



Aquaculture

CONTINUOUS MONITORING AND CONTROL

Distributed by:

Lab Unlimited
CARL STUART GROUP

Tallaght Business Park
Whitestown
Dublin 24
Ireland

Tel: (01) 4523432
Fax: (01) 4523967
E-mail: info@labunlimited.com
Web: www.labunlimited.com

Unit 59, Frimley House
35 High Street
Frimley, Surrey
GU16 7JQ

Tel: 08452 30 40 30
Fax: 08452 30 50 30
E-mail: info@labunlimited.co.uk
Web: www.labunlimited.co.uk



a xylem brand



Table of Contents

2-3	5200A Multiparameter Monitor
4-5	5400/5500D MultiDO Monitors
6-7	Networking
8-9	Benefit Overview
10-11	Software
12	How to Order
13	Contact

Welcome

Increased environmental regulations, decreasing clean water availability, and increasing costs (to name just a few) are impacting the sustainability of the aquaculture industry.

YSI is here to help. The brand you trust for world-class water quality sampling instrumentation and customer service has expanded its Aquaculture Monitoring & Control product line. Our focus is to help you solve these challenges by giving you the innovative, cost-effective products and services that make your job easier and improve the efficiency of your facilities.

For those new to YSI, you may find that direct access to our employees – knowledgeable, customer-focused technical advisers who are here to help you find new and better ways to do your job – is a serious competitive advantage.

Thank you for your interest in YSI and for reviewing our catalog. We encourage you to contact us with any questions, concerns, and comments.

Tim Grooms
Director, Water Quality Products



Monitoring & Control **aquaculture**

Applications

RAS (recirc systems)
Raceways
Ponds
Cages
Live haul
Aquariums
Tanks
Research



5200A

Dissolved Oxygen
(polarographic)
pH
Conductivity
Temperature
ORP
Salinity
TDS
Miscellaneous*



5400

Dissolved Oxygen
(galvanic)
Temperature
Miscellaneous*



5500D

Dissolved Oxygen
(optical)
Temperature
Miscellaneous*

* Miscellaneous refers to the ability to input devices such as lighting, chillers/heaters, blowers, TGP, and more.

Monitors at a Glance

Dependability. Monitoring and controlling with the 5200A, 5400, and 5500D is managed locally by the instrument, not at a central PC or device. This provides security that an entire system won't fail.

Scalability. Easy to use with low cost of ownership. User-scalable as your facility needs change, unlike typical PLCs or DCPs. No engineers or programmers needed to change or add to the system.

Multiparameter and multilocation capability. With the ability to measure multiple probes, virtually any parameter, and multiple locations, you can design a total facility solution.

Feed management. Feed Smart™ conditional feed timer software is included with every monitor. Very powerful feeding capabilities interface with most powered feeders.

Improved management tools. With AquaManager®, you will have access to quality data (water quality parameters, event logs, etc.) to better manage your operation and improve efficiency. SMS and e-mail alarms quickly notify if parameters exceed user-defined limits. Data can be easily accessed remotely using AquaManager and/or the new iPod app.

5200A Multiparameter Monitor

Designed specifically for aquaculture systems, the **5200A** integrates process control, feeding, alarming, and data management into one product. Multiparameter functionality for DO, temp, pH, ORP, conductivity, and automatic salinity compensation. Plus, two configurable inputs for additional sensors and management.

5200A

- Ethernet TCP/IP or wireless communications – optional
- Event logging records calibrations, high and low conditions, and more
- Conditional feed timer with Feed Smart™ software included
- Networking capability; can be integrated with 5400 and 5500D monitors
- Flexible dosing and control software
- SMS and e-mail alarming
- Graphic interface function for quick, reliable system-status checks
- Plug-and-play – easy to install, setup, and maintain
- Photo period management
- Control parameters with set points, dosing, or PID functions



5200A Specifications

Conductivity

Range: 0-200 μ S, 0-2000 μ S, 0-20 mS, 0-200 mS

Resolution: 0.1 μ S in 200 μ S range; 1 μ S in 2000 μ S range; 0.01 mS in 20 mS range; 0.1 mS in 200 mS range

Accuracy: \pm 0.5% of range (0-100 mS); \pm 1.0% of reading (100-200 mS)

Dissolved Oxygen

Description: Polarographic; automatic salinity compensation

Range: 0-500% air saturation; 0-60 mg/L

Resolution: 0.1% (0.0-99.9%); 0.01 mg/L (0-10 mg/L); 0.1 mg/L (10-60 mg/L)

Accuracy: \pm 2% or \pm 0.2 mg/L whichever is greater (0-200%) (0-20 mg/L); \pm 6% of reading (200-500%) (20-60 mg/L)

ORP

Range: -2000 mV to 2000 mV

Resolution: 1 mV

Accuracy: \pm 20 mV

pH

Range: 0.0-14.0 units

Resolution: 0.01 units

Accuracy: \pm 0.2 pH

Salinity (calculated)

Range: 0-80 ppt (0-50 manual input)

Resolution: 0.1 ppt

Accuracy: \pm 2% or \pm 0.1 ppt

Temperature

Range: 0-45°C (32-113°F)

Resolution: 0.1°C

Accuracy: \pm 0.2°C

Timers

Description: 4 timers – 10 cascading events with start/duration setting; 1 feed timer channel

Communication Ports

Description: RS485 and RS232 standard; Ethernet and wireless optional

Data Logger

Description: Non-volatile, 2000 data records, 1250 relay/alarm records, 1000 entries/change records, 500 GLP records

Warranty

Description: 2-year on instrument; 1-year on probe/cable

Auxiliary Inputs*

Description: 2 user-configurable inputs, digital (0 to 1.0 VDC or 0 to 5.0 VDC selectable)

Ratings

Description: CE, ULC, ETL, CUL, RoHS, IP-65, Made in USA

Output Relays (not fused)

Description: 4 internal 10 amp 115 VAC (5 amp 230 VAC) relays for parameter control and/or alarm

Alarming

Description: Local, e-mail, and/or SMS alarming

Power Requirements

Description: Option 1: 12 VDC; Option 2: 100/240 VAC switches to 12 VDC backup

Display

Description: Graphic LCD; extended temp range LCD with backlight

Size

Description: Height: 6.5 in (16.5 cm); Length: 8.5 in (21.6 cm); Depth: 4.75 in (12.1 cm)

Enclosure

Description: NEMA 4X; lightning protection

Parameters

Dissolved Oxygen
(polarographic)

pH

Conductivity

Temperature

ORP

Salinity

TDS

Miscellaneous

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

 [ysi.com/5200A](https://www.ysi.com/5200A)

5400/5500D MultiDO Monitors

Need a Continuous MultiDO Monitoring and Control instrument designed specifically for aquaculture systems? Easily manage a full-scale farming operation, or just one tank, from anywhere in the world.



YSI 5400

The YSI 5400 Continuous Monitor for dissolved oxygen – along with AquaManager software – integrates process control, feeding, alarming, and data management into one product.

YSI 5500D

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



Access data remotely



5400 and 5500D

- Ethernet TCP/IP or wireless communications – optional
- Event logging records calibrations, high/low conditions, and more
- Conditional feed timer with Feed Smart software included
- Networking capability up to 32 instruments per communications port or can be integrated with 5200A, 5400, or 5500Ds
- Graphic interface function for quick, reliable system status checks
- Plug-and-play – easy to install, setup, and maintain
- Flexible monitoring and control software
- E-mail and SMS alarming
- Photo period management
- Control parameters with set points, dosing, or PID functions

Specifications

5400

5500D

Dissolved Oxygen

Description	4 DO channels; Galvanic	●	
	4 DO channels; Optical		●
Range	0-500% air saturation; 0 to 60 mg/L	●	
	0-500% air saturation; 0 to 50 mg/L		●
Resolution	0.1% or 0.01 mg/L (0-10 mg/L); 0.1 mg/L (10-60 mg/L)	●	●
Accuracy	±2% or ±0.2 mg/L, whichever is greater (0-200%); ±0.2 mg/L or ±2% of reading, whichever is greater (0-20 mg/L); ±6% of reading (200-500%) (20-60 mg/L)	●	
	±1% of reading or ±1% air sat, whichever is greater (0-200%); ±0.1 mg/L or ±1% of reading, whichever is greater (0-20 mg/L); ±10% of reading (200-500%) (20-50 mg/L)		●

Timers

Description	4 timers – 10 cascading events with start/duration setting; 4 feed timer channels	●	●
--------------------	---	---	---

Communication Ports

Description	RS485 and RS232 standard; Ethernet and wireless optional	●	●
--------------------	--	---	---

Data Logger

Description	Non-volatile, 2000 data records, 1250 relay/alarm records, 1000 entries/change records, 500 GLP records	●	●
--------------------	---	---	---

Warranty

Description	2-year on instrument; 1-year on probe/cable	●	
	2-year on instrument, probe/cable		●

Auxiliary Inputs*

Description	4 DO probe inputs; 4 user-configurable inputs for temp, (0 to 1.0 VDC, or 4-20 mA) or digital; 2 user-configurable inputs, digital (0 to 1.0 VDC, 0 to 5.0 VDC or 4-20 mA)	●	●
--------------------	--	---	---

Ratings

Description	CE, ULC, ETL, CUL, RoHS, IP-65, NEMA 4X, Made in USA	●	●
--------------------	--	---	---

Output Relays (not fused)

Description	8 internal relays 10 amp 115 VAC (5 amp 230 VAC) relays for parameter control and/or alarm	●	●
--------------------	--	---	---

Alarming

Description	Local, email, and/or SMS alarming. Up to 3 e-mails with Ethernet Module or 10 e-mails with AquaManager	●	●
--------------------	--	---	---

Power Requirements

Description	Option 1: 12 VDC; Option 2: 100/240 VAC; switches to 12 VDC backup	●	●
--------------------	--	---	---

Display

Description	Graphic LCD; extended temp range LCD with backlight	●	●
--------------------	---	---	---

Size

Description	Height: 6.5 in (16.5 cm); Length: 8.5 in (21.6 cm); Depth: 4.75 in (12.1 cm)	●	●
--------------------	--	---	---

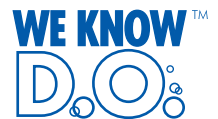
Parameters

5400

Dissolved Oxygen (galvanic)
Temperature
Additional User-Configurable Inputs

5500D

Dissolved Oxygen (optical)
Temperature
Additional User-Configurable Inputs



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

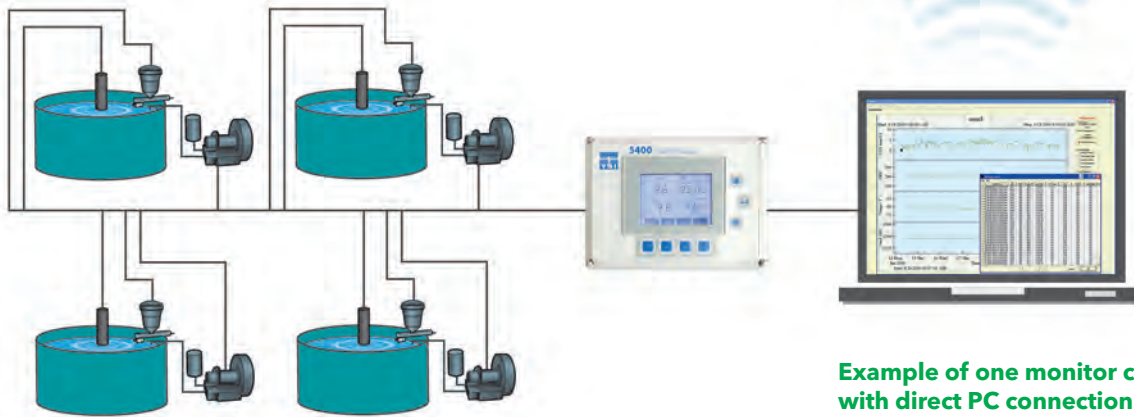
[ysi.com/5400](https://www.ysi.com/5400)

[ysi.com/5500D](https://www.ysi.com/5500D)

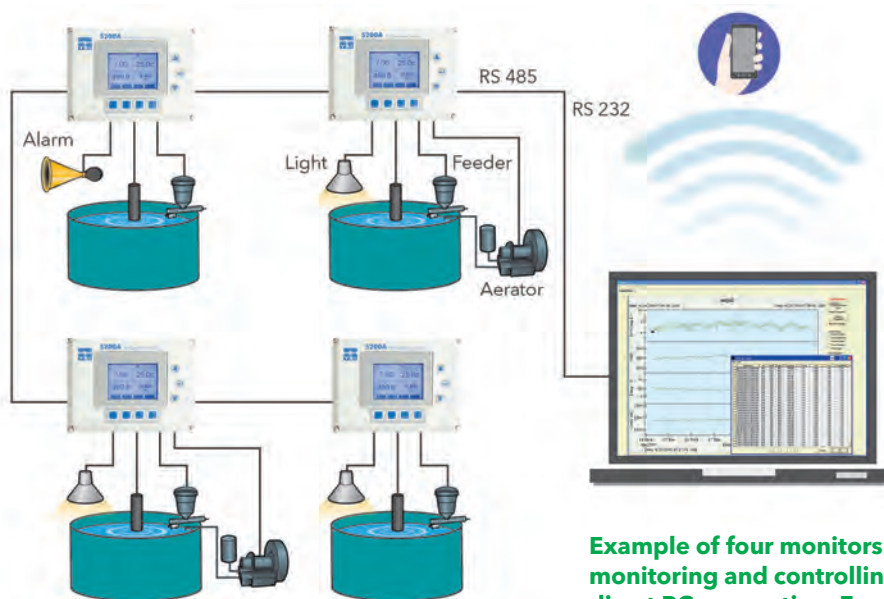
Networking User-Configurable



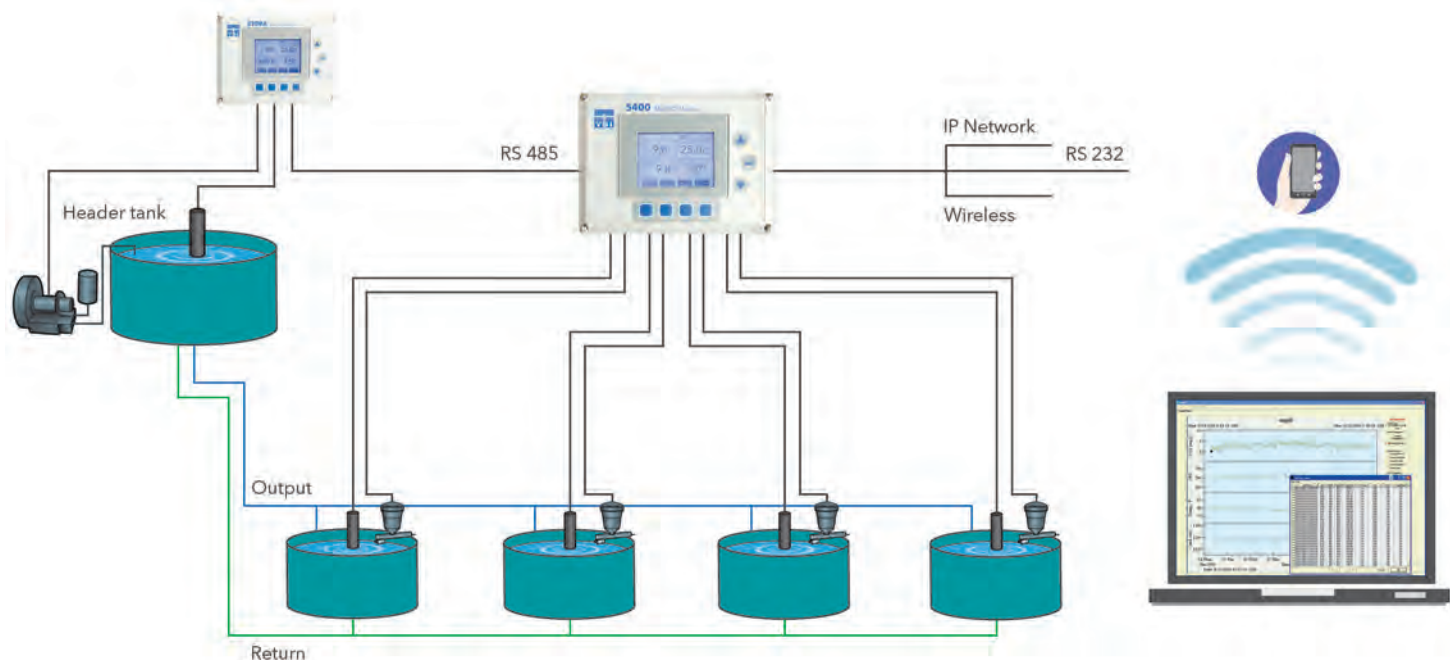
Access data remotely via iPod, iPhone, or iPad.



Example of one monitor controlling four tanks with direct PC connection. E-mail and SMS alarming is available from network-connected PC running AquaManager.

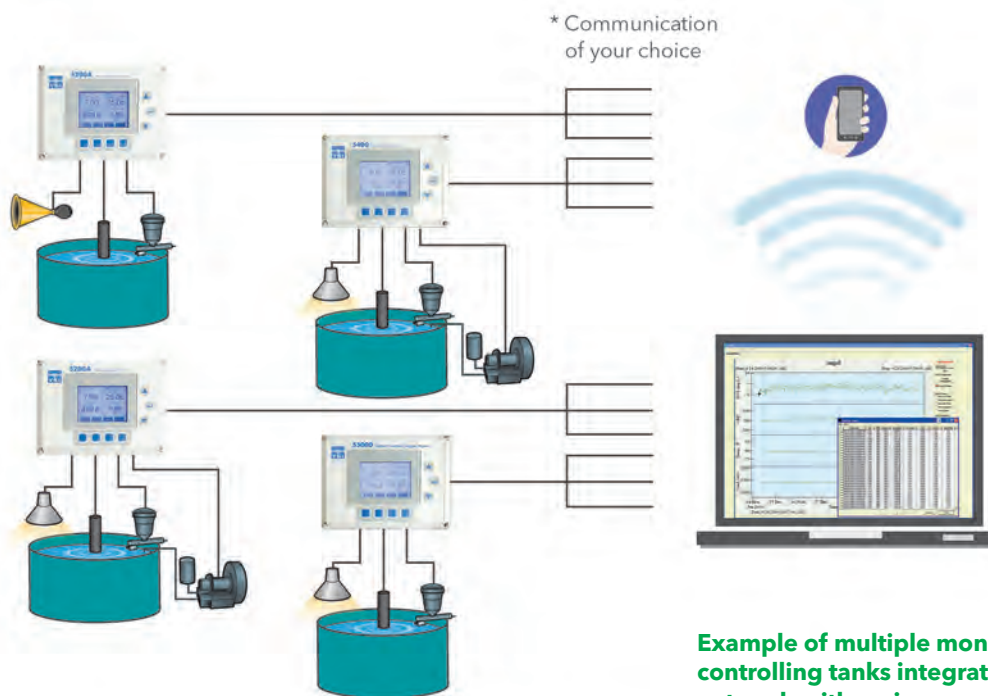


Example of four monitors individually monitoring and controlling four tanks with direct PC connection. E-mail and SMS alarming is available from network-connected PC running AquaManager.



Multiple connectivity options include RS485, RS232, Ethernet, or wireless.

Example of two monitors in the same network providing a multiparameter solution.



* Communication of your choice

* IP Network, Wireless, Ethernet, E-mail, SMS Alarm, RS 232

Example of multiple monitors individually controlling tanks integrated into the same network with various communications channels.

Benefit Overview



Feed Smart™ (included) **Conditional feed timer around the clock**

Feed Smart™ software can be used as a basic feed timer or conditional feed timer. Manages feed delivery based on user-selectable inputs for the number of daily feedings, daily feed weights, total biomass, and feed conversion ratios (FCRs) along with parameter control based on water quality values which reduces, or stops, feeding as water quality deteriorates.

- Saves money on feed
- Eliminates excess food deteriorating water quality
- Feed when fish want to eat
- Increase yields
- Interfaces with most auto feeders
- Increase feeding daily based on FCR
- Select when to feed – time periods and days of the week (up to 100 times daily)
- Calculates biomass
- Saves money on labor and is significantly less expensive than other automated feeding options

Outputs/Timers (included) **5400/5500D**

- 8 relays 10 amp 115 VAC (5 amp 230 VAC)
- 4 timers – 10 cascading events with start/duration setting
- 4 Feed Smart channels
- E-mail and/or SMS alarming up to 3 e-mails with Ethernet module or up to 10 e-mails with AquaManager
- Local alarm; configurable to relay

5200A

- 4 each 10 amp 115 VAC relays (5 amp 230 VAC)
- 4 timers – 10 cascading events with start/duration setting
- 1 Feed Smart channel
- E-mail and/or SMS alarming up to 3 e-mails with Ethernet module or up to 10 e-mails with AquaManager
- Local alarm; configurable to relay

Inputs (included) **5400/5500D**

- 4 DO probe inputs
- 4 user-configurable inputs for temp, Analog (0 to 1.0 VDC, 0 to 5.0 VDC or 4-20 mA) or digital*
- 2 user-configurable inputs, digital or analog (0 to 1.0 VDC, 0 to 5.0 VDC or 4-20 mA)*

5200A

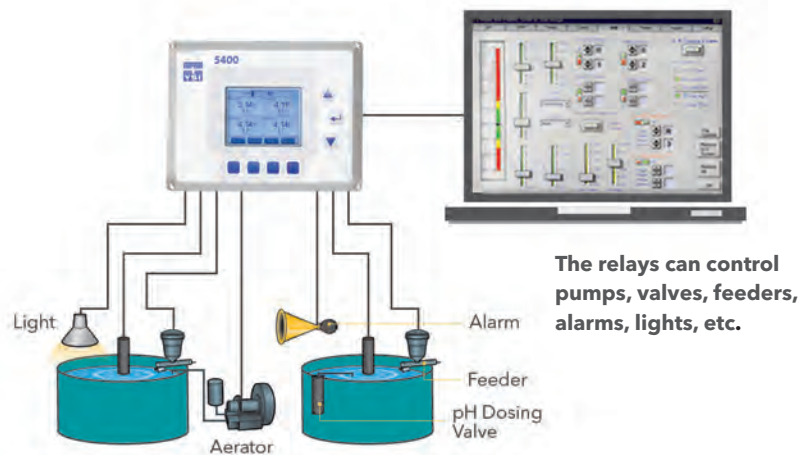
- DO, pH, ORP, conductivity, temp
- 2 user-configurable inputs, digital or analog (0 to 1.0 VDC, 0 to 5.0 VDC or 4-20 mA)*

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

Control

Pumps, valves, feeders, alarms, lights, heaters, chillers, blowers, pure O₂, ozone, etc.

Monitor and control continuously



Control Relays (included)

The **5400/5500D** comes with 8 internal relays and the **5200A** comes with 4 internal relays available for control outputs. The relays are accessible through terminal blocks on the I/O panel inside the enclosure. The terminal blocks provide Normally Open, Normally Closed, and Common Connections to the relays. Select set point, dosing, or PID control mode.



Power (Options)

Option 1 (12 VDC)

Configuration for mobile live-haul applications, or anytime AC power is not available.

Option 2 (100-240 VAC)

The system will automatically switch to 12 VDC back-up operation and sound an alarm if primary voltage drops below safe operating range.*

*12 VDC back-up power supply is optional. Contact YSI for more information.

Software

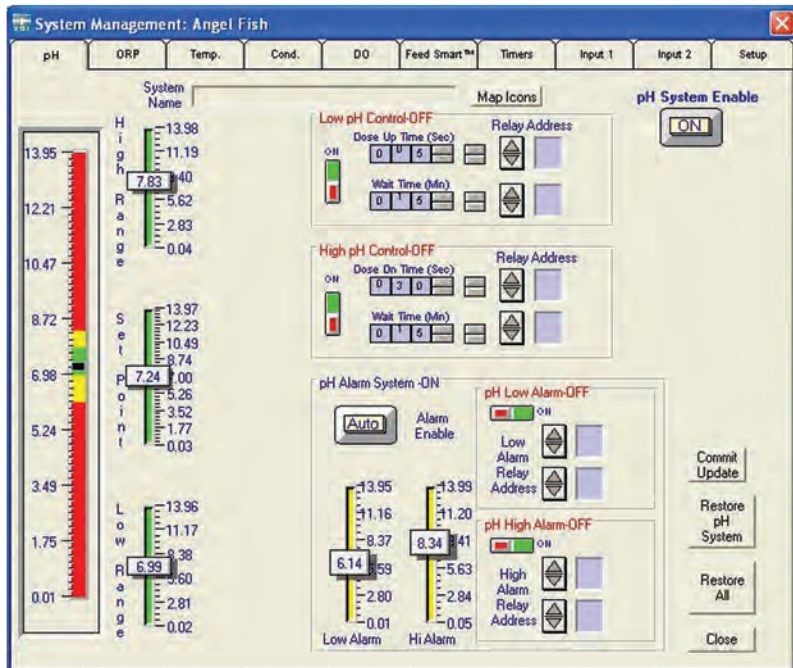
AquaManager® (optional)

AquaManager desktop software allows you to control and set up any instrument on the network to view data, set alarming options, and change relays or set points depending on application – conveniently from one central location.

Instantly see an overview of your facility, manage parameter set points, and manage your data in order to make informed operational decisions in real time. The browser-based format makes navigation and maintenance easy.

The facility-mapping feature provides an immediate overview of all ponds or tanks indicating their current state.

All parameter and system settings can be managed from the desktop with the AquaManager software.



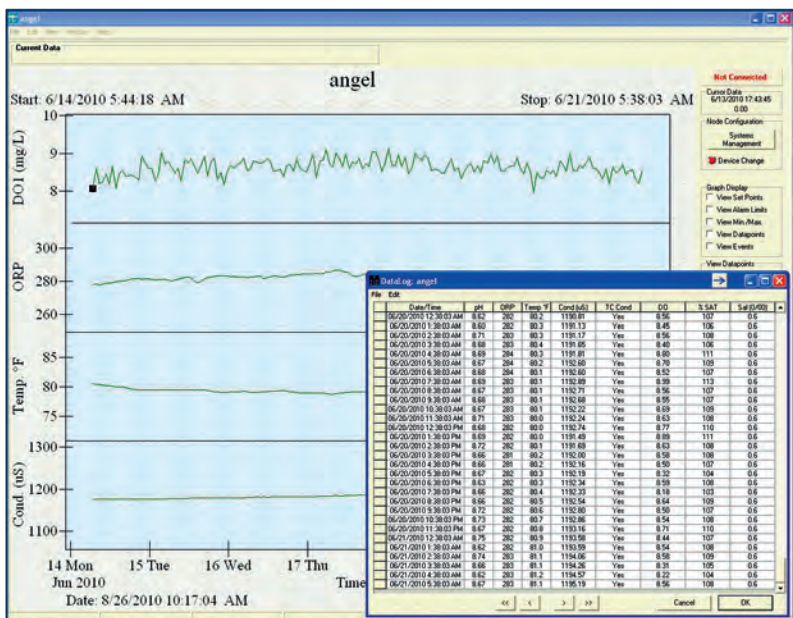
Example of the 5200A system management screen showing set points for pH. The 5400 and 5500D set points screen looks similar.



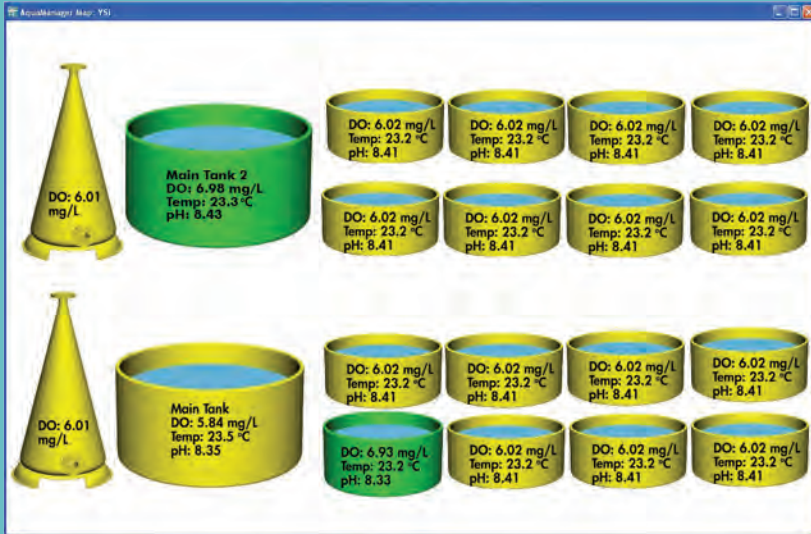
Look for the app in the Apple store. Access data remotely on your iPod, iPhone, or iPad from anywhere. Never be unsure of your operation's success.



App Store



You can view your data instantly in tabular or graphical formats.



In order for issues at your facility to be quickly identified, a visual map can be created to look like your facility. When displayed on a monitor, anyone can see where and when maintenance or action is needed. Real-time data is continually displayed. A facility JPEG or BMP file can be used as a background, and data easily added. Or access the library of icons provided to build your map.



The icon library includes raceways, tanks, lights, pumps, valves, and much more in order to accurately depict what you need for your facility.



All tanks have options to show their state of activity from Inactive (operating normally), Active (some form of control is taking place), or Alarm (beyond the set point limit and control hasn't corrected it).

Quickly identify with visual cues how your facility is operating.

How to Order

5500D

5500-AC	Single channel optical DO monitor, no display, 110-230 VAC
5500D-AC	Single channel optical DO monitor, 110-230 VAC
5500D-DC	Single channel optical DO monitor, 12 VDC, power supply not included
5500D-02-AC	Two channel optical DO monitor, 110-230 VAC
5500D-02-DC	Two channel optical DO monitor, 12 VDC, power supply not included
5500D-04-AC	Four channel optical DO monitor, 110-230 VAC
5500D-04-DC	Four channel optical DO monitor, 12 VDC, power supply not included
626320	Sensor cap (included with initial probe purchase)
626250-X	1-, 4-, 10-, 20-, 30-, 40-, 50-, 60-, or 100-meter cable with optical DO probe

5400

5400-DC	5400-DC, 12 VDC
5400-AC	5400-AC, 100-240 VAC, with 115 VAC US cord
5420-4, 10, 20, or 30	4-, 10-, 20-, 30-meter cable with galvanic DO probe/no Temp
5421-4, 10, 20, or 30	4-, 10-, 20-, 30-meter cable with galvanic DO probe/Temp

5200A

5200A-DC	5200A-DC, 12 VDC
5200A-AC	5200A-AC, 100-240 VAC, with 115 VAC US cord
5561-4, 10, 20, or 30	4-, 10-, 20-, 30-meter cable with polarographic DO probe/Temp
5562-4, 10, or 20	4-, 10-, 20-meter cable with polarographic DO probe/Temp/Cond (order 5564 or 5565 separately)
5564	pH Sensor
5565	pH/ORP Combination Sensor

Accessories

5402	Serial to Ethernet Module; 5200A, 5400, 5500D
5204	DO Membrane Kit, 2 Mil Teflon for polarographic (6 membranes with electrolyte); 5200A
5405-5	DO Membrane Kit, 2 Mil Teflon for galvanic; 5400
5405-25	DO Membrane Kit, 2 Mil Teflon for galvanic (25 membranes with electrolyte); 5400
5406	DO Probe Solution, 1 Pint (473 mL) for galvanic (5 membranes with electrolyte); 5400
5285	RS232 Opto isolator; 5200A, 5400, 5500D
5205	Probe Mounting Kit; 5200A
5909	DO Cap membrane Kit, 2 Mil PE for polarographic (6 caps and solution); 5200A
6505	Weather Shield; 5200A, 5400, 5500D
5209A	AquaManager Desktop Software; 5200A, 5400, 5500D
6506	Desiccant Kit; 5200A, 5400, 5500D
6509	Rail Mount Kit; 5200A, 5400, 5500D
6510	Panel Mount Kit; 5200A, 5400, 5500D
606100	230 VAC cord, European
606101	230 VAC cord, UK
606102	230 VAC cord, Australia

Contact



5200A
Spec Sheet



5400
Spec Sheet



5400
Video



5500D
Spec Sheet

On your phone or tablet, scan the QR codes to view more IQ SensorNet information.

Distributed by:

Lab Unlimited
CARL STUART GROUP

Tallaght Business Park
Whitestown
Dublin 24
Ireland

Tel: (01) 4523432
Fax: (01) 4523967
E-mail: info@labunlimited.com
Web: www.labunlimited.com

Unit 59, Frimley House
35 High Street
Frimley, Surrey
GU16 7JQ

Tel: 08452 30 40 30
Fax: 08452 30 50 30
E-mail: info@labunlimited.co.uk
Web: www.labunlimited.co.uk

Connect with YSI:



Facebook
facebook.com/myYSI



Twitter
twitter.com/ysiinc



Scoop.it
scoop.it/aquaculture



LinkedIn
linkedin.com/company/ysi



YouTube
youtube.com/ysiinc



Tumblr
myysi.tumblr.com



Pinterest
pinterest.com/myYSI

What can Xylem do for you?

We're 12,000 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories, and farms. 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, backed by a legacy of innovation.

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



<p>Distributed by:</p>  <p>Lab Unlimited CARL STUART GROUP</p>	<p>Tallaght Business Park Whitestown Dublin 24 Ireland</p>	<p>Unit 59, Frimley House 35 High Street Frimley, Surrey GU16 7JQ</p>
	<p>Tel: (01) 4523432 Fax: (01) 4523967 E-mail: info@labunlimited.com Web: www.labunlimited.com</p>	<p>Tel: 08452 30 40 30 Fax: 08452 30 50 30 E-mail: info@labunlimited.co.uk Web: www.labunlimited.co.uk</p>



a xylem brand

YSI
1700/1725 Brannum Lane
Yellow Springs, Ohio 45387
+1 937.767.7241
800.765.4974 (US)
environmental@ysi.com
www.YSI.com


AquaManager and Feed Smart are registered trademarks of YSI.
Windows is a registered trademark of Microsoft Corporation.
iPod, iPhone and iPad are registered trademarks of Apple.

Cover photo courtesy of Burt Lum (Bytemarks) and licensed by Creative Commons™.

©2012 YSI
Printed on recycled paper in USA
W24-02 0712



ECO CALCULATIONS REPORT				
YSI, Inc. saved the following resources by selecting U2:XG paper with 30% post-consumer recovered fiber.				
trees	energy	greenhouse gas	waste water	solid waste
2	0.9 million BTUs	740.5 lbs CO ₂	1078 gal	69 lbs
U2:XG is FSC-certified, contains 30% post consumer recovered fiber, and is manufactured with electricity in the form of renewable energy. U2:XG is manufactured by Appleton Coated www.appletoncoated.com				

 Printed on environmentally friendly paper with soy inks.