



Municipal Water

INSTRUMENTATION CAPABILITIES AND SOLUTIONS



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YSI is your trusted partner for your municipal instrumentation and monitoring needs.

For 70 years, YSI has manufactured and designed sensors, instruments and solutions for water quality monitoring. We offer a full range of water quality instrumentation designed for monitoring and testing municipal water. They are field-tough, lab-smart, and applicable throughout your wastewater facility. From the lab to spot sampling to continuous monitoring and control, YSI's instruments can help you throughout your process, from influent to receiving waters.

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YSI instruments are backed by our technical team with years of experience, and who are committed to helping our customers improve their process.

Today, the Yellow Springs, Ohio manufacturing facility employs over 200 people who are dedicated to designing and building reliable water quality instrumentation that meets the needs of our municipal customers. Our instruments can help you with process optimization, increased efficiency, lower energy use and compliance reporting. We are here to support your good work with our extensive network of experts all over USA.

Thank you for your interest in YSI.
We look forward to partnering with you.

Laura St. Pierre | Product Segment Manager, Process



Connect with YSI



Application Notes ysi.com/ww

Learn how municipalities are benefitting from YSI instrumentation

- WWTP Saved Time and Money by Measuring Turbidity and TSS | A595
- Scioto Reserve Water Reclamation Facility Meets Discharge Limits for Total Inorganic Nitrogen with the IQ SensorNet | A619
- Monitoring Orthophosphate for Reduced Chemical Costs with the YSI IQ SensorNet | A620
- Spring Creek Plant Finds Operational Efficiency with SCADA and the YSI IQ SensorNet System | A624
- Automating Orthophosphate Monitoring Cuts Ferric Chloride Costs by over 25% | A635
- Lightning Strikes and the YSI IQ SensorNet System is Still Ticking | A628



White Papers ysi.com/ww

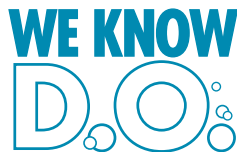
- How to Control Activated Sludge in Wastewater with Online Sensors
- Implementation of Solids Retention Time in Wastewater
- How to Control Denitrification Using Online Nitrate Sensors
- Best Practices for Wastewater Process Monitoring of Ammonium & Nitrate with Ion Selective Electrode (ISE) Sensors



Videos

visit youtube.com/ysiinc

View product demos, field studies and instrument installations.



visit ysi.com/weknowDO

View Dissolved Oxygen technology webinars, videos, selection guides, product spec sheets and more at our dissolved oxygen resource page.



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IQ SensorNet

Monitoring and Control System



2020 Parameters

- Temperature
- Dissolved oxygen
(optical or electrochemical)
- pH
- ORP
- TSS*
- Ammonium
- Nitrate
- Nitrite*
- NOx*
- Potassium
- COD*, TOC*, DOC*, SAC*, BOD*
- Orthophosphate
- Sludge level
- Chloride
- UVT-254*
- Conductivity/
Specific conductance
- Salinity
- Turbidity*
- *ultrasonic cleaning
for sensors



Improve operational performance with continuous data from IQ SensorNet. The benefits of monitoring your process include better visibility and management of your treatment process, improved compliance with regulatory targets, increased process efficiency and cost savings. Cost savings include a reduction in energy use, chemical inputs and pump/blower maintenance requirements.



IQ SensorNet Features:

- 3-year warranty
- UltraClean® ultrasonic cleaning; prevents fouling
- 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
- Color display
- Integrates into existing PLC & SCADA systems

2020 3G Controller

The IQ SensorNet 2020 controller can measure up to 20 parameters. This networked solution can easily be expanded at any time. Simply add a sensor or new communications output as your treatment requirements change. And with the system's back-up control function, the removable 2020 display can be connected to any module.



IQ SensorNet System for a Typical Wastewater Treatment Plant

Inlet: pH, Conductivity, Ammonium, COD/TOC/DOC/BOD/SAC

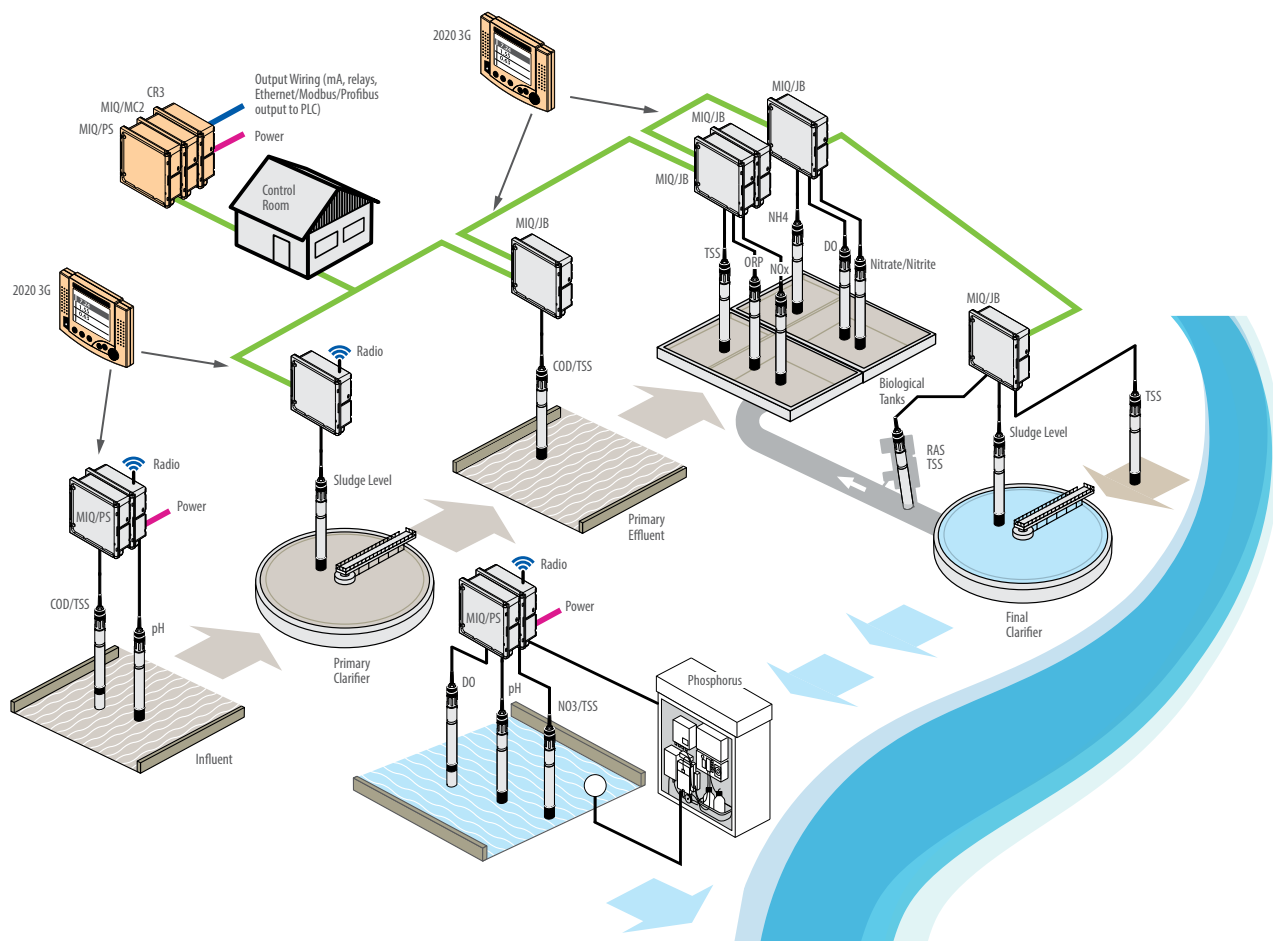
Aeration: DO, Ammonium, Nitrate, Nitrite, NO_x, TSS, pH

Final Settling: Nitrogen, Orthophosphate, Turbidity, TSS, pH, Sludge Blanket Level

Effluent: Ammonium, Nitrate, pH, Conductivity, DO, Orthophosphate, Turbidity, COD/TOC/DOC/BOD/SAC

Disinfection: UVT-254

RAS/WAS: TSS



IQ SensorNet 282/284 Controller



282/284 Parameters

Temperature
Dissolved oxygen
(optical or
electrochemical)
pH
ORP
TSS*
Ammonium
Nitrate
Nitrite*
NOx*
Potassium
Orthophosphate
COD*, TOC*, DOC*,
SAC*, BOD*
Sludge level
Chloride
UVT-254*
Conductivity/
Specific conductance
Salinity
Turbidity*
*ultrasonic cleaning
for sensors

The IQ SensorNet 282 and 284 controllers can connect to 1 to 4 sensors, allowing up to 20 parameters to be measured. The network can easily be expanded with additional measuring locations and communication outputs. The 282 and 284 are compatible with all IQ SensorNet sensors including reliable Ion Selective Electrodes, a wide range of UV VIS spectral sensors, wet chemistry analyzers, accurate dissolved oxygen and more.

282/284 Controller Features:

- Plug and play system
- Connect 1-4 digital sensors for a variety of parameters
- One cable for power and communications
- Ultraclean® ultrasonic cleaning
- Lightning protection
- Numerous analog & digital outputs/relays
- 3-year warranty
- Communications via modem, radio transmission, PROFIBUS, MODBUS, RS-232, MODBUS TCP/IP, Ethernet IP
- Easy-to-read digital color display
- USB interface and data logging capabilities



IQ SensorNet Sensors



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

Sensors/Analyzer



18

	1 TriOxmatic®	2 FDO®	3 SensoLyt®	4 TetraCon®	5 VisoTurb®	6 ViSolid®	7 NitraVis® (TSS)	8 NitraVis NI®	9 CarboVis® (TSS)	10 NiCaVis®	11 NiCaVis NI®	12 NOx®	13 UVT-254	14 VARION®	15 AmmolYt®	16 NitraLyt®	17 IFL®	18 P700® \ Alyza PO4	19 Alyza NH4
Parameters																			
Temperature	•	•	•	•										•	•	•			
DO (electrochemical)	•																		
DO (optical)		•																	
pH*			•																
ORP*			•																
Conductivity				•															
Salinity				•															
Turbidity					•														
TSS					•	•	(•)		(•)										
TDS				•															
Ammonium														•	•				•
Nitrate							•	•		•	•			•		•			
Nitrite								•			•								
Potassium**														•	•				
Chloride**														•		•			
COD (chemical oxygen demand)									•	•	•								
TOC (total organic carbon) *									•	•	•								
BOD (biochemical oxygen demand)									•	•	•								
DOC (dissolved organic carbon)									•	•	•								
SAC (spectral absorption coefficient)									•	•	•								
NOx												•							
Interface (Sludge) Level Measurement																		•	
Orthophosphate																			•
UVT-254									•	•	•		•						

*Choose pH or ORP for the SensoLyt

** The VARION can measure either potassium or chloride, but not both.

Professional Series Dissolved Oxygen Portables

All YSI DO portables are approved for compliance reporting.

ProSolo Parameters

Temperature
Dissolved oxygen
(optical)
BOD (optical)
Barometric pressure

ProSolo

The ProSolo DIGITAL handheld meter offers exceptional affordability, unmatched durability, and the most advanced Optical Dissolved Oxygen technology. Rugged enough for the field. Smart enough for the lab.

The Industry's Best DO Meter

- Optical, luminescent technology eliminates membranes and stirring; little maintenance required
- Highly accurate with expanded DO range of 0-500%; 0-50 mg/L
- Color screen with graphing; backlit keypad for low-light conditions
- Multiple cable options; ODO/T and ODO/CT for the field, OBOD for the lab
- Long-life, rechargeable lithium-ion battery
- Large memory (>100,000 data sets) with extensive site list capabilities
- USB on-the-go connector for quick data backup to a flash drive
- Rubber, over-molded IP-67 waterproof case
- Rugged cables and military-spec connectors
- 3-year instrument; 2-year cable and probe warranty



ProSolo

Pro20/Pro20i

Easy to use, rugged and reliable, the Pro20 and Pro20i provide quick and accurate DO measurements. Get the quickest response time available - 8 seconds with a standard membrane!

Features

- Integral (built-in) cable with 1-, 4-, 10- meter field cables (Pro20i)
- User-replaceable cable with cable lengths up to 100 meters (Pro20)
- Stores 50 data sets, no need to write down data
- Large, graphic, backlit display and glow in the dark keypad
- Tough - IP-67, impact-resistant waterproof case
- 3-year instrument; 2-year cable; 1-year polarographic sensors; 6-month galvanic sensor warranty
- One Touch Cal completes calibration within 3 seconds
- Choose either galvanic or polarographic sensors
- BOD probe for the lab (Pro20 only)

Pro20/20i Parameters

Temperature
Dissolved oxygen
(electrochemical
polarographic or
galvanic)
BOD (electrochemical,
Pro20 only)
Barometric pressure



Professional Series Multiparameter Portables

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 the municipal water professional in mind.

The Ultimate Sampling System

- Digital smart sensors are automatically recognized by the instrument and store calibration data
- User-replaceable cables and sensors
- KorDSS 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-m cable lengths
- Large memory (>100,000 data sets) with extensive site list capabilities
- Built-in barometer for easy DO calibration and virtual vented depth
- Military-spec connectors, waterproof IP-67 rating and rubber over-molded case
- On-screen help feature provides assistance with menu options
- 3-year instrument; 2-year cable warranty; 2-year warranty on most sensors

More Versatile

The YSI ProDSS handheld multiparameter meter provides extreme flexibility with several cable options. Choose between the fully loaded 4-port cable assembly outfitted with any four DSS sensors (with or without depth) or the ODO/CT probe and cable. An OBOD probe is also available for the lab.



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	



Professional Plus

The YSI Pro Plus accommodates any combination of analog Pro Series sensors and cables. This compact handheld provides extreme flexibility to meet your sampling needs. Simple calibrations, detailed GLP (calibration) data, auto-buffer recognition, mil-spec connectors, re-cal prompts, auto-stable indicators, and security passwords help make your job easier in the field or the lab. The ProPlus 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
- Scratch-resistant lens; viewable with polarized glasses
- 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
- 100 folder & site list data structure
- Detailed GLP (calibration) data
- Auto-buffer recognition; up to 6-point pH cal
- Compatible with BOD Analyst Pro® software



ProPlus Parameters

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



Professional Series pH Portables

All YSI pH portables are approved for compliance reporting.

Pro1020 - pH/DO/temp

The YSI Pro1020 measures dissolved oxygen, temperature and pH or ORP (redox) in a simple, easy to use portable. This rugged and reliable instrument provides accurate readings, even in the harshest sampling conditions.

Features

- User-replaceable cables and sensors provide versatility, reduce downtime and reduce overall cost of ownership
- Stores 50 data sets; no need to write down data
- Choose either galvanic or polarographic sensors
- Smart calibration; the instrument remembers the previous calibration values
- Quick response times; 95% DO response time in approximately 8 seconds with standard membrane
- 3-year instrument; 2-year cable; 1-year sensor warranty (6-months galvanic DO sensor)
- Tough - IP-67, impact-resistant waterproof case

Pro10 - pH/temp

The YSI Pro10 measures pH or ORP and temperature in a rugged, easy-to-use portable.

Features

- User-replaceable cables and sensors provide versatility, reduce downtime and reduce overall cost of ownership
- Stores 50 data sets; no need to write down data
- Smart calibration; the instrument remembers the previous calibration values
- 3-year instrument; 2-year cable; 1-year sensor warranty
- Tough - IP-67, impact-resistant waterproof case



TOC Analyzer

The 9210p is designed for continuous monitoring of organic contaminants in water and wastewater streams for regulatory compliance and optimization of the water treatment process. This instrument is ideal for drinking water, municipal wastewater, surface water, ground water, and other industrial water streams.

Features

- Fully compliant with USEPA Method 415.3 and SM 5310C.
- Combines the robust heated persulfate oxidation method with a patented, solid-state infrared detection technology
- The capability to handle 6 individual process streams
- Easy to maintain - No need for costly service contracts
- An on-board Process Gas Module generates carrier gas, eliminating the need for external gases



ProSample Automated Sampler

The YSI ProSample is a series of fully automated portable samplers ideal for wastewater, stormwater and industrial pre-treatment sampling applications.

Features

- Long ice retention with robust PE, double-walled, insulated housing
- Peristaltic pump for highly accurate sampling
- Easy tube replacement for minimal downtime
- Spring-loaded roller bearings in peristaltic pump provide long tube life
- Highly accurate sample volume with 2 sensor system for volume control
- User-friendly; simple programming and calibration
- YSIConnect PC software for controlling the sampler and downloading data
- "Mini" PM option has smaller footprint



Applications

Stormwater
Wastewater treatment
(municipal and industrial)
Pre-sedimentation
Post-sedimentation
Industrial pre-treatment

MultiLab®

The MultiLab is YSI's line of digital multiparameter benchtop meters. Simplify your lab with the 3-channel option where you get 3 meters in one. Measure BOD, pH, ammonia, and more! Many parameters are EPA approved for drinking water and wastewater compliance reporting.



The MultiLab line has recently been updated to include wireless capability and the option to connect 3 BOD probes at the same time. The 4010-2W and 4010-3W also feature built-in OUR/SOUR software.



Wireless technology makes it easy to take measurements without the hassle of cables. Wireless sensors available include: pH, ORP, conductivity and FDO.

Features

- Digital sensors are auto-recognized and store calibration
- Large color display
- 3-year instrument warranty

The MultiLab line includes the 4010-1W (single channel), 4010-2W (dual channel) and 4010-3W (three channel) instruments.

Parameters

- pH
- ORP
- DO/BOD (optical or electrochemical)
- Conductivity
- Temperature
- ISEs*:
 - Ammonia
 - Ammonium
 - Bromide
 - Cadmium
 - Calcium
 - Chloride
 - Copper
 - Cyanide
 - Fluoride
 - Lead
 - Nitrate
 - Potassium
 - Silver/Sulfide
 - Sodium

**only available for the 4010-2W & 4010-3W, with BNC adapter*



EcoSense® pH1000A

The EcoSense pH1000A benchtop meter is a simple laboratory instrument for routine pH measurements. It is an accurate, easy-to-use solution for providing repeatable pH/mV/ORP measurements.

Features

- Large, high contrast, LCD display; displays pH/mV and temperature simultaneously
- Automatic/manual temperature compensation
- Automatic lock mode and end point sensing feature will lock in stable measurements
- 1 year instrument warranty
- Economical option for routine pH measurements
- Simple calibration with automatic buffer recognition



pH1000A Parameters

pH
mV (ORP/Redox)
Temperature

TruLab®

The YSI TruLab line includes the 1110 (single channel), 1310 (single channel) and 1320 (dual channel) instruments, providing easy-to-use and easy-to-calibrate instruments ideal for the laboratory. Three year warranty on all TruLab instruments.

TruLab pH1110

- Single channel measurement of pH or mV (ORP) and temperature
- Basic, easy-to-use instrument for routine pH/mV measurements

TruLab pH 1310/1320

- Single (1310) or dual (1320) channel measurement of pH/mV (ORP) and temperature
- ISEs can also be used with the 1320
- Easy data management with built-in USB, MultiLab Importer (Excel® add-in) included and extensive memory
- Easy-to-read backlit graphic display



TruLabParameters

pH
Temperature
mV (ORP/Redox)
ISEs (1320 only)



Flow & Level

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 harsh conditions of municipal operations.



MagFlux™ electromagnetic flow meter



Expert™ Level Transmitters



Float switch

Flow

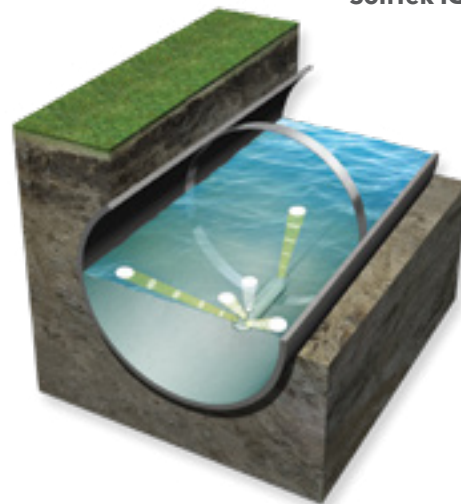
For ensuring operational safety and efficiency at peak flows and weather events - or for billing, SonTek® offers high-tech, high-accuracy solutions for velocity, flow/discharge, total volume, water level, and temperature measurements.



SonTek IQ Series

IQ Series Features

- Measure man-made or natural channels, pipes or streams
- Unmatched coverage using four pulsed Doppler velocity beams
- Best performance amid changing water level and flow conditions using SonTek's patented SmartPulseHD
- Fully self-contained, one-piece design for easy transport and setup



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Unattended Monitoring

From source water to receiving waters, YSI's EXO® Sondes feature industry-leading performance for water quality monitoring. Sealed, digital smart sensors combined with a best-in-class central wiper prevent fouling and ensure data integrity for long-term deployments. Log data internally or connect to an existing system for real-time data collection. EXO Sondes are the ideal solution for unattended continuous monitoring.

EXO1

4 sensor ports, great for spot sampling or short deployments

EXO2

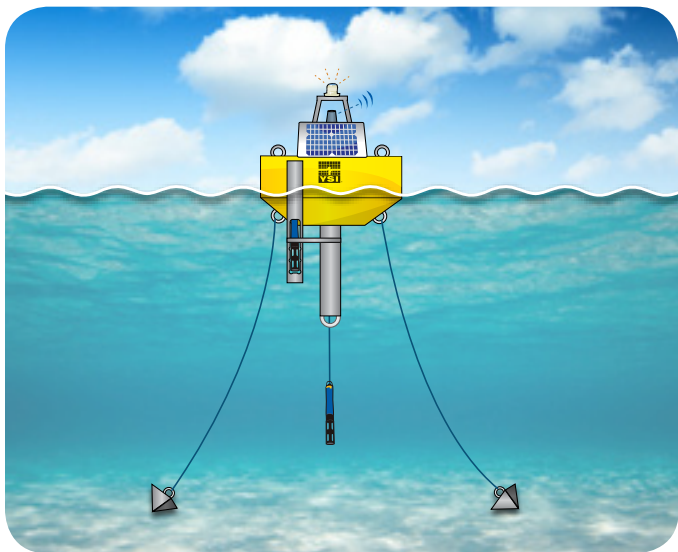
6 sensor ports + central wiper port, max capabilities for long-term monitoring

EXO2^s

6 sensor ports + central wiper, small form factor requires external power

EXO3

4 sensor ports + central wiper, best value for baseline water quality monitoring



EXO Parameters

Ammonium	ORP
Chloride	pH
Chlorophyll	Salinity
Conductivity	Temperature
Depth	Total Algae
Dissolved Oxygen	TDS
fDOM	TSS
Nitrate	Turbidity

Anti-Fouling Central Wiper

The anti-fouling wiper outperforms current leading technologies with a large nylon bristle brush that removes buildup and protects all sensors for up to 90 days between service intervals.



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. With probes and cables manufactured in the United States, you can expect the same accuracy as with other YSI instruments.



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 wastewater applications.

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 wastewater 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



Photometer

Parameters

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

Photometers

The 9300 and the 9500 both feature a graphic backlit display, on-screen instructions, a waterproof case, various diameter sample tube holder, multiple languages, 100+ test options and direct reading concentrations.

The 9500 has additional features that include a waterproof USB that can also be used for power, 500 data-set memory, and several user-selectable options.



EcoSense Pen

Parameters

Temperature
pH
ORP
Conductivity/
Specific conductance
Salinity
TDS

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 applications such as wastewater and surface water. 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.



Pen Features

- Waterproof case meets IP-67 specs
- >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

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



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BOD Analyst Pro, EcoSense, EXO, Expert, MagFlux, MultiLab, ODO, ProOBOD, ProODO, SonTek, TruLab, UltraClean, We Know D.O., AmmoLyt, CarboVis, FDO, NiCaVis, NitraLyt, NitraVis, SensoLyt, TetraCon, TriOxmatic, VARION, ViSolid, VisoTurb and are registered trademarks of Xylem Inc. or one of its subsidiaries. YouTube, Facebook, LinkedIn and Twitter are registered trademarks.

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