Red Tide Spectrometers

Flexible, Low-Cost, Ideal for Education

USB-650 Red Tide Spectrometers are low-cost, small-footprint spectrometers designed especially for teaching labs and educational use. Red Tide Spectrometers are preconfigured with a 25 µm slit and gratings for UV-VIS (200-880 nm) or VIS-NIR (350-1100 nm) wavelengths. Red Tide models are available that couple to optical fibers and other accessories (USB-650 and USB-650-UV) and that include cuvette holder-light source combinations that attach directly to the spectrometer (USB-650-UV-VIS and USB-650-VIS-NIR).

Red Tide Spectrometers are comparable to our CHEMUSB Spectrometers, but with one significant difference: the Red Tide has fewer detector pixels – 650 active pixels – which results in approximately one data point per nanometer (CHEMUSBs have 2048-pixel detectors). This is one reason why Red Tide is not recommended for more demanding applications such as absolute irradiance measurements. For basic absorbance and other lab measurements, Red Tide is an excellent, economical choice.

Red Tide operates via Overture or SpectraSuite Spectroscopy Operating Software, which runs in OS X, Linux and Windows. The Chemistry module for SpectraSuite includes features for educational use, such as a Beer's Law calculator for absorbance experiments. Overture is a simplified software package aimed at beginners.

USB-650-UV/USB-650 Red Tide Spectrometers

- Can be easily coupled to fibers and accessories
- Compatible with PASCO's Xplorer GLX
- Compatible with Vernier's Logger Pro Software

Item Code: USB-650-UV, USB-650

USB-650-UV-VIS Red Tide Spectrometer

- Observe changes as small as 0.1 absorbance units
- Direct-attach deuterium tungsten light source and sample holder
- Plug and play operation

Item Code: USB-650-UV-VIS

USB-650-VIS-NIR Red Tide Spectrometer

- Complete system covering 350-1000 nm at 2.0 nm (FWHM) optical resolution
- Violet LED light source and sample holder
- Interfaces to PC via USB

Item Code: USB-650-VIS-NIR

Physical	
Dimensions (in mm):	89.1 x 63.3 x 34.4
Weight:	190 g
Detector	
Type:	Linear silicon CCD array
Pixels:	650 enabled pixels
Pixel size:	14 µm x 200 µm
Pixel well depth:	~62,500
Sensitivity:	75 photons/count @ 400 nm
Optical Bench	
Design:	f/4, asymmetrical crossed Czerny-Turner
Focal length:	42 mm input; 68 mm output
Entrance aperture:	25 µm wide slit
Fiber optic connector:	SMA 905
Spectroscopic	
Wavelength range: USB-650 USB-650-UV USB-650-VIS-NIR USB-650-UV-VIS	 350-1000 nm 200-880 nm 350-1000 nm 200-880 nm
Optical resolution:	Model dependent
Signal-to-noise ratio:	250:1 (at full signal)
A/D resolution:	12 bit
Dark noise:	3.2 RMS counts
Dynamic range:	8.5 x 10^7 (system); 1300:1 for a single acquisition
Integration time:	3 ms to 65 s (15 s typical max)
Stray light:	<0.05% @ 600 nm; <0.10% @ 435 nm
Corrected linearity:	>99%
Computer	
Operating systems:	Windows XP/7, Mac OS X and Linux w/USB port
Operating software (required):	SpectraSuite Spectroscopy Software Overture Spectroscopy Software