Product Specification: EagleEye Spectrometer

Description

The EagleEye (EE) Series spectrometers feature a Thermoelectric Cooled (TEC) back-thinned CCD sensor and a high-performance 32-bit RISC controller, providing superior thermal stability and low noise. Its optimized Czerny–Turner optical design ensures exceptional resolution, wavelength accuracy, and long-term measurement reliability. Built for precision and durability, the EagleEye maintains consistent performance under thermal, vibration, and shock variations, minimizing wavelength shift and resolution drift. Compact and robust, the EE Series is ideal for long-term spectral monitoring, research, and OEM system integration across both UV–Vis and NIR applications.

Models and Wavelength Ranges

- EE2113: 500–1100 nm (NIR-enhanced)
- EE2063: 180–1100 nm (UV-enhanced)

Main Features

- Czerny–Turner optical design with 2nd & 3rd order rejection for low stray light
- High-sensitivity back-thinned TEC CCD sensor for UV–NIR performance
- Hamamatsu 2048-pixel linear array sensor (EE2113: S16011; EE2063: S11850)
- 32-bit RISC controller for precise and stable operation
- Integration time: 5 ms – 65 s (depending on sensor)
- Optical resolution: 0.2 – 10.5 nm, depending on slit and grating
- USB 2.0 high-speed (480 Mbps) communication
- 8-pin I/O connector with 6 programmable digital I/O lines, UART TX/RX, and external trigger
- Up to 4,000 spectra buffering for continuous acquisition

- Flash ROM storage for wavelength, linearity, and intensity calibration data
- TEC-cooled sensor maintains stable temperature (20–25°C below ambient)
- Supports Matlab™, LabVIEW™, and SpectraSmart software

Technical Details

- Optical Design: Czerny–Turner structure, 2nd & 3rd order rejection
- Sensors: Hamamatsu S16011 (EE2113, NIR-enhanced); S11850 (EE2063, UV-enhanced)
- Pixel Count: 2048 pixels
- Optical Resolution: 0.2 – 10.5 nm (depends on slit and grating configuration)
- Slit Options: 10, 25, 50, 100, 200, 300 µm
- Accuracy: ±0.3 nm (typ. ±1.0 nm under thermal/vibration extremes)
- Wavelength Repeatability: ±0.05 nm (100× measurements, Hg–Ar lamp)
- Integration Time: 5 ms – 65 s
- A/D Conversion: 16-bit, 15 MHz
- Dynamic Range: 4000 (EE2063) / 5000 (EE2113)
- SNR (single acquisition): 500
- Thermal Stability: <0.04 nm/°C (EE2063); <0.015 nm/°C (EE2113)
- Cooling Range: 20–25°C below ambient
- Environmental: Operating 0–50°C; Storage –30–70°C; 0–90% non-condensing
- Interfaces: USB 2.0 @ 480 Mbps; 8-pin I/O port (6 GPIO, TX/RX, Trigger)
- Power: USB 5 VDC @ 330 mA; TEC +5 VDC @ 500 mA (DC jack); voltage 4.75–5.25 V
- Fiber Connector: SMA905 (Ø3.18 ± 0.005 mm ferrule; max 9.812 mm length)

Dimensions

- EE Series: 130 (L) x 96 (W) x 58.3 (H) mm

Power Requirements

- Power via USB: 330mA at +5 VDC
- TEC Power: 500mA at +5VDC

Basic Specifications

Model	Wavelength Range (nm)	Sensor Type	SNR (Single acquisition)	Dynamic Range	A/D	Stray Light (%)	Thermal Stability (nm/°C)
EE2113	500-1100	NIR Enhanced Back-Thinned TEC	500	5000	16 bits	<0.45	<0.015
EE2063	180-1100	UV Enhanced Back-Thinned TEC	500	4000	16 bits	<0.04	<0.04