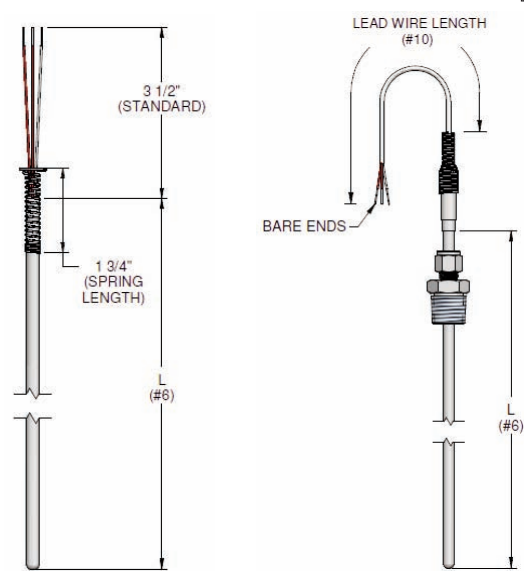


RESISTANCE TEMPERATURE DEVICES (RTDS)

| | | | | | | | |
|---|---|---|--|---|-------------------------------|--|--|
| #1 | DESCRIPTION | | | | | | |
| 3 | RTD | | | | | | |
| #2 | ELEMENT TYPE [4, 9, 10, 11, 15, 18, 22] Platinum 0.00385 alpha ($\Omega/\Omega/^\circ\text{C}$) | | | | | | |
| | Resistor Accuracy at 0°C | Thermometer Class [page 3-18] | Resistor Class [page 3-18] | Note: Wound or film resistors may be used. * For compliant results, use 4 wire RTD for high accuracy (types P & S). | | | |
| B | ± 0.3°C (Competitor's Std) | B | ≥ F 0.30 | | | | |
| E | ± 0.15°C (JMS Standard) | A | ≥ F 0.15 | | | | |
| P* | ± 0.06°C | AA | ≥ 1/2 F 0.10 | | | | |
| S* | ± 0.03°C (Best Accuracy) | 1/4 AA | ≥ 1/10 F 0.10 | | | | |
| X | Other, specify [3-22] | -- | -- | | | | |
| #3 | ELEMENT CONSTRUCTION [4] [3-11] | | | | | | |
| S | Single | Standard construction | Note: Use swaged for high temperature, bendability, high vibration and/or longer than 6 ft. | | | | |
| D | Dual | Standard construction | | | | | |
| J | Single | Swaged construction | | | | | |
| K | Dual | Swaged construction | | | | | |
| X | Other, specify | | | | | | |
| #4 | TUBE DIAMETER - MUST CHOOSE 1 | | | TIP CONSTRUCTION - MUST CHOOSE 1 [5-30] [1-13] | | | |
| P | 1/2" (.500") | D | 1/8" (.125") | N | Normal, closed tip (Standard) | | |
| A | 3/8" (.375") | X | Other, specify | K* | Pointed tip [4-9] | | |
| Y | 5/16" (.312") | Z | N/A | M* | Weld pad [1-1] | | |
| B | 1/4" (.250") | | | O* | Weld pad, removable [4-15] | | |
| R | 6mm (.236") | | | R* | Gas/Air, exposed [3-2] | | |
| C | 3/16" (.188") | | | W* | Enlarged tip [3-2] | | |
| | | | | Y* | Reduced tip [4-1] | | |
| | | * When selecting these options, a description must be provided. See 4-15 for example of removable weld pad. | | | | | |
| #5 | TUBE MATERIAL [11, 12] | | | | | | |
| K | 316 Stainless Steel | | | C | Teflon Coated, SS | | |
| L | 316 LSS | | | S | Titanium | | |
| M | I-600 (Use if symbol #7 >500°F) | | | X | Other, specify | | |
| #6 | LENGTH (L) (See sketches on Pg. 3-1 and 3-2 for L") | | | | | | |
| " | Immersion length in inches | | | | | | |
| #7 | MAX. TEMPERATURE AT WHICH TIP WILL BE EXPOSED | | | | | | |
| A | Cryogenic (-196°C to 0°C) | | | | | | |
| B* | <200°C (392°F) | | | =3 Teflon | | | |
| C* | <285°C (550°F) | | | =5 Kapton | | | |
| D* | <350°C (662°F) | | | =1 Fiberglass | | | |
| E* | <660°C (1220°F) | | | | | | |
| | | | | * If no transition (Z) is in symbol 13, we recommend these corresponding selections for primary wire insulation in symbol 10. | | | |
| #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 | | |

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



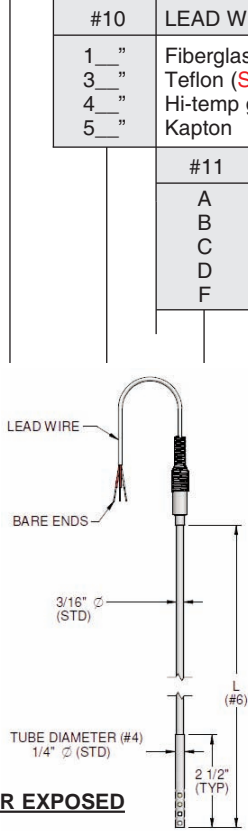
Note: L is the overall length of the sensor to the transition, wire or plug. This includes non-fixed attaching devices.

| | | | | | | | |
|---|---|---|----|---|-----|---|---|
| 3 | E | S | BN | K | 12" | B | W |
|---|---|---|----|---|-----|---|---|

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

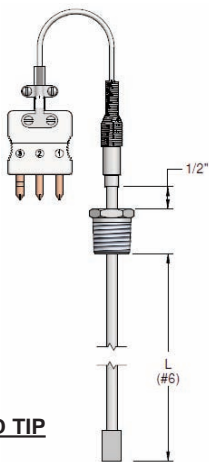
RESISTANCE TEMPERATURE DEVICES (RTDS)

| | | | |
|--|--|--|--|
| #9 | PROCESS NPT / CUSTOM EXTENSION ASSEMBLY [1-3] | | |
| L | 1/8" | | |
| M | 1/4" | | |
| P | 1/2" (Standard w/ symbols W, S, & C above) | | |
| O | 3/4" | | |
| X | Other, specify* *To add a custom extension assembly, select "X" and specify. (Ex: NUN5G1) | | |
| Z | N/A | | |
| #10 | LEAD WIRE TYPE & LENGTH IN INCHES [SEE SECTION 7] | | |
| 1 _ " | Fiberglass braid | X _ " | Other, specify |
| 3 _ " | Teflon (Standard) | Z | N/A |
| 4 _ " | Hi-temp glass braid | | |
| 5 _ " | Kapton | | |
| Note: All wire in tubes > 1/8" OD will be 24 AWG. Smaller tubes will have a max. of 28 AWG. If no transition or armor is specified, wire may be fragile. JMS standard lead wire for RTDs is stranded plated copper. | | | |
| #11 | ARMOR OR HEAT SHRINK / JACKET [7-7] | | |
| A | 3/16" ID SS flex armor (Standard) | G | Heat shrink / sleeving |
| B | 3/16" ID SS flex armor teflon coated white | H | Jacket to match primary insulation |
| C | 3/16" ID SS flex armor teflon coated black | J | Alum mylar shielded and jacketed to match primary insulation |
| D | 1/8" ID SS flex armor | Z | N/A |
| F | SS overbraid | X | Other, specify |
| #12 | WIRE CONFIGURATION [17, 18] | | |
| T | 2 Wire | | |
| Y | 3 Wire | | |
| W | 4 Wire | | |
| Note: Use a double symbol for 2 separate lead wires if dual elements. For example, TT. | | | |
| #13 | TYPE OF TRANSITION [14] | | |
| H | Heat shrink | Z | No transition |
| S | Size on size | | |
| T | 3/8" OD | | |
| R | 1/4" OD | | |
| Q | Cuttable (See full catalog) | | |
| Y | M12 | | |
| X | Other, specify | | |
| 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 to 1200°F) put a "3" after your selection. For example, T3. | | | |
| #14 | 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 | I | Aluminum, NEMA 4X, FM, CSA (6IA/6B4) |
| C | Standard plug | J | 316 stainless steel, NEMA 4X, FM, CSA (6ISS/6B4) |
| F | High temp plug (< 800°F) | 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 | Exp. Proof | |
| E | Standard jack | | |
| G | High temp jack (< 800°F) | Gen. Purpose | |
| WF* | Microphone style jack (6DA) | | |
| V | Hermetic plug (6DC) | L | Aluminum w/ hinged cover (6L / 6B4) |
| Y | M12 watertight plug | M | Aluminum w/ screw cover & chain (6M / 6B4) |
| | | N | Cast iron w/ screw cover (6N / 6B4) |
| | | Q | Black nylon, NEMA 4 (6Q / 6B4) |
| | | R | Aluminum high dome w/hinged cover (6R / 6B4) |
| | | SS | 316 stainless steel w/ screw cover & chain (6SS / 6B4) |
| * Use double symbol here for matching female connector. (Ex. B/BB male with matching female). | | | |
| Transmitters | | Other | |
| 8H | Isolated transmitter | A | Bare Ends |
| 8N | Non isolated transmitter | K | Spade Lugs (6SL) |
| 8I | Hart Protocol | O | Open terminal block (6B4) |
| 8E | Intrinsically Safe | X | Other, specify |
| 8D | Hart / Intrinsically Safe | | |
| 8M | Integral transmitter (see 3-5) | | |
| Note: Add span range after transmitter selection. For ex: 8H(0-200C). | | | |
| #15 | OPTIONS USE ONLY IF APPLICABLE [INTRODUCTION] | | |
| 1* | Stainless steel tag | 6** | Premium calibration report. |
| 2* | Plastic tag | Corrections data will be provided for all. | |
| 3* | Paper tag | 7 | CE Marking [PAGE XV] |
| 4* | Laser etch on probe | 8 | Guide 17025 calibration |
| 5 | Calibrate at specified point(s). Corrections data provided for each point. | 9 | Bar Code |
| | | M | MTR |



GAS/AIR EXPOSED
#4 (R)

Note: Immersion shown (#6) is overall length of tube for gas air sensors.



ENLARGED TIP
#4 (W)

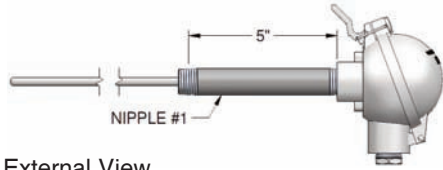
Note: L is the length of the sensor to the fixed attaching device.

| | | | | | | |
|---|-------|---|---|---|---|---|
| P | 3-36" | A | Y | T | A | 1 |
|---|-------|---|---|---|---|---|

* Always specify info required on tag.

** You must specify increments & range. (Ex. 0 - 300°F, 0.1° increments)

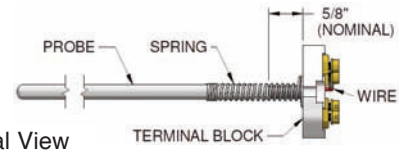
NIPPLE-UNION-NIPPLE EXTENSION ASSEMBLIES



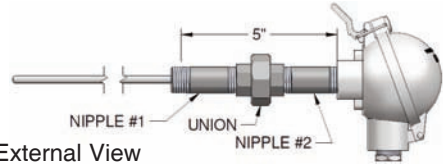
External View

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

Spring loaded against terminal block

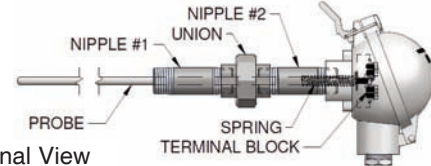


Internal View

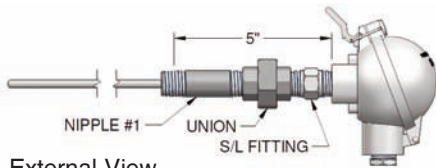


External View

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

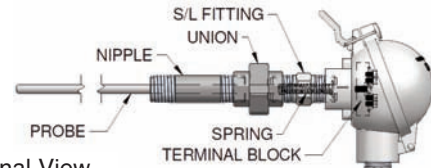


Internal View

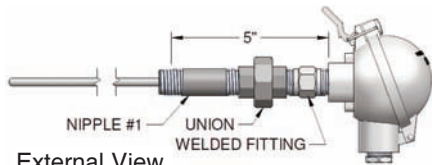


External View

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

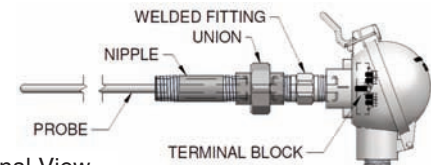


Internal View



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> | |