



Rugged and Reliable Instrumentation for Over 50 Years





THE BEST WARRANTY IN THE BUSINESS

Congratulations. You just purchased the only sensor on the market with a two year warranty. No other manufacturer can match our warranty because no other manufacturer is as confident as we are that AquaMetrix probes are among the most reliable and durable in the industry.

AquaMetrix will replace or repair this sensor if it fails due to defects in material or workmanship for a period of up to two years from the date of shipment to the user. A warranty claim will not be honored if defects are not reported within the warranty period, or if AquaMetrix determines that defects or damages are due to normal wear, misapplication, lack of maintenance, abuse, improper installation, alteration, or abnormal conditions. AquaMetrix's obligation under this warranty shall be limited to, at its option, replacement or repair of this product. The product must be returned to AquaMetrix, freight prepaid, for examination. The product must be accompanied with an MSDS for all the process chemicals used, must be thoroughly cleaned and any process chemicals removed. Contact AquaMetrix or your distributor to initiate warranty support. Product may not be returned without authorization from AquaMetrix.

Model

Rugged and Reliable

AquaMetrix products have been manufactured for more than five decades. The original manufacturer, Lisle-Metrix, was licensed to build GLI (Great Lakes Instruments) products for the Canadian market. GLI probes and controllers earned their place as some of the most rugged and reliable water analysis equipment in the marketplace. Following the signing of NAFTA in 1992, Lisle-Metrix expanded to provide products for the global market under its own name. In 1998, Lisle-Metrix became Aquametrix, and in 2010, the company became the foundation for Water Analytics, Inc.

Throughout the changes in both ownership and name, the original probes and controllers, that have been known for their quality, continue to be interchangeable with their GLI precursors. A steady stream of improvements have made them even better, while a suite of new products have grown to supply more options to the water treatment industry.

Water Analytics continues to build Aquametrix probes and controllers to exacting standards and to incorporate changes that make them all the more rugged and more reliable. Aquametrix sensors and controllers are the only such products in the industry with a two year in-field manufacturers warranty. Our world-wide distribution network insures that the probe you needed yesterday gets to you quickly.

We will continue to strive to ensure that Aquametrix products are both the most dependable in the marketplace and priced to represent the best value as well.

Aquametrix 2300 — The Features of a Controller, PLC and SCADA in a Small Package at a Small Price

Until now process control meant a transmitter, PLC and SCADA connected together in a system whose price put it out of reach to small and mid-size organizations. The new 2300 controller is the first system to provide process control and web functionality for a fraction of the cost of its nearest competitors.



never push a single button on the keypad again.

Alarms via E-Mail, Text and Display

Forget about configuring relays or annunciators to create alarms (though you can do that if you really want to.) Simply set an alarm condition, your e-mail address to text number and a message. The enclosure An alarm doesn't have to just signal a problem. It can be set to signal the activation of a relay.

Data Logging

Data logging is generally an option. It's included in the 2300. Data is stored on a microSD card on Last-In-First-Out sequence. The card need never removed to download data. You can download straight from the web browser.

Security

All that power can be dangerous in the wrong hands. That's why the 2300 has three levels of access: administrative, technician and operator.

Compact

All that power can be dangerous in the wrong hands. That's why the 2300 has three levels of access: administrative, technician and operator.

Four 4-20 Inputs

The 2300 accepts 4 4-20 mA inputs. Mix and match any combination of direct output sensors. The display shows all four processes

Three Frequency Inputs

In addition to 4 4-20 mA inputs the 2300 accepts 3 frequency inputs. Paddle wheel flow sensors, magnetic flow sensors and any device that outputs a square wave all work with the 2300. That makes a total of 7 sensors that can be used. No other controller in a package this small comes close.

If 7 inputs isn't enough just add an optional card.

Four Relays

Four 10 A - 120 V relays allow control of 2 to 4 processes. The relays can mixed and matched in any combination.

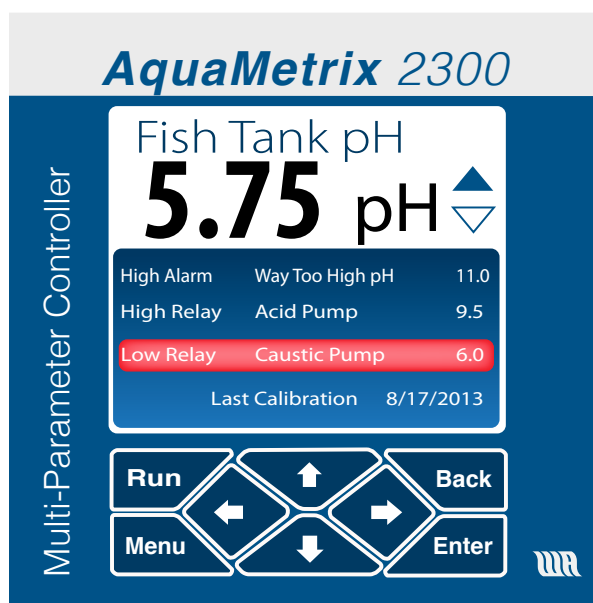
Full Web Functionality

Viewing probe readings on a web browser is just the start of the 2300's internet functionality. Set-up, calibration, data logging, alarm monitoring—in short anything you do at the device you can do on the web. In fact the web interface is so convenient you may

The enclosure is NEMA 4Z for panel mounting. An optional box enables the the 2300 to be wall mounted.

Price

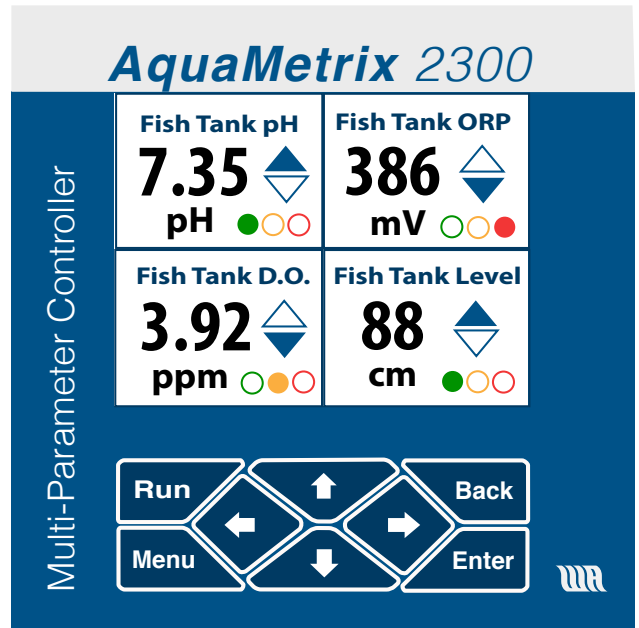
As compact as the form factor is the price is even more so. The 2300 is priced no higher than most multi-channel analyzers and a fraction of the cost of a similarly configured PLC or SCADA system.



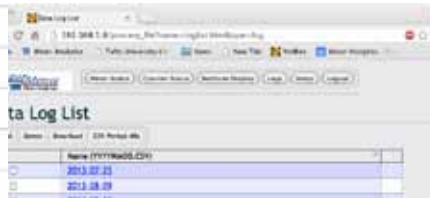
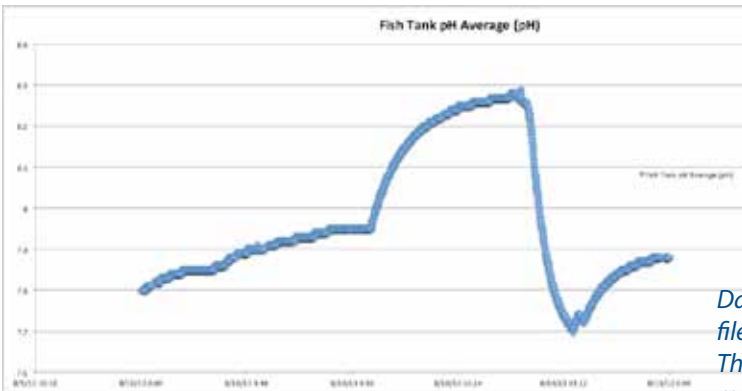
The detail screen is triggered by an alarm or brought up by the user.



The web display shows as many panes as there are sensors—in this case four. Each pane shows the process value, time trace, relay settings, alarm settings and status. Configuring and calibrating each sensor is a click away.



The web display shows as many panes as there are sensors—in this case four. Each pane shows the process value, time trace, relay settings, alarm settings and status. If you like buttons the web ones work just like the real ones



Data logs are accessible from the web browser. With CSV files time plots of all sensor data can be made in seconds. The user can also download a log that records all system information and a third log that records all alarm activations.

Inputs

| | |
|-----------|---|
| Analog | Four 4-20 mA, expandable to 8 with additional input card* |
| Frequency | Two optically isolated, up to 24 VDC or 120 VAC |
| Counter | One accumulator for tracking equipment on time |

Outputs

| | |
|----------------|--|
| Relays | Four 120V/240 V @ 10A/5A expandable to eight* |
| Alarms | Configurable as E-mails and/or texts for alarms, alerts, or just reminders |
| Web | Remote viewing with a browser on a computer, tablet, or smartphone Remote programming from any of these as well |
| Datalogging | Logging of CSV files directly to micro SD card |
| Digital output | Optional: Modbus RTU over RS485 or Modbus TCP over TCP/IP communication card* |

Physical

| | |
|------------|---|
| Mounting | 1/4 DIN panel mount or wall mount with optional hardware |
| Dimensions | Front cover: 6.5" wide x 5.5" tall; rear enclosure: 3.5" wide x 3.5" tall x 4.5" deep |
| Weight | 2 lbs. |
| Protection | NEMA 4X |

Shark — Four parameters, One controller

No other controller on the market packs as much power, offers as much flexibility, and is so cost effective as the Shark.



Four Measuring Parameters

Select the parameter you wish to measure from the easy-to-use LCD menu on the inside front cover. Choose conductivity, pH, ORP, or flow.

No Extra Cards/Options Required

Each Shark comes complete. There are no extra costs associated with buying boards for different applications or buying components to achieve NEMA 4X protection.

Universal Mounting

A universal mounting kit is included for surface, panel, and pipe-mount applications. The 1/4 DIN enclosure makes panel-mount cutouts and engineering simple.

Snap-On Terminal Connectors

Wiring is easy with removable/snap-on terminal connectors.

Displays & Menus

There are two displays on the Shark: a bright LED numeric display on the outside front panel, and a 2-line, 16-character LCD display on the inside. The LED readout on the outside panel can be seen several yards away. A distinctive, color-coded bar graph immediately indicates if the process is within parameters that you set (green), if the control relays are on (yellow), or if your process is in alarm condition (red). All configuration and control functions are performed on the LCD menu on the

inside front panel.

Calibration

Calibration is performed easily from the front panel. The temperature can also be checked from the front. Since configuration settings are changed from the inside menu, they cannot be adjusted by mistake. Process and temperature calibration can also be performed from the inside menu where the latter can be done via manual or automatic modes. Calibration data can be recalled, indicating mode, accepted buffer values, actual sensor input signals, calibration temperature and more.

Analog Outputs

The Shark provides two isolated, independent and scalable 4-20 mA outputs.

Relays with Cycle Timers

The instrument also provides control of external devices using its two independent control relays. A third relay is preset to act as an alarm, but can be used as a third control relay. It has both high and low adjustable on and off set-points.

Factory set for bidirectional control, both control relays can be set for either a rising or falling process, with easily programmed on/off set-points. Each control relay has a built-in independent cycle timer, with field-set on and off times. This feature reduces chemical overshoot.

Enclosure

The Shark is housed in a rugged NEMA 4X polycarbonate enclosure, making it ideally suited for heavy-duty applications.

Shark — pH, ORP, Conductivity & Flow Controller

The only controller with the inside display.



For routine operation the front display and menu make operation simple. The bright LED display shows the process reading and allows calibration to be carried out with ease. "Set it and forget it" is the rule until a sensor change or diagnostics is needed.

7 segment bar graph:

- 3 green LED's indicate within process
- 2 yellow LED's indicate relays activated
- 2 red LED's indicate alarm condition



Loosen the two spring loaded screws on the front plate and a second LCD menu flips down. In addition to showing the process reading, temperature and calibration results, other menus allow the user to change input sensors (as shown below). Other menus offer diagnostics and enable the user to set relay values and fine tune parameters such as noise reduction.

Your television is more challenging to set up than the Shark:

Select parameter...

...Set Relays...

...Calibrate...

...DONE



PANEL MOUNT

SURFACE MOUNT

HORIZONTAL PIPE MOUNT

VERTICAL PIPE MOUNT

Shark TX /P — Four parameters, One transmitter

Complete and versatile, the Shark-TX is the only 1/4 DIN and DIN rail mountable two wire transmitter on the market that allows the user to select one of four measuring parameters.

Four Measuring Parameters

Select the parameter you wish to measure from the easy-to-use LCD menu on the front cover. Choose conductivity, pH, ORP or flow.

Complete - No extra cards required.

Each Shark-TX/P comes complete. There are no extra costs associated with buying boards for different applications.

Two mounting options.

The Shark TX comes complete with a universal mounting kit for surface, panel and pipe-mount applications. The NEMA 4X, 1/4 DIN enclosure is perfect for stand-alone or panel-mount operation.

The Shark-TXP comes complete with DIN rail mounting hardware for mounting in a control panel.

Display

2-line, 16-character LCD on the front panel.

Analog Outputs

The Shark-TX provides an isolated and fully scalable 4-20 mA output.

Enclosure

The Shark TX enclosure makes it ideally suited for heavy-duty applications such as industrial wastewater neutralization, municipal water and wastewater, pulp and paper, and process control. The Shark TXP enclosure is also polycarbonate with a NEMA 4X front panel, and DIN rail mounting hardware on the back.



Features

- pH, ORP, Conductivity & Flow parameters available
- 24 VDC / 24 VDC Loop
- Easy to read 2 X 16 character LCD display
- Quick and easy to calibrate
 - Single 4-20 mA output with range expandability
 - 1/4 DIN size, NEMA 4X polycarbonate housing
 - Shark-TX - Universal mounting hardware provided for surface, panel and pipe mounting
 - Shark-TXP - Panel or DIN rail mounting hardware provided

All electronics of the Shark TX are sealed inside the front swing out enclosure. A NEMA 4X box further isolates the electronics as well as the power and sensor connections



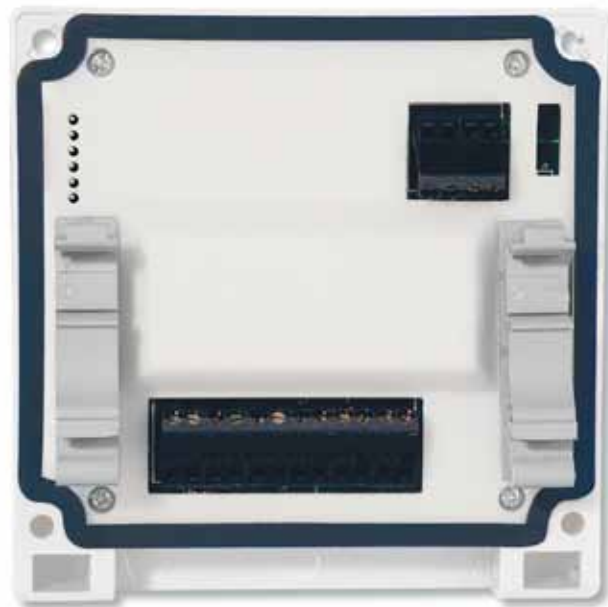
The clean, simple front display shows the process value and temperature. An intuitive 3-button interface allows the user to change the sensor identity, calibrate the sensor, and run diagnostics.



The 1" depth of the Shark TXP enables it to be mounted unobtrusively on a pipe.



The Shark TX/P is typically powered by a 4-20 mA loop, but can also be independently powered by a 24 VDC supply. All the connections needed for power and signal are on the back of the unit.



Transmitters

Use the Shark TX/P for a more flexible 4-20 mA loop circuit.

The appeal of being able to send a 4-20 mA output straight from the probe to the control system makes our 2 wire, loop-powered probes cost effective pieces of equipment. This is the basis of operation of our P/R 65 two-wire differential pH/ORP probes. However, using the combination of a P/R60 probe and a Shark TX transmitter offers the following advantages:

- The 4-20 mA output can be tailored by the user to a specific a pH (ORP) range. By narrowing the measurement range this offers greater accuracy.
- The probe can be calibrated and tested by the transmitter away from the PLC.
- The Shark TX display gives a direct reading of the sensor, thus making it easy to distinguish between faults at the PLC or at the probe.

The Differential Advantage

Differential probes may appear to be expensive; however, when your requirements call for a probe that must last years and provide precise pH/ORP values, their value is unmatched.

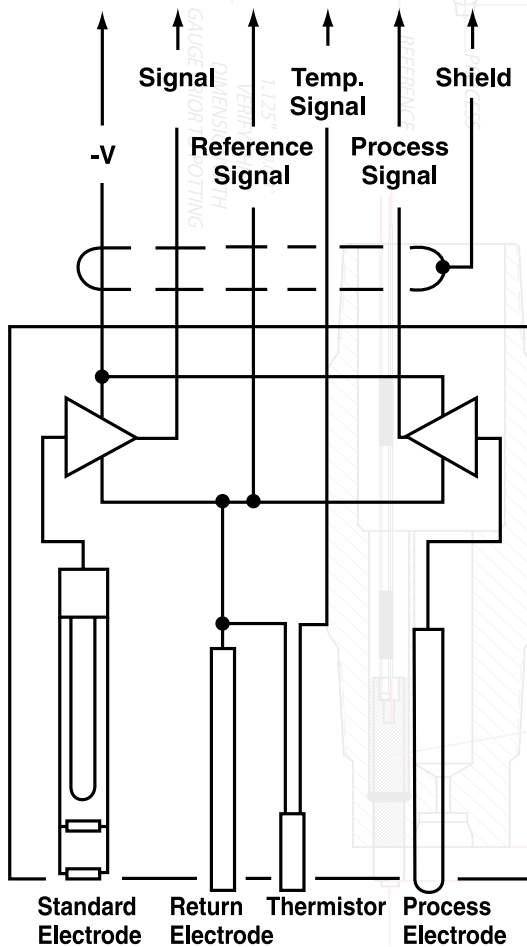
Most sensors are “combination” probes. This means that the reference and process electrodes are “combined” inside one glass envelope. This makes for a simple, compact, and inexpensive probe. But this approach comes at a cost: The process that permeates the reference electrode invariably contaminates it. Since the reference electrode is sealed inside the glass envelope, there is no way to replace its contaminated solution. For this reason combination probes can maintain their accuracy for—on average—1 to 2 years. Furthermore, any ground loops that make their way into either the reference or process electrode affect the accuracy of the reading.

Differential probes solve both the problems of reference electrode contamination and ground loop errors. By splitting the two electrodes and referencing them both to a common titanium ground rod, the following benefits occur:

- The reference electrode can now be coupled into the process via a replaceable salt bridge. When the salt solution becomes contaminated, simply discard it and replace it with a new one. The pH 7 buffer solution that bathes the reference electrode can also be replaced with fresh buffer.

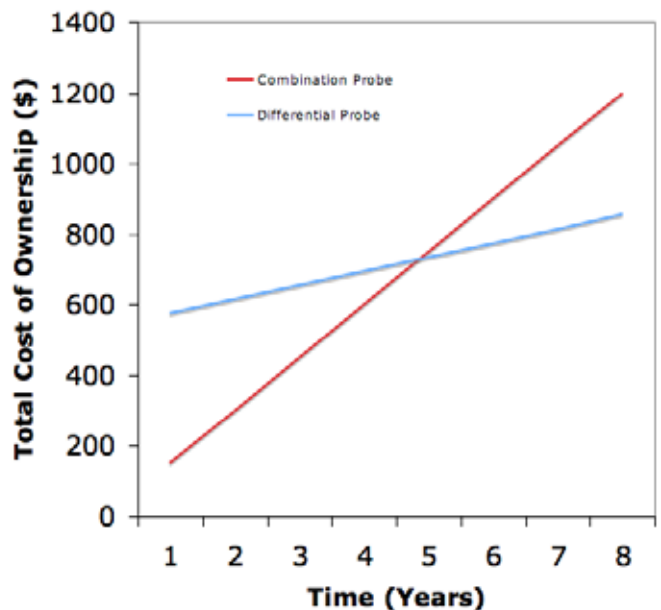
- The addition of the ground rod splits the measurement circuit containing the process and the reference electrodes into two high impedance circuits containing the common titanium return electrode. The process electrode generates a potential E1 proportional to the process pH/ORP. The reference electrode, immersed in the stable buffer solution, generates a standard reference potential, E2. Both circuits have a common potential E3 at the ground rod, which serves as a return electrode. The two circuits are fed into amplifiers which provide an output representing the differential between them: $(E1 - E3) - (E2 - E3)$. The common potential E3 is cancelled out electronically, greatly reducing inaccuracies caused by ground loops which may exist between process and instrument grounds. Ground loop current will flow through the low impedance path of the return electrode, affecting the potential E3, but not the differential measurement.

pH / ORP



The advantages of differential pH/ORP measurement are shown here. Any ground signal that normally interferes with the process signal is automatically cancelled in the differential circuit design. The separation of the two electrodes also allows both the salt bridge connecting the two and the pH 7 buffer solution in which the reference electrode sits to be replaced.

**Cost of Ownership
Combination Probes vs. Differential Probes**



60 Series — Fixed Insertion Differential pH/ORP Sensor

The P60C-8 pH and the R60C-8 ORP probes are dependable, industrial grade sensors designed to provide accurate measurement and longer service life under the most demanding conditions.

Some features of these probes include: differential measurement technology, replaceable salt bridge and encapsulated preamp.

The P/R60C-8 has been field proven in thousands of installations for five decades. The domed glass process electrode is specially designed for tough applications and fast response. This reference electrode is protected from the process by a double junction replaceable salt bridge.

The resulting true differential measurement has several advantages over conventional probes: ground loop problems are virtually eliminated, and the salt bridge is easily replaced. When the reference solution becomes contaminated, the probe can be rejuvenated at a modest cost by replacing the salt bridge and reference solution. Automatic temperature compensation is accomplished through the use of a thermistor at the tip of the probe. The encapsulated preamplifier provides an output signal which can be transmitted 3000 feet over inexpensive cable.

The 60 Series probes have the same form factor and electrical connections as the GLI/Hach probes. Since their durability is unsurpassed in the industry they are frequently used as replacements for GLI probes.

Applications

- Process Control
- Industrial and Municipal Waste Treatment and Neutralization
- Fume Scrubbers
- Plating
- Circuit Board Manufacturing
- Food and Beverage
- Chemical Processing
- Pulp and Paper
- Mining
- Power Generation
- Pharmaceutical Industry



pH / ORP



The classic P/R 60 C-8 1.5" NPT fixed insertion probe has proven itself in thousands of locations that present the harshest of environments.



When space is a premium the new 1" NPT fixed probe is a fixed insertion differential probe benefits in a smaller package. The P60C5 features the same large electrode as the P60C8 for a signal-to-noise that is unmatched.

Features

- Differential Measurement Elimination of grounding problems.
- Replaceable salt bridge and reference buffer solution yields low maintenance cost leading to lower lifetime cost.
- Potted construction for durability and longevity.
- Field-proven for five decades
- Encapsulated preamplifier transmits up to 3000 ft.



Exploded view showing the salt bridge and the well containing the reference electrode. Both the salt bridge and buffer solution (in the vial shown here) can be replaced for little cost.

60 Series — Variable Insertion Differential pH/ORP Sensor

The P/R60C-6 incorporates all the benefits of differential measurement found in other models of the 60 series — in a variable insertion form factor.

This unique pH probe mounts in a standard 1-1/4" NPT tee, or in a tank, through a specially designed CPVC compression fitting. This technology provides several important advantages:

- The probe enters straight into the fitting eliminating twisting of the cable.
- The insertion length is variable between 7/8" and 5".
- One model is used for both flow-through and submersion tank-mount.

Installation does not require a pipe wrench, strap wrench or thread sealant on the probe. This helps to reduce down time for calibration. Another advantage of the P/R60C-6 is the semi-flush face which is more easily cleaned and avoids solution materials gathering on protrusions. The domed glass electrode, the protective metal electrode and the temperature sensor protrude only about 1/8 inch while the salt bridge is flush. A flat-face version of the pH probe is also available.

The encapsulated preamplifier provides an output signal which can be transmitted 3000 feet over inexpensive cable. Another version encapsulates a blind 4-20 mA two-wire transmitter which can transmit a virtually unlimited distance over a twisted pair cable.



pH / ORP

Features

- Differential Measurement
- Replaceable Salt Bridge
- Easy in: no twisted cable
- Easy out: no special tools
- 1-1/4" Compression Fitting
- Adjustable insertion depth
- Semi-flush face: reduced buildup and easy clean-up.
- Encapsulated Preamp transmits up to 3000 ft.
- Hot-Tap version (P60C-7) available
- Flat-faced, hardened glass, antimony electrodes (for pH measurement in HF solutions) and gold (for ORP) electrodes available



All differential probes, including the P60/65C-6 shown here feature replaceable salt bridges. The pH 7 solution in the well behind the salt bridge can also be easily replenished. Kits consisting of 3 salt bridges and pH 7 solution are readily available from your Aquametrix distributor.

65 Series — Differential pH/ORP Sensor with direct 4-20 mA Output

AquaMetrix pH and ORP differential probes stay in service and provide accurate measurements under conditions that often render conventional pH probes inoperable. Now for added versatility, these probes, field-proven in hundreds of installations, are available with an integral encapsulated 4-20 mA two-wire transmitter to feed directly to a PLC or a DCS.

The P65 pH and R65 ORP probes employ the same differential measurement technique found in the P60 and R60 five-wire probes. Like other differential probes, they maintain their accuracy and stability in aggressive process applications long after a combination-style probe's performance begins to deteriorate.

Encapsulated in the body of the probe is a circuit board which outputs a 4-20 mA output. The two-wire transmitter is rugged enough to last many years with zero maintenance of the electronics. Calibration is done in tandem with the PLC or DSC.

The 65 series can be provided in most of the physical configurations of the P/R60 series differential probes:

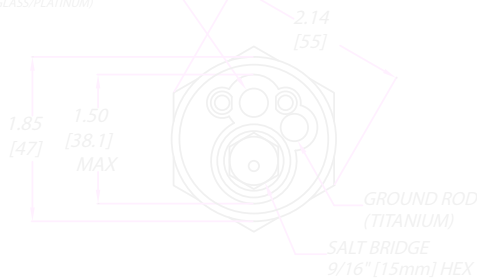
- P/R65C-8 in a 1-1/2" threaded body style
- P/R65C-6 "Easy-In, Easy-Out" variable insertion depth version with 1-1/4" NPT compression fitting
- P/R65C-7 hot tap version of the P/R65C-6

For those circumstances in which a readout is desirable and/or the need to tune the 4-20 mA output to cover a narrower pH range than 0 to 14 we suggest a P60 or R60 5-wire probe in conjunction with a Shark TX (or TXP) transmitter. In this configuration the Shark TX sends the 4-20 mA signal to the PLC or DCS and serves an extra layer of functionality that can be especially useful for diagnosing problems with the probe. See page five for a full description



pH/ORP

The P/R 65 probes have the same body and electrodes as the P/R 60 series but have an encapsulated pre-amp that also outputs a 4-20 mA signal. From top to bottom: P65C-8, P65C-7 and P65C-6.



Features

- Integral two-wire 4-20 mA transmitter can be fed directly to PLC or DCS
- Differential Measurement
- Replaceable Salt Bridge
- Semi-flush face: reduced buildup
- Automatic temperature compensation on pH versions
- Flow-through and submersion hardware available
- Hot-Tap version available
- Flat-faced, hardened glass, antimony electrodes (for pH measurement in an HF solution) and gold (for ORP) electrodes available

Specialty Differential pH / ORP Sensors

These pH or ORP probes are dependable industrial grade sensors that incorporate all the benefits of differential measurement found in other models of the P/R 60-6 series, field proven in thousands of installations. This assortment of form factors means that there is a probe for every application.



AM Series

These probes are designed to fit into existing GLI MH700 and MH100 series ball valve assemblies. The AM 6010 hosts a 1.5" NPT flow-through mount while the AM 6070 is a variable insertion probe with an O-ring seal.



Model P60C-4

For new installations that don't require an exact GLI replacement, but do require a 1.5" NPT flow-through mount, the P60C-4 is the answer. It can be mounted via an Aquametrix hot tap.



Model P60C-7

For hot tap insertion the P60C-7 offers the same functionality of the P60C-6 in an 18" length. For this hot tap probe we recommend the P60HTC assembly. For fixed insertion, a 1-1/4" compression fitting is all that is needed.



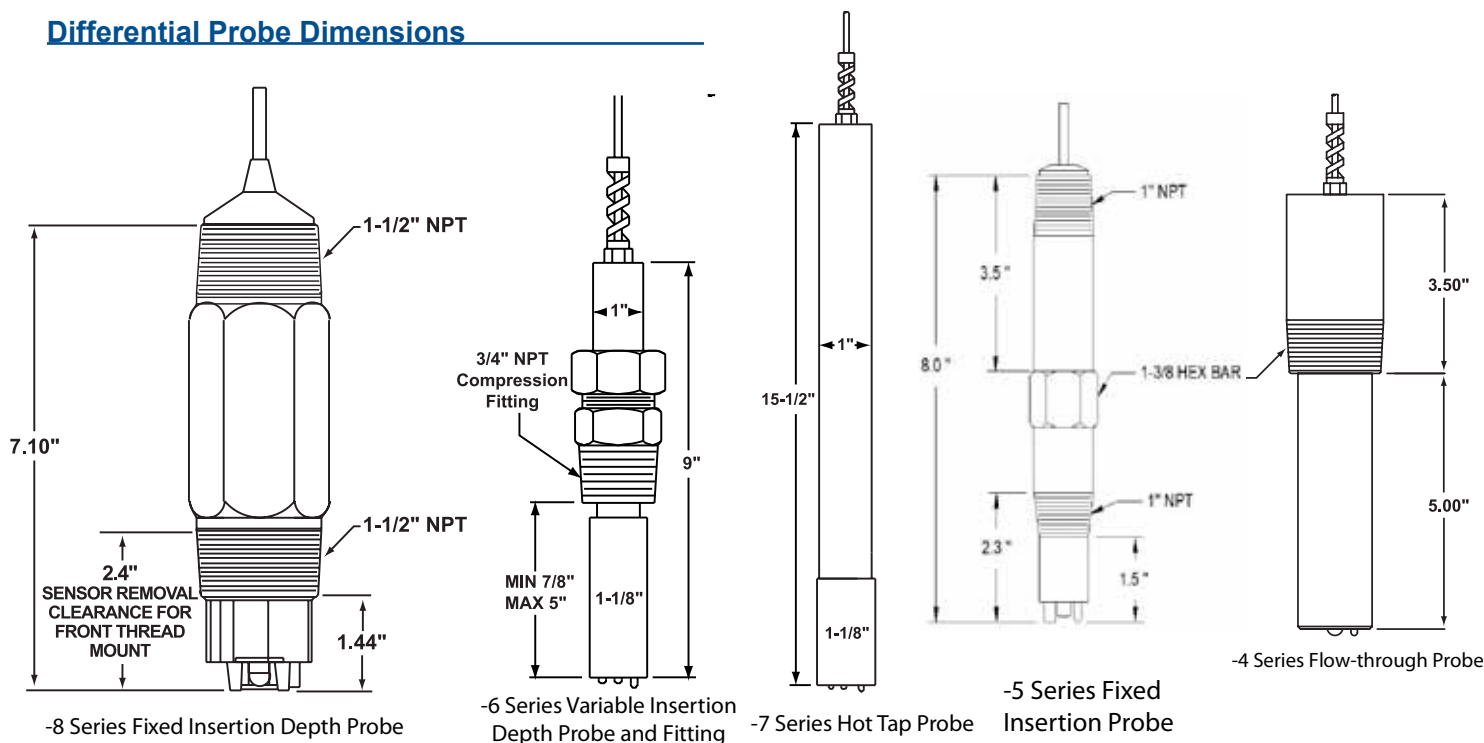
Model P60C5-S

For sanitary applications the P60C5-S consists of the front end of a P60C-6 mated to a stainless steel tri-clover fitting. The back end of the probe is fully encapsulated inside the stainless steel housing to allow full sanitary compatibility.



pH / ORP

Differential Probe Dimensions



The Aquamatrix family of differential probes includes the fixed insertion (far left), the variable insertion (second from left), an extended length version of the -6 for hot tap connections (third from left) and the flow-through version (far right).

For all pH, ORP, 60 series and 65 series probes use this table for ordering information

Order Information

| | |
|--|-----|
| Application | |
| pH | P |
| ORP | R |
| Electronics | |
| Standard 5 wire sensor | 60C |
| Two wire transmitter, 4-20 mA output built-in | 65C |
| Body Type | |
| Standard, 7/8" to 5" variable insertion | 6 |
| Hot Tap, Extended Length, 7/8" to 14" variable insertion | 7 |
| 1.5" NPT threaded ends, GLI LCP replacement probe | 8 |
| 1" NPT threaded ends | 5 |
| GLI605IP replacement (sensor only) | 4 |
| Fixed insertion with sanitary 2.5" tri-clover fitting | S |
| Enhanced Performance Options (only if required) | |
| Hardened glass electrode (pH sensors only) | H |
| Flat faced glass electrode (S body type only) | F |
| Gold electrodes, for ORP sensors only (Platinum is standard) | G |
| Extended Cable Length | |
| Add \$1.50 per foot for the full cable length to the price | XXX |

Differential Probe Options

CABLES & ACCESSORIES

| Description | -8 | -6 | -5 |
|---|-------------|-------------|-------------|
| NEMA 4X junction box | JB-1 | JB-1 | JB-1 |
| Mounting kit for submersion applications includes NPT x 1" reducer, 4 feet of 1" CPVC pipe with strain relief fitting and securing assembly | STC60-L | STC60-6 | STC60-5 |
| Hot Tap Ball Valve assembly | n/a | P60HTC | n/a |
| 5-wire Interconnect cable, dressed both ends specify length (X) | C42-5P-X | C42-5P-X | C42-5P-X |
| 2-wire Interconnect cable, dressed both ends specify length (X) | C42-1-X | C42-1-X | C42-1-X |
| Compression fitting | n/a | C35-79 | n/s |
| Adapter for GLI Installations | C34-51 | | |
| Protection shroud for submersion applications | Protector-3 | Protector-6 | Protector-5 |
| Salt bridge kit w/ kynar outer junction (Package of 3) | AM60-9765K | C35-17 | C35-17 |
| Jet Cleaner attachment | AM-JT-8 | n/a | AMJT-5 |

Submersion Mount



Union Tee Flow Through

pH / ORP

CALIBRATION SOLUTIONS

- A35-13
- A35-14
- A35-24
- A35-40
- A35-41



pH Calibration Solutions



ORP Calibration Solutions



Salt Bridge Kits



Junction Box



Hot Tap Assembly



Protectors

500 Series — Combination pH / ORP Sensor

These industrial combination pH or ORP probes are ideal economic alternatives to higher cost differential probes. They use a conventional process pH glass electrode (platinum for ORP) in the same glass envelope as the reference electrode.

The durable materials wetted by the process provide excellent chemical resistance. Their convertible design allows them to be used in flow-through and submersion applications. The probes are offered with or without temperature compensation.

The 585 comes with a 3/4" MNPT compression fitting which allows the probe to be inserted through the supplied compression fitting. The variable insertion depth (3/4" to 4 1/4") makes probe cleaning and system calibration simple.

The 575 is encased in a 1" CPVC body with NPT threads on both ends. Mounting hardware is available for submersion and flow-through mounting.

All 500 series probes can be directly connected to the Shark, Shark TX/P and 2200P/R analyzers, provided the instrument is within the reach of the 10 ft (3 m) sensor cable. For longer transmission distance, a preamplifier is available. Automatic temperature compensation is also an option.



The P585 Combination probe is a combination glass electrode encapsulated in 3/4" epoxy body and comes with a 3/4" NPT compression fitting.



The P575 Combination probe features a combination glass electrode encapsulated in epoxy and housed in a CPVC body with 1" NPT threads on both ends.

Features

- Industrial-grade quality at low cost
- Convertible design for flow through and submersion
- All materials offer excellent chemical resistance
- Universal style: Flow-through and submersion.
- Easy in: no special tools
- Easy out: no twisted cable
- Automatic temperature compensation available

Applications

All of the same applications listed for differential probes as well as for those cases where probe lifetime's longer than three years are not needed.

Order Information

Application

| | |
|-----|---|
| pH | P |
| ORP | R |

Body Type

| | |
|---|-----|
| CPVC body, 1" MNPT threaded ends | 575 |
| Epoxy body, variable insertion - includes 3/4" CPVC compression fitting | 585 |

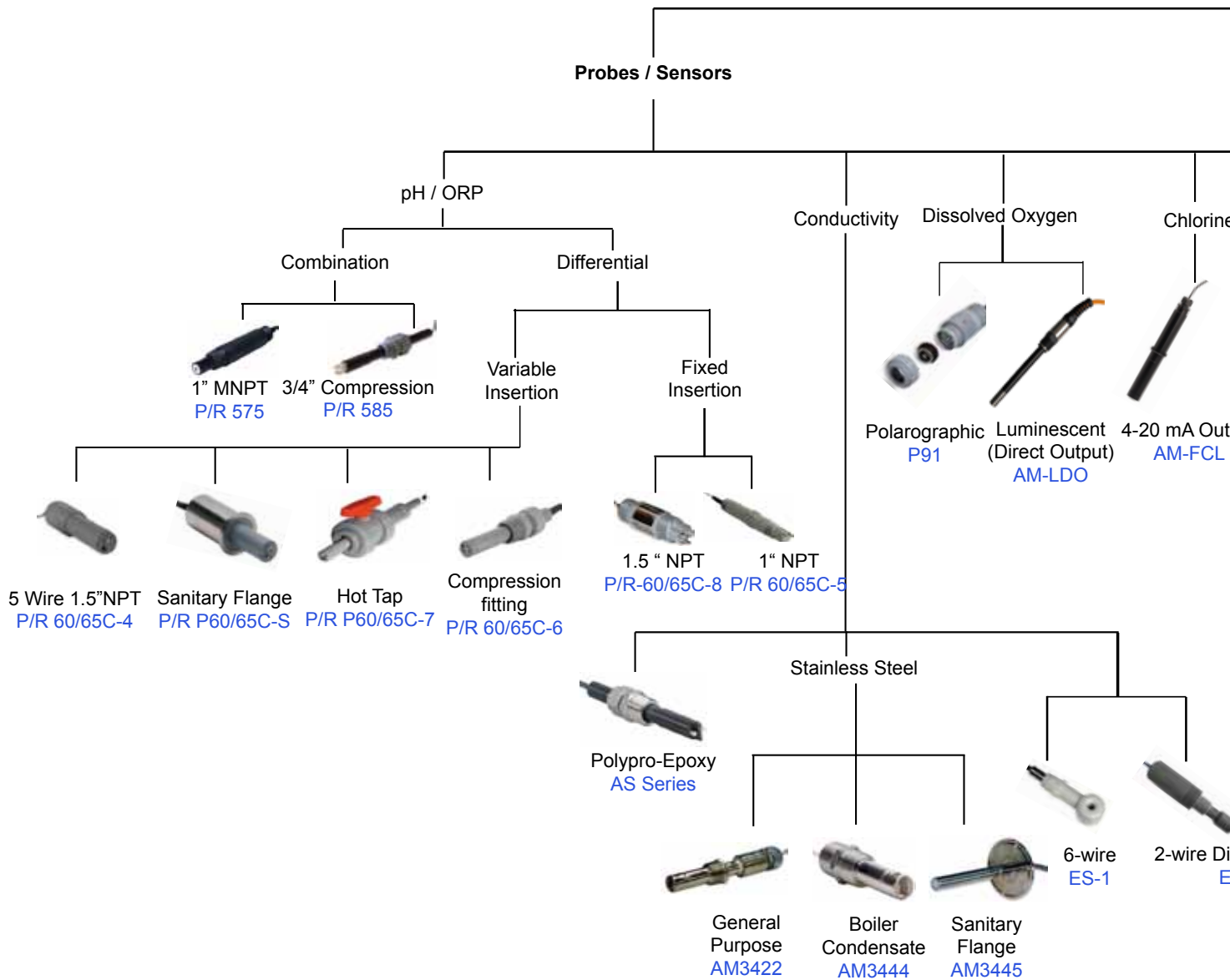
Enhanced Performance Options (only if required)

| | |
|--|-----|
| Automatic temperature compensation (pH only) | K |
| MBNC connector | BNC |

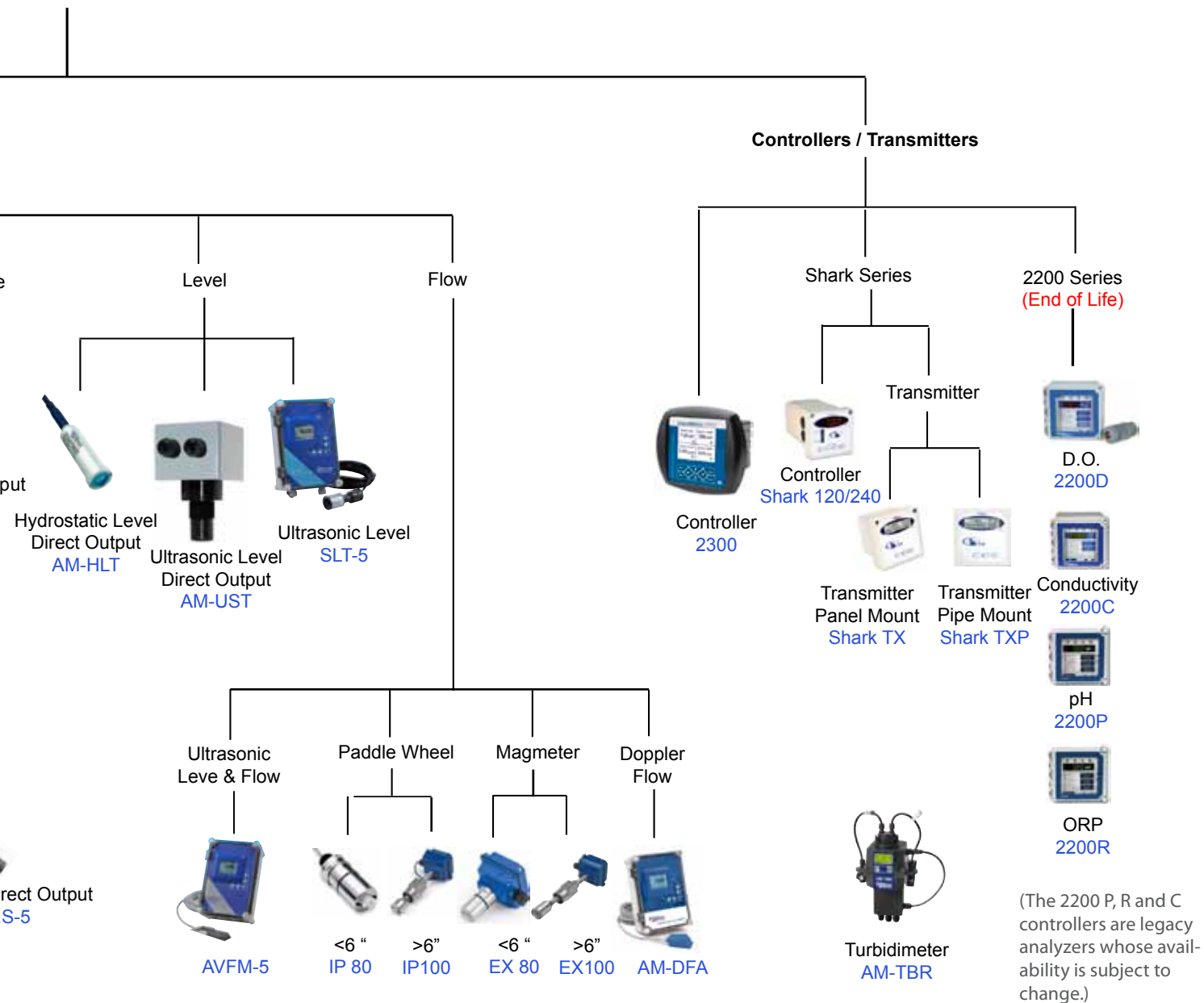
Temperature Compensation (only if temp compensation is added)

| | |
|--|---|
| GLI temperature compensation device, PT1000 RTD | 1 |
| AquaMetrix temperature compensation device, 300 Ω thermistor | 2 |

pH / ORP



Rugged and Reliable In



Instrumentation for Over 50 Years

AS Series - Epoxy-Polypropylene with SS or Graphite Electrodes

AquaMetrix has decades of experience manufacturing a wide variety of conductivity sensors to satisfy any industrial, power plant, water treatment system or laboratory application.



This AS-S-1 probe has 316 SS electrodes and cell constant of 1.



This AS-G-1 probe has graphite electrodes and cell constant of 1.

The AS conductivity probes will satisfy just about any industrial, power plant or laboratory application. They feature either 316 stainless steel or graphite electrodes and polypropylene shells.

Five cell constants from 0.01 to 50 are available to cover most water samples between pure water and saline conditions. All types are designed with a safety stop shoulder on the cell.

Integral automatic temperature compensation, via either a thermistor or RTD, provides compensation to 25°C when used with the Shark or compatible analyzer.

Flow-through mounting incorporates a special compression fitting which allows adjustable insertion length in piping or in the side of a tank. Submersion mounting is achieved by reversing the direction of the compression fitting. Mounting hardware is available which includes CPVC piping and an adjustable bracket for hanging on the rim of the tank. Ball Valve ("Hot-Tap") types permit removal of the cell from process piping or from tanks without shutting down the system.



The AS-S-001-HT is a resistivity probe (cell constant 0.01) with an extended length for hot tap insertion.

Features

- Rated to 150 C and 15 psi
- Choice of 316 SS Electrodes or graphite
- Economically Priced
- Automatic Temperature Compensation
- Constants from 0.01 to 50
- Impregnated graphite electrodes
- Ball valve "Hot Tap" version available
- For temperatures up to 100 °C (212 F)
- Applications include cooling towers, high purity water applications, reverse osmosis systems, food and beverage.

Order Information

Electrodes

| | |
|----------------------|---|
| 316 Stainless Steel | S |
| Impregnated Graphite | G |

Cell Constant

| | |
|---|-----|
| Cell constant 0.01 (used for resistivity) | 001 |
| Cell constant 0.1 | 01 |
| Cell constant 1.0 | 1 |
| Cell constant 10 | 10 |
| Cell constant 50 | 50 |

Cell Mounting Options

| | |
|---|----|
| Low temperature, 3/4" MNPT CPVC compression fitting | P |
| High temperature, 3/4" MNPT SS compression fitting | S |
| Extended length cell hot tap ball valve MS-HTC | HT |

Temperature Compensation

| | |
|--|---|
| Temperature compensation device, PT1000 RTD | 1 |
| Temperature compensation device, 3 kΩ thermistor | 2 |

Extended Cable Length

| | |
|---|----|
| Add \$1.50 per foot for the full cable length | XX |
|---|----|

Please note that the MS series, which had graphite electrodes, has been merged into the AS series.

AM3422 Series - Stainless Steel Probes



The AM3422 sensors offer a compact design in stainless steel that allows installation into standard pipe fittings in small line sizes such as 3/4" and 1", avoiding the need for special flow cells. Wetted materials of construction are 316 stainless steel and Teflon, with double O-ring seals at all points. The outer EPDM O-ring bears the brunt of the process interface, allowing the back O-ring to maintain reliable sealing free from chemical attack. An integral temperature element tailored to the analyzer of choice provides automatic compensation for maximum accuracy.

Process connections are made via a customized fitting with 1/2" or 3/4" NPT threads. This fitting can be screwed into a line fitting or tank. It can also be reversed for use in a submersion configuration.



Features

- 316 SS for very harsh applications less than 150 C
- O-ring seals for high on-stream reliability
- Low Maintenance — Easy to clean
- Wide measuring range
- Automatic temperature compensation
- Specially suited for plating, pharmaceutical, boilers, food and beverage industries.

Order Information

Cell Constant

| | |
|--------------------|------------|
| Cell constant 0.05 | 005 |
| Cell constant 0.1 | 01 |
| Cell constant 0.5 | 05 |
| Cell constant 1.0 | 1 |
| Cell constant 5 | 5 |
| Cell constant 10 | 10 |

Conductivity

AM3444 - High Temperature Probes

For high pressure and very high temperature applications the AM3444 series offers a choice of cell constants. They are ideal for boiler control applications, blowdown control, condensate monitoring, leak detection on heat exchangers, and steam purity measurements.

Wetted materials of construction are 316 stainless steel, PEEK, and EPDM O-rings. All possible leak paths through the sensor are double sealed with O-rings for maximum on-stream reliability. The front seals bear the brunt of chemical attack, allowing the back seals to remain relatively unaffected. The result is that sensor life is more than double what can be expected of single sealed, or epoxy sealed units.

Features

- Measures conductivity up to 205°C
- O-ring seals for high on-stream reliability
- Wide Measuring range
- Automatic Temperature Compensation
- Ideal for boilers

Order Information

| | |
|---------------------|----------|
| Cell constant 0.05* | A |
| Cell constant 0.1 | H |
| Cell constant 0.5* | B |
| Cell constant 1 | C |
| Cell constant 5* | D |
| Cell constant 10 | E |

* Not compatible with Shark or Shark TX controllers

Please note that the Shark performs automatic temperature control for temperatures up to 100 C.

AM3455 Series - Stainless Steel Sanitary Flange Fitting

The AM3455 sensors are welded to blind flanges that can be inserted into standard tee fittings in sanitary systems using Ladish or tri-clover fittings.

Wetted materials are 316 stainless steel and Teflon, with double EPDM O-rings. The process side O-ring is the only one in contact with the stream, allowing the back O-ring to maintain reliable sealing, free from chemical attack. Temperature compensation elements are potted in the body itself.

The insertion depth can be modified to obtain proper positioning in a specific installation. The sensor is built for clean, in-place service. All wetted materials are FDA compliant and USP Class VI is available.

Features

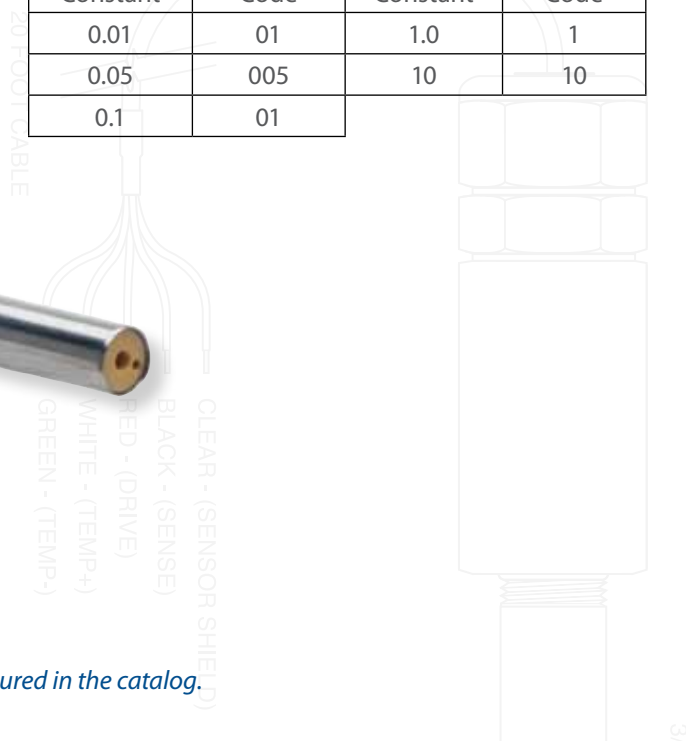
- Low Maintenance for reduced cleaning requirements
- Small size enables convenient installation and service.
- O-ring seals used for high on-stream reliability
- Automatic Temperature Compensation
- Specially suited for dairy, food, beverage and all other sanitary applications.

Order Information

Cell Constant Selection

| Constant | Code | Constant | Code |
|----------|------|----------|------|
| 0.01 | 01 | 1.0 | 1 |
| 0.05 | 005 | 10 | 10 |
| 0.1 | 01 | | |

Conductivity



Conductivity Sensor Model Guide

The table below offers an overview of all the conductivity sensors featured in the catalog.

| Probe | Cell const. Range | Body | Electrodes | Temperature Element | Temperature -Pressure Rating | Connector | Controller |
|--------|---------------------|--------------------------------------|--------------------|------------------------------|-------------------------------------|----------------------|-------------------------|
| AS | 0.1 - 50 | Polypro shell with epoxy interior | 316 SS or graphite | 3kΩ thermistor or 1000 Ω RTD | 200 psi @ 105 0C | ¾" MNPT | Shark-120 or Shark TX/P |
| AM3422 | 0.01, 1, 10, 50 | 316 SS shell with epoxy interior | 316 SS | 3kΩ thermistor or 1000 Ω RTD | 100 psi @120 0C | ¾" MNTP | Shark-120 or Shark TX/P |
| AM3444 | 0.1 and 10 | 316 SS with high temp epoxy interior | 316 SS | 3kΩ thermistor or 1000 Ω RTD | 100 psi @150 0C 500 psi @ 100 0C | ¾" MNPT | Shark-120 or Shark TX/P |
| AM3455 | 0.01, 0.1, 1 and 10 | 315 SS with epoxy interior | 316 SS | 3kΩ thermistor or 1000 Ω RTD | 120 0C @ 100 psi | 1½" or 2" tri-clover | Shark-120 or Shark TX/P |
| ES-1 | 0.1-100 mS/cm | Polypropylene | n/a | 1000 Ω RTD | 105 psi @ 105 0C | ¾" MNPT | Knick Eco Stratos |
| ES-5 | 0.1-10 mS/cm | CPVC or Kynar | n/a | 100 Ω RTD | 50 psi @ 40 0C | 1½" MNPT on 2 ends | Loop powered. |

ES Series - Toroidal (Electrodeless) Conductivity Probe

Features

The ES series electrodeless (or "toroidal") conductivity sensors are used in processes where conventional sensors may become fouled or corroded. This technology uses induction to measure conductivity. Since the sending and receiving coils are encapsulated there are no contacting elements to foul.

Both ES sensors can be mounted in a flow through configuration or submersion mounted in tanks or open vessels. The ES-1 sensor is housed in polypropylene, comes standard with a Pt1000 RTD temperature device and connects to a controller (we recommend the Knick Eco Stratos). The ES-5 is a direct 4-20 mA output probe that comes in a CPVC housing and as a Pt100RTD that provides a temperature compensated signal. In most set-ups it connects to a PLC.

Note: The ES-1 does not connect to a Shark or Shark TX/P.

- Low Maintenance for reduced cleaning requirements
- No electrode corrosion - Toroid is fully encapsulated
- One wetted material for easier chemical compatibility
- Wide measuring range
- Automatic temperature compensation
- Specially suited for fume scrubbers, plating and textile manufacturing.



On the top is the ES-1 7 wire toroidal sensor that connects to a 3rd party analyzer. The ES-5, on the right, is a 4-20 mA output toroidal sensor that usually connects to PLC.

Conductivity Sensor Cell Constant Guide

Although different probes have varying conductivity ranges for a given cell constant, this table can be of help for choosing the right probe for the job.

| Cell Constant | Range |
|---------------|-------------------|
| 0.01 | 0-5 μ S/cm |
| 0.1 | 0-500 μ S/cm |
| 1 | 0-5000 μ S/cm |
| 10 | 0-50 mS/cm |
| 50 | 0-500 mS/cm |

Order Information

Body Material

| | |
|--------------|----------|
| CPVC (ES-5) | C |
| Kynar (ES-5) | K |

Effective Cell Constant Range

| | |
|-----------------|----------|
| 0 to 10 mS/cm | 1 |
| 0 to 100 mS/cm | 2 |
| 0 to 1000 mS/cm | 3 |

2200D Controller and P91 Oxygen Sensor

The model 2200D Dissolved Oxygen analyzer/controller is a rugged and dependable industrial grade instrument that is extremely easy to use.

Its large, bright LED digital display is clearly visible and its speedy calibration and simple operator interface makes this analyzer/controller a favorite with instrumentation departments in a wide variety of demanding industrial and municipal applications.

Frequently used functions are accessed through an intuitive step-through menu which is printed directly on the front panel for ease of navigation. Seldom used or set-once adjustments, such as password activation, are located on DIP switches on the back of the swing-out front panel.

Features

- Intuitive step-through menu design for quick and easy setup
- Bidirectional control through two control relays with independent set-points for relay on and relay off
- High/low alarm relay
- Alarm LED on front panel
- Membrane perforation alarm
- Output signal is field-scalable for maximum resolution
- Altitude compensation for maximum accuracy
- Status errors illuminate LED on front panel
- Test feature allows simulation of DO readings to test relay set-points and analog settings
- Password protection and watchdog timer
- Applications include wastewater treatment, aeration basin monitoring, aquaria and fish hatcheries.

Dissolved Oxygen



Accessories include (right) replaceable P91D DO cartridge, (left) (middle) ball float (middle), and FTA2 inline mounting hardware (right).

Order Information

Power Supply

| | |
|---|-------------------------------|
| 1 | 110 Volt, 50/60 Hz (standard) |
| 2 | 220 V, 50/60 Hz |

Mounting Style

| | |
|---|-----------------|
| A | Surface Mount |
| B | Panel Mount Kit |
| C | Pipe Mount Kit |

Dissolved Oxygen Sensor

| | |
|------|-----------------------------------|
| P91 | Dissolved oxygen sensor. |
| P91D | Dissolved oxygen sensor cartridge |

AM-LDO Direct Output Luminescent Dissolved Oxygen Sensor

Aquametrix has been selling polarographic dissolved oxygen analyzers for over three decades. We are now pleased to be able to offer an optical dissolved oxygen sensor that outputs directly a 4-20 or Modbus signal. Optical DO sensors are inherently self-referencing, require no warm-up period, do not require flow and are less affected by fouling.

Maintenance is trivial. The sensor cap lasts for an industry leading 3 years or longer and is inexpensive to replace. The body is corrosion resistant and designed to stand up to the harsh environment of wastewater.

No sensor on the market packs as much into one small package. Plug into your PLC or computer and you're ready to measure.



Polarographic or Luminescent?

Here in the U.S. the polarographic (or "Clark" or "amperometric" or "membrane") has taken a back seat to luminescent based DO (LDO) analyzers. However there are still very good reasons why polarographic sensors are serious contenders for DO measurement. Some of these are:

1. Polarographic sensors and analyzers are simple AND precise. That makes them considerably less expensive than optical analyzers. They can detect small changes in DO concentration. Note that precision is distinct from accuracy. Because Clark cells require calibration and LDO probes do not, the latter do have an edge in accuracy.
2. Polarographic sensors are easy to maintain. The sensor elements that must be replaced are of a teflon membrane and electrolyte. AquaMetrix now offers a cartridge that can be refurbished instead of disposed.

There are advantages to luminescent DO sensors. They include:

1. The sensors are inherently self-referencing so they don't need calibration. They are therefore more accurate than Clark cells but their lower sensitivity results in less precise measurements.
2. They require no flow across the sensor head.
3. The sensor front end lasts about 2 years before needing to be replaced.

Features

- No moving parts
- Very rugged
- Instantly stable values
- Calibrated in the factory with calibration data stored in sensor
- Direct output via 4-20 mA or Modbus.
- Only 1 replaceable part - sensor cap.
- Not affected by CO₂ or H₂S
- Economically Priced

Dissolved Oxygen

Order Information

| | |
|--------------------------------|-------------|
| AM-IDO Sensor w 4-20 mA output | AM-LDO-A |
| AM-IDO Sensor w Modbus RTU | AM-LDO-D |
| Replacement Cap | AM-LDO-Cap |
| USB-RS485 Modbus Converter | AM-LDO-CONV |

AM-FCL Free Chlorine Direct Output Sensor

The AM-FCL is a compact and inexpensive free chlorine sensor. It operates on membrane-based amperometric technology, which provides the most trouble-free operation of all reagent-free methods. The two electrode sensor outputs a direct 4-20 mA signal so an analyzer is not essential. The signal is temperature compensated. Simply insert the probe's two wires into your 4-20 loop and you're good to go. Combine the output of the AM-FCL with that of an Aquametrix 4-20 mA output probe and your PLC can be easily programmed to perform automatic pH compensation.

For control without a PLC the AM-FCA can be connected to the AM-FCA analyzer. For pH compensation you manually enter the pH value or add a pH probe.

The sensor is available in three ranges: 0 to 2 ppm, 0 to 5 ppm and 0 to 10 ppm.

Order Information

| Chlorine Range | |
|----------------|------------|
| AM-FCL-2 | 0 - 2 ppm |
| AM-FCL-5 | 0 - 5 ppm |
| AM-FCL-10 | 0 - 10 ppm |
| Options | |
| AM-FCL-FC | Flow Cell |
| AM-FCL-FM | Flow meter |

Chlorine

Features

- Loop powered 4-20 mA output
- Compact design
- Combines with 4-20 mA pH probe for pH compensation
- Automatic temperature compensation
- Optional flow cell and flow meter insures constant pressure for accurate measurement
- Inexpensive replaceable membrane and electrolyte



AM-FCL or AM-FCO sensor with direct 4-20 mA output

FCL with optional flow cell

AM-FCO Chlorine Dioxide Direct Output Sensor

The AM-FCO has the same form factor as the AM-FCL free chlorine sensor. Modifications to the electrolyte, membrane and electronics tailor the probe toward chlorine dioxide.

The sensor is available in two ranges: 0 to 2 ppm, and 0 to 10 ppm.

Order Information

| Chlorine Range | |
|----------------|------------|
| AM-CLO-2 | 0 - 2 ppm |
| AM-CLO-10 | 0 - 10 ppm |
| Options | |
| AM-FCL-FC | Flow Cell |
| AM-FCL-FM | Flow meter |

Features

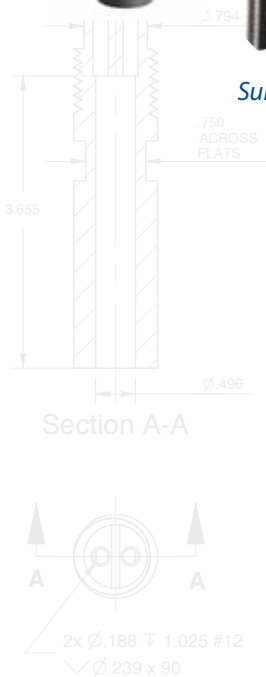
- Loop powered 4-20 mA output
- Compact design
- Combines with 4-20 mA pH probe for pH compensation
- Automatic temperature compensation
- Optional flow cell and flow meter insures constant pressure for accurate measurement
- Inexpensive replaceable membrane and electrolyte

The Aquametrix 4-20 Collection and the 2300

Until this year the 4-20 mA and square wave output sensors were intended for third party PLC's. Now, with the 2300 controller, all of these probes have a home. Any sensor or transmitter that outputs a 4-20 mA input or a frequency output or transmitter works with the 2300.



Direct 4-20 mA output sensors include: Differential pH/ORP, toroidal conductivity, AM-LDO dissolved oxygen, AM-FCL free chlorine, paddle-wheel



Summary of sensors that can input into the 2300. Inputs are either 4-20 mA or frequency output.

| 4-20 mA Direct Output | | |
|-----------------------|----------------------|-----------------------------|
| pH | P65C-X; X=4,5,6,7,8 | Differential |
| ORP | R65C-X; X=4,5,6,7,8 | Differential |
| Conductivity | ES-5 | Toroidal |
| Dissolved Oxygen | AM-LDO | Luminescent |
| Free Chlorine | AM-FCL | Amperometric |
| Level | AM-HLT | Hydrostatic |
| | AM-UST | Ultrasonic |
| Generic | Shark TX transmitter | pH, ORP, Conductivity, Flow |
| | Shark 120 controller | pH, ORP, Conductivity, Flow |
| Frequency Output | | |
| Flow | IP series | Paddle Wheel |
| | EX series | Magmeter |

Paddle-Wheel and Magmeters

The IP series paddle-wheel series are impeller type insertion meters designed for use with a variety of liquids in pipe sizes 1/2" to 8". The EX80 series insertion electromagnetic flow meters are designed for use with liquids in 1 to 12" pipe. Both work with the Shark controller or Shark TX transmitter.

IP80 and EX80 Series

IP bodies are machined from a solid rod for maximum precision. High-quality jewel bearings and nickel-bound tungsten carbide shafts provide extreme low friction and long life.

The non-drag, Hall-effect sensor outputs a square pulse which can be sent as long as 2,000 feet without a transmitter. This signal can be connected directly to a Shark, Shark TX, PLC, counter or computer card.

The EX80 is ideal for difficult applications with changing viscosities and pulsating flows, such as air-driven diaphragm pumps. With no moving parts, these meters can be used in applications where debris would foul a mechanical sensor.



IP100 and EX100 Series

The IP100/200 series employ all of the features of the -80 Series but with adjustable depth insertion male NPT fitting to fit any pipe from 3" to 48". Installation fittings are standard 1-1/2" (101/201) NPT. Fittings such as saddles and weldolets may be purchased either locally or from Water Analytics.



Magmeters require a 24 VDC power supply. These can be purchased from Water Analytics or a local electronics retailer.

Features

- IP: Low-friction jewel bearings. Single moving part.
- EX: No moving parts.
- Choice of materials for compatibility with variety of chemicals
- High level signal can be sent up to 2000 feet
- Each fitting individually calibrated and marked with K-factor (pulses per gallon)
- Ideal for wastewater flow, irrigation, chemical mixing, neutralization systems and filtration systems.

Order Information

Sensor Type

| | |
|--------------|----|
| Paddle Wheel | IP |
| Magmeter | EX |

Sensor Style

| | |
|------------------------------|----|
| Impeller sensor (1/2" - 3") | 81 |
| Impeller sensor (4" - 6") | 82 |

Sensor Material

| | |
|-----------------|---|
| PVC | P |
| Stainless Steel | S |
| Polypropylene | Y |
| Brass | B |

Mounting Style

| | |
|----------------------------|-----|
| 1/2" Tee fitting | 050 |
| 3/4" Tee fitting | 075 |
| 1" Tee fitting | 100 |
| 1.5" Tee fitting | 150 |
| 2" Tee fitting | 200 |
| 3" Saddle/Weldolet fitting | 300 |
| 4" Saddle/Weldolet fitting | 400 |
| 6" Saddle/Weldolet fitting | 600 |

Mounting Tee Material

| | |
|---|---|
| PVC | P |
| 304 Stainless Steel (available for 0.5" - 2") | S |
| Bronze (Not available for 6" pipes) | B |

Order Information - IP100/200

Sensor Mounting

| | |
|---|-----|
| Insertion style with MNPT connection (3 - 10") | 100 |
| Insertion style with MNPT connection (10 - 48") | 20 |

Sensor Material

| | |
|-----------------|---|
| Stainless Steel | S |
| Brass | B |

AM-DFA Flow Analyzer

Features

Doppler Flow Meters monitor the flow rate of dirty or aerated liquids including: wastewater, chemicals, acids, slurries, abrasives and viscous liquids.

It takes just minutes to install the DFM-5.0 flow sensor on the outside of any pipe. Calibration is easy with the built-in, 5-button keypad. Select your choice of flow units and enter pipe diameter through the user-friendly calibration menu. Enable password protection to prevent tampering.

The DFM-5.0 Doppler Flow Meter includes an ultrasonic sensor, a simple 5-key calibration system, a large digital flow rate display with totalizer, isolated 4-20 mA output and two control relays. Data logger and intrinsically safe sensor are optional.



- Digital processing system tracks flow signals accurately and auto-zeroes with signal loss
- Noise suppression circuitry filters “dirty” power and electrical interference from most VFD’s
- Automatically converts between measurement units (e.g. gallons or liters)
- Calibration data and Totalizer values are stored automatically during power interruptions
- Output “simulation” function simplifies calibration of remote devices (e.g. chart recorders or controllers)
- Self-tunes to Sensor cable length

Order Information

Power Supply

| | |
|---|-------------------|
| A | 110 VAC, 50/60 Hz |
| B | 9-32 VDC |

Enclosure Temperature

| | |
|---|---|
| A | Standard (-5° to 140°F / -20° to 60°C) |
| B | Heater and Thermostat (AC model only, 15 Watts) |

Electronics Protection

| | |
|---|---|
| 1 | Standard - no circuit board coating |
| 2 | Conformal Coating (excludes power supply, display and optional data logger) |

Intrinsic Safety Barrier

| | |
|---|--|
| 1 | Standard (none), General Purpose (not rated intrinsically safe) |
| 2 | ISB Intrinsic Safety Barrier for Sensor and Cable Installation in Class I, II, III, Div I, II) |

Data Logger

| | |
|---|--|
| 1 | None - standard |
| 2 | 2 million point data logger (with USB output, PC software) |

Summary of Flow Measurement

There are many ways to measure level. The table below is a quick summary of the instruments in the AquaMetrix catalog.

| Measurement Technology | Advantages | Disadvantages |
|---------------------------|--|---|
| Paddle Wheels | Least expensive of all | Must cut pipe and install fitting. Impeller can foul |
| Magmeters (insertion) | Accurate, inexpensive | Must cut pipe and install fitting, |
| Ultrasonic - Doppler | Cutting pipe not needed. Can be moved from one pipe to another | Moderately expensive. Does not work with clean water. |
| Ultrasonic - Transit Time | Most accurate ultrasonic technique. Works with clean and dirty water | Most expensive of all instruments. |

AVFM-5 Area Velocity Flow by Greyline

For measuring flow AND level in an open channel or partially full pipes there is no instrument on the market like the AVFM-5.

The AVFM-5 uses a submerged ultrasonic sensor to measure both velocity and level. The sensor resists fouling, corrosion and abrasion and is tolerant of turbulence and high flow. It can be configured with the standard submerged sensor, or with submerged velocity plus a non-contacting ultrasonic level sensor.

The AVFM-5 measures forward flow up to 20 ft/sec, reverse flow up to 5 ft/sec, and level from 1" to 15 ft. In addition to stored profiles of common flumes and weirs the user can construct any arbitrary open channel cross section.

Level and Flow



Features

- One sensor measures both velocity and level
- Displays, transmits and controls
- Measures flow in pipes and open channels of any shape
- Measures level from 1" to 15 ft. (2.5 cm to 4.5 m)
- 3 isolated 4-20 mA outputs
- Menu selectable option for 0-5 VDC output for low power consumption
- 2 control relays
- Measures to irregular shaped channels
- Measures reverse flow
- RFI rejection filters and electrical surge protection
- Optional data logger

Order Information

Power Supply

| | |
|---|-------------------|
| A | 110 VAC, 50/60 Hz |
| B | 9-32 VDC |

Enclosure Temperature

| | |
|---|---|
| A | Standard (-5° to 140°F / -20° to 60°C) |
| B | Heater and Thermostat (AC model only, 15 Watts) |

Electronics Protection

| | |
|---|---|
| 1 | Standard - no circuit board coating |
| 2 | Conformal Coating (excludes power supply, display and optional data logger) |

Intrinsic Safety Barrier

| | |
|---|---|
| 1 | Standard (none), General Purpose (not rated intrinsically safe) |
| 2 | ISB Intrinsic Safety Barrier for Sensor and Cable Installation in Class I, II, III, Div I, II, Groups C,D,E,F,G |

Data Logger

| | |
|---|--|
| 1 | None - standard |
| 2 | 2 million point data logger (with USB output, PC software) |

SLT-5 Level by Greyline

Features

This versatile instrument measures, displays, transmits and controls liquid level in storage tanks, pumping stations and open channels. The non-contacting ultrasonic sensor mounts above the liquid being measured. The SLT-5 features a user-friendly keypad calibration system, isolated 4-20mA output and 2 programmable control relays

Calibration is easy with the built-in 5 button keypad. The SLT 5.0 offers simple menu selection of measurement units (gallons, liters etc.), calculates volume in horizontal round tanks, or flow rate (and total) through any flume or weir.

For hazardous locations, the sensor is rated Intrinsically Safe with an optional safety barrier. The standard sensor is rated for measurement ranges up to 10 m. Optional sensors are available for for flange-mount or longer measurement range. Options include 4 additional control relays (6 total) and a built-in data logger with USB output to Flash memory sticks.

- Displays, transmits, totalizes and controls
- User friendly, 5 Key Programmer
- False Echo Rejection
- Isolated 4-20 mA output²
- 2 Programmable control relays
- Optional data logger
 - Automatic temperature compensation
 - Watertight, dust-tight NEMA 4X (IP66) polycarbonate enclosure
 - Sensor ranges from 8 inches to 52 feet
 - Easy set up with pre-programmed sizes for weirs, flumes, and tanks



Level

Order Information

Power Supply

| | |
|---|-------------------|
| A | 110 VAC, 50/60 Hz |
| B | 9-32 VDC |

Enclosure Temperature

| | |
|---|--|
| A | Standard (-5° to 140°F / -20° to 60°C) |
| B | Heater and Thermostat, 115 VAC, 15 watts |
| C | Heater and Thermostat, 230 VAC, 15 watts |

Electronics Protection

| | |
|---|---|
| 1 | Standard - no circuit board coating |
| 2 | Conformal Coating (for humid environment) |

Intrinsic Safety Barrier

| | |
|---|---|
| 1 | Standard (none), General Purpose (not rated intrinsically safe) |
| 2 | ISB Intrinsic Safety Barrier for Sensor and Cable Installation in Class I, II, III, Div I, II, Groups C,D,E,F,G |

Data Logger

| | |
|---|--|
| 1 | None - standard |
| 2 | 2 million point data logger (with USB output, PC software) |

LL Series Liquid Level Transducers Features

Aquametrix manufactures four models of liquid level controllers that operate on the principle of electrolytic conductivity in liquids. A built-in sensitivity adjustment permits field tuning the instrument so that one model is suitable for most conductivity liquids. This allows the user to adjust the unit to respond to either foam or liquid. Controllers may be as far as 300 meters from the electrodes.

The AquaMetrix design limits the voltage at the electrodes to 18 V, and also limits the current even if electrodes are shorted. Some competitive controllers require as much as 500 volts across the electrodes.

The LL4 model has one relay for a pump with normally open or normally closed operation. The LL7 and LL7H have the add a pair of normally open contacts for use with an annunciator or other device.

The LL7H has much greater sensitivity and is specifically designed for use with low conductivity liquids.

The LL3 is the most versatile. It contains two relays for pump and auxiliary each with normal open or normal closed operation. An indicator LED light can be used for very accurate sensitivity adjustments.

All LL Series controllers are suitable for single level service or differential service. Single level service allows for high or low alarm, while differential service provides a pump up/pump down region between two electrode heights. All units are housed in an enclosure which plugs into a standard 12-pin relay socket with durable screw terminals.



- Ideal for applications where the controller is mounted remotely, up to 300' from the electrodes
- Built-in sensitivity adjustment for foam or liquid applications
- Safe Low voltage at the electrodes
- Custom electrode length and material available
- Model LL7H for use with low conductivity liquids

Order Information

Model

| | |
|-----------|--|
| LL-4 | 10 kΩ max sensitivity, SPDT |
| LL-7 | 10 kΩ max sensitivity, SPDT plus auxiliary N.O. contacts |
| LL-7H | 1 MΩ max sensitivity, SPDT |
| LL3-J445 | 10 kΩ max sensitivity (adjustable), DPDT, no base |
| LL3-J445B | 10 kΩ max sensitivity (adjustable), DPDT, with base |

Level

Summary of Level Measurement

There are many ways to measure level. The table below is a quick summary of the instruments in the AquaMetrix catalog.

| Product | Principle of Operation | Benefits | Drawbacks |
|-----------|----------------------------|--|--|
| LL Series | Conductivity | Simple, Cost effective | Contacting. Requires conductivity > 50 μS/cm. Depth limited to length of steel rods. |
| AM-HLT | Pressure transducer | Simple. Rugged. 4-20 mA Output | Cost effective. Range must be customized for each sensor. |
| AM-UST | Ultrasonic | Non-contacting, 4-20 mA Output | No readout. Requires 4-20 mA meter and 24 VDC power supply. |
| SIT-5 | Ultrasonic | Level or flow. Non contacting. 4-20 mA Output | More expensive. Works in open channels and tanks. |
| AVFM-5 | Ultrasonic- level and flow | Process Control. Measures level and flow. 4-20 mA output | More expensive. Only works in open channels |

AM-HLT Hydrostatic Level Transducers

The AM-HLT level transducers are simple, rugged and inexpensive level sensors with built-in 4-20 mA transmitters. The user simply places the sensor at the bottom of the water (or fluid). The sensor converts the difference between the hydrostatic pressure and atmospheric pressure to the water depth.

With an IP68 rating they are at home in everything from potable water to activated sludge and any Class I, Div 2 environment. Every sensor is customized by the customer (at not additional cost) to provide a 4-20 mA output tailored to the maximum depth required.

The HLT transducers come in three form factors: The AM-HLT-1 is the most economical choice for measuring level in clean liquid applications. The HLT-5 features a non-fouling flush membrane and the HLT-50 offers a wide 2.75" diameter diaphragm that is protected by an aluminum plate. An optional aneroid bellows permanently seals the vent tube. Optional anti-surge circuitry offers lifetime-guaranteed protection from lightning strikes and power surges.



Order Information

| | Membrane | Range |
|-----------|---------------------------|---------------------|
| AM-HLT-0 | 1" recessed membrane | 1 - 700 ft (210 m) |
| AM-HLT-5 | 1' flush membrane | 6 - 115 ft (2-35 m) |
| AM-HLT-50 | 2.5" membrane w. Al plate | 6 - 115 ft (2-35 m) |

AM-UST Ultrasonic Direct Output Transducer

The AM-UST is one of the most compact and cost-effective level transducers on the market. Inside a package about the size of a quarter DIN enclosure is a full feature ultrasonic transducer that outputs directly either a 4-20 mA analog signal or two Modbus over RS485 digital signals.

Special microballoon radiating material couples the piezoelectric crystal vibrations into the air with perfect impedance matching. The result is a very narrow beam angle. The firmware automatically locks onto the true level while filtering out false echoes. The result is a league leading 3 degree effective beam angle.

Simply plug the sensor adapter into a computer and program the AM-UST. To calibrate simply set the empty level and span. This automatically sets the 4-20 mA output.

Order Information

| Level Range | |
|-------------|-----------|
| AM-UST-03 | 0 to 3 m |
| AM-UST-10 | 0 to 10 m |

Features

- Works with all fluids—clean water, waste water, non-aqueous, debris-filled
- Unrivaled simplicity, ruggedness and price using pressure
- Direct 4-20 mA output
- Pre-calibrated level ranges
- Optional lightning/surge protection

Level



Features

- Non-contact ultrasonic level measurement
- Open channel measurement for level, flow, volume and pump control
- Effective 3° beam angle
- 2 SPDT Relays for alarm and pump control
- 4-20 mA and 2 Modbus / RS-485 output
- 9-36 VDC power supply
- Embedded software for simple user programming
- Simple to install and calibrate

Aquametrix AM-TBR Turbidimeter

The AM-T builds on a 35 year old heritage of measuring turbidity in water and wastewater installations around the world. The instrument comes configured with a white light source to meet EPA Method 180.1 for the U.S. Market. For the European market that meets ISO 7027 or wastewater applications in which colored water can skew results we offer the AM-TBR with an iR light source.

Unlike other incandescent light sources, the Krypton filled bulb provides up to 7 years of lifetime. The IR light source also provides 7 years of trouble free service that outputs 90% of the initial light intensity.

The optical windows in the AM-TBR are isolated from the water stream to prevent erroneous reading from fogg. To eliminate artificially low reading caused by fouling an ultrasonic cleaning mechanism automatically cleans the optical chamber.

The AM-TBR was designed to be cost effective to purchase and even more cost effective to maintain. The turbidimeter is modular to make servicing and cleaning quick and easy. The compact sample volume of 30 ml means that calibration solution goes a long time and the response time is a few seconds.

Optional Windows software allows the user to graphically display data history, alarms and analyze multiple networked turbidimeters. An optional additional display enables remote readings anywhere.

The AM-T can use our the TCAL primary calibration fluid instead of expensive and hazardous Formazine.



The ultrasonic cleaning system insures that the optical chamber is clean whether clean or raw water is being measured.

Features

- Range: 0 to 1000 NTU
- Fast and Easy calibration
- Modular construction allows easy cleaning and servicing.
- EPA 180.1—Krypton filled white light with 7 year lamp lifetime
- Alternate infrared light source to meet ISO 7027 with 7 year lifetime
- Small sample volume to minimize calibration standard cost
- Removable sample cuvettes for easy cleaning and calibrating
- Bubble rejection system
- Automatic continuous ultrasonic optical cleaning system
- Optics isolated from sample to reduce the chance of false low readings
- Selectable 4-20 mA or RS 485-MODBUS
- UL and CE approved



Order Information

Light Source

| | |
|---|--------------------------------|
| 1 | White light source (EPA 180.1) |
| 2 | IR source (ISO 7027) |

Range

| | |
|------|------------|
| 100 | 0-100 NTU |
| 1000 | 0-1000 NTU |

Accessories

| | |
|-----------|---------------------------------------|
| TCAL-100 | Primary Calibration Kit for <100 NTU |
| TCAL-1000 | Primary Calibration Kit for <1000 NTU |
| TDIS | Remote Display |
| TWIN | Windows software for data collection |

Distributed by



**100 School Street
Andover, MA 01810**

978-749-9949

fax: 978-749-9961

www.WaterAnalytics.net