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B&WTEK
Your Spectroscopy Partner

Exemplar® *Plus LS*

High Performance Smart Spectrometer

Spectrometer

The **Exemplar® Plus LS (BTC645N)** 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 - 1100 nm 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. 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 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.

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

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:

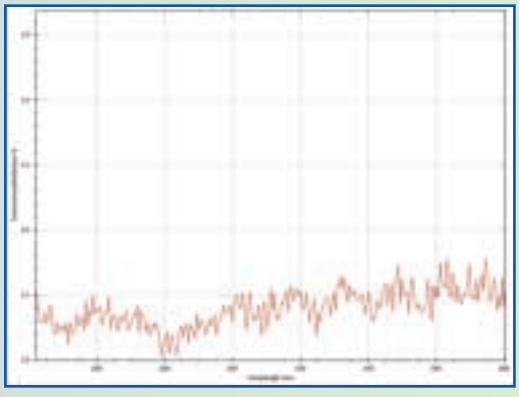
Acquires and transfers more than 140 spectra per second at an integration time of 6.3 ms

Synchronous:

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

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 ($NaNO_2$) showing stray light to be less than 0.1% without applying any software corrections.

More about our **Exemplar® *Plus LS***

Specifications:

Model No.	BTC645N
Power Input	5V DC @ 3.0A (maximum at startup)
Detector Type	Back-thinned Silicon CCD Array
Wavelength Range	180 nm - 1100 nm
Detector Pixel Format	2048 effective detector elements
Effective Pixel Size	14 µm x ~ 0.9 mm
Spectrograph f/#	3.0
Spectrograph Optical Layout	Concave holographic
Dynamic Range	50,000 (Typical)
Digitizer Resolution	16-bit or 65,535:1
Data Transfer Speed	>140 spectra per second at integration time of 6.3 ms in burst mode
Trigger Delay	95 ns +/- 20 ns (call for timing diagram)
Readout Speed	> 400 kHz
Integration Time	6.3 ms, adjustable in 1 µs 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	7.0 in x 4.25 in x 2.68 in (178 mm x 108 mm x 67 mm)
Computer Interface	USB 3.0 / 2.0
Operating Systems	Windows: 7, 8, 10, 11

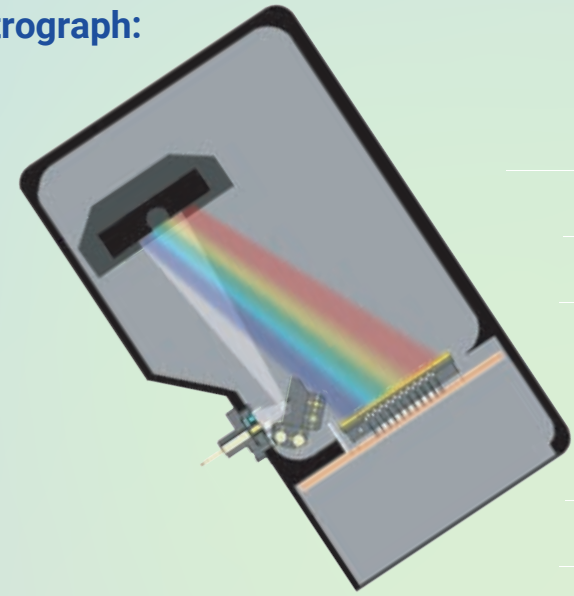
Entrance Slit

Slit Option	Dimensions	Resolution for Wavelengths 350 - 1050nm
10 µm	10 µm wide x 1 mm high	~2.0 nm
25 µm	25 µm wide x 1 mm high	~2.5 nm
50 µm	50 µm wide x 1 mm high	~3.2 nm
100 µm	100 µm wide x 1 mm high	~6.0 nm
Custom slit widths 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	

Spectrograph:



Features:

- High UV, Vis, and NIR response
- 2048 detector elements
- Over 60% QE at 200 nm
- Configurable cooling temperature (0° default)
- 80% peak QE
- Built-in shutter
- Ultra low stray light

Accessories:

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

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. SDK with demo code is available as additional option.