

# ***Monitor Your Chlorine...*** ***... Reagent Free***



*Model Q45H-62/63*

**Residual Chlorine Monitor**

# Say Goodbye to Buffers and DPD Reagents...Now!

ATI's Model Q45H is designed for on-line monitoring and control of chlorination systems. It is available in two versions: a free chlorine monitor for drinking and cooling water systems, and a combined chlorine monitor ideally suited for "chloraminated" drinking water. The combined chlorine system can also be used in wastewater effluents where sufficient ammonia is present prior to chlorination to result in a predominantly monochloramine residual.

Unlike on-line colorimetric and most amperometric monitors, Q45H systems utilize a membrane-covered polarographic sensor that **does not require the addition of chemical reagents**. That means no more costly reagents to purchase or flowcells that require frequent cleaning. All that's needed is a constant flow of water across the face of the sensor, provided by a simple constant-head flowcell.

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 Q45H chlorine monitoring system is easy to operate, requires minimal maintenance, and will not eat a hole in your operating budget with on-going reagent requirements or component replacement costs.



Combined Chlorine Monitor



Free Chlorine Monitor



Constant Head Flowcell



Low Volume Flowcell

## Features

**No Costly Reagents Required:** By eliminating the need for costly DPD and buffer reagents, the Q45H will save you money. You will also improve the work environment by eliminating the storage, handling and disposal of chemical reagents and the organic waste produced by DPD colorimetric analyzers.

**Lower Your Maintenance Costs:** The Q45H has no moving parts, so you don't have to replace worn out tubing or failed pump modules.

**Automatic pH Compensation:** Eliminate Free Chlorine error caused by process pH drift with the optional pH compensation feature.

**Dual Measurement Capability:** On AC powered units, choose the optional pH sensor and get outputs for both chlorine and pH. This feature is available with either the Free or Combined Chlorine monitors.

**Free or Combined Chlorine Measurement:** Monitor is programmable for either type of measurement with simple sensor conversion.

**Loop-powered, AC, or Battery Versions:** For chlorine 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.

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

**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.

## Sensor Mounting Options

The residual chlorine sensors are available in two configurations: flowcell and submersion. The Free Chlorine sensor should always be used in the flowcell configuration. The Constant-Head Flowcell is used to maintain a constant flow rate and pressure at the face of the sensor. The sample inlet flow rate and pressure can vary widely without affecting the measurement. The only requirement is that the sample inlet flow rate be at least 7 gallons per hour. A Low Volume Flowcell is available for clean water application with a flow rate of 3-6 gallons per hour. The combined chlorine sensor can be used in either the Flowcell or Submersion configuration. The submersion sensors require flow velocities of at least 0.4 ft/sec for proper operation.

## Optional pH Compensation For Free Chlorine Monitor

For many applications, process pH is relatively stable, and nothing more than the standard monitor and sensor are needed. However, when the pH of the water stream varies regularly, a significant error in free chlorine concentration is introduced. This error is due to the sensitivity of the membraned sensor to wide pH fluctuations.

With the simple addition of an optional pH sensor, the Q45H will automatically correct for these changes, maintaining accurate measurement even when pH varies widely or is up near a pH of 9. In addition, this option provides a second analog output that can be assigned to pH, converting the chlorine monitor into a two parameter system, providing isolated 4-20 mA outputs for both chlorine and pH. Both Free and Combined Chlorine monitors can be converted to dual output monitors.

## Multiple Power Sources

The Q45H 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 and automatic pH correction capability.

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 and pH, or for independent PID and chlorine outputs, or simply for chlorine and temperature outputs.



*Submersion and Flowcell Sensors*



*Portable Chlorine 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 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-62/63 Residual Chlorine Analyzer Specifications

## Electronic Monitor

Display Range:	0-200 ppb or 0-2.000, 0-20.00, or 0-200.0 ppm
Accuracy:	± 0.02 ppm or 1% of F.S.
Repeatability:	± 0.01 ppm or 0.5% of F.S.
Linearity:	0.2% 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 VDC for battery power
Control Relays:	Two SPDT relays, 6A @ 250 VAC, 5A @ 24 VDC, resistive
Relay Mode:	Programmable for control, alarm, or timer function
Analog Outputs:	Isolated 4-20 mA, 550 ohm max. load. Two assignable 4-20 mA outputs, 550 ohm max. (AC only)
Data Logger	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 Q45H-62/63 Monitor

### Suffix A - Measurement Type

- 62 - Free Chlorine
- 63 - Chloramines

### Suffix B - Power

- 1 - 24 VDC, 2-wire (single output only)
- 2 - 115 VAC with 2 relays and 2 outputs
- 3 - 230 VAC with 2 relays and 2 outputs
- 4 - Battery Operated with two 0-2.5 VDC outputs
- 5 - Battery Operated with internal data-logger

### Suffix C - Sensor Style

- 1 - Sensor with constant head flowcell and 25' cable
- 2 - Submersible sensor with 25' cable (Chloramine sensor only)
- 3 - Sensor with sealed low-volume flowcell
- 4 - Sensor with 1-1/2" Flow "T" (Chloramine sensor only)
- 5 - Dual free chlorine/pH sensors with constant-head flow-cell
- 6 - Dual free chlorine/pH sensors with low-volume flowcell and 1" tee

### OPTIONS:

- 07-0100 NEMA 4X junction box
- 31-0001 5 conductor sensor interconnect cable (max. 100 ft.)
- 00-0628 Mounting bracket kit for submersible sensor.
- 00-0930 Monitor pipe mounting bracket Kit
- 00-0259 CO<sub>2</sub> buffer injection system (for precipitation control)
- 55-0003 Rotameter for CO<sub>2</sub> buffer system
- 00-0570 Free Chlorine Sensor polarizer (flow)
- 00-0572 Combined Chlorine Sensor polarizer (flow)
- 00-0573 Combined Chlorine Sensor polarizer (submersion)

## 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 C, item 5 allows Q45H to supply outputs for both chlorine & pH
4. Flowcell for Cl<sub>2</sub> / pH combination systems should be kept within 25 feet of monitor.
5. Buffer packets for pH 4 & 7 supplied with options 5 or 6, suffix C.

