

General Specifications:

Power Input	5V DC @ < 3 Amps
Detector Type	Back-thinned CCD array
Pixels	2048 @ equivalent 14µm x 896µm (14x64)
Spectrograph F#	2.45
Spectrograph Optical Layout	Concave Holographic, aberration corrected, flat field
Dynamic Range	~3.3x10 ⁴
Digitizer Resolution	16-bit or 65,535 to 1
Readout Speed	375 KHz
Data Transfer Speed	> 48 MHz
Integration Time	1ms to > 20,000ms
External Trigger	Aux Port
Operating Temperature	15°C to 35°C
Weight	1.1 kg (2.42 lbs)
Dimensions	158mm x 102mm x 84mm (6.22in x 4.01in x 3.30in)
Computer Interface	USB 2.0
Operating Systems	Windows: XP, Vista (32-bit), 7 (32-bit)

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About the *i*-trometer™

The *i*-trometer is a miniature Back-thinned 2048 x 64 CCD array, linearly summed spectrometer designed for meeting the needs of wide dynamic range spectral applications. A holographic aberration corrected flat field concave grating and optimized optical bench minimizes stray light and improves throughput.

The *i*-trometer employs a high UV-NIR response CCD detector array leading to high detection sensitivity. The spectrometer offers wide detection dynamic range, superior quantum efficiency (QE), high signal-to-noise (S/N) ratio and is ideal for various UV/Vis/Short-wave NIR spectroscopic applications. The optical input to the spectrometer can select from a single or bundled fiber option, providing ease of use and high throughput coupling for low light level detection. *i*-trometer also features plug-and-play USB interface and high speed data transferring.

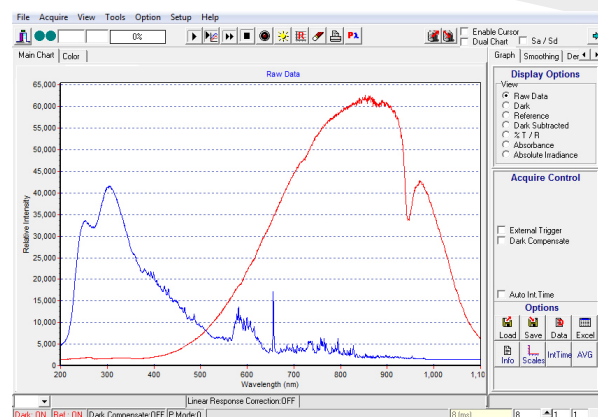
Spectrometer *i*-trometer™

Miniature Back-thinned
CCD Spectrometer



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:

Distribution in the UK

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The leading supplier of scientific and industrial lasers, optical systems and associated accessories, fibre optic components and instrumentation, and machine vision products.

Features:

- High UV, Vis, NIR Response
- Wide Dynamic Range
- Software configurable “High Dynamic Range” or “High Sensitivity” Operation Modes
- True 0.22 NA Optical Bench
- Low Stray Light Performance
- USB 2.0 High Speed Interface

Applications

- UV / Vis / Short-wave NIR Spectroscopy
- UV / Vis / NIR Lamp Characterizations
- HPLC Detection
- Solar Monitoring

Accessories

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

Workings of a Spectrometer:

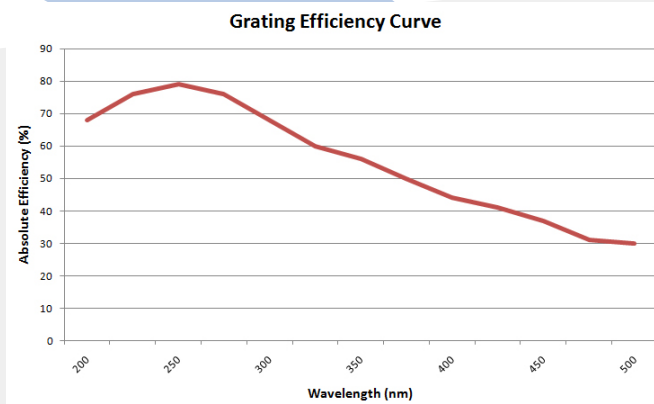
Configurable Concave Holographic Grating

4 Collects, Disperses and Refocuses Light

This one compact optical component collects, disperses, and refocuses light onto the detector, by combining two optical components, i.e. grating and focusing mirror in standard optical benches. The grating is a blazed holographic grating which delivers excellent efficiency and stray-light reduction and is able to provide a faster F#, therefore delivering higher throughput.

Type	Best Efficiency	Spectral Coverage (nm)	Resolution (nm) 25µm Slit	Ordering Code
Concave Holographic	UV - Vis	190-800	~1.5	CCH01
Concave Holographic	UV - NIR	190-1100	~2.0	CCH02
Concave Holographic	Vis - NIR	350-1050	~1.5	CCH03
Custom Configurations Available				

Record your Grating Ordering Code on the back page.



Configurable Slit

2 Determines the photon flux and optical resolution

Light entering into a spectrometer's optical bench is focused onto a pre-mounted and aligned slit, which ultimately determines the optical resolution and throughput of the spectrometer.

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

Slit Option	Dimensions	Resolution Multiplier	Ordering Code
25µm	25µm wide x 1mm high	~1.0	Slit-25
50µm	50µm wide x 1mm high	~2.0	Slit-50
100µm	100µm wide x 1mm high	~4.0	Slit-100
Custom Configurations Available			

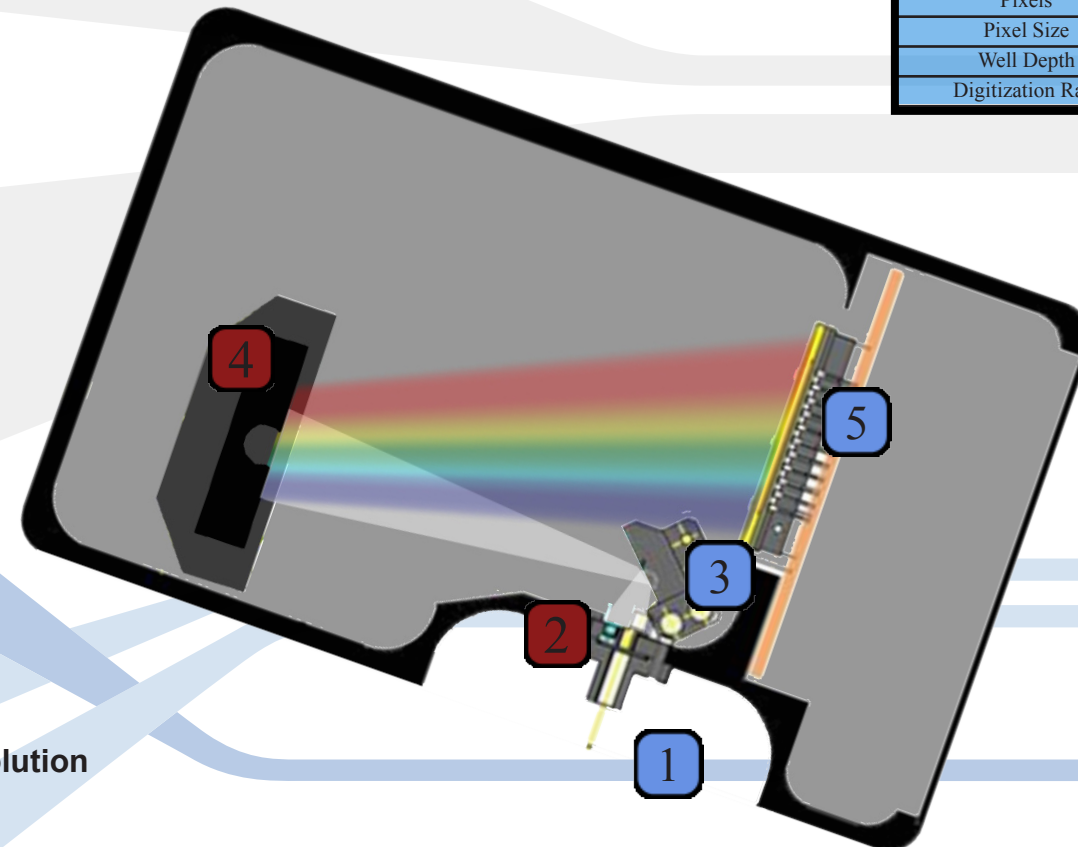
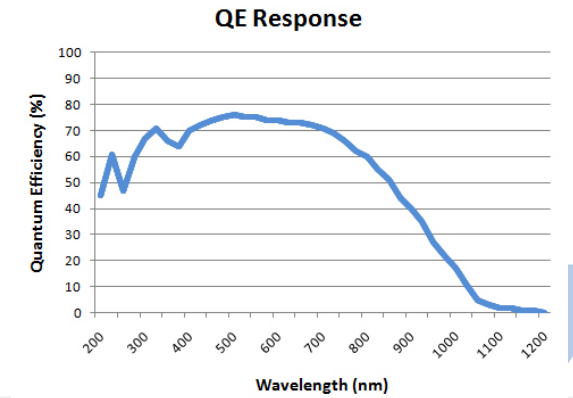
Record your Slit Ordering Code on the back page.

Standard Detector

5 As the dispersed light strikes the detector's pixels, the electronics digitize the data to be displayed

The *i-trometer*TM features a Back-thinned CCD Array with a pixel format of 2048 x 1 element @ 14µm x 14µm with effective (Active) pixels of > 2000. Each pixel represents a portion of the spectrum and as the incident light strikes the back of this thinned piece of substrate, individual pixels across the CCD are then translated by the electronics and their intensity displayed using our software, BWSpecTM. The Quantum Efficiency (QE) of this Back-thinned CCD array is increased by > 30% compared to most Front Illuminated Linear CCD arrays. This detector also has very low read out noise allowing for low-light level detection.

Specifications	
Wavelength Range	190nm - 1100nm
Pixels	2048 x 64
Pixel Size	14µm x 14µm
Well Depth	~200,000 e
Digitization Rate	375 kHz



Standard Folding Mirror

3 Redirects the light beam towards the grating

Redirects the light from the slit towards the holographic grating to be diffracted 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.

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.