Life Sciences products

Data for Life.™

Welcome to the Gold Standard

YSI has earned its reputation as the Gold Standard in bioanalytical instruments for its highly-accurate sensors and rapid results. You'll find YSI Life Sciences products around the globe in research institutions, hospitals and clinics, athletic training facilities, and biopharmaceutical companies. A trusted name in critical bioprocess monitoring, sports medicine, and food and beverage processing applications, YSI Life Sciences offers scientists, technicians, physicians, and clinicians precise, consistent Data for Life.

YSI Life Sciences instruments provide process-specific data with fast, accurate results for the following analytes:

Ammonium
Choline
Dissolved Carbon Dioxide
Dissolved Oxygen
Ethanol
Galactose
Glucose
Glutamate
Glutamine
Hydrogen Peroxide
L-Lactate
Lactose
Methanol
Potassium
Sucrose

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Data for Life.™

CE

YSI 7100 MBS
systems & accessories

Typical Applications
- Cell culture
- Fermentation
- Bioprocessing
- Food and beverage quality assurance
- Food and beverage processing
- Physiology research

Multiparameter Bioanalytical System
YSI 7100 MBS

Make the most of your time with the new 30-position Autosampler accessory. Prepare an extra carousel while your first tray is processing.

Enhanced Productivity with Multitask Intelligence™

YSI's newest multiparameter bioanalytical system offers simultaneous multiparameter measurement for enhanced productivity. This upgradeable system can measure several parameters at once. Only YSI offers gold standard measurement of glucose, glutamate, glutamine, lactate, ammonium, and potassium.

The 7100 system is upgradeable to include all of the features of YSI's Multitask Intelligence™ such as the 30-position turntable. Future options include online monitoring, PC-based data acquisition software, an analog output signal for interfacing with process controllers, an on-board modem, and capability to upload to the Internet.

See your results rapidly using the convenient touchscreen display and printer.

Reagent Ordering Info

Chemistry	Sensor	System Buffer	Calibration Standard	Linearity Check Solution
Glucose	**2365** (4-pack)	**2357** (dry mix) Makes 2 liters	**7147** (150 ml) 1.80 g/L or 10.0 mmole/L	**1531** (125 ml) 9.00 g/L or 50.0 mmole/L
L-Lactate	**2329** (4-pack)	**2357** (dry mix) Makes 2 liters	**7147** (150 ml) 0.45 g/L or 5.00 mmole/L	**1530** (125 ml) 2.70 g/L or 30.0 mmole/L
L-Glutamate	**2754** (4-pack)	**2357** (dry mix) Makes 2 liters	**7155** (150 ml) 0.731 g/L or 5.00 mmole/L	**2756** (125 ml) 1.420 g/L or 10.0 mmole/L
L-Glutamine	**2735** (4-pack)	**2357** (dry mix) Makes 2 liters	**7136** (150 ml) 0.731 g/L or 5.00 mmole/L	**2737** (125 ml) 1.169 g/L or 8.0 mmole/L
Ammonium	**7174** (1 each)	**7170** (liquid) 500 ml	**7172** (150 ml) 500 mg/L or 27.8 mmole/L	**7179** (125 ml) 100 mg/L or 5.56 mmole/L
Potassium	**7175** (1 each)	**7170** (liquid) 500 ml	**7171** (150 ml) 1000 mg/L or 25.6 mmole/L	**7179** (125 ml) 200 mg/L or 5.12 mmole/L

Standard Features

of the YSI 7100 MBS base unit:

- Configure your system to fit your needs
- Upgradeable in 1, 2, or 3 sensor module systems
- Multiparameter measurement of up to 6 distinct parameters at one time
- Fluid level detection to minimize carryover and improve accuracy
- Reagent management system with optional barcode entry
- Built-in printer
- RS-232 and RS-485 serial ports
- Update software using disk drive, installed and standard on all systems
- UL, CUL, and CE compliant
- Reliable, easy-to-install sensors

Options & Accessories

Item	Part Number
7100 MBS (2 parameter, biosensor module only)	7100-02
7100 MBS (4 parameter, 2 biosensor modules)	7100-04
7100 MBS (6 parameter, 3 biosensor modules)	7100-06
7100 MBS (4 parameter, 1 biosensor & 1 ISE module)	7100-04A
7100 MBS (6 parameter, 2 biosensor & 1 ISE module)	7100-06A
Biosensor Module Upgrade Kit*	7180
ISE Module Upgrade Kit*	7178
Autosampler (30 position)	7110
Maintenance Kit Recommended 6 month/1,000 hours use	7188-A
Maintenance Kit Recommended 12 month/2,000 hours use	7188-B
Buffer Pump Head Assembly (includes tubing)	7189
Bar Code Scanner - handheld	7181
Printer Paper 5-pack	2751
Membrane Installation Solution (biosensor modules only)	2392
Membrane Check Solution (FCN, biosensor modules only)	2363
Ammonium/Potassium Check Solution (ISE modules only)	7179
Sodium Check Solution (ISE modules only)	7173
Ammonium Electrode (ISE modules only)	7174
Potassium Electrode (ISE modules only)	7175
Reference Electrode (ISE modules only)	7176

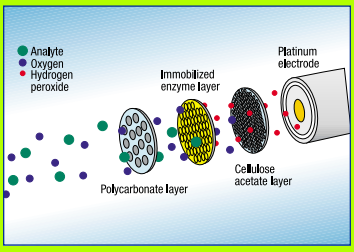
* Contact YSI Technical Support for detailed information on the upgrade of 7100 MBS systems.

With the new 7100, YSI now offers an upgradeable platform. Expect to see continued enhancement of technologies and integration with customers' systems.

YSI Technology – Immobilized Enzyme Electrodes

To measure a substrate of interest, one or more enzymes are immobilized between two membrane layers, polycarbonate and cellulose acetate. The substrate reacts with the enzyme(s), producing hydrogen peroxide, which passes through the cellulose acetate to an electrode with a platinum anode. Here the hydrogen peroxide is oxidized. The resulting current is proportional to the concentration of the substrate.

YSI membranes contain three layers. The first layer, porous polycarbonate, limits the diffusion of the substrate into the second (enzyme) layer, thus preventing the reaction from becoming enzyme-limited. The third layer, cellulose acetate, excludes nearly all electrochemical compounds from interfering with the measurement of hydrogen peroxide.



This patented technology keeps operating costs low because the immobilized membranes can be used many times. Other reagent needs are minimal.

YSI 7100 MBS
systems & accessories

YSI's newest multiparameter bioanalytical system can save you time and money. With YSI's proven technology, you will achieve precise, accurate results. The 7100 unit is flexible and designed for easy upgrades and simple chemistry changes. Scroll through up to 50 displayed readings or choose one of 4 alternative data paths. Customize your 7100 system with three mix-and-match sensor modules—each containing two chemistry sensors.

YSI 7100 shown with optional on-line monitor, to be released in 2004.

Sensor Membranes

YSI 7100 MBS uses proven biosensor technology pioneered by YSI more than 25 years ago. Easy-to-change sensor membranes provide rapid, accurate, and economical measurements.

Typical Operating Cost YSI Biosensor-Based Measurements*

* YSI 2700 SELECT and 7100 MBS.

For this level of speed, accuracy, and precision, YSI offers the lowest cost per test in the industry.

- Gold standard accuracy
- No pretreatment of samples
- Modular design expands with your needs
- Multitask options for increased efficiency
- Portability of data with output, storage, and transfer options
- User accessibility provides easy maintenance
- Quick sample results

Buy with confidence. YSI has more instruments of its kind in the biotechnology/pharmaceutical industry than any other manufacturer.

YSI Technology – Fluid Management Technology

The YSI 7100 MBS uses sensors combined with Multitask Intelligence software to monitor calibration solutions, buffer flush solutions, and sample aspirations. Calibration standard and buffer solution labels are bar-coded for easy entry of information into fluid management software. Shelf life and working life information are continually monitored during operation; messages alert the user when reagents require attention. In addition, fluid levels are monitored. The 7100 automatically searches for reagent bottle status and then automatically switches to the appropriate backup reagent. Waste levels are monitored, allowing the user plenty of time to empty the waste reservoir.

Among the most advanced features of the YSI 7100 MBS is its unique design which detects fluid level. A robotic sampling probe detects the surface of the sampling fluid and penetrates only a couple of millimeters into the fluid before aspiration of a few microliters of sample. This precise, accurate technique minimizes the contamination of the sample. The combination of proven sensor technology with reliable fluid management makes the YSI 7100 MBS simple to operate and provides results you can trust.

CE

YSI 2700 SELECT systems & accessories

Typical Applications
- Cell culture
- Fermentation
- Bioprocessing
- Food and beverage quality assurance
- Food and beverage processing
- Physiology research

Biochemistry Analyzer

YSI 2700 SELECT™

Improving the yield of bioprocesses

Precise and consistent results in fermentation and cell culture processes require rigid control of system variables. In addition to controlling the oxygen, pH, and temperature in a bio-process, researchers recognize the need to regulate the availability of nutrients to organisms and cells. YSI is the market leader in providing such a system for online process monitoring and control of nutrients and byproducts.

The fast and flexible YSI 2700 SELECT accurately analyzes key food components and byproducts during manufacturing including:

- Glucose
- L-Lactate
- L-Glutamine
- L-Glutamate
- Ethanol
- Lactose
- Sucrose
- Galactose
- Hydrogen peroxide
- Methanol
- Choline

YSI 2700M Aseptic Monitoring & Control System

Combine the YSI 2730 Aseptic Monitoring & Control system with the 2700 SELECT and pull samples directly from a bioreactor. Measure important nutrients and byproducts and immediately control the replenishment of nutrients, if needed, while maintaining sterility. All 2730 system components are autoclavable.

YSI 2710 Turntable

Build a system for batch analysis by combining the YSI 2700 SELECT with the YSI 2710 Turntable. The 24-position turntable lets you load samples and walk away. The instrument automatically analyzes samples and prints results.

Choosing an analyte to measure is as simple as selecting a color-coded membrane. YSI biosensors eliminate many interferences of traditional optical methods. Results are typically unaffected by color, turbidity, density, or temperature.

Options & Accessories

Item	Part Number
Single Channel Biochemistry Analyzer*	2700S
Dual Channel Biochemistry Analyzer*	2700D
Turntable	2710
Aseptic Monitoring & Control Accessory	2730
Printer Paper 5-pack	2751
Membrane Installation Solution	2392
Membrane Check Solution	2363
Preventive Maintenance Kit (2700)	2788
Preventive Maintenance Kit (2730)	2731

*Specify 115 or 230 volt

Standard Features

of the YSI 2700 SELECT:

- Results specific for your analytes, even in complex matrices
- Closed-loop monitoring and control capability
- RS-232 and analog signal (with 2730) allows data logging with a PC
- Discrete samples can be run while analyzer is acting as online monitor
- Autoclavable online monitor components
- Two measurement chemistries can be run simultaneously
- Selectable measurement units: g/L, mg/L, mmole/L, % (w/v)

Reagent Ordering Info

Chemistry	Membrane	System Buffer	Calibration Standard	Linearity Check Solution
Choline	2771	2357	2772	2773
Ethanol	2786	2787	2790 (kit)	2790 (kit)
Galactose	2702	2705	*	*
Glucose	2365	2357	2776	2777
Hydrogen peroxide	2701	2357	*	*
L-Glutamate	2754	2357	2755	2756
L-Glutamine	2735	2357	2736	2737
L-Lactate	2329	2357	2776	2777
Lactose	2702	2705	2783	2784
Methanol	2725	1579	2726 (kit)	2726 (kit)
Sucrose	2703	2357	2780	2778

*User must prepare standards

Increase Frequency of Test Samples and Save Money

A customer profile in the food and beverage industry

The YSI 2700 Select's ability to focus on in-process quality control testing during manufacturing has helped food and beverage companies maintain the quality of their products. These companies use data gathered from the in-process testing to verify the quality of the product before it is packaged and sent to the customer. Samples are pulled from production vessels and measured off-line. In the event of a problem, the product can be adjusted immediately.

Many small and large suppliers of potatoes to the potato chip industry use the YSI 2700 to measure dextrose and sucrose. Previously, the companies sent samples to labs and ordered very few tests due to the high cost per test. After the companies brought sample testing in-house with the 2700, they increased the number of tests run and still saved thousands of dollars yearly.

One potato supplier attested to the benefits of the 2700, "Dextrose and sucrose measurements are determined in potatoes before they go into storage. While in storage, the quality of the potatoes is monitored by subsequent dextrose and sucrose measurements. As potatoes age, their carbohydrates change to sugar and the higher the sugar, the darker the potato chip. Most people prefer eating lighter-colored chips. With the YSI 2700, we can determine when the potatoes will go off color. Several days before this happens, we ship the potatoes to the snack food manufacturer for chipping. This process saves thousands of dollars in wasted product."

YSI 2700 SELECT
systems & accessories

Sample preparation is simple. Run samples directly, most without filtering or centrifuging. Solid samples simply need to be dissolved or suspended. Reagent needs are minimal. Replace only what you use without the need to purchase an entire reagent pack.

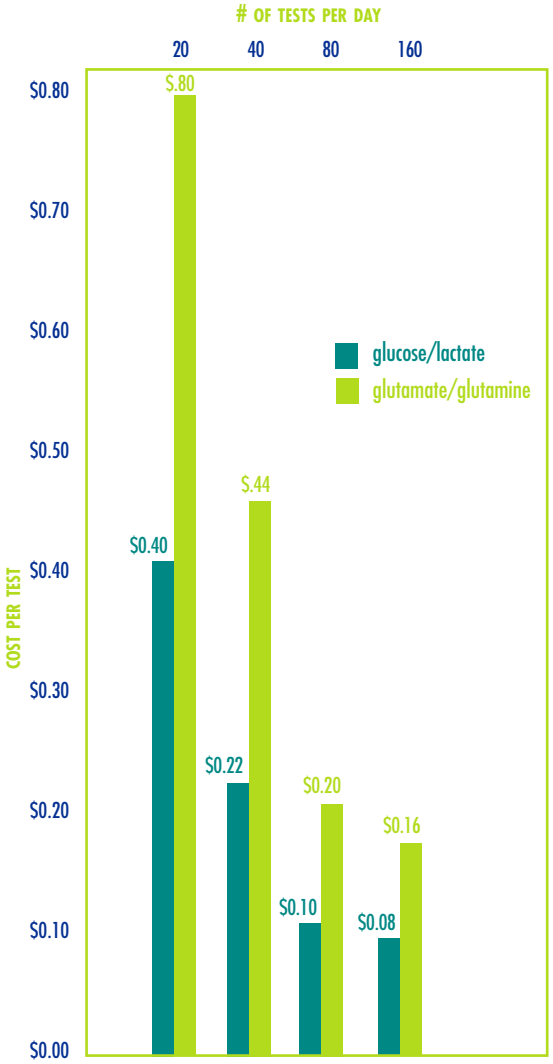
Application notes are free and available for many applications that the YSI 2700 has tested, mainly in the food and beverage industry. Please visit our website to review or download these insightful technical notes.

A201 Data Logging
A202 Effluent Monitoring
A203 Aseptic Monitoring & Control
A301 Dextrose in Molasses
A302 Sucrose in Molasses
A303 Simultaneous Dextrose & Sucrose in Molasses
A304 Dextrose in Potatoes
A305 Simultaneous Dextrose & Sucrose in Potatoes
A306 Dextrose in Corn Syrup & Other Syrup Products
A307 Simultaneous Dextrose & Sucrose in Sweetened Condensed Milk
A308 Simultaneous Dextrose & Sucrose in Baked Goods
A309 Simultaneous Dextrose & Sucrose in Cereal Products
A310 Simultaneous Dextrose & Sucrose in Corn & Peas
A311 L-Lactate in Lunch Meats

A312 Dextrose in Frozen Green Beans
A313 Ethanol in Beer
A314 Dextrose in Canned Green Beans
A315 Simultaneous Dextrose & Sucrose Utilizing External Hydrolysis
A316 Simultaneous Dextrose & Sucrose in Ice Cream Bars
A317 Determination of Hydrogen Peroxide
A318 L-Glutamate Determination
A319 % Cook in Extruded Cereal Products Using Physical Solubilization
A320 Lactose Measurement in Cheese
A322 % Cook in Extruded Cereal Products Using Chemical Solubilization
A323 Simultaneous Dextrose & Sucrose in Peanut Butter
A324 Choline Determination
A325 Simultaneous Measurement of Glutamate & Glutamine

When used in a manufacturing environment, the YSI 2700 SELECT allows immediate verification of formulation for intervention and reformulation if necessary. Because the instrument is simpler to use than traditional methods such as HPLC, extensive operator training is not required. Quality checks throughout the analyzer's operation ensure reproducible, accurate results.

Typical Operating Cost YSI Biosensor-Based Measurements*



* YSI 2700 SELECT and 7100 MBS.

Typical Applications

- STAT laboratory
- Diabetes research
- Blood glucose monitor quality assurance
- Blood glucose monitor calibration
- Healthcare patient diagnostics
- Metabolic research
- Sports physiology

Stat Glucose, Lactate & Whole Blood Analyzer

YSI 2300 STAT Plus™

The measurement standard for fast, accurate glucose & lactate results in whole blood, plasma, serum, and cerebrospinal fluid.

In 1975, YSI commercialized the first analyzer to measure glucose in whole blood. YSI followed this in 1982 with a whole blood lactate analyzer. Since then, these products have become the gold standard for clinical diagnostic work in hospitals and laboratories.

The YSI 2300 STAT Plus is the only dedicated glucose and lactate analyzer available. In 60 seconds or less, this analyzer makes precise glucose measurements of whole blood, plasma, or serum and precise lactate measurements of whole blood, plasma, or cerebrospinal fluid.

CE

YSI 2300 STAT Plus systems & accessories

Easy sampling: Present a sample to the sipper tube and press the key-pad. The 2300 automatically aspirates the sample and, in less than 60 seconds, displays and prints glucose and lactate levels.

Typical Cost Per Test for YSI Biosensor-Based Measurements*

* YSI 2300

Labs serving surgery, intensive care, neonatal, and other critical care areas find the 2300 STAT Plus a valuable tool. Lactate analysis may signal an oxygen deficit in a critically ill patient. Glucose analysis may reveal hypoglycemia, hyperglycemia, or even chronic illnesses such as diabetes. The 2300 STAT Plus provides results in seconds, enabling better diagnosis in medical treatment.

Standard Features

In addition to speed, autocalibration, and small sample size, the YSI 2300 STAT PLUS features:

- Lower cost per test. No need to renew enzymes after each test, minimizing the use of costly reagents and supplies.
- Whole blood capability. The only dual channel glucose and lactate analyzer that analyzes whole blood—no need to spin blood.
- Simple, safe operation. Menu-driven software guides operators through each step.
- Batch runs. 24-position turntable provides batch operation capability for plasma or serum. Each batch and sample is assigned an identification number with date and time.
- Interference rejection. Eliminates most of the interferences that plague other methods.
- Broad measurement range. Eliminates the need for sample dilution.

Reagent Ordering Info

Chemistry	Membrane	System Buffer	Calibration Standard	Linearity Check Solution	Starter Kit
Glucose	2365 (4-pack)	2357 (dry mix) makes 4 liters	2356	1531 (125 ml) 9.00 g/L or 50.0 mmole/L	2324
L-Lactate	2329 (4-pack)	2357 (dry mix) makes 4 liters	2328	1530 (125 ml) 2.70 g/L or 30.0 mmole/L	2325
Glucose/ Lactate	2365/2329 (4-pack)	2357 (dry mix) makes 4 liters	2747	1530/1531	2323

Options & Accessories

Item	Part Number
STAT Plus Glucose and Lactate Analyzer	2300D
Preservative Kit	2315
Cell Lysing (8 packets/4 liters)	1515
Membrane Installation Solution	2392
Membrane Check Solution	2363
Printer Paper 5-pack	2751
Preventive Maintenance Kit	2788

YSI and the Blood Glucose Monitor

When YSI marketed the first commercially successful whole blood glucose analyzer in 1975, few people realized that this enzyme electrode technology would become the world's gold standard for whole blood glucose measurement. The accuracy, precision, and speed for a whole blood glucose measurement were unmatched in the analytical market. Though the home glucose monitor (glucometer) was in its infancy in the 1970s, these devices rapidly improved over the years.

When healthcare companies that developed and manufactured the glucometers initially searched for the standard by which to factory calibrate both meters and test strips, YSI became the instrument of choice. Today millions of diabetics around the world depend on the accuracy of home glucose monitors. That accuracy is most often traceable to YSI glucose measurements systems such as the 2300 STAT Plus. Similarly, hospital versions of these early glucose monitors are now the preferred method of "point of care testing," both in the critical care satellite labs and in bedside testing of patients in diabetic wards. Again, YSI provides the method by which to ensure the accuracy of these devices.

Typical Applications

- *In situ* measurement of dissolved CO_2
- Monitor fermentation
- Analyze cell culture processes
- Observe metabolism changes

Dissolved CO_2 Monitor

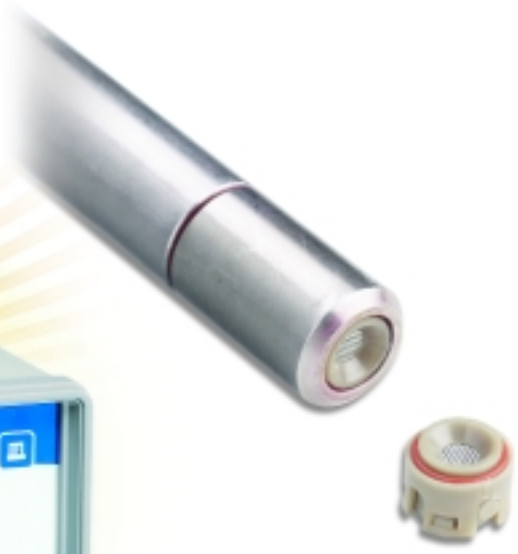
YSI 8500 BioVision™

See your process in a new light

YSI's patented opto-chemical sensor technology enables scientists, technicians, and production managers to optimize critical fermentation and cell culture processes through continuous *in situ* monitoring of dissolved carbon dioxide. Engineered to fit with a variety of bioreactors, the YSI 8500 delivers real-time data to help you gain insight into cell metabolism and other changes within the bioreactor. With single point calibration and a lower system cost than most blood gas analyzers, the modular YSI 8500 is the most reliable, cost-effective way to measure CO_2.

CE

YSI 8500 BioVision systems & accessories



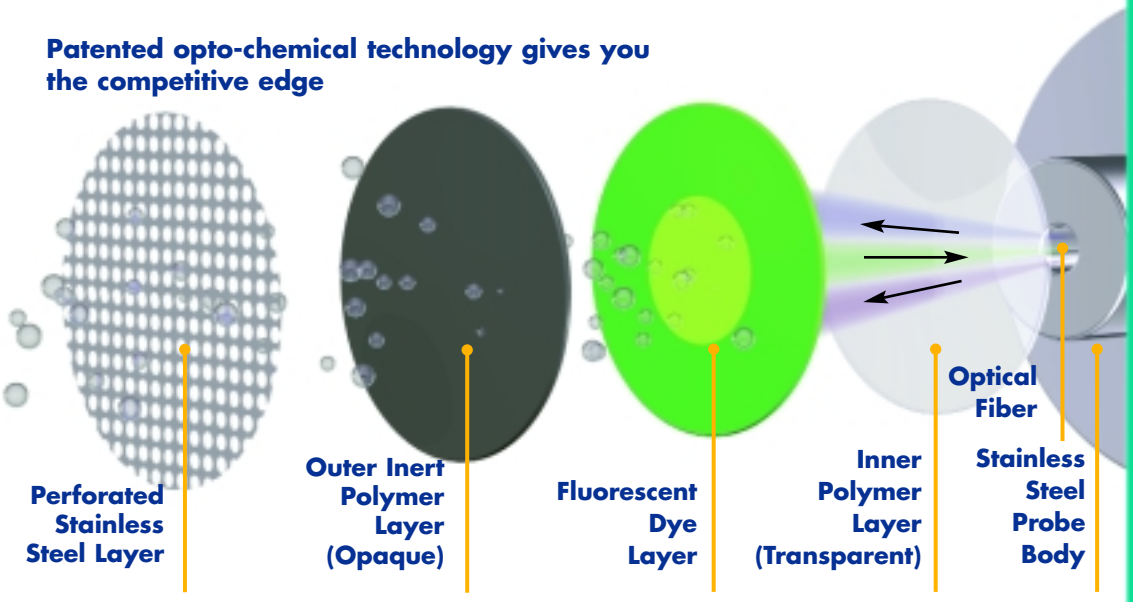
Fully Autoclavable, Fits Into Most Bioreactors

This rugged sensor is a disposable, autoclavable capsule that inserts into a stainless steel probe. Installation of the sensor capsule is simple. Multiple probe styles are available now with more being developed.

Standard Features

- Accurate *in situ* measurement
- Single point calibration
- Easy-to-replace disposable sensor capsules
- Real-time response
- Does not consume CO_2
- User-defined data logging intervals, as frequently as every 15 seconds
- Rugged, reusable stainless steel probes in multiple styles

Patented opto-chemical technology gives you the competitive edge



YSI has successfully commercialized innovative opto-chemical CO_2 measurement technology that was developed at Tufts University.

How it works

In the YSI 8500 sensor, dissolved CO_2 moves through a perforated steel layer, on through a permeable polymer and into a fluorescent dye layer. In a reversible reaction, CO_2 reacts with the dye, changing the dye's fluorescence. An optical fiber transmits two wavelengths of light from the monitor though the cable and probe, then through a transparent polymer and into the dye layer. The resulting light emission from the dye is transmitted back through the optical fibers to the monitor, where the dissolved CO_2 is calculated based on a ratiometric analysis of the dye's fluorescence.

Options & Accessories

Item	Part Number
8500 Monitor	8500
8500 System, side mount probe*	8500-04
8500 System, top mount probe**	8500-05, 8500-06
8500 System, top mount probe#	8500-07
Side Mount Probe, 25mm dia. x 70mm depth, safety port	8504
Top Mount Probe, 12mm dia. x 320mm depth, PG 13.5 fitting	8505
Top Mount Probe, 12mm dia. x 320mm depth, compression fitting	8506
Probe, 12mm dia. x 120mm depth, PG 13.5 fitting	8507
Sensor Capsule	8550
Sensor Capsule, six pack	8551
Probe Adapter, 12-19 mm	8560
Probe Cable, 1m	8570
Probe Cable, 3m	8571
Shielded Probe Cable, 1m	8576
Shielded Probe Cable, 3m	8577
Autoclave Cap	8580
Autoclave Cap, 5-pack	8581
Buffer, 250 mL with bottle	8591
Bottle, 12mm probe storage, 5-pack	8592
Bottle, 25mm probe storage, 5-pack	8593
Background Capsule	8556
O-Ring, 8504 probe kit	8594
O-Ring, 8505 and 8507 probe kit	8595
O-Ring Adaptor, 8505 and 8507 kit	8596
O-Ring Adaptor, 19mm probe kit	8597

* Monitor, 8504, 8571, (2) 8550, ** Monitor, 8505 or 8506, 8571, (2) 8550, # Monitor, 8507, 8571, (2) 8550

Why Measure Dissolved CO_2?

The measurement of dissolved CO_2 provides data that is consistent with the true cellular environment. Dissolved CO_2 can provide valuable cellular metabolic information which can be used to improve cell viability, maximize the production of the product being generated by the cell, and improve the quality of the product of interest. Elevated CO_2 levels can lower intracellular pH, increase cellular osmotic pressure, and inhibit specific growth processes via feedback inhibition. If the CO_2 level is too low, specific anabolic processes will not occur to their optimum levels. By monitoring the dissolved CO_2 level, it is possible to more clearly understand the effect of CO_2 on the cellular growth processes for each specific cell type. Controlling dissolved CO_2 to an optimal level will best optimize the process for maximum yields.

YSI 8500 BioVision
systems & accessories

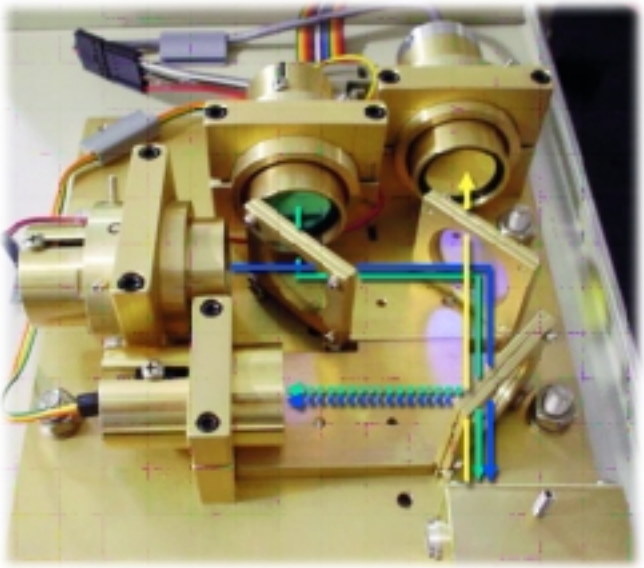
Flexible Calibration and Monitoring Parameters

Although a single point calibration at the start of each run is required for optimum accuracy, this vital step is quick and easy. It can be completed in process by using a certified reference gas or blood gas analyzer. The user sets the data logging points, choosing to measure as often as every 15 seconds, or collecting data at longer intervals to reflect the length of a particular run. Data can be read directly from the YSI 8500 monitor display, uploaded to a computer or incorporated into your control process.

Engineered to fit a variety of bioreactors, rugged, reusable stainless steel probes are autoclavable and offer easy-to-change sensor capsules.

Excitation and Emission of Light

The optical bench of the YSI 8500 is constructed of high quality photo detectors, light emitting diodes, and dichroic filters. These components are arranged on an optical table in a unique functional design that allows for the fluorescent measurement of CO_2 in conjunction with the YSI optical sensor. The organization of the 8500 components allows for dual excitation and single emission measurements of CO_2 with the fluorescent dye HPTS.



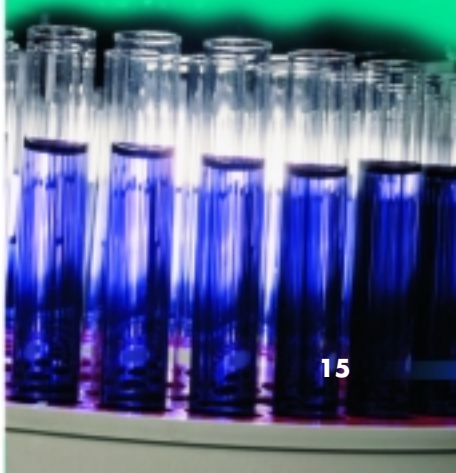
A multimedia CD, *See Your Process in a New Light*, is available. This presentation introduces key features of the YSI 8500 BioVision™ monitor and probes and addresses frequently asked questions. Contact Life Sciences Customer Service for ordering information.

[800.659.8895]

YSI 8500 Evaluated at Northwestern University

" . . . Setup and operation of the 8500 and the CO_2 probe were straightforward, following the steps in the user manual. Initial trial runs in a cell-free bioreactor were carried out by gassing a phosphate-buffered saline (PBS) solution with 195mm Hg pCO_2, which was verified on a blood gas analyzer (BGA). Once the 8500 response had stabilized, the probe was calibrated using the dissolved pCO_2value measured using the BGA. We then stripped the CO_2 from the liquid phase with nitrogen to 70 mm Hg and the CO_2 was ramped back up. The *in situ* CO_2 probe was easy to use in our Applikon 3-L bioreactor. The probe was calibrated prior to autoclaving, per recommendations. [. . .] The probe did not require recalibration and agreed with the BGA in DME/F12 cell culture medium at 40 mm Hg pCO_2. **Overall, we were pleased with the operation of the 8500 and CO_2 probe."**

—William M. Miller, Professor and Chair of Chemical Engineering, Northwestern University



Typical Applications

- Bacteria, yeasts, molds
- Biochemical assays and techniques
- Cell fractions of chloroplasts, membranes, microsomes, mitochondria
- Pathology and toxicology
- Pharmacological studies
- Plant and animal tissue and cells

Biological Oxygen Monitor

YSI 5300A

Versatile measurement over a wide range of sample sizes.

The YSI 5300A Biological Oxygen Monitor is ideal for laboratory teaching and research applications. With greater sensitivity than conventional gas phase manometric systems, the 5300A measures oxygen consumption and evolution in a variety of samples including respiration, oxidative activity, and cellular metabolism studies. The 5300A utilizes Clark-type polarographic oxygen probes immersed in magnetically-stirred sample chambers, and produces oxygen uptake or evolution curves in two to 15 minutes. This compact, two-channel instrument offers micro and macro measurement capability, maximizing the advantages of sensitivity, speed, and integrated system design.

Features

- Measures sample volumes from 600µL to 8 ml
- Utilizes Clark-type polarographic oxygen electrodes, assuring a fast and stable response
- Run and record two experiments simultaneously
- RS-232 and analog outputs for data logging
- Measures samples in air- and oxygen-saturated solutions
- Zero-oxygen calibration offset for improved sample accuracy

CE

YSI 5300A systems & accessories

Injecting a sample for analysis is easy with the micro oxygen chamber (attached to ring stand), micro oxygen probe, and controller for magnetic stirring.

Options & Accessories

Item	Part Number
Standard System (Measures 1 to 8 ml)	
Biological Oxygen Monitor*	5300A
Bath Assembly*	5301B
Oxygen Probe#	5331A
Circulating Bath*^	5310
Micro Accessory Kit@	5304
Micro System (Measures fixed volume of 600µL or continuous flowing sample)	
Biological Oxygen Monitor*	5300A
Single Chamber Micro Oxygen System[1]	5356S
Dual Chamber Micro Oxygen System[2]	5356D
Micro Oxygen Probe~	5357
Accessories	
Two-channel Chart Recorder	5320
Wire Set (connects 5320 to 5300A)	5325
Tubing Kit (connects 5310 to 5301B)	5315
Chamber Pack	5215
Magnetic Stirrer	5222
Membrane Mounting Kit	5350
KCl and Standard Membrane Kit	5775
KCl and High-sensitivity Membrane Kit	5776
Standard Membranes (150)	5793
High-sensitivity Membranes (150)	5794

* Specify 115 or 220 volt; # YSI recommends 2; ^ Controls to ±0.02°C, includes 5315; @ Converts 5301B to measure 1 ml sample size; [1] Includes (1) of 5357, batch/flow chamber, and stirrer with controller; [2] Includes (2) of 5357, batch/flow chamber, and stirrer with controller; ~ Probe and cable sold together

Typical Applications
- On the spot analysis of lactate in athletes

Lactate Analyzer
YSI 1500 Sport

Set the pace of athletic training

Many coaches measure lactate to set the training pace for Olympic, college, and professional athletes. YSI's portable lactate analyzer can make this process easier and more effective. With the YSI 1500 Sport you can monitor your athlete's lactate levels with laboratory-level accuracy in a portable system. Within 60 seconds the analyzer displays lactate results and stores it in memory.

Lactate analysis is the standard measure of fitness in many sports—track and field, rowing, cycling, swimming, triathlon, skiing, and speed skating—because it helps coaches to avoid overtraining. When you compare an athlete's performance at specific points to blood lactate levels, you can detect a slow rise in lactate until it begins to accumulate faster than it can be metabolized. At this point the muscles are not adequately supplied with oxygen. Using lactate data, an athlete's aerobic and anaerobic systems can be modified for better performance and maximum lactate tolerance.

Features

- Accurate, repeatable results in the field
- Lightweight and portable
- 8-hour battery
- Utilizes YSI's patented immobilized enzyme electrode technology
- 150 samples stored in memory
- Permanent printed record via infrared data link
- RS-232 serial port for transfer of data to computer
- Reagents in spill-proof bottles

CE

YSI 1500 Sport
systems & accessories

A simple prick of the fingertip or earlobe provides enough blood for analysis and helps coaches determine an athletes' highest performance levels—wherever they are training.
Not for home use.
Professional use only.

Reagent Ordering Info

Chemistry	Membrane	System Buffer	Calibration Standard	Linearity Check Solution	Starter Kit
L-Lactate	2329 (4-pack)	2357 (dry mix)	2327	2328	1504*

* Includes 1505, 1515, 1530, 2327, 2329, 2357, 2363, 2392

Options & Accessories

Item	Part Number
SPORT Lactate Analyzer**	1500
Syringepet Blunt Needle	1501
Capillary Injector	1502
Capillary Tube Package (100)	1505
Cell Lysing (8 packets/4 liters)	1515
Preservative Kit#	2315
Membrane Installation Solution	2392
Membrane Check Solution	2363
Preventative Maintenance Kit	1503
HP Infrared Printer	1506
Printer Paper 5-pack	2751

** Specify 115 or 230 volt, #Includes 1515 (2 each) and 50 tubes.

YSI Life Sciences

Product Specifications

7100 MBS Multiparameter Bioanalytical System

Analyzer

Sample Size	Adjustable from 10 to 50 microliters (aspirate volume), per sensor module
Analysis Time#	1.5 to 4 minutes
Sample to Sample Turnaround Time#	2 to 7 minutes
Data Paths	Serial out (RS-232 and RS-485), displayed, printed, writes comma-delimited text file to 3.5" diskette
Power Requirements	100-120/200-240 VAC±10%; 50-60 Hz±5%: 120 Watts nominal
Ambient Temperature	15˚ to 35˚C
Relative Humidity	10% to 90% (non-condensing)
Regulatory Compliance	UL, CUL, CE
Instrument Dimensions (cm)	43w x 45h x 41d cm (<0.2m² footprint)
Instrument Weight	16 kg (35 lbs.) without fluids

Analytical Performance

Parameter	Measurement Range	Precision	Typical Sensor Working Life
Glucose	0.05 - 18.0 g/L	2% or 0.02 g/L	21 days*
L-Lactate	0.05 - 2.70 g/L	2% or 0.03 g/L	14 days*
L-Glutamate	15 - 1460 mg/L	2% or 8 mg/L	10 days*
L-Glutamine	30 - 1169 mg/L	4% or 15 mg/L	5 days*
Ammonium	10 - 500 mg/L	5% or 10 mg/L	90 days**
Potassium	20 - 1000 mg/L	5% or 20 mg/L	90 days**

* Enzyme electrode membrane

**Ion selective electrode

Varies with analyte selection

2700 Select Biochemistry Analyzer

Analyzer

Aspirated Sample Volume	User selects 5 to 65 microliters
Analysis Time	60 seconds
Precision	<2%, <4% for glutamine
Linearity	±5%, calibration value to range maximum
Calibration	User selects frequency
Size	35.6 x 25.4 x 35.6 cm, 11.4 kg (14 x 10 x 14 inches, 25 lbs)
Working Environment	15 to 35°C ambient temperature, 10 to 90% relative humidity (non-condensing)
Power	110-120/220-240 VAC; 50-60 Hz, 50 Watts nominal
Battery Backup	Rechargeable Ni-Cad batteries to back up RAM
Regulatory Compliance	CSA, CE

YSI 2710 Turntable

Sample Containers	10 to 16 mm dia, 20 to 100 mm height
Sample Wheel	19.1 dia x 1.9 cm (7.5 dia x 0.75 in)
Size	23.5 x 20.3 x 12.7 cm, 2.5 kg (9.25 x 8 x 5 in, 5.5 lbs)

YSI 2730 Monitor & Control Accessory Monitor

Sample Inlet Tubing	Silicone, 0.08" OD x 0.02" ID; Volume: 5.1 microliters per inch
Inlet Channel Pump Tubing	PharMed® 0.13" OD x 0.035" ID
Valve Tubing	0.03" ID
Wasteline Tubing	Silicone, 0.16" OD x 0.10" ID
Nominal Flow Rate (Inlet Line)	100 to 2500 microliters per minute (±8% @ ±6 PSI)
Sample Interval	2 minutes to 1,000 hours

Analytical Performance

Chemistry	Measurement Range	Calibration Point	Precision	Typical Membrane Working Life
Choline	0 to 450 mg/L	175 mg/L	2%	7 days
D-Glucose, Dextrose (Low Range)	0 to 9 g/L at 25 µL sample size	2.50 g/L	2%	21 days
D-Glucose, Dextrose (High Range)	0 to 25 g/L at 10 µL sample size	2.50 g/L	2%	21 days
Ethanol[1]	0 to 3.20 g/L	2.00 g/L	2%	5 days
Galactose[2,3]	0 to 25 g/L	N/A	N/A	10 days
Hydrogen Peroxide[2]	0 to 600 mg/L	N/A	N/A	21 days
Lactose	0 to 25 g/L	5.00 g/L	2%	10 days
L-Glutamate	0 to 10 mmol/L	5.00 mmol/L	2%	7 days
L-Glutamine[4]	0 to 8 mmol/L	5.00 mmol/L	4%	5 days
L-Lactate **L-Lactic Acid**	0 to 2.70 g/L	0.50 g/L	2%	14 days
Methanol[5]	0 to 2.50 g/L	1.00 g/L	2%	5 days
Sucrose	0 to 25 g/L	5.00 g/L	2%	10 days

Notes:
1. Methanol is a potential substrate interference. Specifications are for 10 µL sample.
2. The user must provide calibrator solution.
3. Lactose is a potential substrate interference.
4. Specifications are for the simultaneous measurement of glutamine and glutamate.
5. Ethanol is a potential substrate interference. Specifications are for 10 µL sample.

YSI Life Sciences

Product Specifications

2300 STAT Plus Glucose and Lactate Analyzer

Analyzer

Sample Size	25 µL, (aspirated volume)
Response Time	(from test tube holder)
Normal Mode:	Displayed and printed result in 65 seconds. Sample to sample interval is 100 seconds.
Screen Mode:	Displayed and printed result in 45 seconds. Sample to sample interval is 70 seconds.
Operating Temperature	15 to 35° C
Humidity	10 to 90% noncondensing
Power	110-120 VAC or 220-240 VAC, 50-60 Hz, 50 Watts nominal
Size	25.4 x 35.6 x 35.6 cm, 11.4 kg; 10 x 14 x 14 inches, 25 lbs
Regulatory Compliance	CSA, CE, FDA Registered Class II (862.1345)
CE Device Category	IVD

Analytical Performance

Parameter	Measurement Range	Calibration Point	Precision	Typical Membrane Working Life
Glucose	**Normal Mode:** to 900 mg/dL (9000 mg/L, 50.0 mmol/L) **Screen Mode:** to 500 mg/dL (5000 mg/L, 27.8 mmol/L)	180 mg/dL (1800 mg/L, 10.0 mmol/L)	Whichever is larger, ±2% of reading or 2.5 mg/dL (25 mg/L or 0.2 mmol/L)	21 days
Lactate	**Normal Mode:** to 30.0 mmol/L (267 mg/dL, 2670 mg/L) **Screen Mode:** to 15.0 mmol/L (134 mg/dL, 1335 mg/L)	5.00 mmol/L (45 mg/dL, 445 mg/L)	Whichever is larger, ±2% of reading or 0.1 mmol/L (1 mg/dL or 10 mg/L)	14 days

Note: YSI makes no performance claims for sampling whole blood using the YSI 2710 Turntable.

8500 BioVision Dissolved CO_2 Monitor

Monitor	
Measurement	pCO_2
Range	1-25% at atmospheric pressure (760 mm Hg)
Accuracy	±5% of reading or 0.2% absolute (whichever is greater)
Calibration	Single point; performed with reference gas before start of process
Drift	2% of actual reading per 7 days
Response Time	T_{90} < 7 min.
Operating Temperature	20-40°C
Operating Pressure	0.68 bar/10 psig maximum
Sterilization Temperature	132°C, 20 minutes
Sterilization Pressure	2 bar/ 30 psig maximum
Sensor Technology	Opto-chemical
Sensor Working Life	45 days continuous use
Fluorescent Dye	Hydroxypyrene trisulfonic acid
Communications	RS-232 or RS-485, 4-20 mA loop or 1-5 Vdc
Regulatory Compliance	UL, CUL, CE

Product Specifications

5300A Biological Oxygen Monitor

Monitor	
Channels	Each of the two channels are independently operated and each channel has a dedicated 0 to 2.000 Volt recorder output. Each channel has two input jacks, one for the 5331A standard probe and one for the 5357 micro probe.
Display	LCD, oxygen results displayed in % oxygen saturation, four digits maximum
Resolution	0.1%
Range	0.0 to 199.9% saturation
Power	115 vac ±10%, 60 hz, 0.16 amp; 230 vac ±10%, 50 hz, 0.08 amp
Regulatory Compliance	CE
Instrument Size	9 x 9.5 x 4.4 inches (22.9 x 24.1 x 11.2 cm)
Weight	2.6 pounds (1.1 kg)
Recorder Output	0 to 2.000 volts corresponds to full scale. 20 K ohms minimum load impedance required. The display is tracked within ±0.2% of full scale; the differential out put capability (Channel 1 minus Channel 2) is accurate to ±0.4% of full scale.

Oxygen Probes	
Oxygen Consumption Rate Range	3 to 250 µL O2/hr in air-saturated solutions; 15 to 250 µL O_2/hr in oxygen-saturated solutions
Probe Linearity	±1.0% of full scale. (full scale is 199.9%)
Oxygen Consumption of 5331A (Standard Oxygen Probe)	Less than $6x10^{-7}$ grams O_2/hr (<0.1 µL 0_2/hr) in air.
Oxygen Consumption of 5357 (Micro Oxygen Probe)	Less than $6x10^{-9}$ grams O_2/hr (<0.005 µL O_2/hr) in air.
Stabilization Time	60 seconds maximum with probe and solution at operating temperature
Response Time	90% of final reading in approximately 10 seconds (± 2 seconds). Assumes probe and solution are at operating temperature.

Sample Chambers	
Sample Chamber Size	600 µL with the 5356 Micro Oxygen Chamber, 1 mL with YSI 5304 Micro Adapter Kit and 3 to 8 mL with 5301B Bath
Temperature Stability	With suitable circulator, ±0.02°C of circulator temperature in the sample chamber
Stirring Speed	480 RPM with 5301B Standard Bath and variable to 1600 RPM with 5356 Micro Oxygen Chamber
Sample Temperature Range	5 to 40°C
Regulatory Compliance	115V 5301B: UL; 230V 5301B: CE

5300A Biological Oxygen Monitor

System	
System Stability	Max. 5% of full scale per hour at 50% saturation or greater. (Accounts for probe, temperature, electronic, and O_2 leak effects.)
System Linearity	±1% of full scale (full scale is 199.9%)
Environmental Requirements	• Laboratory setting • Ambient temperature 15 to 35°C • Relative humidity up to 65% (non-condensing), low signal readings at 90% humidity affects the readings.
UL3103-1 Compliance (5300A & 5301B)	Pollution degree 2, Installation category 2

1500 Sport Lactate Analyzer

Analyzer	
Sample Size	25 µL
Response Time	
Manual Calibration Mode:	Displayed in 30 seconds. Sample to sample interval is 60 seconds.
Automatic Calibration Mode:	Displayed in 60 seconds. Sample to sample interval is 96 seconds.
Measurement Range	to 30 mmol/L (to 270 mg/dL)
Precision	Whichever is larger, ±2% of reading or 0.1 mmol/L, 1 mg/dL or 10 mg/L
Calibration Point	5.00 mmol/L (to 45 mg/dL)
Memory	150 samples
Operating Temperature	5 to 45°C
Storage Temperature	0 to 60°C
Humidity	10 to 90% noncondensing
Battery Life	8 hours with full charge; fail-safe low battery protection
Size	34 x 37.6 x 17.8 cm, 4.8 kg 13.4 x 14.8 x 7 inches , 10.5 lbs
Regulatory Compliance	CE, FDA Registered Class II (862.1450)
CE Device Category	IVD

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YSI Life Sciences

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Find out how you can make your bioanalysis processes more effective. Call your local representative or the YSI Life Sciences technical support team today.

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