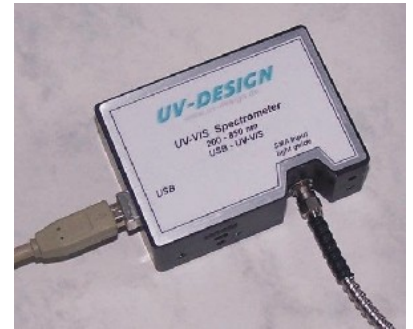
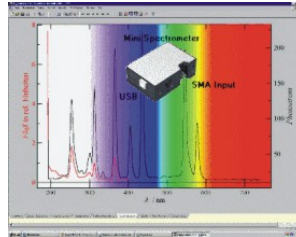


# THE WIDE RANGE OF UV - IR TECHNOLOGY



## Mini Spectrometer USB

- + *Facilitated Operation*
- + *Optimal Performance*
- + *Modular Design*



The USB Miniature Fiber Optic Spectrometer, is a revolutionary small plug-and-play spectrometer and features these key innovations:

- Simplified spectrometer-computer interface -- Plugs directly into Universal Serial Bus port of any desktop or notebook PC.
- Miniature modular design -- Choose from 2 detectors, 14 gratings, 6 slits and hundreds of accessories to optimize a system for your application.
- Streamlined start-up -- Automatically reads the wavelength calibration coefficients of the spectrometer and configures spectrometer operating software.
- No external power requirements -- Spectrometer draws its power from the computer.
- In the standard version the spectral area reaches from 200 – 850 nm

### Facilitated Operation

Setting up the USB Spectrometer is easy. The user simply installs the latest version of OOIBase32 Spectrometer Operating Software onto any desktop or notebook PC with Windows 98/Me/2000/XP operating system and then connects the USB cable from the spectrometer to the PC, eliminating the need for installing external A/D converters and searching for available IRQs and input/output ranges. Wavelength calibration coefficients unique to each spectrometer are programmed into a memory chip right on the USB Spectrometer; OOIBase32 software simply reads these values from the spectrometer. What's more, the USB Spectrometer requires no external power supply; it draws its power from the computer. In fact, the USB port can be used to power light sources that connect to the spectrometer.

### Optimal Performance

The USB Spectrometer couples a low-cost, high-performance 2048-element linear CCD-array detector with an optical bench that's small enough to fit into the palm of your hand -- the same detector and optical bench that have provided superior performance to the users of our 15,000 systems out in the field. The USB Spectrometer works in the way that it accepts light energy transmitted through single-strand optical fiber and disperses it via a fixed grating across the linear CCD array detector, which is responsive from 200-1100 nm.

### Modular Design

Selecting the USB Spectrometer - choosing from 14 gratings, 6 slits and hundreds of fiber optic accessories such as light sources, probes and optical fibers to create the optimal system for their application. Users can also choose from a complete line of spectroscopic accessories to use with the USB Spectrometer. Most accessories have SMA connectors for application flexibility. Changing the sampling system is as easy as unscrewing a connector and adding new components or accessories, such as light sources, sampling holders, filter holders, flow cells, fiber optic probes and sensors, collimating lenses, attenuators, diffuse reflectance standards, integrating spheres and an extensive line of optical fibers.

**Item 30.1 USB Mini Spectrometer Standard**

**200 – 850 nm**

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# THE WIDE RANGE OF UV - IR TECHNOLOGY



## Mini Spectrometer USB

### Key Features

Computer interface:	Universal Serial Bus (RS-232 available on side connector)
Spectrometer channels:	Master spectrometer channel only
Computer requirements	IBM-compatible PC with Pentium or better microprocessor 32 MB RAM (16 MB) Windows 98/Me/2000/XP when using the USB interface on desktop or notebook PCs. Any 32-bit Windows operating system when using the serial port on desktop or notebook PCs. Windows CE 2.11 and above when using the serial port on handheld PCs.
Operating software:	OOIBase32 32-bit software
Integration time:	3 milliseconds-65 seconds
Data transfer rate:	Full scans (2048 wavelengths) into memory every 13 milliseconds OOIBase32 time acquisition approximately every 25 milliseconds
Dimensions:	3.5" x 2.5" x 1.31" LWH 89 mm x 64 mm x 34 mm LWH
Weight:	0.45 lb. without cable 0.60 lb. with cable 200 grams without cable 270 grams with cable

### Detector Specifications

Detector:	2048-element linear silicon CCD array
Effective range:	200-1100 nm
Dynamic range:	$2 \times 10^8$
Sensitivity (estimate):	86 photons/count; also, $2.9 \times 10^{-17}$ joule/count $2.9 \times 10^{-17}$ watts/count (for 1-second integration)
Signal-to-noise:	250:1 (at full signal)
Dark noise:	2.5-4.0 (RMS)

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# THE WIDE RANGE OF UV - IR TECHNOLOGY



## Mini Spectrometer USB

### Optics Specifications

Gratings:	Multiple grating choices, optimized for UV, VIS or Shortwave NIR
Slits:	5, 10, 25, 50, 100, 200 $\mu$ m widths (slit height is 1000 $\mu$ m); no slit option also available (optical fiber is entrance aperture)
Focal length:	42 mm (input); 68 mm (output)
Order-sorting:	Single-piece, multi-bandpass detector coatings for applications from ~ 200-850 nm (available only with 600-line gratings) or 350-1000 nm (Grating #2, #3 or #4 only); Schott glass longpass filters (installed or loose) also available
Resolution:	~ 0.3 nm-10.0 nm FWHM (depends on groove density of grating and diameter of fiber or width of slit)
Stray light:	< 0.05% at 600 nm; < 0.10% at 435 nm; <0.10% at 250 nm
Fiber optic connector:	SMA 905 to single-strand optical fiber (0.22 NA)

### Detector and Optical Bench Accessories

UV2 Detector Upgrade	Quartz window at optical bench entrance allows transmission of UV light; required for applications <360 nm
L2 Detector Collection Lens	Miniature lens focuses tall slit images onto short detector pixels; improves light-collection efficiency by ~10x
OFLV-200-850>	Single-piece detector coating for systems set from 200-850 nm; removes second order effects and improves transmission efficiency
OF1- Optical Filters	Plug filters block second order effects, reduce signal intensity
Slits	>Fixed 1-mm height entrance aperture improves optical resolution and reduces signal intensity; available in 6 different widths

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