

Rotary Scanning Mid-Far Infrared Hyperspectral Imager

ATH3080

Features

- Wavelength Range: 2.5~5.0 μ m, 7.8~12.3 μ m.
- Ultra-Low Temperature Stirling Cooled CCD or Uncooled Detector.
- Detector Resolution: 640x512 or 320x256.
- Advanced Image Compression Algorithm.
- Compact Size: 386 mm x 300 mm x 162 mm.
- Lightweight: <7.500g.
- 13 Megapixel Visible Light Camera, Integrated Spectroscopy.
- No Mechanical Scanning, High Reliability.

Application

- Geological and Mineral Resources Exploration.
- Precision Agriculture and Crop Growth & Yield Assessment.
- Forest Pest and Fire Monitoring.
- Coastline and Marine Environment Monitoring.
- Pasture Productivity and Rangeland Monitoring.
- Lake and Watershed Environmental Monitoring.
- Remote Sensing Education and Research.
- Meteorological Research.
- Ecological Environment Protection and Mine Environmental Monitoring.
- Water Quality Testing and Soil Monitoring.
- Agricultural and Livestock Product Quality Testing.
- Military, Defense, and Homeland Security.
- Disaster Prevention and Mitigation.

Description

The ATH3080 is a hyperspectral imager designed by Optosky for the mid-to-far infrared band. Compact and lightweight, it utilizes a Stirling cooler for deep CCD cooling, ensuring low dark current, low noise, high spatial and spectral resolution, and a wide imaging range. Comprising an imaging lens and a hyperspectral spectrometer based on transmission grating technology, it has excellent aberration characteristics.

The high-performance infrared CCD with Stirling cooling provides clear imaging and minimal noise. The ATH3080 measures real-time spectral information of plants, water bodies, and soil, producing spectral images that reveal physicochemical properties, aiding in plant classification and growth studies. The system's compact design and high spectral resolution allow it to form independent measurement systems with a field rotary or indoor linear scanning platform. It can also be mounted on UAVs for aerial remote sensing operations.

Model	Features
ATH3080-MW	2.5~5.0 μ m, Stirling cooling
ATH3080-LW	7.8~12.3 μ m, Stirling cooling
ATH3080-LW-NT	7.8~12.3 μ m, non-cooled thermal radiometer



1. Selection Guide

Model	Features
ATH3080-MW-MCT3	2.5~5.0μm, 320X256, Stirling-cooled MCT detector
ATH3080-MW-MCT6	2.5~5.0μm, 640X512, Stirling-cooled MCT detector
ATH3080-LW-MCT3	7.8~12.3μm, 320X256, Stirling-cooled MCT detector
ATH3080-LW-MCT6	7.8~12.3μm, 640X512, Stirling-cooled MCT detector
ATH3080-LW-NT	7.8~12.3μm, 640X512, non-cooled thermal-sensitive radiometer

2. Parameter

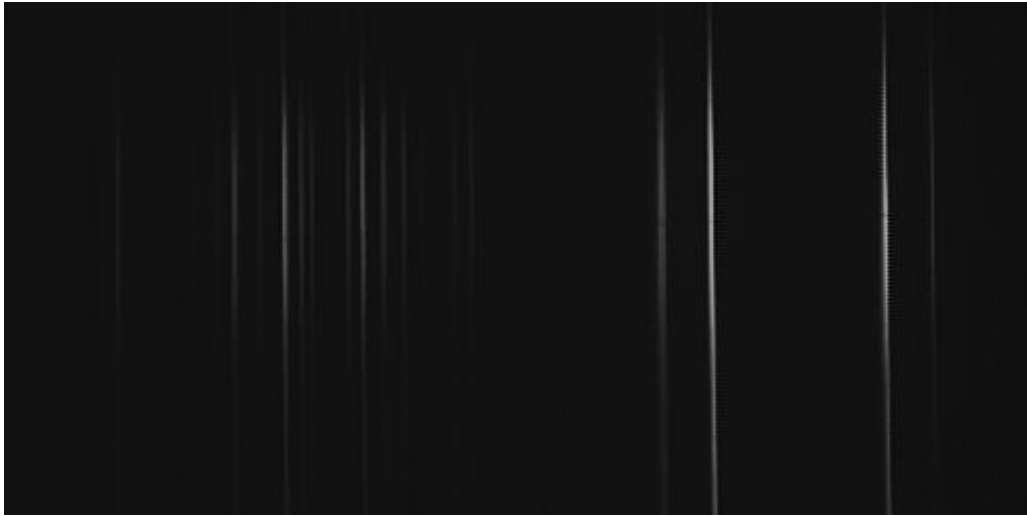
No.	Specifications	Parameters		
		ATH3080-MW	ATH3080-LW	ATH3080-LW-NT
1	Spectral Range	2.5~5.0μm	7.8~12.3μm	7.8~12.3μm
2	Spectral Resolution (FWHM)	No Binning: Better than 30nm 4X4binning: 50nm	No Binning: Better than 50nm 4X4binning: 100nm	No Binning: Better than 50nm 4X4binning: 100nm
3	Sampling Interval	8.0 nm	35.0 nm	35.0 nm
4	F/#	F/2.6	F/2.6	F/2.6
5	Sensor	Stirling cooling MCT CCD	Stirling cooling MCT CCD	non-cooled thermal radiometer
6	Data interface	USB3.0	USB3.0	USB3.0
7	Power Consumption	DC12V, <15 W	DC12V, <15W	DC12V, <10W
8	Sensor Size	9.6 mm × 7.68 mm	9.6 mm × 7.68 mm	9.6 mm × 7.68 mm
9	Sensor Resolution	ATH3080-MW-MCT3: 320×256 ATH3080-MW-MCT6: 640×512	ATH3080-LW-MCT3: 320×256 ATH3080-LW-MCT6: 640×512	640×512
10	Pixel Size	ATH3080-MW-MCT3: 30μm ATH3080-MW-MCT6: 15μm	ATH3080-LW-MCT3: 30μm ATH3080-LW-MCT6: 15μm	17 μm
11	Bit Depth	16 bits	16 bits	14 bits
12	NETD	<20mK	<1K	<1K
13	Dynamic range	73 dB	60 dB	50 dB
14	Slit Width	30μm、15μm	30μm、15μm	34μm
15	Binning Mode	4×4 / 2×4	4×4 / 2×4	4×4 / 2×4
16	Max spatial Bands	256、512	256、512	640
17	Max Spectral Bands	320、640	320、640	512
18	FOV	12.5°@f=35 mm 17.5°@f=25 mm	12.5°@f=35 mm 17.5°@f=25 mm	12.5°@f=35 mm 17.5°@f=25 mm

19	IFOV	0.017mrad @ f=35 mm 0.0234mrad @f=25 mm	0.00977mrad@f=35 mm 0.0137mrad@f=25mm	0.0137mrad@f=25mm
20	Visible light camera	13 megapixels, autofocus		
21	Maximum turntable angle	180°		
22	Minimum rotation angle	0.01°		
23	Data acquisition software	Flexible exposure time settings, with dynamic display of real-time hyperspectral images and spectral curves.		
24	Data analysis software	No third-party software is required; one-click access to clustering analysis, single-band, false-color and true-color images, over 20 vegetation indices (customizable), 3D image cropping, and target spectral identification. All functions support unattended batch processing.		
25	Maximum frame rate	150 fps	120 fps	120 fps
26	Power supply and power consumption	DC 12V, 5A		
27	Dimensions	386 mm x 300 mm x 162mm		
28	Weight	< 7545 g	< 7545 g	< 6545 g
29	Operating temperature	-20 ~ 50°C		
30	Storage temperature	-30 ~ 70°C		

Note: The parameters in the table are for reference only. Instruments with other performance parameters are available upon customization.

Note: *1: This value is measured under 4x4 binning conditions. Binning operation can improve the signal-to-noise ratio. *2: The field of view (FOV) and instantaneous field of view (IFOV) are determined by the imaging lens. The values in the table are measured using a 25mm focal length lens. Different field of view and instantaneous field of view can be achieved by using imaging lenses with focal lengths of 15mm, 18mm, 35mm, etc.

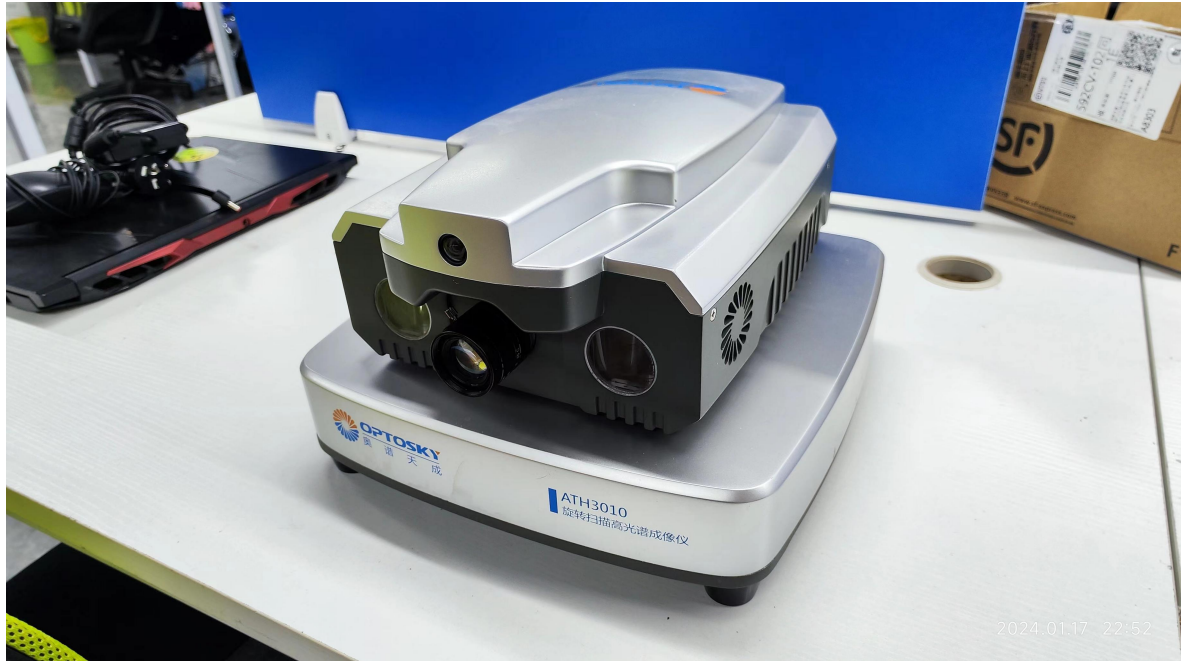
3. Imaging Test of ATH3080



Spectral Images Captured by ATH3080

4. ATH3080 Images and Dimensions





5. Applications



UAV Mounting Test



Field Test Scenario 1



Field Test Scenario 2



Field Test Scenario 3