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Toroidal Conductivity Monitor

Model Q46CT



Noryl Toroidal Sensor

Conductivity measurement in aggressive chemical solutions or in water systems containing large amounts of solids, oils, and greases is very maintenance intensive using conventional 2 or 4 electrode sensors. ATi's **Model Q46CT** employs an inductive (toroidal) sensor that allows measurement in corrosive samples with virtually no maintenance.

Toroidal Conductivity Monitoring Systems contain a variety of features and options to meet virtually any conductivity monitoring and control application. While not suitable for low level conductivity measurement, toroidal monitors are an excellent choice for high conductivity applications. **The Q46CT is also available as a concentration monitor.**

ATi's Q46 platform represents our latest generation of monitoring and control systems. Control features have been expanded to include an optional 3rd analog output or an additional bank of low power relays. Digital communication options now include Profibus DP, Modbus RTU, or Ethernet IP variations.

Non-Contacting Conductivity System



TOROIDAL SENSOR

ATI's Model Q46CT toroidal conductivity system is designed for online monitoring of chemically aggressive process solutions. This sensor consists of two metallic ribbon coils that are fixed in place by the sensor jacket material. The drive coil establishes a strong magnetic field around the sensor body which induces a current in the process solution. The sensing coil is used to measure the induced current in the process solution. The magnitude of this current is proportional to the conductivity of the process solution.

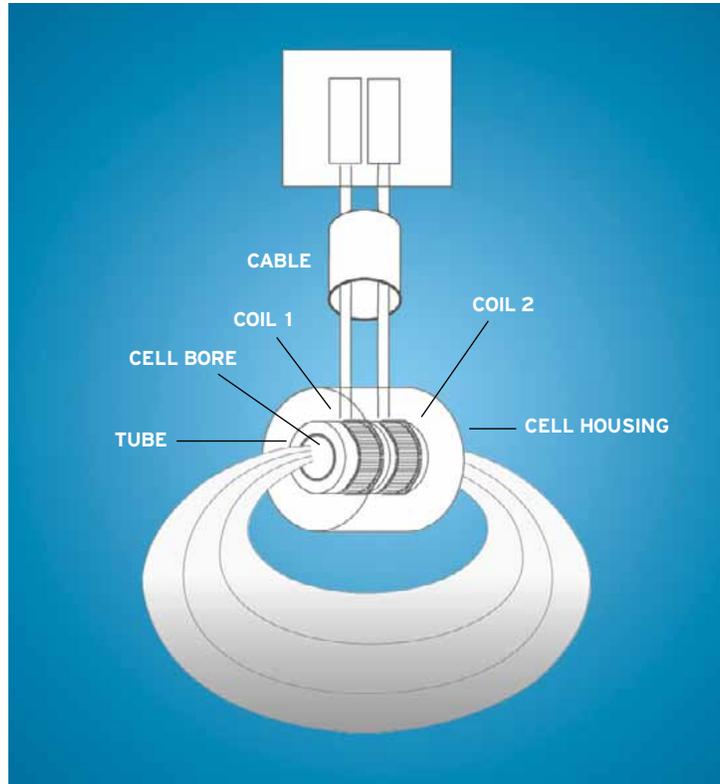
The toroidal sensor is available in Noryl to ensure sensor wetted materials are chemically resistant to both strong acids and strong bases. Sensor material is also non-conductive, thereby isolating the sensor from electrical noise and ground loops that can influence the integrity of the measurement.

This material also makes the sensor resistant to electrode coating, as most substances do not adhere to the sensor material.

Sensors can be submersion-mounted using the 3/4" NPT pipe thread at the back of the sensor for easy installation in open tanks. The sensor may also be pipe-mounted using the special 2" CPVC tee fitting which has an alignment key to automatically orient the sensor to the sample flow.

A Pt1000 RTD in the sensor body provides temperature input for both display and automatic temperature compensation of the conductivity measurement.

Non-Contacting Sensor
with Virtually
No Maintenance



TYPICAL APPLICATIONS



- High Conductivity Processes
- High Solids Content Processes
- Pharmaceutical Applications
- Fume Scrubbers
- Boiler Blowdown
- Cooling Towers
- Chemical Feed
- Food and Beverage
- Metal Plating / Rinsing
- Bioremediation
- Clean-In-Place
- Potable Water
- Wastewater Treatment
- Pulp and Paper
- Textile Manufacturing
- Neutralization Tanks
- Refining
- Acid / Caustic Feed

FEATURES

Adaptability. Concentration version for direct display of chemical concentrations.

Extra Outputs. Expansion board to add a third 4-20 mA analog output or to add three additional non-isolated low power relays.

Flexibility. Wide range capability, with selectable ranges of 0-200.0 uS up to 0-2.000 S provide maximum application flexibility.

AC or DC Power Options. Power options include universal 100-240 VAC +/- 10%, or 12-24 VDC.

Analog Output Options. Two isolated 4-20 mA outputs are standard, with an option for a third output if required. Default setting provides analog outputs for conductivity and temperature.

PID Output. Standard PID control function assignable to one analog output.

Digital Communications. Available in either Profibus DP, Modbus RTU, or Ethernet IP.

Relay Assignable. Three SPDT relays are standard, with relay functions programmable for alarm, control, or trouble indication. Three additional low power relays available as an option.

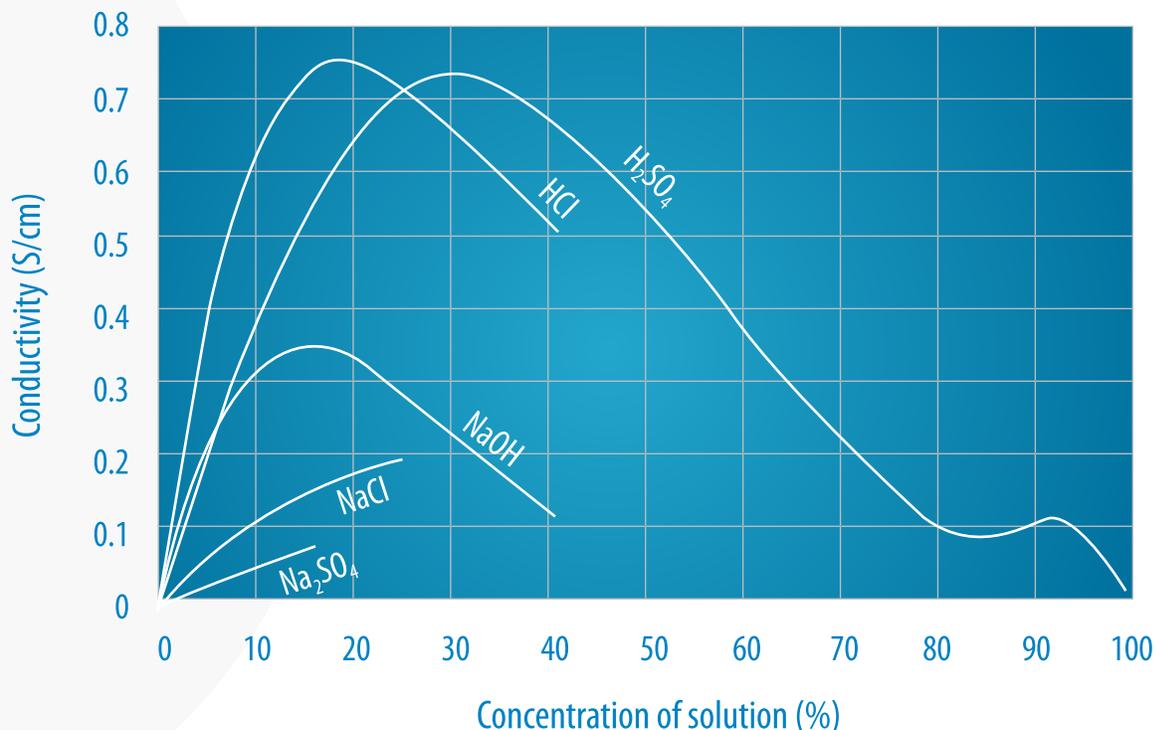
Flexible Mounting. NEMA 4X (IP-66) enclosure is suitable for wall, pipe, or panel mounting.

Clear Display. Back-lit large LCD display provides clear visibility in any lighting conditions. A scrolling second line on the display provides additional information and programming prompts.

CONCENTRATION MONITOR

Conductivity monitors can be used to monitor and display the concentration of acids or bases used in various chemical process applications. The Q46CT is available with pre-loaded tables allowing direct display of concentration for solutions of sodium chloride (NaCl), hydrochloric acid (HCl), potassium hydroxide (KOH), and sodium hydroxide (NaOH).

In addition to these standard tables, the user may enter their own table data for other chemicals, or may edit the standard tables supplied by ATI. Custom tables require data on both concentration vs. conductivity and temperature vs. conductivity for the chemical of interest.



Relationship between Concentration of Solutions and Conductivity (at 18° C)

Q46CT SPECIFICATIONS

ELECTRONIC MONITOR

Display Range	0-200.0 uS, 0-2.000 / 20.00 / 200.0 / 2000 mS, 0-2.000 S
Accuracy	0.5% of selected range or 0.02 PPM
Repeatability	0.3% of selected range or 0.01 PPM
Non-Linearity	0.1% of selected range
Temperature Drift	0.01% of span/°C
Power	100-240 VAC, +/- 10%, 50/60 Hz 12-24 VDC, 500 mA max.
Analog Outputs	Two isolated 4-20 mA, 500 Ω load max. (3rd output optional)
Relays	Three SPDT, 6A @250 VAC, 5A @24 VDC (3 additional SPST non-isolated, 1A @30 VDC optional)
Display	4-digit, 0.75" numeric LCD with 12-digital second line, LED back light.
Enclosure	NEMA 4X Polycarbonate V-0 Flammability
Operating Conditions	-20 to 60°C (-4 to 140°F)
Weight	6 lbs. (2.7 kg) with sensor, flowcell and accessories
Sensitivity	0.05% of span or 0.01 mS
Digital Output	Profibus DP, Modbus RTU or Ethernet IP
Mounting	Wall mounting kit standard, Panel mount bracket and pipe u-bolts available
Size	5.6" W x 4.9" H x 6.4" D

SENSOR

Sensor Type	Toroidal (Inductive)
Materials	Noryl
Cable Length	20 ft (6 m) standard, 200 ft (61 m) max. with junction box
Temperature Limits	0-105°C, 0-80°C with flowcell
Pressure Limit	150 PSIG max.
Connection	3/4" MNPT rear thread
Flowcell	2" CPVC with alignment key
Temperature Element	Pt1000 RTD

ORDERING INFORMATION

Model Q46CT A-B-C-D-E Toroidal Conductivity

Suffix A - Power

- 1 - 100-240 VAC, +/-10%, 50/60 Hz
- 2 - 12- 24 VDC, (requires 500 mA)

Suffix B - Sensor Type

- 1 - Noryl with 20' cable

Suffix C - Digital Output

- 1 - None
- 2 - Profibus DP
- 3 - Modbus RTU
- 4 - Ethernet IP

Suffix D - Optional Output

- 1 - None
- 2 - One additional 4-20 mA output
- 3 - Three additional low power relays (SPST, 0.5 A max.)

Suffix E - Measurement Type

- 1 - Conductivity
- 2 - Concentration

ACCESSORIES

- 07-0100** Junction Box, NEMA 4X
- 31-0068** Sensor Interconnect Cable
- 63-0083** 2" CPVC Tee with Sensor Adapter
- 00-1447** Mounting Bracket Kit for Submersible Sensor
- 05-0094** Panel Mount Bracket Kit
- 47-0005** 2" U-bolt, 304SS
- 09-0047** Conductivity Standard - 447 mS, 500 mL
- 09-0048** Conductivity Standard - 1,500 mS, 500 mL
- 09-0049** Conductivity Standard - 8,974 mS, 500 mL
- 09-0050** Conductivity Standard - 80,000 mS, 500 mL

ALSO AVAILABLE!

Toxic / Combustible Gas Detectors

The **D12** provides the ultimate in application and flexibility. The transmitter comes either as a loop-powered or 3-wire model with on-board relays. This model also comes complete with features that enhance performance and provide operational flexibility such as accepting up to 46 different ATI sensors. These interchangeable sensors greatly reduce the need for multiple transmitter models. Having these useful features with simple installation, easy operation and low-maintenance, you simply won't find a more versatile transmitter.



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