Gemini Red™ Broadband NIR Spectrometer - DRAFT

A 900 – 2500 nm dual-band NIR spectrometer with a single optical input

The Gemini-Red™ Series is a broadband NIR spectrometer covering 900–2500 nm through an integrated dual-band design. Two spectral channels covering 900–1700 nm and 1600–2500 nm share a single optical input, enabling complete near-infrared spectral acquisition. Dual 256-pixel InGaAs detector arrays with dual-stage TEC cooling provide separate detection for each spectral band while maintaining sensitivity and wavelength accuracy. The system supports independent integration time and gain settings for each channel, with Ethernet, USB, and GPIO interfaces.



APPLICATIONS

- Semiconductor inspection
- Environmental & geological sensing
- Agriculture & food analysis
- Material analysis
- Broadband NIR applications

KEY PERFORMANCE

Wavelength Range: 900 – 2500 nm

Spectral Channels: 900 – 1700 nm and 1600 – 2500 nm

Optical Resolution: 2.3 – 17 nm (25-200 µm slit widths)

Sensor: Dual 256-pixel InGaAs arrays

Integration Time: 6 µs – 24 s

Stray Light: <0.2%

Interface: Ethernet / USB / GPIO

DRAFT - Preliminary specifications subject to change.

Gemini Red™ Specifications - DRAFT

	Gemini-Red Series		
Wavelength Range	900 – 2500 nm		
Input Port	SMA905 Fiber Optic Connector		
Sensor	Dual 256-pixel InGaAs Arrays (Dual Stage TEC Cooling)		
Resolution	Short-Wavelength Channel	Long-Wavelength Channel	
	2.3 – 17 nm (25 – 200 µm slit widths available; typical resolution with a 50 nm slit: 4.2 – 4.4 nm)		
SNR (Single Measurement)	High Gain	3200	2200
	Low Gain	4500	4300
Dynamic Range (Single Measurement)	High Gain	8000	7000
	Low Gain	13000	12000
Dark Noise (Average)	High Gain	8	8.5
	Low Gain	5	5.5
Integration Time	Independent integration time settings for each spectral channel to optimize measurement performance		
Fiber Input Interface	SMA905		
Data Interface	Ethernet / USB / GPIO		
Dimensions / Weight	210 (L) × 180 (W) × 75.5 (H) mm; <4 kg		

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