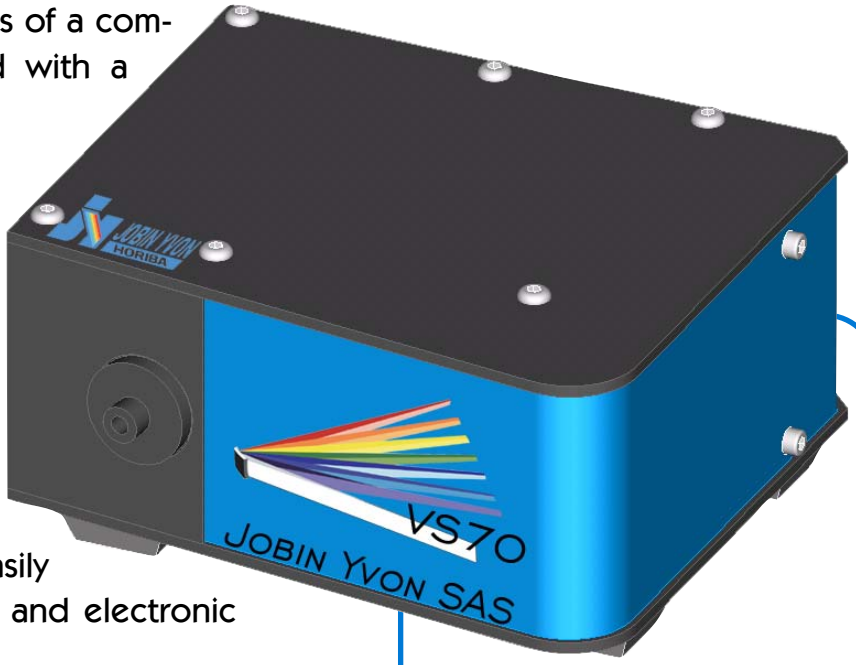
OEM Versatile Spectrograph

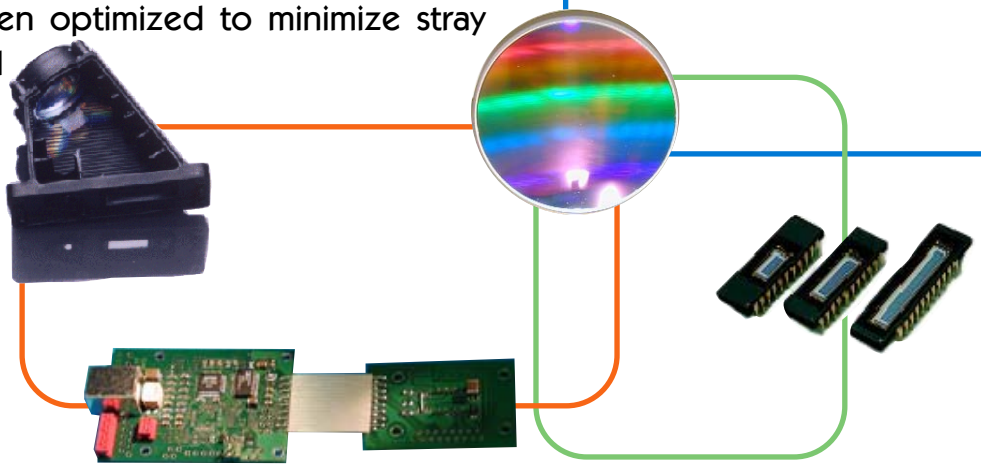
This new OEM Optical module consists of a compact Versatile Spectrograph coupled with a multi-channel array detector.



The VS70 is a configurable, high performance spectrograph that can be customized for a variety of OEM applications in the fields of analytical chemistry, medical analysis, semiconductors, process monitoring and many others.

The VS70 was specially designed to easily adapt to a large variety of detectors and electronic drivers.

The optical design has been optimized to minimize stray light and maximize optical performance.



The VS70 is based on a high performance aberration corrected concave grating fitted with a custom variable order-sorting filter to eliminate higher orders.

FEATURES

- ❑ High optical performance.
- ❑ Versatility.
- ❑ Custom OEM design solutions.
- ❑ Compact size.
- ❑ Robustness.
- ❑ Stability.

SPECIFICATIONS

- Flat field grating (aberration corrected).
- Focal length: 70 mm.
- Spectral range: from 200 to 900* nm.
- Aperture: f/2.
- Resolution: < 2 nm with a slit of 50 µm width
- Straylight: < 0.1% at 340 nm with Deuterium lamp
- Dispersion: 25 nm/mm
- Wavelength accuracy: < 0.5 nm (with a mathematical fit)
- Reproducibility: < 0.1 nm
- Dimensions: 107.5 * 101 * 50 mm

* Depending on the position and the type of the array detector used.

One of the advantages of the VS70 is that it is available in several versions:

1) VS70-B (Version with detector and order sorting filter.)
The basic version of the VS70 spectrograph includes an aberration-corrected concave holographic grating, an optical slit, an SMA connector, a detector that the customer can choose from among many options, and a JY order sorting filter especially adapted for the VS70.

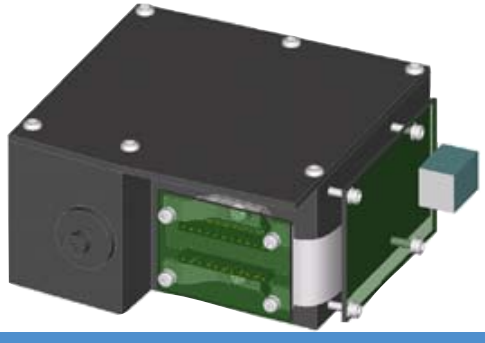
These components are in a optimized housing designed to maximize the optical performance of the grating.

This version allows customers to become free from all phases of optical adjustments and tests. Simply connect their electronic driver to the detector to make precision measurements.

2) VS70-E (Version with the electronic driver.)
This version integrates in addition to the components of the basic version, a detector, an order sorting filter and high performance electronic driver (see below)
In fact, with this third version, customers simply connect to the VS70 via the USB or RS232 interface.

3) VS70-F (full Version)
This last version associates to the VS70-E version a rugged protective enclosure which has 2 functions: to protect the electronic drivers, to offer the possibility to the customer to use the VS70 as a final product.
With this full version of the VS70 customers can associate their own application software, and propose a plug & play spectral analysis device.

These last two versions, which are complete solutions, eliminate the problems of adaptation and optimization of the optics, mechanics and electronics, allowing the customer to focus resources on adding value to their products. The customer can be confident that these products have been optimized for high performance as a complete sub-system.
The customer deals with only one component, which simplifies management (purchases, stock, services, etc..)



Input:

The VS70 can accept light directly through either a fixed slit or a SMA fiber connector including an integrated slit.
Different sizes of slit can be offered depending on the resolution requested by the customer and the type of the detector.

Output:

Detectors:

The design of the VS70 allows the use of large choice of linear array as well as custom arrays for specific applications.

- ❏ CCD: Sony ILX511 (2048 pixels), Toshiba TCD 1205 (2048 pixels) TCD1304 (3648 pixels).
- ❏ PDA: NMOS & CMOS technology
  Hamamatsu ref S39XX and S83XX families
- ❏ And many others

In the case of CCD arrays, a special UV coating process needs to be applied to the array in order to increase sensitivity below 250 nm

JY Order sorting filters

In conjunction with our Aberration corrected concave grating, we have fitted a JY order sorting filter.
This order sorting filter made from a very elaborate process, permits the instrument to work from 200 to 900 nm and eliminates the higher orders without degrading the optical performance of the instrument.

Electronic driver:

These detectors are driven with high performance electronic which features:

- ❏ a high dynamic range with 16-bit pixel resolution,
- ❏ Includes a 32 bits processor at MCU 30 Mhz
- ❏ Incorporates flash memory for data storage of digitized pixel information.
- ❏ Utilizes a Field Programmable Gate Array (FPGA) providing control logic for data transfers, exposure control and CCD readout (in option).
- ❏ Integration time from 5 mSec to 65.535 mSec.
- ❏ User Selectable Computer Interface for communication with host computer and data transfer operations to host memory:

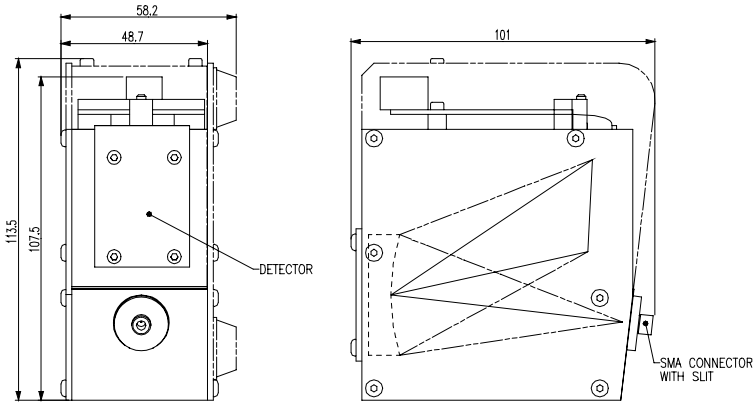
- ● Universal Serial Bus (USB) link operating at 3 Mbyte/sec).
- ● RS-232 link providing selectable baud rates from 9600 to 38.4 kbits/sec.

- ❏ Operating systems : Windows 98/ME/2000/XP
- ❏ Power supply:

- ● USB powered for CCD and CMOS arrays
- ● 9 V 150 mA max for NMOS PDA

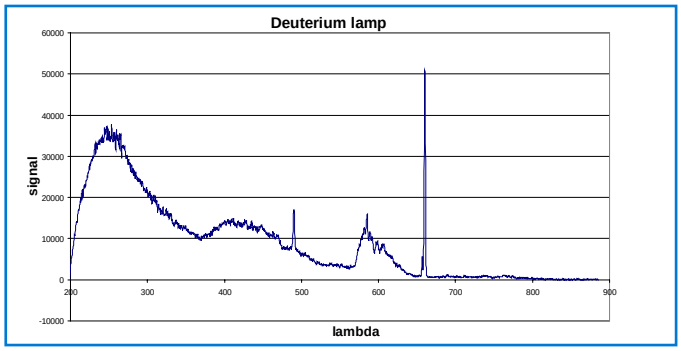
Options:

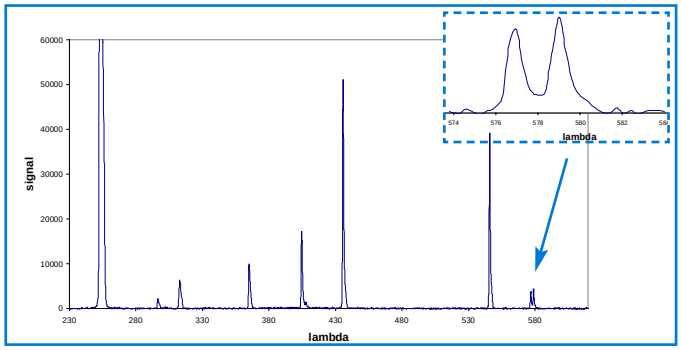
- ❏ Different sizes of slit
- ❏ Removable SMA connector
- ❏ CCD or PDA detectors
- ❏ Electronic drivers USB, RS232 etc..



Example of typical system performance:

Ref: VS70-CCD-UV





The Jobin Yvon SAS OEM Group develops new spectrometers (monochromators and spectrographs) based on your specifications.

The OEM support team can assist you in selecting the best solution for your particular application.

The configuration for the test system is a VS70 spectrograph equipped with a linear CCD array, UV enhanced and a JY electronic driver.

1) Description of the spectrograph:

- Spectral range: 200 to 900 nm
- fixed slit of 25 µm width and 500 µm height
- Order sorting filter

2) Description of the detector and the electronic driver

- Linear CCD array ref ILX511
- 2048 pixels (14*200 µm)
- Spectral Response Range: 200-1000 nm
- Peak Sensitivity Wavelength: 550 nm typ
- Sensor Dynamic Range: 49.5 dB typ (8-9 ADC bits)
- Data Read Rate: 200 kHz to 1 MHz
- UV coating
- JY electronic driver

Results:

- Resolution: < 1 nm with a 25 µm width slit
- Straylight: < 0.1% at 340 nm with Deuterium lamp
- Wavelength accuracy: < 0.5 nm (with a fit)
- Reproducibility: < 0.1 nm

Need more information on these devices ? CONTACT US !

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