

# *Online Monitoring and Control for Ozonation Processes*



*Model Q45H/64*

Dissolved Ozone Monitor

# Interference-Free Measurement

ATI's Model Q45H/64 Dissolved Ozone Analyzer is the ideal choice for on-line monitoring and control of ozonation systems. Capable of measuring  $\text{DO}_3$  concentrations as low as 0-200 PPB full scale, the system provides the sensitivity needed for demanding applications such as pharmaceutical grade water or semi-conductor wash water. And with the standard 0-2 PPM range, the monitor is ideally suited to water bottling systems or municipal water treatment. Even high range applications requiring 0-20 or 0-200 PPM can be easily accommodated.

Utilizing a highly selective polarographic membraned sensor, dissolved ozone can be monitored interference-free, with little maintenance. There are no moving parts and what little maintenance is required can be done in just a few minutes. Installation is simple and you can be up and running in a few hours.

Available in loop-powered, AC operated, or battery operated portable versions, the Q45H/64 is well suited for almost any  $\text{DO}_3$  measurement requirement. Even a portable data-logging version is available for temporary installation or process studies. And for even more flexibility, the instrument is available with an optional pH sensor input that allows a single unit to provide both dissolved ozone and pH analog outputs.



Dissolved Ozone Monitor



Constant Head Flowcell

- **Bottled water**
- **Pharmaceutical grade water**
- **Semi-conductor wash water**
- **Cooling water**
- **Potable water treatment**



Low Volume Flowcell

## Monitor Features

**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.

**Loop-powered, AC, or Battery Versions:** For ozone 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 ozone concentration. Second line scrollable through pH, temperature, and other information.

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

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

**Assignable Analog Outputs:** Dual analog outputs can be configured to track ozone and temperature, ozone and ozone, or ozone and pH.

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

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



## Simple Flow Control

Dissolved ozone sensors are normally installed in a flowcell, with sample piped to the flowcell using 1/4" I.D. sample tubing. The standard flowcell arrangement uses a constant-head overflow system to ensure stable flow and pressure across the sensor regardless of sample line fluctuations. A low-volume flowcell is also available for installations where minimum sample flow is desired and sample flow and pressure can be carefully controlled.

For ozone measurements in reactor chambers often used in large municipal water treatment systems, a submersible sensor is available. This sensor is easily pipe mounted and can be submerged up to 25 feet.

## PID Control Function

A standard feature of the Q45H/64 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 many types of ozonators. While not suitable for systems with rapid flow changes requiring compound-loop control, the Q45H PID function can handle many stable flow applications.

## Multiple Power Sources

The Q45H/64 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 ozone and pH, or for independent PID and ozone outputs, or simply for ozone and temperature outputs.



*Submersion and Flowcell Sensors*



*Portable Ozone 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 ozone 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/64-A-B Dissolved Ozone Monitor Specifications

## Electronic Monitor

Display Range:	0-200.0 PPB, 0-2.000 PPM, 0-20.00 PPM, 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

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.
Sample Inlet:	1/4" I.D. hose barb
Sample Outlet:	1/2" I.D. hose barb

## Ordering Information: Model Q45H64-A-B Dissolved O<sub>3</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 ozone/pH sensors with constant-head flowcell
- 6 - Dual ozone/pH sensors with low volume flowcell and 1" tee

### Options:

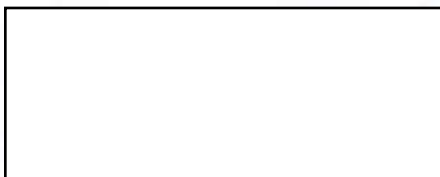
- 07-0100 NEMA 4X junction box
- 31-0038 Sensor interconnect cable (max. 100 ft.)
- 00-0628 Mounting bracket kit for submersible sensor
- 00-0930 Monitor pipe mounting bracket kit
- 00-0570 Ozone sensor polarizer (flow)
- 00-0571 Ozone sensor polarizer (submersion)
- 47-0005 2" U-bolt, 304SS
- 05-0068 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 5 & 6 allow Q45H to supply outputs for both ozone and pH.
4. Flowcell for O<sub>3</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 B.
6. Pipe mount requires two 2" U-bolts (47-0005).
7. Panel mount requires bracket (05-0068).



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