

# *Residual Chlorine Dioxide Monitoring with Direct Membrane Sensing*



*Model Q45H/65*

Residual Chlorine Dioxide Monitor

# Control Chlorine Dioxide Disinfection with Real-Time Monitoring

ATI's Model Q45H/65 Residual Chlorine Dioxide Monitor is designed for on-line monitoring and control of industrial disinfection systems. Chlorine dioxide is a powerful disinfecting agent used for treating potable water, cooling water, and food processing wash water. To ensure proper disinfection while minimizing disinfection by-products, the concentration of disinfectant must be precisely maintained.

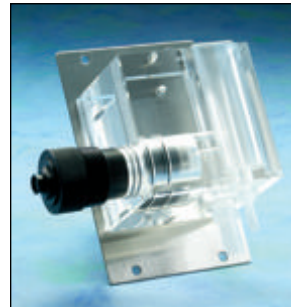
The Residual Chlorine Dioxide system features a unique membrane-covered polarographic sensor that does not require the addition of chemical reagents. All that's needed is a constant flow of water across the face of the sensor, and this is provided by a simple constant-head flowcell. The sample water is unaffected by the measurement and can be safely discharged back into the process.

The Q45H system has no moving parts, so there are no pumps or motors that burn out or tubing breaks that create maintenance nightmares. All normal maintenance items are included with each system.

The ATI Model Q45H/65 Residual Chlorine Dioxide system responds to chlorine dioxide with minimal interference from any residual chlorine that may be present.



Chlorine Dioxide Monitor



Constant Head Flowcell



Low Volume Flowcell

## Features

**No Costly Reagents Required:** The Q45H will save you money when you buy it, as well as for years afterwards.

**Loop-powered, AC, or Battery Versions:** For chlorine dioxide measurement only, a loop-powered system is available. AC powered versions provide for PID, relay, and dual output functions. A unique battery operated unit with internal data logger is also available.

**Large, Dual Line Display:** Large, high-contrast display for easy viewing of chlorine dioxide concentration. Second line scrollable through pH, temperature, and other information.

**Dual Measurement Capability:** On AC powered units, choose the optional pH sensor and get outputs for both chlorine dioxide and pH.

**PID Control Output:** Standard PID control function can be configured quickly and easily.

**Two Alarm Relays:** AC operated systems provide two relays that are configurable for either "control mode" or "alarm mode" of operation.

**Flexible Range Capability:** Standard Q45H monitors are programmable for display ranges of 0-2, 0-20, or 0-200 PPM with analog outputs scalable within the display range to any desired value. For low level applications, a display range of 0-200 PPB may also be selected.

**Universal Enclosure:** NEMA 4X (IP-66) enclosure is suitable for panel, wall, or pipe/header mounting.

## ***PID Control Function***

A standard feature of the Q45H is a PID control function. To use this function, the primary 4-20 mA output from the monitor must be assigned for PID control. Control setpoint and PID variables for proportional, integral, and derivative are easily entered using front panel push buttons. The isolated 4-20 mA output can then be used as the control input to any metering pump with analog input capability. While not suitable for systems with rapid flow changes requiring compound-loop control, the Q45H PID function can handle many stable flow applications.

## ***Optional pH Measurement***

The Model Q45H/65 Residual Chlorine Dioxide system can easily be converted into a dual measurement system. A special pH sensor can be used to allow the monitor to display both chlorine dioxide and pH. The isolated analog outputs can also be configured to track the dual parameters. Calibration and configuration of both parameters is done through the Q45H/65 user interface. This feature allows the user to add a pH measurement system at approximate half the price of a stand-alone system.

## ***Multiple Power Sources***

The Q45H/65 is designed for exceptional flexibility to meet a variety of monitoring applications. In its simplest form, the unit is a loop-powered transmitter operating from standard 24 VDC power supplies. This means easy integration into many DCS, PLC, and SCADA systems. Loop-powered instruments include the PID output function.

For applications where the second analog output is desired or where alarm relay functions are needed, an AC powered system is available. Operation from AC power allows the user to utilize analog outputs for both chlorine dioxide and pH, or for independent PID and chlorine dioxide outputs, or simply for chlorine dioxide and temperature outputs.



*Submersion and Flowcell Sensors*



*Portable Chlorine Dioxide Monitor*

For even greater versatility, a portable unit powered by a standard 9 V battery is also available. The dual 0-2.5 VDC outputs are assignable to chlorine dioxide concentration and temperature. This instrument can be supplied with an internal data-logger, making it ideal for short term monitoring at remote sites. The unit will run for 10 days on a single battery, and the data-logger will store up to 32,000 data points, easily enough for 10 days of data at 1-minute intervals.

# Model Q45H/65-A-B Residual Chlorine Dioxide Analyzer Specifications

## Electronic Monitor

Display Range:	0-200.0 PPB or 0-2,000, 0-20.00, or 0-200.0 PPM
Accuracy:	± 0.02 PPM or 0.5% of F.S.
Repeatability:	± 0.01 PPM or 0.3% of F.S.
Linearity:	0.1% of F.S.
Zero Drift:	< 0.01 PPM per month
Display:	Large 4 digit main display, 0.75" characters. 12 digit alpha-numeric second line display
Power:	16-35 VDC for loop-powered unit; 115/230 VAC, 50/60 Hz., 10 VA max. ; 9-volt battery for battery operated portable
Control Relays:	Two SPDT relays, 6A @ 250 VAC, 5A @ 24 VDC, resistive
Relay Mode:	Programmable for control or alarm function
Analog Outputs:	Isolated 4-20 mA, 550 ohm max. load. Two assignable 4-20 mA outputs, 550 ohm max. (AC only)
Data Logger:	Battery version only, stores 32,000 data points
Operating Conditions:	-20-60°C, 0-95% R.H. non-condensing
Enclosure:	NEMA 4X (IP-66) polycarbonate wall, panel, or pipe mount
Weight:	5 lbs. (2.3 Kg.) with sensor and flowcell

## Sensor & Flowcell

Sensor:	Membrane-covered polarographic sensor
Wetted Materials:	Noryl and 316 Stainless Steel
Sensor Cable:	25 feet (7.5 M) standard, 100 feet (30 M) maximum
Response Time:	90% in 60 seconds
Temperature Limits:	0-50°C.
Flowcell Material:	Clear acrylic
Sample Flow Rate:	7-15 GPH (0.5-1.0 LPM)
Sample Inlet:	1/4" I.D. Hose Barb
Sample Drain:	1/2" I.D. Hose Barb

## Ordering Information:

### Model Q45H65-A-B-C Residual ClO<sub>2</sub> Monitor

#### Suffix A - Power

- 1 - 24 VDC, 2-wire (Single output only)
- 2 - 115 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 Style

- 1 - Sensor with constant head flowcell and 25' cable
- 2 - Submersible sensor with 25' cable
- 3 - Sensor with sealed low-volume flowcell
- 4 - Sensor with 1-1/2" flow "T"
- 5 - Dual chlorine dioxide/pH sensors with constant head flowcell

#### Suffix C- pH Sensor Input

- 1 - None
- 2 - "Q"22 pH sensor w/ battery, pre-amp, 25-ft. cable
- 3 - Standard pH sensor w/ 25-ft. cable and adaptor for over flow cell
- 4 - Standard pH sensor w/ 25-ft. cable and sealed flowcell

#### OPTIONS:

- 07-0100 NEMA 4X junction box
- 31-0038 Sensor interconnect cable (max. 100 ft.)
- 00-0628 Mounting bracket kit for submersible sensor
- 00-0930 Monitor pipe mounting bracket kit
- 00-0570 Chlorine dioxide sensor polarizer (flow)
- 00-0571 Chlorine dioxide sensor polarizer (submersion)
- 47-0005 2" U-bolt, 304SS
- 05-0068 Panel mount bracket kit

## Notes

1. All systems are supplied with one package of membranes, one 120 cc bottle of electrolyte, and one spare parts kit containing 3 each of all o-rings and special screws.
2. AC power is required to allow for two 4-20 mA outputs.
3. Suffix B items C items 2, 3 & 4 allow Q45H to supply outputs for both chlorine dioxide and pH.
4. Flowcell for ClO<sub>2</sub>/pH combination systems should be kept within 25 feet of monitor.
5. Buffer packets for pH 4 & 7 supplied with options 2, 3, or 4, Suffix C.
6. Pipe mount requires two 2" U-bolts (47-0005).
7. Panel mount requires bracket (05-0068).
8. 1/2 DIN panel mount, select 07-0201.



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