

Fully Integrated Spectroscopy Acquisition System

SpectrAcq2™

The SpectrAcq2™ — An economical, High performance, Spectral Data Acquisition System with Optional Photon Counting Capabilities

Our new SpectrAcq2™ is not just another readout system—it's a compact, high speed, high performance spectral data acquisition controller designed for advanced spectroscopy and light measurement applications.

The optional photon counting detection module allows you to measure the light level by counting photons, one by one.

This method is the most sensitive technique for light measurements. Designed to work as a stand-alone unit or with most of the ISA Jobin Yvon/Spex high performance spectrometers, the SpectrAcq2™ offers superior performance and versatility at an affordable price.



SpectrAcq2™ FEATURES

- Data acquisition from one input channel, with four programmable gain settings and autoranging.
- Configurable for current or voltage signal inputs.
- Optional photon counting module for measuring low light levels.
- 16 bit resolution and accuracy.
- Up to 1000 data points per second. Data storage of up to 5000 data points.
- RS-232 interface standard, IEEE488 optional.
- Analog output for controlling PMT high voltage: 0 to +5 volts, 12 bit resolution.
- Four TTL input and output lines.
- +15V supply for external devices such as solid state detector preamplifiers.
- Optional SpectraMax™ for Windows® data acquisition and analysis software.
- Programmer's instruction set is included.
- LabVIEW drivers available.

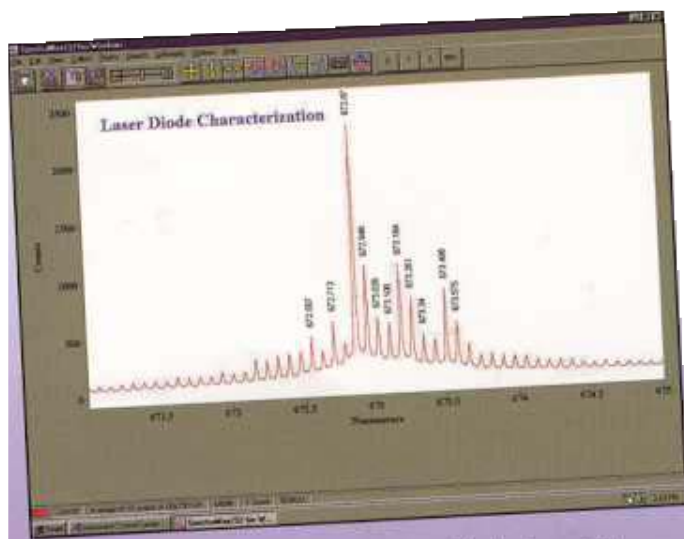
SpectrAcq2™

High Performance Spectral Data Acquisition System with Optional Photon Counting Capabilities in One Compact Package

The SpectrAcq2™ provides an economical, easy way to capture the data from your spectrometer, single channel detector and computer. The SpectrAcq2™ is a versatile spectral data acquisition/ data storage system in one compact unit. It will acquire data at up to 1000 data points per second from any single channel detectors including solid state detectors and PMTs. An optional photon counting module is available for excellent sensitivity and accuracy. Photon counting is one effective way to use a photomultiplier tube for measuring very low light levels.

APPLICATIONS

Diode Laser Characterization



A TRIAX320 imaging spectrometer fitted with a DSS-S025A single element silicon photodiode detector through a 1427B optical interface was used with a SpectrAcq2 controller to characterize a prototype

A compact imaging spectrometer equipped with a silicon photodiode or PMT detector offers a simple, economical package for rapid data collection when characterizing optical filters and light sources such as diode lasers, spectral lamps and glow discharges.

diode laser. The spectrometer control and the data acquisition were performed using the versatile Spectramax for Windows software. The output spectrum from this diode laser shows the central wavelength as well as the various sidebands in the output spectrum.

Automated Data Acqui

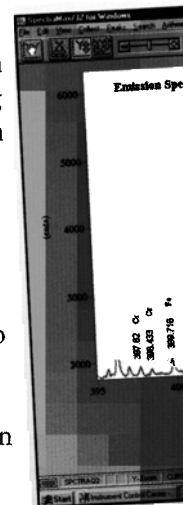
The SpectrAcq2™ has been designed for integrated operation with ISA's powerful SpectraMax™ for Windows® data acquisition and analysis software.

The software has the complete range of control modes normally associated with scanning spectroscopic acquisition. These include repetitive scanning, signal averaging and time base acquisition. In addition, SpectraMax™ for Windows® features real time data manipulations of incoming data for direct absorption and transmission measurements. Full access to input triggers as well as TTL inputs and outputs through

Plasma Analysis

High power density lasers are frequently used in welding many important engineering alloys. Laser welding frequently produces significant vaporization of volatile alloying elements from the weld pool, and consequently a poor control over the weld quality. Using emission spectroscopy to monitor the plasma formed at the weld surface can provide important information about the vaporization rate of various alloying elements which in turn can be used to control the composition and properties of the weld.

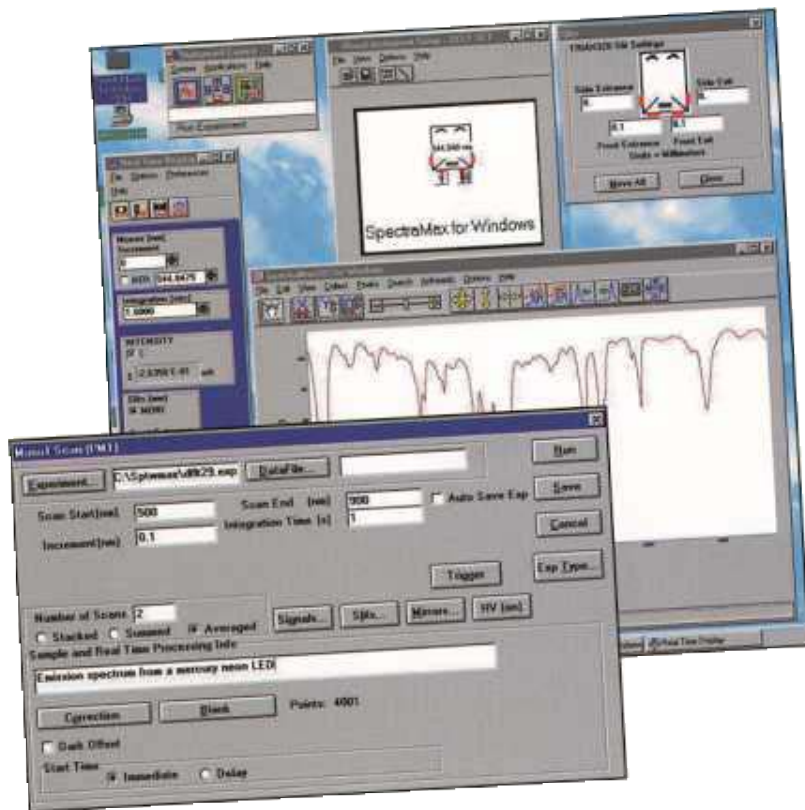
A 1978 ISA PMT detector mounted onto a TRIAX320 imaging spectrometer was used to monitor the emission from a plasma formed above an aluminum plate welded by a high power Nd:YAG laser.



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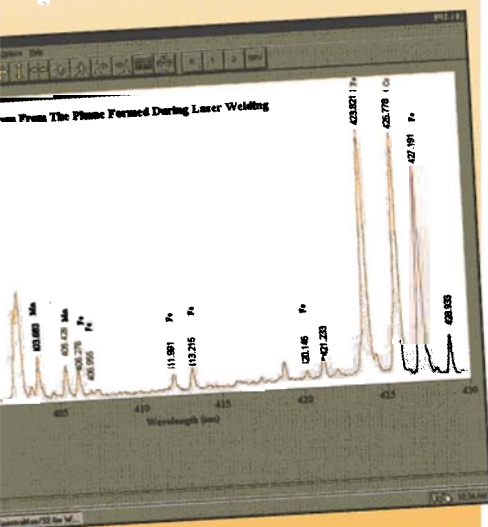
the SpectrAcq2™ I/O lines allow for easy interfacing with other devices in your experiments.

The GRAMS/32® utilities provided as part of SpectraMax™ for Windows® offers post-acquisition data processing capabilities unparalleled in the industry. Designed to work with any JY/SPEX spectrometer and detection system, this powerful and easy-to-use Windows® software offers true turn-key operation.



Raman Spectroscopy

Spectrometer control and data acquisition through a SpectrAcq2 controller were done using SpectraMax for Windows software. A 700F fiber optic bundle was used to couple light from the plasma into the spectrometer. The emission spectrum from the plasma shows several sharp lines from elements such as Cr, Mn and Fe.



Specifications

The SpectrAcq2™ is a compact spectral data acquisition system for spectroscopy. The system includes one input channel configurable for current or voltage, 16 bit ADC, temporary data storage, RS-232 communication, analog output for PMT High Voltage control, $\pm 15V$ supply for external device and programmer's instruction set. Optional IEEE488 and photon counting module are available. The SpectrAcq2™ requires a computer, software, monochromator and single channel detector for operation.

Signal inputs:	Data acquisition from one input channel with four programmable gain settings and autoranging. Selectable for current or voltage.
Current input ranges:	0–0.01, 0–0.1, 0–1, and 0–10 μA bipolar.
Voltage input ranges:	0–0.01, 0–0.1, 0–1, 0–10 V bipolar.
Minimum signal:	0.3 pA–0.3 μV
Maximum signal:	10 μA –10V
ADC resolution:	16 bit
Integration time:	1 ms to 64 seconds.
Internal data storage:	up to 6000 data points.
Analog Output:	for controlling PMT High Voltage: 0 to 5V, 12 bit resolution.
Programmable I/O:	4 TTL Input and Output lines.
Voltage supply:	$\pm 15V$ supply for external devices such as solid state detector preamplifiers.
Communications:	RS-232 Standard, IEEE488 Optional.
Photon Counting:	Optional DM302 module for low light level measurements.
Software:	Optional SpectraMax™ for Windows® Lite or Full version. LabVIEW drivers available.
Dimensions:	6.75 W x 8.75 D x 2.25 H inches. 17.1 W x 22.2 D x 5.7 H cm.
Weight:	1.6 Kg (3.5 lbs).



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The U.K.: 0181/204.81.42