

# Exemplar® Plus

Spectrometer

## High Performance Smart Spectrometer



The Exemplar® Plus is a high-performance smart spectrometer utilizing a low-stray-light unfolded Czerny-Turner spectrograph. 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 190-1100nm spectral range. The Exemplar Plus features a high signal-to-noise ratio, making it ideal for low light level applications. It also features a built-in shutter allowing for dark scan measurements even while illuminated. As a member of the Exemplar product line, it features on-board data processing and USB 3.0 communication. The Exemplar product line is also optimized for multi-channel operation, featuring ultra-low trigger delay and gate jitter.

### Applications:

- Low light level UV to NIR spectroscopy
- Raman and fluorescence spectroscopy
- On-line process monitoring
- LCD display measurement
- Biomedical spectroscopy
- Gas and water analysis
- LED characterization

Exemplar Plus Standard Configuration*:	
Wavelength Range	190-1100nm
Slit	25µm
Filter	LVF
Grating	300mm/280nm
Resolution	1.8nm

\*Custom configurations are also available.

SIGNAL TO NOISE RATIO:	
On-board averaging 1	~540
On-board averaging 10	~1900
On-board averaging 100	~4800

### SMART:

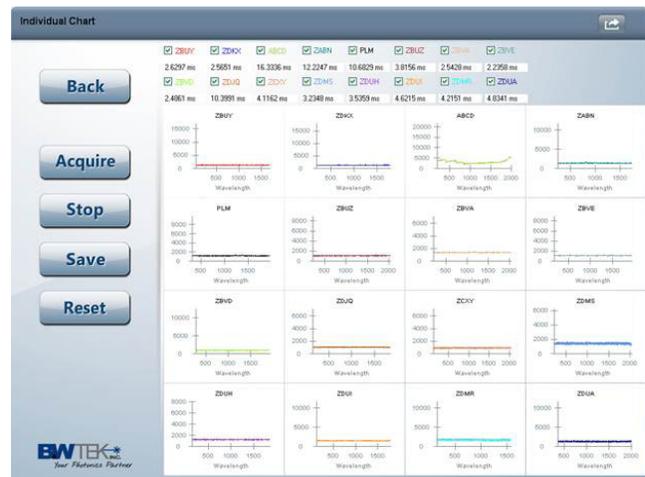
On-board processing including averaging, smoothing, and dark compensation

### 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)



## Specifications:

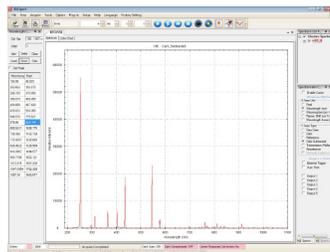
Power Input	5V DC @ 6A (maximum at startup) 5V DC @ 2.5A (typical at normal operation)
Detector Type	Back-thinned CCD Array
Wavelength Range	190nm - 1100nm
Detector Pixel Format	2048 effective detector elements
Effective Pixel Size	14µm x ~ 0.9mm
Spectrograph f/#	3.6
Spectrograph Optical Layout	Standard Czerny-Turner
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	3.6 lbs
Dimensions	7.40in x 5.05in x 2.80in (188mm x 128mm x 71mm)
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)
- 80% peak QE
- Built-in shutter

## 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 350 - 1050nm
10µm	10µm wide x 1mm high	~1.2nm
25µm	25µm wide x 1mm high	~1.5nm
50µm	50µm wide x 1mm high	~2.4nm
100µm	100µm wide x 1mm high	~4.8nm
Custom slit widths available		

## Diffraction Grating

Best Efficiency	Spectral Coverage (nm)	Grating
Vis / NIR	350-1050	400/550
NIR	750-1050	830/900
UV- NIR	190-1100	300/280
UV - NIR	200-850	400/250
UV	190-380	1500/250
Custom configurations available		

## Accessories:

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

## Spectrograph

