O.D. add "E" to code e.g. "EG0"
 - 6) For "Probe Handle" transition use code "P" e.g. "PT7" (good for 350°F — not available in hi-temp).

TERMINAL TYPE	CODE
BARE LEADS	B30
MINIATURE PLUG	M15
STANDARD 2-POLE PLUG W/EXTERNAL STRAIN RELIEF	P15
DUAL-STD. 2-POLE PLUG W/EXTERNAL STRAIN RELIEF	P12
STANDARD 3-POLE PLUG W/EXTERNAL STRAIN RELIEF	P32

NOTES FOR ABOVE TERMINAL CONNECTORS
 a) Connectors for use to 205°C (400°F)
 b) For other options see factory

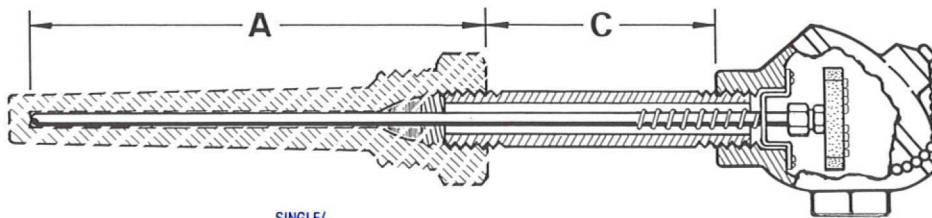
JUNCTION TYPE	ORDER CODE
Single Thermocouple Element Marlox	
Exposed	1X
Grounded	1G
Ungrounded	1U
*Weld Pad, Grounded	
Perpendicular	1A
Parallel	1B
Tube Skin	1C
Dual Thermocouple Element Marlox	
Exposed	2X
Grounded	2G
Ungrounded	2U
*Weld Pad, Grounded	
Perpendicular	2A
Parallel	2B
Tube Skin	2C



FOR / TITLE:		
DATE:	BY:	REFERENCE



SENSORS — SELECTION SUMMARY CUSTOM MARLOX™ THERMOCOUPLES



PROBE DIA.	SHEATH MAT'L	T/C TYPE	SINGLE/DUAL T/C	JUNCTION TYPE	SUPPORT FITTING	TERMINAL TYPE	A DIM
					0000	XXX 0000	

SPECIFY "A" DIM. of Thermowell or give Twell P/N i.e. 260TR-34-4 1/2-304

PROBE DIA. CODE
187
250
312
375

SHEATH MAT'L. CODE
304
310
316
600
230

ANSI TYPE
1T
1J
1E
1K
1N

Special tolerance. Use "2" i.e. 2K



JUNCTION TYPE	ORDER CODE
Single Thermocouple Element Marlox	1G 1U
Grounded Ungrounded	
Dual Thermocouple Element Marlox	2G 2U
Grounded Ungrounded	

SUPPORT FITTING	CODE	
 NIPPLE "C" DIM.	2"	12 42
	5"	15 45
	6"	16 46
 NIPPLE/UNION/NIPPLE "C" DIM.	3"	33 63
	6"	36 69

NOTES: 1) Galvanized Steel Standard
2) NPT Size specified by Weatherproof Head Size

CODE	WEATHERPROOF HEAD
274	CAST ALUMINUM 1/2 NPT
276	3/4 NPT
278	1 NPT
374	CAST IRON 1/2 NPT
376	3/4 NPT
378	1 NPT

3/4 NPT CONDUIT

TERMINAL BLOCKS for Weatherproof Heads	
SPRING LOADED 4 WIRE	

CODE	EXPLOSIONPROOF HEAD
124	1/2 NPT PROBE MOUNT 1/2 NPT

3/4 NPT CONDUIT

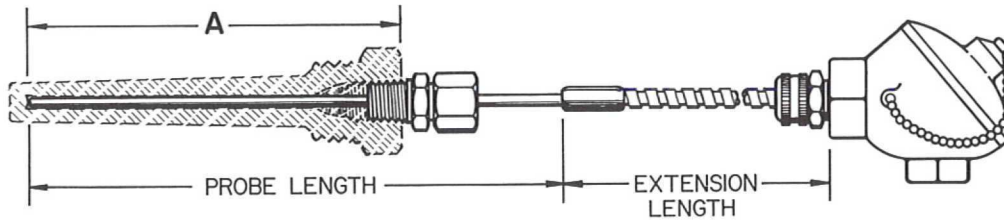
TERMINAL BLOCKS for Explosion Proof Heads	
SPRING LOADED 4 WIRE	

FOR / TITLE:		
DATE:	BY:	REFERENCE



SENSORS — SELECTION SUMMARY

CUSTOM MARLOX™ THERMOCOUPLE WITH FLEXIBLE EXTENSION FOR THERMOWELLS



PROBE DIA.	SHEATH MAT'L	T/C TYPE	SINGLE/ DUAL T/C	JUNCTION TYPE	SUPPORT FITTING	EXTENSION TYPE	EXTENSION LENGTH IN INCHES	TERMINAL TYPE	PROBE LENGTH IN INCHES
					A4 0000	ME3 0000		241	

PROBE DIA. CODE
187
250
312
375

SHEATH MAT'L CODE
304
310
316
600
230

ANSI TYPE
1T
1J
1E
1K
1N

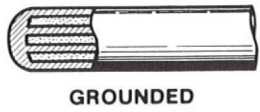
Special tolerance. Use "2" i.e. 2K

EXTENSION TYPE	CODE
TEFLON INSULATED 260°C (500°F) with SS Armor Cable over Exten.	ME3

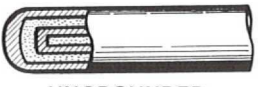
*EXTENSION LENGTH IN INCHES

NOTES

- 1) For SS Armor Cable with PVC coating. Code "ME8"



GROUND



UNGROUND

JUNCTION TYPE	ORDER CODE
Single Thermocouple Element Marlox	1G 1U
Grounded Ungrounded	
Dual Thermocouple Element Marlox	2G 2U
Grounded Ungrounded	

WEATHERPROOF HEAD	CODE
CAST ALUMINUM with wire grip fitting PROBE MOUNT 1/2 NPT 3/4 NPT CONDUIT	241
TERMINAL BLOCKS for Weatherproof Heads	
RIGID 4 WIRE	

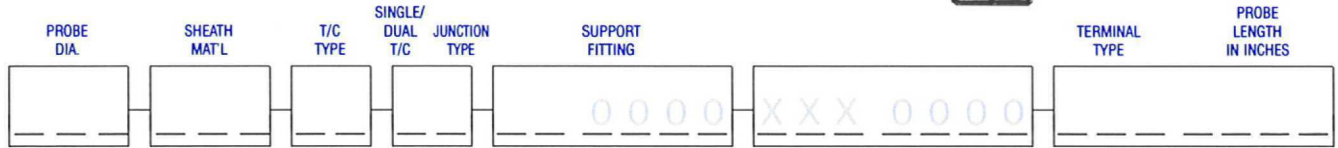
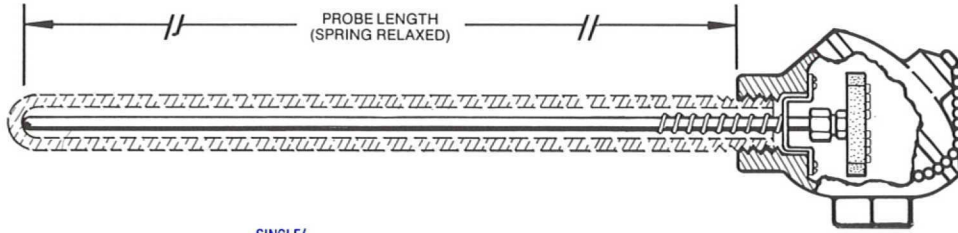
MOUNTING FITTING	ORDER CODE				
NONE	XX				
<table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 50%;">FIELD POSITIONABLE IMMERSION</th> <th style="width: 50%;">COMPRESSION FITTING</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1/2 NPT</td> <td style="text-align: center;">A4</td> </tr> </tbody> </table>	FIELD POSITIONABLE IMMERSION	COMPRESSION FITTING	1/2 NPT	A4	A4
FIELD POSITIONABLE IMMERSION	COMPRESSION FITTING				
1/2 NPT	A4				
NOTES Stainless Stl.					

FOR / TITLE:		
DATE:	BY:	REFERENCE



SENSORS — SELECTION SUMMARY

CUSTOM MARLOX™ THERMOCOUPLES FOR PROTECTING TUBE



PROBE DIA. CODE
187
250
312
375

SHEATH MAT'L CODE
304
310
316
600
230

ANSI TYPE
1T
1J
1E
1K
1N

Special tolerance. Use "2" i.e. 2K



GROUNDING



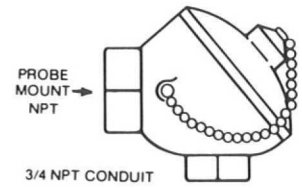
UNGROUNDING

JUNCTION TYPE	ORDER CODE
Single Thermocouple Element Marlox	
Grounded	1G
Ungrounded	1U
Dual Thermocouple Element Marlox	
Grounded	2G
Ungrounded	2U

SUPPORT FITTING	CODE
None	XX
NIPPLE/ UNION	"C" DIM.
	2-5/8"
	5-3/4"
	Stl. (1)
	23
	26
	SS
	53
	56

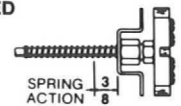
NOTES: 1) Galvanized Steel Standard
2) NPT Size specified by Weatherproof Head Size

CODE	WEATHERPROOF HEAD
274	CAST ALUMINUM 1/2 NPT
276	3/4 NPT
278	1 NPT
374	CAST IRON 1/2 NPT
376	3/4 NPT
378	1 NPT

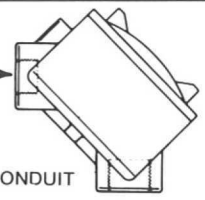


TERMINAL BLOCKS for Weatherproof Heads

SPRING LOADED 4 WIRE

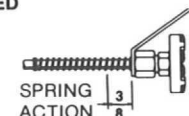


CODE	EXPLOSIONPROOF HEAD
124	1/2 NPT PROBE MOUNT 1/2 NPT



TERMINAL BLOCKS for Explosion Proof Heads

SPRING LOADED 4 WIRE



FOR / TITLE:		
DATE:	BY:	JOB NO.

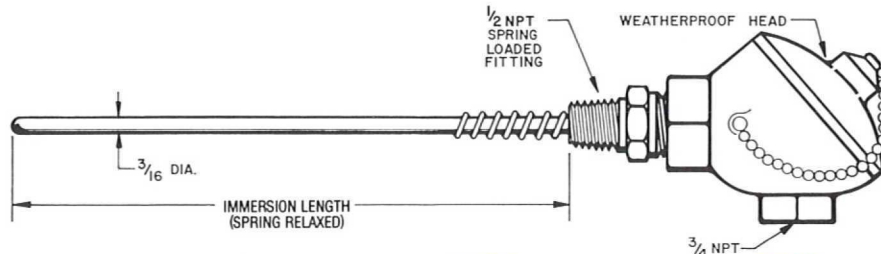
(216) 941-6200

MANUFACTURING CORPORATION 12404 TRISKETT ROAD CLEVELAND, OHIO 44111 FAX: (216) 941-6207



SENSORS — SELECTION SUMMARY

CUSTOM MARLOX™ THERMOCOUPLES FOR BEARING APPLICATIONS

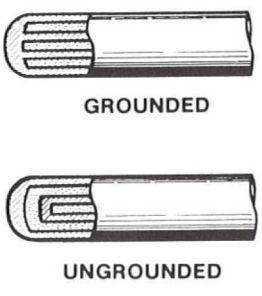


PROBE DIA.	SHEATH MAT'L	T/C TYPE	SINGLE/DUAL T/C	JUNCTION TYPE	MOUNTING FITTING	IMMERSION LENGTH IN INCHES	EXTENSION TYPE	EXTENSION LENGTH IN INCHES	TERMINAL TYPE	PROBE LENGTH IN INCHES
1 8 7	3 0 4				W 1		X X X	0 0 0 0		X X X X

Last digit is 10ths of inches
i.e. .0045 = 4.5"

PROBE DIA. CODE	SHEATH MAT'L. CODE	ANSI TYPE
187	304 310 316 600 230	1T 1J 1E 1K 1N

Special tolerance.
Use "2" i.e. 2K



JUNCTION TYPE	ORDER CODE
Single Thermocouple Element Marlox	1G 1U
Grounded Ungrounded	
Dual Thermocouple Element Marlox	2G 2U
Grounded Ungrounded	

CODE	WEATHERPROOF HEAD
	CAST ALUMINUM
206	3/4 NPT w/single block PROBE MOUNT 3/4 NPT
226	w/dual block 3/4 NPT CONDUIT
TERMINAL BLOCKS for Weatherproof Heads	
	RIGID 2 WIRE FOR SINGLE ELEMENT
	RIGID 4 WIRE FOR DUAL ELEMENT

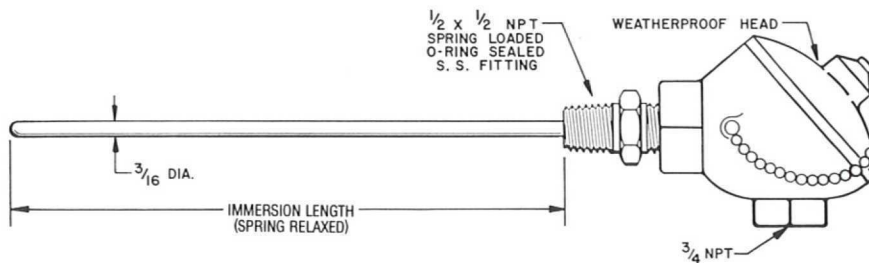
MOUNTING FITTING	CODE
<p style="text-align: center;">SPRING LOADED EPOXY SEALED FITTING</p>	W1
<p>Spring Loaded Epoxy Sealed Fitting provides NPT mounting for terminal head and process connection for bearing applications. For 3/16" Dia. T/C's only select immersion that allows at least a 1/4" interference for spring loading.</p>	

FOR / TITLE:		
DATE:	BY:	JOB NO.



SENSORS — SELECTION SUMMARY

CUSTOM MARLOX™ THERMOCOUPLES FOR BEARING APPLICATIONS



PROBE DIA.	SHEATH MAT'L	T/C TYPE	SINGLE/DUAL T/C	JUNCTION TYPE	MOUNTING FITTING	IMMERSION LENGTH IN INCHES	EXTENSION TYPE	EXTENSION LENGTH IN INCHES	TERMINAL TYPE	PROBE LENGTH IN INCHES
187	304				S1		XXX	0000	294	XXXX

PROBE DIA. CODE
187

SHEATH MAT'L. CODE
304

ANSI TYPE
1T
1J
1E
1K
1N

Special tolerance. Use "2" i.e. 2K

Last digit is 10ths of inches i.e. .0045 = 4.5"

CODE	WEATHERPROOF HEAD
294	<p style="text-align: center;">CAST ALUMINUM</p> <p style="text-align: center;">PROBE MOUNT 1/2 NPT 3/4 NPT CONDUIT</p>
TERMINAL BLOCKS for Weatherproof Heads	
<p>B12S SPRING LOADED 4 WIRE (Bayonet Mtg.) Max Sheath DIA. .187"</p> <p style="text-align: center;">5/8" SPRING ACTION</p>	



JUNCTION TYPE	ORDER CODE
Single Thermocouple Element Marlox	1G 1U
Grounded Ungrounded	
Dual Thermocouple Element Marlox	2G 2U
Grounded Ungrounded	

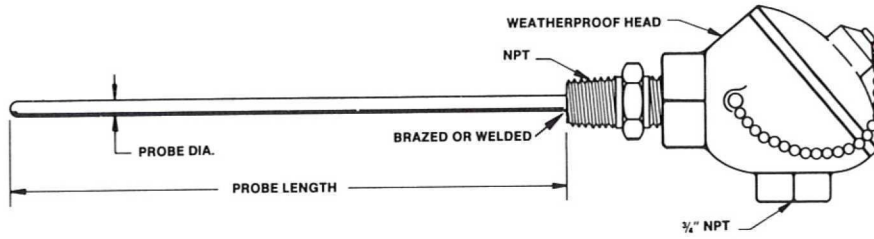
MOUNTING FITTING	CODE
	S1
<p>Spring Loaded O-Ring Sealed Fitting provides NPT mounting for terminal head and process connection for bearing applications. For 3/16" Dia. T/C's only select immersion that allows at least a 1/4" interference for spring loading. T/C element may be easily removed from fitting by bayonet mounting.</p>	

FOR / TITLE:		
DATE:	BY:	REFERENCE



SENSORS — SELECTION SUMMARY

CUSTOM MARLOX™ THERMOCOUPLE WITH DOUBLE FITTING



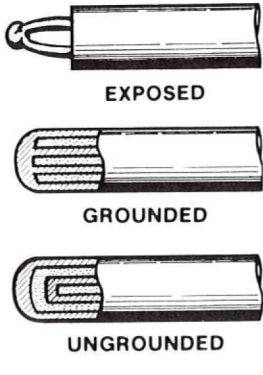
PROBE DIA.	SHEATH MAT'L	T/C TYPE	SINGLE/DUAL T/C	JUNCTION TYPE	MOUNTING FITTING	IMMERSION LENGTH IN INCHES	EXTENSION TYPE	EXTENSION LENGTH IN INCHES	TERMINAL TYPE	PROBE LENGTH IN INCHES
					D		XXX	0000		XXXX

PROBE DIA. CODE
125
187
250
312
375
500

SHEATH MAT'L CODE
304
310
316
600
230

ANSI TYPE
1T
1J
1E
1K
1N

Special tolerance. Use "2" i.e. 2K



JUNCTION TYPE	ORDER CODE
Single Thermocouple Element Marlox	1X 1G 1U
Exposed Grounded Ungrounded	
Dual Thermocouple Element Marlox	
Exposed Grounded Ungrounded *Weld Pad	2X 2G 2U

Last digit is 10ths of inches i.e. .0045 = 4.5"

TERMINAL TYPE	CODE
WEATHERPROOF HEAD	
CAST ALUMINUM SINGLE 1/2 NPT 3/4 NPT DUAL 1/2 NPT 3/4 NPT	204 206 224 226
TERMINAL BLOCKS for Weatherproof Heads	
RIGID 2 WIRE FOR SINGLE ELEMENT	 104 106
RIGID 4 WIRE FOR DUAL ELEMENT	
GENERAL PURPOSE HEAD w/block	
TERMINAL BLOCK 2-WIRE SINGLE ELEMENT ONLY Cast Aluminum 1/2 NPT 3/4 NPT	104 106
EXPLOSIONPROOF HEAD	CODE
RIGID 4 WIRE FOR SINGLE OR DUAL ELEMENT CAST ALUMINUM 1/2 NPT 3/4 NPT CONDUIT	120
MINI WEATHERPROOF HEAD	
THERMOSET PLASTIC PROBE MOUNT NPT 2-1/8"	400

FITTING TYPE	SIZE	CODE
IMMERSION LENGTH	1/4 x 1/4 NPT 1/2 x 1/2 NPT 3/4 x 3/4 NPT	D2 D4 D6

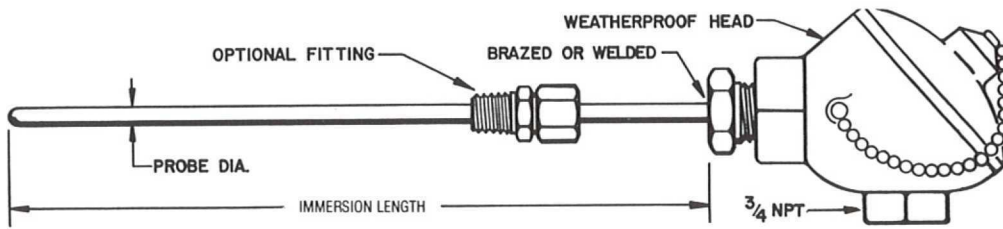
Fixed Double Fittings (Back to Back Threads) are stainless steel, NPT thread sizes, and are brazed to the sheath. Generally used with terminal heads this arrangement provides a process connection.

FOR / TITLE:		
DATE:	BY:	REFERENCE



SENSORS — SELECTION SUMMARY

CUSTOM MARLOX™ THERMOCOUPLES WITH MOUNTED HEAD



PROBE DIA.	SHEATH MAT'L	T/C TYPE	SINGLE/DUAL T/C	JUNCTION TYPE	MOUNTING FITTING	IMMERSION LENGTH IN INCHES	EXTENSION TYPE	EXTENSION LENGTH IN INCHES	TERMINAL TYPE	PROBE LENGTH IN INCHES
						0000	XXX	0000		

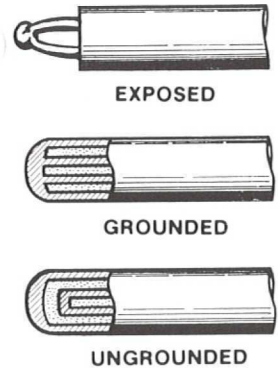
PROBE DIA. CODE
187
250
312
375
500

SHEATH MAT'L. CODE
304
310
316
600
230

ANSI TYPE
1T
1J
1E
1K
1N

Special tolerance. Use "2" i.e. 2K

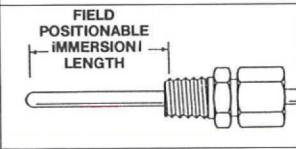
Last digit is 10ths of inches i.e. .0045 = 4.5"



JUNCTION TYPE	ORDER CODE
Single Thermocouple Element Marlox	1X
Exposed	1G
Grounded	1U
Ungrounded	
Dual Thermocouple Element Marlox	
Exposed	2X
Grounded	2G
Ungrounded	2U
*Weld Pad	

MOUNTING FITTING	CODE
NONE	XX
COMPRESSION IMMERSION	
SS Fitting	
1/8 NPT	A1
1/4 NPT	A2

*Not readjustable with metal ferrule
 NOTES:
 C1 = Stl. B1 = Brass
 Ferrules:
 Metal Standard (Non-readjustable)
 "T" for Teflon (Readjustable)
 e.g. T1
 "L" for Lava (Non-reusable)
 e.g. L1



TERMINAL TYPE WEATHERPROOF HEAD	CODE
<p>CAST ALUMINUM SINGLE 1/2 NPT</p> <p>DUAL 1/2 NPT</p> <p>3/4 NPT CONDUIT</p>	<p>214</p> <p>234</p>
TERMINAL BLOCKS for Weatherproof Heads	
<p>RIGID 2 WIRE FOR SINGLE ELEMENT</p> <p>RIGID 4 WIRE FOR DUAL ELEMENT</p>	
GENERAL PURPOSE HEAD w/block	
<p>TERMINAL BLOCK 2-WIRE</p> <p>SINGLE ELEMENT ONLY</p> <p>Cast Aluminum 1/2 NPT 3/4 NPT</p>	114
EXPLOSIONPROOF HEAD	
<p>RIGID 4 WIRE FOR SINGLE OR DUAL ELEMENT</p> <p>CAST ALUMINUM 1/2 NPT</p> <p>3/4 NPT CONDUIT</p>	122
MINI WEATHERPROOF HEAD	
<p>THERMOSET PLASTIC</p> <p>PROBE MOUNT NPT</p> <p>2-1/8"</p> <p>— Does not require terminal block — 1/4 NPT Conduit</p>	402

FOR / TITLE:		
DATE:	BY:	REFERENCE:



SENSORS HIGH TEMPERATURE METAL SHEATHED THERMOCOUPLES

Specifications

MARLIN offers thermocouples utilizing noble metals and exotic materials for the sheath, thermocouple wires and insulation. These thermocouples are fabricated utilizing hard-fired refractory oxides and incorporate the highest manufacturing standards to insure performance and to prevent contamination.

Thermocouples

Platinum-Rhodium vs Platinum

Recommended for use in inert or oxidizing atmospheres or for short periods of time in vacuum. Easily contaminated, these elements must be protected from the effects of reducing atmospheres and contaminating vapors.

Tungsten vs Tungsten-Rhenium

Recommended for use in vacuum, high purity hydrogen and high purity inert atmospheres only.

Sheath Alloys

Platinum virtually non-oxidizable, soluble only in acids generating free chlorine. Halogens attack it at high temperatures. Malleable. Recommended for use in oxidizing or inert environments. Maximum operating temperature 3000°F.

Platinum 10% Rhodium has the character of platinum with increased resistance to corrosion and higher heat strength. Suitable for oxidizing or inert environments. Maximum operating temperature 3100°F.

Tantalum A reactive and refractory metal: reactive because it will oxidize above 550°F; refractory because of its extremely high melting point. Suitable for use in inert or vacuum environments. Hard and tough with good ductility, maximum operating temperature 4500°F.

Molybdenum Oxidizes at elevated temperatures. Relatively good hot strength. Suitable for inert, vacuum or reducing environments. Maximum operating temperature 4000°F.

Molybdenum 50%/Rhenium 50% Ductile with high hot strength. Suitable in vacuum, hydrogen, nitrogen, cracked ammonia and inert atmospheres. Maximum operating temperature 4000°F.

THERMOCOUPLES

CALIBRATION	MAXIMUM OPERATING TEMP.	MAXIMUM EXPOSURE TEMP.	RECOMMENDED ENVIRONMENT
Pt-10% Rh/Pt ANSI TYPE S	2700°F 1482°C	3100°F 1704°C	Oxidizing, Inert
Pt-13% Rh/Pt ANSI TYPE R	2700°F 1482°C	3100°F 1704°C	Oxidizing, Inert
Pt-30% Rh/Pt-6% Rh ANSI TYPE B	3100°F 1704°C	3220°F 1770°C	Oxidizing, Inert
W-5% Re/W-26% Re (C)	5000°F 2760°C	5430°F 3000°C	Vacuum, High Purity Hydrogen & Inert

Pt-Platinum, Rh-Rhodium, W-Tungsten, Re-Rhenium

SHEATH SIZE-WIRE GAUGE				
Sheath Dia. Inches	.062	.125	.187	.250
Wire Gauge B & S	30	30	24	24

REFRACTORY OXIDE INSULATORS

The resistivity of metal oxides decreases with increasing temperature. Above 3600°F only beryllia retains sufficient resistivity for most applications.

MATERIAL	APPROX. MELT TEMP.	MAXIMUM RECOMMENDED TEMP.	
		HARD-FIRED	SWAGED
Magnesia MgO	5070°F 2800°C	N/A	3400°F 1870°C
Alumina Al ₂ O ₃	3650°F 2010°C	3200°F 1760°C	3000°F 1650°C
Beryllia* BeO	4620°F 2550°C	4200°F 2315°C	N/A

*Caution: Beryllia Dusts are Toxic.

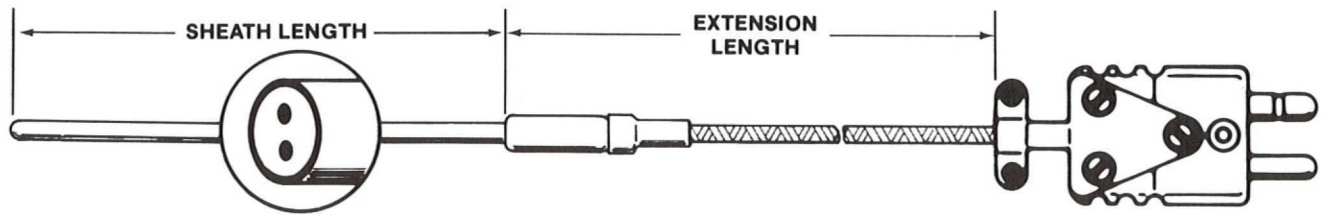
SHEATH ALLOYS

MATERIAL	APPROX. MELT TEMP.	MAXIMUM OPERATING TEMP.	RECOMMENDED ENVIRONMENT
Platinum	3217°F 1770°C	3000°F 1650°C	Oxidizing, Inert
Platinum 10% Rhodium	3362°F 1850°C	3100°F 1705°C	Oxidizing, Inert
Tantalum	5425°F 2996°C	4500°F 2482°C	Vacuum
*Molybdenum	4730°F 2610°C	4000°F 2205°C	Vacuum, Inert
*Moly 50% Rhenium 50%	4424°F 2440°C	4000°F 2205°C	Vacuum, Hydrogen, Nitrogen, Inert, Cracked Ammonia

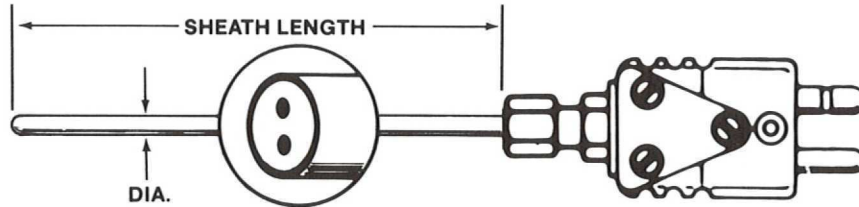
*Not suitable for swaging



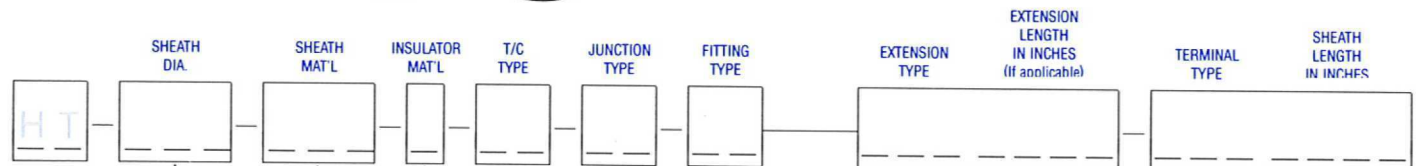
SENSORS HIGH TEMPERATURE METAL SHEATHED THERMOCOUPLES



**THERMOCOUPLE
w/EXTENSION
& CONNECTOR**



**THERMOCOUPLE
w/CONNECTOR**



Last digit is 10ths of inches
i.e. .0045 = 4.5"

SHEATH SIZE DIA. INCHES	CODE
0.125	125
0.187	187
0.250	250

INSULATOR MAT'L	CODE
MgO	M
Al ₂ O ₃	A
BeO	E

ORDER CODE	JUNCTION TYPE
1X 1G 1U	Single Element Thermocouple
	Exposed Grounded
	Ungrounded
2X 2G 2U	Dual Element Thermocouple
	Exposed Grounded
	Ungrounded

CODE	EXTENSION TYPE
XXX	NONE
MGO	FIBERGLASS INSULATED 482°C (900°F)

*Extension length in inches

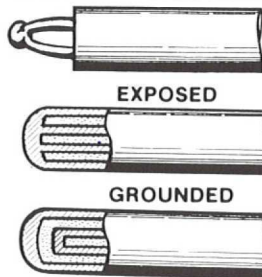
NOTES:

- 1) For SS Armor Cable over Exten. add "3" to code: e.g. "MG3"
 - 2) For SS Overbraid over Exten. add "1" to code: e.g. "MG1"
- TRANSITIONS:**
- 3) Extension includes transitions for use to 205°C (400°F)
 - 4) For Hi-Temp transition 425°C (800°F) add "H" to code e.g. "HGO"

SHEATH MAT'L	CODE
Platinum	PPT
Platinum 10% Rhodium	P10
Tantalum	TAN
Molybdenum	MOL
Moly 50% Rhenium 50%	MR5
Inconel "600"	600

THERMOCOUPLE TYPE	CODE
Pt13Rh vs Pt	1R
Pt10Rh vs Pt	1S
Pt30Rh vs Pt6Rh	1B
W5Re vs W26Re	1C

Special limits
Use "2" i.e. 2R



MOUNTING FITTING	CODE
NONE	XX
COMPRESSION IMMERSION	
SS Fitting	A1 A2
1/8 NPT	
1/4 NPT	
*Not readjustable with metal ferrule NOTES: C1 = Stl. B1 = Brass Ferrules: Metal Standard (Non-readjustable) "T" for Teflon (Readjustable) e.g. T1 "L" for Lava (Non-reusable) e.g. L1	
FIELD POSITIONABLE IMMERSION LENGTH	

Note: Compression fitting is the only fitting available on this T/C arrangement.

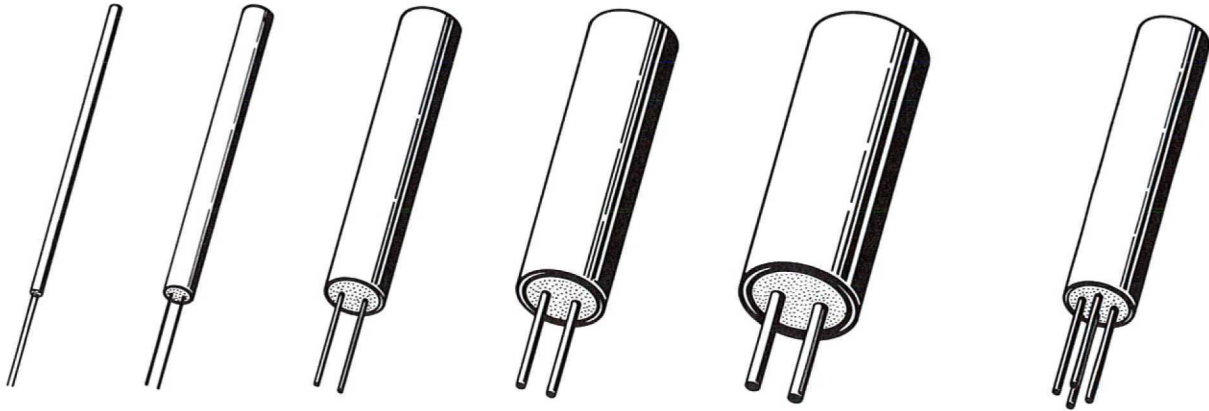
TERMINAL TYPE	CODE
	B10
	B30
	P11
	P15
	P12

NOTES FOR ABOVE TERMINAL CONNECTORS
1) Connectors for use to 205°C (400°F)
2) For other options consult factory

EXAMPLE:
HT-187-MOL-A-1C-1U-XX-XXX000-P110012
3/16 O.D., Molybdenum Sheath, Alumina Insulator,
Tungsten 5 Rhenium vs Tungsten 26 Rhenium Thermocouple,
Ungrounded Junction, 2-Pole Connector,
12" Sheath Length
(Consult Factory for Prices)



SENSORS RANDOM LENGTH MARLOX® THERMOCOUPLE CABLE



MARLOX RANDOM LENGTHS

Marlox is available for your fabrication from our stock. Ends are cut square and moisture sealed.

Standard Marlox is single element (2 wire) or Dual Element (4 wire) thermocouple construction with magnesium oxide (MgO) insulation compacted into a metal sheath.

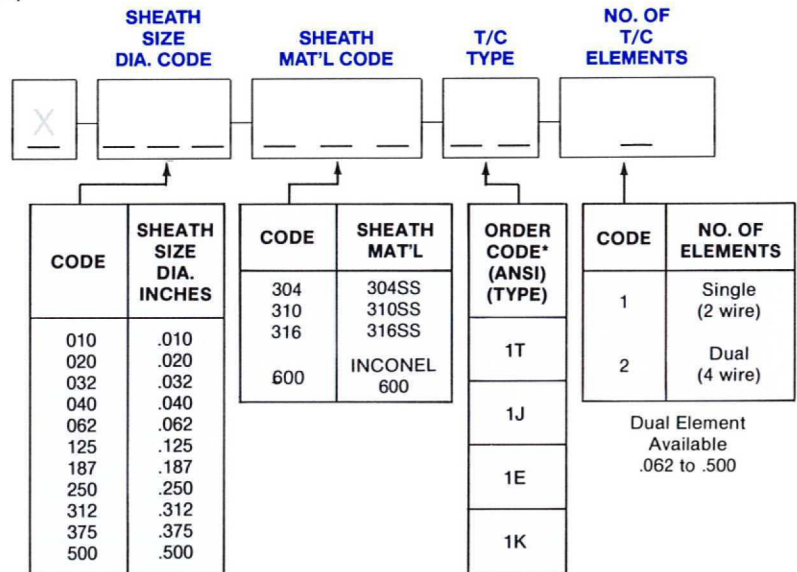
Example: 1/8" OD, 304SS, Iron-Constantan,
Single Element, 50 feet
Order No. X-125-304-1J-1-50 Ft.

SHEATH SIZE DIA. INCHES	NOMINAL TUBE WALL THICKNESS INCHES	WIRE GAUGE B & S		MAX STOCK LENGTH (FT.)
		SINGLE T/C ELEMENT	DUAL T/C ELEMENT	
.010	.0015	44		50
.020	.003	38		100
.032	.004	34		150
.040	.006	33		200
.062	.009	28	30	500
.125	.017	22	24	375
.187	.025	20	21	175
.250	.033	16	18	100
.312	.041	16		60
.375	.052	15		45
.500	.070	10		30

DIM. TOLERANCE: Up to .062 ±.001; .125 to .500 ±.003"
Furnished in coils .010" to 0.312"
Furnished in straight lengths 0.375" to 0.500"

WHEN ORDERING SPECIFY:

- 1) Sheath Alloy and Size by code from table
- 2) ANSI Calibration Type by letter code
- 3) Length in feet



For special limits use "2" i.e. "2K"

PRICE \$/FT													
RANDOM LENGTH MARLOX® THERMOCOUPLE CABLE													
CODE	SHEATH SIZE DIA. INCHES	SINGLE ELEMENT (-1)						DUAL ELEMENT (-2)					
		304SS		INCONEL				304		INCONEL			
		J	K	T	E	J	K	J	K	T	E	J	K
010	.010	\$5	\$5	—	—	—	—	—	—	—	—	—	—
020	.020	3	3	3	3	\$3	\$3	—	—	—	—	—	—
032	.032	3	3	3	3	3	3	—	—	—	—	—	—
040	.040	2	2	3	3	2	2	—	—	—	—	—	—
062	.062	2	2	3	3	3	3	\$5	\$5	\$7	\$7	\$6	\$6
125	.125	3	3	3	3	3	3	4	4	6	6	5	5
187	.187	4	4	4	4	4	4	6	6	8	8	8	8
250	.250	6	6	6	6	7	7	8	8	—	—	9	9
312	.312	9	9	—	—	9	9	—	—	—	—	—	—
375	.375	8	8	—	—	14	14	—	—	—	—	—	—
500	.500	—	—	—	—	—	—	—	—	—	—	—	—

DISCOUNT SCHEDULE	
QUANTITY	FACTOR
0-99	NET
100-249	.90
250-499	.80
500-999	.70
1000+	.60

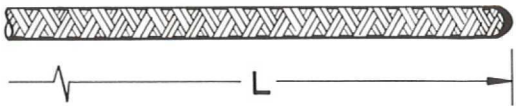
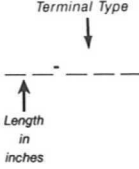

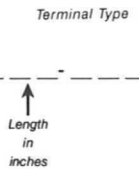
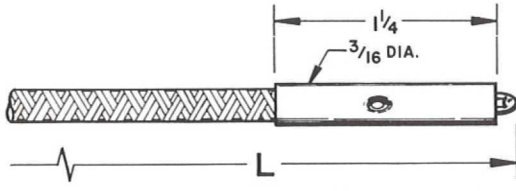
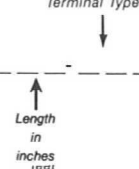
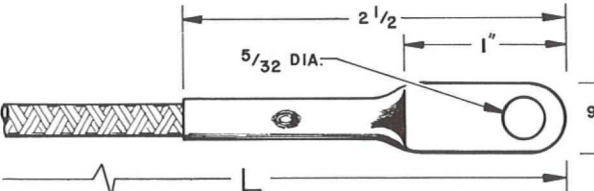
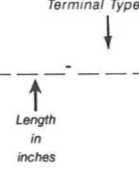
- Quantity is total feet per order.
- All items per order can be combined regardless of sizes or types.

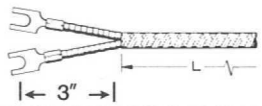


Other Sizes and Combinations available, consult factory.
Special Limit Marlox (i.e. JJ, KK) Add 10% to price.



SENSORS SURVEY AND PROFILING THERMOCOUPLES

TYPE K 20ga. — CERAMIC FIBER INSULATED — INCONEL OVERBRAID

Description	Part Number	Base Price L = 36 in.	\$/Additional 12 in.
 <p>The inconel overbraid is welded to the thermocouple wire to form a smooth tip.</p>	 K-20-CC42-1G-	\$22.00	\$3.00
 <p>The thermocouple junction is exposed beyond the inconel overbraid</p>	 K-20-CC42-1X-	\$22.00	\$3.00
 <p>An inconel sleeve is added to the exposed junction thermocouple as a mounting strain relief.</p>	 K-20-CC42-1X1-	\$26.00	\$3.00
 <p>An inconel mounting lug is added to the thermocouple. Available grounded.</p>	 K-20-CC42-1G2-	\$30.00	\$3.00

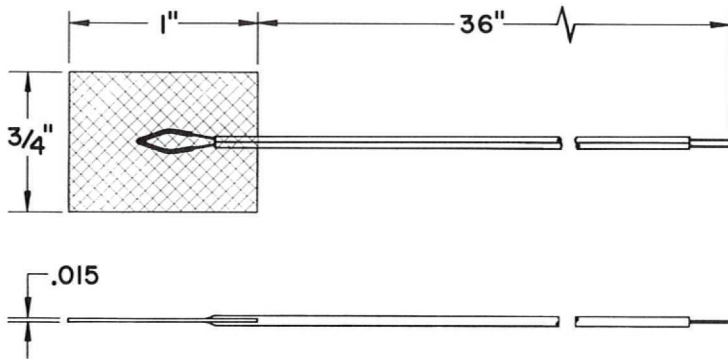
Code	Terminal Type	Price
B10	1" Bare leads	N/C
L13	Compensated Spade Lugs 	\$5.00
P16	2-Pole Connector Plug 	\$6.00
P26	Hi-Temp. 2-Pole Connector Plug 	\$9.00

Discount Schedule	
Quantity	Discount Factor
1-9	NET
10-24	.95
25-49	.90
50-99	.85
100-199	.80
200 +	.75

SENSORS FOIL THERMOCOUPLES ON SELF-ADHESIVE LAMINATE

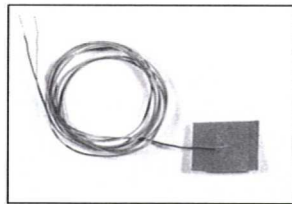
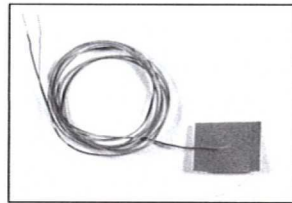
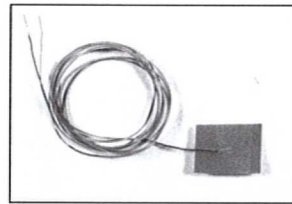
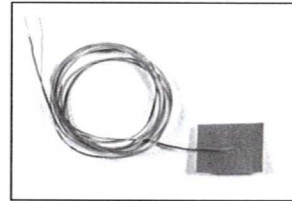
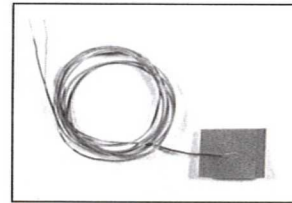
For fast response and accurate sensing of surface temperature these Marlin .005" foil thermocouples (.015" laminate) are easy to apply with their self adhesive laminate. For continuous duty temperature use of -50°F (-45°C)* to $+400^{\circ}\text{F}$ (205°C). The thermocouple leads are 30 gage, teflon insulated 36" long (other lengths available on request). Stocked for immediate delivery in packages of 5 thermocouples.

*Must be applied initially at above 40°F (4°C).



P/N	ANSI TYPE	LEAD LENGTH
M951-5	T J E K	36"

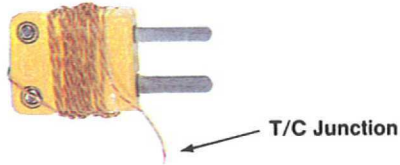
\$60.00/Package of 5



DISCOUNT SCHEDULE	
QUANTITY No. of Pkgs.	Factor
1-2	Ret.
3-5	.95
6-10	.90
11+	.85



SENSORS SPECIALTY THERMOCOUPLES



M970 — Thermocouple Type K
\$24.50 ea.

Very fine gage (40 ga. -.003") Type K thermocouple. This teflon insulated exposed junction thermocouple is 36" long and has a Marlin miniature plug (1260-K) attached. The junction can be cemented or taped in place. Temperature range to 400° F. Available only in Type K.



M990 — Thermocouple Type K
\$28.00 ea.

Totally teflon insulated Type K thermocouple of 24 ga. (.020) wire. For use in applications where acids or corrosives could otherwise attack exposed wire. For use to temperatures of 400° F. Available in Type K only 60" long.

DISCOUNT SCHEDULE	
QUANTITY No. of T/C's	Factor
1-9	Net
10-24	.95
25-49	.90
50+	.85



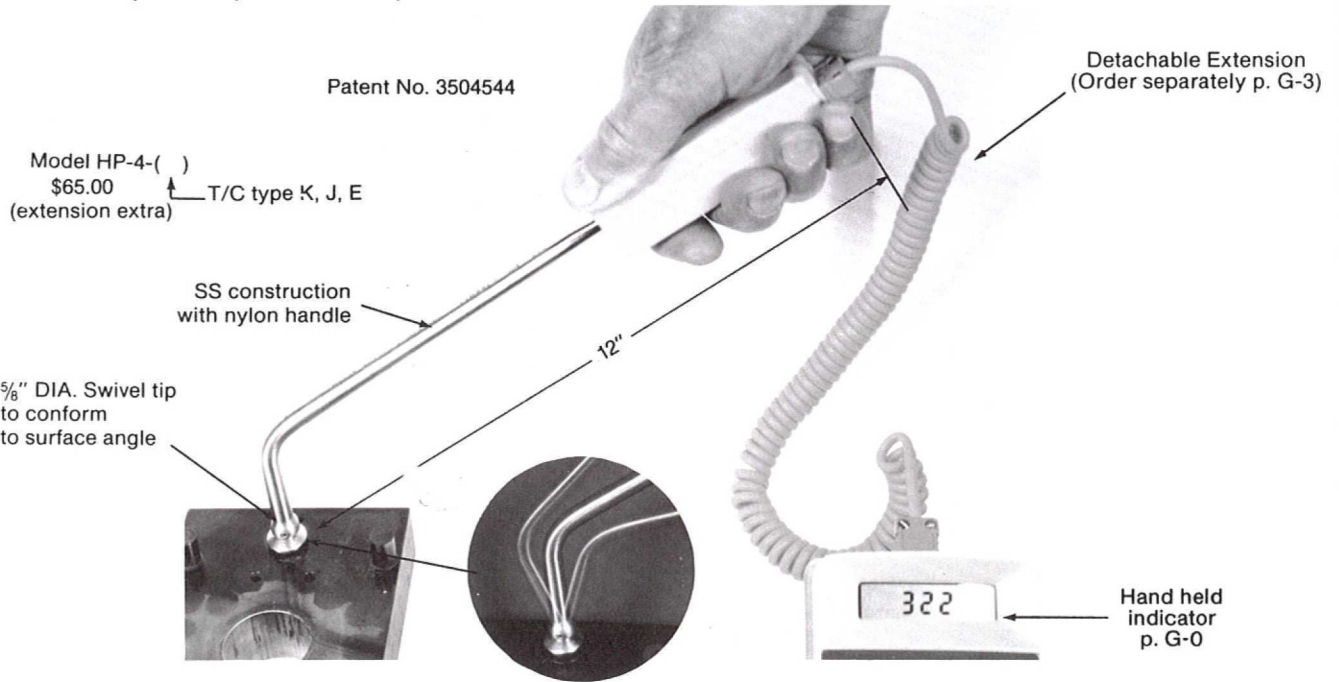
MANUFACTURING CORPORATION 12404 TRISKETT ROAD CLEVELAND, OHIO 44111 FAX: (216) 941-6207

(216) 941-6200

SENSORS

SURFACE TEMPERATURE MEASUREMENT — SWIVEL-TIP PROBE

Heavy duty, swivel-tip surface probe for accurate, fast temperature sensing of hot plates, molds, etc. to 500°F (not for liquids). (Insure that proper protection is provided for hands and body from exposure to heat.)



Band Type Surface Probe for fast, accurate temperature readings of convex, static surfaces of cylinders and rolls etc. to 750°F. (Insure that proper protection is provided for hands and body from exposure to heat.)

Model HP-5-K
\$95.00
(extension extra)

T/C Type K,J,E

