GF Piping Systems

Aquarium Environment Monitoring Solutions

Dissolved Oxygen, Flow, pH/ORP, Salinity

Environmental Monitoring

Water chemistry is considered to be the most important part of an aquarium. The worlds oceans, freshwater lakes, and rivers provides all the proper elements to ensure a healthy environment. The water quality conditions are maintained by natural tides, currents and flow.

An aquarium is an unnatural environment for aquatic organisms, as they are in intimate contact with their environment, the changing composition of the water has a major effect on their well-being.

The line of GF Signet Aquatic sensors, allow a fast and accurate way to measure key parameters in the aquatic environment to maintain a healthy environment.

Product Offering

Dissolved Oxygen

In an aquarium, the average oxygen saturation is about 70%. The level of dissolved oxygen varies throughout the day; it is higher during the lighting period and has the lowest concentration in the early morning hours.
A dissolved oxygen content of 5-7 ppm is sufficient for most aquatic life.

The first signs of stress to the animals will show if the oxygen content drops below 4 ppm, fatalities can be expected at 2 ppm. Oxygen enters the water by diffusion from the atmosphere or through plant photosynthesis. The dissolved oxygen level in water is constantly changing and represents a balance between respiration and decomposition that deplete oxygen and the photosynthetic activity that increases it.

3-2610-41 DO Sensor

+ Dissolved Oxygen

- Compatible with 8900, 9900, and 9950
- 0 to 20 ppm
- 4 to 20 mA output
- Modbus output (RS 485)
- 2% accuracy - No calibration
- Fresh or Salt Water applications
- In-line applications 2 in. to 8 in.
- In-line or submersible/Suspend

Product Offering

Salinity

Salinity is a measure of how much salt is in the water. The preferred method to make water for marine and reef tanks starts with RO/DI water which is mixed with commercial aquarium salt mix that contains all the salts and minerals needed. Salinity describes the content of total dissolved salts and minerals in the water and is measured in parts per thousand (ppt). Salinity of natural sea water varies by ocean, sea and reef, but is usually near 1.026 specific gravity (s.g.) or ~35 ppt salinity.

Conductivity sensors are necessary in various locations throughout an aquarium, including the measurement of ultra-pure water, wastewater discharge, and to determine the level of salts in aquatic water; whether being measured as Salinity, TDS (total dissolved solids), or conductivity.

Conductivity Sensor Family

+ Conductivity Sensor Family

- ¾" NPT process connectors for in-line pipe monitoring
- Submersible sensors for tanks
- Material available, Titanium, Hastelloy-C, Monel or 316 SS
- Cell constant 0.01, 0.1, 1.0, 10 and 20 are available
- Wet-Tap sensors available

Flow

Flow is critical to the health of an aquarium. Maintaining proper flow throughout aquariums ensures stable chemistry and biological filtration. Plants, micro-organisms, fish and all aquatic animals require oxygen to live. As oxygen is used by the aquatic life, it is replaced by carbon dioxide which can reduce the overall pH of the water.

Flow sensors deployed throughout an Aquarium ensures that filters, pumps, the denitrification process and disinfection are working efficiently to maintain a good, healthy environment. Flow monitoring is an excellent way to determine if the filter requires maintenance, and also to monitor proper back-wash process.

Flow Family

+ Flow

- Fully serviceable
- Paddlewheel and Magmeter available
- Various wetted materials available for corrosion resistant Titanium, Hastelloy-C
- Wet-Tap assembles
    - Installs and removes sensors from piping systems for service without flow interruption
- NPT or ISO process connections available

Product Offering

pH and ORP

All fish have different preferences to water pH. Almost no fish prefer completely neutral water, due to imbalances in the wild. Fresh water fish adapt to a wide pH range. They might be happiest at pH 7.2, but they would be just as happy at 6.8 or 7.6. The pH of natural sea water varies throughout different marine environments, but is generally around 8.2 pH. Reef tank pH should be maintained between 8.0 and 8.6. pH will be at its lowest point at night and will rise throughout the day as dissolved oxygen levels rise.

Nature's immense buffering and filtering capacity maintains a healthy water system required for life support. Water must be disinfected in aquariums or the ecosystem will be destroyed by a surge in bacterial growth and/or algae blooms, which consume oxygen and spread disease. Disinfection of the water as it is re-circulated and filtered is needed to kill bacteria levels and maintain a healthy system. For marine mammals, chlorine, sodium hypochlorite, calcium chlorite or ozone may be used to provide a residual disinfecting agent. An ORP (oxidation-reduction potential) or "redox" sensor measures, and monitors the oxidizing capacity of the water to ensure disinfectant levels are properly maintained.

3-3719 pH/ORP Wet-Tap Assembly

+ Wet-Tap Assembly

- Electrode removal without process shutdown
- Protects electrode from breakage available with NPT or ISO process connector
- Fully serviceable
- Sealed pneumatic dampening for smooth and safe operation
- Automatic locking mechanism

3-2724, 3-2726 and 3-2756 pH Electrodes Series

+ pH

- Designed for both tank and in-line measurements
- 272X family sensors available with NPT or ISO process
- Mounts in any angle of the pipe for easy installation
- Wet-Tap assembly available

+ ORP

- Designed for both tank and in-line measurements
- 2725 sensor available with NPT or ISO process
- Mounts in any angle of the pipe for easy installation
- Wet-Tap assembly available
- Wet-Tap sensor 3-2757-HDPE specifically designed for aquatic use.

Product Offering

Pressure, Temperature and Level

Ocean and fresh water temperature varies globally. In order to sustain stable healthy fish and animal populations, temperature control of the aquatic environment is important. The amount of oxygen that can be dissolved (saturated) in the water is also dependent on the water temperature and salinity levels.

Filtering of aquarium water is vital to a healthy aquarium by removing biogrowth, suspended matter and fish/animal waste. A pressure sensor measures the difference in pressure between the inlet and outlet, and allows proper warning when filter maintenance is required.

Monitoring water level and managing tank farms in Aquariums is made easy with the wide range of GF level products. Level monitoring ensures a stable environment to the aquatic life, and is a key measurement in tanks that hold process water, makeup water, wastewater and chemicals to guarantee an adequate supply is available.

2350 Temperature Sensor

+ Temperature

- 4 to 20 mA or digital (S^3L) output
- Standard 3/4 in. NPT process connection
- One-piece injection molded PVDF body
- PT1000 platinum
- Easy installation
- Threaded for in-line or submersible installation

2450 Pressure Sensor

+ Pressure

- 4 to 20 mA or digital (S^3L) output
- 1/2 in. male union process connection
- One-piece injection molded PVDF body
- Flush ceramic diaphragm
- Easy installation
- Choice of three pressure ranges
- Pressure or level measurement

Level Family

+ Level

- Easy settings
- Large displays
- Foreign object recognition
- High resistance and long life despite contact with corrosive liquid
- Low maintenance costs
- Ultrasonic level sensors
- Hydrostatic level sensors
- Tuning forks
- Ultrasonic gap switch
- Conductive multipoint switch
- Float switches

Product Offering

Multi-Parameter Transmitters

The 9900 Multi-Parameter Transmitter offers the ease and flexibility to be used with any GF Signet sensor. This allows a single transmitter to be used throughout the Aquarium, reducing the need for cross training to other brands of meters, and also the need for inventorying multiple spare transmitters.

The 9950 allows two sensor to be displayed and controlled by a single transmitter. The 9950 can be used with two different sensors to monitor two parameters or be used with two like sensors such as conductivity, flow and pressure sensor to monitor independent monitoring points or calculate the difference between two measuring points to support RO systems and media filter maintenance

9900 Transmitter

+ Multi-Parameter

- Multiple sensor types supported with one instrument
- "Dial-type" digital bar graph
- Optional Relay Module for addition of two dry contact relays
- One 4 to 20 mA output in base unit. One additional 4 to 20 mA available with optional module
- NEW! Rear Enclosure kits for panel, wall or pipe mounting
- Warning and Relay LED indicators for "at a glance" visibility
- Customizable features including digital label for custom identification

9950 Transmitter

+ Multi-Parameter

- One instrument for multiple sensor types
- Two different sensor types can be combined in one instrument
- Configurable display
- Derived measurements
- Advanced boolean logic
- Optional modules can be added for additional capabilities

Compatibility

Multi-Parameter Transmitters

Flow, pH/ORP, Conductivity/Resistivity, Temperature, Pressure, Level, Salinity, 4 to 20 mA Signals, Batch, Dissolved Oxygen

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