



FX-300-CON Conductivity Transmitter & Controller



- Ranges: Conductivity 0.05 – 500,000 μS , Temperature 0-210 $^{\circ}\text{C}$
 - Cell Constants: 0.01–10.0. Custom cell constants are also available
 - Special low conductivity versions for $K=0.01/\text{cm}$ (min 0-5 μS , max 0-20 μS), and $K=0.1/\text{cm}$ units (min 0-50 μS , max 0-200 μS)
 - 1-Point Gain calibration for agreement with lab analysis or standard solution to set effective cell constant, Max $\pm 50\%$ from nominal cell
 - Offset calibration for a true zero reading for sensor dry in air
 - Integrated temperature compensation via Pt 100/1000 Ohm element
 - Display & Output Conductivity (in μS or mS) or Temperature
 - Scalable Analog Output 0-20 mA or 4-20 mA for Conductivity or Temperature, optional RS-485 Modbus Digital Output
 - Automatic correction for resistance and capacitance of sensor cable
 - Galvanic isolation between sensor input and analog output (3000V)
 - 4mA offset & 20mA gain trim calibrations for accurate 4-20mA output
- Features standard or custom designed industrial grade sensors engineered and built to order for superior performance and lifetime using configurations and materials specifically suited for the application.
 - **FX-300-C10-Poly** in cell constants 0.01 to 10.0 & **FX-300-C51-316SS** in cell constants 0.1 to 1.0, compact sensors for general purpose use and mounting into 3/4" or 1" pipe fittings to avoid the use of special flow cells. With polypropylene, stainless steel, or KYNAR (PVDF) fittings. Special short form factor $K=0.01/\text{cm}$ cell available to support smaller line sizes and inline low conductivity applications.
 - **FX-300-C52** High 10.0 cell constant in compact size for a variety of applications including skid mounted R.O. systems, water treatment, and chemical dilution.
 - **FX-300-C10-TRI** small size sensor available with optional TRI sanitary clean in place (CIP) flange. FDA compliant food grade materials. Flange sizes 1/2", 1", 1.5", 2" and 2.5". Rated for use up to 150 psig at 130 degree Celsius. Cell Constants from 0.01 to 10.0. Special $K=2.0/\text{cm}$ cell constant is ideal for chemical CIP lines that require inline installation to directly replace existing toroidal installations.
 - **FX-300-C41** High temperature & pressure boiler condensate and blow down control without coolers. Double seal design extends sensor life over twice that of single or epoxy sealed units. Cell constants: 2.0, 1.0, 0.2, 0.1, 0.05. Temperatures to 205 $^{\circ}\text{C}$ and pressures up to 500 psig with PEEK insulator & 316SS electrodes standard.
 - **FX-300-C40** (not shown) is a sensor for cell constant range of 0.01 to 20.0 and various mountings, including insertion, submersible or valve retractable assemblies for insertion/removal under line pressure. Wetted materials 316 SS and PEEK, with double O-ring seals for most applications, including high chemical concentrations.
 - **FX-300-C50 & FX-300-C60** (not shown) compact double threaded 1"-1" MNPT bodied sensors for cell constants from 0.1 to 2.0 offer fouling resistance & minimal maintenance for RO, drinking water inline quality measurements to wastewater submersion installations from low 50 μS all the way up to high 50,000 μS samples.



CUSTOM SENSOR DESIGN & FABRICATION AVAILABLE UPON REQUEST



GENERAL SPECIFICATIONS: FX-300-CON Conductivity Transmitter & Controller

Measurement Type:	Single or multi-channel inline Contacting Conductivity and Temperature
Applications:	Drinking water through wastewater, chemical processes, pollution control, long service life with low maintenance applications, remote installation locations
Conductivity & Temperature Ranges:	Conductivity Ranges for each Cell as Shown Below, Temperature Range 0-210 °C, Accuracy ±0.2% Absolute
Pressure Ranges:	Standard Version 100 psig @ 150°C, High Pressure Version 250 psig @ 205°C, Both Versions Max 500 psig @ 100°C
<u>Wetted Materials of Construction</u>	316 Stainless Steel (316SS), Titanium, Monel, Hastelloy C, Nickel, Zirconium and others upon request
Sensing Electrodes	CPVC, TEFLON (PTFE), KYNAR (PVDF), PEEK and others upon request
Insulators	EPDM, EPR & Viton-75 and others upon request
"O"-Rings	316SS, Monel, Propylene, KYNAR (PVDF) and others upon request
Sealing Fittings	

Supported Measuring Ranges & Cells:

<u>Cell Constant</u>	<u>Full Scale Max Range (Nominal)</u>	<u>Min Range at 10% of Full Scale</u>
10.0 (5.0-15.0)	0 to 500,000 µS/cm	0 to 50,000 µS/cm
2.0 (1.0-3.0) *	0 to 100,000 µS/cm	0 to 10,000 µS/cm
1.0 (0.5-1.5)	0 to 50,000 µS/cm	0 to 5,000 µS/cm
0.1 (0.05-0.15)	0 to 5,000 µS/cm	0 to 500 µS/cm
0.1L (0.05-0.15)	0 to 200 µS/cm	0 to 50 µS/cm
0.01 (0.005-0.015)	0 to 500 µS/cm	0 to 50 µS/cm
0.01L (0.005-0.015)	0 to 20 µS/cm	0 to 5 µS/cm

* Extended range K=2.0/cm unit with full scale 0-200,000 µS and min scaling of 0-20,000 µS, Analog & MODBUS

NOTES: Many alternate cell constants and ranges can also be supported (inquire to factory). The full scale measurement range and nominal cell constant must be defined at the time of order and cannot be changed after dispatch.

Sensor Installation options:	Inline ½" & ¾" MNPT, Immersion, Submersible, Valve Retractable (HOT-TAP) and Sanitary Tri-Clover
Display:	Bright 3-digit red LED display visible in sunlight of Conductivity or Temperature. 6 LED indicators
Power Supply:	CSA/UL/CE approved universal 115/230 VAC power supply, consumption 60mA maximum
Signal Output:	Selectable, scalable 0-20mA or 4-20 mA DC 500 Ω max, RS-485 Modbus digital output available optionally
Enclosure Mounting & Dimensions:	Wall Mount, NEMA 4X lockable windowed, 7.2" high x 7.2" wide x 6" deep. Optional 2" NPT pipe mount

Module Description & Available Options:

Transmitter Module: In addition to contacting conductivity, modules are also available to measure pH/ORP, dissolved oxygen (DO), and inline ION SELECTIVE (ISE) analysis including fluoride, ammonia, nitrate, nitrite, calcium and more. Each module includes 3-digit LED display and scalable 4-20mA analog output. All analog outputs have built-in trim calibration support, including both offset and span adjustments. 35 mm Din rail mounting. 1-point Calibration of temperature is available for all measurement modules. User selectable auto temperature compensation or manual temperature compensation operating modes.

Preamplifier Support: Unlike many low cost systems, the FX-300 series supports optional external preamplifiers for noisy environments for pH/ORP and ISE measurements to avoid opening the analyzer enclosure for sensor service and to minimize sensor replacement cost. Preamplifiers are not required for conductivity.

FX-REL Option: Alarm and relay controller module provides (2) 5 Amp contact relays and controller that is fully configurable by the user for control mode and variables for each control algorithm. Control modes include: 1) Alarm functions only; 2) On/Off control with a user-configurable dead band; 3) Time proportional control; 4) Proportional frequency control (variable pulse controller).

FX-USB Data Logging Option: Removable USB data logger records up to 32,000 readings over a 4-20mA DC range. Optional device to log by Modbus to a computer is available.

FX-TOT Option: Module computes the total concentration of parameter such as ammonia using the free ion activity, pH, and temperature inputs from the respective measurement modules' bridged output. Also provides a scalable 4-20mA output for the total ISE measurement and Modbus for all inputs and outputs.

Modbus Option: Available by ordering the measurement module to include Modbus (only on initial order), or by adding the separate FX-TOT module anytime.

Enclosure Options: Up to 4 modules (including the power supply) fit in standard 7" x 7" enclosure. Up to 8 modules fit in optional 11" x 9" enclosure.

Power Options: Universal 115/230 VAC power supply, or 3-wire 24VDC operation (NOT 2-wire loop power) if you have a dedicated 24VDC power supply onsite.