200nm-12μm

Research-Grade Hyperspectral Imager

200nm-12μm
High-sensitivity & High Resolution

NWH1000 Hyperspectral Imager

The NWH1000 series offers a flexible hyperspectral imaging solution with customizable spectral bands, modular sizes, and detector options. Covering a broad wavelength range from 200 nm to 2500 nm, it includes VNIR, macro, and NIR hyperspectral cameras suitable for diverse research and application needs. Its modular design allows easy integration into various platforms, such as UAVs, laboratory instruments, portable systems, and microscope imagers. With user-friendly development support, the NWH1000 is well-suited for education, research, smart agriculture, environmental monitoring, intelligent manufacturing, and industrial inspection.

Key Features

- **Broad Spectral Range:** Captures data from 200 nm to 12 μm, accommodating diverse spectral analysis requirements.
- **High-Precision Spectral Data:** Utilizes prism-grating technology for accurate, high-resolution spectral information.
- **Modular Design for Flexibility:** Features a proprietary modular design compatible with various detectors, offering a range of spectral ranges and sizes to suit different needs.
- **Compact and Lightweight:** Its small form factor allows for easy integration into various setups and ensures portability.
- **High Imaging Quality:** Achieves exceptional image quality across the entire target surface, with a spot diameter of less than 0.5 pixels.
- **Customizable Optics:** Equipped with a standard C-Mount lens interface for flexible focal length options.
- **Excellent Performance and Value:** Delivers outstanding spectral performance at a cost-effective price point, making it suitable for a wide array of scientific, industrial, and research applications.

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Specification

VNIR Hyperspectral Camera		
Model	**NWH1000-CMOS-P**	**NWH1000-SCMOS**
Spectral Resolution	Linearly-tunable transmission grating spectrometer	Linearly-tunable transmission grating spectrometer
Spectral Range	400–1000 nm	400–1000 nm
Spectral Resolution	Better than 2.3 nm	Better than 2.3 nm
Sampling Interval	2.8 nm	2.4 nm
F-number	F/2.4	F/2.4
Detector Type	CMOS	SCMOS (TE Cooled)
Detector Interface	GigE	USB 3.0
Detector Power Supply	External,12V DC ,4.2W	External power supply12V, DC,4.3W
Detector Size	1.1” (14.5 mm x 9.9 mm)	1.2" (13.3 mm x 13.3 mm)
Native Resolution	1600 x 1100 pixels	2048 x 2048
Pixel Size	9 µm x 9 µm	6.5 µm x 6.5 µm
Effective Pixel Depth	12 bits	12 bits
Effective Slit Length	14.2 mm	13.3 mm
Slit Width	30 µm	30 µm
Recommended Binning	4 x 4	4 x 4
Effective Spatial Pixels	390	512
Spectral Bands	228	≥ 300
Field of View (FOV)	22.9° @ f=35 mm	21° @ f = 35 mm
Instantaneous Field of View (IFOV)	0.85 mrad @ f=35 mm	0.74 mrad @ f = 35 mm
Frame Rate	68 fps	72 fps
Dimensions	Approx. 280 mm x 80 mm x 70 mm	Approximately 350 mm x 90 mm x 90 mm
Weight	<1.5 kg	<2 kg
Operating Temperature	0–40°C	0 to 40 °C
Storage Temperature	0–50°C	0 to 50 °C

Specification

UV Hyperspectral Camera / NIR Hyperspectral Camera		
Model	**NWH1000-UV**	**NWH1000-NIR**
Spectral Dispersion Method	Linear-type transmission grating	Linear-type transmission grating
Spectral Range	250–490 nm	900–1700 nm
Spectral Resolution	Better than 2 nm	Better than 6 nm
Sampling Interval	0.9 nm	1.7 nm
F-number	F/2.8	F/2.0
Detector	CMOS	InGaAs (TE Cooled)
Detector Interface	GigE	GigE
Detector Power Supply	12V DC, 13.6W	12V DC, 8.4W (TEC OFF) / 16W (TEC ON)
Detector Sensor Size	9.47 mm × 7.58 mm	9.6 mm × 7.68 mm
Detector Native Resolution	1280 × 1024	640 × 512
Detector Pixel Size	7.4 μm × 7.4 μm	15 μm × 15 μm
Effective Bit Depth	12 bits	14 bits
Effective Slit Length	8.8 mm	9.6 mm
Slit Width	20 μm	30 μm
Recommended Pixel Binning	2 × 2	1 × 1
Effective Spatial Pixels	>560 (2× binning)	640
Number of Spectral Bands	>250 (2× binning)	512
Field of View (FOV)	18.8° @ f = 25 mm	15.6° @ f = 35 mm
Instantaneous FOV (IFOV)	0.8 mrad @ f = 25 mm	0.43 mrad @ f = 35 mm
Frame Rate	40 fps @ 12-bit / 200 fps @ 10-bit	175 fps
Dimensions	Approx. 335 mm × 88 mm × 83 mm	300 mm × 105 mm × 90 mm (excluding lens)
Weight	<2 kg	<3 kg
Operating Temperature	0–40 °C	0–40 °C
Storage Temperature	0–50 °C	0–50 °C

Specification

SWIR Hyperspectral Cameras		LWIR Hyperspectral Camera	
Model	**NWH1000-SWIR**	**Model**	**NWH1000-LWIR**
Spectral Dispersion Method	Folded-type transmission grating	Spectral Dispersion Method	Folded-type reflective grating
Spectral Range	900–2500 nm	Spectral Range	7.7–12.5 μm
Spectral Resolution	Better than 10 nm	Spectral Resolution	Better than 40 nm
Sampling Interval	3 nm	F-number	F/2.0
F-number	F/2.0	Detector	Cooled infrared detector
Detector	HgCdTe (Stirling-cooled)	Detector Interface	Gigabit Ethernet
Detector Interface	Gigabit Ethernet	Detector Power Supply	
Detector Power Supply	24V DC	Detector Pixel Size	15 μm × 15 μm
Detector Sensor Size	9.6 mm × 7.68 mm	F-number	F/2.0
Detector Native Resolution	640 × 512	Effective Spatial Pixels	640
Detector Pixel Size	15 μm × 15 μm	Number of Spectral Bands	128
Effective Bit Depth	14 bits	Field of View (FOV)	≥12°
Effective Slit Length	9.6 mm	Lens Mount	C-Mount
Slit Width	30 μm	Dimensions	250 mm × 200 mm × 90 mm
Recommended Pixel Binning	1 × 1	Weight	<12 kg
Effective Spatial Pixels	640	Operating Temperature	0–40 °C
Number of Spectral Bands	≥400	Storage Temperature	0–50 °C
Field of View (FOV)	21.8° @ f = 25 mm	Software	Acquisition software + SDK
Instantaneous FOV (IFOV)	1.2 mrad @ f = 25 mm	Packaging	Custom protective case
Frame Rate	≥100 fps		
Dimensions	Approx. 500 mm × 150 mm × 150 mm (excluding lens)		
Weight	<8 kg		
Operating Temperature	0–40 °C		
Storage Temperature	0–50 °C		