

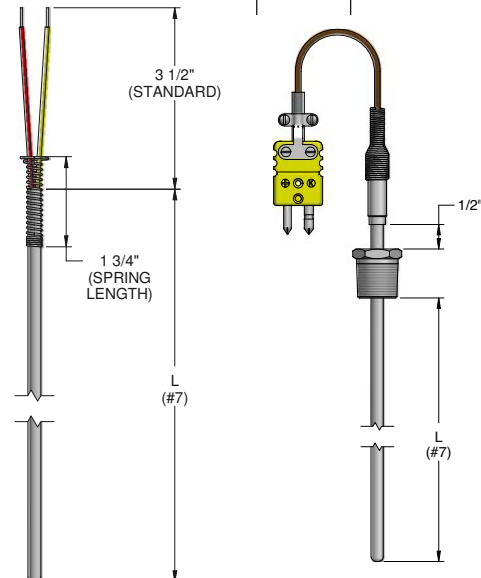
MINIATURE AND INDUSTRIAL THERMOCOUPLES



#1	DESCRIPTION [6, 7]					
1	Thermocouple					
	#2	TYPE [8, 9, 10]				
	-"	J, T, K, E, N, X (Other, specify)				
	#3	LIMITS OF ERROR [9]	ELEMENT CONSTRUCTION			
	1	Standard	Single			
	2	Standard	Dual			
	3	Special	Single			Note: For hollow tube sensors see pages 2-1 and 2-2.
	4	Special	Dual			
	X	Other, specify				
	#4	OUTSIDE DIAMETER [11]	CONDUCTOR SIZE (FOR BASE METALS ONLY)			
			SINGLE (AWG)	DUAL (AWG)		
	A*	3/8"	13	16		
	B	1/4"	16	18		
	C	3/16"	19	20		
	D	1/8"	22	24		
	E	1/16"	28	30		Note: JMS now offers sheath as small as .010 in diameter
	F*	1/25"	32	34		
	X	Other, specify				
	Z	N/A				
	#5	SHEATH MATERIAL [11]	MAX °F [2-8, 4-17]			MAX °F
	H	304 Stainless Steel	1650	M	Inconel 600	2100
	J	310 Stainless Steel	2100	C	Teflon coated SS	400
	V	STABALOY	2220	Q	Hastelloy C-276	2000
	K	316 Stainless Steel	1650	X	Other, specify	
	#6	MEASURING JUNCTION [12, 13, 14, 15]				
	G	Grounded		P*	Reduced tip, grounded	
	U	Ungrounded		Y*	Reduced tip, ungrounded	
	E	Exposed (Isolated on dual)		R*	Gas/Air, exposed	
	I	Isolated		S*	Gas/Air, grounded	
	J*	Pointed tip, grounded		T*	Gas/Air, ungrounded	
	K*	Pointed tip, ungrounded		V*	Enlarged tip, grounded	
	L*	Weld pad, grounded		W*	Enlarged tip, ungrounded	
	M*	Weld pad, ungrounded		X*	Other, specify	
	N*	Weld pad, removable grounded			* Note: Provide description when selecting these options.	
	O*	Weld pad, removable ungrounded				
	#7	LENGTH (See sketches on Pg. 1-1, 2, & 3 for lengths)				
	-"	Length in inches Note: If sensor requires factory bend order from pg 2-1.				
	#8	STANDARD INDUSTRIAL ATTACHING DEVICE [1-3, 6-13]				
	W	Fixed NPT ss fitting - double threaded				
	S	Spring loaded NPT ss fitting -double threaded				
	C	Spring loaded NPT ss w/ oil ring - double threaded				
	D	Spring loaded ss fitting - single threaded				
	M**	CSA explosion proof spring loaded fitting				
	A	Spring loaded w/threaded retainer				
	B	Bayonet spring loaded assembly for thermowells and heads				
	E*	Adjustable spring over .250", .188", .125" sheath				
	F	Reverse mounted steel plug fixed for attaching head				
	G	Fixed stainless steel to sheath (See drawing to left)				
	H*	Compression fitting ss w/ ss ferrule				
	I*	Compression fitting ss w/ teflon ferrule				
	J*	Compression fitting ss w/ lava ferrule				
	K*	Compression fitting ss w/ nylon ferrule				
	L*	Compression fitting brass w/ brass ferrule				
	H4	4" SS nipple-union-nipple (NUN4H1)				
	H6	6" SS nipple-union-nipple (NUN6H1)				
	N4	4" nipple-union-nipple (NUN4G1)				
	N6	6" nipple-union-nipple (NUN6G1)				
	S4	4" spring-loaded-union-nipple (NU4G1)				
	S6	6" spring-loaded-union-nipple (NU6G1)				
	C4**	4" CSA certified flame path spring-loaded-union-nipple				
	C6**	6" CSA certified flame path spring-loaded-union-nipple				
	X	Other, specify or if more than 1 is needed				
	Z	Not applicable (no fitting required)				

[] BRACKETS INDICATE PAGE NUMBERS IN TECHNICAL CATALOG AVAILABLE ONLINE AT WWW.JMS-SE.COM/PDF/JMS_TECHNICAL_CATALOG.PDF

Note: For options N & O Fastrax designs refer to 4-15.



Immersion for Symbol #8-E Spring
Immersion for Symbol #8-G&D Fitting

1	J	1	B	H	G	12"	S
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* Length calc. w/out attaching device.(See dwg on pg. 1-2)
**For CSA certified assbly. sensor must be assembled w/thermowell having appropriate Canadian Registration Number (CRN)

MINIATURE AND INDUSTRIAL THERMOCOUPLES

#9	PROCESS NPT [3]
L M P O X Z	1/8" 1/4" 1/2" (Standard w/ symbols W, S, C, and N in symbol #8) 3/4" Other, specify N/A

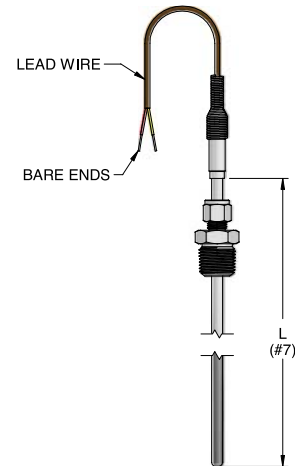
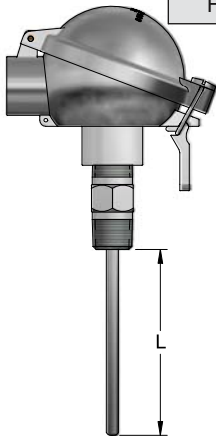
#10	LEAD WIRE TYPE & LENGTH IN INCHES [SEE SECTION 7]		
Z 1__" 2__" 3__" 4__" 5__"	No lead wires Glass braid PVC Teflon Hi-temp glass braid Kapton	}	Solid 20 AWG
7__" 8__" X__"			Bare wire PVC coil cord - Standard when using symbol #8-B and #13-R Other, specify

Note: For stranded wire, add "S" before symbol designation in this column. 24 awg or smaller may be used to accommodate some smaller diameters and flex armor extensions.

#11	ARMOR OR HEAT SHRINK [7-7] [16]	
A B C D F G H	3/16" ID SS flex armor 3/16" ID SS flex armor teflon coated white 3/16" ID SS flex armor teflon coated black 1/8" ID SS flex armor SS overbraid Heat shrink / sleeving Jacket to match primary insulation	J X Z
		Aluminum mylar shielded and jacketed to match primary insulation Other, specify N/A

Note: Bell Springs are used for most wire extensions at transition. A special armor adapter is used when armor is longer than 60".

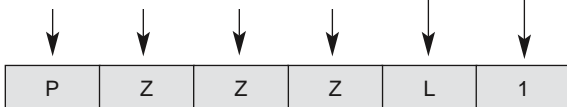
#12	TYPE OF TRANSITION [16]	
H S T R Q X Z	Heat shrink Size on size 3/8" OD (Standard) 1/4" OD Cuttable (see full catalog) Other, specify No transition	Note: For high humidity / moisture environments, ≤ 500°F put a "2" after your selection. Note: For high temperature at the transition area use an X + type of transition and maximum temperature. >500°F



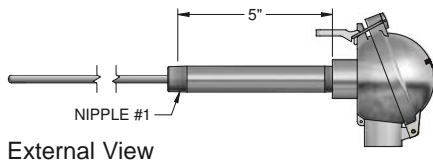
Immersion is overall length of tube for non-fixed attaching devices

#13	COLD END TERMINATION [SEE SECTION 6] PICK AS MANY AS APPLICABLE	
A B C D E F G I J K L M N O P U	Bare ends Miniature plug Standard plug Miniature jack Standard jack High temperature plug (< 800° F) High temperature jack (< 800° F) Explosion proof NEMA 4X head, FM, CSA (6IA/6B4) Explosion proof stainless steel NEMA 4X head, FM, CSA (6ISS/6B4) Spade lugs (6SL) Aluminum head w/ hinged cover (6L / 6B4) Aluminum head w/ screw cover & chain (6M / 6B4) Cast iron head w/ screw cover (6N / 6B4) Open terminal block (6M) Explosion proof AL head ATEX certified Explosion proof stainless steel head ATEX certified	Note: For any other cold end termination, use symbol X and describe using appropriate part numbers from section 6 in place of symbol #13.
Q R WM WF 8H 8N 8S 8I 8E 8D X	Blk nylon Nema 4 head (6Q/6B4) High dome head (6R) Microphone style connector (6DA) -Male Microphone style connector (6DA) -Female Isolated transmitter Non isolated transmitter AI-1500 TempIR with Hart Protocol Intrinsically Safe TempIR TempIR/ Hart/ Intrinsically Safe Other, specify	

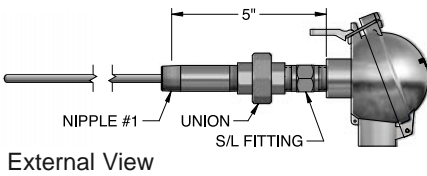
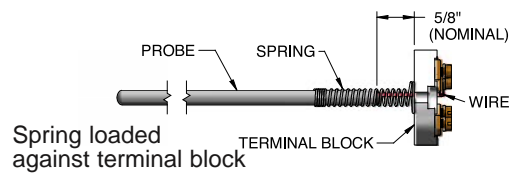
#14	OPTIONS USE ONLY IF APPLICABLE [INTRODUCTION]		
1* 2* 3* 4*	Stainless steel tag Plastic tag Paper tag Laser etch on probe	5 6** 7 8 9 Z	Calibrate at specified point(s). Corrections data will be provided for each point. Premium calibration report Corrections data will be provided for all temperatures within the range. CE Marking [Page XV] Guide 17025 calibration BAR CODE N/A
	* Must specify information required on tag / to be etched		** You must specify increments & range (Ex. 0 to 300°F, 10° increments)



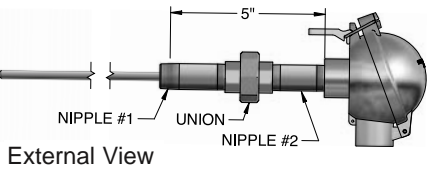
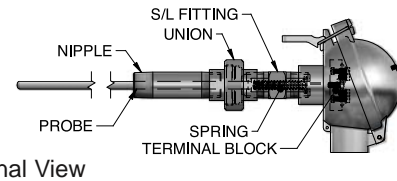
NIPPLE-UNION-NIPPLE EXTENSION ASSEMBLIES



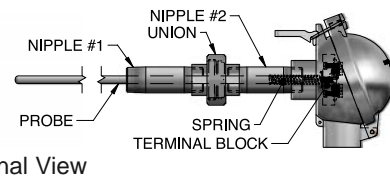
Drawing 1
Nipple + Adjustable Spring
Minimum Nipple L = 1"
Ex. Part#: 1J1BHG12"EXZZZL
X = N5"G1



Drawing 2
Nipple-Union with Machined
1/2" x 1/2" Spring Loaded Fitting
Minimum NU L = 3 1/2"
(includes S/L fitting)
Ex. Part#: 1J1BHG12" SXZZZL
X = NU5"G1



Drawing 3
Nipple-Union-Nipple with
Spring Against Terminal Block
Minimum NUN L = 2 1/2"
EX. Part#: 1J1BHG12"EXZZZL
X = NUN5"G1



An extension assembly may be needed to provide extra length for your sensor in order to extend your sensor head through insulation, or away from the heat of the process. This extension can include a pipe nipple only or a nipple-union-nipple or a nipple-union with a spring-loaded fitting.

Standard nipples and unions are 1/2" NPT and are available in galvanized or stainless steel. The union joins two nipples in an extension assembly and has a standard pressure rating of 150 pounds.

When a nipple-union-nipple or nipple only assembly is used and spring loading of the thermocouple element is required, there are two different methods of spring loading the sensor. The preferred method is to use the machined 1/2" by 1/2" NPT spring-loaded stainless steel fitting as one of the nipples. With this design, the probe is secured within the fitting and is mounted to the head in a rigid manner (see drawing #2 above). The appropriate part number for this assembly would be selected from symbols #8 and #9 from page 1-1 and 1-2, in addition to the symbols on this page. A cheaper method is a spring, mounted over the probe and loaded against the bottom of the terminal block in the head. With this method the probe is not supported within the nipple-union-nipple. It is secured only by the wires into the terminal block. (See drawings 1 & 3 above). We do not recommend that you use this method of spring loading.

When specifying this sensor extension, the nipple-union-nipple length tolerance is $\pm 1/2"$.

#1	EXTENSION ASSEMBLY		
N	Nipple Only (Dwg #1)		
NU	Nipple-Union (Dwg #2)		
NUN	Nipple-Union-Nipple (Dwg #3)		
#2	LENGTH		
--"	Specify length in inches		
#3	MATERIAL		
G	Galvanized Steel		
H	304 Stainless Steel		
C	Black Steel		
#4	PRESSURE RATING		
1	#150	- A351 spec (Standard)	} ASTM
2	#3000	- A182 spec	
3	#6000	- A182 spec	
X	Other, specify		

NUN 5" G 1