

VNIR Hyperspectral Imager

ATH1010

Features

- Spectral Range: 400~1000nm
- Hyperspectral Resolution: Better than 1.3 nm
- Optical Path: Holographic transmission grating
- Maximum Field of View: 31.7°
- Minimum Instantaneous FOV: 1.2 mrad
- Exceptional Imaging Performance
- Advanced Image Compression Algorithm
- Compact Dimensions: 280mm × 64mm × 63mm
- Lightweight: Less than 700g
- No Mechanical Scanning, High Reliability

Application

- Geological and mineral resources exploration
- Precision agriculture, crop growth and yield assessment
- Forest pest and disease monitoring, fire prevention monitoring
- Coastal and marine environment monitoring
- Grassland productivity and monitoring
- Lake and watershed environmental monitoring
- Remote sensing education and research
- Industrial sorting
- Ecological environment protection and mining environment monitoring
- Water quality testing, soil monitoring

Description

Optosky: ATH1010 is a compact and lightweight micro hyperspectral imager with exceptional portability, making it ideal for integration with UAV platforms. Beyond its size and weight advantages, the ATH1010 also features high spatial resolution, high spectral resolution, and a wide imaging range. The device consists of an imaging lens and a hyperspectral spectrometer, with the latter utilizing transmission grating technology to ensure superior aberration control.

Equipped with a high-performance CCD imaging sensor, the ATH1010 supports two modes—1920×1200 (standard FOV) or 2048×2048 (wide FOV)—delivering sharp images with extremely low noise. The ATH1010 is a conventional straight-barrel hyperspectral device, well-suited for multirotor drones. For fixed-wing and other drones with short landing gear, Optosky offers the ATH1010L model, which features a folded optical path design to minimize landing gear height requirements.

This device can capture real-time spectral data from vegetation, water bodies, soil, and other surface features, generating high-quality spectral images. Through in-depth image analysis, precise correlations between the physicochemical properties of ground objects and their spectral characteristics can be established, enabling applications in plant classification, vegetation growth monitoring, and other research fields. The entire system boasts a compact design, with the main unit offering high spectral resolution and an external push-broom imaging method. It can be configured as a standalone measurement system with a field rotation platform or an indoor linear scanning platform, or flexibly mounted on drones to meet diverse aerial remote sensing needs.



Product data information is current as of publication date. Products conform to specifications per the terms of Optosky Standard warranty.

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1. Selection Guide

Model	Describe
ATH1010	Transmission grating push-broom imaging with 1.3nm high resolution in standard FOV at 1920×1200 pixels
ATH1010W	2048 spatial bands with transmission grating push-broom imaging achieving 1.3nm resolution at 2048×2048 pixels
ATH1010SCM	SCMOS camera featuring 2048×2048 pixels with high sensitivity
ATH1010L	L-type hyperspectral imager designed for fixed-wing drones with 1920×1200 pixels
ATH1010LT	Ultra-lightweight 300g configuration supporting 1920×1200 pixels

2. Parameter

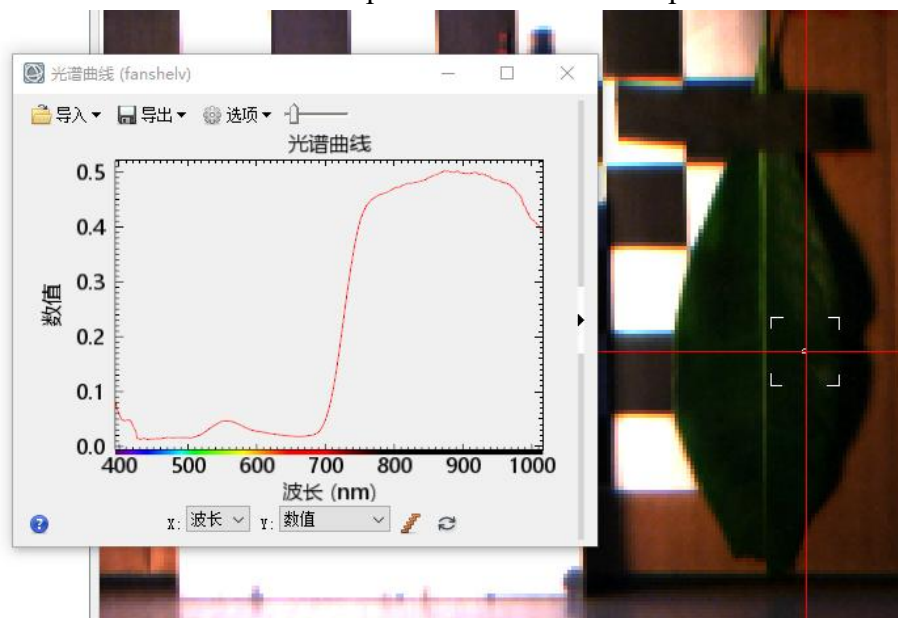
Parameter	Specification			
	ATH1010	ATH1010LT	ATH1010W	ATH1010SCM
Spectral Dispersion Method	Transmission grating technology			
Illumination Method	Passive illumination (light source not included)			
Spectral Range	400~1000 nm			
Spectral Resolution	Without binning: Better than 1.3 nm With 4×4 binning: 1.7 nm			
Sampling Interval	0.31 nm	0.31 nm	0.29 nm	0.29 nm
F/#	F/2.6			
Sensor	CMOS	CMOS	CMOS	Cooled SCMOS
Data interface	USB3.0			
Power Consumption	USB Power Supply, 3.4 W	USB Power Supply, 3.4 W	USB Power Supply, 4.5 W	DC Power Suppl, 20W
Sensor Size	11.3 mm ×7.03 mm	11.3 mm ×7.03 mm	11.26 × 11.26 mm	13.31x 13.31 mm
Sensor Resolution	1920 × 1200	1920 × 1200	2048*2048	2048*2048
Pixel Size	5.86 μm x 5.86 μm	5.86 μm x 5.86 μm	5.5 μm x 5.5 μm	6.5x6.5μm
Bit Depth	12 bits	12 bits	12 bits	16 bits
SNR	45 dB	45 dB	43 dB	45dB
Dynamic range	73 dB	73 dB	60 dB	64dB
Slit Width	25μm, Other options supported			
Binning Mode	4×4 /2x2			

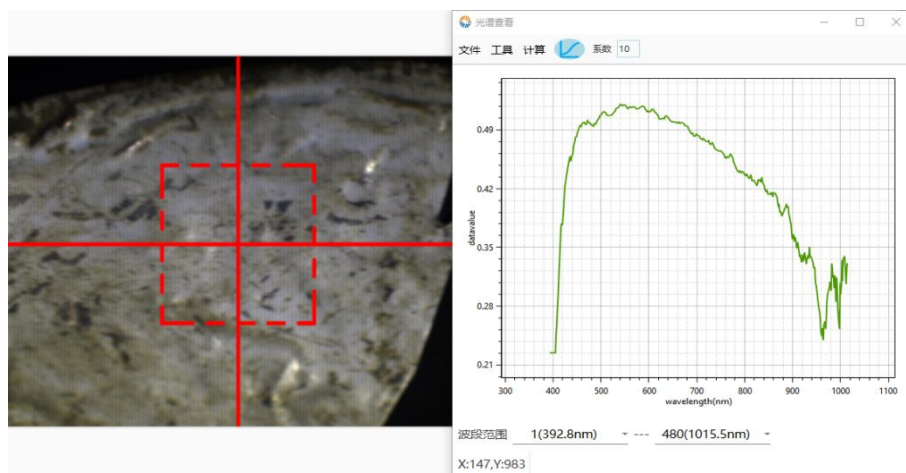
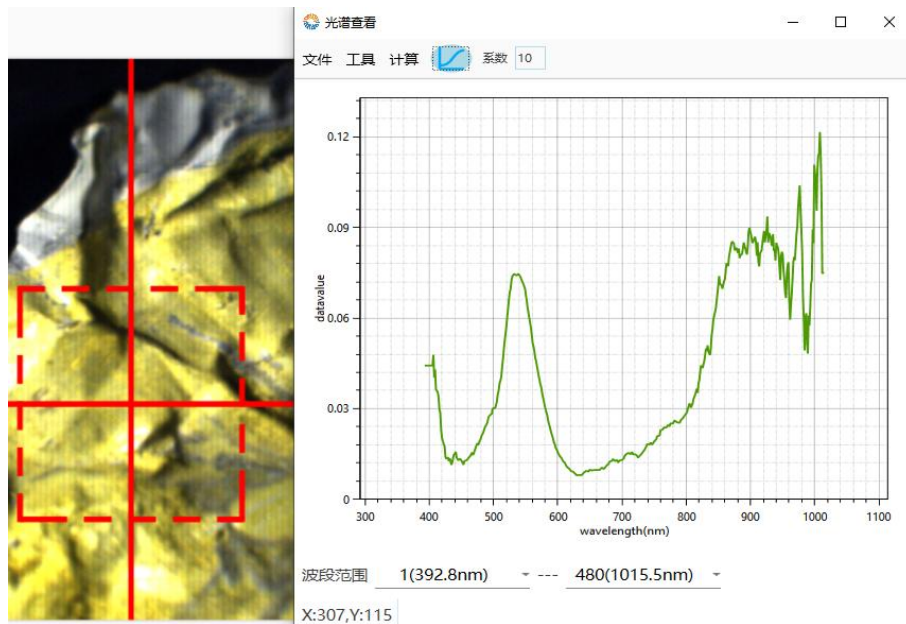
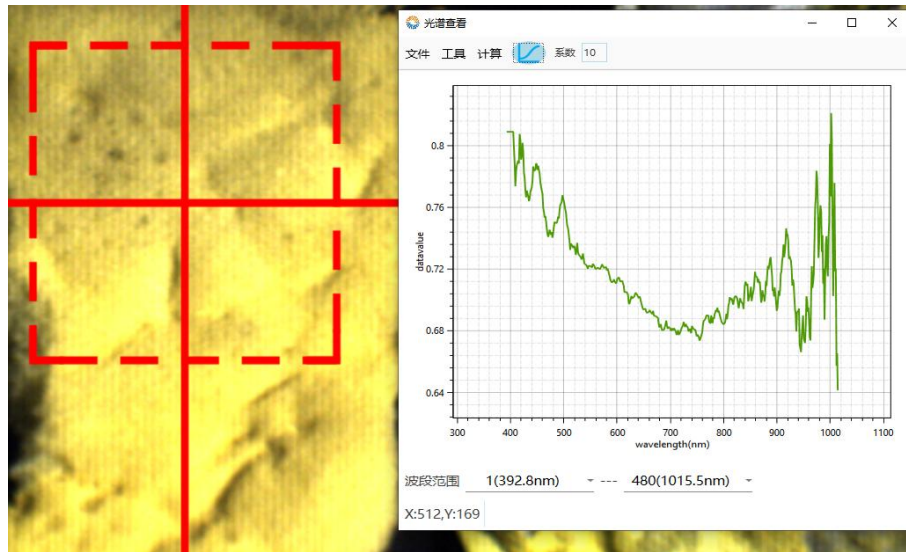
Max spatial Bands	1200	1200	2048	2048
Max Spectra Bands	1920	1920	2048	2048
FOV	11.4°@f=35 mm	11.4°@f=35 mm	18.2°@f=35 mm	21°@f=35 mm
IFOV	0.167mrad@f=35 mm	0.167mrad@f=35 mm	0.157mrad@f=35 mm	0.85mrad@f=35 mm
Maximum Frame Rate	164 fps	164 fps	90 fps	72fps
Focal Length	25 mm, 35mm Optional			
Dimensions	279 mm×64 mm×64mm	204mm×44 mm×49mm	279 mm×64 mm×64mm	347mm*80mm *80mm
Spatial Resolution	0.016m (@35mm , Flight Altitude: 100m)	0.016m (@35mm , Flight Altitude: 100m)	0.015m (@35mm , Flight Altitude: 100m)	0.015m (@35mm , Flight Altitude: 100m)
Weight	<800 g	<400 g	<800 g	1.2Kg
Operating Temperature	-20 ~ 50°C			
Storage Temperature	-30 ~ 70°C			

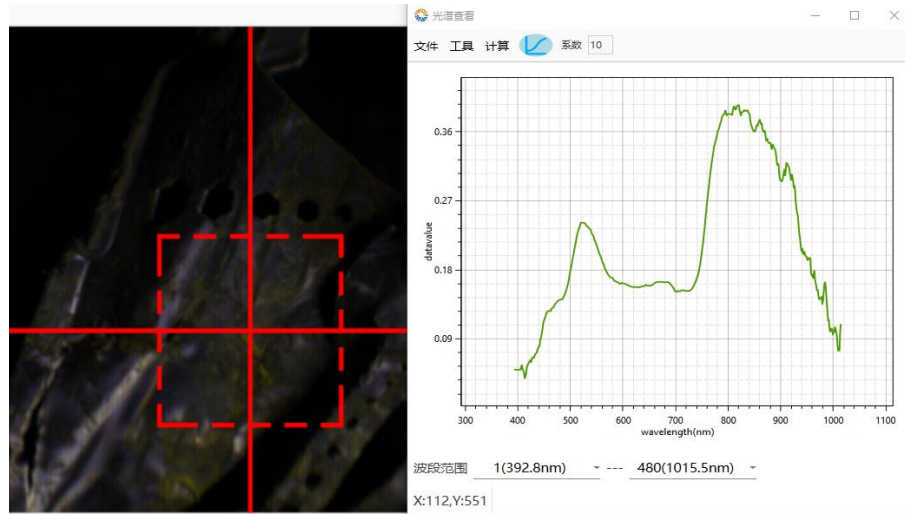
Note: *1 This value is measured under 4×4 binning conditions. Binning operation improves signal-to-noise ratio.

3. Imaging testing

Reflectance Spectra of Different Samples







4. Accessories

Name	Specification	Quantity
Standard Accessories		
ATH1010 Visible-Near Infrared Hyperspectral Imager	400-1000nm	1
Hyperspectral Camera Connection Cable	USB3.0	1
Hyperspectral Data Acquisition Software	/	1
Portable Instrument Case	/	1
Standard Diffuse Reflectance White Panel	10*10CM, 95% Reflectance	1
Optional Accessories		
Halogen Light Source	100W	1
Hyperspectral Acquisition Platform	/	1
Rotation Gimbal	/	1
Diffuse Reflectance Standard Panel	On-demand	1
Tripod	/	1
Hyperspectral Imaging Lens	/	1

Note: The hyperspectral camera module alone cannot perform normal data acquisition and must be used with a motion platform and light source.