Ocean Optics




2009
new product catalog

spectrometers | lasers | sensors | probes | software | accessories

smart. innovative. flexible. solvers.

Ocean Optics invented the world's first miniature spectrometer and has specified and delivered over 120,000 units since 1992. With that kind of experience, Ocean Optics can easily provide you with the perfect solution for your application -- no matter what it might be.

We offer a comprehensive product line of optical sensing equipment for medical and biological research, environmental regulation, science education and applications such as process control and quality assurance.

ordering made easy

For a more personal experience, be sure to contact an Ocean Optics Applications Scientist at +1 727-733-2447 Monday through Friday or via email at info@oceanoptics.com.

Visit our online shop for fibers, probes, accessories and more at www.oceanoptics.com/shop.html.

worldwide service

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because quality matters

Ocean Optics is the only manufacturer that provides a full 3-year warranty on all its miniature spectrometers. You can rest assured that your Ocean Optics spectrometer delivers reliable performance – now and in the years to come.

Innovative Capabilities

new technologies and OEM applications

As the inventors of the world's first miniature spectrometer, Ocean Optics has always been at the forefront of innovation. Our comprehensive range of optical components and accessories have helped solve application puzzles, find answers and improve life through applications specific to medicine, the ecology, space exploration, education and more.

More Than Spectrometers

Sure we're the world's leading supplier of miniature fiber optic spectrometers. But, that's not the only knowledge available to you. Ocean Optics also has expertise in complementary technologies that drive the development of optical fibers, chemical sensors and thin films technologies. For example, access to patented dichroic filter array processes has led to new linear variable filters for fluorescence applications and unique optical filters that enhance the performance of our spectrometers. That's the Ocean Optics advantage.

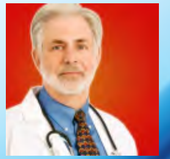
OEM Offerings

Our spectrometers, optical fibers, components and sensors are used in a vast array of OEM products. Known for providing specialized solutions for a broad range of manufacturing applications, Ocean Optics delivers the volumes you require and the quality you demand. Our engineering and support teams work closely with product developers to ensure a seamless transition from development to fulfillment. Our team of OEM specialists can also assist in developing prototypes that drive your business to new markets and opportunities.

- Complete range of spectrometers, fibers, probes and modular components
- More choices in detectors, gratings, mirrors, fibers, light sources and thin film optics
- Applications Scientists assist you in your development of new products and prototypes
- Off-the-shelf photonics accessories
- New applications including multispectral imaging, LED design and color measurement
- Customized private label products





Education

spectrometers and curricula for the science educator

Ocean Optics offers a complete line of tools for today's teaching lab including low-cost spectrometers and accessories, software and curricula. Our Education Division is focused on bringing excitement back into the science classroom with a series of Spectroscopy 101 one-day workshops designed especially for educators in college, high school and middle schools. Each Spectroscopy 101 workshop provides practiced, real-world science curricula with spectroscopy at its core. You can find a one-day workshop in your area by logging on to www.spectroscopy101.com.

SPECTROSCOPY 101

Red Tide Spectrometers are general-purpose instruments ideal for budget-restricted teaching labs.

Spectroscopy TV

video tutorials to get you going

Did you know that Ocean Optics produces video tutorials for use with its spectrometers and software? Our Spectroscopy TV (at oceanoptics.com and on youtube.com/oceanoptics) features videos that help you get the most out of your Ocean Optics spectrometer system.

With new videos added regularly, Spectroscopy TV shows you how to get set up, conduct basic measurements, understand results and do more with your spectrometer.

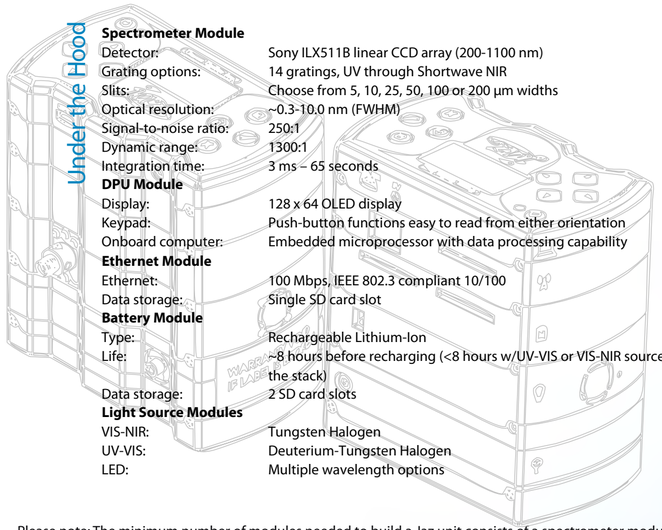
Be sure to visit us at www.oceanoptics.com/tv.asp or at www.youtube.com/oceanoptics.

Jaz Modular Sensing Suite

the perfect field, process and research solution

Jaz is like nothing you've ever seen before – a community of stackable, modular and autonomous components that create a built-to-suit family of smart sensing instruments. Its unique features and expandable platform make it beautifully suited for field applications, remote sensing, process flow and general laboratory use.

Don't let Jaz's playful appearance fool you. At its heart are a high-performance miniature spectrometer and a modular design that accommodates Ethernet connectivity, battery operation and PC-free performance. Add multi-spectrometer channel capability for one serious piece of sophisticated engineering – a brilliant choice for a variety of applications.



Spectrometer Module	
Detector:	Sony ILX511B linear CCD array (200-1100 nm)
Grating options:	14 gratings, UV through Shortwave NIR
Slits:	Choose from 5, 10, 25, 50, 100 or 200 µm widths
Optical resolution:	~0.3-10.0 nm (FWHM)
Signal-to-noise ratio:	250:1
Dynamic range:	1300:1
Integration time:	3 ms – 65 seconds
DPU Module	
Display:	128 x 64 OLED display
Keypad:	Push-button functions easy to read from either orientation
Onboard computer:	Embedded microprocessor with data processing capability
Ethernet Module	
Ethernet:	100 Mbps, IEEE 802.3 compliant 10/100
Data storage:	Single SD card slot
Battery Module	
Type:	Rechargeable Lithium-Ion
Life:	~8 hours before recharging (<8 hours w/UV-VIS or VIS-NIR sources in the stack)
Data storage:	2 SD card slots
Light Source Modules	
VIS-NIR:	Tungsten Halogen
UV-VIS:	Deuterium-Tungsten Halogen
LED:	Multiple wavelength options

Starting at $2,540
Base unit with spectrometer and DPU

Please note: The minimum number of modules needed to build a Jaz unit consists of a spectrometer module and a DPU (together known as a JAZ-COMBO). The Ethernet, Battery and Light Source Modules are optional and can be added on at additional cost. Consult an Applications Scientist for assistance.

Learn more about Jaz on pages 9, 10 & 13.

Jaz Spectrometer

Internal Processing

Onboard Memory

Ethernet & USB Connectivity

Battery Module

Light Source

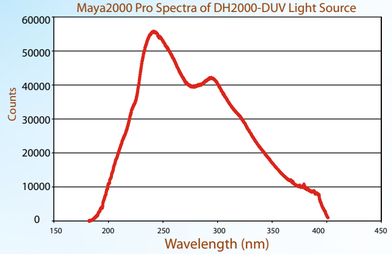
Maya2000 Pro Spectrometer

high sensitivity and deep UV measurement

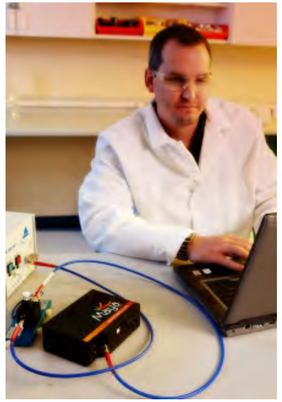
The flagship Maya2000 Pro offers high quantum efficiency, high dynamic range and is responsive in the deep UV (~185-300 nm). This back-thinned 2D FFT-CCD spectrometer uses the Hamamatsu S10420 detector and is perfect for applications that require higher quantum efficiency over a broader spectral range.

Starting at $5,800
Light Source and Accessories Additional

Maya2000 Pro Spectra of DH2000-DUV Light Source



Detector	
Type:	Hamamatsu S10420
Architecture:	Back-thinned, 2D
Thermoelectric cooling:	No
# of Pixels:	All: 2068 X 70 Active: 2048 x 64
Pixel size:	14 µm square
Detector active area (mm):	28.672 horizontal x 0.896 vertical
Well depth:	200Ke-
Peak QE:	75%
QE @ 250 nm:	60%
Spectrometer	
Integration time:	6 ms - 10 seconds
A/D converter:	16 bit, 500 kHz
Dynamic range (typical):	12000:1
Signal-to-noise ratio:	450:1
Non-linearity (uncorrected):	~4.0%
Non-linearity (corrected):	<1.0%



- USB 2.0 interface
- Low-noise electronics
- Optical resolution to ~0.035 nm (FWHM); resolution depends on groove density of grating and size of entrance aperture (slit)
- 14 grating options including optional HC-1 composite grating for coverage from 175-1100 nm (additional charge)
- Slits available in widths of 5, 10, 25, 50, 100 and 200 µm
- Optional order-sorting filters to eliminate second- and third-order effects
- Fully controllable strobe signals (single or continuous)
- 10 onboard digital user-programmable GPIOs

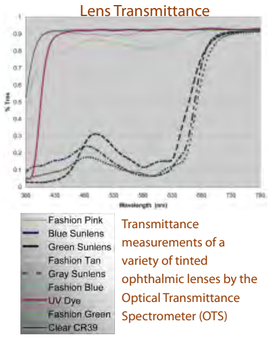
Optical Transmittance Spectrophotometer

ideal for in-line and in-lab applications

This simple, yet elegant system is ideal for accurate, repeatable measurements of optical filters, glass and ophthalmic lenses.

The Ocean Optics Optical Transmittance Spectrophotometer (OTS) is ideal for both in-line and in-lab applications where transmittance accuracy (to +/- 1.0%) and precision (+/- 0.1%) are critical. Common applications include measurement of optical coatings, windows and filters, and glass and plastic components.

Lens Transmittance



Transmittance measurements of a variety of tinted ophthalmic lenses by the Optical Transmittance Spectrometer (OTS)

Spectral range:	380-780 nm
Light source:	High-power Tungsten Halogen
Color calculations:	CIE L*a*b* color characteristics
Measurement calibration:	Manual calibration using known glass standard (included); calibration time <30 seconds
System calibration:	Recommended annual recalibration
Traceable standards:	Optional
Typical samples measured:	Tinted plastic and glass lenses, windows and optical filters
Sample size:	10-150 mm diameter, up to 10 mm thickness
Optical stage:	White powder-coated aluminum with chemically resistant coating
Software:	Specialized lens transmittance and color calculation software
Quality:	Conforms with ISO 8980-3, ISO 13666: 1998 and CIE norms and standards
Manufacturing compliance:	CE/UL/RoHS/WEEE

Starting under $10,000

- High-resolution miniature linear CCD-array spectrometer configured for 380-780 nm
- High-power, 20-watt Tungsten Halogen light source
- Precision integrating sphere for collecting signal transmitted through the sample
- Great for tint color, visual transmittance and UV cutoff
- Short optical fiber to channel signal from the integrating sphere to the spectrometer
- Customized lens transmittance and color calculation software

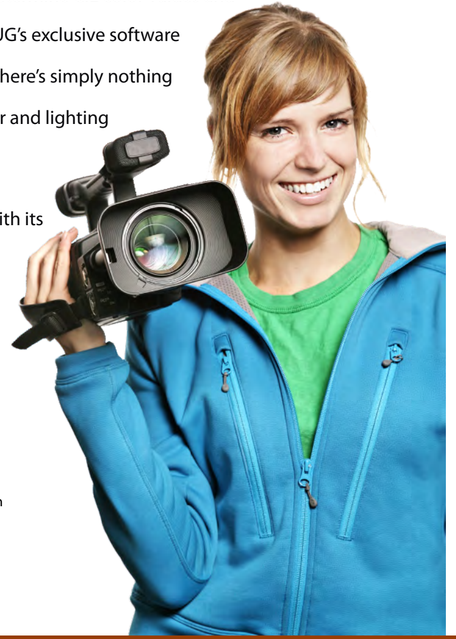
colorBUG

wireless, convenient measurement of color and illuminance

The colorBUG™ is an ingenious handheld device for testing color and illuminance in studio, architectural and theater applications. Perfect for lighting designers, photographers and technicians, colorBUG is no larger than a typical mobile phone and comes with applications that allow you to determine CIE color values and illuminance easily and conveniently. What's more, colorBUG's exclusive software allows you to share data with your iPhone or iPod touch. There's simply nothing more convenient or clever for monitoring the perfect color and lighting environment.

The colorBUG makes storing and analyzing data a snap. With its wireless capabilities, colorBUG eliminates the need for tethering to a PC, freeing you to work faster and more efficiently.

Because it communicates wirelessly with your iPhone or iPod touch, colorBUG frees you up to do more, in less time and with less fuss. What's more, you can mount colorBUG on a wall or other surface and make color and illuminance measurements remotely.



Power:	Rechargeable Lithium-Ion battery Chargeable via Mini USB
Wireless:	802.11 a/b/g
Client software:	Compatible with iPhone/iPod touch with iPhone DS 2.0 or later
Color space:	CIE 1931 (x, y, z)
Illuminance values measured:	Lux/fc
Sensor:	Digital Color Light Sensor

QF600-8-VIS-NIR Fiber Fluorescence Probe

unparalleled control in sampling depth

The QF600-8-VIS-NIR fiber optic fluorescence probe has a unique optical design that allows you to control the depth of sampling and to optimize the region of overlap between excitation and emission fibers. The probe uses one flat fiber for detection and seven angled fibers that direct excitation energy to the region in front of the detection fiber. An adjustable window facilitates choosing the depth of overlap. The QF600-8-VIS-NIR works with liquids or solids.

Probes Starting at $1,600

Custom options and lengths are available. Select different fiber wavelength range options or solarization-resistant fiber and different connectors and jacketing.

Fiber profile:	Step-index multimode
Fiber core:	Low OH silica
Fiber cladding:	Doped silica
Fiber buffer:	Polyimide
Assembly jacketing:	Silicone monocoil
Connectors:	Premium SMA 905

Diameter:	600 µm
Assembly length:	2.0 meters (+/- 5%)
Bundle:	7 angled polished fibers around 1 flat polished fiber
Numerical aperture:	0.22 +/-0.02
Wavelength range:	VIS/NIR (400-900 nm)
Probe ferrule:	0.25" OD x 3.0" stainless steel

Multimode Laser Subsystem

high power, multimode spectrum stabilized laser subsystem

The Multimode Laser Subsystem features high output power with narrow spectral bandwidth. This unit's stabilized peak wavelength remains locked, regardless of case temperature (-10 ºC to +55 ºC). Devices can be spectrally tailored to suit application needs and offer side mode suppression ratios (SMSRs) better than 40 dB. This provides an extremely high signal-to-noise performance and makes this source ideal for Raman spectroscopy and pump laser applications. The laser is integrated with high performance laser drive and temperature control electronics in a compact, small-footprint package that is no larger than a typical mobile phone.

- Up to 400 mW fiber coupled output power
- Peak wavelength 785 nm
- Spectral linewidth <0.15 nm
- Temperature stabilized spectrum (<0.007 nm/º C)
- Low power consumption (<5.5 W)
- 40 dB SMSR typical

Starting at $5,950

USB2000+ Spectrometer

the powerful miniature fiber optic spectrometer

Starting at $2,639
USB2000+ Spectrometer Only

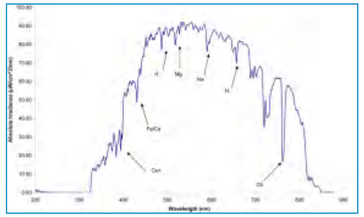
The USB2000+ Miniature Fiber Optic Spectrometer is a unique combination of technologies that delivers up to 1,000 spectra per second for applications where fast reactions are monitored.

The compact USB2000+ is ideal for chemical, biochemical and other applications where fast reactions need to be monitored. Its modular design and user-configured wavelength range and resolution make it as versatile as it is efficient.

The USB2000+ utilizes an onboard, 2-MHz A/D converter, which allows you to capture and transfer one full spectrum into memory every millisecond when the spectrometer is interfaced to a PC via the USB port.

Detector:	Sony ILX511B linear silicon CCD array
Detector range:	200-1100 nm
Pixels:	2048
Pixel size:	14 µm x 200 µm
Pixel well depth:	~62,500 electrons
Focal length:	42 mm input; 68 mm output
Entrance aperture:	5, 10, 25, 50, 100 or 200 µm wide slits
HC-1 grating option:	No
Order-sorting filters:	200-850 nm or 350-1000 nm
Other bench filter options:	Longpass OF-1 filters
Wavelength range:	Grating dependent
Optical resolution:	~0.3-10.0 nm FWHM
Signal-to-noise ratio:	250:1 (at full signal)
A/D resolution:	16 bit
Dark noise:	50 RMS counts
Dynamic range:	$2x10^8$ (system); 1300:1 single acquisition
Integration time:	1 ms to 65 s (20 s typical max)
Stray light:	0.05% at 600 nm; <0.10% at 435 nm

USB2000+ Solar Irradiance Spectrum w/Absorption Bands of Atmospheric Elements



- 1,000 full spectra/second
- Programmable microcontroller
- Modular design
- User-configured wavelength range and resolution
- Automatically reads the wavelength calibration coefficients of the spectrometer and configures operating software
- USB-to-PC interface; no external power requirements
- RoHS and CE compliance

SpectraKit

your plug-and-play solution

Ocean Optics SpectraKits are carefully designed to provide a plug-and-play solution for specific applications by selecting and placing all the necessary equipment, accessories, software, documentation and training materials in one convenient case.

By following the instructions and video materials, the user will be rapidly acquainted with the system and software and will be able to start developing their own methods to analyze their samples.

SpectraKit for Oxygen Sensing
Everything you need to measure oxygen concentration in liquids and gases is included in the Oxygen Sensor SpectraKit. This kit features our modular fiber optic oxygen sensor that combines phase fluorometry with a breakthrough in materials science to create an optical sensor that can be used for real-time, in situ monitoring. Also included is a 5-pack evaluation kit of our RedEye Oxygen Sensor Patch, designed for integration into packaging for non-invasive measurements.

SK-OXYGEN - $9,790

SpectraKit for Bioreflectance
Combine UV-VIS spectroscopy with a portable light source and sampling optics to measure reflectance and reflected color of biological samples - in the field or at the laboratory - in real time. The BioReflectance SpectraKit has all the tools you'll need to perform a variety of field reflectance applications, including chlorophyll analysis in crops, UV reflectance of birds and insects and monitoring of color and reflectance of fruits and vegetables as a function of ripening.

SK-BIO - $10,395

SpectraKit for Raman
Harness the power of Raman technology for qualitative and quantitative analysis of solutions, powders, gels and surface media with the Raman Spectroscopy SpectraKit. This modular system combines a robust laser, high-sensitivity spectrometer and rugged sampling probe. The included experimental examples and instructional materials are especially useful for spectroscopists unfamiliar with Raman spectroscopy.

SK-RAMAN - $25,164

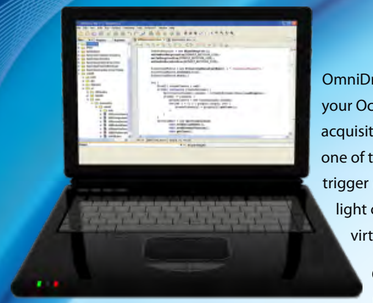
SpectraKit for Irradiance
Our SpectraKit for Irradiance has all the tools you'll need -- including spectrometer, collection options and calibration standards -- for absolute or relative irradiance measurements of LEDs, flat panel displays and other radiant sources. The SpectraKit for Irradiance features our NIST-traceable calibrated light source that can be configured for an optical fiber or cosine corrector.

SK-IRRADIANCE - $8,580




OmniDriver Software

the spectroscopy development platform



OmniDriver is the software driver package for Windows, Mac OS and Linux that allows you to write custom software solutions for your Ocean Optics USB spectrometers including Jaz with Ethernet. OmniDriver lets you harness the power of high-speed data acquisition, spectral processing, visual data representation and more in a single package. If you program in C, C++, Visual Basic or one of the many Microsoft Office applications, you can use OmniDriver to control spectrometer functions such as setting external trigger modes and activating strobe enable, as well as to make measurement adjustments such as detector nonlinearity and stray light correction. In addition, OmniDriver provides the necessary drivers so you can configure our spectrometers as real-time virtual instruments in LabVIEW graphical programming.

OmniDriver can be purchased with our Spectral Processing and Manipulation (SPAM) package, which performs spectral processing math and provides access to spectral processing commands for your own application.

OmniDriver $399
OmniDriver + SPAM $499

New Software Options for Jaz

getting more out of your data

A program for irradiance measurement and a tool for building your own applications are the two newest software options for our Jaz modular sensing suite. Although Jaz comes with its own basic software, most customers will complement that functionality with SpectraSuite Spectroscopy Software, which is ideal for post-acquisition processing of spectral data. For absolute irradiance applications, we offer Jaz-IRRAD – a great choice for measuring solar irradiance or monitoring the output of LEDs and other sources. And our newest offering is Jaz scripting language, a powerful tool simple enough for non-programmers to create their own applications for Jaz. Need your Jaz interface to show sugar content in a liquid, or to express reflected color in colorspace values such as L*a*b*? The Jaz scripting language lets you build a sequence of steps into a self-contained application to do just that. The possibilities are nearly endless.

SpectraSuite Operating Software $199
Jaz-IRRAD Irradiance Software $299
*Introductory offer **Jaz Scripting Language* $99**

HR2000+ Spectrometer

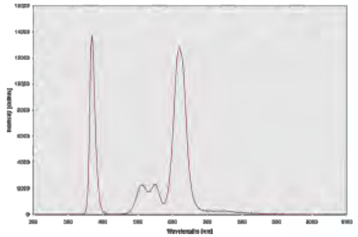
high resolution and high speed come together

Starting at $4,042
HR2000+ Spectrometer Only

The HR2000+ Spectrometer integrates a high-resolution optical bench, a powerful 2-MHz analog-to-digital (A/D) converter, programmable electronics, a 2048-element CCD-array detector, and a high-speed USB 2.0 port.

This innovative combination produces an extremely fast spectrometer and provides resolution to 0.035 nm (FWHM). The HR2000+ allows you to capture and store a full spectrum into memory every millisecond when it's interfaced to a computer via a USB 2.0 port. The HR2000+ is perfect for chemical, biochemical and other applications where fast reactions need to be monitored and fine spectral features need to be resolved.

HR2000+ Fluorescence Measurement



- 1,000 full spectra/second
- Wide range (200-1100 nm) with HC-1 grating
- Programmable microcontroller
- High-resolution (1.0 nm FWHM) over entire spectral range
- High-resolution "HR" Optical Bench
- Plug and play operation
- Multiple bench accessories

Detector:	Sony ILX511B linear silicon CCD-array
Detector range:	200-1100 nm
Pixels:	2048
Pixel size:	14 µm x 200 µm
Pixel well depth:	~62,500 electrons
Focal length:	101.6 mm input and output
Entrance aperture:	5, 10, 25, 50, 100 or 200 µm wide slits
HC-1 grating option:	Provides 200-1100 nm range
Order-sorting filters:	200-1100 nm
Other bench filter options:	Longpass OF-1 filters
Wavelength range:	Grating dependent
Optical resolution:	~0.035-6.8 nm FWHM
Signal-to-noise ratio:	250:1 (at full signal)
A/D resolution:	14 bit
Dark noise:	12 RMS counts
Dynamic range:	$2x10^8$(system); 1300:1 single acquisition
Integration time:	1 ms to 65 s (20 s typical max)
Stray light:	<0.05% at 600 nm; <0.10% at 435 nm

Remora

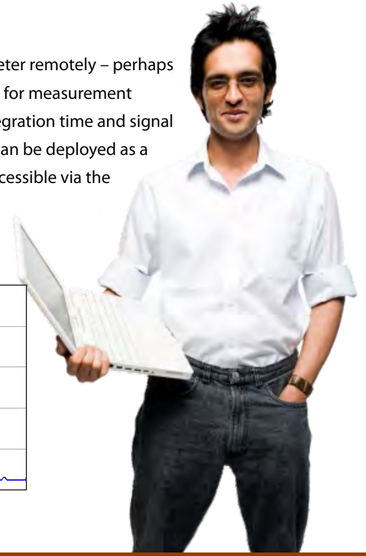
turn your spectrometer into a Wi-Fi™ information server

Starting at $750
Spectrometer not included

Remora is the convenient, low-cost adapter that turns your Ocean Optics spectrometer into a robust web and information server. Attach Remora to your QE65000, HR2000+ or HR4000 Spectrometer to capture data wirelessly or over Ethernet. Connect to Remora's web interface and control your spectrometer through Wi-Fi or Ethernet-enabled devices such as PCs, mobile phones, PDAs and more.

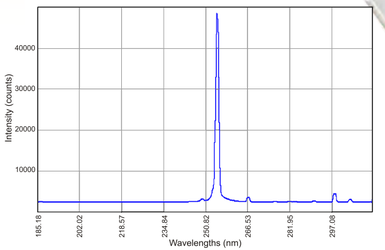
Adding Remora to your spectrometer is quick and simple. Your Remora comes with a static IP address so that configuration is a snap. Simply browse to the Remora web interface to configure it for your network and go!

Remora is an incredibly handy tool for operating your spectrometer remotely – perhaps to poll the spectrometer in your lab on the other side of campus for measurement results or to change spectrometer setup parameters such as integration time and signal averaging. What's more, spectrometers equipped with Remora can be deployed as a network of devices that collect real-time data that is instantly accessible via the Internet.



- Appliance for QE65000, HR2000+ and HR4000 Spectrometers
- Control of basic acquisition parameters via web interface
- Supports most web browsers
- Spectrum available in tab-delimited file format or graphs
- Log file available for tracking acquisition parameters
- Compact design

Remora Web Interface



New Option for Monitoring O2 in Packaging

The award-winning RedEye™ Oxygen Sensor Patch is a self-adhesive patch with oxygen indicator that attaches directly inside packages and containers for non-invasive measurements. RedEye sizes vary from a few millimeters to several centimeters, giving you a custom fit; in fact, RedEye's sensing material is versatile enough to be applied to substrates that meet most any specification. Also, different RedEye sensing formulations are available to optimize your results for every sample environment. Use RedEye for monitoring oxygen levels in the headspace of bioreactors and blood bags and for measuring oxygen gas and dissolved oxygen non-intrusively during bioprocesses and in pharmaceutical packaging such as blister packs for pills.

Starting at $45
RedEye Evalution Kit
Special Volume Discounts Available

New Probes Expand O2 Sampling Options

With the addition of new probes for small samples and for biological materials, we now offer nearly a dozen oxygen sensing probe options – everything from slender probes for fine spatial resolution to rugged stainless steel probes for process environments. Our newest options include a 200 micron polyimide probe – our smallest probe yet – for very small sample sizes, and an angled probe for biological samples. Optional silicone coatings (both standard and medical-grade) can be applied to probes to exclude ambient light, improve chemical resistance and eliminate refractive index effects.

Phenol Red pH Test Kits

Use our Phenol Red pH Test Kits to determine the pH level in solutions. Simply add 3 mL solution to the test cuvette, cap it, and shake the cuvette to disperse the dye. Measure the absorbance value of the reactive color to determine pH levels. CHEM-TEST works with any Ocean Optics spectrometer system that is configured for absorbance.

Coating Options for OEMs and Product Developers

Our optical-sensor coating technologies are available to OEMs and product developers designing new products for chemical-sensing applications. With our oxygen and pH indicator materials, clients can develop and manufacture a variety of custom optical sensor devices including fiber optic probes, cuvettes, Petri dishes, microscope slides and more. Also, RedEye patches are designed especially with OEMs in mind, where high-volume production runs can lower costs and monitor sample conditions more efficiently than existing methods. Additional services include sensor coating development and the licensing of Ocean Optics proprietary oxygen and pH coating technologies. Contact an Applications Scientist for details.

Sensors for Real-Time Analysis

advanced sampling options and detection technology

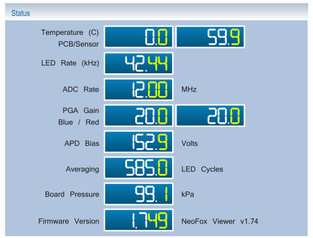
Ocean Optics optical sensors provide a viable alternative to traditional chemical sensing devices and consist of transducer materials applied to the tips of optical fibers or to substrates such as patches or cuvettes. These indicator materials change optical properties in response to specific analytes in their immediate environment, with formulations available for a variety of oxygen and pH sensing needs.

Thanks to our developments in sensor detection technology and sampling options, you can enjoy lower system prices and greater application versatility than ever before.

NeoFox Phase Measurement System

A new option for the detection part of our fluorescence-based optical sensor systems helps reduce costs, improve system stability and make calibration easier for most oxygen sensing setups. NeoFox is a benchtop device for measurement of fluorescence lifetime, phase and intensity, and is especially useful for applications where sensitivity to drift and system stability are important. What's more, NeoFox is about half of the cost of our previous phase-measurement system, and includes a self-calibration feature for improved electronic stability.

NeoFox Interface



Starting under $3,000

Complete O2 Sensing Systems including NeoFox, general purpose probe, software and accessories.

System Specifications	FOXY Formulation (general-purpose coating)	FOSPOR Formulation (high-sensitivity for low levels of O2)	HIOXY Formulation (for hydrocarbon environments)
O2% range:	0-20%	0-<1%	0-20.9% at 1 ATM
DO range (ppm):	0-10 ppm	0-0.5 ppm	0-8 ppm
Temperature range:	-20-+80 ºC for probes 0-60 ºC for patches	-20-+80 ºC for probes 0-60 ºC for patches	0-60 ºC NA
O2 resolution:	100-500 ppm	10 ppm	100-500 ppm
DO resolution:	4-20 ppb at room temp.	0.4-2 ppb at room temp.	4-20 ppb at room temp.
O2 accuracy:	5% of reading	5% of reading	5% of reading
DO accuracy:	5% of reading	5% of reading	5% of reading
Min. detectable level:	100-500 ppm	10-100 ppm	100-500 ppm
Response time:	< 1 second in gas ~30 seconds with overcoating in gas ~45 seconds in pure water	< 1 second in gas ~30 seconds with overcoating in gas ~45 seconds in pure water	< 1 second in gas ~45 seconds in pure water

NIRQuest Spectrometers

improved performance with more grating options

A high-performance optical bench, low-noise electronics and various grating options make NIRQuest Spectrometers truly extraordinary. This new generation of small-footprint, near-infrared spectrometers is available in three models that cover various ranges between 850 nm and 2500 nm, and are ideal for applications ranging from analyzing moisture content in food and beverage products to analyzing trace metals in wastewater. In addition to improved optical bench performance, NIRQuest Spectrometers are available with more grating options than our previous NIR Spectrometers. That allows users to take advantage of the different grating characteristics to maximize experiment setups.

Starting at $15,000

Base spectrometer only

NIRQuest is the less expensive, less complex alternative to FT-IR and comparable technologies. It delivers the power of NIR analysis in a small-footprint instrument that is modular, versatile and perfect for a vast range of applications.

	NIRQuest512	NIRQuest256-2.1	NIRQuest256-2.5
Detector:	Hamamatsu G9204-512 InGaAs linear array	Hamamatsu G9206-256 InGaAs linear array	Hamamatsu G9208-256 InGaAs linear array
Detector range:	850-1700 nm	900-2100 nm	900-2500 nm
Grating options:	900-1700 nm	900-2100 nm or 1200-2100 nm	900-2500 nm
Entrance aperture:	10, 25, 50, 100 or 200 µm wide slits or fiber (no slit)		
Fiber optic connector:	SMA 905	SMA 905	SMA 905
Accessories:	Compatible with Ocean Optics fiber optic accessories including light sources, optical fibers, cuvette holders and probes		

Get to Know Jaz

the world's coolest modular measuring suite

Since Jaz is made up of autonomous modules that share common networking and electronics, it's the most versatile sensing solution for a virtually endless range of applications. Jaz can be built to suit with multiple spectrometer channels and can include an optional light source, optional Ethernet module and more. Although Jaz comes with its own basic software, you can increase your range of software options with add-ons such as SpectraSuite spectroscopy software, Jaz-IRRAD absolute irradiance-measurement software and a software scripting tool that lets you build self-contained Jaz applications (see page 13). Make it your own and put a little Jaz into your work.

Why Choose Jaz?

- Reliable performance
- Replaceable slit aperture
- Benchmarked to our flagship USB2000+
- Remote access over Ethernet
- Make parameter changes on the fly
- Intensity control of light sources
- Changing LEDs is simple and fast
- Fully tested in extreme conditions
- Fully upgradeable hardware and software

Jaz for the Laboratory

- **UV-VIS applications**
- **Ideal for light measurement**
- **Handheld spectral analysis**
- **Convenient user interface**

Jaz's Ethernet connectivity, battery operation and PC-free use make it an excellent choice for a wide range of lab applications. You can easily mix and match Jaz modules to optimize setups for thousands of absorbance, reflectance and emission applications. Save time in your lab with Jaz. If you're using multiple spectrometers or light sources, Jaz eliminates the worry of setting up a computer or configuring separate spectrometers to monitor a reference source. Jaz's nimble software has simple wizards for basic spectroscopy measurements so that even a layperson can capture spectra in minutes. All of it adds up to an easy-to-use, time-saving solution in the lab.

- Benchmarked to high performance standards of the USB2000+ Spectrometer
- Replaceable laser-cut slit and aperture assemblies
- Ethernet module for remote data analysis, integration time control and convenient on-the-fly parameter changes
- Adjustable light source intensity
- RoHS and CE Mark certified

Jaz for Field Applications

- **Vineyards and crop management**
- **Water testing and monitoring**
- **Upwelling and downwelling**
- **Environmental research and analysis**

Leave the PC at the office and really dig into field analysis. Jaz does the processing in a convenient, handheld modular stack, storing data to your SD card, processing spectra through its powerful onboard DPU and displaying results on its built-in OLED display. Add the Ethernet module to connect Jaz to the Internet for remote measurements. The battery module is rechargeable and the SD card slots make storing data simple and convenient.

- Rechargeable 8-hour Lithium-Ion battery
- Microprocessor and onboard display eliminate the need for a PC
- Stackable, autonomous instrument modules allow you to customize the system to your changing application needs
- Ethernet connectivity plus an SD card for data storage make remote operation a snap!
- Reversed orientation keyboard option
- Temperature range -10 ºC to +55 ºC

Take Jaz with You

Perfect for Your Lab

Ideal for Light Sensing

There's Nothing Simpler

Jaz for Multichannel Sampling

- **Convenient reference monitoring**
- **Expanded wavelength range**
- **Multipoint sample analysis**
- **Absorbance, reflectance and emission setups**

You can add up to 8 spectrometer channels to any Jaz stack for simple, inexpensive in-line or in-lab multipoint sampling and reference monitoring. Since Jaz's modules are RoHS compliant and CE Mark certified, they are incredibly robust for demanding environments operating at temperatures of -10 ºC to +55 ºC. Jaz is also versatile enough for quality control and process applications ranging from verification of color and appearance of foods to analysis of chemical composition in a variety of substances.

- Up to 8 spectrometer channels
- Easily configured for multipoint sampling within process streams
- PC-free operation and Ethernet connectivity for remote sensing
- Small-footprint system for simple deployment in process and other environments
- Tested at temperature ranges of -10 ˚C to +55 ˚C

THE Jaz CLUB

Get the latest news, product updates, video tutorials and special offers at www.thejazclub.com.

Starting at $2,540

Base unit with spectrometer and DPU. Contact an Ocean Optics Applications Scientist for more information at +1 727-733-2447 or via email at info@oceanoptics.com.

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