



Aquaculture

APPLICATIONS, CAPABILITIES & SOLUTIONS

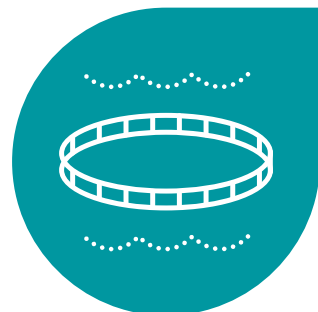


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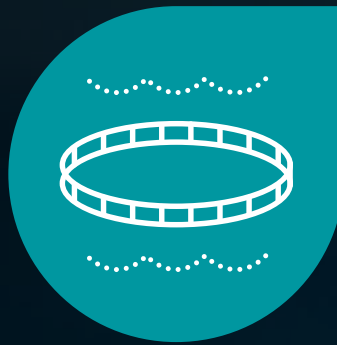
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Xylem Aquaculture

Proven. Trusted.

Applications

Aquaponics
Aquatic Life Support
RAS (recirculating systems)
Raceways
Ponds
Cages
Live Haul
Aquariums
Research

Parameters

Dissolved Oxygen
pH
Conductivity
Temperature
ORP
Salinity
Total Dissolved Solids
Water Velocity
Chlorophyll
Blue-green Algae
Nitrate
Ammonium/Ammonia
Chloride
Meteorological Sensors
...and more

Capabilities

Aquaponics
Aquatic Life Support
Portable Handhelds
Continuous Monitoring
& Control
Unattended Buoyed
Systems
UV Disinfection
Pumping
Ozonation
Feed Timer
Remote Data Access

As the demand for high-quality aquaculture production increases, the need for water quality instrumentation to ensure a healthy harvest and minimize negative environmental impacts is also increasing.

We have expanded our offering of DO meters, handheld instruments, and continuous monitors and have designed them specifically for the aquaculture professional.

We pride ourselves in developing and manufacturing industry-leading instrumentation to help make your job easier, provide reliable data for decision-making, and improve the efficiency of your facility. We are here to support you in your work. Our knowledgeable customer service and technical support staff are here to help with any instrument or application questions you may have.



ProDSS[®]

The **YSI ProDSS** (Digital Sampling System) portable multiparameter meter provides extreme flexibility and convenience for measuring over 20 different parameters. It is the standard spot-sampling and profiling instrument for water quality professionals, especially when the environment demands it. The ProDSS is a true field instrument, built tough with aquaculture facilities in mind.

The Ultimate Sampling System

- Connects to 4-port, 1-port, and integrated probe assemblies
- Digital smart sensors are auto-recognized for easy setup
- User-replaceable cables and sensors
- Kor Software (included)
- USB on-the-go connector for quick data backup to a flash drive
- Color display and backlit keypad; menu-driven operation
- Long-life, rechargeable lithium-ion battery
- Optional GPS
- Optional depth sensor and up to 100 meter cable lengths
- Large onboard memory with storage capacity for over 100,000 data sets
- Built-in barometer for easy DO calibration and virtual vented depth
- IP-67 rubber, over-molded waterproof case and military-spec connectors
- On-screen help feature provides assistance with menu options
- Simple and quick calibration procedures
- Warranty: 3-year instrument, 2-year cable and most sensors



▲ ProDSS 4-port Cable

Connect any four smart sensors to the 4-port cable assembly to get comprehensive water quality data.



ProDSS Parameters

- | | |
|----------------------------|---------------------------------------|
| Dissolved Oxygen (Optical) | Chlorophyll |
| Turbidity | Total Algae |
| pH | Ammonium |
| ORP/Redox | Ammonia |
| Salinity | Chloride |
| TDS | Nitrate |
| Resistivity | Temperature |
| TSS | Barometric Pressure |
| Depth | Conductivity/
Specific Conductance |
| Seawater Density | |
| GPS Coordinates | |

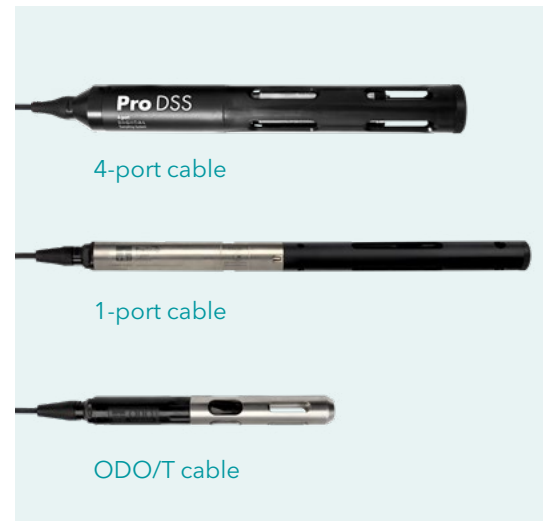


YSI.com/ProDSS

Versatile

The YSI ProDSS handheld multiparameter meter provides extreme flexibility with three main cable options. Choose between the fully loaded 4-port cable assembly (with optional depth) outfitted with any four DSS sensors, the 1-port cable assembly (with built-in thermistor and optional depth) for dedicated sampling, or the ODO/T (with optional built-in conductivity) integrated probe assembly which delivers cutting-edge optical dissolved oxygen technology in a streamlined package.

The ProDSS is a true field instrument. The titanium smart sensors (4-port and 1-port cables) can easily be replaced in the field and our durable locking military spec, bayonet-style cable connector ensures quick and secure cable connection. A rugged and waterproof (IP-67) rubber over-molded instrument case provides protection from the demands of field sampling. The durable cable protects your investment with a 2-year warranty.



Data Management Software

Kor Software is included with the instrument for powerful data management. Kor Software allows you to configure the ProDSS, download and view data, and run real-time studies.

Geo-location

Optional on-board GPS allows you to collect GPS data and water quality data together, at your exact location.

Is Nitrate Nitrogen Harmful?

Modest levels of nitrate nitrogen may be more harmful to aquaculture-raised rainbow trout than producers realize. A team of scientists at the Conservation Fund's Freshwater Institute, led by John Davidson, documented deformities and significant behavioral changes in rainbow trout (*Oncorhynchus mykiss*) raised in recirculating aquaculture systems (RAS) with nitrate nitrogen concentrations at levels less than one-tenth the recommended maximum nitrate nitrogen level or less than 100 mg/L. They believe the changes were spurred by chronic exposure to nitrate nitrogen. "If fish are stressed based on a water quality parameter that's present, that could impact performance in other ways, like feed conversion or growth rate," Davidson says.

Nitrate nitrogen levels can build up in RAS systems rapidly as fish excrete ammonia nitrogen and biofiltration systems convert the ammonia nitrogen to nitrate and then to nitrate nitrogen. Davidson and his team monitored nitrate nitrogen levels carefully using two standard lab testing protocols, as well as with a YSI Pro Series multiparameter handheld meter. He says instant readings from the handheld meter will be important for staying on top of nitrate nitrogen levels in commercial settings.



[Read the full blog – ysi.com/ysi-blog/aquaculture](https://ysi.com/ysi-blog/aquaculture)

ProQuatro

The **YSI ProQuatro** accommodates any combination of analog Pro Series sensors and cables. This compact handheld provides extreme flexibility to meet your sampling needs. Simple calibrations, detailed calibration data, auto-buffer recognition, mil-spec connectors, re-cal prompts, auto-stable indicators, and on-the-go USB connector help make your job easier in the field or the lab. The ProQuatro is a true professional instrument for the water professional.

Tough

- Rubber, over-molded IP-67 waterproof case
- 3-year instrument; 2-year cable warranty
- Rugged cables, sensors, and military-spec connectors
- Drop-tested 1 meter at all angles
- Backlit display and keypad

Smart

- 5,000 data sets in manual mode; up to 50,000 in continuous mode (depending on number of parameters)
- Search function filters user-defined data
- Interval or single-event logging
- 50 Data IDs for logging data
- Detailed GLP (calibration) data
- Auto-buffer recognition; up to 6-point pH cal

Streamlined Data Management

- On-the-Go USB port simplifies data export
- Connect a flash drive and upload data directly - even in the field
- Export data as a CSV file for quick analysis
- Conduct real-time studies at your aquaculture facility



▲ Quatro Cable (605790)

This multiparameter cable allows the measurement of temperature, conductivity, salinity, dissolved oxygen, and any two ISEs - pH, ORP, ammonium/ammonia, nitrate, or chloride.

Additional cable options for field



Single port cable
60510 - ISE, pH, ORP
60520 - DO
60530 - Cond



Single port cable with conductivity
6051030 - ISE/Cond
6052030 - DO/Cond



Dual port cable
6051010 - ISE/ISE
6051020 - ISE/DO

Cable options for lab



Lab grade ISE
605107 - pH
605108 - ORP
605109 - pH/ORP

ProQuatro Parameters

Temperature	pH
Conductivity/ Specific conductance	ORP
Resistivity/Resistance	BOD (electrochemical)
Salinity	Ammonium/Ammonia
TDS	Chloride
Dissolved oxygen (electrochemical)	Nitrate
	Barometric Pressure



ProSolo

The **YSI ProSolo** handheld meter provides high-accuracy dissolved oxygen measurements with very low maintenance requirements. The ProSolo can be used with ODO/T or ODO/CT probe and cable assemblies.

Reliable, accurate data:

- 0 to 500%, 0 to 50 mg/L measurement range; accuracy of ± 0.1 mg/L or 1% of reading, whichever is greater (0 to 20 mg/L)
- Real-time salinity compensation for dissolved oxygen measurement when used with an ODO/CT probe and cable
- Optical based sensor doesn't require stirring, increasing the accuracy of the measurement
- Large memory (over 100,000 data sets) with extensive site list capabilities
- USB on-the-go connector for quick data backup to a USB drive

Tough, designed for field work:

- Waterproof, IP-67 rated rubber over-molded case
- Rugged cables with military-spec connectors
- Color screen with graphic, backlit keypad for low-light conditions
- Long-life, rechargeable lithium-ion battery
- 3-year instrument warranty, 2-year cable, probe and sensor cap warranty

Low maintenance:

- Optical based sensor requires little maintenance - no membranes to change and no daily calibration required
- ProSolo sensor cap is warrantied for 2-years
- ProSolo has extremely low calibration drift



ProSolo Parameters

Temperature
Dissolved oxygen
(optical-based sensor)
Conductivity*
Salinity*
TDS*
Barometric pressure

*Available on ODO/CT probe and cable assembly only.

Cable options



ODO/T (627200) - Integral Optical Dissolved Oxygen and Temperature Probe



ODO/CT (627150) - Integral Optical Dissolved Oxygen, Temperature, and Conductivity Probe



Advanced Data Management

- Powerful Kor Software is included with all systems
- Use to transfer instrument configurations to multiple handhelds
- Transfer data directly from handheld or USB
- Conduct real-time studies
- Enhance data with site images



Pro Series

Dual Parameter

The **YSI Pro Series** handheld instruments provide accurate measurements in a compact, rugged, easy-to-use instrument. Accurate data. Rugged for the field. Perfect for Aquaculture.

All instruments share:

- IP-67 waterproof rating
- 3-year instrument warranty; 2-year cable warranty
- Quick Cal provides easy and intuitive calibrations
- 50 data-set memory
- Graphic, backlit display and glow-in-the-dark keypad
- Rugged cables, sensors and military-spec connectors
- User-replaceable cables and sensors
- Languages - English, Spanish, French, Portuguese
- Internal barometer for dissolved oxygen (DO) instrument
- Available with 1, 4, 10, 20, and 30 meter cable lengths



Military-spec Connector

Pro2030

- Proven, super stable conductivity electrode
- Fast response times; easy to change PE cap membranes

Pro1020

- Fast response times; easy to change PE cap membranes
- Simplifies DO measurements in changing salinity environments
- Auto-buffer recognition

Pro1030

- Proven, super stable conductivity electrode
- Auto-buffer recognition



Pro2030 Parameters

Temperature
Dissolved Oxygen
(electrochemical - galvanic or polarographic)
Conductivity/
Specific Conductance
Resistivity/ Resistance
Salinity
Total Dissolved Solids (TDS)

Pro1020 Parameters

Temperature
Dissolved Oxygen
(electrochemical - galvanic or polarographic)
pH or ORP

Pro1030 Parameters

Temperature
Conductivity/
Specific Conductance
Salinity
Total Dissolved Solids (TDS)
pH or ORP

Pro Series

Single Parameter

Designed specifically for the rigors of the aquaculture industry, the **YSI Pro Series** instruments are true field meters that are simple, easy-to-use, and rugged.

All instruments share:

- Tough IP-67, impact-resistant, waterproof case
- Rugged cables, sensors and military-spec connectors
- 3-year instrument warranty; 2-year cable warranty
- 50 data-set memory
- Graphic, backlit display and glow-in-the-dark keypad
- Quick Cal provides easy and intuitive calibrations

Pro10

- Auto-buffer recognition
- Multiple languages include English, Spanish, French and Portuguese
- User-replaceable cables and sensors
- Available with 1, 4, 10, 20 and 30 meter cable lengths

Pro20

- Internal barometer
- One Touch Cal completes calibration within 3 seconds
- Choose either Galvanic or Polarographic sensor
- Fast response times; easy to change PE cap membranes
- Multiple languages include English, Spanish, French and German
- User-replaceable cables and sensors
- Available with 1, 4, 10, 20, 30, and 100 meter cable lengths

Pro20i

- Same features as the Pro20 except it includes a built-in, integral cable providing a lower-cost option
- Available with 1, 4, and 10 meter cable lengths

Pro30

- Quick Cal recalls previous calibration values
- Proven, super-stable conductivity cell built into the cable
- Multiple languages include English, Spanish, French and German
- User-replaceable cables and sensors
- Available with 1, 4, 10, 20, and 30 meter cable lengths



Pro10 Parameters

Temperature
pH or ORP



Pro20 / Pro20i Parameters

Temperature
Dissolved Oxygen
(electrochemical -
galvanic or polarographic)

Pro30 Parameters

Temperature
Conductivity/
Specific Conductance
Salinity
Total Dissolved Solids (TDS)



Sensor installation

ProSwap

Swap one smart sensor for another with the **ProSwap** digital water quality meter! Featuring built-in temperature and optional depth sensors, ProSwap can transform into whatever you need: a purpose-built turbidity meter or a high-accuracy optical DO meter; a spot sampling pH meter or a profiling conductivity-temperature-depth system. The ProSwap connects with any ProDSS smart sensor.

Simple. Flexible. Reliable.

- Connects to 1-port and integrated probe assemblies as well as ProDSS digital water quality sensors
- Digital smart sensors are auto-recognized for easy setup
- User-replaceable cables and sensors
- Kor Software (included)
- USB on-the-go connector for quick data backup to a flash drive
- Long-life, rechargeable lithium-ion battery
- Optional GPS
- Optional depth sensor and up to 100 meter cable lengths
- Large onboard memory with storage capacity for over 100,000 data sets
- IP-67 rubber, over-molded waterproof case and military-spec connectors
- Rigorously drop tested from all angles
- Easy-to-read color display and backlit keypad
- On-screen help feature provides assistance with menu options
- Simple and quick calibration procedures
- 3-year instrument warranty; 2-year cable and sensor warranty



ProSwap Parameters

Dissolved Oxygen (Optical)	Chlorophyll
Turbidity	Total Algae
pH	Ammonium
ORP/Redox	Ammonia
Salinity	Chloride
TDS	Nitrate
Resistivity	Temperature
TSS	Barometric Pressure
Depth	Conductivity/ Specific Conductance
Seawater Density	
GPS Coordinates	



ODO™ RTU

YSI's **ODO RTU** utilizes the most advanced optical dissolved oxygen technology and can be connected into any Modbus system. ODO RTU is also available with built-in conductivity measurement to automatically compensate for salinity.

ODO RTU Features

- 0 to 500%, 0 to 50 mg/L measurement range; accuracy of ± 0.1 mg/L or 1% of reading, whichever is greater (0 to 20 mg/L)
- Modbus communication integrates directly into your existing PLC or data logger without additional software*
- Real-time salinity compensation for dissolved oxygen measurement when used with an ODO/CT probe and cable
- Optical based sensor doesn't require stirring, increasing the accuracy of the measurement
- Requires little maintenance and is protected by stainless steel guard
- 2-year cable, probe, and sensor cap warranty

ODO RTU connects directly to a PLC or data logger and is not intended for use with the ProSolo or ProODO handheld meters.

*The ODO RTU with hardware 1.0 or greater support multi-drop network configurations.



ODO RTU Parameters

Temperature
Dissolved oxygen
(optical-based sensor)
Conductivity*
Salinity*
TDS*
Barometric pressure

*Available on ODO/CT probe and cable assembly only.

CastAway-CTD

The CastAway-CTD is a small, rugged, and technically advanced CTD designed for profiling to depths of up to 100 m. The system incorporates modern technical features which allow it to achieve a 5 Hz response time, fine spatial resolution, and high accuracy. It uses a six electrode flow-through conductivity cell with zero external fields and a rapid response thermistor to attain high measurement accuracy. The instrument is simple to deploy, does not require a pump, and is hydrodynamically designed to free fall at a rate of 1 m/s.



CastAway-CTD Benefits

LCD Screen with Real-time data
Small, portable and easy to set-up
Automated wireless data transfer
Integrated GPS.

- 5 Hz sampling rate
- Salinity Accuracy: 0.1 PSU
- Temperature Accuracy: 0.05 °C
- Use for spot sampling or profiling

EcoSense[®]

Handheld Portables

The **EcoSense** line of compact, portable instruments provide accurate data in the most affordable format. The instruments feature an easy-to-use interface, one-hand operation, and a IP-67 waterproof case.

The “M” model instruments feature an extended memory (250 data sets), simple data transfer with a micro-USB port, and a real-time clock and re-calibration timer.

Handheld Features

- Waterproof case meets IP-67 specs
- 1-year instrument warranty
- Submersible waterproof cables
- Large displays
- Quick, simple calibrations
- 50 data-set memory (“A” models)
- 250 data-set memory (“M” models)



pH100M / pH100A

The pH100M and the pH100A are economically priced, reliable instruments for measuring pH and temperature. Use with the standard pH electrode or with the flat glass electrode to prevent damage in harsh applications and environments.

ODO200M / ODO200

An optical-based dissolved oxygen meter ideal for DO sampling. Optical sensors require less maintenance, hold calibration longer and don't require stirring compared to membrane-covered sensors. Like electrochemical DO sensors, optical sensors are EPA approved for water quality compliance reporting.

DO200M / DO200A

Economical, fast dissolved oxygen measurements with screw-on cap PE membranes that require low stirring. Easy calibration routine with the ability to measure in the field or in the lab with a BOD probe.

EC300M / EC300A

The EC300M and the EC300A measure conductivity, salinity, total dissolved solids (TDS), and temperature in simple, compact handhelds.



EcoSense Handheld Parameters

Temperature
pH
ORP
Dissolved oxygen (optical or electrochemical)
BOD (electrochemical)
Conductivity/
Specific conductance
TDS
Salinity

Pen Features

- Waterproof case meets IP-67 specs
- Over 100 hour battery life with indicator
- 1-year instrument warranty
- Replaceable electrode
- 50 data-set memory
- Hold feature locks stable readings on display
- Graphic display with on-screen instructions

pH/EC1030A

The pH/EC1030A offers accurate, low-cost measurement of pH, conductivity, total dissolved solids (TDS), salinity, and temperature.

pH10A

The pH10A is the perfect instrument for economical spot sampling of pH and temperature in aquaculture applications. Quickly calibrate with up to 3-point auto-cal.

ORP15A

The ORP15A offers accurate, low-cost measurement of ORP (absolute and relative mV) and temperature.

EC30A

The EC30A measures conductivity, TDS, and temperature with an easy, user-replaceable electrode ensuring the instrument is always ready.



EcoSense Pen Parameters

Temperature
pH
ORP
Conductivity/
Specific conductance
Salinity
TDS

9800 Photometer



The YSI 9800 Photometer has a unique field-robust design that features a smart user interface with easy on-screen instructions for all test options, a backlit touchscreen display, several user-selectable options, and a 1,000 data-set storage capability. A waterproof USB port allows for both data retrieval and power.

Photometer Parameters

Hardness
Ammonia
Nitrate
Nitrite
pH
Copper
Chlorine
Alkalinity
... and more

IQ SensorNet

Monitoring and Control System



2020 3G Controller

Monitor up to 20 parameters with a single controller and network of modules.



282/284 Controller

Standalone controllers for 2 or 4 sensors



FDO® Dissolved Oxygen Probes

Robust sensor design for DO, pH, conductivity, and much more

Improve operational performance with 24/7 online data from IQ SensorNet. The benefits of monitoring your aquaculture system include better visibility and management of your water quality, less grab sampling, process control capabilities, and peace of mind knowing your fish stocks have a healthy environment to grow.

IQ SensorNet Features:

- 3-year warranty
- System-wide lightning protection
- Change or move sensors at any time with ease
- Modular expansion - add sensors and communication outputs at any time
- Easily stack modules without extra wiring
- One cable for power and communications; simplifies installation
- USB interface (can be used for security)
- System redundancy for backup control and power
- Connect up to 20 digital sensors
- LED status update
- Numerous relays and analog outputs may be selected
- Communications via modem, radio transmission, PROFIBUS, MODBUS, RS-232, MODBUS TCP/IP, Ethernet IP
- Graphic, backlit color display
- Integrates into existing PLC & SCADA systems

IQ SensorNet Parameters

- | | |
|---|-----------------------------------|
| Temperature | Chloride |
| Dissolved Oxygen (optical or electrochemical) | Orthophosphate |
| pH | Chlorine (DPD Colorimetric) |
| ORP | TOC (Total Organic Carbon) |
| TSS | Conductivity/Specific conductance |
| Turbidity | Salinity |
| Ammonium | ... and more! |
| Nitrate | |
| Potassium | |

3017M

DPD Chlorine Analyzer



Continuously measure chlorine in your aquatic application with YSI's 3017M DPD chlorine analyzer. Prevent unnecessary stress on your aquatic life caused by excessive chlorine levels. With a low limit of detection, the 3017M is ideal for chlorine measurements in aquaculture and aquatic habitats. The analyzer features two configurable relays to alert you to harmful spikes in chlorine.

Benefits

- Accurate and Reliable
- Low Maintenance
- EPA & ISO Compliant
- Factory Calibrated
- YSI IQ SensorNet Compatible

Flow & Level

For level and flow controllers, **MJK** provides hydrostatic and ultrasonic level instruments, as well as open-channel flow, electromagnetic flow meters, and float switches made tough for the demanding conditions of aquaculture facilities.



MagFlux™
Electromagnetic Flow Meter



Expert™
Level Transmitters



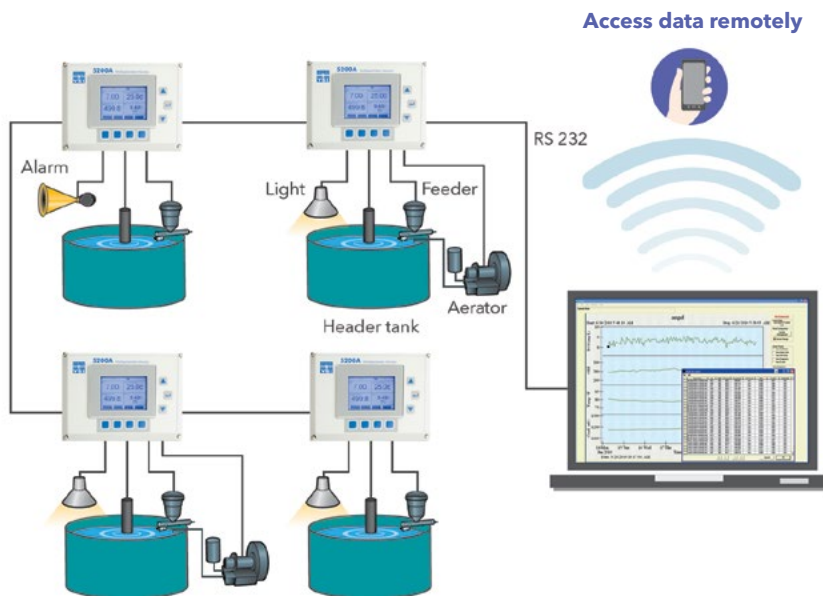
Float Switch

5200A Multiparameter Monitor

Designed specifically for aquaculture and aquatic life support systems, the **5200A** integrates water quality monitoring, process control, feeding, alarming and data management into one instrument. Multiparameter functionality for dissolved oxygen, temperature, pH, ORP, conductivity and automatic salinity compensation. Plus, two configurable inputs for additional sensors and management.

Monitor Features

- Ethernet TCP/IP or wireless communications – optional
- Event logging records calibrations, high and low conditions, and more
- Conditional feed timer with Feed Smart™ software included
- Networking capability; can be integrated with 5500D monitors
- Flexible dosing and control software
- SMS and email alarming
- Plug-and-play – easy to install, setup, and maintain
- Photo period management
- Control parameters with set points, dosing, or PID functions
- Graphic interface function for quick, reliable system-status checks



Example of four monitors individually monitoring and controlling four tanks with direct PC connection. Email and SMS alarming is available from network-connected PC running AquaManager®.

Outputs / Timers (included)

- 4 each 10A at 110 VAC relays (5A at 240VAC)
- 4 timers – 10 cascading events with start/duration setting
- 1 Feed Smart channel
- Email and/or SMS alarming; up to 3 emails with Ethernet module or up to 10 emails with AquaManager®
- Local alarm; configurable to relay
- Increase flexibility and capabilities when combined with expansion modules

Inputs (included)

- DO, pH, ORP, conductivity, temp
- 2 user-configurable inputs, digital or analog (0 to 1.0 VDC, 0 to 5.0 VDC or 4-20 mA)*

* IP Network, Wireless, Ethernet, Email, SMS, Alarm, RS232

5500D MultiDO Monitors

Need a continuous multi-channel dissolved oxygen (DO) monitoring and control instrument designed specifically for aquaculture systems? Easily install and manage a full-scale farming operation with expandable capabilities.

5500D Access data remotely



- Ethernet TCP/IP or wireless communications – optional
- Event logging records calibrations, high/low conditions, and more
- Conditional feed timer with Feed Smart software included
- Networking capability up to 32 instruments per communications port - 5200A and 5500D monitors can be networked together
- Plug-and-play – easy to install, setup, and maintain
- Easily make changes to the monitoring and control settings
- Email and SMS alarming
- Photo period management
- Control parameters with set points, dosing, or PID functions
- Compatible in salt water applications - user configurable salinity range to compensate for DO

Outputs / Timers (included)

- 8 relays 10A at 110 VAC (5A at 240VAC)
- 4 timers – 10 cascading events with start/duration setting
- 4 Feed Smart channels
- Email and/or SMS alarming; up to 3 emails with Ethernet module or up to 10 emails with AquaManager
- Local alarm; configurable to relay

Inputs (included)

- Up to 4 DO probe inputs
- 6 user-configurable inputs*, digital or analog (0 to 1.0 VDC, 0 to 5.0 VDC or 4-20 mA)
- 4 auxiliary inputs can be configured for temperature inputs

*User-configurable inputs can be used for additional sensors like DO, pH, TGP, ORP, photo period, etc. Some sensors require additional transmitter.



The YSI 5500D Optical DO monitoring & control instrument continuously monitors your farming operation's water quality for dissolved oxygen using optical DO technology. Choose 1, 2, or 4 DO channels.



Currents, Waves, and Water Quality

Monitor water quality, currents, and waves onsite or with remote access with **Aanderaa's** industry-leading sensors. Ensure the health of your product and manage site efficiency with our aquaculture monitoring systems.



Aqua Oxygen Optode 4531

Compact and fully integrated sensor for measuring O_2 concentration and temperature.



Oxygen Optode 5730

A compact dissolved oxygen and temperature sensor ready to be integrated into your system.



Bluetooth Recording Current Meter (RCM Blue)

A current meter with Bluetooth® communications for data access and setting up deployments. Integrate a pressure sensor for a more detailed understanding of the water motion.

Bluetooth configuration eliminates the need to open the instrument for downloading and configuration. An LED shows the instrument status is "ON".

Deployment time is up to 19 months at a 10 minute interval with 150 pings and with Aanderaa standard Pressure Case. Correct current measurements even at 50 degree tilt.

Oxygen is essential for most biological and chemical processes in the aquatic environment. Monitoring this parameter is required to understand the health of the water and can be useful as a tracer molecule in oceanographic studies. The Oxygen Optode is rated for fresh, shallow water to deep, ocean water.

Benefits:

- High accuracy
- Does not require stirring
- Lower fouling sensitivity
- Better long-term stability
- Not sensitive to H_2S
- Not freezing sensitive



Doppler Current Sensor Blue 5430

The Aanderaa Doppler Current Sensor is a rugged, true vector averaging current sensor for measuring current speed and direction in the sea. The sensor has a built-in compass and tilt sensor and also outputs sea temperature. The speed range is 0 to 300 cm/s. The sensor has a low current drain and flexible sampling schemes. New multi-frequency (DCS) with ZPulse technology achieves better performance using only half the power of previous models. The new, fast response compass and tilt circuitry have no moving parts, achieving excellent performance in unstable areas such as in the wave zone close to the surface.



Conductivity Sensor

Conductivity sensors from Aanderaa are compact, fully integrated sensors for measuring water conductivity. Measuring conductivity of salt water is a key parameter for *in situ* measurements of several fundamental physical properties of water.



Turbidity Sensor

The optical turbidity sensor is the most versatile turbidity sensor on the market: side-looking, fully calibrated, with temperature included.

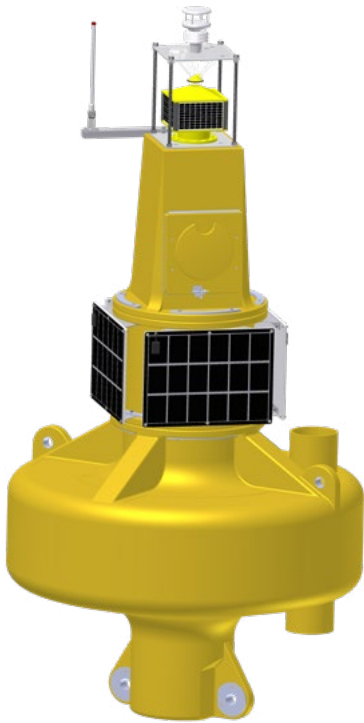
Advantages of the Sensors:

- Smart Sensor for easy integration with SeaGuard® and SmartGuard
- Direct read out of engineering data, multipoint factory calibrated
- Enter site-specific reference data to receive TSS
- Low power consumption
- Rugged and robust with low maintenance needs
- Output format AiCaP CANbus, RS-232

SonTek-SL500



Inspired by the need for a **simple** way to measure water velocity and level in open water, the SonTek-SL (affectionately known as the Side-Looker or "SL") has earned worldwide acceptance as a long-term monitoring solution. The SL500 provides a horizontal profile of 2D velocity at a range of 1.5 to 120 m. When equipped with a compass, the SonTek-SL can report Earth (ENU) coordinate velocities. The SonTek-SL features accessories, mounting options, software, and various data formats to ensure it fits your application.



MOTUS Wave Buoy

The MOTUS (movement in Latin) Wave Buoy is a perfect solution for collecting environmental data in coastal areas. The buoy can monitor various parameters such as wind, waves, currents, and water quality. Data are controlled and synchronized by data management systems, which provide a low-power and efficient system that offers long-term deployment capabilities.

Parameters

Meteorological Measurements
Navigational Aids
Real-Time Data Delivery
Wave Measurements
Water Quality Sensors
Data Management
Telemetry Options
Current Direction And Speed

Platform Capabilities:

- Measure accurate wave characteristics with the flexibility of a Met Ocean (ODAS) buoy
- High sampling rate and mechanical dampening, ensuring low noise
- Compensate for buoy wave response, off-center placement of sensor and payloads by configurable settings
- Distinguish the direction of swells and wind-driven waves
- Current profile with intelligent compensation for movement
- Full suite of water quality parameters with anti-fouling
- Get the support you need with Xylem product experts in your region
- On-board processing of wave parameters resulting in lower demands for bandwidth and power

MOTUS Stand-Alone Sensor

Turn your buoy into an intelligent data-collecting platform with the Aanderaa MOTUS Wave Stand-Alone Sensor.

Sensor Options

Directional Wave Sensor
Wave Height Sensor
Lite OEM Sensor



EXO™ Sondes

Water Quality Monitoring

The **EXO** family of sondes, from YSI, represents the latest multiparameter water quality instrumentation for long-term data collection and early warning detection. User-replaceable smart sensors, combined with a central wiper, ensure quality data collection over extended deployments. Each sonde can be used autonomously or as part of a larger monitoring network to provide real-time information on the health of water bodies.

Continuous data collection

- Use in fresh or salt water applications
- Flexible sensor payload to install nearly any configuration of parameters for nearly any environment (or project!)
- Seamless integration into monitoring systems with real-time water quality alerts
- Best-in-class anti-fouling technology protects data integrity and extends deployments

Rugged materials that hold up in harsh environments

- Welded titanium sensors & welded housings with double o-ring seals to prevent leaks
- Wet-mateable connectors resist corrosion

Reduced cost of ownership

- Rugged, long-lasting optical dissolved oxygen cap
- Replaceable electrode for pH/ ORP and ISEs to extend operational life



EXO3 & EXO3^S

EXO1 & EXO1^S

EXO2 & EXO2^S

Parameters

Dissolved Oxygen (optical)
pH
ORP
Conductivity/
Specific Conductance
Salinity
Total Dissolved Solids (TDS)
Total Algae
Turbidity
Chlorophyll
Nitrate
Chloride
Ammonium
Temperature
Total Suspended Solids
fDOM
Depth
.... and more



Anti-Fouling Central Wiper

The industry-leading anti-fouling wiper extends your deployments by removing buildup and protecting sensors for up to 90 days between service intervals.



Systems Integration

EXO sondes can be integrated into powerful monitoring systems, giving you real-time insights into water quality.

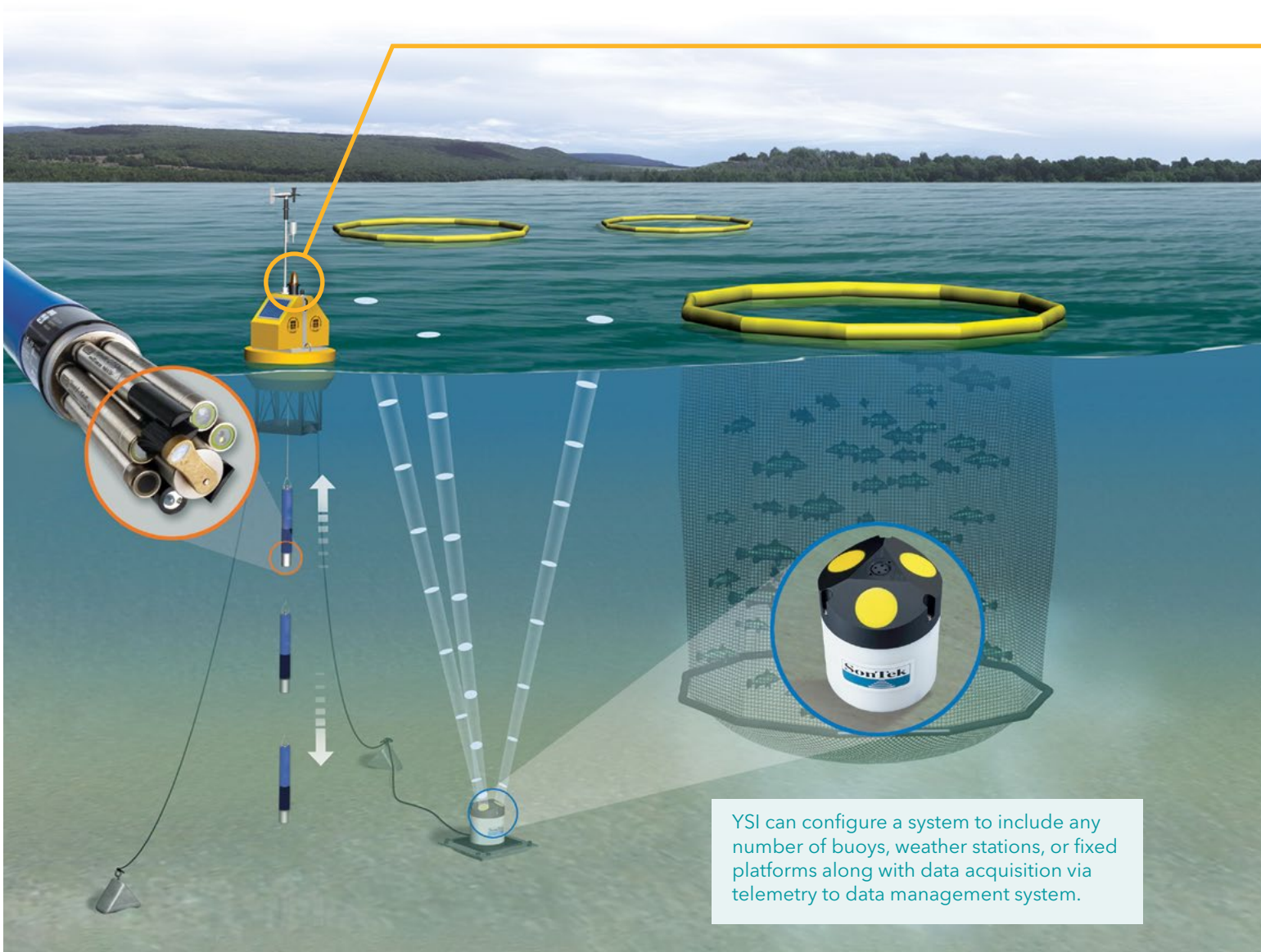
Offshore Monitoring and Early Warning Systems

Farming in offshore and open-sea environments requires rugged equipment to withstand the impacts of the harsh natural surroundings.

It also requires robust communication and telemetry systems for sending the necessary data to keep fish healthy and protected.

YSI provides a complete monitoring solution from sensors such as **EXO** or **Argonaut-XR**, to data collection buoy platforms, to cloud-based data visualization software like **HydroSphere™**.

- Best-in-class anti-fouling technology
- Protect your investment with email alarms delivered directly to personnel
- Limit service trips by delivering real-time data back to your office
- Minimize installation and infrastructure costs with a system designed for autonomous operation (*Systems can be configured with solar panels to generate their own power*)



YSI can configure a system to include any number of buoys, weather stations, or fixed platforms along with data acquisition system via telemetry to data management system.

HydroSphere

Data anywhere, anytime.

HydroSphere is a scalable collaborative data visualization platform for outdoor water monitoring. Empower your organization and all data stakeholders by:

- Telling your data's story with customizable graphs, tables, and dashboards
- Never miss an event with data-driven alarms and customizable escalation
- Defining roles and access to your data with personalized credentials for each user
- Building networks of monitoring sites
- Creating public websites for the visualization of curated data

Never Miss an Event with HydroSphere

The customizable alarms and escalation notifications can alert users as soon as problems occur.



Argonaut-XR

Acoustic Doppler Profiler



The Argonaut-XR offers exceptional value for near-shore deployments in less than 30 m of water*. Designed specifically for mounting on the bottom of an estuary, open channel, or harbor, the XR features a special mode that automatically adjusts its measurement cell(s) with changing water levels. Its small size, rugged build, and flexible system architecture make the XR attractive for real-time operation and autonomous deployments.

Basic Autonomous Configuration:
External battery
Internal recorder
Compass / tilt sensor
Pressure sensor
Temperature sensor

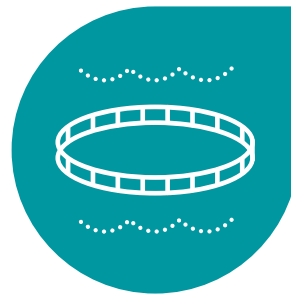
**The housing is rated to 200 m, but with a pressure sensor, the maximum depth is 30 m.*

Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xylem.com



Xylem
Aquaculture
Proven. Trusted.

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