

Sanitary TRI-CLOVER Contacting Conductivity Sensors



The K=3.0/cm cell constant sensor is shown to the left with 1.5" TRI-CLOVER flange. The middle and right sensors are both K=0.1/cm cell constants with the middle having a 1.5" TRI-CLOVER and the right having a ¾" TRI-CLOVER.

- FDA Compliant; Suitable for use in food, dairy, beverage and pharmaceutical applications
- Designed for insertion into Ladish or Tri-Clover fittings from ¾" up to 2½" in size
- Redundant O-ring seals used on all versions for high on-stream reliability
- Steam Sterilizable; Suitable for processes employing Chemical Clean in Place (CIP) sterilization
- The AST10, AST51 and AST40 sensors are welded to blind flanges of customer specified size, and can then be inserted into standard tee fittings in sanitary systems using fittings by Ladish or Alfa-Laval Tri-Clover.
- Available in cell constants from K=0.01/cm all the way up to K=10.0/cm and anywhere in between to support all possible measurements ranges of interest. Inquire to factory for best choice for your application.
- Wetted materials of construction are 316 stainless steel and Teflon or PEEK, with double redundant EPR O-ring seals (Viton optional). The process side O-ring is the only one in contact with the stream, allowing the back O-ring to maintain reliable sealing, free from chemical attack. TC elements are potted in the body itself.
- Cable length is 10 feet standard but extended lengths are available. Quick-disconnect waterproof and corrosion-resistant snap connections are available for ease of removal for cleaning and/or recalibration.
- Process connections are customer specified sanitary flanges. The insertion depth is tailored for each flange size to obtain proper positioning in the standard tee fittings of the given piping system. The sensor is amenable to both steam sterilization, or cleaning by solutions of bleach, ozone, or caustic.
- Available with braid-reinforced blue cable which is suitable for use with high pressure IP69K rated fittings.



ASTXX-TRI Sanitary Contacting Conductivity Sensors Specifications

Measurement Range:	Dependent Upon Cell Constant and Mating Transmitter Employed *
Operating Temperature:	-35 to +130 °C (-31 to +266 °F) with TEFLON insulator ** -35 to +205 °C (-31 to +401 °F) with PEEK insulator **
Operating Pressure:	Max 150 psig @ 130°C with TEFON INSULATOR Max 200 psig @ 205°C with PEEK INSULATOR
Process Connections:	Sanitary Flange from ¾” up to 2½” in size
Wetted Materials of Construction:	
Insulator:	TEFLON (PTFE) or PEEK Depending upon Cell Constant, FDA Compliant
O-Rings:	EPDM (Standard) or Viton (Optional), Redundant, FDA Compliant
Electrodes:	316SS Standard, Titanium available upon request as special order
Process Fitting:	316SS Standard, Titanium available upon request as special order
Temperature Element:	Standard with Pt1000 or Pt100 temperature sensor; Other TC elements such a Balco 3K resistor and 10K Thermistor are also available upon request
Cell Constants Available for Models	
AST10-TRI:	K = 0.01, 0.02, 0.05, 0.1, 1.0, 3.0, 10.0 /cm (TEFLON INSULATOR)
AST51-TRI:	K = 0.1, 1.0 /cm (TEFLON INSULATOR) – <i>Drawings for these upon request</i>
AST40-TRI:	K = 2.0, 5.0 /cm (PEEK INSULATOR)
Cable Length Limits:	Standard 10 feet (3 meters), Max is 100 feet (30 meters)
End of Cable Terminations:	Tinned Leads (-TL) or NEMA 6P rated waterproof and corrosion-resistant quick disconnect snap connector in 5-pole (Q5M/Q5F) or 4-pole (Q4M/Q4F) version
Storage and Shelf-Life:	One (1) year from date of dispatch from factory when stored at ambient.
Dimensional Details:	See Following Pages for drawing of each particular cell constant configuration.

The table below details the various critical dimensions for design and commissioning purposes. Inquire to factory for assistance.

Cell	DIMENSIONS		
Constant	"A"	"B"	DIA
0.01	1.97	5.25	0.50
0.02	1.97	5.25	0.50
0.05	0.80	2.65	0.50
0.1	0.30	2.65	0.50
1	0.30	2.65	0.50
2.0	0.30	3.00	0.75
3.0	2.17	4.90	0.50
5.0	3.00	4.0 to 7.0	0.75
10.0	5.20	9.20	0.50

NOTES FOR SANITARY SENSOR DIMENSIONS

"A" is distance from tip of sensor to center of vent hole

"B" is distance from tip of sensor to front of flange.

Custom insertion depths available as special order.

"DIA" is diameter of outer electrode shaft

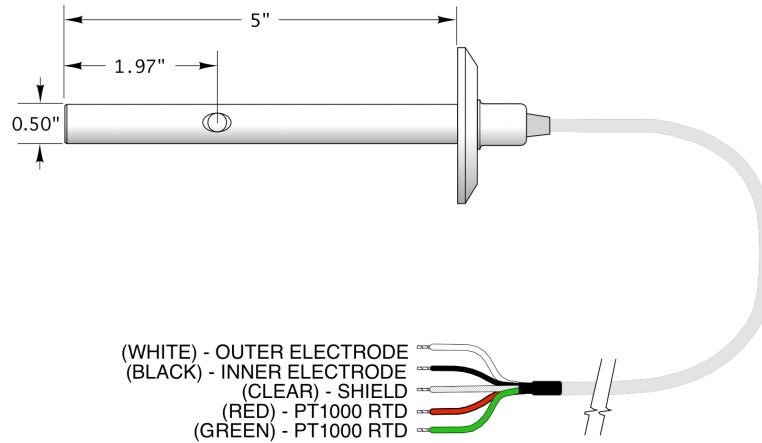
All dimensions are in inches

* Contact factory to confirm that your desired measurement range is suitable for the chosen cell constant & mating instrument.

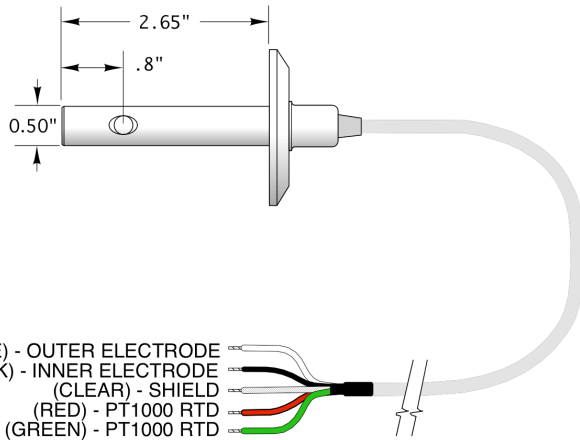
** Contact factory for applications where the measurement is below 0°C prior to specifying sensor for project or commissioning.

Dimension Details for Cell Constants 0.01, 0.02, 0.05, 0.1 & 1.0

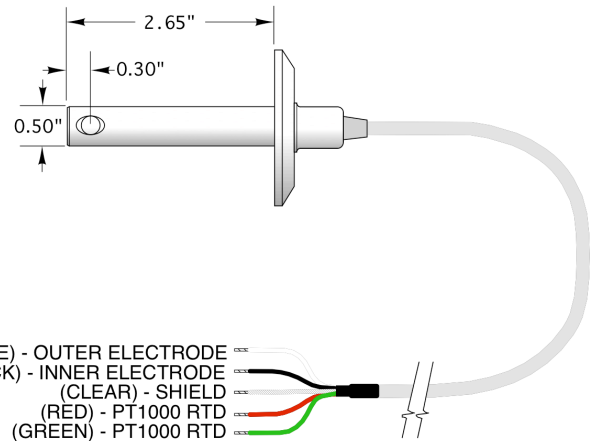
K=0.01/cm & K=0.02/cm Cell Constants



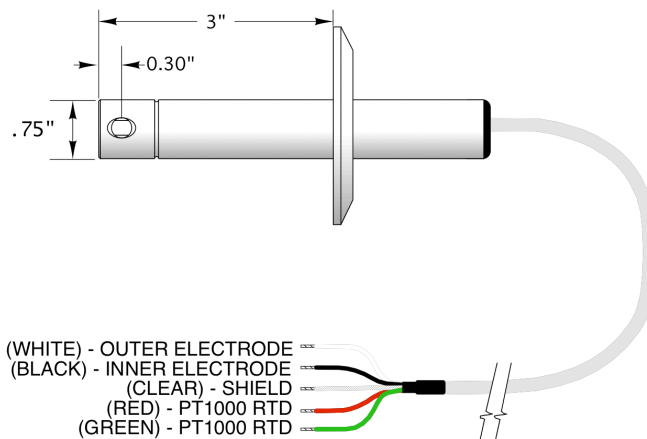
K=0.05/cm Cell Constant



K=0.1/cm & K=1.0/cm Cell Constants



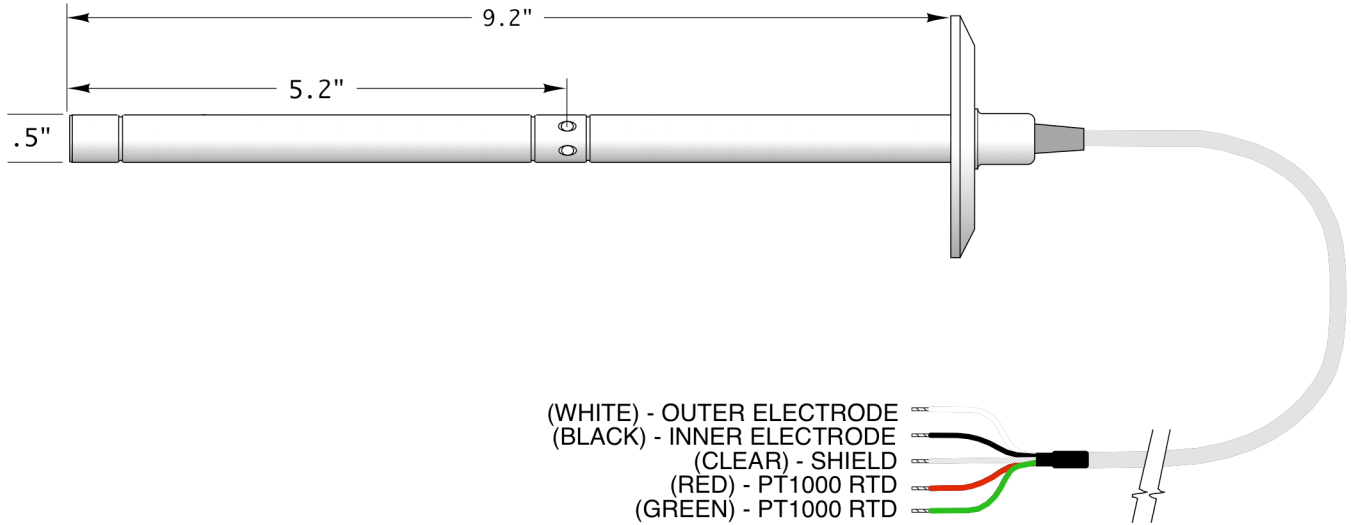
K=2.0/cm Cell Constant



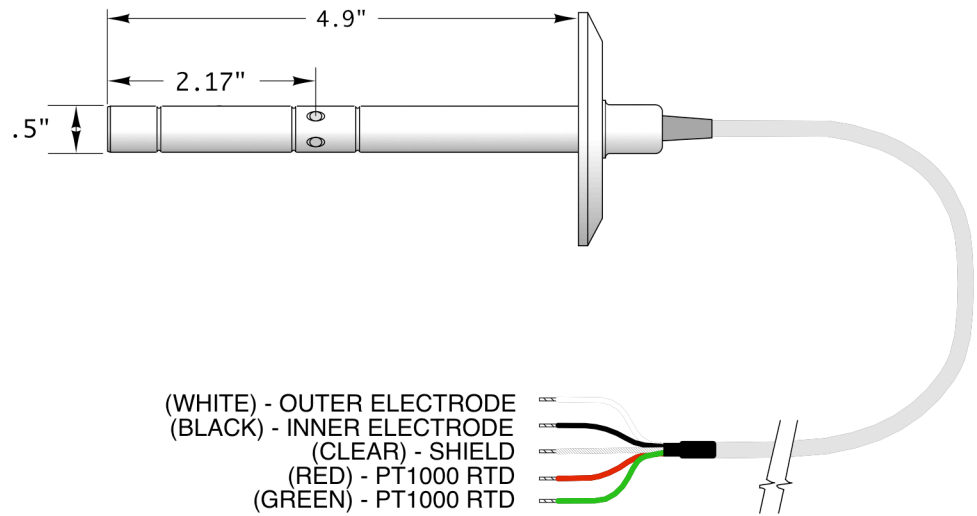
The flanges for the K=0.01/cm, K=0.02/cm, K=0.05/cm, K=0.1/cm & K=1.0/cm sanitary conductivity sensors are shown with a 1.5" TRI-CLOVER flange. The K=2.0/cm sanitary conductivity sensor is shown with a 2" TRI-CLOVER flange. The smallest TRI-CLOVER flange for K=2.0/cm sensor is the 1.5" where all sizes are available for all other cell constants. All dimension in inches.

Dimension Details for Cell Constants 3.0 & 10.0

K=10.0/cm Cell Constant



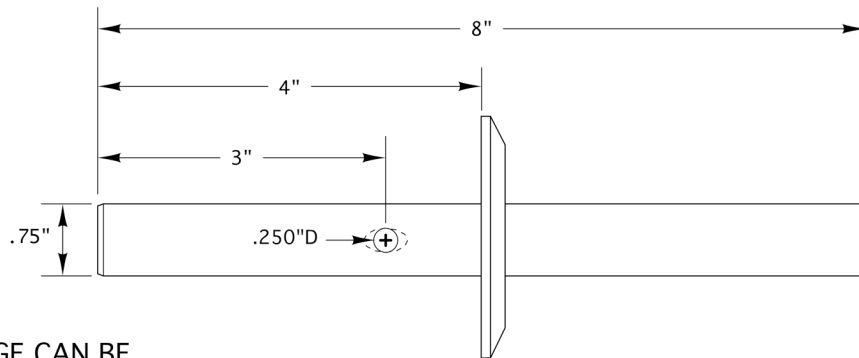
K=3.0/cm Cell Constant



The sensors may be installed at any orientation as desired. Care should be taken that the installation scheme is such that the measuring cell is completed full at all time (no entrapped air bubbles). In the case of batch operation where the tank is drained, typically installation with the sensor tip to the top of the tank is preferred (inverted). For inline installations, the vent hole should be entirely in the path of flow to ensure that the sample in the measuring cell is representative at all times. Alternatively, if the vent hole cannot be installed to be entirely in the flow the tip should be installed into the direction of flow typically at an elbow in the piping.

Sensors shown with 2" sanitary flanges in the drawings above. Any flange size from 3/4" to 2 1/2" available. All dimension in inches.

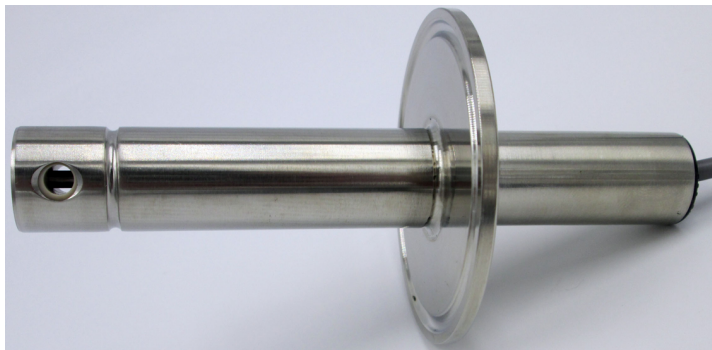
Dimension Details for Cell Constant 5.0



NOTES:

THE SANITARY FLANGE CAN BE WELDED 4"-7" FROM THE TIP OF SENSOR BODY (4" PICTURED ABOVE). THE VENT HOLE REMAINS 3" FROM TIP FOR ANY INSERTION DEPTH

(WHITE) - OUTER ELECTRODE
(BLACK) - INNER ELECTRODE
(CLEAR) - SHIELD
(RED) - TC
(GREEN) - TC



K=2.0/cm cell constant configuration has vent hole and inner electrode just 03 inches from tip. The distance from flange to tip is 3.0 inches with an overall length of 5.0 inches. The K=2.0/cm cell constant configuration can be used to measure conductivity up to 200mS/cm with a suitable mating transmitter.



K=5.0/cm configuration has the vent hole location 3.0 inches from the tip of the sensor. As shown in this configuration the flange to tip length is 5.0 inches (min is 4.0 and max is 7.0). The K=5.0/cm cell constant configuration can measure up to 500mS/cm when interfaced with a suitable mating transmitter.



Overall length for K=5.0/cm configuration is only 8.0 inches which is quite compact for a high cell constant sensor. The K=2.0/cm and K=5.0/cm cell configurations both have 0.75 inch shaft diameter for the outer electrode. Sensors are shown with 2" Sanitary TRI-CLOVER flange in the drawing and photos above. Any flange size from 3/4" to 2 1/2" available. All dimension in inches.

Last Revised December 2, 2019