A Badger Meter® Brand

Water Quality Monitor

Q45CT Toroidal Conductivity Transmitter

OVERVIEW

The toroidal conductivity transmitter 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 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.

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.

This 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.

Figure 1: Toroidal sensor

APPLICATIONS

- **Cooling Towers**
- **Acid and Case Dilution**
- **Brine Systems**
- **Wastewater**
- **Salt Water intrusion**
- **Plating Baths**
- **Salt Water Aquariums**
- **Chemical Processing**
- **Streams and Rivers**

FEATURES

- Measurement from 0…200 uS to 0…2.000 S
- Option for NaCI, NaOH, or HCI concentration display
- Loop-powered or battery-operated
- External 5…17V DC version for solar power applications
- Toroidal sensor resistant to fouling
- Submersion or In-line sensors
- Large, easy-to-read LCD display
- Total Dissolved Solids (TDS) on secondary display
- Clear, menu-driven user interface
- NEMA 4X (16-66) enclosure
- Wall or pipe mounting bracket standard
- Build-in PID controller

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ATI-DS-05292-EN-01 (November 2025)

Product Data Sheet

SPECIFICATIONS

Electronic Monitor

Display Range	0…2000 µS 0…2.000, 0…20.00, 0…200.0, 0…2000 mS 0…2.000 S
Accuracy	±0.5% of selected range
Repeatability	0.2% of selected range
Sensitivity	0.05% of selected range
Linearity	0.1% of selected range
Temperature Drift	0.04% of span/° C
Sensor Type	Toroidal
Temperature Input	Pt1000 in sensor for temperature compensation
Power	2-wire unit: 17…30V DC, 25 mA maximum Battery unit: Two AA alkaline batteries External DC: 5…17V DC, 10 mA maximum
Analog Outputs	2-wire unit: Single 4…20 mA DC, 450 Ω maximum Battery unit: Two 0…2.5V DC, 50K Ω minimum External DC: Two 0…2.5V DC, 50K Ω minimum
Output Isolation	600V galvanic isolation
Enclosure	NEMA 4X (IP66) polycarbonate, V-0 flammability
Mounting Options	Wall or pipe mounting bracket supplied
Conduit Entries	Two PG9 cord grips, 0.16…0.31 in. diameter cable
Ambient Temperature	Operating: –40°…140° F (–40°…60° C) Storage: –40°…158° F (–40°…70° C)
Ambient Humidity	0…95%, non-condensing
Size	4.4 (H) × 4.4 (W) × 3.5 (D) in. (111 × 111 × 90 mm)
Weight	2-wire or External DC unit: 1 lb (0.45 kg) Battery unit: 2 lb (0.9 kg)
Certifications	CE marked to BS EN 61326-1:2006 standard UL and CSA general purpose

Sensor Specifications

Sensor	Toroidal sensor
Wetted Materials	Noryl
Sensor Cable	20 ft (6.1 m) standard, maximum 200 ft (61 m)
Response Time	Two seconds to 90% of full scale
Temp Limits	0...221° F (0…105° C)
Pressure Limits	150 psig
Process Connection	3/4 in. MNPT rear thread, optional 2 in. keyed tee fitting
Temp Element	PT1000 RTD
Minimum Conductivity	100 microSiemens

ORDERING INFORMATION

Model Q8-A-BB-C Torodial Conductivity

Suffix A - Power	
5	24V DC, 2-wire (single output only)
6	Battery-operated with two 0…2.5V DC outputs
7	External 5…17V DC with two 0…2.5V DC outputs

Suffix B - Sensor Type	
T1	Noryl with 20 ft cable
WW	None
Suffix C - Measurement Type	
1	Conductivity
2	Concentration

Accessories

07-0100	Universal junction box, NEMA 4X
31-0068	Sensor interconnect cable
63-0083	Tee fitting, CPVC
47-0005	2 in. U-bolt, 304SS
00-0628	Submersible sensor handrail mounting kit
09-0047	Conductivity standard, 447 µS, 500 mL
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 require a junction box (07-0100) and sensor interconnect cable (31-0068).
2. Pipe mount requires two 2 in. U-bolts (47-0005).