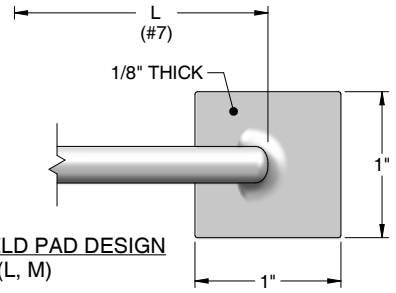
INDUSTRIAL AND MINIATURE THERMOCOUPLES

#1	DESCRIPTION [6, 7]
1	Thermocouple

#2	TYPE [8,9,10]
____	J,T,K,E,N,X (Other, Specify)

Many more options available at JMS-SE.com

#3	LIMITS OF ERROR/ELEMENT CONSTRUCTION			
1	Standard	Single	6	Standard Triple
2	Standard	Dual	X	Other, specify
3	Special	Single		
4	Special	Dual		



WELD PAD DESIGN
#6 (L, M)

#4	OUTSIDE DIAMETER [1-11]	CONDUCTOR SIZE (FOR BASE METALS ONLY) SINGLE (AWG)	DUAL (AWG)

	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				
B	1/4"	16	18	E	1/16"	28	30				

*JMS now offers sheath as small as 0.010" diameter

Note: For hollow tube sensors or sensors requiring a factory bend, see pages 2-1 and 2-2.

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

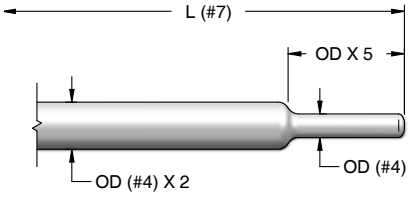
[ ] Brackets indicate page numbers where additional helpful information can be found in technical catalog. Now available online at www.JMS-SE.com/TechnicalCatalog

#6	MEASURING JUNCTION [1-12, 13, 14, 15]		
G	Grounded	P	Reduced tip, grounded
U	Ungrounded	Y	Reduced tip, ungrounded
E	Exposed (isolated on dual/triple)	R	Gas/air, exposed
I	Isolated	S	Gas/air, grounded
J	Pointed tip, grounded 45°	T	Gas/air, ungrounded
K	Pointed tip, ungrounded 45°	V*	Enlarged tip, grounded
L	Weld pad, grounded (Flat)	W*	Enlarged tip, ungrounded
M	Weld pad, ungrounded (Flat)	X	Other, specify
N	Weld pad, removable grounded		
O	Weld pad, removable ungrounded		
NF	Removable, "foot" only, grounded		
OF	Removable, "foot" only, ungrounded		

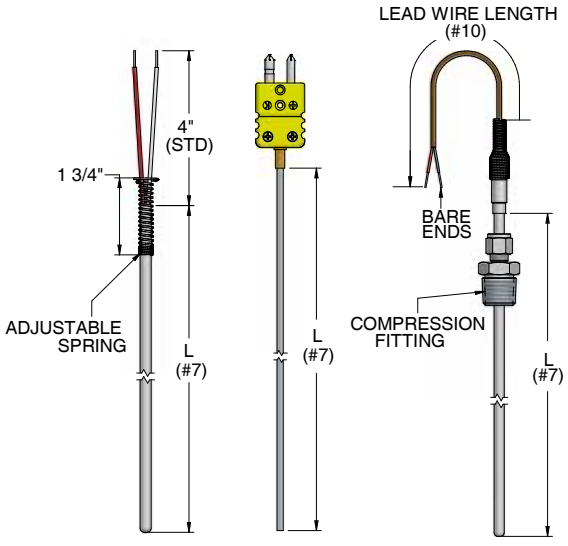
*Provide length and enlarged diameter description when selecting these options.

Note: For options N, NF, O, & OF Fastrax (aka removable weld pad) designs, refer to 4-11.

REDUCED TIP DESIGN
#6 (P,Y)



#7	LENGTH (See illustrations on page 1-1 through 1-3 for lengths)
____"	Length in Inches (Lengths greater than 90" may be coiled for shipment)



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

NEW Skip to page 1-3 to complete selection #8 if your sensor requires a nipple and/or union extension.

#8	STANDARD INDUSTRIAL ATTACHING DEVICE [1-3, 6-13]		
X	Other, specify		
Z	N/A	No attaching device	
G	Single thread (process)	Welded design	
F	Single thread (reversed)		
W	Double threaded		
H*	SS w/ SS ferrule	Compression design	
I*	SS w/ Teflon ferrule		
J*	SS w/ Lava ferrule		
K*	SS w/ Nylon ferrule		
L*	Brass w/ Brass ferrule		
D	Single threaded (process)	Spring-loaded design	
C	Double threaded w/ oil seal		
A	Double w/ threaded retainer		
E	Adjustable spring		
S	Double threaded (most common)		
B	Double threaded Bayonet		
BS*	Double threaded Bayonet w/ oil seal		
BD	Single threaded Bayonet		
BDS*	Single threaded Bayonet w/ oil seal		

*For double threaded use a 2 suffix along with your selection (ex: H2) For thread toward "cold end" use a 3 suffix (ex: H3)

Note: High nickel proprietary spring material is rated to 1000°F (for 1/4" Ø Sensors)

* Not recommended for sensors Ø > 1/4"

1	J	1	B	H	G	12"	S

OR → S { U | N | 6" | H | 1 }

SEE PAGE 1-3

INDUSTRIAL AND MINIATURE THERMOCOUPLES

#9 PROCESS CONNECTION SIZE & TYPE [1-3]

Note: Threaded bushing may be used for sizes larger than 1/2" NPT

L	1/8" NPT	O	3/4" NPT	X	Other, specify
M	1/4" NPT	J	1" NPT	Z	N/A
A	3/8" NPT	T	1 1/4" NPT		
P	1/2" NPT (Standard) w/ symbols W,S,C, & N from selection #8	Y	1 1/2"NPT		

#10 LEAD WIRE TYPE & LENGTH IN INCHES [SEE SECTION 7]

Z	No lead wires	7__"	Bare wire (AWG per #4)
1__"	Fiberglass braid	8__"	PVC coil cord (Relaxed length) (4" standard length for in head bayonet sensors)
2__"	PVC	S9__"	Teflon ultra premium Type T, stranded 22 AWG
3__"	Teflon	X__"	Other, specify
4__"	Hi-temp fiberglass braid		
5__"	Kapton		

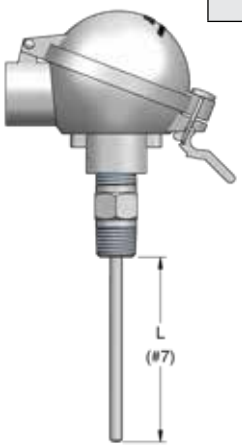
Solid 20 AWG

Note: Add an S prefix to your selection to designate stranded wire. Preferred for high vibration applications with lead wires > 6". Example: S312= 12" stranded Teflon lead wire. 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 special armor adapter is used when flex armor is longer than 60".

A	SS flex armor	J	Aluminum mylar shielded and jacketed to match primary insulation
B	SS flex armor teflon coated white	Z	N/A
C	SS flex armor teflon coated black	K	SS overbraid, drain, & yellow Teflon jacket overall, 20 AWG stranded (Type K only)
D	Small 1/8" ID SS flex armor	X	Other, specify
F	SS overbraid		
G	Heat shrink/sleeving		
H	Jacket to match primary insulation		



#12 TYPE OF TRANSITION [1-16]

H	Heat shrink
S	Size on size
T	3/8" OD or larger (Standard)
R	1/4" OD
X	Other, specify
Z	No transition

Note: For high humidity/moisture environments (≤ 500˚F), put a 2 after your selection. For example, R2.

Note: For high temperatures at the transition area (500°F - 1200°F), put a 3 after your selection. For example, T3.

#13 COLD END TERMINATION

Choose as many as applicable (Additional options see Pg. 1-7)
(Visit our online catalog for additional terminations, www.JMS-SE.com/ends)

Connectors

B	Miniature plug
C	Standard plug
F	High temperature plug (< 800˚F)
WM	Microphone style plug (6DA)
D	Miniature jack
E	Standard jack
G	High temperature jack (<800˚F)
WF	Microphone style jack (6DA)

Transmitters

8H	Isolated transmitter
8N	Non-isolated transmitter
8I	Hart protocol
8E	Intrinsically safe
8D	Hart/intrinsically safe
8PS	Indicating with SS Exp. housing
8PA	Indicating with Alum Exp. housing

Note: Add span range after transmitter selection. Example: 8H(0-200C). Transmitter output=4-20mA. (See section 8 for other options).

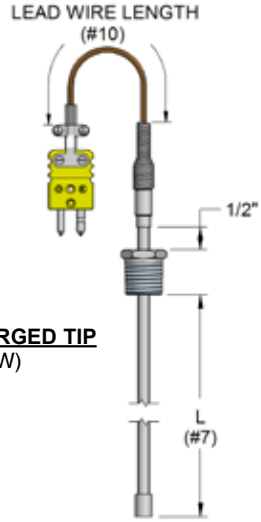
Heads [6–1] visit www.JMS-SE.com/headspecs

Exp. Proof	I	Aluminum, NEMA 4X, FM, CSA, IP68 (6IA)
	J	316 SS, NEMA 4X, FM, CSA, IP68 (6ISS)
	P	Aluminum, NEMA 4X, FM, CSA, ATEX, IECEx, IP68 (6IAIEC)
	SI	Cast Iron, NEMA 4, UL, CSA (6I)
Gen. Purpose	L	Aluminum w/ hinged cover (6L)
	M	Aluminum w/ screw cover & chain (6M)
	R	Aluminum w/ hinged high dome cover (6R)
	N	Cast Iron w/ screw cover (6N)
	Q	Black plastic (6Q)
	SS	316 SS w/ screw cover & chain (6SS)

Other

A	Bare ends
K	Spade lugs (6SL)
O	Open terminal block (6B4)
X	Other, specify

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



ENLARGED TIP
#6 (V,W)

#14 OPTIONS

Use only if applicable [INTRODUCTION]

Marking / Tagging

1	Stainless steel tag
2	Plastic tag
3	Paper tag
4	Laser etch on probe
7	CE marking [page XV]
T	Calibration Tag

Calibration Options

5	Calibrate at specified point(s). Corrections data provided for each point.
5L*	Standard lot calibration
5M	Material calibration report.
6**	Premium calibration report. Corrections data will be provided for temperatures within the range.
6L	Premium lot calibration report. Corrections data will be provided for temperatures within the range.

Certifications

8***	Guide 17025 calibration certification
M	MTR (sheath / tubing / measuring junction components)

Other Options

B	Head mounting bracket
S	Ship straight (Do not coil)
X	Other, specify

* AMS 2750 H compliant
** Must specify increments & range (Example: 0 to 300°F, 10° increments)
*** Must choose calibration option other than 5M

P	Z	Z	Z	L	1

COMPLETE PART NUMBER EXAMPLES

- With nipple-union-spring-loaded extension assembly: **1J1BHG12"S[UN6H1]PZZZL1**
- Without extension assembly: **1J1BHG12"SPZZZL1**

CUSTOM NIPPLE/UNION EXTENSION CONFIGURATOR

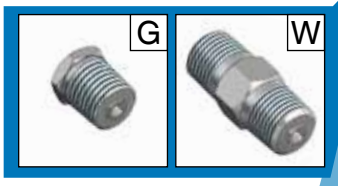
An extension assembly provides extra length extending the sensor head past insulation and away from heat. Standard unions are 1/2" FNPT on both ends. The union joins two nipples in an extension assembly and has a standard pressure rating of 150 PSIG.

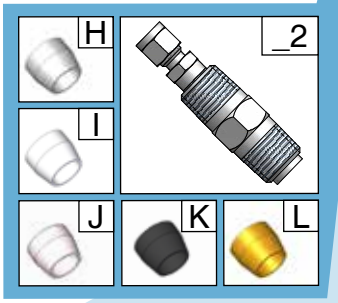
When a nipple-union-nipple assembly is selected and spring-loading of the thermocouple element is required, there are two different methods of spring-loading the sensor. JMS's standard, recommended method is to use the machined 1/2" x 1/2" NPT spring-loaded stainless steel fitting as one of the nipples. With this design, the probe is secured within the fitting and mounted to the head in a rigid manner instead of spring-loading against a terminal block, as is the case with a standard nipple-union-nipple. Due to stress exerted by spring, selection #8, option N "nipple" should never be used with an in-head transmitter. Any of the other options within option #8 are compatible with in-head transmitters.

Notes:

-The standard JMS spring designed specifically for a 1/4" OD sensor is made of high nickel proprietary spring wire which allows users to successfully maintain 1/2" of spring-loading even up to 1000°F.

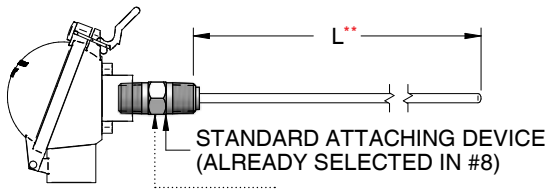
-Spring-loaded extension assemblies should not be used with ceramic protection tubes.





Note: High nickel proprietary spring material is rated to 1000°F. (For 1/4" Ø sensors)

#8	COLD SIDE STANDARD INDUSTRIAL ATTACHING DEVICE [1-3, 6-13]
X	Other, specify
Welded design	
G	Single Thread (Process)
W	Double Threaded
Compression design	
H2	SS w/ SS ferrule
I2	SS w/ Teflon ferrule
J2	SS w/ Lava ferrule
K2	SS w/ Nylon ferrule
L2	Brass w/ Brass ferrule
Spring-loaded design	
D	Single threaded
C	Double threaded w/ oil seal
A	Double w/ threaded retainer
N	Nipple (spring-loaded against terminal block)
S	Double threaded
B	Double threaded Bayonet
BS	Double threaded Bayonet w/ oil seal
BD	Single threaded Bayonet
BDS	Single threaded Bayonet w/ oil seal

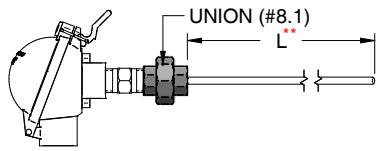


MOST COMMON

** L is the overall length of the sensor to the fixed attaching device. Page 1-1, selection #7 for T/Cs or 3-1, selection #6 for RTDs.

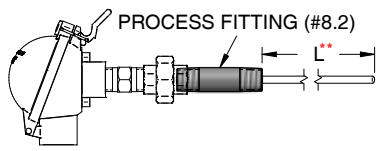
#8.1	UNION
U	Union
O	Coupling
X	Other, specify

Note: Thread adapters may be used when symbol #9 is not 1/2" NPT.

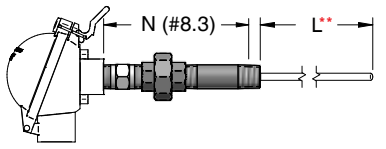


#8.2	PROCESS FITTING (MALE)
N	Nipple
X	Other, specify
Z	N/A (female thread)

Note: Thread adapters may be used when symbol #9 is not 1/2" NPT.



#8.3	N LENGTH
__" Z	Specify (Inches)*
	N/A (female thread)



* ONLY for configurations with nipples (option N for selection #8 or #8.2) ALL other configurations have fixed lengths and this selection is not applicable.

#8.4	UNION and/or NIPPLE MATERIAL		
H	304 stainless steel	X	Other, specify
K	316 stainless steel		
C	Black steel		
G	Galvanized steel		

#8.5	UNION PRESSURE RATING	
1	#150 - A351 spec (Standard)	ASTM
2	#3000 - A182 spec	
3	#6000 - A182 spec	
X	Other, specify	

S	U	N	6"	H	1

Continue on to the "PROCESS NPT" selection to finish creating your sensor part number. Selection #9 on page 1-2 (thermocouples) and 3-2 (RTDs).

ADDITIONAL TERMINATIONS

COLD END TERMINATION [SEE SECTION 6] Choose as many as applicable (JMS part number prefixes are shown in parenthesis)

Connectors

	Plugs		Jacks
B	Miniature plug (6A1B)	D	Miniature jack (6A1D)
BH	Miniature high temperature plug (6A2B) <800°F	DH	Miniature high temperature jack (6A2D) <800°F
C	Standard plug (6A1C)	E	Standard jack (6A1E)
F	Standard high temperature plug (6A2C) <800˚F	G	Standard high temperature jack (6A2E) <800˚F
WM	Microphone style plug (6DA)	WF	Microphone style jack (6DA)
WA	Solid pin plug, heavy duty (6A3C)	WB	Solid pin jack, heavy duty (6A3E)
WC	Jab in plug (6A4C)	WD	Jab in jack (6A4E)
WE	Ultra high temperature plug, glazed (6A5C) <1200°F	WG	Ultra high temperature jack, glazed (6A5E) <1200°F
WH	Ultra high temperature plug, unglazed (6A7C) <1200°F	WI	Ultra high temperature jack, unglazed (6A7E) <1200°F
WJ	Low noise plug (6A6C) <425°F	WK	Low noise jack (6A6E) <425°F
WL	DIN-IEC microphone plug (6DB)	WN	DIN-IEC microphone style jack (6DB)
V	Molded/water resistant plug (6DC)	VF	Molded/water resistant jack (6DC)
Y	M12 Male connector (6DY)	YF	M12 Female connector (6DY)
WQ	Miniature locking plug (6A8B2)	WR	Miniature locking jack (6AIDL2)
WS	Standard plug, locking (6A8C2)	WT	Standard jack, locking (6A8E2)

Heads

[6–1] Visit *www.JMS-SE.com/headspecs*

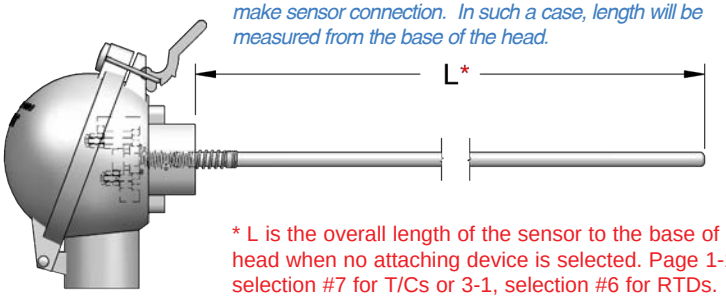
Explosion Proof

I	Aluminum, NEMA 4X, FM, CSA, IP68 (6IA)
J	316 stainless steel, NEMA 4X, FM, CSA, IP68 (6ISS)
P	Aluminum, NEMA 4X, FM, CSA, ATEX, IECEx, IP68 (6IAIEC)
U	316 stainless steel, NEMA 4X, ATEX, IP68 (6ISSATEX)
SI	Cast Iron, NEMA 3, 4, UL, CSA (6I)
GA	Aluminum, screw cover w/ indicating window, NEMA 4X, ATEX, IECEx, FM, CSA, IP68 (688A1)
GS	316SS, screw cover w/ indicating window, NEMA 4X, ATEX, IECEx, FM, CSA, IP68 (688S1)

General Purpose

L	Aluminum w/ hinged cover (6L)
M	Aluminum w/ screw cover & chain (6M)
R	Aluminum w/ hinged high dome cover (6R)
N	Cast Iron w/ screw cover (6N)
Q	Black plastic (6Q)
SS	316 stainless steel w/ screw cover & chain (6SS)
WP	White plastic, screw cover, Sanitary (6WP)
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, < 350F (6T)
SU	Molded plastic, mini head, 1/4" NPT, < 800F (6U)

Some applications may have pre-existing threaded pipes or protection tubes where no attaching device is needed to make sensor connection. In such a case, length will be measured from the base of the head.



* L is the overall length of the sensor to the base of the head when no attaching device is selected. Page 1-1, selection #7 for T/Cs or 3-1, selection #6 for RTDs.

Transmitters [8-1 to 8-3]

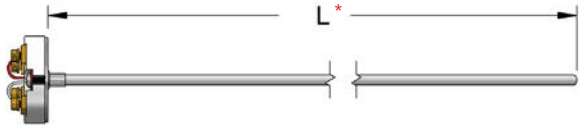
Notes:
- Add span range after transmitter selection. Example: 8H(0-200C).
- Transmitter output = 4 - 20 mA. (See section 8 for other options).

8H	Isolated transmitter
8N	Non-isolated transmitter
8I	Hart Protocol
8E	Intrinsically safe
8D	Hart/Intrinsically safe
8M	Integral transmitter (see page 3-5) RTDs ONLY

8PA	Explosion proof, IP66/IP68, NEMA 4X, ATEX/IECEx, FM/CSA, Aluminum, threaded cap with glass viewing window, touch programmable [8-2]
8PS	Explosion proof, IP66/IP68, NEMA 4X, ATEX/IECEx, FM/CSA, 316 SS, threaded cap with glass viewing window, touch programmable [8-2]

Other

A	Bare ends
K	Spade lugs (6SL)
RL	Ring lugs (6RL)
O	Open ceramic terminal block, brass screw terminal (6B)
OA	Open Bakelite terminal block, nickel plated screw terminal (6BB)
OB	Open ceramic terminal block for sensors with bayonet style connection, brass screw terminal (6B or 6C)
OG	Ceramic terminal block, brass screw terminal (6G)
OP	Pluggable polymide terminal block, nickel plated screw terminal (6PT)
OS	Open ceramic terminal block, nickel plated solder terminal (6C)
CG	Cord connector/grip, aluminum 1/2" NPT (6CC)
TB	Conduit bushing, ¾" NPT male X ½" NPT female, plated steel (6IRB)
X	Other, specify



* L is the overall length of the sensor to the base of the terminal block mounting plate when open terminal block cold end termination is selected without a fixed attaching device. Page 1-1, selection #7 for T/Cs or 3-1, selection #6 for RTDs.