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Let's Solve Water



YSI Life Sciences

PRODUCTS & SOLUTIONS



a xylem brand



Thank you for your interest in YSI Life Sciences products. This catalogue provides a comprehensive overview of our laboratory and process instruments and accessories. From our gold standard biochemistry analyzers and online monitoring systems to our family of laboratory meters and sensors, YSI offers a wide range of analytical solutions to meet your laboratory and process analytical needs.

With over 40 years of providing rapid, accurate analytical instruments, YSI Life Sciences has established a legacy of expertise in various industrial applications, including bioprocess monitoring and control, food and beverage, biofuels and renewable energy and medical and physiological research. Our laboratory and process analytical solutions have been designed to help make your job easier through reliable, accurate and easy-to-use instruments.

YSI Life Sciences is here to support you. Our knowledgeable customer service and technical support staff can help with any instrument or application questions you may have.

If you have any comments, questions or feedback, please let me know. Your input is highly valued.

A handwritten signature in black ink, reading "Christopher Warner".

Christopher Warner
YSI Life Sciences, Assistant Product Manager

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Biochemistry Analyzers

The key to generating analyte-specific results in 60 seconds or less is YSI's innovative biosensor technology. Using the inherent specificity of enzymes for a single target analyte, YSI's proprietary immobilized enzyme electrodes allow a rapid, accurate, and largely interference-free measurement to be made in about a minute. The unique fluidics and chamber design resist clogging - even at high cell densities.

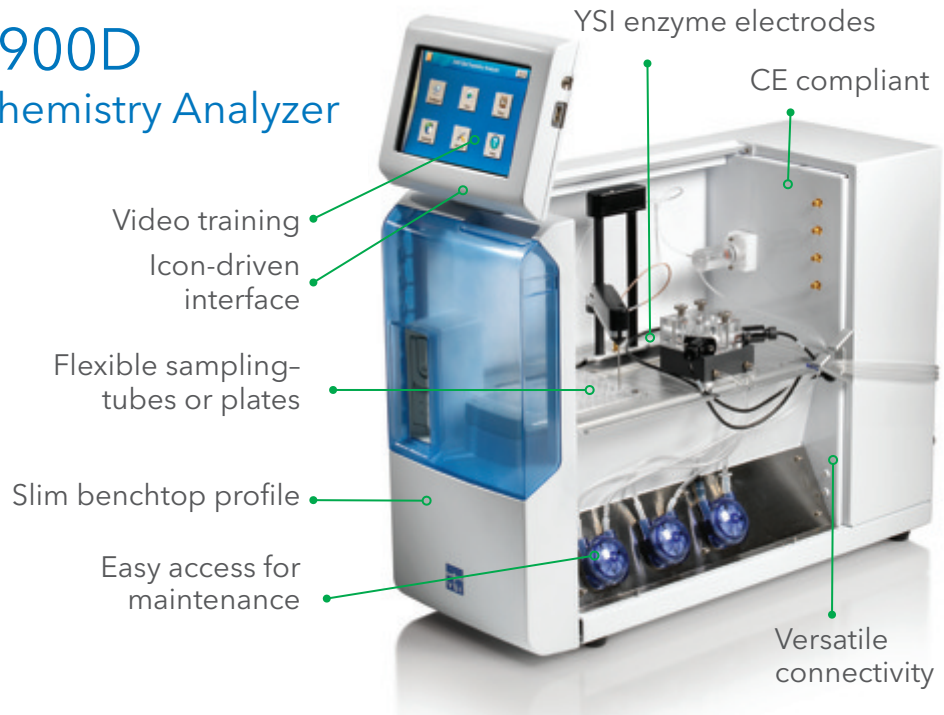
Biochemistry Analyzers Available

2900D | 2950D-0 – 2950-4 | 2500

YSI 2900 Series

Fully modular and with a range of upgrades available, the YSI 2900 and 2950 feature an intuitive graphical user interface and a touch screen display. This makes 2900 Series analyzers the easiest to use and most cost effective way to measure the following chemistries in a wide range of applications: Glucose, Lactate, Glutamine, Glutamate, Ammonium*, Potassium*, Xylose, Ethanol, Methanol, Sucrose, Galatose, Lactose, Choline, Glycerol, Hydrogen peroxide (*YSI 2950)

YSI 2900D Dual Chemistry Analyzer



Versatile

Configurable for > 10 chemistries - each in under 1 minute

Analyte-specific results

Even in complex matrices

Modular

Expandable from 2 to 6 chemistries with the YSI 2950

Anti-clogging fluidics and chamber design

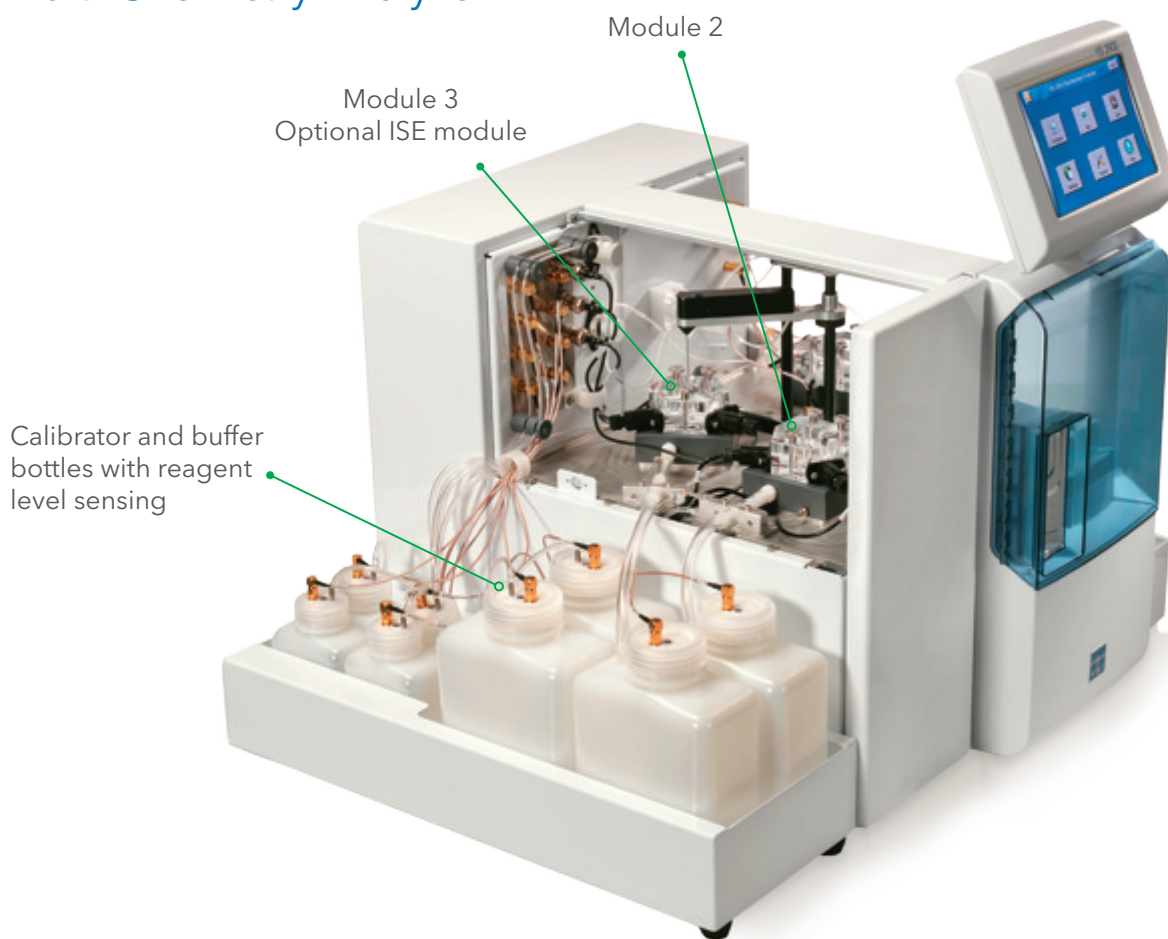
Measure high cell density samples with ease

 ysi.com/lifesciences

YSI 2900 Series (continued)

The YSI 2900 Series is a flexible, modular platform with a range of configurations, options, and accessories to meet your lab needs. The base platform is the YSI 2900D. Also available is the YSI 2950 platform, configurable with up to 3 sensor modules capable of measuring up to 6 chemistries. Module 3 may be configured for biosensor or ISE measurements.

YSI 2950D Multi-Chemistry Analyzer



Printer Option

If you need a hard copy or printout of your results, an optional thermal printer is available. Of course, your data can also be retrieved electronically.

Tube Holders

The 2900 Series can accept a wide range of sample holders including any standard 96 well, 4, 8 and 24 place test tube holders and microcentrifuge tubes.

Plate Sealers

Evaporation of volatile analytes like methanol or ethanol is not a worry – the sipper needle is capable of sampling from a range of films available to seal 96 well plates.

YSI 2500

The YSI 2500 Glucose/Lactate Analyzer is the cost effective alternative to the 2900D analyzer, supporting identical analytical methodologies for glucose and lactate assays only. The 2500 system supports fully automated sampling protocols, in addition to stat and syringe sampling; making it an ideal candidate for all of your laboratory sampling needs.

YSI 2500 Biochemistry Analyzer



Technical Specifications

Model	2900/2950	2500
Aspirated Sample Volume	User-defined from 10 to 50 μ l	User-defined from 10 to 50 μ l
Analysis Time	60 seconds	60 seconds
Precision	Application specific, typical CV <2%	CV <2%
Linearity	+/- 5% Cal value to maximum	+/- 5% Cal value to maximum
Dimensions	YSI 2900: 8"w x 20.5"d x 15.75"h 20.3cm w x 52.1cm d x 40cm h YSI 2950: 14"w x 20.5"d x 15.75"h 35.6cm w x 52.1cm d x 40cm h Bottle rack adds 9" (22.9cm)	8"w x 20.5"d x 15.72"h 20.3cm w x 52.1cm d x 40cm h
Working Environment	15 to 35° C ambient temperature, 10 to 75% relative humidity (noncondensing)	15 to 35° C ambient temperature, 10 to 75% relative humidity (noncondensing)
Power Requirements	100-120 VAC or 220-240 VAC, 50-60 Hz, 50 Watts nominal	100-120 VAC or 220-240 VAC, 50-60 Hz, 50 Watts nominal
Regulatory Compliance	CE, RoHS	CE, RoHS
Automation	Up to 96 samples	Up to 96 samples
Weight	YSI 2900: 28 lbs./12.7 kg YSI 2950: 39 lbs./17.7 kg (each without bottle rack)	28 lbs./12.7 kg (without bottle rack)

Comparison Valuation

Model	2500	2900	2950
Parameters			
Possible Chemistries	2	2	6
Glucose	X	X	X
Lactate	X	X	X
Glutamine		X	X
Glutamate		X	X
Sucrose		X	X
Lactose		X	X
Galactose		X	X
Xylose		X	X
Ethanol		X	X
Methanol		X	X
Choline		X	X
Glycerol		X	X
Hydrogen Peroxide		X	X
Ammonium			X
Potassium			X
Online Monitoring			
1 Channel		X	X
4 Channel		X	X
8 Channel		X	X
Regulatory			
21 CFR, Part 11		X	X
IQ/OQ Documentation Package	X	X	X
Data			
USB	X	X	X
Ethernet	X	X	X
Serial (RS-232)		X	X
Remote Commands Support		X	X
Printer Option	X	X	X
OPC Connectivity Options		X	X
Sample Processing			
Stat Sampling	X	X	X
96-Well Plate	X	X	X
24 Tube Plate	X	X	X
8 Tube Holder	X	X	X
4 Tube Holder	X	X	X
Warranty	1 Year	1 Year	1 Year

Configurations & Accessories

Instrument	Modules	Chemistries	Modular Upgrade?
2500	X	2	No
2900 D	X	2	Yes*
2950 D-0	X	2	Yes
2950 D-1	X X	4	Yes
2950 D-2	X X X	6	Yes
2950 D-3	X X X	6	Yes
2950 D-4	X X	4	Yes

X Biosensor Module X ISE Module

*2900D to 2950 platform upgraded at an authorized service center



Commonly Used Applications

Chemistries	Bioprocess Monitoring	Food and Beverage	Medical Research
Glucose	X	X	X
Lactate	X	X	X
Glutamine	X	x	x
Glutamate	X	X	x
Ammonium	X	x	
Potassium	X	x	x
Xylose	X		x
Ethanol	X	X	x
Methanol	X		x
Sucrose	x	X	x
Galactose	x		x
Lactose	x	X	x
Choline		X	x
Glycerol	X	x	x

X Primary application x Secondary application

2900M/2950M

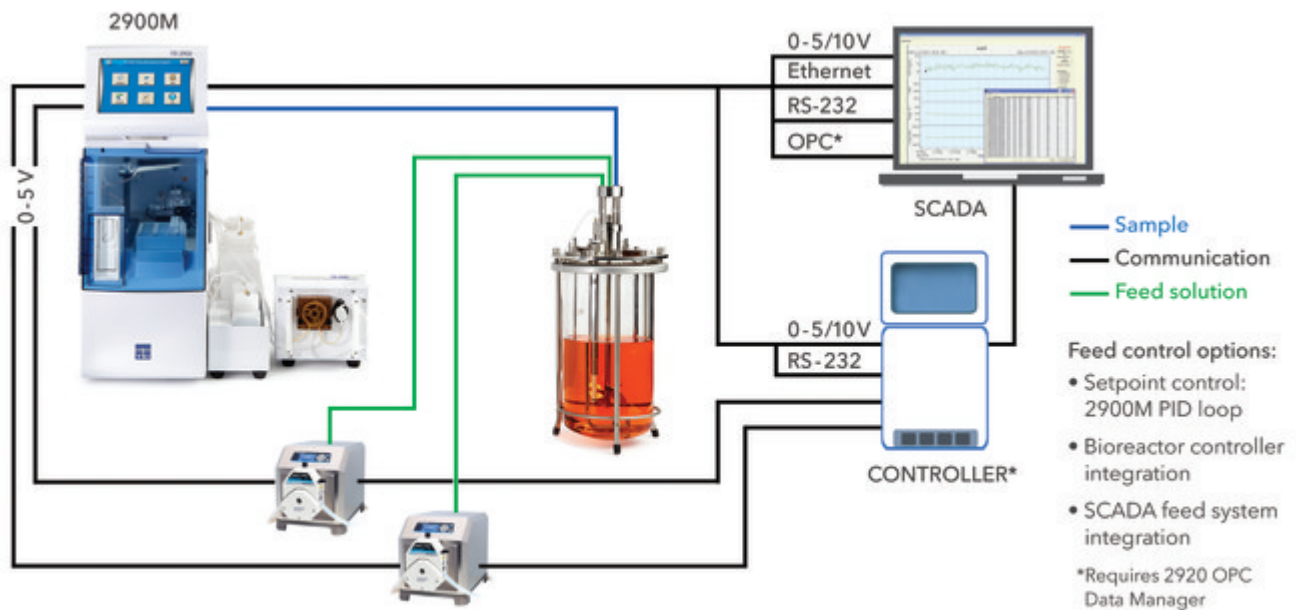
Online Monitoring & Control Systems

Our single-vessel sampling systems are designed to provide simple and reliable online monitoring and control solutions for your bioreactor process. Closed-loop monitoring and control capability are easily achieved for any scale of operation or type of bioreactor.

YSI 2900M/2950M

- Monitor up to 6 chemistries
- Analytical results in 60 seconds per chemistry
- Touchscreen, icon-driven HMI for easy viewing and menu navigation
- Simultaneous online monitoring and 96-well plate sampling
- Connectivity options for SCADA, DAS or LIMS
- Direct control of up to 2 feed pumps
- Automated cleaning cycle
- Autoclaveable components
- CIP and SIP compatible
- 21 CFR, Part 11 compliant
- GAMP® 5 compliant

Multiple Connectivity Options Include RS232, Analog (0-5V), Ethernet and OPC





2900M/2950M Specifications

Aspirated Sample Volume: User-defined from 10 to 50 μ l

Analysis Time: 60 seconds

Precision: Application specific, typical CV <2%

Linearity: +/- 5% Cal value to maximum

Dimensions: YSI 2900: 8"w x 20.5"d x 15.75"h | 20.3cm w x 52.1cm d x 40cm h
 YSI 2950: 14"w x 20.5"d x 15.75"h | 35.6cm w x 52.1cm d x 40cm h
 Bottle rack adds 9" (22.9cm)

Weight: YSI 2900: 28 lbs./12.7 kg | YSI 2950: 39 lbs./17.7 kg. (without bottle rack)

Working Environment: 15 to 35° C ambient temperature
 10 to 75% relative humidity (noncondensing)

Power Requirements: 100-120 VAC or 220-240 VAC, 50-60 Hz, 50 Watts nominal

Regulatory Compliance: CE, RoHS

Automation: Up to 96 samples

21 CFR, Part 11: Compliant

2960 Online Monitor Specifications

Vessel Inputs: 1-channel Autosampler: 1 input

Dimensions: 6.25"l x 4.75"w x 5.50"h

Weight: 3.0 lbs

Power Requirements: 90 - 264 VAC, 1.5 A, 47 - 63 Hz, 30 Watts nominal

Regulatory Compliance: CE, RoHS

Sample Flow Rate: 0.1 - 2.5 ml/min (user defined)

Sample Purge Time: 30 seconds minimum recommended (user defined)

Sample Interval: Time unit: minutes (user defined)

Vessel Tubing Length: Maximum recommended length is 3.0 meters (10 feet)

Antiseptic Cycle: Time unit: minutes (user defined)

Tubing ID: Sample inlet: 0.020" / Peristaltic pump: 0.035" / Pinch valve: 0.03" / Waste: 0.10"

Tubing Wetted Materials: Pharmed® tubing (peristaltic pump)
 C-flex® tubing (pinch valve)
 Silicone (sample inlet and waste lines)

I/O Communication Interface Specifications

Ethernet (FTP): 1 port

OPC: 1 port (2920 OPC Data Manager Module required)

Serial Communication (RS-232): 1 port

Analog (0-5/10V): Selectable: +10.0 VDC or +5.0 VDC
 Capable of communicating up to 2 chemistries/vessel

USB: 1 port

Parameters

Glucose
 Lactate
 Glutamate
 Glutamine
 Galactose
 Lactose
 Sucrose
 Xylose
 Choline
 Ethanol
 Methanol
 Hydrogen Peroxide
 Ammonium*
 Potassium*

*2950M only

2940/2980

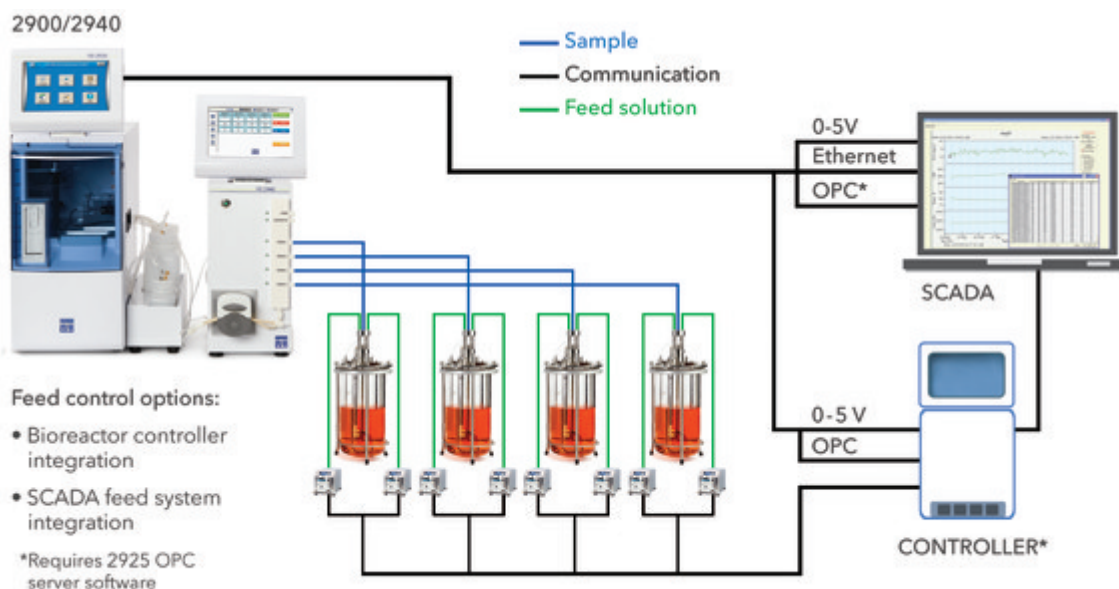
Multi-Channel Online Monitoring Systems

For multiple and parallel bioreactor systems, our 4-channel and 8-channel sampling systems provide many simple and reliable online monitoring and control solutions for your bioreactor processes. Closed-loop monitoring and control capabilities are easily achieved for any scale of operation or type of bioreactor, including single-use systems.

YSI 2940/YSI 2980

- Automated, aseptic sampling of up to 8 vessels
- Monitor up to 6 chemistries
- Analytical results in 60 seconds for each chemistry
- Simultaneous online monitoring and 96-well plate sampling
- Automated cleaning cycle
- Autoclaveable components
- CIP and SIP compatible
- Touchscreen, icon-driven HMI for easy viewing and menu navigation
- Connectivity options for SCADA, DAS, LIMS and feed-control systems
- Remote access and control via web-based server
- OPC server option
- 21 CFR, Part 11 compliant

Multiple Connectivity Options Include Analog (0-5V), Ethernet and OPC





2900/2950 Biochemistry Analyzer Specifications

Aspirated Sample Volume: User-defined from 10 to 50 μ l

Analysis Time: 60 seconds

Precision: Application specific, typical CV <2%

Linearity: +/- 5% Cal value to maximum

Dimensions: YSI 2900: 8" w x 20.5" d x 15.75" h | 20.3cm w x 52.1cm d x 40cm h
 YSI 2950: 14" w x 20.5" d x 15.75" h | 35.6cm w x 52.1cm d x 40cm h
 Bottle rack adds 9" (22.9cm)

Weight: YSI 2900: 28 lbs./12.7 kg | YSI 2950: 39 lbs./17.7 kg. (without bottle rack)

Working Environment: 15 to 35° C ambient temperature
 10 to 75% relative humidity (noncondensing)

Power Requirements: 100-120 VAC or 220-240 VAC, 50-60 Hz, 50 Watts nominal

Regulatory Compliance: CE, RoHS

Automation: Up to 96 samples

21 CFR, Part 11: Compliant

2940/2980 Online Monitor Systems Specifications

Vessel Inputs: 2940: 4 vessel inputs 2980: 8 vessel inputs

Dimensions: 2940: 6.0" w x 18.2" h x 11.0" l 2980: 15.2cm w x 46.2cm h x 27.9cm l

Weight: 7.26kg (16.0 lbs)

External Power Requirements: Auto-sensing power adapter: 100 - 120 VAC/220 - 240 VAC,
 1.5 A (50/60 Hz \pm 5%)

Regulatory Compliance: CE, ETL, UL, RoHS

Sample Size: 0.5 - 2.0ml (user defined)

Sample Flow Rate: 0.1 - 2.5ml/min (user defined)

Sample Interval: Time unit: minutes (user defined)

Antiseptic Cycle: User defined flow rate (ml/minute) and time (minutes)

Vessel Tubing Length: 1.5 meters (5 ft) (autoclavable and gamma irradiated options)
 3.0 meters (10 ft) (autoclavable and gamma irradiated options)

Tubing ID: Sample inlet: 0.030" / Peristaltic pump: 0.030" / Waste: 0.0625"

Wetted Materials: Pharmed® tubing (peristaltic pump)
 C-flex® and C-flex Ultra® tubing (sample inlet and waste lines)
 PBT (Sample Manifold)
 Nylon (connectors)

I/O Communication Interface Specifications

Ethernet (TCP/IP): 2 ports (additional ports if Ethernet hub is used)

OPC: 2 ports (additional ports if Ethernet hub is used)

Analog (+5.0 VDC): 2940 - 4 ports (1 port per vessel)
 2940 - 8 ports (1 port per vessel)
 Each port capable of communicating up to 2 chemistries

USB: 3 ports

Parameters

Glucose

Lactate

Glutamate

Glutamine

Galactose

Lactose

Sucrose

Xylose

Choline

Ethanol

Methanol

Hydrogen Peroxide

Ammonium*

Potassium*

*2950 only

FISP®

Bioreactor Sampling Probes

YSI proudly offers Flownamics FISP® *in-situ* Sampling Probes as part of our online monitoring systems. FISP sampling probes have been the standard *in-situ* bioreactor and vessel sampling device for over 20 years. Employing ceramic microfiltration technology, FISP sampling probes provide simple, cell-free sampling while ensuring bioreactor or fermentor sterility. FISP sampling probes are available in a variety of sizes to fit most types of bioreactors, including single-use vessels.



FISP Features

- Aseptic, cell-free vessel sampling
- 0.2 micron filter assures vessel sterile barrier
- Wetted materials provide excellent chemical resistance
- SIP/CIP/Autoclave compatible
- Minimal dead volume provides consistent, accurate sampling
- Resistant to temperatures, pressures, viscosities and shear forces
- For use in lab, pilot and industrial scale vessels
- Compatible with bacterial, yeast, fungal, algal and mammalian cell culture processes
- Animal-derived component free (ADCF) wetted materials
- Membrane meets ISO 10993:5, *in vitro* Cell Cytotoxicity, requirements



F-series FISP Probe

- Fits 12 & 19mm headplate ports
- Dead volume 0.24 - 0.44 ml, depending on probe length
- Immersion lengths (mm): 120, 200, 310, 410
- Can be used with single-use bioreactors
- Can be used with 1.5 and 2.0 inch sanitary fitting ports (adapter required)



D-Series FISP Probe

- Fits standard and safety 25mm Ingold ports
- Dead volume 0.24 - 0.44 ml, depending on probe length
- Immersion lengths (mm): 90(standard) and 115 (safety port)

 [ysi.com/fisp-bioreactor-sampling-probes](https://www.ysi.com/fisp-bioreactor-sampling-probes)

2920 OPC Data Manager

2925 OPC Server



YSI's OPC data management technology seamlessly acquires data from both off-line and on-line YSI analyzers and exports your data into any OPC-enabled SCADA, bioprocess management system or data historian. Our OPC Data Manager and OPC-enabled online monitoring systems feature an internal web server, which allows easy remote access using a web browser. Whether you are networking a single bioreactor system, an entire PD lab or multiple labs or suites, YSI's OPC data management options provide simple connectivity and data management solutions for your process systems.

2920 OPC Data Manager

- Add-on module for off-line YSI 2900 Series biochemistry analyzers or YSI 2900M/2950M Online Monitoring & Control Systems
- Fully compliant OPC UA and DA, v. 2.0
- Exports data into any OPC-enabled system
- Internal web server
- Remote access using IP address and web browser
- Performs extensive error tracking and management
- Sleek, modular design
- YSI 2925 OPC Server purchased separately

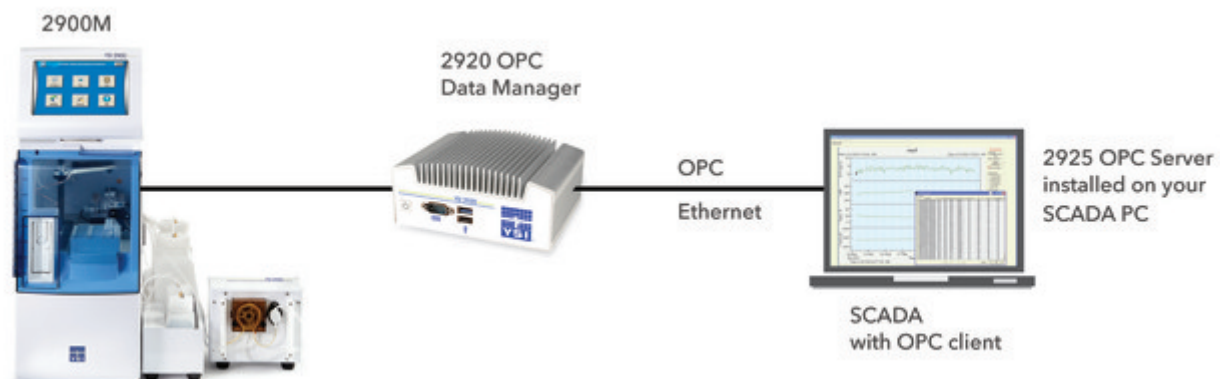
2925 OPC Server Software

- Software option for YSI 2940 and YSI 2980 only
- Required for YSI 2920 OPC Data Manager
- Allows up to 16 analyzer inputs

YSI OPC Server System Requirements

- OS: Windows 7/10, 32/64 bit
- Ethernet connectivity
- 512 MB RAM
- 10 MB of available hard disk space
- CD-ROM driver
- Mouse pointing device

YSI OPC Connectivity and Systems Integration



MultiLab



MultiLab 4010-3
Three channel

Parameters

4010 - 2/3

pH
ORP
DO/BOD (optical)
Conductivity
Temperature
ISEs:*

Ammonia
Ammonium
Bromide
Cadmium
Calcium
Chloride
Copper
Cyanide
Fluoride
Iodide
Lead
Nitrate
Potassium
Silver/Sulfide
Sodium

*Only with BNC adapter

The YSI MultiLab line includes the 4010-1 (single channel), 4010-2 (dual channel) and 4010-3 (three channel) instruments that provide easy-to-use and -calibrate menu-driven operation ideal for the laboratory.



A BNC adapter is available that covers one of the digital inputs on the 4010-2/3 instruments. This allows for connection of pH electrodes and other ion selective electrodes (ISEs) that feature BNC connection

4010-2/3

- Two (4010-2) or three (4010-3) channel input for pH, ORP, DO/BOD, ISEs, or conductivity
- Intelligent digital sensors (IDS) - plug and play sensors
- Use non-IDS (other manufacturer's) pH, ORP or ISE sensors with a simple BNC adapter
- Data storage - 500 data sets in manual mode and 10,000 data sets in automatic logging mode
- Large, easy-to-read graphic color displays
- GLP traceability (smart sensors store serial # and calibration data)
- Antibacterial keypad
- USB connectivity to manage data
- MultiLab Importer (Excel® add-in) included
- 3-year warranty



[ysi.com/4010-2](https://www.ysi.com/4010-2)



[ysi.com/4010-3](https://www.ysi.com/4010-3)



MultiLab 4010-1
Single channel

Parameters

4010 - 1

- pH
- ORP
- DO/BOD (optical)
- Conductivity
- Temperature

4010(P)-1

- One-channel input for pH, ORP, DO/BOD, or conductivity
- Data storage - 500 data sets in manual mode and 5,000 data sets in automatic logging mode
- Large, easy-to-read graphic display
- Intelligent digital sensors (IDS) – plug and play sensors
- GLP traceability (sensors store serial # and calibration data)
- USB connectivity to manage data
- MultiLab Importer (Excel® add-in) included
- 3-year warranty
- Optional integrated printer for increased documentation capability



ProOBOD Probe

 ysi.com/4010-1



IDS

The IDS (intelligent digital sensors) automatically store their unique serial number and calibration data. In addition, they also digitally process the measurement signal. The sensors can be moved from instrument to instrument and maintain their calibration data and transmit this information to the new instrument.

- IDS sensors store their own unique ID with serial number and calibration data
- Digital sensor recognition, processing and data transfer
- Includes pH, ORP, conductivity and self-stirring BOD sensors
- BOD probe uses optical dissolved oxygen technology and includes a guarded sensor tip

Parameters

1110, 1310P & 1310

pH
mV (ORP/Redox)
Temperature



TruLab 1310

1110 and 1310/1310P Single Channel Benchtop Meters

Ideal laboratory instruments for basic, routine pH/mV measurements in the lab. The pH 1110 is an accurate, easy-to-use instrument for repeatable pH or mV measurements in the laboratory. The 1310/1310P offers pH/mV measurements with automatic documentation for GLP compliance.



TruLab 1110

TruLab pH 1110

- Single channel measurement of pH or mV (ORP) and temperature
- AutoRead function improves repeatability
- Easy-to-read, segmented display
- Easy calibration / adjustable calibration timer
- 1, 2 or 3-point calibration for pH
- BNC input; connect any pH/ORP electrode featuring BNC connection
- 3-year warranty
- Wide selection of electrodes - pH, ORP and temperature probes

TruLab pH 1310/1310P

- Single channel measurement of pH or mV (ORP) and temperature.
- Easy-to-read backlit graphic display with text menu for easy operation
- Fast data transfer via USB in .csv or ASCII format; optional integrated printer
- MultiLab Importer (Excel® add-in) included
- Continuous Monitoring Control (CMC) function for monitoring the ideal measuring range for pH measurements based on the last calibration
- 1, 2, 3, 4 or 5 point calibration for pH
- 22 stored buffer sets for auto-buffer recognition and easy calibration
- BNC input; connect any pH/ORP electrode featuring BNC connection
- 3-year warranty
- GLP/AQA compliant
- Wide selection of electrodes - pH, ORP and temperature probes

 [ysi.com/1110](https://www.ysi.com/1110)

 [ysi.com/1310](https://www.ysi.com/1310)



TruLab 1320



TruLab 1320P

1320/1320P Dual Channel Benchtop Meter

The 1320 benchtop is an accurate, easy-to-use solution for the measurement of pH/mV/ISE in the laboratory. The 1320 has internal memory and stored data can be sent to a PC via USB. An optional built-in printer is available with the 1320P.

- Simultaneous dual measurement of pH, mV (ORP) or ISE and temperature (2-channel benchtop meter)
- Easy-to-read backlit display with text menu for easy operation
- Fast data transfer via USB in .csv or ASCII format; optional integrated printer
- MultiLab Importer (Excel® add-in) included
- Continuous Monitoring Control (CMC) function for monitoring the ideal measuring range for pH measurements based on the last calibration
- 1, 2, 3, 4 or 5 point calibration for pH
- 2, 3, 4, 5, 6 or 7 point calibration for ISE, also non-linear
- Built-in ISE measurement methods (standard addition, standard subtraction, and others)
- BNC input; connect any pH/ORP/ISE electrode featuring BNC connection
- Direct readout of effective ion concentration
- 3-year warranty
- GLP/AQA compliant
- Wide selection of electrodes - pH, ORP, temperature, and ISEs

Electrode Information

Multiple electrodes are available as part of the TruLine, Science, and IoLine family of sensors. In addition, the 1320 and 1320P instruments can use any of the 15 accurate, lab-grade TruLine ISEs.

Parameters

1320P & 1320

- pH
- mV (ORP/Redox)
- Temperature
- ISEs:
 - Ammonia
 - Ammonium
 - Bromide
 - Cadmium
 - Calcium
 - Chloride
 - Copper
 - Cyanide
 - Fluoride
 - Iodide
 - Lead
 - Nitrate
 - Potassium
 - Silver/Sulfide
 - Sodium

 [ysi.com/1320](https://www.ysi.com/1320)

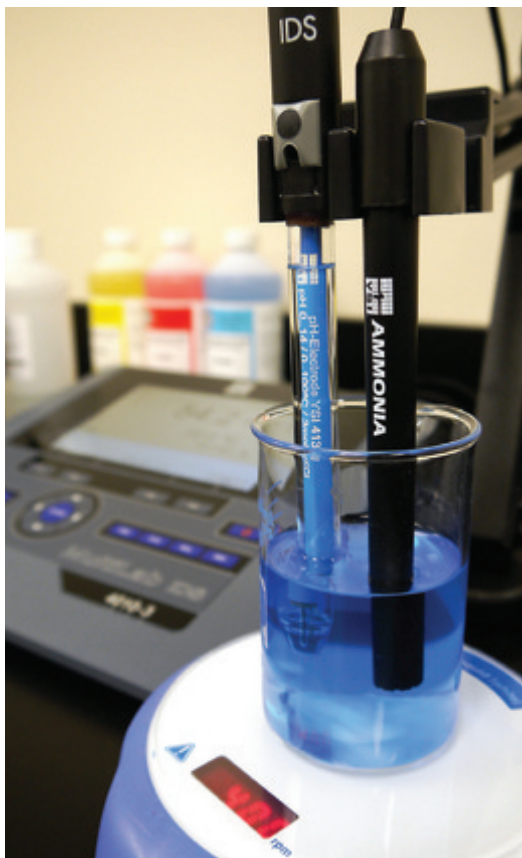
TruLine ISEs

Parameters

Ammonia
Ammonium
Bromide
Cadmium
Calcium
Chloride
Copper
Cyanide
Fluoride
Iodide
Lead
Nitrate
Potassium
Silver/Sulfide
Sodium



TruLine Family of ISEs



Ammonia ISE

The TruLine series of combination ISEs is designed to meet the most demanding challenges of determining effective ion concentration in the laboratory setting. The TruLine ISEs can be connected to the YSI TruLab 1320(P), the YSI MultiLab 4010-2/3 (with BNC adapter) and other ISE instruments that feature BNC connection. The TruLine ISEs are refillable and feature a built-in double-junction reference system, allowing for a long electrode life and optimum performance in the lab.

- Wide selection of 15 electrodes for 16 different parameters
- 4 sensor technologies - gas sensing, polymer/PVC membrane, solid state, glass sensor
- Integrated reference (i.e. combination ISE)
- BNC connection, 3 ft cable
- Made in the USA
- Reference/electrode fill solution, ISAs, and standards available
- 12 month warranty for solid state, glass sensor, & gas-sensing ISEs
- 9 month warranty for ISEs with polymer/PVC membrane

pH Electrodes



TruLine Electrodes



IoLine Electrodes



Science Electrodes

TruLine

- Designed for use in typical laboratory applications
- Single-junction electrodes with Ag/AgCl reference system
- Integrated temperature sensor option
- Durable electrodes with gel electrolyte for general use; liquid electrolyte sensors for more critical measurements
- Electrodes with special membranes for unique applications
- BNC connector; compatible with any pH meter that has a BNC input

IoLine

- Designed for use in Tris Buffer and protein solutions - unique iodine/iodide reference system prevents clogging of the junction
- Reference system and the platinum junction provide excellent stability, fast response times, and high accuracy
- Triple junction design increases measurement security
- Available in a micro version for small sample sizes
- Useful in nearly any application and at a wide-range of temperatures
- BNC connector; compatible with any pH meter that has a BNC input

Science

- Designed for use in unique applications that require a particular junction
- Features the Silamid reference system, a unique construction of the Ag/AgCl reference system resulting in a more stable and longer lasting electrode with a fast response
- Double-junction reference and integrated temperature sensor
- Ground-joint junction with a fast electrolyte outflow is specifically designed for samples high in solids or with low ionic strength
- Platinum junction for applications that do not require a rate of electrolyte outflow as fast as the ground-joint
- BNC connector; compatible with any pH meter that has a BNC input



YSI 5010-W Probe Specifications

Accuracy	mg/L	±0.1 mg/L or ±2% of reading, whichever is greater
	% air	±2% of the reading or ±2% air saturation, whichever is greater
	temperature	±0.2° C
Range	mg/L	0-20 mg/L or 0-60 mg/L, instrument dependent
	% air	0-200% or 0-600%, instrument dependent
	temperature	-5 to 50°C, operating temperature 0 to 45°C
Resolution	mg/L	0.01 mg/L
	% air	0.1%
	temperature	0.1°C
Response	Typical response at 20°C is 95% of the change within 20 seconds.	

YSI 5000/5100 Information

Features	Benefits
Menu-driven operation	Ease of use
Compatible with YSI wine bottle and BOD probes	Less investment needed; User-replaceable parts
Large LCD	Easy-to-read from 10 feet
Internal memory for 100 data sets	No manual transcribing
RS-232 interface	Ability to transfer data to a PC
Probe and stir motor powered through instrument	Fewer cables in workspace
Audio & tactile keyboard response	Keystroke confirmation reduces errors
Autostabilization	Alerts to predetermined stable condition
User-upgradable internal software	Ensures upgrade without downtime
Real-time clock	Date-stamped stored data

Additional YSI 5100-only Features

Features	Benefits
Built-in OUR/SOUR software	Eases use with USEPA 503 regulations & for operational control
Internal barometer	No external barometer or look-up charts required for calibration
Automated calibration	Reduces manual steps; saves time
Barcode compatibility	Automatic bottle numbering
Port for computer keyboard	Quick data entry from keyboard

YSI 5000 & 5100 Specifications (Instrument Only)

Accuracy	mg/L	±0.1% + 1 lsd	Resolution	mg/L	0.01 mg/L
	% air	±0.1% + 1 lsd		% air	0.1%
	temperature	±0.1°C		temperature	0.1°C
Range	mg/L	0-60 mg/L	Power	(4) C-size alkaline batteries or AC	
	% air	0-600%			
	temperature	-5 to +50°C			

The YSI Biosensor Technology

...this occurs in a matter of seconds, which results in a sample analysis cycle of 60 seconds or less per chemistry analyzed.

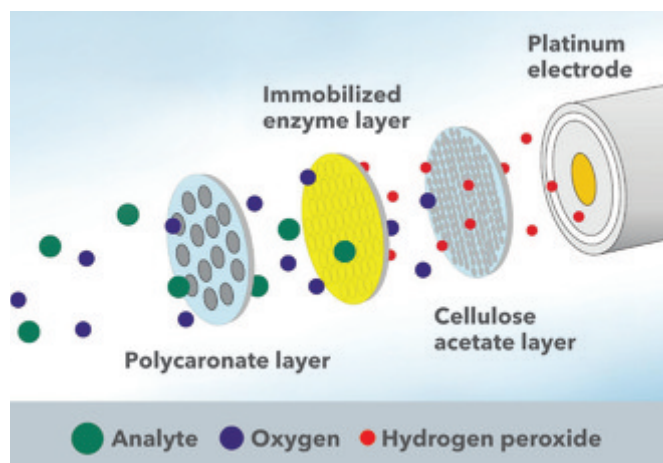


Figure 1
YSI Enzyme Electrode Technology. Enzyme specificity and proprietary membrane attributes allow for rapid, precise and essentially interference-free analysis.

YSI's innovative enzyme electrode technology harnesses the power of enzymatic specificity and catalysis to provide a rapid, precise analytical tool. Enzymes, which are powerful biological catalysts, can accelerate reactions by factors of at least one million. Additionally, enzymes are highly specific for both the reaction catalyzed as well as their choice of substrate. YSI immobilizes substrate-specific enzymes between two selective, interfering membranes and couples the membrane component to a platinum electrode, which results in a highly specific measurement for a given substrate.

To better explain how the enzyme electrode technology works, an example of a common ingredient analysis, i.e., dextrose (D-glucose), will be used. An enzyme probe is fitted with a three-layer membrane containing immobilized glucose oxidase enzyme in the middle layer. The face of the probe, covered by the membrane, is situated in a buffer-filled sample module into which the dextrose sample is injected by the instrument. The dextrose diffuses through the first membrane. When it contacts the immobilized glucose oxidase, it is rapidly oxidized, producing hydrogen peroxide (H_2O_2).

H_2O_2 , in turn, passes through the inner membrane and is oxidized at the platinum anode, producing electrons. A dynamic equilibrium is achieved when the rate of H_2O_2 production and the rate at which H_2O_2 leaves the immobilized enzyme layer are constant and is indicated by a steady state response. The electron flow is linearly proportional to the steady state H_2O_2 concentration and, therefore, to the concentration of the substrate. All of this occurs in a matter of seconds, which results in a sample analysis cycle of 60 seconds or less per chemistry analyzed (Figure 1).



Figure 2

The YSI 2950 Biochemistry Analyzer can simultaneously measure up to six chemistries for raw materials, R&D, in-process and final product sample analysis.

Sample analysis requires little or no preparation due to the YSI Biochemistry Analyzer's unique sample chamber design and membrane characteristics, which makes the enzyme electrode impervious to sample color, pH, turbidity, cell concentrations, salts, proteins, detergents and other low molecular weight interferences. Additionally, only small sample volumes are needed, ranging between 10-50 μl . The YSI 2900 Series Biochemistry Analyzers are highly flexible, modular platforms with a range of configurations, options and accessories to meet the needs of various industry applications and scale of operations (Figure 2).

Up to six different chemistries can be measured simultaneously using automated, high-throughput options, i.e., 96-well plates, stat mode for immediate process sample checks and automated on-line sample analysis. Each analyzer offers an intuitive graphic user interface, onboard training videos and multiple data management options. As compared to other conventional methods, such as HPLC, YSI Biochemistry Analyzers offer a low-cost alternative for both initial capital investment and cost per chemistry test (\$0.10 - \$0.70 USD/sample). Other features include low maintenance requirements and easy product changeover.

Applications and Measurement Expertise

A wide range of application notes is available online for download.



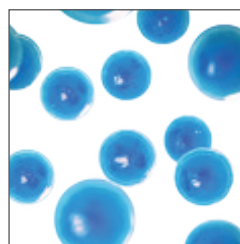
Bioprocess Monitoring

Bioreactor glucose and lactate. YSI analyzers are an essential part of many stages of bioprocessing, including: R&D, process optimization, scale-up and production. Our analyzers provide critical off-line and on-line process analysis for biopharmaceutical, biofuel, and other industrial biotechnology manufacturing processes.



Food and Beverage

For years, food technologists have trusted YSI Biochemistry Analyzers for ensuring food and beverage product quality through rapid, precise analysis of carbohydrates, alcohols, aminoacids, and electrolytes.



Medical Research

From diabetes and cancer research to stem cell therapy and sports physiology applications, YSI's gold standard biosensor technology is recognized as the scientist's analytical technology of choice.

 [ysi.com/applications/lifesciences](https://www.ysi.com/applications/lifesciences)

Typical Results

Application	Sample Preparation	Typical Results	Analysis Time
Bioreactor glucose	None	CV < 2% at cal pt.	< 1 min.
Lactate/ethanol in ketchup	Diluted 1:1 with reagent water	Lactate CV = 1.8% at 72.5 ppm Ethanol CV = 2.1% at 181.2 ppm	< 1 min.
Whole blood/serum glucose	None	Whole blood CV < 2% at 75 mg/dL NIST Serum Controls 965A CV 0.5% - 1.1% for 34-292 mg/dL	< 1 min.

Xylem

- 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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