HR2000+CG Application-Ready Spectrometer

Preconfigured for High Resolution over Extended Range

HR2000+CG

The HR2000+CG Composite Grating Spectrometer is preconfigured with our HC-1 Grating. This proprietary variable-blazed grating was specifically designed to provide full spectral output throughout the 200-1050 nm range.

Also, the HR2000+CG optical bench is preconfigured with a 5 µm slit for excellent optical resolution and our OFLV-200-1100 Variable Longpass Order-sorting Filter to eliminate second- and third-order effects.

The HR2000+CG is ideal for biological and chemical applications where fast measurements and high resolution are needed.

Features

- Broad UV-NIR response
- High resolution (1.0 nm FWHM) over entire available range
- Captures up to 1,000 full scans per second
- Programmable microcontroller

Physical	
Dimensions:	148.6 mm x 104.8 mm x 45.1 mm
Weight:	570 g
Detector	
Detector:	Sony ILX511B linear silicon CCD array
Detector range:	200-1100 nm
Pixels:	2048 pixels
Pixel size:	14 µm x 200 µm
Pixel well depth:	~62,500 electrons
Sensitivity:	75 photons/count at 400 nm; 41 photons/count at 600 nm
Optical Bench	
Design:	f/4, Symmetrical crossed Czerny-Turner
Focal length:	101.6 mm input and output
Entrance aperture:	5 µm wide slit
Grating:	HC-1
OFLV filter:	OFLV-200-1100
UV enhanced window:	Yes, UV2 quartz window
Fiber optic connector:	SMA 905 to 0.22 numerical aperture single-strand fiber
Spectroscopic	
Wavelength range:	200-1100 nm (best response 200-1050 nm)
Optical resolution:	<1.0 nm FWHM
Signal-to-noise ratio:	250:1 (at full signal)
A/D resolution:	14 bit
Dark noise:	12 RMS counts
Dynamic range:	8.5 x 10^7 (system); 1300:1 for a single acquisition
Integration time:	1 ms to 65 seconds
Stray light:	<0.05% at 600 nm; <0.10% at 435 nm
Corrected linearity:	>99%
Electronics	
Power consumption:	220 mA @ 5 VDC
Data transfer speed:	Full scans into memory every 2 ms with USB 2.0 port; every 15 ms with USB 1.1 port
Inputs/outputs:	10 onboard digital user-programmable GPIOs
Analog channels:	One 13-bit analog input and one 9-bit analog output
Trigger modes:	4 modes
Strobe functions:	Yes
Connector:	30-pin connector

Technical Tip

The HC-1 Grating is a variable blazed grating that provides our HR Spectrometers with broad wavelength coverage (200-1050 nm). That extended range can be illuminated with a combination deuterium-tungsten halogen source like our DH2000-BAL, but an optical fiber for your system is a different matter. Because no single fiber covers the entire UV-NIR range, we suggest using a "mixed" bifurcated fiber assembly. A bifurcated assembly has two fibers, each of which can be configured for a different range – UV-VIS for one leg and VIS-NIR for the other leg.

Also of note, the HC-1 grating's native response at longer wavelengths is not as good as it is at shorter wavelengths. But you can take steps to mitigate the grating's response characteristics. For example, for relative mode measurements, increasing the number of signal averages may be a useful technique for optimizing response at longer wavelengths. Ensuring your light source and optical fiber are suited to longer wavelengths also is helpful. To ensure best results, we recommend consulting an Applications Scientist for assistance.