

3-A APPROVED SANITARY SENSORS

CIP (Clean-In-Place) line of 3-A certified sanitary thermocouples and RTDs from JMS are specially designed to meet the needs of the food, dairy, beverage, pharmaceutical, chemical and cosmetic industries. They are ideally suited for a number of applications where corrosion and contamination are factors. They are fabricated from stainless steel or other 3-A approved material using a method assuring imperfection-free surfaces. All sanitary grade thermocouples are provided to special limits of error. All sanitary RTDs are available in 4 wire construction.

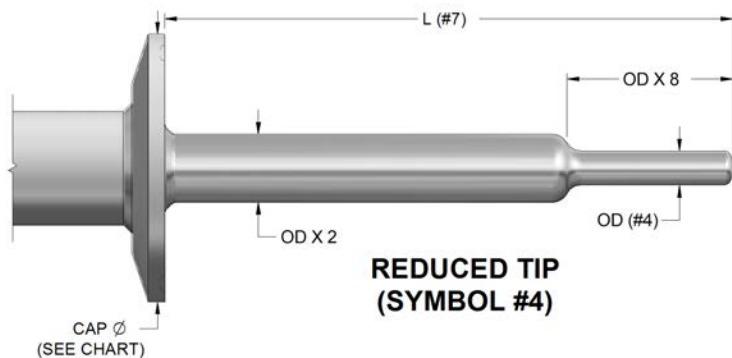
Direct Immersion sanitary sensors incorporate sanitary caps manufactured per the ASME BPE standard. Removeable sensors for sanitary applications typically incorporate spring loaded fittings and are assembled with sanitary thermowells. Wetted materials are polished to a #4 finish to assure that there are no pits, folds or crevices. The exterior nipple, also stainless steel, can be joined to a connection head, designed to withstand caustic washdown. A typical RTD or Thermocouple (see pages 1-1 and 3-1) may be used with a sanitary thermowell (see pages 4-3 through 4-6).



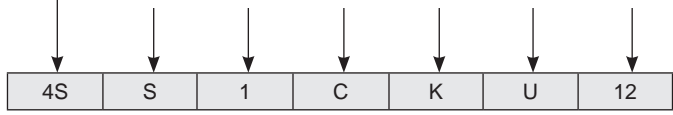
www.3-A.org

#1	DESCRIPTION																				
4S	Sanitary sensors																				
#2	RTD/THERMOCOUPLE TYPE (RTD-Platinum 0.00385 alpha ($\Omega/\Omega/^\circ\text{C}$). Resistor accuracies at 0°C below & [3-1,17,18])																				
B E P S X	<table border="0"> <tr> <td>RTD Options</td> <td rowspan="5">} Resistor accuracies at 0°C. Add 3 before selection for 3 wire RTD</td> <td>T</td> <td>Thermocouple Options</td> </tr> <tr> <td>4 wire $\pm 0.30^\circ\text{C}$</td> <td>K</td> <td>Copper/Constantan</td> </tr> <tr> <td>4 wire $\pm 0.15^\circ\text{C}$</td> <td>J</td> <td>Chromel/Alumel</td> </tr> <tr> <td>4 wire $\pm 0.06^\circ\text{C}$</td> <td>X</td> <td>Iron/Constantan</td> </tr> <tr> <td>4 wire $\pm 0.03^\circ\text{C}$ (JMS Standard)</td> <td></td> <td>Other, specify</td> </tr> <tr> <td>X</td> <td>Other, specify</td> <td></td> <td></td> </tr> </table>	RTD Options	} Resistor accuracies at 0°C. Add 3 before selection for 3 wire RTD	T	Thermocouple Options	4 wire $\pm 0.30^\circ\text{C}$	K	Copper/Constantan	4 wire $\pm 0.15^\circ\text{C}$	J	Chromel/Alumel	4 wire $\pm 0.06^\circ\text{C}$	X	Iron/Constantan	4 wire $\pm 0.03^\circ\text{C}$ (JMS Standard)		Other, specify	X	Other, specify		
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X	Other, specify																				
#3	ELEMENT CONSTRUCTION																				
1 2 X	Single Dual Other, specify																				
#4	OUTSIDE DIAMETER (OD)																				
A B C D	<table border="0"> <tr> <td>3/8"</td> <td>E</td> <td>1/16"</td> <td rowspan="4">Note: For a reduced tip, add R before selection. The shank OD will equal twice the tip OD. See illustration below. (Example RB steps down from 1/2" to 1/4" at the tip)</td> </tr> <tr> <td>1/4"</td> <td>X</td> <td>Other, specify</td> </tr> <tr> <td>3/16"</td> <td>Z</td> <td>NA</td> </tr> <tr> <td>1/8"</td> <td></td> <td></td> </tr> </table>	3/8"	E	1/16"	Note: For a reduced tip, add R before selection. The shank OD will equal twice the tip OD. See illustration below. (Example RB steps down from 1/2" to 1/4" at the tip)	1/4"	X	Other, specify	3/16"	Z	NA	1/8"									
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#5	TUBING MATERIAL																				
K L H I X	<table border="0"> <tr> <td>316 stainless steel</td> <td>S</td> <td>Titanium</td> </tr> <tr> <td>316 low carbon stainless steel (Standard)</td> <td></td> <td></td> </tr> <tr> <td>304 stainless steel</td> <td></td> <td></td> </tr> <tr> <td>304 low carbon stainless steel</td> <td></td> <td></td> </tr> <tr> <td>Other, specify</td> <td></td> <td></td> </tr> </table>	316 stainless steel	S	Titanium	316 low carbon stainless steel (Standard)			304 stainless steel			304 low carbon stainless steel			Other, specify							
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#6	MEASURING JUNCTION																				
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#7	IMMERSION LENGTH (L)																				
—"	Length in inches																				

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

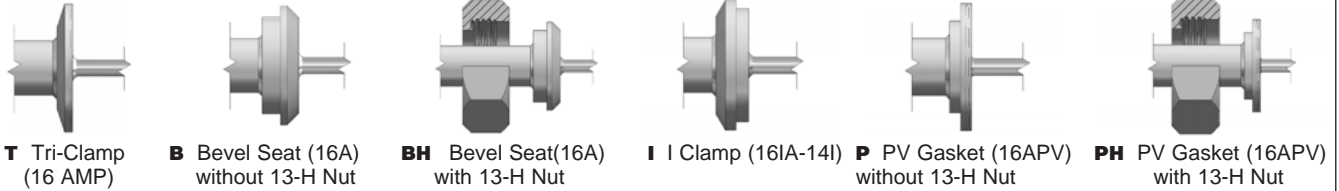


TRI-CLAMP (16 AMP) CAP SIZE CHART	
CAP SIZE (#9)	CAP Ø
1/2 or 3/4	.984"
1 or 1 1/2	1.984"
2	2.516"
2 1/2	3.047"
3	3.579"
4	4.682"
6	6.570"
8	8.563"
10	10.563"
12	12.563"



3-A APPROVED SANITARY SENSORS

#8	SANITARY CAP OPTIONS [SEE BELOW] Note: Standard sanitary thermowells can be found on page 4-4 and 4-5.		
T B*** BH*** I**	Tri-Clamp (16 AMP) Bevel seat (16 A) without 13-H nut Bevel seat with 13-H nut I Clamp (16AI-14I)	P PH A*** X*	PV Gasket (16APV) without 13-H nut PV Gasket with 13-H nut 3A4 Adapter Other, specify
			* When specifying X, ensure that it meets 3-A standard. ** Not 3-A authorized. *** Must be cleaned manually.



#9	CAP SIZE See Tri-Clamp Size Chart on page 4-1		
05	1/2 or 3/4	60	6
15	1 or 1 1/2	80	8
20	2	100	10
25	2 1/2	120	12
30	3	Z	N/A
40	4	X	Other, specify

Note: 05 Cap sizes (1/2 x 3/4) will use 1/4" NPT nipple. Not available for Bevel seat or I-Clamp



#10	POLISH (Wetted surfaces only)		
H	High polish #4 finish (≤ 32 microinches(µin)) (Standard)	F	Fine polish (≤ 20 microinches(µin))
E	Electropolish after #4 finish (≤ 32 microinches(µin))	V	Ultra polish 8G finish (≤ 8 microinches(µin))
P	Passivate after #4 finish (≤ 32 microinches(µin))	X	Other, specify

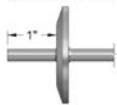
#11	LEAD WIRE TYPE AND LENGTH IN INCHES	MAX. TEMP. °C	MAX. TEMP. °C
Z	No lead wire (Teflon will insulate the wires in the head)	200°C	5" Kapton 288°C
1"	Fiberglass braid	350°C	9" Kapton & white teflon flex 200°C
3"	Teflon	200°C	X" Other, specify
7"	Teflon wire with white Teflon coated flex armor	200°C	

#12	TRANSITION TYPE		
H	Heat shrink	X	Other, specify
S	Size on size	Z	No transition
R	1/4" OD		
T	3/8" OD (Standard w/out head)		
N	Nipple (Standard w/ head)		
B	7/16" OD (Standard for high humidity)		

Note: For extra high humidity/moisture/washdown environments ≤ 500°F, please add a 2 suffix to your selection. Example: T2

Note: For high temperature at the transition area (>500°F) please add a 3 suffix to your selection. Example: T3

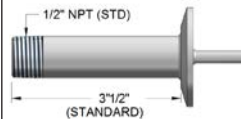
Z No Transition



B, T or R Transition, or M12 Direct Connect Transition



N Threaded Nipple



#13	COLD END TERMINATION Choose as many as applicable [Additional options see Pg 1-7]		
WP	White plastic head (3-A Standard)	AW	Bare ends, Teflon with nipple
A	Bare ends	SC	Capped socket connection [4-6]
P	Epoxy coated explosion proof rated cast Iron head w/ gasket	8H	Isolated transmitter
IA	Epoxy coated explosion proof rated aluminum head w/ chain	8M	Integral transmitter (see page 4-6 for details)
ISS	Explosion proof stainless steel head	8N	Non-isolated transmitter
SS	General purpose stainless steel head w/ screw cover	8PS	Indicating transmitter w/ SS housing
		8PA	Indicating transmitter w/ aluminum housing
		Y*	M12 watertight male connector
		X	Other, specify

* See page 4-6 for wiring diagram.

Note: For detailed specifications and ratings see JMS-SE.com/headspecs

#14	OPTIONS—USE ONLY IF APPLICABLE [INTRODUCTION]		
M	MTR (wetted parts)	6**	Premium calibration report
T	Calibration tag		Corrections data will be provided for all temperatures within the range.
1*	Stainless steel tag		
2*	Plastic tag	6C	Premium calibration report.
3*	Paper tag		Callendar-Van Dusen coefficients will be provided.(RTD only)
4*	Laser etch on probe	7	CE marking [page XV]
5	Calibrate at specified point(s). Corrections data will be provided for each point.	8	Guide 17025 calibration
		9*	Bar code on paper tag

* Must specify information required on tag/probe
** Must specify increments & range.(Example: 0 to 300°F, 10° increments)

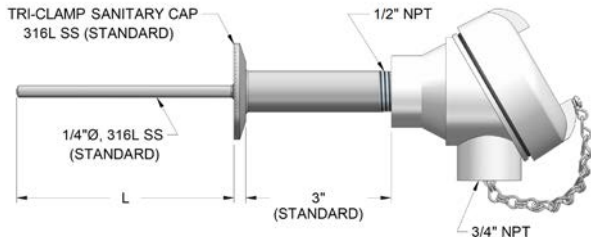
T	15	H	3-36"	T	WP
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Note: When specifying X, be sure to observe requirements and restrictions as imposed by the 3-A Sanitary standards for sensors and sensor fittings and connections, Number 74-03.

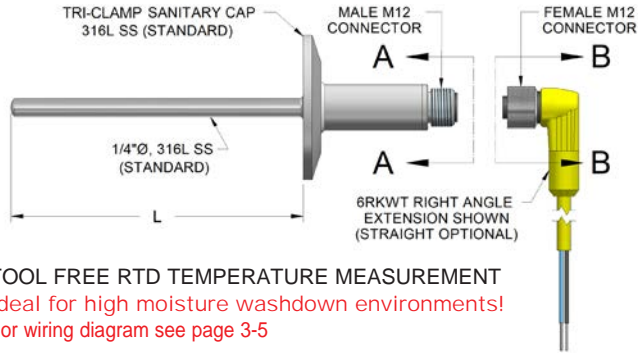
3-A APPROVED COMPLETE SENSORS

SANITARY CAP TYPICAL DESIGNS

TRI-CLAMP (16 AMP) (CAP OPTION "T")



3-A RTD with 4-20 mA INTEGRAL OUTPUT (RTD *in*, 4-20 mA *OUT*!!)



TOOL FREE RTD TEMPERATURE MEASUREMENT
Ideal for high moisture washdown environments!
For wiring diagram see page 3-5