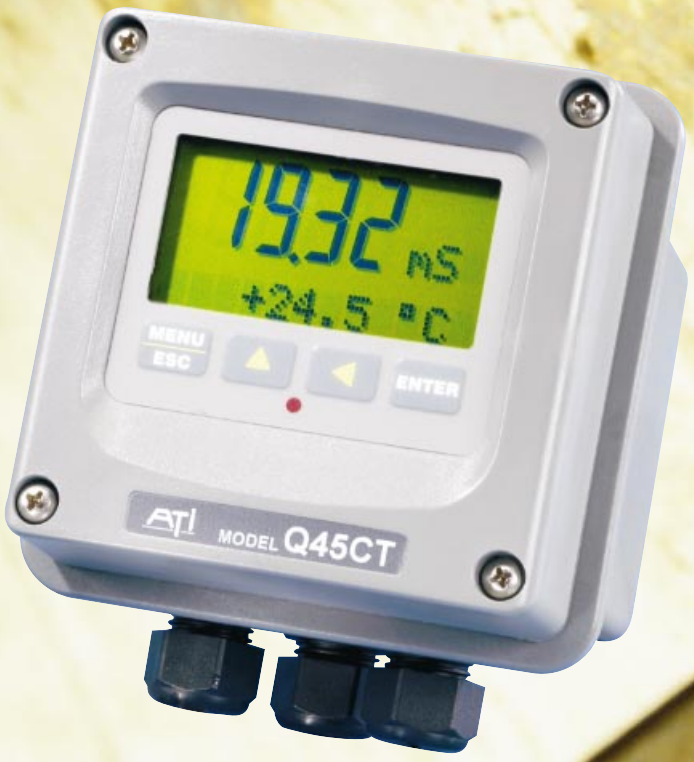
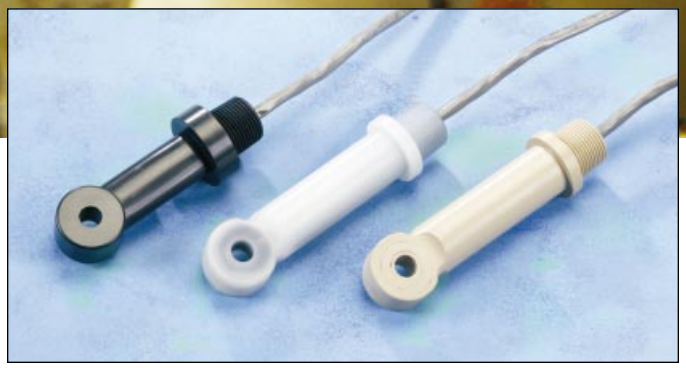
Non-Contacting Conductivity System



Model Q45CT

Toroidal Conductivity Monitor



ATI's Model Q45CT toroidal conductivity system is designed for on-line 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 is used to induce a current in the process solution. The second sensing coil is used to measure the current in the process solution, the magnitude of this current is proportional to the conductivity of the process solution.

Toroidal sensors are available in polypropylene, Kynar, and PEEK to ensure sensor wetted materials are chemically resistant to process chemicals. 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 for easy installation in open tanks or pipe-mounted in the optional 2" tee fitting, which is keyed to the sensor for proper alignment. Tee fitting material is either polypropylene or 316 stainless steel. For larger pipe diameters, the sensor can be insertion mounted through a 1-1/2" NPT ball valve for easy retraction.

The Q45CT is also available as a Concentration Monitor. The monitor comes with concentration/temperature tables for sodium hydroxide, potassium hydroxide, hydrochloric acid, nitric acid, and sulfuric acid. A user configurable table is also available for entering data points for a custom concentration curve.

The ATI Model Q45CT toroidal conductivity system is well suited for aggressive chemical processes, water application that coat or foul traditional sensors, and plating bath operations where high current densities are present.

System Features

Non-contacting Sensor: The non-contacting sensor contains two toroids that are isolated from the process by the body material, making the sensor resistant to foulants and electrical interferences.

Multiple Body Materials: The sensor body material can be made of polypropylene, Kynar (PVDF), or PEEK.

Loop-powered, AC, or Battery Versions: This line of microprocessor-based instrumentation allows for easy implementation of loop-powered, line-powered, or battery-powered capability within the same instrument. This instrument can be rapidly converted between any of these versions with no requirement for software change.

- Loop-powered (16-35 VDC) Transmitter, 4-20 mA output
- Line-powered (115/230 VAC) Analyzer, dual relays, dual 4-20 mA outputs
- Battery-powered (9 VDC) Monitor/Data Logger, dual 0-2.5 VDC outputs

Standard PID Output: A PID control output is standard in every Q45CT monitor, with control parameters easily user configurable.

Dual Alarm Relays/Analog Outputs: AC operated systems provide two relays that are configurable for either "control mode" or "alarm mode" of operation, and two analog outputs that are assignable for conductivity and/or temperature.

Flexible Calibration: Two-point and sample calibration options include stability monitors to check temperature and main parameter stability before accepting data.

Large, Dual Line Display: The large, high contrast, super-twist display provides excellent readability over a wide operating temperature range, even in low light conditions. The main display line consists of large, segmented characters with measurement units. The secondary display line utilizes easily readable dot matrix characters for clear display of calibration and diagnostic messages. Two of four measured parameters may be displayed simultaneously.

Monitor Performance Specifications

Measuring Range:	Main input: 0.0 µS to 2000 mS % concentration mg/L Total Dissolved Solids Loop current 4.00 to 20.00 mA Sensor temperature -10 to 210°C (14 to 410°F)
Main Parameter Range:	0 to 2,000 µS 0.000 to 2.000 mS 0.00 to 20.00 mS 0.0 to 200.0 mS 0 to 2000 mS 0.000 to 2.000 S
Repeatability:	0.3% of span, or 0.1 µS, whichever is greater
Sensitivity:	0.05% of span or 0.1 µS, whichever is greater
Non-linearity:	0.3% of span, or 0.1 µS, whichever is greater
Stability:	0.1% of span per 24 hours
Temperature Drift:	Span or zero, 0.03% of span/°C
Warm-up Time:	7 seconds to rated performance
Response Time:	6 seconds to 90% of step input at lowest setting
Max. Sensor to Analyzer Distance:	200 feet (61 meters)

Sensor Performance Specifications

Sensor:	Toroidal electrode
Wetted Materials:	Polypropylene, Kynar, or PEEK
Sensor Cable:	20 feet (6.1 m) standard, maximum length 200 feet (61 m)
Response Time:	2 seconds to 90% of full scale
Temperature Limits:	0 -105°C
Pressure Limits:	150 psig
Process Connection:	3/4" MNPT rear thread, optional 2" keyed tee fitting
Temperature Element:	PT1000 RTD
Minimum Conductivity:	500 microSiemens

Instrument Specifications (common to all variations)

Enclosure:	NEMA 4X, IP66, polycarbonate, stainless steel hardware, weatherproof and corrosion resistant, (HWD): 4.4" (112 mm) x 4.4" (112 mm) x 3.5" (89 mm)
Mounting Options:	Wall, panel (115mm x 115mm), or pipe/handrail
Conduit Openings:	Three M16 openings, cordgrips and conduit adapters included
Weight:	Loop-powered Transmitter: 1 lb. (0.45 kg); Other configurations: 1.5 lbs. (0.68 kg)
Display:	Large, high-contrast, Super-Twist (STN) LCD 4-digit main display with sign, 0.75" (19.1 mm) seven-segment characters 12-digit alpha-numeric second line display, 0.3" (7.6 mm) 5 x 7 dot matrix characters
Keypad:	4-key membrane type with tactile feedback, polycarbonate with UV coating, integral EMI/static shield and conductively coated window
Ambient Temperature:	
Service:	-20 to 60°C (-4 to 140 °F)
Storage:	-30 to 70°C (-22 to 158 °F)
Ambient Humidity:	0 to 95%, non-condensing
Location:	Designed for hazardous and non-hazardous areas
EMI/RFI Influence:	Designed to EN 61326-1
Output Isolation:	600 V galvanic isolation
Filter:	Adjustable, 0-9.9 minutes additional-damping to 90% step input
Temperature Input:	Selectable Pt1000 or Pt100 RTD with automatic compensation

Ordering Information:
Model Q45CT-A-B-C Monitor

Suffix A - Power
- 1 - 24 VDC, 2-Wire (single output only)
- 2 - 120 VAC with 2 relays
- 3 - 230 VAC with 2 relays
- 4 - Battery operated with two 0-2.5 VDC outputs
- 5 - Battery operated with internal data-logger

Suffix B - Sensor Type
- 1 - Polypropylene with 20' cable
- 2 - Kynar (PVDF) with 20' cable
- 3 - PEEK with 20' cable

Suffix C - Monitor Type
- 1 - Conductivity
- 2 - Concentration

Options:

07-0100	NEMA 4X Junction Box
31-0057	Sensor interconnect cable
63-0083	Tee Fitting, Polypropylene
63-0084	Tee Fitting, 316SS
09-0048	Conductivity standard, 1,500 µS, 500 mL
09-0049	Conductivity standard, 8,974 µS, 500 mL
09-0050	Conductivity standard, 80,000 µS, 500 mL

Notes
1. All sensor cable lengths greater than 20 feet requires a junction box (00-0726) and sensor interconnect cable (31-0057).

ANALYTICAL TECHNOLOGY, INC.

Represented By:

Analytical Technology, Inc.
6 Iron Bridge Drive
Collegeville, PA 19426
Phone: 610/917-0991• Toll-Free: 800/959-0299
Fax: 610/917-0992
E-Mail: sales@analyticaltechnology.com

Analytical Technology
33 Stamford St.
Mossley, Ashton-u-Lyne 0L5 0LL
Phone: +44 (0) 1457 832800
Fax: +44 (0) 1457 839500
E-Mail: sales@atiuk.com

Web Site: www.analyticaltechnology.com

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