



Turtle Tough GP2 Immersion Conductivity Sensor
With 1/2" Stainless Steel Compression Fitting



Turtle Tough GP2 Immersion Conductivity Sensor
With 3/4" Polypropylene Compression Fitting



Turtle Tough GP3 Immersion
Conductivity Sensor
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- The TT-GP2-CON and TT-GP3-CON sensors offer a compact design that allows installation into standard pipe fittings in small line sizes such as 3/4" and 1" avoiding the need for special flow cells. Simplicity of design allows these conductivity sensors to be economically offered in exotic metals for especially corrosive chemical processes.
- Wetted materials of construction are 316 stainless steel (standard) with titanium & Hastelloy C-276 optional. The insulator material of construction is always and TEFLON (PTFE). Double redundant EPR O-ring seals (Viton optional) ensure reliability in long-term continuous field measurements. Only the process side O-ring is in contact with the stream so that the back O-ring maintains reliable sealing, free from chemical attack.
- Temperature measurement is achieved by potting the suitable temperature compensation (TC) element for the mating conductivity transmitter to be employed into the inner electrode. This approach ensures a fast responding and accurate automatic temperature compensation no matter the conductivity instrument used.
- Process connections are made via 1/2" or 3/4" MNPT threads on a bored through compression fitting. This fitting can be screwed into a line, or tank, and turned around and connected to a standpipe for use in a submersion configuration. Compression fittings are available in polypropylene (PP), KYNAR (PVDF) or 316SS materials of construction (max 500 psig rating achieved when the 316SS compression fitting)
- The TT-GP2-CON is good for general purpose use up to about 20,000 micromhos (μS) on most analyzers, while the TT-GP3-CON covers a broader range of cell constants and of conductivities anywhere from 0.05 to 1,000,000 micromhos (μS)
- Available in cell constants from $K=0.01/\text{cm}$ all the way up to $K=10.0/\text{cm}$ and anywhere in between to support all possible measurements ranges of interest. Inquire to factory for best choice for your application.
- Cable length is 3 metres standard but extended lengths up to 30 metres (100 feet) are available upon request.
- Quick-Connect waterproof & corrosion-resistant connectors for easy removal for maintenance.
- Available with braid-reinforced blue cable which is suitable for use with high pressure IP69K rated fittings.

TT-GP3-CON & TT-GP2-CON Contacting Conductivity Sensors Specifications

Measurement Range:	Dependent Upon Cell Constant and Mating Transmitter Employed *
Operating Temperature:	-35 to +100 °C (-31 to +212 °F) with POLYPROPYLENE fitting ** -35 to +120 °C (-31 to +248 °F) with KYNAR & 316SS fitting **
Operating Pressure:	Max 100 psig @ 100°C with POLYPROPYLENE compression fitting Max 150 psig @ 120°C with KYNAR compression fitting Max 500 psig @ 100°C or 200 psig @ 120°C with 316SS compression fitting
Process Connections:	½" or ¾" MNPT Depending upon Type of Compression Fitting Selected
Wetted Materials of Construction:	Insulator: TEFLON (PTFE) O-Rings: EPDM (Standard), Viton or Kalrez (Optional) Electrodes: 316SS (Standard), Titanium or Hastelloy C-276 (Optional) Process Fitting: ½" or ¾" MNPT Polypropylene (Std), ½" MNPT KYNAR or 316SS (Optional)
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	
TT-GP2-CON:	K = 0.1, 1.0 /cm
TT-GP3-CON:	K = 0.01, 0.02, 0.05, 0.1, 1.0, 3.0, 10.0 /cm
Cable Length Limits:	Standard 3 meters (10 feet), Max is 30 meters (100 feet)
End of Cable Terminations:	Tinned Leads or NEMA 6P rated waterproof and corrosion-resistant quick connect connector in 5-pole (QC5M/QC5F) or 4-pole (QC4M/QC4F) version
Storage and Shelf-Life:	One (1) years from date of dispatch from factory when stored at ambient.
Dimensional Details:	See Following Pages for drawing of each particular cell constant configuration.

Cell Constant	DIMENSIONS		
	"A"	"B"	"C"
0.01	1.98	5.25	3.50
0.01	1.175	3.50	1.36
0.02	0.95	5.25	3.50
0.05	0.925	5.25	3.50
0.1	0.30	5.25	3.50
0.1	0.30	2.75	1.00
1.0	0.30	5.25	3.50
1.0	0.30	2.75	1.00
3.0	2.17	6.00	3.50
10.0	5.10	8.5	7.00

NOTES ON TT-GP3-CON & TT-GP2-CON SENSOR DIMENSIONS

"A" is distance from tip of sensor to center of vent hole
 "B" is distance from tip of sensor to tip of cap
 "C" is distance from the tip of sensor to start to threads

Cells shaded in orange are for the short style version.
 Cells shaded in blue are for the TT-GP2-CON models.

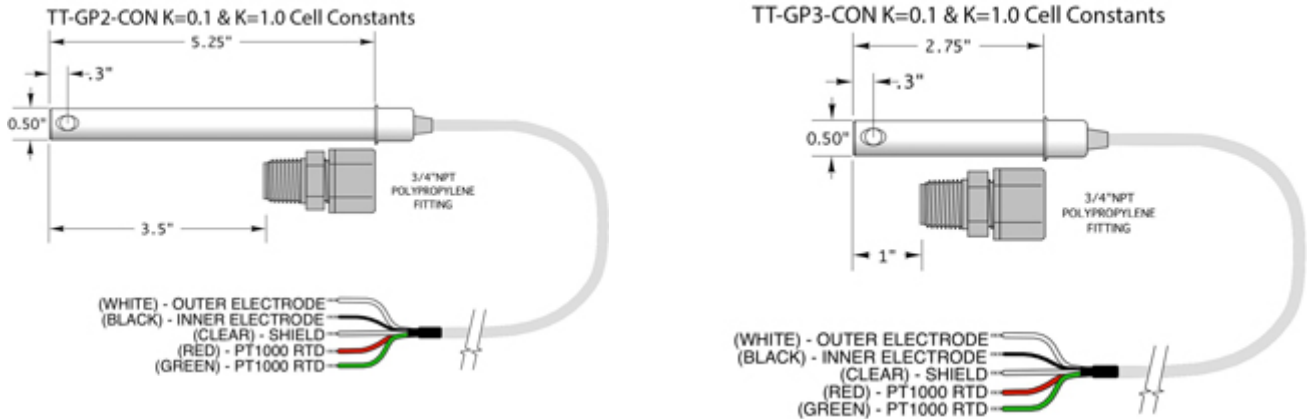
All other dimensions are for the standard TT-GP3-CON models.

All dimensions are in inches.

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

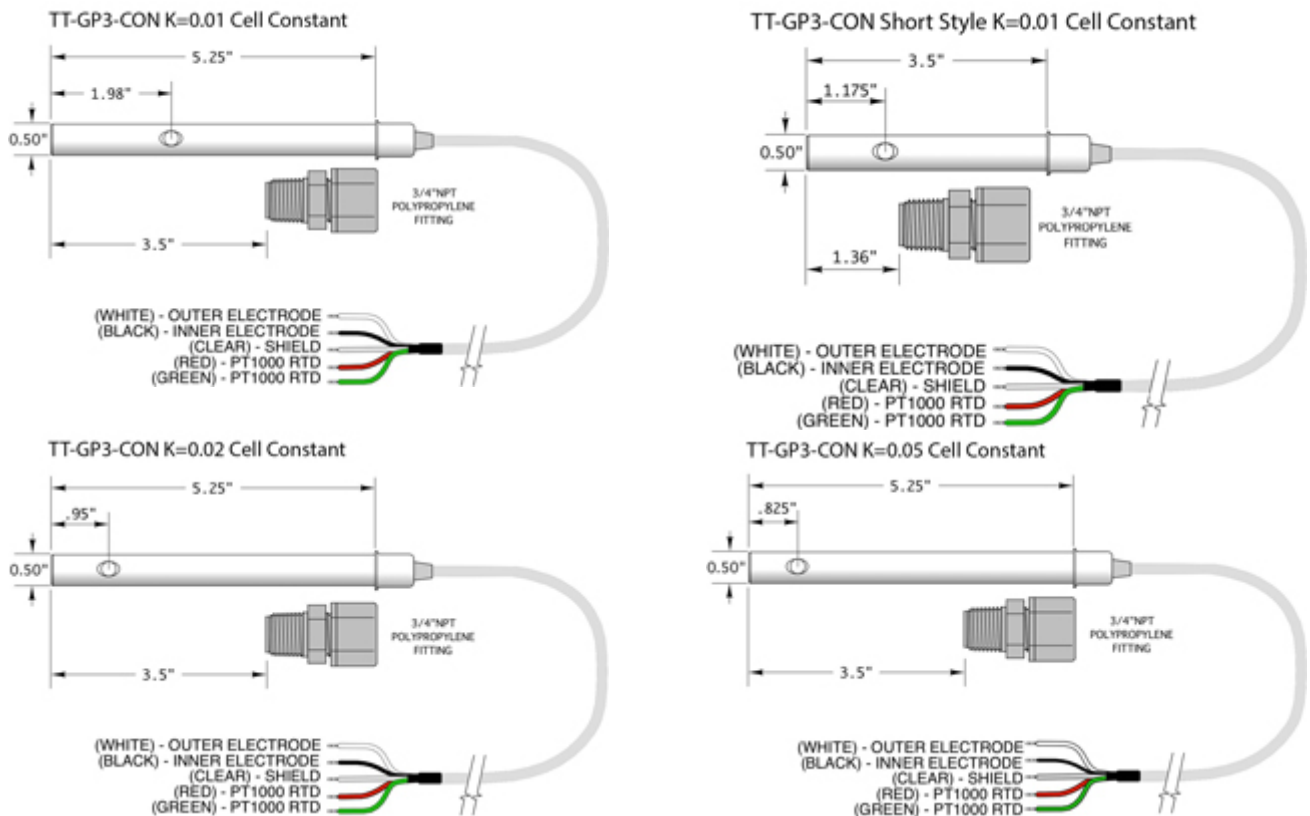
** Contact factory for applications where the measurement is below 0°C prior to specifying sensor for project or commissioning.

Dimension Details for TT-GP2-CON & TT-GP3-CON in Cell Constants 0.1 & 1.0

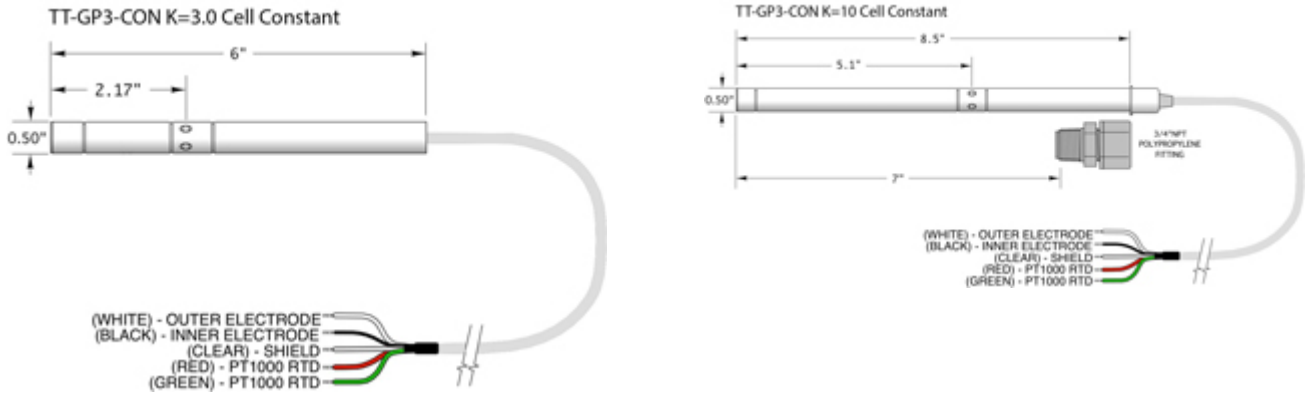


The cell constants 0.01/cm, 0.02/cm & 0.05/cm are typically used for measurement in deionized (DI) water, reverse osmosis (RO) water, distilled & demineralized water as well as other types of low conductivity applications. Cell constants 0.1/cm & 1.0/cm are suitable for most general purpose measurements with the exact range depend upon the mating instrument. The insertion depth of the sensor when installed orthogonal to direction of flow (such as in a pipe tee) must be at least the distance "A" from the tip of the sensor to the center of the vent hole and at most distance "C" from the tip of the sensor to the start of the threads. The compression fitting can be slid down to minimize distance "C" so long as it does not obstruct or cover any portion of the vent holes. The cell constants 0.01/cm, 0.02/cm, 0.05/cm & 0.1/cm may also be installed with the tip pointed into the direction of flow (see drawing for K=10.0/cm cell constant for visualization of this type of installation scheme). As always contact factory for assistance if required.

Dimension Details for TT-GP3-CON in Cell Constants 0.01, 0.02 & 0.05

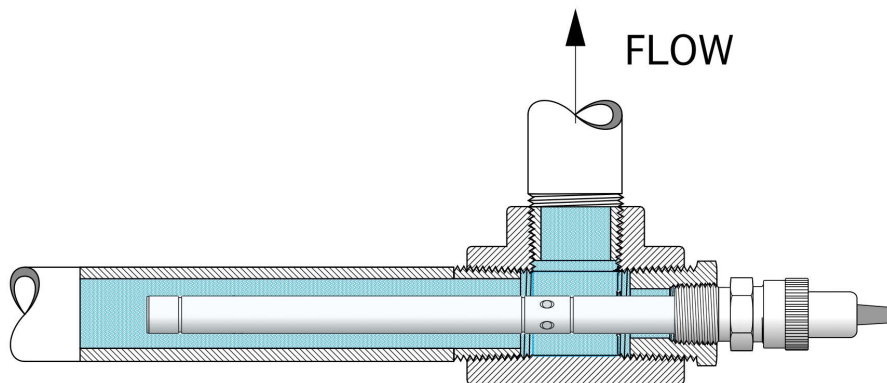


Dimension Details for TT-GP3-CON in Cell Constants 3.0 & 10.0



The distance "C" from the tip of sensor to start of threads is valid for 3/4" polypropylene compression fittings. This distance may vary slightly when using the 1/2" MNPT polypropylene, KYNAR (PVDF) or 316SS compression fittings. TT-GP2-CON & TT-GP3-CON sensors available without any cap as a special-order option although some special care is needed when using this approach (see drawing for K=3.0/cm cell constant above as an example of this configuration). The TT-GP3-CON sensors are quite often installed with the tip into the direction of flow when line sizes are too small to ensure that the vent holes will be wetted at all times (see below for visualization of this scheme).

Typical Installation Scheme for TT-GP3-CON in Cell Constant 10.0/cm



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 or times when this part of the line is dry). In the case of batch operation where the tank is periodically drained, installation with the sensor tip to the top of the tank (inverted style) is preferred. For inline installations, the vent hole should be entirely in the path of flow and unobstructed by the compression fitting to ensure that the sample in the measuring cell is representative of the process fluid 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. For low-flow installations please contact the factory for additional assistance. Dimensions for all drawings are in inches. Custom insertion depth may be available for selected sensor configurations as special order options upon request.