

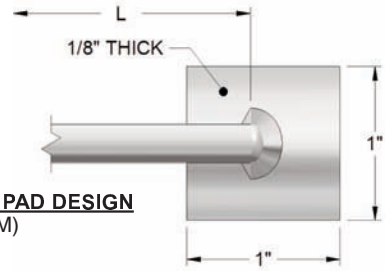
MINIATURE AND INDUSTRIAL THERMOCOUPLES

#1	DESCRIPTION [6, 7]			
1	Thermocouple			
#2	TYPE [8, 9, 10]			
-	J, T, K, E, N, X (Other, specify)			
#3	LIMITS OF ERROR / ELEMENT CONSTRUCTION			
1	Standard	Single	6	Standard Triple
2	Standard	Dual	X	Other, specify
3	Special	Single		
4	Special	Dual		

Note: For hollow tube sensors see pages 2-1 and 2-2.

Note: JMS now offers sheath as small as .010 in diameter.

WELD PAD DESIGN #6 (L, M)



#4	OUTSIDE DIAMETER [11]		CONDUCTOR SIZE (FOR BASE METALS ONLY)					
			SINGLE (AWG)		DUAL (AWG)			
	OD	Single / Dual	OD	Single / Dual	OD	Single / Dual	OD	Single / Dual
P	1/2"	10 12	R	6mm	16 18	F*	1/25"	32 34
A	3/8"	13 16	C	3/16"	19 20	X	Other, specify	
Y	5/16"	14 16	D	1/8"	22 24	Z	N/A	
B	1/4"	16 18	E	1/16"	28 30			

#5	SHEATH MATERIAL [11]		MAX °F [2-8, 4-17]		MAX °F	
H	304 Stainless Steel		1650	C	Teflon coated SS	400
J	310 Stainless Steel		2100	S	Titanium	400
V	STABALLOY		2220	Q	Hastelloy C-276	800
K	316 Stainless Steel		1650	P	Pyrosil	2300
M	Inconel 600		2100	X	Other, specify	--

[] Brackets indicate page numbers where additional helpful information can be found in technical catalog. Now available online at www.JMS-SE.com/TechnicalCatalog

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

#6	MEASURING JUNCTION [12, 13, 14, 15]			
G	Grounded	P*	Reduced tip, grounded [4-1]	
U	Ungrounded	Y*	Reduced tip, ungrounded [4-1]	
E	Exposed (Isolated on dual) [1-4]	R*	Gas/Air, exposed [3-2]	
I	Isolated [1-4]	S*	Gas/Air, grounded [3-2]	
J*	Pointed tip, grounded [4-9]	T*	Gas/Air, ungrounded [3-2]	
K*	Pointed tip, ungrounded [4-9]	V*	Enlarged tip, grounded [1-2]	
L*	Weld pad, grounded [1-1]	W*	Enlarged tip, ungrounded [1-2]	
M*	Weld pad, ungrounded [1-1]	X*	Other, specify	
N*	Weld pad, removable grounded [4-15]		* Provide description when selecting these options.	
O*	Weld pad, removable ungrounded [4-15]			

#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.

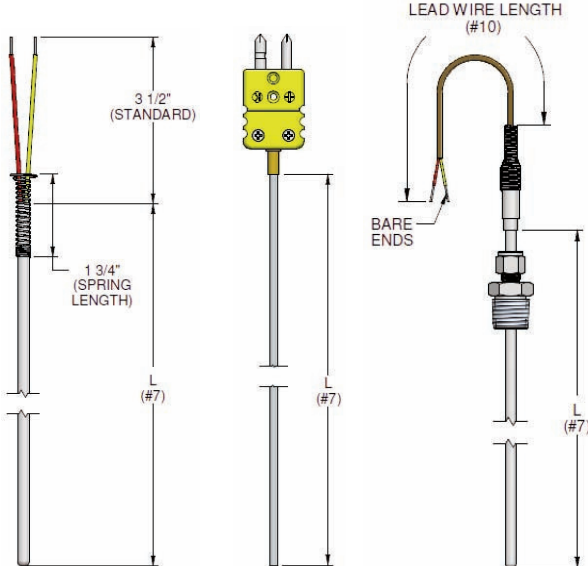
#8	STANDARD INDUSTRIAL ATTACHING DEVICE [1-3, 6-13]			
Spring Loaded Note: Spring material, 1000°F rated (for 1/4" Ø sensors)				
D	Single threaded (process)	E	Adjustable spring	
C	Double threaded w/ oil ring	S	Double threaded	
A	Double w/ threaded retainer	B	Bayonet assembly	
		BD	Bayonet oil seal	

Welded				
G	Single threaded (process)	W	Double threaded	
F	Single threaded reversed (attached head)			

Compression *Length (#7) calculated without attaching device.				
H*	SS w/ SS ferrule	K*	SS w/ Nylon ferrule	
I*	SS w/ Teflon ferrule	L*	Brass w/ Brass ferrule	
J*	SS w/ Lava ferrule			

Extension Assembly (See 1-3 for more extension options and details)				
H4	4" NUN, 304SS	H6	6" NUN, 304SS	
N4	4" NUN, GALV	N6	6" NUN, GALV	
WH4	4" NUW, 304SS	WH6	6" NUW, 304SS	
WG4	4" NUW, GALV	WG6	6" NUW, GALV	
SH4	4" NU, 304SS	SH6	6" NU, 304SS	
S4	4" NU, GALV	S6	6" NU, GALV	

Other Options For CSA Certified assemblies, see Page 4-17.					
X	Other, specify			Z	N/A



Note: L is the overall length of the sensor to the transition, wire or plug. This includes non-fixed attaching devices.

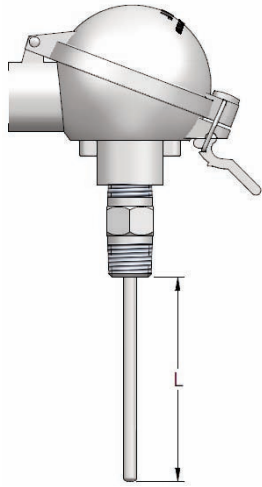
Acronym Definitions
 S/L = Spring Loaded
 SS = Stainless Steel

Galv = Galvanized
 NUN = Nipple-Union-Nipple
 NUW = Nipple-Union-Welded Fitting
 NU = Nipple-Union-Spring Loaded Fitting

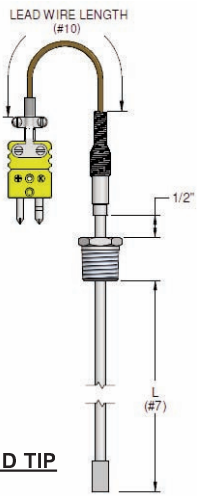
1	J	1	B	H	G	12"	S
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MINIATURE AND INDUSTRIAL THERMOCOUPLES

#9	PROCESS NPT / CUSTOM EXTENSION ASSEMBLY [3]			
L	1/8"	O	3/4"	
M	1/4"	X	Other, specify	
P	1/2" (Standard w/ symbols W, S, C, and N in symbol #8)	Z	N/A	
Note: To add a custom extension assembly not described in selection #8, select "X" and specify. Ex. NUN5G1				
#10	LEAD WIRE TYPE & LENGTH IN INCHES [SEE SECTION 7]			
Z	No lead wires	7"	Bare wire	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.
1"	Glass braid	8"	PVC coil cord - Standard	
2"	PVC	} Solid 20 AWG	when using symbol #8-B and #13-R	
3"	Teflon		Other, specify	
4"	Hi-temp glass braid			
5"	Kapton	X"		
#11	ARMOR OR HEAT SHRINK [7-7] [16]			
A	3/16" ID SS flex armor	J	Aluminum mylar shielded and jacketed to match primary insulation	
B	3/16" ID SS flex armor teflon coated white	X	Other, specify	
C	3/16" ID SS flex armor teflon coated black	Z	N/A	
D	1/8" ID SS flex armor			
F	SS overbraid			
G	Heat shrink / sleeving			Note: Bell Springs are used for most wire extensions at transition. A special armor adapter is used when armor is longer than 60".
H	Jacket to match primary insulation			
#12	TYPE OF TRANSITION [16]			
H	Heat shrink			
S	Size on size			Note: For high humidity / moisture environments, ≤ 500°F put a "2" after your selection. For example, R2.
T	3/8" OD (Standard)			
R	1/4" OD			
Q	Cuttable (see full catalog)			Note: For high temperatures at the transition area (500°F - 1200°F) put a "3" after your selection. For example, T3.
M	M12 Fixed mount			
X	Other, specify			
Z	No transition			
#13	COLD END TERMINATION [Add'l options see Pg 1-6] Pick as many as applicable (Visit our online catalog for additional terminations, www.jms-se.com/ends)			
Connectors		Heads [6-1] visit www.jms-se.com/headspecs		
B	Miniature plug	Exp. Proof	I	Aluminum, NEMA 4X, FM, CSA (6IA/6B4)
C	Standard plug		J	316 stainless steel, NEMA 4X, FM, CSA (6ISS/6B4)
F	High temperature plug (< 800°F)	Gen. Purpose	P	Aluminum, NEMA 4X, FM, CSA, ATEX, IECEx (6IAIEC/6B4)
WM	Microphone style plug (6DA)		U	316 stainless steel, NEMA 4X, ATEX, IECEx (6ISSATEX/6B4)
D	Miniature jack		L	Aluminum w/ hinged cover (6L/6B4)
E	Standard jack		M	Aluminum w/ screw cover & chain (6M/6B4)
G	High temperature jack (< 800°F)	R	Aluminum high dome, hinged cover (6R/6B4)	
WF	Microphone style jack (6DA)	N	Cast iron w/ screw cover (6N/6B4)	
Transmitters		Q	Black nylon, NEMA 4 (6Q/6B4)	
8H	Isolated transmitter	SS	316 stainless steel w/ screw cover & chain (6SS/6B4)	
8N	Non isolated transmitter	Other		
8I	Hart Protocol	A	Bare Ends	
8E	Intrinsically Safe	K	Spade Lugs (6SL)	
8D	Hart / Intrinsically Safe	O	Open terminal block (6B4)	
Note: Add span range after transmitter selection. For ex: 8H(0-200C).		X	Other, specify	
#14	OPTIONS USE ONLY IF APPLICABLE [INTRODUCTION]			
1*	Stainless steel tag	5L*	Standard Lot Calibration	
2*	Plastic tag	6**	Premium calibration report. Corrections data will be provided for temperatures within the range.	
3*	Paper tag	6L*	Premium Lot Calibration	
4*	Laser etch on probe	7	CE Marking [Page XV]	
5	Calibrate at specified point(s). Corrections data provided for each point.	8	Guide 17025 calibration	
	* Must specify information required on tag / to be etched	9	Bar Code	
			* AMS 2750D and AMS 2750E compliant	
			** Must specify increments & range (Ex. 0 to 300°F, 10° increments)	



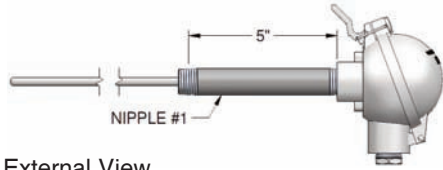
Note: L is the length of the sensor to the fixed attaching device.



ENLARGED TIP
#6 (V, W)

P	Z	Z	Z	L	1
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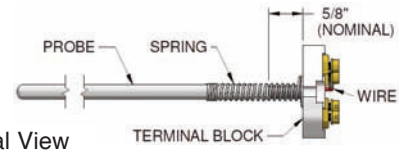
NIPPLE-UNION-NIPPLE EXTENSION ASSEMBLIES



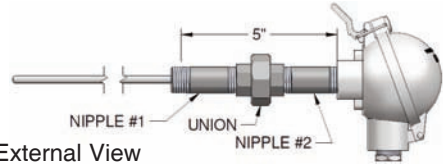
External View

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

Spring loaded against terminal block

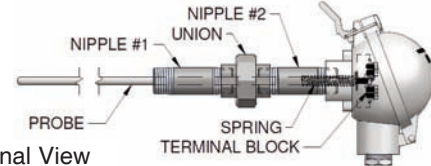


Internal View

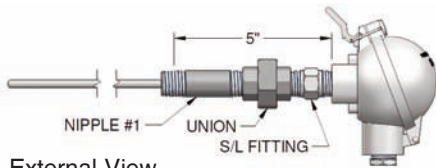


External View

Drawing 2
Nipple-Union-Nipple
Minimum NUN Length = 2-1/2"
Ex. Part#: 1J1BHG12"XPZZZL
X = NUN5"G1

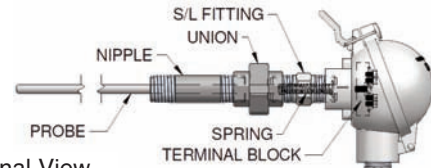


Internal View

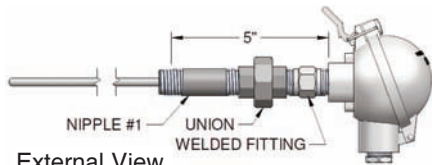


External View

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

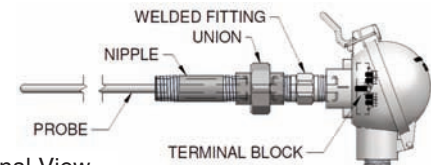


Internal View



External View

Drawing 4
Nipple-Union-Welded Fitting
Minimum NUW Length = 3"
EX. Part#: 1J1BHG12"XPZZZL
X = NUW5"G1



Internal View

An extension assembly provides extra length extending the sensor head past insulation and away from heat. Extensions include pipe nipple only (drawing #1), nipple-union-nipple (drawing #2), nipple union with attaching device (drawing #3), or nipple-union with welded fitting (drawing #4) All but welded are spring-loaded. Standard unions are 1/2" FNPT on both ends and galvanized or stainless steel material. The union joins two nipples in an extension assembly and has a standard pressure rating of 150 PSIG.

When a nipple-union-nipple assembly is selected and spring loading of the thermocouple element is required, there are two different methods of spring loading the sensor. JMS's standard, recommended method is to use the machined 1/2" x 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 (drawing #3) instead of spring-loading against a terminal block (drawings #1 & #2). **Note: the standard JMS spring designed specifically for a 1/4" OD sensor is Inconel material. This high temperature material allows users to successfully maintain 1/2" of spring loading even up to 1020°F!**

#1	EXTENSION ASSEMBLY		
N	Nipple Only (Dwg #1)		
NUN	Nipple-Union-Nipple (Dwg #2)		
NU	Nipple-Union-Spring Loaded Fitting (Dwg #3)		
NUW	Nipple-Union-Welded Fitting (Dwg #4)		
	#2	LENGTH	
	--"	Specify length in inches	
	#3	MATERIAL	
	G	Galvanized Steel	
	H	304 Stainless Steel	
	K	316 Stainless Steel	
	C	Black Steel	
	#4	PRESSURE RATING	
	1	#150	- A351 spec (Standard)
	2	#3000	- A182 spec
	3	#6000	- A182 spec
	X	Other, specify	
		} ASTM	
	NUN	5"	G
			1

ADDITIONAL TERMINATIONS

COLD END TERMINATION [SEE SECTION 6] Pick as many as applicable	
Connectors (JMS part numbers are shown in parenthesis)	
<p>Plugs</p> <p>B Miniature plug (6A1B) BH Miniature High temperature plug (6A2B) <800°F C Standard plug (6A1C) F Standard High temperature plug (6A2C) <800°F WM Microphone style plug (6DA) WA Solid pin plug, heavy duty (6A3C) WC Jab in plug (6A4C) WE Ultra High Temp plug, glazed (6A5C) <1200°F WH Ultra High Temp plug, unglazed (6A7C) <1200°F WJ Low noise plug (6A6C) <425°F WL DIN-IEC microphone plug (6DB) V Molded / hermetic plug (6DC) Y M12 Male connector (6DY)</p>	<p>Jacks</p> <p>D Miniature jack (6A1D) DH Miniature High temperature jack (6A2D) <800°F E Standard jack (6A1E) G Standard High temperature jack (6A2E) <800°F WF Microphone style jack (6DA) WB Solid pin jack, Heavy duty (6A3E) WD Jab in jack (6A4E) WG Ultra High Temp jack, glazed (6A5E) <1200°F WI Ultra High Temp jack, unglazed (6A7E) <1200°F WK Low noise jack (6A6E) <425°F WN DIN-IEC microphone style jack (6DB) VF Molded / hermetic jack (6DC) YF M12 Female connector (6DY)</p>
Heads [6-1] visit www.jms-se.com/headspecs	
<p>Explosion Proof</p> <p>I Aluminum, NEMA 4X, FM, CSA (6IA/6B4) J 316 stainless steel, NEMA 4X, FM, CSA (6ISS/6B4) P Aluminum, NEMA 4X, FM, CSA, ATEX, IECEx (6IAIEC/6B4) U 316 stainless steel, NEMA 4X, ATEX, IECEx (6ISSATEX/6B4) SI Cast Iron, UL / CSA (6I/6PT) GA Aluminum, screw cover w/ indicating window, NEMA 4X, ATEX / IECEx, FM / CSA (688A1) GS 316SS, screw cover w/ indicating window, NEMA 4X, ATEX / IECEx, FM / CSA (688S1)</p> <p>General Purpose</p> <p>L Aluminum w/ hinged cover (6L/6B4) M Aluminum w/ screw cover & chain (6M/6B4) R Aluminum high dome, hinged cover (6R/6B4) RV Aluminum high dome, hinged cover w/ indicating window (6RV) N Cast iron w/ screw cover (6N/6B4) Q Black nylon, NEMA 4 (6Q/6B4) SS 316 stainless steel w/ screw cover & chain (6SS/6B4) WP White Plastic, screw cover, Sanitary (6WP, 6B4) SB Nickel plated, cylinder style, 1/4" NPT (6S250) SD Nickel plated, cylinder style, 1/8" NPT (6S125) SC Stainless Steel, socket cap style ST Molded plastic, mini head, 1/4" NPT, < 400F (6T) SU Molded plastic, mini head, 1/4" NPT, < 800F, (6U)</p>	
Transmitters	
<p>8H Isolated transmitter 8N Non isolated transmitter 8I Hart Protocol 8E Intrinsically Safe 8D Hart / Intrinsically Safe 8M Integral transmitter (See Pg.3-5) RTDs ONLY</p>	<p>Note: Add span range after transmitter selection. For ex: 8H(0-200C).</p>
Other	
<p>A Bare Ends K Spade Lugs (6SL) O Open terminal block, screw terminal (6B) OA Open terminal block, screw terminal (6BB) OB Open terminal block bayonet sensor OG Terminal block, brass screw terminal (6G) OP Pluggable terminal block, screw terminal (6P) OS Open terminal block, solder terminal (6C) PS Ship straight X Other, specify</p>	