

YUSENSE®



Modular Design, One Machine for Multiple Purposes

MS400

4-Band Agricultural Multispectral Camera

4 Bands & RGB Agricultural Multispectral MS400



Four 1.3M pixel multi-spectral channels, one 8.0M pixel RGB, optical glass window, large aperture, low distortion, broadband transmission, all-glass lens, high cost performance, meet the application needs of agricultural remote sensing.

■ Product Features

- ◆ 4 Multispectral & 1 RGB.
- ◆ 1.3 million & 8 million pixels.
- ◆ 12bit raw data and global shutter & 8bit rolling shutter.
- ◆ Gigabit Ethernet port/TTL serial port.
- ◆ ≤ 175 g Lightweight aluminum body.
- ◆ ≤ 7 W @ 12V power supply, 64G TF card.
- ◆ Downlink Light Sensor (DLS) as standard.
- ◆ Convenient setting of WEB interface parameters under WIFI connection.
- ◆ Multiple trigger modes for external, timing, and overlap ratio.
- ◆ Compatible with multi-type rotary-wing and fixed-wing UAV platform.

■ Spectral Remote Sensing Hardware System CA400 + MS400

Easy to use and easy to fly

One-key take-off and landing, geo-fencing, out-of-control return, all under control; dual RTK positioning module, providing real-time centimeter-level positioning data, flight safety is more reliable, making agricultural remote sensing simpler.

Modular, Convenient Disassembly and Assembly

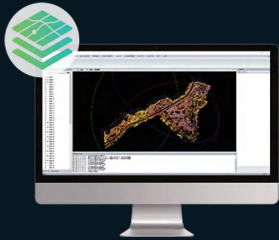
Highly integrated quick-release structure, no need to use tools for disassembly and assembly; portable power supply and camera trigger, easy to apply.

Long Endurance and Efficient Operation

Under typical working conditions, the flight time is 40 minutes, the control distance is 4 kilometers, the cruise speed is 10 m/s, the flight coverage area is wider, the number of flights is less, the data collection time is less, and the data utilization rate is higher, which meets the needs of remote sensing of agricultural conditions of field crops.



■ Data Preprocessing Software Yusense Map



Yusense Map is a powerful, easy-to-operate multi-spectral image processing software for UAVs. Without too much manual intervention, it can complete a series of tasks such as camera parameter reading, aerial triangulation, Band alignment, orthophoto generation and precise DSM.

Band alignment: Photogrammetric theoretical adjustment solution, automatic precise matching of homonymous image points, and sub-pixel multi-channel registration.

split joint: Automatic aerial triangulation, high-precision screening of matching points, seamless orthophoto stitching.

Multi-source data processing: It can process multi-spectral, thermal infrared, visible light and other data.

Spectral index calculation: Support free editing of index formula.

High-precision radiometric correction: Accurate radiation correction, synchronous calculation of real reflectivity, scientific restoration of the essential characteristics of the target.

■ Typical Application



Condition monitoring

By using vegetation factors such as NDVI and LAI, quantifying the consistency of vegetation canopy status at different spatial scales, and using characteristic spectra of vegetation in different health states to quantitatively assess vegetation growth, which can provide data support for irrigation, fertilization, plant protection, yield evaluation and other work.



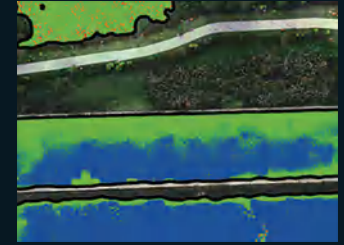
Discolored pine monitoring

Using spectrum and texture information to achieve efficient suppression of the environmental background of soil, withered grass and other objects and high-precision identification of color-change pine. By accurately extracting the location, spatial distribution and canopy area of color-changing pine trees, we can provide data support for the management of diseased trees.



Black and smelly water monitoring

By referring to the evaluation standard of surface black and smelly water, using the characteristic spectrum of black and smelly water to construct the classification index to achieve black and smelly water classification inversion and spatial information statistics. This technology can assist in analyzing the influence of domestic sewage and industrial wastewater on surrounding water, and finally help pollution source investigation and water environment assessment.



Water eutrophication monitoring

Referring to the eutrophic state evaluation standard, the classification index is constructed by using the characteristic spectrum to realize the classification inversion and spatial information statistics of water eutrophication, to assist the analysis of the impact of farmland wastewater, fishery and aquaculture on the surrounding water body, and to assist the investigation of pollution sources and water environment assessment.

■ Product Parameters

Band configuration	Four Multi-spectral bands and one RGB sensor	Power supply mode ^[2]	12V
Target surface size	MS:1/4" ; RGB:1/4"	Power consumption	≤7W@12V
Effective pixels	MS:1.3Mpx ; RGB:8.0Mpx	Storage medium	Standard and support up to 64G capacity (transmission speed U3 and above rating) micro SD card
Shutter type	Global shutter/Shutter	Video format	—
Quantitative figures	MS:12bit ; RGB:8bit	Data processing software	Yusense Map/Yusense Map Plus
Viewing Angle	MS:36.7°×31.3° ; RGB:37.5°×28.6°	Control method	WIFI (WEB interface access)/Ethernet/UART/Yusense net
GSD	MS:6.23cm@h120m ; RGB:2.49cm@h120m	Picture mode	External trigger, Timed trigger, Overlap rate trigger, Cascade trigger
Image size	MS:80m×67m@h120m ; RGB: 82m×61m@h120m	Frequency of taking pictures ^[3]	1Hz
Spectral band ^[1]	555nm@27nm,660nm@22nm, 720nm@10nm,840nm@30nm, RGB	Image format	Multispectral: 16 bit original TIFF & 8 bit reflectance JPEG; RGB: 8bit JPEG (including GPS and ambient light information)
Optical window	Optical-grade glass window	Operating ambient temperature	-10°C~+50°C(Relative wind speed≥1m/s)
Size	≤55mm×65mm×50mm	Storage Environment Temperature	-30°C~+70°C
Weight	≤175g	Environmental humidity	RH(%)≤85%(Non condensation)
Installation interface	7×M3	Product certification	CE、FCC、RoHS


Note: [1] Standard wavelength, The following 18 wavelengths are allowed to be assembled and customized (consult YUSENSE marketing personnel for detailed assembly method and cost): 410nm @ 35nm, 450nm @ 30nm, 490nm @ 25nm, 530nm @ 27nm, 555nm @ 27nm, 570nm @ 32nm, 610nm @ 30nm, 650nm @ 27nm, 660nm @ 22nm, 680nm @ 25nm, 720nm @ 10nm, 720nm @ 15nm (high pass), 750nm @ 10nm, 780nm @ 13nm, 800nm @ 35nm, 840nm @ 30nm, 900nm @ 35nm, 940nm @ 30nm (tolerance ± 5 nm).


[2] Please consult the marketing staff of Yuchen for details if other voltages are used for power supply.


[3] Test results of storage media with data transmission speed rating of U3 and above (read and write speed ≥ 60MB/s).

Let every drone have the right spectral camera

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