



USB Series

The USB series are the world's most popular general purpose spectrometers used in a wide range of applications and industries. USB spectrometers are highly configurable for any specific application in the UV-NIR range between 200-1100nm. The plug-and-play operation gets you started within minutes after installation.

Applications

- » Biology measurements
- » Colour analysis
- » Biochemical monitoring
- » Light analysis
- » Chemical identification
- » Concentration determination
- » Textile measurements

Features

- » 1,000 full spectra per second
- » Onboard, 2-MHz A/D converter
- » Onboard programmable microcontroller
- » USB-to-PC interface
- » Linear CCD-array detector
- » RoHS and CE compliance
- » 10 user-programmable digital I/Os for interfacing to other equipment
- » Various trigger modes

Advantages

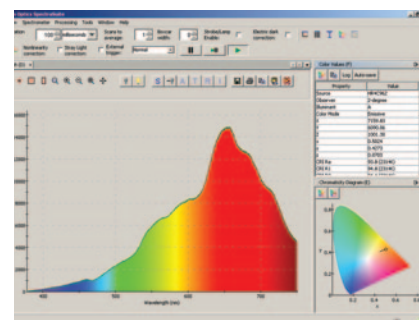
- » Plug and play operation
- » User friendly
- » No external power supply
- » Multi purpose
- » User-configured wavelength range and resolution
- » Fibre coupled SMA 905
- » SpectraSuite user-interface software compatibility

Specifications

USB2000+

USB4000

DETECTOR		
Type	Linear CCD array	Linear CCD array
Detector range	200 - 1100 nm	200 - 1100 nm
Active Pixels	2048	3648
Pixel size	14 μm x 200 μm	8 μm x 200 μm
Pixel well depth	~ 62 500 electrons	~ 100 000 electrons
Sensitivity	75 photons / count at 400 nm 41 photons / count at 600 nm	130 photons / count at 400 nm 60 photons / count at 600 nm
SPECTROSCOPIC		
Wavelength range	Grating dependent (max. 650 nm)	Grating dependent (max. 650 nm)
Optical resolution	~ 0.3 - 10.0 nm (FWHM)	~ 0.3 - 10.0 nm (FWHM)
Signal-to-noise ratio	250 : 1	300 : 1
A/D resolution	16 bit	16 bit
Dark noise	50 RMS counts	50 RMS counts
Dynamic range	1300 : 1	1300 : 1
Integration time	1 ms to > 60 seconds	3.8 ms to > 60 seconds (10 μs in shutter mode)
Stray light	< 0.05 % @ 600 nm; < 0.10 % @ 435 nm	< 0.05 % @ 600 nm; < 0.10 % @ 435 nm
Corrected linearity	> 99.8 %	> 99.8 %
OPTICAL BENCH		
Design	f/4, Symmetrical crossed Czerny-Turner	f/4, Symmetrical crossed Czerny-Turner
Focal length	42 mm input, 68 mm output	42 mm input, 68 mm output
Entrance aperture	5, 10, 25, 50, 100 or 200 μm	5, 10, 25, 50, 100 or 200 μm
Grating options	14 different grating options	14 different grating options
Fibre optic connector	SMA 905 to 0.22 numerical aperture single strand optical fibre	SMA 905 to 0.22 numerical aperture single strand optical fibre
PHYSICAL		
Dimensions	89.1 x 63.3 x 34.4 mm	89.1 x 63.3 x 34.4 mm
Weight	190 grams	190 grams
ELECTRONICS		
Power consumption	250 mA @ 5 VDC	250 mA @ 5 VDC
Data transfer speed	Full spectrum every 1 ms with USB 2.0 port	Full spectrum every 5 ms with USB 2.0 port
Inputs/Outputs	8 onboard digital user-programmable GPIOs	8 onboard digital user-programmable GPIOs
Analog channels	No	No
Trigger modes	3 modes	4 modes
Strobe functions	Yes	Yes
COMPUTER		
Operating systems	Windows, Mac, Linux	Windows, Mac, Linux
Computer interfaces	USB 2.0 ; RS-232	USB 2.0; RS-232
Peripheral interfaces	SPI (3-wire); I ² C integrated circuit	SPI (3-wire); I ² C integrated circuit



Colour measurement with the USB2000+



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