USB4000-UV-VIS and USB4000-VIS-NIR

Application-ready Spectrometers for the UV-VIS and VIS-NIR

The USB4000-UV-VIS and USB4000-VIS-NIR are reliable, robust spectrometers that have a 3648-element linear CCD array detector for good signal to noise performance and enhanced electronics for controlling the spectrometer and accessories.

Each spectrometer has a 3648-element Toshiba TCD1304AP detector with a multibandpass order-sorting filter and 25 µm slit for optical resolution to ~1.5 nm (FWHM). The USB4000-UV-VIS covers the 200-850 nm wavelength range and the USB4000-VIS-NIR covers 350-1000 nm. Operating software (priced separately) is SpectraSuite, a comprehensive program that operates on Windows, Macintosh and Linux operating systems.

Although the USB4000-UV-VIS and USB4000-VIS-NIR have a preconfigured optical bench, there's still flexibility built in to your setup possibilities. That's because these spectrometers are compatible with our entire range of SMA 905-terminated fiber optic accessories.

Changing your sampling setup is as easy as unscrewing a connector and adding new components or accessories – including light sources, cuvette holders, flow cells and fiber optic probes and assemblies.

UB4000-UV-VIS and USB4000-VIS-NIR spectrometers are among the most popular miniature spectrometers in the world and make a great choice for a variety of basic absorbance, reflectance and emission applications. And both models are in stock and ready to ship today.

Specifications	USB4000-UV-VIS	USB4000-VIS-NIR
Dimensions:	89.1 mm x 63.3 mm x 34.4 mm	89.1 mm x 63.3 mm x 34.4 mm
Weight:	190 g	190 g
Computer interface:	Universal Serial Bus (RS-232 available on side connector)	Universal Serial Bus (RS-232 available on side connector)
Spectrometer channels:	Master spectrometer channel only	Master spectrometer channel only
Detector:	Toshiba TCD1304AP Linear CCD array	Toshiba TCD1304AP Linear CCD array
Integration time:	1 ms-65 seconds	1 ms-65 seconds
Useable range:	200-850 nm (grating-dependent)	350-1000 nm (grating-dependent)
Dynamic range:	2 x 10^8 (system), 1300:1 for a single acquisition	2 x 10^8 (system), 1300:1 for a single acquisition
Sensitivity:	130 photons/count at 400 nm; 60 photons/count at 600 nm	130 photons/count at 400 nm; 60 photons/count at 600 nm
Signal-to-noise ratio:	300:1 (at full signal)	300:1 (at full signal)
Dark noise:	50 (RMS)	50 (RMS)
Grating:	600 l/mm, set to 200-850 mm (blazed at 300 nm)	600 l/mm, set to 350-1000 nm (blazed at 500 nm)
Slit:	1000 µm x 25 µm	1000 µm x 25 µm
Focal length:	42 mm (input); 68 mm (output)	42 mm (input); 68 mm (output)
Order-sorting:	Single-piece, multi-bandpass detector coating to eliminate second-order effects from 200-850 nm	Single-piece, multi-bandpass detector coating to eliminate second-order effects from 350-1000 nm
Resolution:	1.5 nm (FWHM)	1.5 nm (FWHM)
Stray light:	<0.05% at 600 nm; 0.10% at 435 nm	<0.05% at 600 nm; 0.10% at 435 nm
Fiber optic connector:	SMA 905 to single-strand optical fiber (0.22 NA)	SMA 905 to single-strand optical fiber (0.22 NA)

Spectroscopy is a technique in which the design criteria exist as a set of trade-offs. The optimal spectrometer depends entirely upon the application. Even selecting a preconfigured system where some of the design trade-offs have already been decided for you, is a choice with consequences. In any case, the design process always begins by asking a series of questions: What are you trying to measure? How fast do you need the measurements? And there's the most important question of all: Why are you making the measurements?