

ULTRA Series Digital Smart Toroidal Inductive Conductivity Sensor



PRODUCT CODE: TT-ULTRA-TO-CON-DSS

Wide Range, High Conductivity Digital Smart Sensors

The Digital Smart Toroidal Inductive Conductivity sensor with integral RS-485 Modbus RTU communications allows for a simple and fully portable installation. The sensor may be calibrated anywhere (lab, shop or field) and interface with any data acquisition or control system in the field via the RS-485 Modbus RTU output. Temperature and cell constant calibrations can be done with the sensor left in service if grab sample adjustments are desired to agree with reference values.

Features

- Polypropylene (PP) sensor tip & KYNAR body for outstanding chemical resistance
- Automatic Temperature Compensation (ATC) achieved with integral Pt1000 temperature element
- Computed units available are salinity (PSU) and selectable total dissolved solids (TDS) units of NaCl, 442 or KCl
- Sensor operation:
 - Standard range mode: 3,900-390,000 $\mu\text{S}/\text{cm}$
 - High range mode: 23,400-2,340,000 $\mu\text{S}/\text{cm}$
- 1" MNPT front and back threads for immersion installations
- Digital Smart Sensor Technology, Modbus RTU (RS485)
- Plug 'n play connectivity

Installation Options

- Inline Sensor Holder
 - Inline Hot Tap Assembly
- Fully Submersible when installed on an immersion rod
All Immersion applications

Compatible With

- Turtle Tough TOUCH Series Controllers
- Turtle Tough DSS1 Series Analyser
- Modbus RTU (RS485) compatible devices

Digital Smart Sensor DSS Technology

- Connect directly to PLC/SCADA/DCS
- Calibrate anywhere, lab or workshop
- Stores history for advanced sensor management & diagnostics
- Compatible with the ULTRA 2.0 Advanced Sensor Management Software





Digital Smart Toroidal Inductive Conductivity Sensor



Digital Smart Sensor DSS Technology

Seriously Different, Next Level Smart Technology

Turtle Tough's Smart Sensor technology has revolutionized the way we manage and communicate with sensors. With onboard microprocessors and memory, our Smart technology has transformed how we connect, manage maintenance, monitor performance, and manage data compared to our analogue predecessors.

This evolution has made it possible to:

- Save hours of maintenance per sensor install
- Eliminate field calibration
- Easily integrate into existing equipment
- Automate smart sensors diagnostic and management

Benefits of Conductivity Smart Digital Sensors

- Integral RS-485 Modbus RTU interfaces all-modern PLC controllers and data acquisition systems.
- The communicator provides easy management of field installations without the cost of a mating analyser.
- Windows software for setup and calibration of DSS conductivity sensors allow for easy and low-cost field commissioning for setup and pre-calibration of sensors without the cost of an analyser.
- Intelligent management of sensor calibrations and service life-cycle for efficient commissioning and maintenance.
- All aspects of the installation are completely portable from the shop to the field site location.
- The 'Days in Use' since calibration was performed is stored allowing for optimal maintenance planning.
- All digital sensors ensure reliable operation even in noisy process environments.
- No degradation in digital output even with very long cable runs. Max of 1,000 metres (3,280 feet) with 12VDC power supply to support remote installation sites and consolidation of collected data.
- Bridging connections and modifying installations easily without loss of signal quality with NEMA 6P and IP67 rated quick-disconnect waterproof and corrosion-resistant dual snap connector. Simple plug and play operation for intelligent maintenance planning and smart management of sensor installations and stocking.
- Low-cost quick connect digital extension cables facilitate the consolidation of DSS sensors outputs into a one panel enclosure where many remote field installations can be conveniently viewed at once.
- All extension cables for DSS sensors are inter-compatible. Uniform extension cables minimize stocking. Separate field installation guide details available options to commission and exchange sensors



Product Name	ULTRA Series Digital Smart Toroidal Inductive Conductivity Sensor
Product Code	TT-ULTRA-CON-TO-DSS-IMR (Immersion) TT-ULTRA-CON-TO-DSS-SUB-CPN (Submersible) TT-ULTRA-CON-TO-DSS-INL (inline)
Measuring Type	CON
Sensor Installation Types	Inline, Immersion and Fully Submersible applications
Output	DSS1- Modbus RTU (RS485)
Pressure	Max 100 psig (13.8 bar) @ 65°C for Inline Installations *
Temperature Range	for Inline/Immersion: -20 to +120 °C (-4 to +248 °F) for Fully Submersible: -20 to +85 °C (-4 to +185 °F)
Process Connections	1" MNPT Rear Threads for Immersion & Submersible Installations 2" MNPT Front Threads Adapted to Process Pipe Tee for Inline Configuration *
Housing	Measuring Sensor Tip (Blue): Polypropylene Sensor body for electronics (Red): KYNAR® (Poly-Vinylidene-Fluoride, PVDF)
Temperature Element	Pt1000 temperature sensor
Temperature Input Range	-25 to +120 °C (-13 to +248 °F) ±0.3°C
Temperature Compensation	User adjustable anywhere from 0.01 to 9.99 % per °C (2.00% per °C is default)
Measurement Resolution	Standard Range Mode: 7.8 µS/cm or High Range Mode: 46.8 µS/cm
Calibration	Zero Dry in Air Offset; Separate slope (gain) for standard and high range modes
Connection	Quick Connect Plug - 4PIN (NEMA 6P)
Cable Length	Standard 6 meters (20 feet)
Storage and Shelf-Life	One (1) year from date of dispatch from factory with proper storage conditions

* Must indicate if sensor is to be used for inline installation scheme at time of purchase. Rear threads are always 1" MNPT size no matter which sealing option is selected. Contact factory for assistance if you perform measurements that are below 0°C (32°F).

** Submersible installation means that the rear threads of the sensor are completely below the waterline of the measured solution. Supported temperatures at sensor board are -20°C to +85°C (-4°F to 185°F) which is the same as supported submersible temperatures.

Product Name	Temperature Compensated Conductivity Range @ 25°C	Temperature Compensated Conductivity Range @ 85°C	Temperature Compensated Conductivity Range @ 120°C
Standard Range Mode	3,900 TO 390,000 MS/CMZ	1,773 to 177,273 µS/cm	1,345 to 134,483 µS/cm
High Range Mode	23,400 TO 2,340,000 MS/CM	10,636 to 1,063,636 µS/cm	8,069 to 806,897 µS/cm

Contact Us

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