

Exemplar® Plus LS

High Performance Smart Spectrometer



The Exemplar® Plus LS is a high performance smart spectrometer utilizing an aberration corrected concave holographic grating to effectively eliminate stray light. It features a highly sensitive TE cooled back-thinned (BT) CCD detector which is linearly summed for high dynamic range. Its long focal length, coupled with a high quantum efficiency detector, provides superior data quality over the entire 180-1100nm spectral range. The Exemplar Plus LS features a high signal to noise ratio, making it ideal for low light level applications especially in the UV range, and also features a built-in shutter allowing for dark scan measurements even while illuminated. As a member of the Exemplar product line, it features onboard data processing and USB 3.0 communication. The Exemplar product line is optimized for multi-channel operation featuring ultra-low trigger delay and gate jitter.

SIGNAL TO NOISE RATIO:

On-board Averaging 1	~540
On-board Averaging 10	~1900
On-board Averaging 100	~4800

Standard spectral configurations range from 180nm-1100nm with resolutions between 0.6nm and 6.0nm. Custom configurations are available for OEM applications.

SMART:

On-board processing including averaging, smoothing, and dark compensation

SPEED:

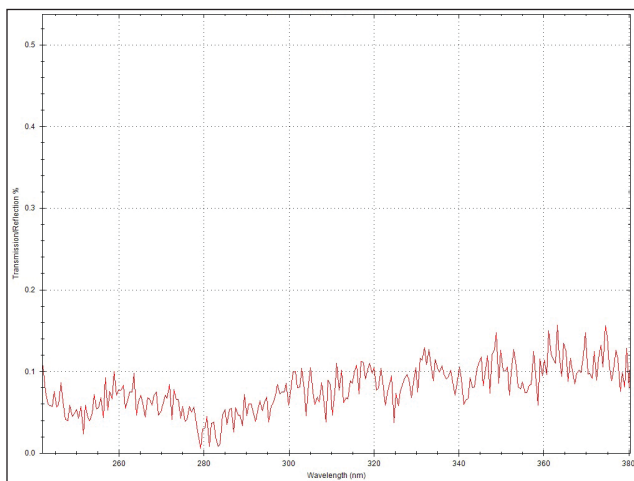
Acquires and transfers more than 140 spectra per second at an integration time of 6.3ms

SYNCHRONOUS:

Supports up to 32 devices with ultra-low trigger delay (95ns) & gate jitter (+/- 20ns)

Applications:

- Low light level UV to NIR spectroscopy
- Fluorescence spectroscopy
- On-line process monitoring
- LCD display measurement
- Biomedical spectroscopy
- Solar simulation characterization
- Absorbance spectroscopy
- Irradiance measurements



ASTM® stray light test using 50 g/L sodium nitride (NaNO₂) showing stray light to be less than 0.1% without applying any software corrections.

Specifications:

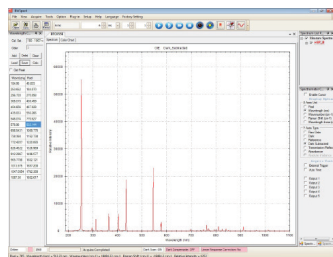
Power Input	5V DC @ 3.0A (maximum at startup)
Detector Type	Back-thinned CCD array
Wavelength Range	180nm - 1100nm
Detector Pixel Format	2048 effective detector elements
Effective Pixel Size	14µm x ~ 0.9mm
Spectrograph f/#	3.0
Spectrograph Optical Layout	Concave holographic, aberration corrected, flat field
Dynamic Range	50,000 (Typical)
Digitizer Resolution	16-bit or 65,535:1
Data Transfer Speed	>140 spectra per second at integration time of 6.3ms in burst mode
Trigger Delay	95ns +/- 20ns (call for timing diagram)
Readout Speed	> 400kHz
Integration Time	6.3ms, adjustable in 1µs increments
Aux Port	External trigger, 4 digital outputs (2 with shutter control), 2 digital inputs, analog input, analog output and system reset
Operating Temperature	5°C - 35°C
Operational Relative Humidity	85% noncondensing
CCD Cooling	Default: 0°C at ambient of 25°C.
Weight	2.6 lbs
Dimensions	7.0in x 4.25in x 2.68in (178mm x 108mm x 67mm)
Computer Interface	USB 3.0 / 2.0
Operating Systems	Windows: 7, 8 (32-bit & 64-bit)

Additional Features:

- High UV, Vis, and NIR response
- 2048 detector elements
- Over 60% QE at 200nm
- Configurable cooling temperature (0° default)
- Over 90% peak QE
- Built-in shutter
- Ultra low stray light

Software:

BWSpec® is a spectral data acquisition software with a wide range of tools that are designed to perform complex measurements and calculations at the click of a button. It allows the user to choose between multiple data formats and offers optimization of scanning parameters, such as integration time. In addition to powerful data acquisition and data processing, other features include automatic dark removal, spectrum smoothing, and manual/auto baseline correction.



Entrance Slit

Slit Option	Dimensions	Approx. Resolution 190-1100nm
10µm	10µm wide x 1mm high	~2.0nm
25µm	25µm wide x 1mm high	~2.5nm
50µm	50µm wide x 1mm high	~3.2nm
100µm	100µm wide x 1mm high	~6.0nm
Custom Configurations Available		

Diffraction Grating

Best Efficiency	Spectral Coverage (nm)
UV	180-450
UV-Vis	190-800
Vis	400-800
UV-Vis-NIR	190-1100
Vis-NIR	350-1050
Custom Configurations Available	

Accessories:

- Fiber sampling probes
- Fiber sample holders
- Fiber patch cords
- Light sources

Spectrograph

