



## Technical Specification Sheet

# MINI RUGGED SPECTROMETER SYSTEMS

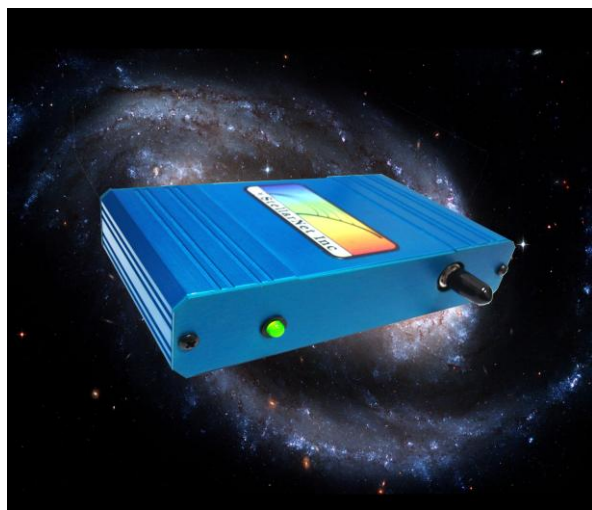
A Universe of Spectrometer Systems

### BLUE-Wave Miniature Fiber Optic Spectrometers for UV-VIS-NIR & OEM

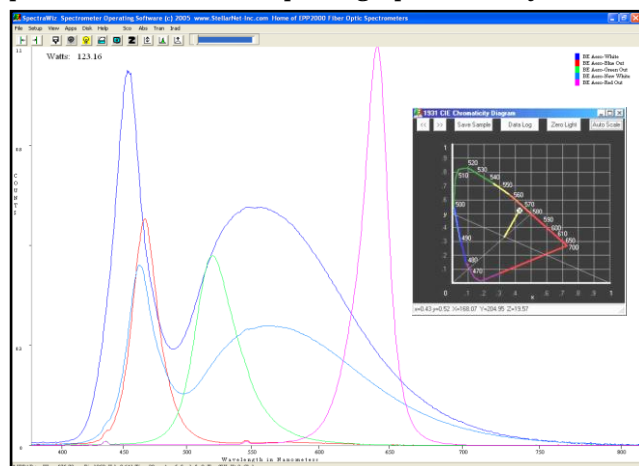
The StellarNet BLUE-Wave Spectrometers are fiber optic coupled instruments with a wide selection of models for measurements in 190-1150nm wavelength ranges using a 16-bit digitizer via high speed USB-2.

Each unit contains a USB-2 interface with a snap shot memory to provide instantaneous spectral image from the highly sensitive CCD or Photo Diode Array detectors with options for 2048 or 3648 elements. Various models provide a choice of grating range and slit resolutions.

A single strand fiber optic cable or probe assembly delivers input via standard SMA 905 fiber optic connector with a choice of cable lengths. The spectrograph optics are exceptionally robust in a vibration tolerant modular design, with no moving parts. The detachable spectrograph assembly and



BLUE-Wave 16-bit USB2 Spectrometers



LED spectra of red, green, blue, white

control electronics are protected inside a rugged metal enclosure, suitable for portable, process, and lab applications. Several units may be daisy-chained using a powered USB2 hub allowing simple configurations for dual and multi-beam applications in chemistry, spectro-radiometry, PORTA-LIBS, and industrial process controls.

The SpectraWiz software is included to accurately measure light emission intensity for LED, Laser, plasma, solar, xenon, and so on. Measurement applications include SpectroRadiometry (NIST traceable intensities, LED xy chromaticity), SpectroColorimetry (CIELAB L\* a\* b\*), Chemistry concentration/reaction time analysis, UVabc monitors, Spectral-ID of elemental plasma emissions, and more.

Specifications		BLUE-Wave Spectrometers from \$2700	
Dynamic Range:	2000:1 with 6 decades	Dimensions:	1 x 3 x 5 inches
Optical Resolution:	See model table – to 0.2nm	Weight:	14 ounces
Detector Type:	CCD, 2k/3k pixels	Power Consumption:	< 100 mA via USB port
Detector Range:	200-1100nm (UV add \$350)	Interface Options:	USB <sup>2</sup> or WiFi <sup>2</sup> , RS232 <sup>3</sup> , SPI <sup>3</sup> , 4-20mA <sup>3</sup> , Digital I/O <sup>3</sup> , or ethernet <sup>3</sup>
Pixel Size:	14 x 200um or 7 x 200um	Data Transfer Speed:	30Hz or 1000Hz <sup>1</sup>
Diffraction Grating:	Holographic and Ruled	Detector Integration:	1ms to 65s
Grating g/mm:	300, 600, 1200, 1800, 2400	Slit Size Options:	14,25, 50, 100, 200um
Spectrograph:	f/4, SymX-Czerny-Turner	Stray Light:	<.1% at 435nm;<.5% at 600nm
Order Sorting Filters:	Integrated and High Pass	Fiber Optic Input:	SMA-905 0.22 na single fiber
Signal to Noise:	1000:1	Operating Systems:	Windows and Linux <sup>2</sup> , Android <sup>2</sup> , iOS <sup>2</sup>
Digitizer:	16-bit	Software Included:	SpectraWiz Program, WinSDK (C,C#,VB, Delphi), Customizable LabVIEW, VBA for Excel (CRI & LED Report)



<sup>1</sup> zAPI Electronics Upgrade <sup>2</sup> zAP2 WiFi + Applications Processor Upgrade with SpectraWiz Mobile Software <sup>3</sup> SMART-Control Interface

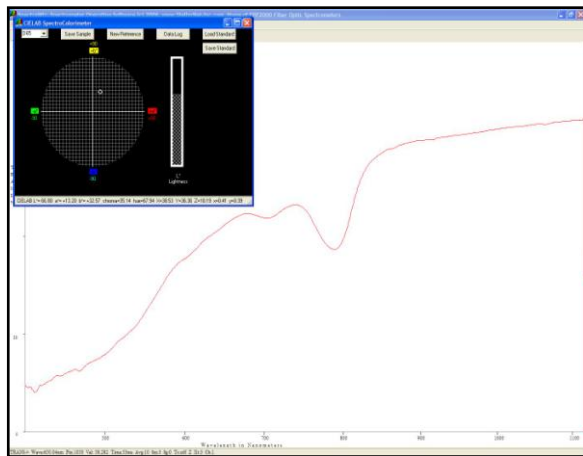


## BLUE-Wave Miniature Fiber Optic Spectrometers for UV-VIS-NIR & OEM

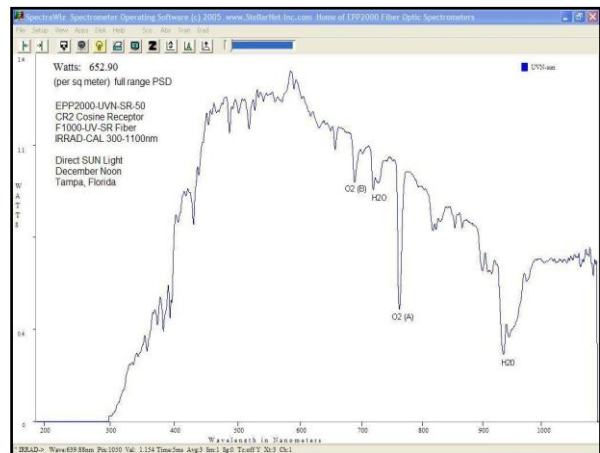
Additional measurement applications include emission wavelength monitoring /characterization of tunable lasers or LED's and other sources such as elemental emissions from plasma & Laser Induced Breakdown Spectroscopy. Also Bragg grating technology enables optical sensing of many

parameters including temperature and pressure. Thin film thickness measurements can be made using sample specular reflectance. The small size and weight makes the BLUE-Wave spectrometers just perfect for portable and OEM applications.

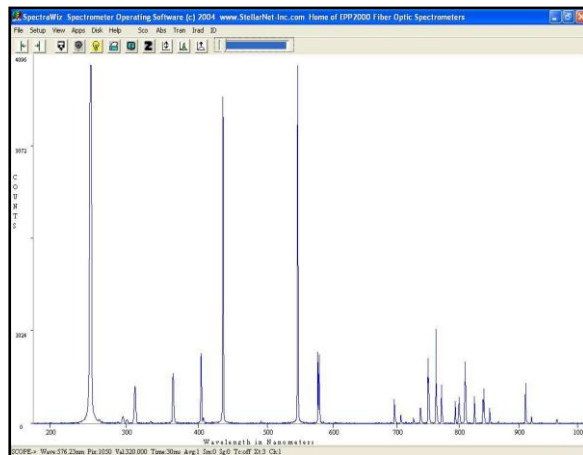
BLUE-Wave Spectrometer Configurations			2048 pixel CCD detector		Predicted Slit Resolving Resolutions		
Model	Wavelength Range in nm	Grating g/mm	Slit-200 nm res.	Slit-100 nm res.	Slit-50 nm res.	Slit-25 nm res.	Slit-14 nm res.
UV	200-600	1200	3.0	1.6	0.8	0.50	0.40
UV2	200-400	2400	1.5	0.8	0.4	0.25	0.20
UV3	220-350	3600	1.0	0.5	0.25	0.16	0.13
UVIS	300-1100	600	6.0	3.2	1.6	1.00	0.80
VIS	350-1150	600	6.0	3.2	1.6	1.00	0.80
VIS2	380-780	1200	3.0	1.6	0.8	0.50	0.40
NIR	500-1150	600	6.0	3.2	1.6	1.00	0.80
NIR2	600-1000	1200	3.0	1.6	0.8	0.50	0.40
NIR2b	785-1150	1200	3.0	1.6	0.8	0.50	0.40
NIR3	550-840	1800	2.2	1.2	0.6	0.35	0.28
NIR3b	680-935	1800	2.2	1.2	0.6	0.35	0.28
NIR4	500-700	2400	1.5	0.8	0.4	0.25	0.20
NIR4b	600-800	2400	1.5	0.8	0.4	0.25	0.20
UVN	250-1100	600	6.0	3.2	1.6	1.00	0.80
UVNb	200-1050	600	6.0	3.2	1.6	1.00	0.80



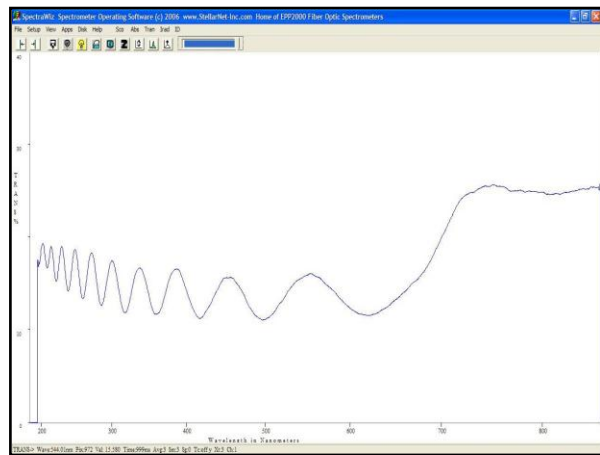
VIS color reflectance



UVN spectra of sunlight



UVN spectra of mercury+argon gas



UV-VIS spectra of a thin film