

# HR4000CG-UV-NIR Spectrometer

Preconfigured for High Resolution and Extended Range



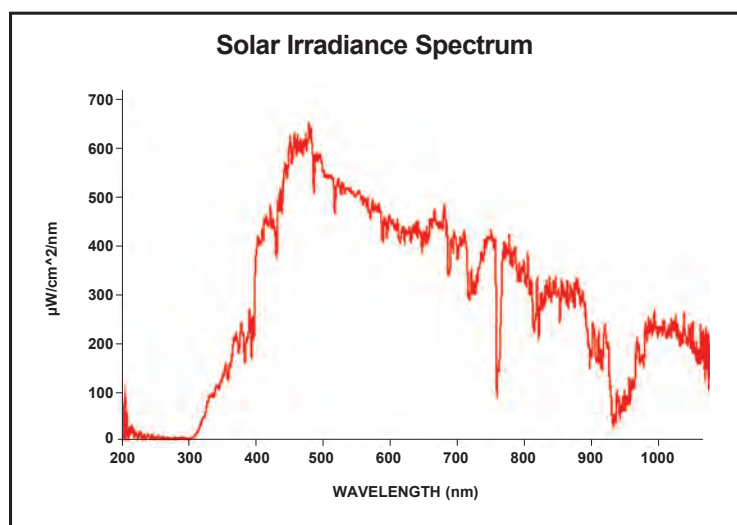
## HR4000CG-UV-NIR

Our HR4000CG-UV-NIR Composite Grating Spectrometer uses our HC-1 Grating and provides full spectral output at the 200-1100 nm ranges with best efficiency at 200-1050 nm.

This preconfigured system has an OFLV variable Longpass Order-sorting filter that eliminates second- and third-order effects and utilizes a 5  $\mu\text{m}$  entrance slit for improved optical resolution performance.

## Features

- Wide range of 200-1100 nm
- High resolution (0.75 nm FWHM)
- Installed HC-1 composite grating and order-sorting filter



Physical	
Dimensions:	148.6 mm x 104.8 mm x 45.1 mm
Weight:	570 g
Detector	
Detector:	Toshiba TCD1304AP linear CCD array
Detector range:	200-1100 nm
Pixels:	3648 pixels
Pixel size:	8 $\mu\text{m}$ x 200 $\mu\text{m}$
Pixel well depth:	~100,000 electrons
Sensitivity:	130 photons/count at 400 nm; 60 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 $\mu\text{m}$ wide slit
Grating:	HC-1
Detector collection lens:	Yes, L4
OFLV filter:	OFLV 200-1100 nm
UV enhanced window:	Yes, UV4 quartz window
Fiber optic connector:	SMA 905 to 0.22 numerical aperture single-strand optical fiber
Spectroscopic	
Wavelength range:	200-1100 nm (Grating dependent)
Optical resolution:	0.75 nm FWHM
Signal-to-noise ratio:	250:1 (at full signal)
A/D resolution:	14 bit
Dark noise:	12 RMS counts
Dynamic range:	2 x 10 <sup>8</sup> (system); 1300:1 for a single acquisition
Integration time:	3.8 ms-10 seconds
Stray light:	<0.05% at 600 nm; <0.10% at 435 nm
Corrected linearity:	>99.8%
Electronics	
Power consumption:	450 mA @ 5 VDC
Data transfer speed:	Full scans to memory every 4 ms with USB 2.0 port, 15 ms with USB 1.1 port
Inputs/Outputs:	Yes, 10 onboard digital user-programmable GPIOs
Analog channels:	One 13-bit analog input; one 9-bit analog output
Auto nulling:	No
Breakout box compatibility:	Yes, HR4-BREAKOUT
Trigger modes:	4 modes
Strobe functions:	Yes
Gated delay feature:	No
Connector:	30-pin connector



A cosine corrector is a useful tool for measuring solar irradiance. The cosine corrector consists of a screw-on stainless steel barrel with a thin disk of diffusing material inside and is designed to collect radiation from 180° field of view. (By comparison, an optical fiber will collect light from approximately 25° field of view.) Cosine correctors can be attached directly to the spectrometer or to an optical fiber.