

# *Auto-Clean* pH/ORP Monitor



**"Air Wash" Self-Cleaning System For  
Better, More Accurate Performance**

**ATi**  
ANALYTICAL TECHNOLOGY, INC.

# Better Performance With A Burst Of Air.



*Air Wash Sensor Assembly*

On-line pH and ORP monitoring is common in water and wastewater treatment systems and a wide variety of industrial plants. Sensor designs have become more durable and poison resistant over the years, expanding the number of applications for continuous measurement. Because the surfaces of pH and ORP sensors must remain clean for accurate measurement, sensor maintenance continues to be fairly high. In many wastewater treatment applications, rapid sensor fouling is a major problem.

Many different automatic cleaning methods have been used in an attempt to reduce the cleaning requirements for pH and ORP sensors. Mechanical and chemical systems have proven useful in certain applications, but are often complicated and troublesome. ATI has developed a unique "air wash" system (patent pending) that uses high pressure air to scour the surface of the sensing and reference elements. This cleaning method provides a simple

cleaning process that eliminates the need for any moving parts in contact with the fluid or the use of any hazardous chemicals.

## Keeping Clean Was Never So Simple.



*Replaceable Sensing Module*

The cleaning function in the Auto-Clean system is activated automatically by the monitor. The cleaning frequency can be programmed for any interval from once an hour to once every 24 hours. During a cleaning cycle lasting approximately 1 minute, the analog and relay outputs are held to insure that external control and alarm systems are not affected.

When the cleaning cycle starts, the internal compressor activates and charges an accumulator cylinder. When the accumulator is charged to the proper pressure, a solenoid valve on the outlet delivers the air to the cleaning nozzle in a 3 second burst. This sequence is repeated a number of times to dislodge any accumulations on the sensor face. At the end of the cycle, the monitor holds outputs for an additional minute to allow the sensor to stabilize again before updating output functions.

The sensor assembly provided with the system is specifically designed for optimum cleaning efficiency and ease of use. The sensor consists of two parts, a holder assembly containing a preamplifier circuit and a replaceable sensor module that screws onto the end of the holder. The holder also contains an air hose connection and titanium air nozzle to direct the cleaning air blast across the critical surfaces of the sensing module. Sensing modules use a flat glass pH electrode (or flat metal redox electrode) for ease of surface cleaning, and the module can be changed in seconds should replacement become necessary.

# Integral Air Supply Makes Installation A Breeze.

The D15 Auto-Clean pH/ORP Monitor incorporates the "air wash" cleaning system into an integrated monitoring package that greatly reduces the manual cleaning requirements in many pH and ORP monitoring applications. All the components required for a complete installation are provided, including an air supply capable of delivering the required cleaning air. Since the unit uses ambient air pressurized with an internal compressor, no separate air supply is needed. However, special versions are available to allow the use of instrument air where available.

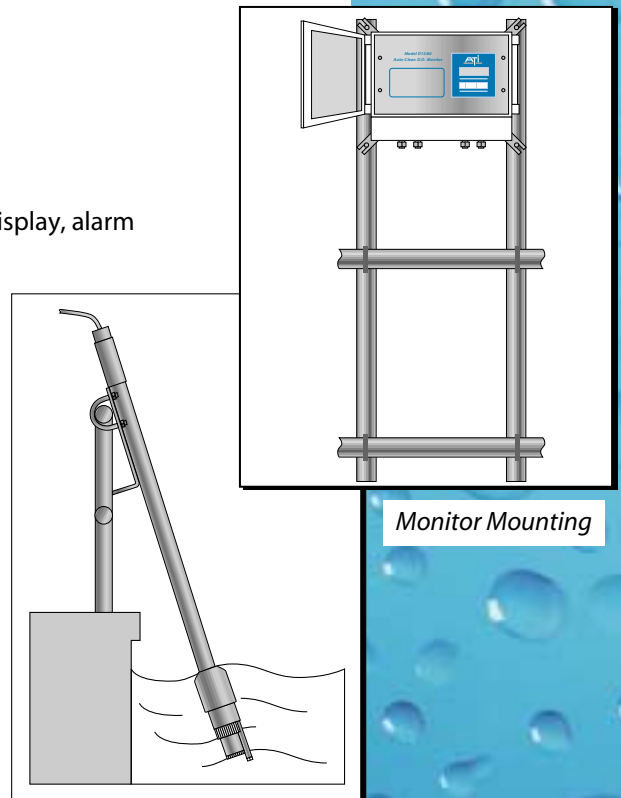
Series D15 systems consist of two main components, a NEMA 4X electronic assembly and a modular sensor assembly. The electronic package includes microprocessor based pH/ORP monitor, air compressor, accumulator cylinder, solenoid valve, and cleaning sequence controller. The monitor unit provides the operator interface to the system, displaying pH and ORP values on a 16 character backlit liquid crystal display. Two programmable alarm relays may be used for on/off control or may be programmed for variable pulse frequency or pulse width pump control. Two isolated 4-20 mA outputs are provided, with programmable output spans that can be inverted if needed.



The Auto-Clean pH/ORP Monitor

## System Features.

- **Alphanumeric LCD:** Provides pH and ORP display, temperature display, alarm status indication, and all configuration information.
- **Two Control Relays:** Relays are programmable for setpoint, deadband, and time delay. Relays offer pulse frequency and pulse width modulation control modes in addition to simple on/off control for direct chemical feed pump modulation.
- **Isolated Outputs:** Programmable 4-20 mA output span from 1 to 14 pH units full scale. Output may also be inverted if required. Second temperature output standard.
- **Multipurpose Alarm Relay:** Provides alarm output if pH or ORP values go outside a definable band, and may also be programmed to alarm if control functions do not hold designated values for a specific time period.
- **Automatic Buffer Recognition:** Monitor recognizes calibration buffer values automatically and makes calibration a snap.



Monitor Mounting

# Specifications

## ELECTRONICS

<b>Inputs:</b>	Single pH or ORP sensor with preamplifier
<b>Range:</b>	0-14.00 pH, -1000 to +1000 mv ORP
<b>Electrode Type:</b>	Glass or antimony for pH, platinum or gold for ORP
<b>Repeatability:</b>	±0.02 pH
<b>Linearity:</b>	0.1% of F.S.
<b>Display:</b>	16 character alphanumeric backlit LCD
<b>Cleaning Function:</b>	Automatic air wash cleaning system, programmable frequency
<b>Temp. Compensation:</b>	Automatic from -10° to 110°C with 100 ohm Pt. RTD
<b>Control Relays:</b>	Two SPDT relays, 5A @ 220 VAC resistive Programmable deadband and time delay
<b>Control Mode:</b>	On/Off, pulse width modulation, pulse frequency modulation
<b>Alarm Relay:</b>	Independent SPDT relay, 5A @ 220 VAC resistive Programmable for actuation on high/low values or on control system failure
<b>Analog Output:</b>	Two isolated 4-20 mA, 600 ohm maximum load Programmable output span. Output may be inverted. Second output normally used for temperature, but may also be assigned to measurement
<b>Operating Conditions:</b>	-25° to 50°C, 0% to 95% R.H. non-condensing
<b>Power:</b>	110/220 VAC ±10%, 50/60 Hz.
<b>Enclosure:</b>	NEMA 4X ABS Wall Mount

## SENSOR

<b>Sensor Assembly:</b>	Two part assembly with top holder and screw-in sensing module
<b>Sensor Cable:</b>	25 feet standard, 100 feet maximum with junction box
<b>pH Sensor Module:</b>	Flat glass double junction electrode
<b>ORP Sensor Module:</b>	Platinum double junction electrode standard, gold optional
<b>Response Time:</b>	90% in 10 seconds
<b>Temp. Compensator:</b>	100 ohm platinum RTD integral to sensor
<b>Temp. Limits:</b>	-10° to +80°C
<b>Pressure Limits:</b>	0-20 PSIG
<b>Materials:</b>	Noryl
<b>Air Connection:</b>	Soft tube fitting for 1/4" I.D. x 3/8" O.D. PVC tubing
<b>Air Cleaner Nozzle:</b>	Titanium

# Ordering Information

## MODEL D15/EE - F - G - H - I AUTO-CLEAN MONITOR

Suffix EE - Parameter	Suffix H - Power
72 - pH	1 - 120 VAC, 50/60 Hz.
75 - ORP	2 - 220 VAC, 50/60 Hz.
Suffix F - Enclosure	Suffix I - Enclosure Heater
1 - Panel Mount with separate cleaner assembly	1 - None
2 - NEMA 4X Wall Mount	2 - Heater/Thermostat for ambient temp. below 0°F (-15°C)
Suffix G - Sensor Cable Length	<b>Note:</b> All systems are supplied with one package of pH 4 buffer and one package of pH 7 buffer for calibration, one O-ring kit, and 25 ft. (or 50 ft.) of air tubing.
1 - 25 feet	
2 - 50 feet	

## OPTIONS

00-0624	Mounting bracket kit for submersible sensor
00-0930	Monitor Pipe Mounting Bracket Kit
31-0038	7 conductor shielded interconnect cable for preamp sensor



680 Hollow Road, Box 879  
Oaks, PA 19456  
Phone: 610-917-0991 • 1-800-959-0299  
Fax: 610-917-0992  
E-Mail: sales@analyticaltechnology.com  
Web: www.analyticaltechnology.com

ATI (UK) Limited  
First Floor • 237-139 Oldham Road  
Springhead, Oldham OL4 4QR  
Phone: 0161-624-0200 • 0800-018-4020  
Fax: 0161-624-0400  
E-Mail: sales@atiuk.com

Represented By:

