

Spectrometer Cypher™ H

High Performance Photodiode Array Spectrometer



The Cypher™ H is a high performance linear photodiode array (PDA) spectrometer and is optimized for UV performance through the use of an aberration corrected concave holographic grating to minimize stray light. The PDA offers improved quantum efficiency in the NIR and UV regions, extremely wide dynamic range, and exceptionally low read noise; making it ideal for the detection of small variations in light intensity. The Cypher™ H features 512 (standard) or 1024 pixels, a built-in 16-bit digitizer, USB 2.0 interface and external trigger.

The Cypher™ H is available in two standard spectral configurations: 185nm - 800nm and 300nm - 1050nm. Custom configurations are available for OEM applications.

Applications:

- UV and NIR Applications
- LED and Other Display Device Tests
- Color Measurement
- Small Light Difference Detection

Features:

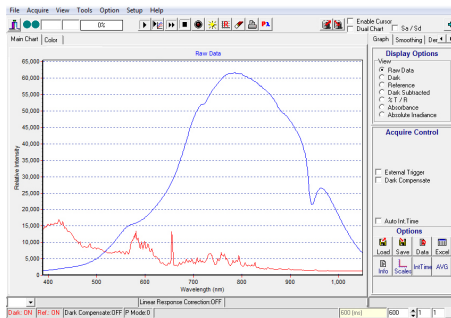
- Enhanced QE in NIR
- High UV Response as Low as 185nm
- High Dynamic Range
- 512 or 1024 Pixels

Accessories:

- Light Sources
- Fiber Patch Cords
- Fiber Sampling Probes
- Fiber Sample Holders

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.



Specifications:

DC Power Input	5V DC @ < 0.8 Amps
AC Adapter Input	100 - 240VAC 50/60 Hz, 0.5A @ 120VAC
Detector Type	Self-scanning Photodiode Linear Array
Pixels	512 @ 25µm x 2500µm 1024 @ 25µm x 2500µm
Spectrograph f/#	3.0
Spectrograph Optical Layout	Concave Holographic, Aberration Corrected, Flat Field
Dynamic Range	5 x 10 ⁴ (Typical)
Digitizer Resolution	16-bit or 65,535:1
Readout Speed	250 kHz
Data Transfer Speed	>70 Spectra Per Second Via USB 2.0
Integration Time	3 - 65,535ms x Multiplier
External Trigger	Aux Port
Operating Temperature	5°C - 35°C
Weight	~ 2.6 lbs (1.2 kg)
Dimensions	6.22in x 4.01in x 3.3in (158mm x 102mm x 84mm)
Computer Interface	USB 2.0 / 1.1
Operating Systems	Windows: XP, Vista, 7

Technical Details

Cypher™ H

Standard

Fiber Coupler

1 Secures Fiber to Ensure Repeatable Results

By coupling a fiber optic to the SMA 905 adaptor, light will be guided to the slit and optically matched, ensuring reproducibility. For free space sampling, a diffuser or lens assembly can be connected directly to the SMA 905 adaptor.

Configurable

Entrance Slit

2 Determines Photon Flux and Spectral Resolution

Light entering into a spectrometer's optical bench is vinyetted by a pre-mounted and aligned slit. This ultimately determines the spectral resolution and throughput of the spectrometer after grating selection. We offer a variety of slit widths to match your specific application needs: from 25µm - 200µm wide, with custom slits available.

Slit Option	Dimensions	Approx. Resolution 350-1050nm
25µm	25µm wide x 2mm high	~2.7nm
50µm	50µm wide x 2mm high	~4.2nm
100µm	100µm wide x 2mm high	~7.2nm
200µm	200µm wide x 2mm high	Call
Custom Configurations Available		

Standard

Folding Mirror

3 Redirects Light Towards Grating

The folding mirror redirects the light from the slit towards the holographic grating to be dispersed and refocused. This mirror is coated with AlMg₂ which produces approximately 95% reflectance when working in the UV-Vis spectrum. Aluminum (Al) provides reflectance and magnesium (Mg₂) protects the aluminum from oxidation.

Configurable

Concave Holographic Grating

4 Collects, Disperses and Refocuses Light

This one compact optical component collects, disperses, and refocuses light onto the detector, by effectively combining the grating and focusing mirror found in standard Czerny-Turner optical benches. The optimized holographic grating delivers excellent efficiency and stray-light reduction and is able to provide a faster f/#, delivering higher throughput.

Best Efficiency	Spectral Coverage (nm)	Grating Option
UV / Vis	185-800	Group 1
UV / NIR	350-1050	Group 1
Custom Configurations Available		

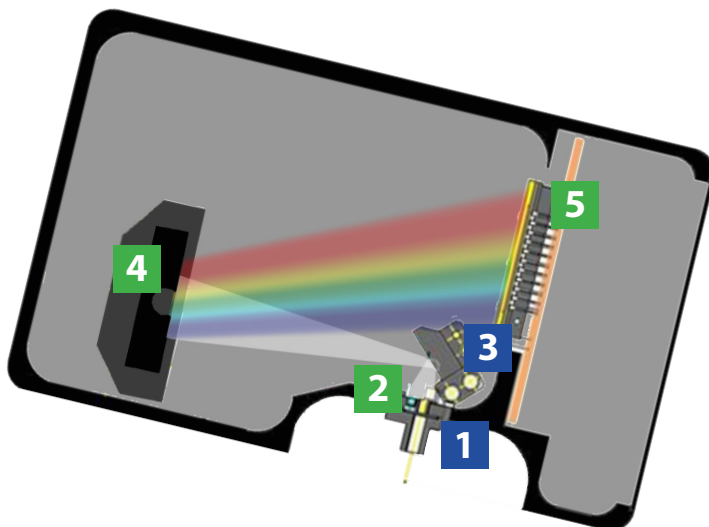
Configurable

Array Detector

5 Measures Entire Spectrum Simultaneously

The Cypher™H features a linear 512 or 1024 element PDA detector with a pixel size of 25µm x 2500µm. As the incident light strikes the individual pixels across the CCD, each pixel represents a portion of the spectrum that the electronics can then translate and display with a given intensity using BWSpec™ software.

The PDA offers improved quantum efficiency in the NIR and UV regions, extremely wide dynamic range, and exceptionally low read noise; making it ideal for the detection of small variations in light intensity.



Specifications	
Wavelength Range	185nm - 1050nm
Pixels	512, 1024
Pixel Size	25µm x 2500µm
Well Depth	~156,000,000 e
Digitization Rate	250 kHz

