OPTOSKY Spectroscopy Solutions

Datasheet

Multispectral Imaging & Camera Drones | ATH9603

Features

- Capture images in different bands with a single camera
- Three sets of bands to choose from (OCN/RGN/NGB)
- Image: 12 megapixels (4,000 x 3,000 px), 8MP
- Image format: RAW(12bit)+JPG(24bit), JPG(24bit);
- Video: 2160p24, 1440p30, 1080p60, 720p60
- Video format: H.264 encoder.MP4;
- Trigger options: interval/timer and external PWM shooting modes
- Extract images easily over USB,use PWM signals
- Provide accurate GNSS module
- Can be adapted to any model of drone
- The maximum storage capacity is 256G
- The power supply voltage is 5V/1A
- Data interface: USB

Application

- Agriculture and Crop Management
- Environmental Monitoring
- land Use and Planning
- Water Resources Management
- Natural Disaster Monitoring
- Resource Exploration
- Areas Such As Climate Research, Ecology, Archeology and Remote Sensing

Description

ATH 9603 is a compact drone 3-band multispectral camera developed by Optosky. It has three band combinations to choose from: OCN (orange 615nm + cyan 490nm + near infrared 808nm), RGN (red 660nm + green 550nm + near infrared 850nm), NGB (near infrared 850nm + green 550nm + blue 490nm). There are also distortion-free wide-angle and small-angle lenses to choose from.

The ATH 9603 drone 3-band multispectral camera is small in size and light in weight. It can be easily installed on various drones with a bracket and can remotely trigger photos through the PWM of the HDMI interface. The camera has 256G storage space, providing more space for data storage. The collected data can also be output through the USB interface.

At the same time, the ATH 9603 drone has a maximum flight time of 90 minutes, a maximum speed of 15M/S, a maximum resistance to strong winds of 12M/S, a maximum elevation limit of 5000M, and can work in an environment of -20~45℃. It is equipped with a 1500mAh lithium battery with a battery life of up to 150 minutes. It has the ability to withstand earthquakes and interference, and can adapt to flight missions under various complex environmental conditions.

Model	Description
ATH 9603	Normal type
ATH 9603W	Wide field of view type

1503 Bld. A04, 3rd Software Park, Jimei, Xiamen, 361005, China
Tel: +86-592-6102588

1. Parameter

Parameters	ATH 9603
Optical Sensor	High resolution CMOS Sensor
Spectral Band	OCN/RGN/NGB
Sensor Size	6.2*4.6mm
Image Format	RAW, JPEG
Dynamic Range	12bit (RAW), 8bit (JPEG)
Storage	256G
Data Output Interface	USB3.0
Flight Duration	90min
Camera Control Method	Wireless remote control or ground station software
Field of View	41°@47mm
Weight	70g (excluding adapters and accessories)
Range of Working Temperature	-10℃ to 50℃
Drone Adaptability	Suitable for most common models of drones, with universal interface or customizable adapters
Flight Time Impact	5% (camera itself) + additional load on the flying platform
Application Areas	Agriculture, environmental monitoring, vegetation research, land use planning, geographical information, resource management

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2. Working Principle

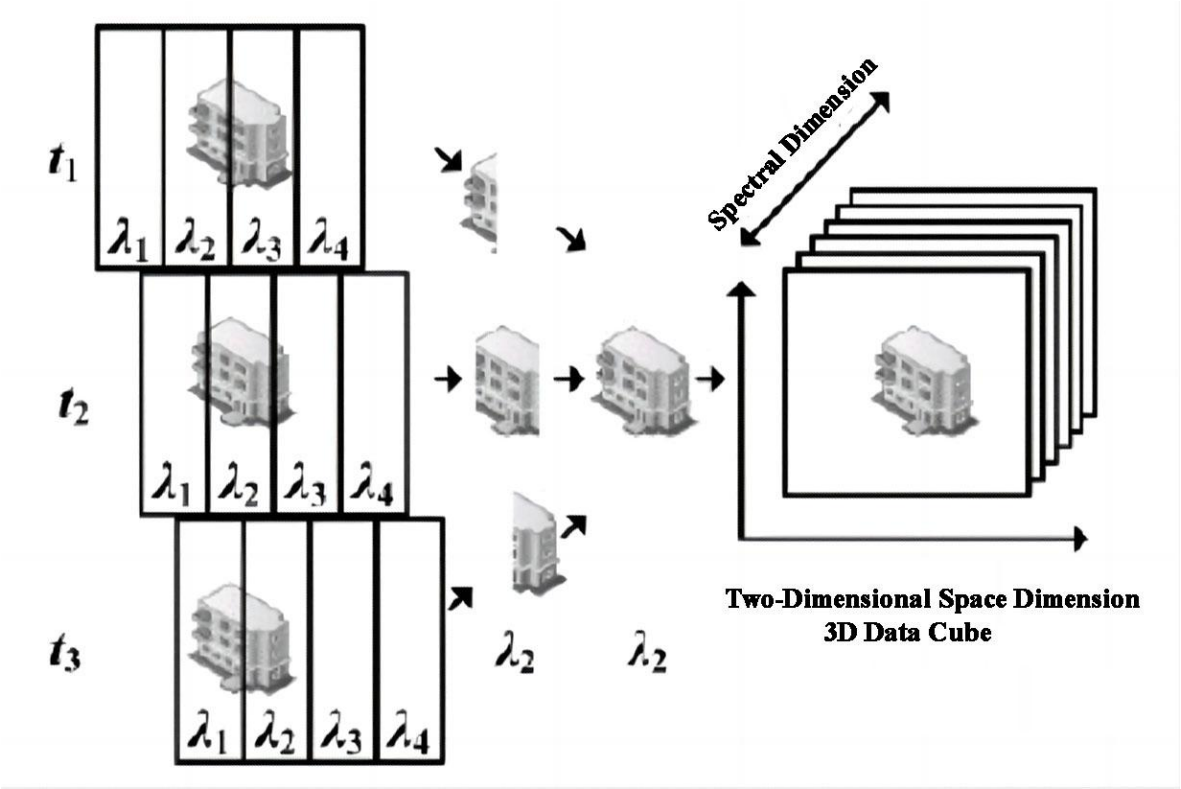

Figure 1 Schematic diagram of ATH 9603 UAV 3-band multispectral camera

The principle of the filter array multispectral camera is to achieve spectral separation and multispectral imaging by placing a filter array above the optical sensor array. When light enters the camera system through the camera's lens, it passes through an array of filters. The filter array is composed of multiple filter units, each unit corresponding to the spectral response of a specific wavelength range. Each filter unit is designed to selectively pass or block specific wavelengths of light. This means that when light passes through the filter array, each filter unit only allows light in a specific wavelength range to pass through, while blocking light in other wavelength ranges. After the light passes through the filter array, it enters the corresponding optical sensor array. Each optical sensor is aligned with the filter unit and is responsible for receiving and converting light signals transmitted through the filter unit. Optical sensors convert optical signals into electrical signals and perform signal amplification and processing. The output of each optical sensor represents the light intensity within the wavelength range selected by the corresponding filter unit. By collecting and processing the output of multiple sensors in an optical sensor array, filter array multispectral cameras can acquire image data in multiple spectral bands simultaneously. This multi-channel image data can be used for spectral analysis, feature identification, vegetation monitoring and other applications.

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3. Application fields

Airborne multispectral cameras have wide applications in many fields. For example:

1. Agriculture and crop management:

Airborne multispectral cameras can be used for crop monitoring, growth assessment, pest and disease detection, and irrigation management. By capturing the different spectral bands reflected by plants, vegetation health, nutritional status and water needs can be assessed to optimize crop growth and yield.

2. Environmental monitoring:

Cameras can be used to monitor and assess pollution, soil quality, water quality and vegetation cover in the environment. By analyzing image data in different bands, environmental parameters such as air pollution, water eutrophication, and forest cover changes can be monitored to help environmental protection and sustainable development.

3. Land use and planning:

Airborne multispectral cameras can provide high-resolution surface image data for land use planning, urban planning and land resource management. By obtaining land use information, land type classification and land surface change monitoring, decision makers can be assisted in making more accurate land management and planning decisions.

4. Water resources management:

Cameras can be used to monitor water quality, water storage capacity and hydrodynamic characteristics of reservoirs, lakes and rivers. By obtaining optical properties and color information of water bodies, key water resources management data can be provided, such as water quality changes, algae bloom monitoring, and water flow velocity measurements.

5. Natural disaster monitoring:

Airborne multispectral cameras can be used to monitor and assess the impact and damage of natural disasters, such as floods, earthquakes, and forest fires. By capturing image data of disaster areas, disaster assessment, post-disaster reconstruction planning and emergency response can be carried out.

6. Resource exploration:

Cameras can be used for geological exploration, mineral resource exploration and energy exploration. Analysis of surface images and spectral features can help identify underground mineral resources, geological structural features and energy potential.

In addition to the above application scenarios, airborne multispectral cameras are also widely used in fields such as climate research, ecology, archeology and remote sensing. As technology continues to develop, so do camera performance and application scenarios.

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