

RESISTANCE TEMPERATURE DEVICES (RTDS)

#1	DESCRIPTION				
3	RTD				
#2	ELEMENT TYPE [3-4, 9, 10, 11, 15, 18, 22, 24]		100 Ω Platinum 0.00385 alpha (Ω/Ω°C) unless otherwise stated		
B	Resistor Accuracy at 0°C		Thermometer Class [pg. 3-18]	Resistor Class [pg. 3-18]	Note: Wound or film resistors may be used. * For compliant results, use 4 wire RTD for high accuracy (types P & S).
E	± 0.30°C (Competitor's Std)		B	≥ F 0.3	
P*	± 0.15°C (Standard)		A	≥ F 0.15	
S*	± 0.06°C		AA	≥ 1/2 F 0.1	
N	± 0.03°C (Best Accuracy)		1/4 A	≥ 1/10 W 0.3	
M	± 0.74°C (120 Ω Nickel α=0.00672)		Non-Standard	Non-Standard	
X	± 0.30°C (1000 Ω)		B	≥ F 0.3	
X	Other, specify [3-22]		--	--	
#3	ELEMENT CONSTRUCTION [4]				
S	Single	Standard construction	SV	Single	High vibration construction
D	Dual	Standard construction	DV	Dual	High vibration construction
J	Single	Swaged construction			
K	Dual	Swaged construction			
X	Other, specify		Note: Use swaged for high temperature, bendability, and/or longer than 90".		
#4	TUBE DIAMETER	MUST CHOOSE 1	TIP CONSTRUCTION [1-13]		MUST CHOOSE 1
P	1/2" (.500")	D	1/8" (.125")	N	Normal, closed tip (Standard)
A	3/8" (.375")	X	Other, specify	K	Pointed tip, 45°
Y	5/16" (.313")	Z	N/A	M	Weld pad
B	1/4" (.250")			O	Weld pad, removable
R	6mm (.236")			R2	Gas/Air, exposed
C	3/16" (.188")			W*	Enlarged tip
				Y2	Reduced tip
				X	Other specify

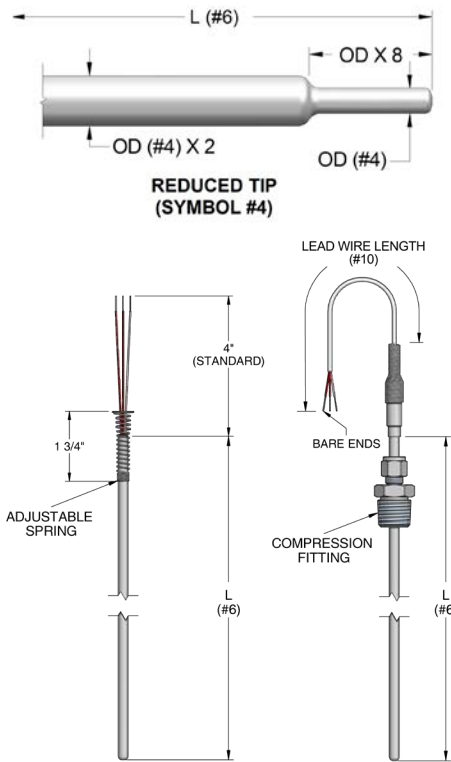
[] Brackets indicate page numbers where additional helpful information can be found in our technical catalog. Now available online at www.JMS-SE.com/TechnicalCatalog

#5	TUBE MATERIAL [3-11, 3-13]				
K	316 stainless steel		C	Teflon coated, stainless steel	
L	316L stainless steel		S	Titanium	
M	I-600 (Use if symbol #7 >500°F)		Q	Hastelloy C-276	
X	Other, specify				

#6	LENGTH (L) (See illustrations on pages 3-1 and 3-2 for "L" dimension)				
"	Immersion length in inches (lengths greater than 90" may be coiled for shipment)				

#7	MAX TEMPERATURE AT WHICH TIP WILL BE EXPOSED				
A	<0°C (32°F) Cryogenic = 5 Kapton				
B	<200°C (392°F) = 3 Teflon*				
C	<288°C (550°F) = 5 Kapton*				
D	<350°C (662°F) = 1 Fiberglass*				
E	<660°C (1220°F) = 4 High temperature fiberglass*				
*If no transition (Z) is in symbol 13, we recommend these corresponding selections for primary wire insulation on hollow tube sensors.					

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



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.

#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				

OR → S { U N 6" H 1 }
SEE PAGE 1-3

RESISTANCE TEMPERATURE DEVICES (RTDS)

#9	PROCESS CONNECTION SIZE & TYPE [3]		
L	1/8" NPT	O	3/4" NPT
M	1/4" NPT	X	Other, specify
A	3/8" NPT	Z	N/A
P	1/2" NPT (Standard)		

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

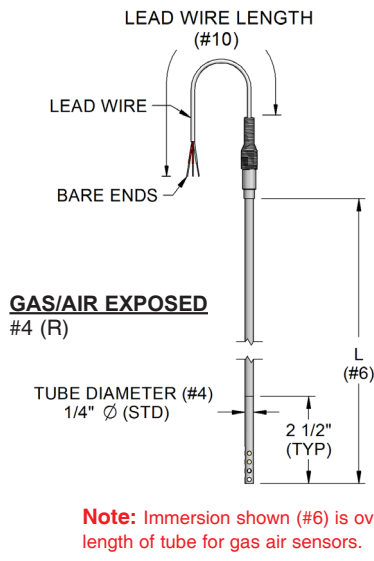
#10	LEAD WIRE TYPE & LENGTH IN INCHES [see section 7]		
1"	Fiberglass braid	X"	Other, specify
3"	Teflon (Standard)	Z"	N/A
4"	High temperature fiberglass braid		
5"	Kapton (Standard for Cryogenic)		

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.

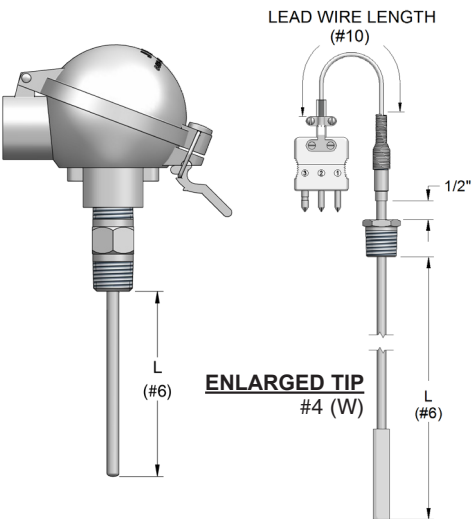
#11	ARMOR OR HEAT SHRINK/JACKET [7-7]		
A	SS flex armor (Standard)	G	Heat shrink/sleeving
B	SS flex armor Teflon coated white	H	Jacket to match primary insulation
C	SS flex armor Teflon coated black	J	Aluminum Mylar shielded and jacketed to match primary insulation
D	1/8" ID SS flex armor	Z	N/A
F	SS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

#12	WIRE CONFIGURATION [17, 18]		
T	2 Wire	Note: Use a double symbol for 2 separate multiconductor lead wires, if dual elements. For example, TT.	
Y	3 Wire		
W	4 Wire		

#13	TYPE OF TRANSITION [14]		
H	Heat shrink	Note: For high humidity/moisture environments (≤ 500°F), put a 2 after your selection. For example, R2.	
S	Size on size		
T	3/8" OD or larger	Note: For high temperatures at the transition area (500°F to 1200°F), put a 3 after your selection. For example, T3.	
R	1/4" OD		
Q	Cuttable (Std construction only) [3-12]		
X	Other, specify		
Z	No transition		



#14	COLD END TERMINATION [Additional options see Pg 1-7] Choose all that apply				
Connectors		Heads [6-1] Visit www.JMS-SE.com/headspecs			
B	Miniature plug	Exp. Proof	I	Aluminum, NEMA 4X, FM, CSA, IP68 (6IA)	
C	Standard plug		J	316 SS, NEMA 4X, FM, CSA, IP68 (6ISS)	
F	High temp plug (< 800°F)		P	Aluminum, NEMA 4X, FM, CSA, ATEX, IECEX, IP68 (6IAIEC)	
WM	Microphone style plug		U	316 SS, NEMA 4X, FM, ATEX, IECEX, IP68 (6ISSATEX)	
D	Miniature jack		Gen. Purpose	L	Aluminum w/ hinged cover (6L)
E	Standard jack			M	Aluminum w/ screw cover & chain (6M)
G	High temp jack (< 800°F)	N		Cast Iron w/ screw cover (6N)	
WF	Microphone style jack	Q		Black plastic (6Q)	
V	Water resistant plug	R		Aluminum high dome w/ hinged cover (6R)	
Y	M12 Water resistant plug	SS	316 SS w/ screw cover & chain (6SS)		



Transmitters		Transmitter & Housing [See Pg. 8-2]	
8H	Isolated transmitter	8PS	Indicating with SS housing
8N	Non-isolated transmitter	8PA	Indicating with aluminum housing
8I	Hart Protocol	Other	
8E	Intrinsically safe	A	Bare ends
8D	HART / Intrinsically safe	X	Other, specify
8M	Integral transmitter (see page 3-5)		

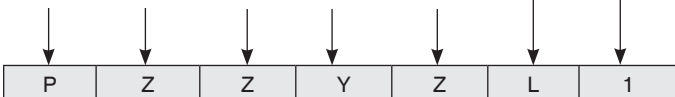
Note: Add span range after transmitter selection. Example: 8H(0-200C).

#15	OPTIONS (Use only if applicable)		
1	Stainless steel tag	6C*	Premium calibration report.
2	Plastic tag		Callendar-Van Dusen coefficients will be provided for all
3	Paper tag		CE marking [page XV]
4	Laser etch on probe	7	Guide 17025 calibration
5	Calibrate at specified point(s)	8	MTR (Sheath, tubing, tip)
	Corrections data provided for each point.	M	Calibration tag
6*	Premium calibration report. Corrections data will be provided for all	T	

*Must specify increments & range (Example: 0 to 300°F, 10° increments)

COMPLETE PART NUMBER EXAMPLES

-with nipple-union-spring-loaded fitting extension assembly:
3ESBNK12"BS[UN6H1]PZZYZL1
 -without extension assembly:
3ESBNK12"BSPZZYZL1



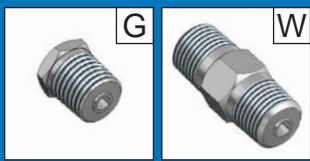
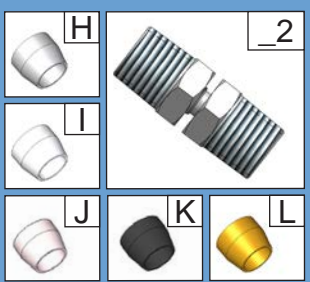
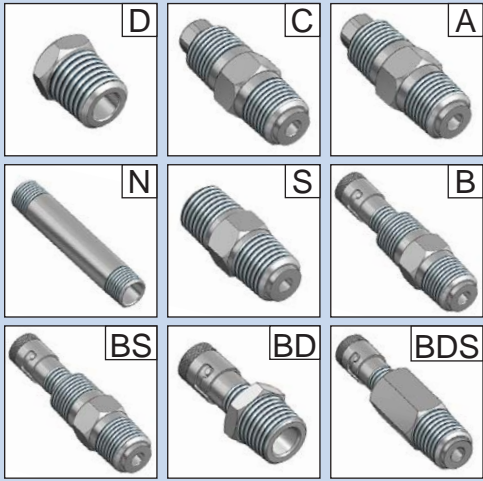
CUSTOM NIPPLE/UNION EXTENSION CONFIGURATOR

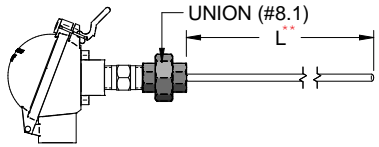
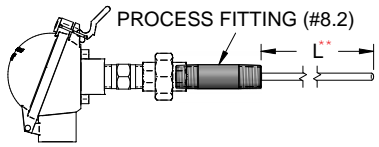
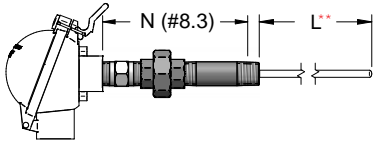
An extension assembly provides extra length extending the sensor head past insulation and away from heat. Standard unions are 1/2" FNPT on both ends. The union joins two nipples in an extension assembly and has a standard pressure rating of 150 PSIG.

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.

		#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			

#8.1	UNION	
U	Union	
O X	Coupling Other, specify	
Note: Thread adapters may be used when symbol #9 is not 1/2" NPT.		
#8.2	PROCESS FITTING (MALE)	
N	Nipple	
X Z	Other, specify N/A (female thread)	
Note: Thread adapters may be used when symbol #9 is not 1/2" NPT.		
#8.3	N LENGTH	
"	Specify (Inches)*	
Z	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
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 }

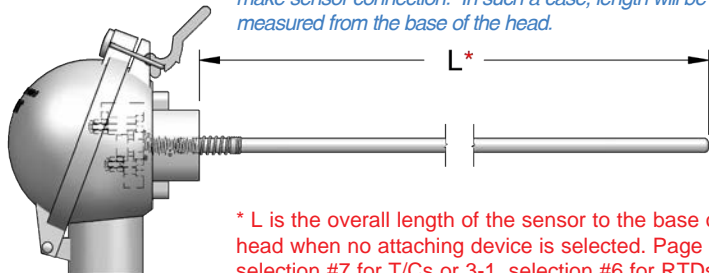
Continue on to the "PROCESS NPT" selection to finish creating your sensor part number. Selection #9 on page 1-2 (thermocouples) and 3-2 (RTDs).

ADDITIONAL TERMINATIONS

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

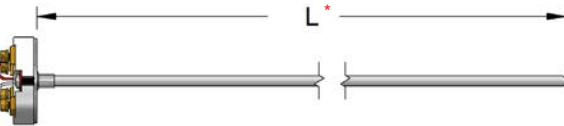
Connectors	
<p style="text-align: center;">Plugs</p> <p>B Miniature plug (6A1B) BH Miniature high temperature plug (6A2B) <800°F C Standard plug (6A1C) F Standard high temperature plug (6A2C) <800°F WM Microphone style plug (6DA) WA Solid pin plug, heavy duty (6A3C) WC Jab in plug (6A4C) WE Ultra high temperature plug, glazed (6A5C) <1200°F WH Ultra high temperature plug, unglazed (6A7C) <1200°F WJ Low noise plug (6A6C) <425°F WL DIN-IEC microphone plug (6DB) V Molded/water resistant plug (6DC) Y M12 Male connector (6DY) WQ Miniature locking plug (6A8B2) WS Standard plug, locking (6A8C2)</p>	<p style="text-align: center;">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 temperature jack, glazed (6A5E) <1200°F WI Ultra high temperature jack, unglazed (6A7E) <1200°F WK Low noise jack (6A6E) <425°F WN DIN-IEC microphone style jack (6DB) VF Molded/water resistant jack (6DC) YF M12 Female connector (6DY) WR Miniature locking jack (6A1DL2) WT Standard jack, locking (6A8E2)</p>

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

<p style="text-align: center;">Explosion Proof</p> <p>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)</p> <p style="text-align: center;">General Purpose</p> <p>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)</p>	<p style="text-align: center;"><i>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.</i></p>  <p style="color: red;">* 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.</p>
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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	8PA	Explosion proof, IP66/IP68, NEMA 4X, ATEX/IECEx, FM/CSA, Aluminum, threaded cap with glass viewing window, touch programmable [8-2]
8N	Non-isolated transmitter		
8I	Hart Protocol	8PS	Explosion proof, IP66/IP68, NEMA 4X, ATEX/IECEx, FM/CSA, 316 SS, threaded cap with glass viewing window, touch programmable [8-2]
8E	Intrinsically safe		
8D	Hart/Intrinsically safe		
8M	Integral transmitter (see page 3-5)		RTDs ONLY

Other	
<p>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 polyimide 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, 3/4" NPT male X 1/2" NPT female, plated steel (6IRB) X Other, specify</p>	 <p style="color: red;">* 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.</p>

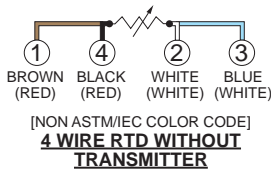
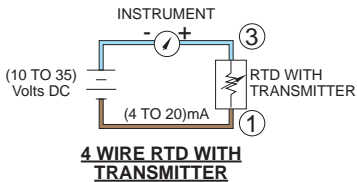
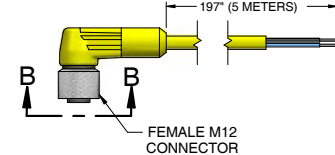
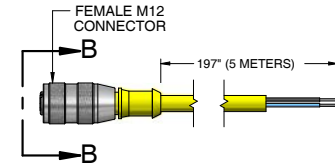
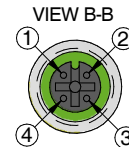
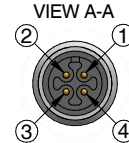
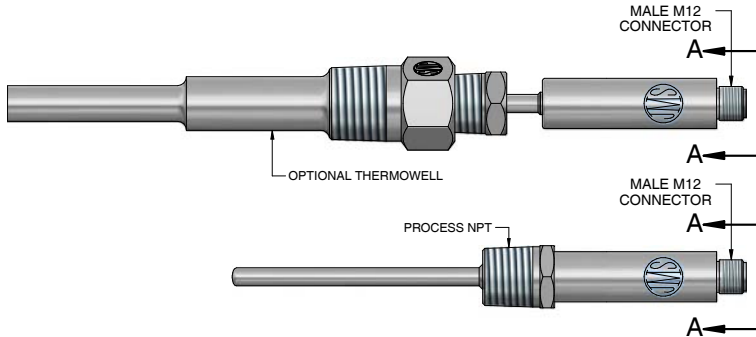
RTD WITH INTEGRAL PC PROGRAMMABLE TRANSMITTER

RTD with 4-20 mA INTEGRAL OUTPUT (RTD *in*, 4-20 mA *out*)

INDUSTRIAL STYLE INTEGRAL TRANSMITTER (Transmitter option see page 3-2, #14, 8M)

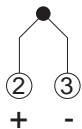
FEATURES:

- PC programmable
- Carry a 4-20 mA to your PLC directly from the RTD with no special equipment.
- Available in fixed immersion and spring loaded for thermowells!!
- Quick-n-Clean M12 connection for easy replacement.
- NEMA 6P (IP67) rated with M12 connector.
- Ideal for most applications from -60 to 320°F.
- Ambient temperature limits -40 to 185°F.

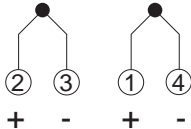


JMS PART #	DESCRIPTION
6SKWT*	M12 CORDSET, 4 POLE, FEMALE, STRAIGHT, IP67, 197" (5 METER) LENGTH
6RKWT*	M12 CORDSET, 4 POLE, FEMALE, RIGHT ANGLE, IP67, 197" (5 METER) LENGTH

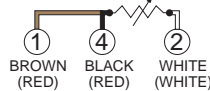
*Add an X to the end of the part # to specify a custom cord length.



SINGLE TC WITHOUT TRANSMITTER



DUAL TC WITHOUT TRANSMITTER



[NON ASTM/IEC COLOR CODE]
3 WIRE RTD WITHOUT TRANSMITTER