

General Specifications:

Power Input	USB at < 350mA
Detector Type	Response enhanced 2048 element linear silicon CCD array
Detector Pixel Format	2048 x 1 elements @ 14µm x 200µm per element
Spectrograph F#	3.6
Spectrograph Optical Layout	Crossed Czerny-Turner
Dynamic Range	275 typical
Digitizer Resolution	16-bit or 65,535:1
Readout Speed	500 kHz
Data Transfer Speed	Up to 180 spectra per second via USB 2.0
Integration Time	1 - 65,535ms
External Trigger	Aux Port
Operating Temperature	5°C - 35°C
Operational Relative Humidity	85% Noncondensing
Weight	~0.34 kg (0.75 lbs)
Dimensions	102mm x 67mm x 34mm (4.02in x 2.64in x 1.34in)
Computer Interface	USB 2.0 / 1.1
Operating Systems	Windows: XP, Vista (32-bit), 7 (32-bit)

BWTEK INC.
Your Photonics Partner



MADAtec Srl ITALY
WWW.MADATEC.COM
Tel. +39-0236542401
e-mail: sales@madatec.com

BWTEK INC.
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Spectrometer Quest™ X

Compact, Low Cost,
High Performance CCD
Spectrometer

About the Quest™ X

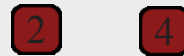
The Quest™ X series is a low cost, high performance, non-cooled linear CCD array spectrometer. Equipped with 2048 elements, built-in 16-bit digitizer, and a USB 2.0 interface, this spectrometer will continuously deliver optimized high throughput results.

External event synchronization and external trigger input are standard. This spectrometer is ideal for most UV, Vis, and NIR applications with our standard spectral configurations which start at 200nm to as high as 1050nm. With our slit options, resolutions between 0.5nm and 3.0nm can be achieved. Flexible custom configurations and application support are available for OEM applications.



Ordering Info

Ordering Code: Quest™ X



To order your custom system, fill in the slit ordering code (2) and grating ordering code (4).

Software

BWSpec™ features a wide range of tools designed to allow complex measurements and calculations to be completed at the click of a button. BWSpec™ allows the user to choose between multiple data formats and offers optimization of scanning parameters such as integration time and laser power output. In addition to powerful data acquisition and data processing, other features include automatic dark removal, spectrum smoothing, and manual/auto baseline correction. The software also contains an OCX interface for users to collect spectrum in Thermo Scientific GRAMS/AI.

To find out more:

Contact our Application Team for your unique solution.

B&W Tek, Inc. · 19 Shea Way, Newark, DE 19713 USA
Phone: 302-368-7824 · Fax: 302-368-7830
Web: www.bwtek.com · Email: www.bwtek.com/contact

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Applications

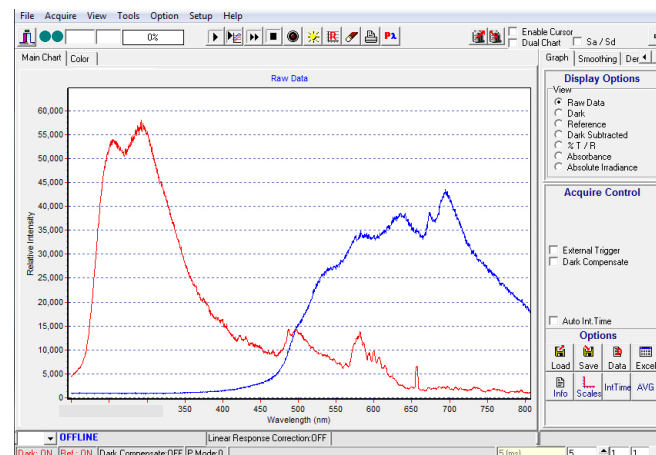
- UV, Vis, and NIR: Spectroscopy / Spectroradiometry / Spectrophotometry
- WL Identification
- Absorbance
- Reflectance
- OEM Optical Instrumentation Building Blocks

Features:

- UV - NIR (200nm - 1050nm)
- 0.5nm Spectral Resolution
- 16-bit Digitizer
- 500 kHz Readout Speed
- Plug-and-play USB 2.0
- 1ms Minimum Integration Time

Accessories

- Fiber Patch Cords
- Light Sources
- Cuvette Holder
- Inline Filter Holder
- Much more...

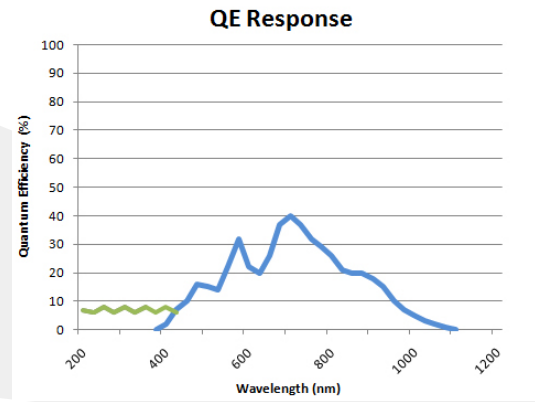


Workings of a Spectrometer:

Standard Detector

6 2048 Pixel Linear CCD Array Detector

The Quest™ X features a non-cooled 2048 element linear silicon CCD array detector with a pixel format of 2048 x 1 elements @ 14µm per element with effective (active) pixels > 2000. Each pixel represents a portion of the spectrum and as the dispersed incident light strikes the individual pixels across the CCD the electronics can then translate and display the intensity using our BWSpec™ software. The quantum efficiency (QE) and noise level of the array detector greatly influences the spectrometer's sensitivity, dynamic range and signal-to-noise ratio. The spectral acquisition speed of the spectrometer is mainly determined by the detector response over a wavelength region.



--- The extension of the QE curve after the UV enhancement.

Specifications	
Wavelength Range	200nm - 1050nm
Pixels	2048
Pixel Size	14µm x 200µm
Well Depth	~65,000 e
Digitization Rate	500 kHz

Configurable Grating

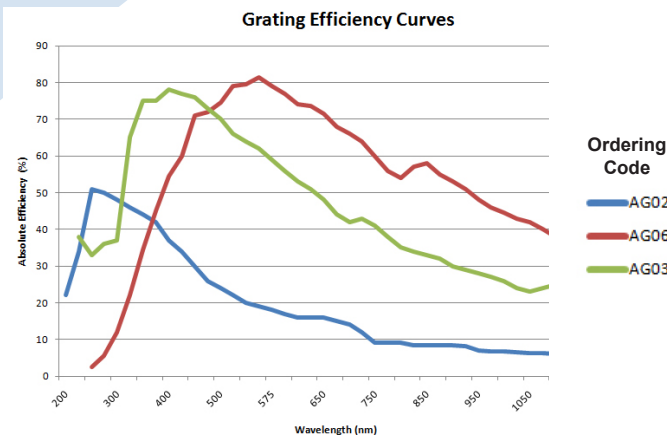
4 Wavelength Range and Spectral Resolution

The groove frequency of the grating determines two key aspects of the spectrometer's performance: the wavelength coverage and the spectral resolution. The higher the groove frequency the more resolution the instrument will achieve but the wavelength coverage will be less. Inversely, decreasing the groove frequency increases wavelength coverage at the cost of spectral resolution. With over twenty-five gratings offered, we can customize the spectrometer to suit your application needs.

The blaze angle or blaze wavelength of the grating is also a key parameter in optimizing the spectrometer's performance. The blaze angle determines the maximum efficiency the grating will have in a specific wavelength region. We have a variety of blaze angles available per groove frequency to match your application needs.

Best Efficiency	Spectral Coverage (nm)	Ordering Code
UV / NIR	200 - 850	AG02
Vis	380 - 750	AG06
Vis / NIR	350 - 1050	AG03
Custom Configurations Available		

Record your Grating Ordering Code on the back page.



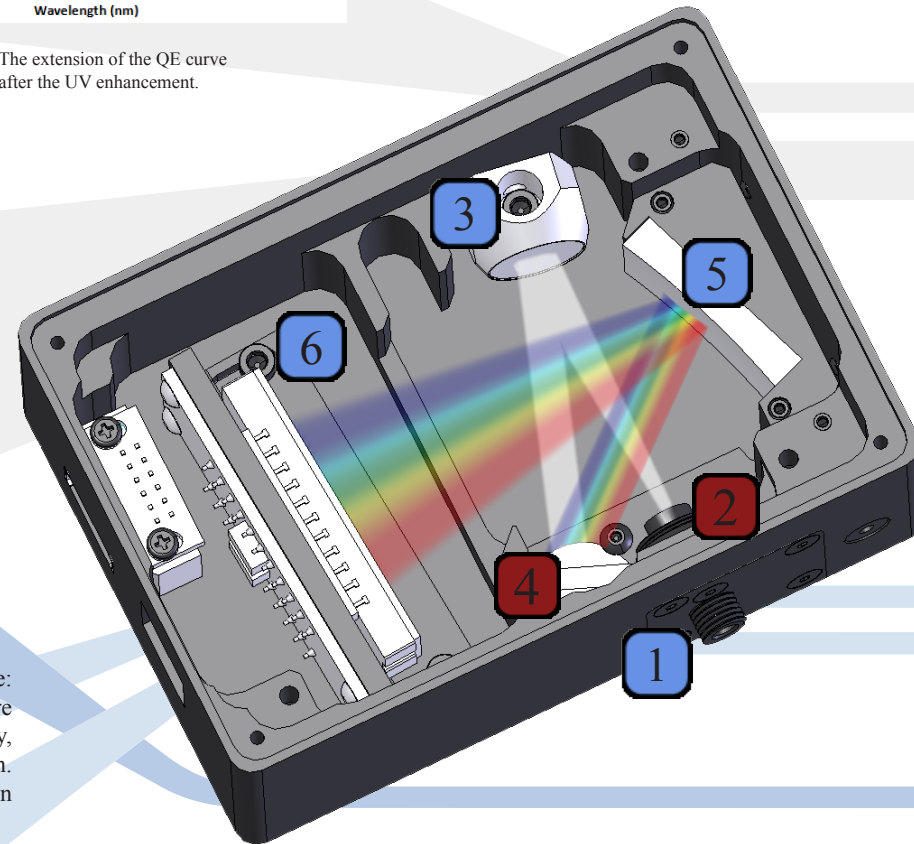
Standard Collimating Mirror

3 Collimates and redirects the light beam towards the grating

Standard Focusing Mirror

5 Refocuses the dispersed light onto the detector

Both mirrors are F# matched focusing mirrors 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 Slit

2 Determines the photon flux and optical resolution

Light entering into a spectrometer's optical bench via a fiber or lens is focused onto a pre-mounted and aligned slit. This ultimately determines the optical resolution and throughput of the spectrometer after grating selection.

We offer a variety of slit widths and heights to match your specific application needs: from 5µm - 800µm wide and 1mm and 2mm high (1mm being our standard height).

Slit Option	Dimensions	Typical Resolution AG03 Grating	Ordering Code
10µm	10µm wide x 1mm high	~1.0	Slit-10
25µm	25µm wide x 1mm high	~1.2	Slit-25
50µm	50µm wide x 1mm high	~2.0	Slit-50
100µm	100µm wide x 1mm high	~3.0	Slit-100
Custom Configurations Available			

Record your Slit Ordering Code on the back page.

Standard SMA 905

1 Precision fiber coupler

By coupling the SMA 905 adaptor with a fiber or lens, light will be guided to the slit and optically matched. This ensures reproducibility for light coupling from the fiber or lens into the optical bench.