Spectrum Link Everything

V.20240828

Website

彩谱® FIGSPEC®

Leading Hyperspectral Camera Manufacturer

Portable hyperspectral camera
Hyperspectral Camera FS1X Series
Imaging Hyperspectral Camera FS2X Series
Microscopic Hyperspectral Imaging System
UAV hyperspectral measurement system

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Portable hyperspectral camera

400-1700nm hyperspectral camera
Obtain hyperspectral image data and analyze it anytime and anywhere

Main characteristics

- Internal sweep hyperspectral camera, wavelength range 400-1700nm
- The spectral resolution (FWHM) can reach 2.5nm
- The spatial resolution is up to 1920*1920, and the number of spectral channels is up to 1200
- Display and operation through 5-inch touch screen, resolution 1280*720

Main function

Working mode	High precision imaging measurement mode PC control mode Line scan mode
User adjustment	Users can flexibly set and adjust the exposure time, merge method, ROI area
Data format	Data format compatible with multiple formats (including envi)
Data export	USB Type-C is available
Working hours	100 measurements can be made on a single charge

Parameters

Model number	FS-IQ-VIS	FS-IQ-VISNIR	FS-IQ-SWIR
Spectroscopic method	Transmission grating spectroscopy	Transmission grating spectroscopy	Transmission grating spectroscopy
Image resolution	1920 * 1920	1920 * 1920	1280*1280
Dynamic range	12 bits	12 bits	12 bits
Imaging speed	5s	5s	5s
Spectral channel number	500	1200	1024
Spectral range	400-700nm	400-1000nm	900-1700nm
Optical harmonic resolution	2.5 nm	2.5 nm	6nm
Slit width	25 um	25 um	25 um
Transmission efficiency	≥60%	≥60%	≥60%
Stray light level	≤0.5%	≤0.5%	≤0.5%
Pixel size	5.86um* 5.86um	5.86um* 5.86um	5um* 5um
Detector type	CMOS	CMOS	InGaAs
Standard lens focal length	25 mm	25 mm	25 mm
Minimum working distance	100mm	100mm	100mm
Field Angle	25 °	25 °	17°
Minimum exposure time	21us	21us	1us
Maximum exposure time	10s	10s	10s
Signal-to-noise ratio	600/1	600/1	600/1
Data interface	USB3.0	USB3.0	USB3.0
Camera lens interface	C	C	C
attachment	USB3.0 transmission line	USB3.0 transmission line	USB3.0 transmission line
Auxiliary imaging function	The auxiliary view camera monitors the shooting area	The auxiliary view camera monitors the shooting area	The auxiliary view camera monitors the shooting area

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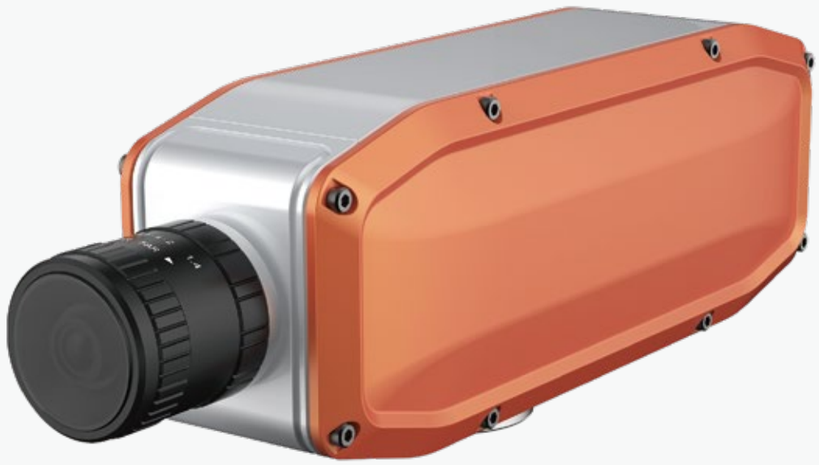
Hyperspectral Camera FS1X Series (Line Scan)



Visible spectrum/NIR：

● Spectral range: 400-1000nm, wavelength resolution better than 2.5nm, up to 1200 spectral channels.

● Acquisition speed: up to 128FPS across the whole spectrum, up to 3300Hz after band selection (support multi-region band selection)

● Widely used in printing, textile and other industrial products surface color, texture detection. The repeatability of color measurement single pixel is up to dE* AB <0.1

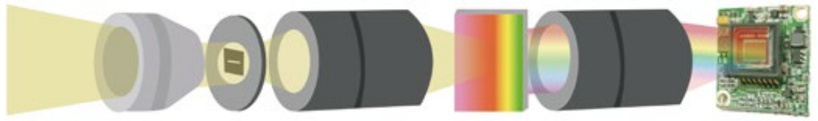
SW-NIR：

● Spectral range: 900-1700nm, wavelength resolution better than 8nm, up to 254 spectral channels

● Acquisition speed: up to 200FPS across the whole spectrum

● Widely used in composition identification, material identification, machine vision, agricultural product quality and other fields

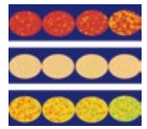
Measurement principle



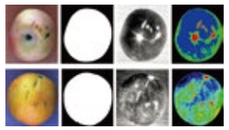
Typical application

印刷品检测

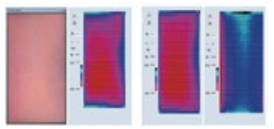
纺织品检测



药品成分分析

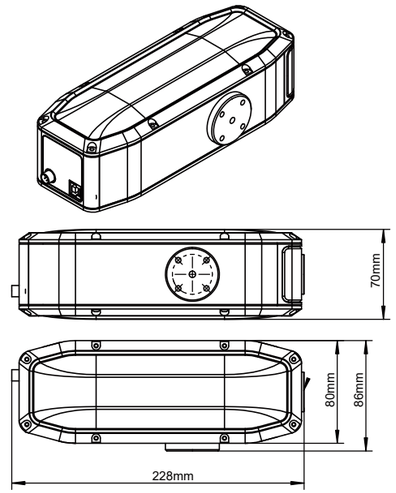


果蔬分选



屏幕检测

外观尺寸图



Parameters

Model	FS-10	FS-12	FS-13	FS-15
Spectroscopic method	Grating	Grating	Grating	Grating
Spectral region	400-700nm	400-1000nm	400-1000nm	900-1700nm
Spectral band	600	1200	1200	254
Spectral FWHM	2.5nm	2.5nm	2.5nm	8nm
Slit width	25um	25um	25um	25um
Transmission efficiency	> 50%	> 60%	> 60%	> 60%
Stray light	< 0.5%	< 0.5%	< 0.5%	< 0.5%
Spatial pixel number	1920	1920	1920	320
Pixel size	5.86um	5.86um	5.86um	30um
Imaging speed	Full band 41Hz 390Hz can be achieved after ROI	Full band 41Hz 390Hz can be achieved after ROI	Full band 128Hz 3300Hz can be achieved after ROI	200Hz
Detector	CMOS	CMOS	CMOS	InGaAs
SNR(Peak)	500/1	600/1	600/1	600/1
Camera output	USB3.0	USB3.0	USB3.0	Gigabit network
Camera interface	C-Mount	C-Mount	C-Mount	C-Mount
Accessories	USB3.0 transmission line	USB3.0 transmission line	USB3.0 transmission line	Gigabit transmission network
ROI	Single area	Single area	Multiple area	Single area
Dimension	Length x width x height: 22.8 cmx7cmx8. 6 cm	Length x width x height: 22.8 cmx7cmx8. 6 cm	Length x width x height: 22.8 cmx7cmx8. 6 cm	Length x width x height: 31.3cmx8.7cmx9.6cm
Weight	1250g	1250g	1250g	2630g
Power dissipation	5W	5W	5W	5W

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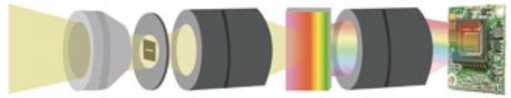
Hyperspectral camera FS-17

FS-17 is a 900-1700nm near-infrared hyperspectral camera launched by CHNSpec Technology, which is an advanced hyperspectral imaging equipment. InGaAs matrix image sensor with high sensitivity, with excellent spectral resolution and spatial resolution, can be widely used in agriculture, food, pharmaceutical, environment and other fields; Support for USB3.0 interface, compatible with standard C-Mount lenses, flexibility and ease of use, easy to integrate into the device for real-time hyperspectral imaging; Using a unique optimization algorithm to achieve high-speed acquisition and processing, with high efficiency and stability, it is a reliable hyperspectral imaging equipment.

- Spectral method: transmission grating
- Spectral range: 900-1700nm
- Spectral channel: 1024
- Spectral resolution: 8nm
- Number of space pixels: 1280
- Imaging speed: up to 1800fps after ROI
- Slit width: 25um
- Camera interface: C-Mount

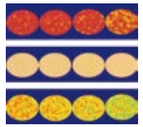
Measurement principle



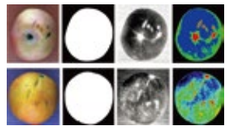
Typical application

Printed matter inspection

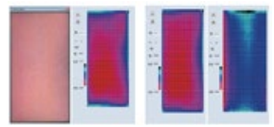
Textile testing



Drug composition analysis

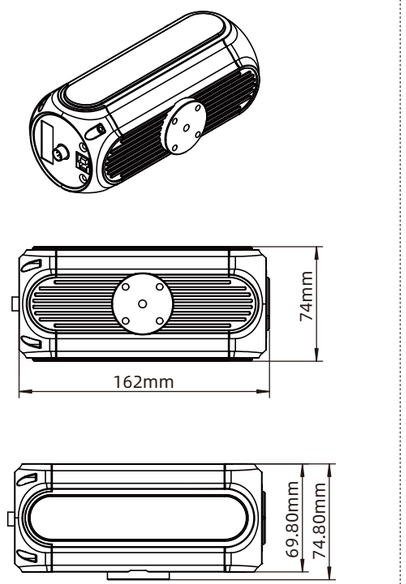


Fruit and vegetable sorting



Screen detection

Exterior dimensional drawing



Parameters

Model number	FS-17
Spectroscopic method	grating
Spectral range	900-1700nm
Spectral channel	1024
Spectral resolution (FWHM)	6nm
Slit width	25um
Transmission efficiency	> 60%
Stray light	< 0.5%
Number of spatial pixels	1280
Pixel size	5um
Imaging speed	8bit/1024 bands 132 frames/SEC,12bit/1024 bands 70 frames/SEC,8bit/512 bands 253fps, up to 1800fps after ROI
probe	InGaAs
SNR(Peak)	600/1
Camera output	start
Camera interface	C-Mount
attachment	Lens, USB cable, power supply
ROI	Multiple regions
dimension	Length x width x height :16.6cmx7.5cmx7.4cm
weight	625g
Power dissipation	5W

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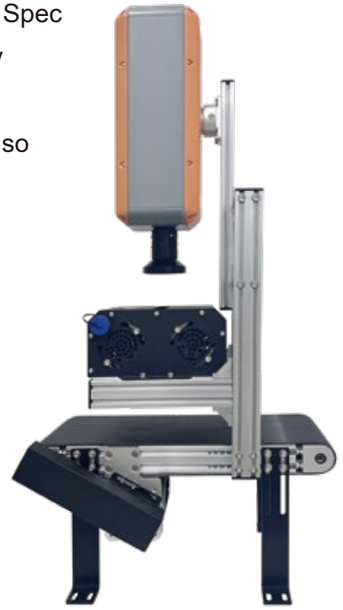
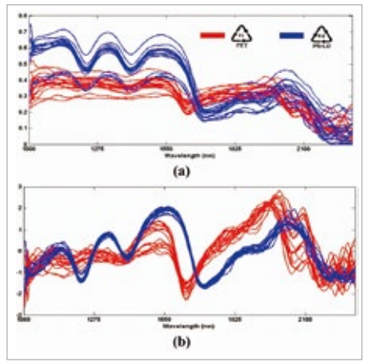
High speed hyperspectral sorting system FS-18/19

The FS-18/19 is a line scan hyperspectral camera from CHN Spec designed for industrial sorting applications. Its high frequency features meet the scanning speed requirements of industrial applications, and its robust construction and compact body also make it more flexible in installation scenarios.

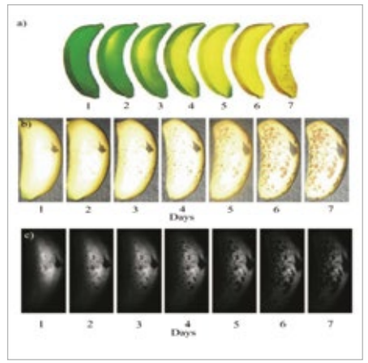


- Spectral range：900-1700nm
- Imaging speed: up to 1480fps
- Spectral resolution: 6nm
- Suitable for all environments
- Multiple regional ROIs can be achieved
- Hyperspectral image processing software is provided

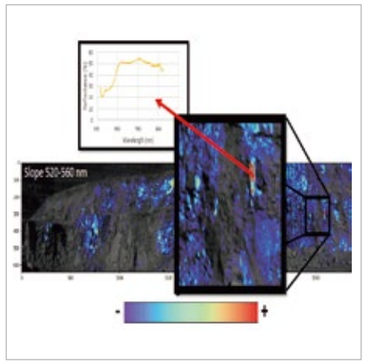
Application fields



Plastic sorting



Fruit and vegetable sorting



Ore sorting

Parameters

Product number	FS-18 (short wave infrared SWIR)	FS-19M (short wave infrared SWIR)	FS-19X (short wave infrared SWIR)
lighting method	Passive lighting (excluding light source)		
Spectral method	Transmission grating		
Spectral range	900-1700nm		
Number of spectral bands	512	150	100
Spectral resolution	< 6nm	<9nm	< 13nm
slit width	25um		
Transmission efficiency	>60%		
stray light	<0.5%		
number of spatial pixels	640		
Pixel size	15um		
Lens focal length	Standard 8mm (optional 6mm, 12mm, 25mm, 35mm lenses)		
field of view	62°(8mm focal length lens), 77°(6mm lens)		
Imaging speed	740fps	2400fps	3500fps
detector	InGaAs		
SNR(Peak)	600/1		
camera output	Cameralink		
camera interface	C-Mount		
Accessories	Lens, data cable, power supply, data acquisition card		
Technical Support	SDK can be provided to support secondary development		
ROI	single area		

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FIGSPEC FS2X Series
Imaging Hyperspectral Cameras

FigSpec® series of imaging hyperspectral cameras adopt transmission grating splitter module with high diffraction efficiency and high sensitivity surface array camera, combined with built-in scanning imaging and auxiliary camera technology, which solves the difficult problems of traditional hyperspectral cameras, such as external push scan imaging mechanism and complex focus. It can be directly integrated with standard C interface imaging lens or microscope to achieve rapid spectral image acquisition.

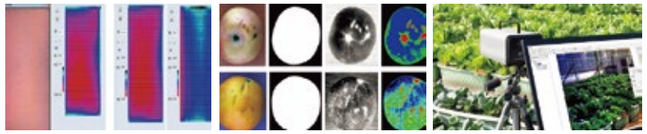
Visible spectrum/NIR：

- Spectral range: 400-1000nm, wavelength resolution better than 2.5nm, up to 1200 spectral channels.
- Image resolution up to 1920*1920

SW-NIR：

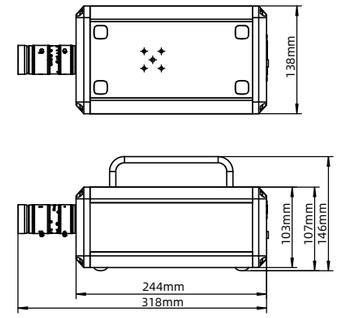
- Spectral range: 900-1700nm, wavelength resolution better than 8nm, up to 254 spectral channels
- Image resolution up to 320*320

Application fields



Screen detection | Fruit and vegetable sorting | Plant pests and diseases detection

Exterior dimensional drawing



Parameters

Model	FS-20	FS-22	FS-23	FS-25
Spectroscopic method	Grating	Grating	Grating	Grating
Image resolution	1920*1920	1920*1920	1920*1920	320*320
Dynamic range	12 bits	12 bits	12 bits	14 bits
Imaging speed	≤15 seconds	≤15 seconds	≤5 seconds	≤5 seconds
Spectral channels number	600	300	1200	254
Spectral region	400-700nm	400-1000nm	400-1000nm	900-1700nm
Spectral FWHM	2.5nm	5nm	2.5nm	8nm
Slit width	25um	25um	25um	25um
Transmission efficiency	60%	60%	60%	60%
Stray light level	0.5%	0.5%	0.5%	0.5%
Pixel size	5.86um*5.86um	5.86um*5.86um	5.86um*5.86um	30um*30um
Detector type	CMOS	CMOS	CMOS	InGaAs
Sensor imaging surface size	11.3*7.1mm	11.3*7.1mm	11.3*7.1mm	9.6mm x 7.68mm
Standard lens focal length	25mm	25mm	25mm	25mm
Minimum working distance	100mm-∞	150mm-∞	100mm-∞	100mm-∞
Field angle	25°	25°	25°	17°
Minimum exposure time	34us	21us	21us	1us
Maximum exposure time	10 seconds	10 seconds	10 seconds	1 seconds
SNR	600/1	600/1	600/1	600/1
Data interface	USB3.0	USB3.0	USB3.0	Gigabit network
Camera lens interface	C-Mount	C-Mount	C-Mount	C-Mount
Accessories	USB3.0 transmission line	USB3.0 transmission line	USB3.0 transmission line	Gigabit network transmission line
Imaging features	With ROI function Single area ROI can be achieved	With ROI function Single area ROI can be achieved	With ROI function Multi area ROI can be achieved	With ROI function Single area ROI can be achieved
Auxiliary imaging features	Auxiliary framing camera to monitor the shooting area	Auxiliary framing camera to monitor the shooting area	Auxiliary framing camera to monitor the shooting area	Auxiliary framing camera to monitor the shooting area
Power supply mode	Built-in battery	Built-in battery	Built-in battery	Built-in battery
Host engine size *	25.5cm*13.8cm*10.7cm	25.5cm*13.8cm*10.7cm	25.5cm*13.8cm*10.7cm	33.5cm*18.2cm*14.3cm
Weight**	Less than 2.8KG	Less than 2.8KG	Less than 2.8KG	Less than 5.3KG
Power dissipation	50W	50W	50W	50W

* size without lens and handle ** weight without lens

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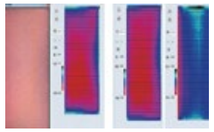
Imaging hyperspectral camera FS-27

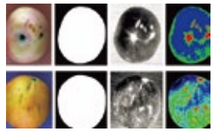
FS-27 imaging hyperspectral camera adopts transmission grating spectral module with high diffraction efficiency and high sensitivity surface array camera, combined with built-in scanning imaging and auxiliary camera technology, to solve the traditional hyperspectral camera needs external push-scan imaging mechanism and difficult to operate such as complex focusing. It can be directly integrated with the standard C interface imaging lens or microscope to achieve fast acquisition of spectral images.

- Spectral method: transmission grating
- Spectral range: 900-1700nm
- Spectral channel: 1024
- Spectral resolution: Better than 6.5nm
- Image resolution: 1280*1280
- Imaging speed: ≤5 seconds
- Slit width: 25unm
- Camera interface: C-Mount

Application fields

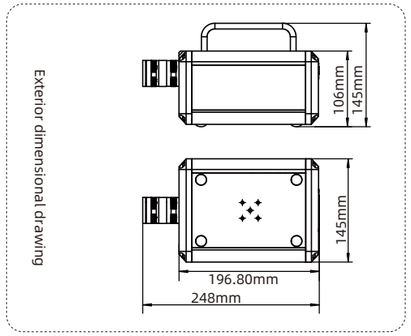


Screen detection



Fruit and vegetable sorting

Plant pests and diseases detection



Parameters

Model number	FS-27
Spectroscopic method	Transmission grating
Image resolution	1280 * 1280
Dynamic range	12 bits
Imaging speed	≤ 5s
Spectral channel	1024
Spectral range	900-1700nm
Spectral resolution (FWHM)	6nm
Slit width	25um
Transmission efficiency	> 60%
Stray light level	< 0.5%
Pixel size	5um*5um
Detector type	InGaAs
Sensor imaging surface dimensions	9.6mm x 7.68mm
Standard lens focal length	25mm
Minimum working distance	150mm
Field Angle	14.5 °
Minimum exposure time	1us
Maximum exposure time	Ten seconds
Signal-to-noise ratio	600/1
Data interface	start
Camera interface	C-Mount
attachment	USB3.0 transmission line
Imaging function	Have ROI capability Multiple regional ROIs can be achieved
Auxiliary imaging function	Auxiliary view camera to realize the monitoring of the shooting area
Power supply mode	Built-in battery power
dimension	Length x width x height :24.8cm*14.5cm*14.5cm
weight	2535g
Power dissipation	50W

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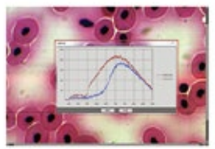
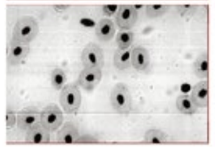
Microscopic hyperspectral imaging system



Any point spectrum

400-1000NM
Hyperspectral imaging



single spectrum imaging

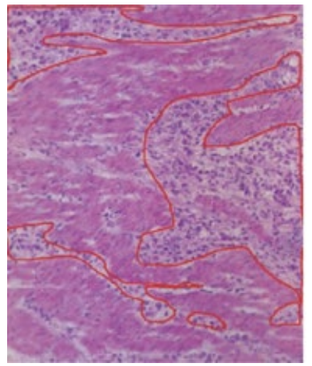
- Combining the advantages of microscope and imaging spectrometer, hyperspectral data acquisition of microscopic images can be performed at any time.
- It can transform existing biological microscopes, fluorescence microscopes, stereo microscopes, metallographic microscopes, etc., and easily transform ordinary microscopes into hyperspectral microscopes.
- Customers can customize microscope models according to their needs.
- The FigSpec® series of imaging spectrometers integrate a visual camera and a hyperspectral camera internally. The visual camera can be used to quickly preview the sampled images, and the hyperspectral image data collection can be performed after confirming that the images meet the requirements.

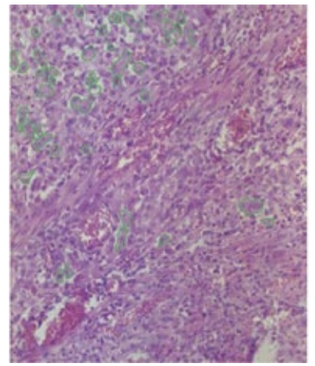
System composition

Hyperspectral imaging spectroscopic camera (optional FS-20/FS-22/FS-23)*1，Lens*1，Microscope (any manufacturer's model can be specified)*1，PC application software*1

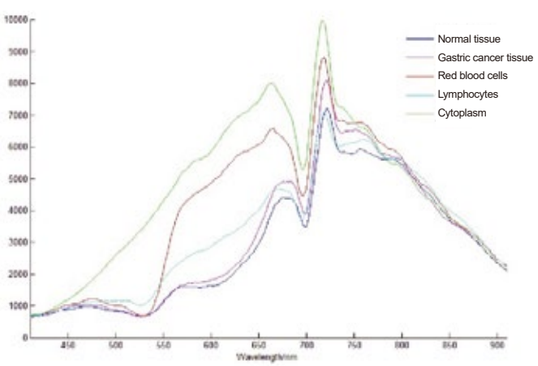
Applications

Example 1: Hyperspectral detection of gastric cancer tissue



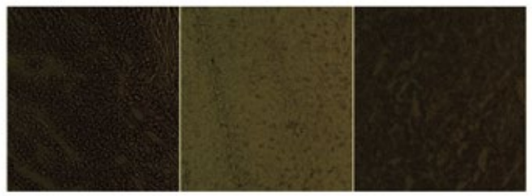


△Gastric cancer tissue markers and gastric cancer cell markers

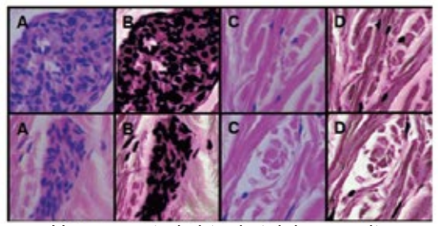


△Comparison of spectral derivatives between gastric cancer tissue and normal tissue

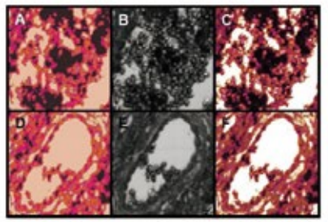
Example 2: Virtual staining of pathological sections based on hyperspectral technology



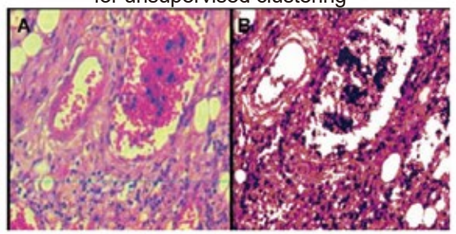
Hyperspectral pseudocolor images of unstained sections



Hyperspectral virtual staining results for unsupervised clustering



Hyperspectral virtual staining results of unsupervised clustering combined but spectral images



Comparison of hyperspectral virtual staining results and H-E staining

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Microscope Hyperspectral Measurement System FS-MS

- Combining the advantages of both the microscope and the portable hyperspectral camera, hyperspectral data collection can be carried out for microscopic images at any time.
- The existing biological microscope, fluorescence microscope, stereomicroscope and metallographic microscope can be transformed, and the ordinary microscope can be transformed into hyperspectral microscope conveniently.
- FigSpec® The series portable hyperspectral camera is internally integrated with a visual camera and a hyperspectral camera. The visual camera can be used to quickly preview the sampled image, and hyperspectral image data acquisition can be carried out after it is determined that the image meets the requirements.

System Composition

Portable hyperspectral camera (FS-IQ-VISNIR) *1, lens *1, microscope, PC application software *1.

Parameters

Model	Microscope hyperspectral measurement system
Spectroscopic splitting method	Transmission grating light splitting
Image resolution	1920*1920
Dynamic range	12 bits
Imaging speed	5 seconds
Number of spectral channels	1200
Spectral range	400-1000nm
Spectral FWHM	2.5nm
Slit width	25um
Transmission efficiency	≥60%
Stray light level	≤0.5%
Pixel size	5.86um*5.86um
Detector type	CMOS
Standard lens focal length	25mm
Minimum working distance	100mm
Field angle	25°
Minimum exposure time	21us
Maximum exposure time	10s
Signal-to-noise ratio	600/1
Data interface	USB3.0
Camera lens interface	C
Parts	USB3.0 Transmission line
Auxiliary imaging function	The auxiliary view camera monitors the shooting area
Eyepiece	Large Field of view WF10X(Φ18mm)
Objective lens	Long anomaly field achromatic objective (glass without cover) PL 5X/0.12 Long anomaly field achromatic objective (glass without cover) PL L10X/0.25 Long anomaly field achromatic objective (glass without cover) PL L40X/0.60 Long anomaly field achromatic objective (glass without cover) PL L60X/0.75 (spring)
Eyepiece tube	Triocular, tilted 30˚,(built-in polarizer, can be switched)
Episcopic illumination system	6V 20W halogen lamp with adjustable brightness Fall illuminator with field light bar, aperture light bar, polarizer, (yellow, blue, green) color filter and frosted glass
Focusing mechanism	Coarse-adjustable coaxial focusing, coarse-adjustable cell value :2μm, coarse-adjustable elastic, with locking and limiting device
Converter	Four holes (inward ball positioning)
Stage	Double-layer mechanical mobile (size :185mmX140mm, moving range :75mmX50mm)

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PTZ hyperspectral measurement system

FS series PTZ hyperspectral measurement system is a measurement system combining hyper-spectral camera and PTZ equipment, which can realize real-time monitoring of the shooting area, support automatic scanning and network connection. It can be applied to the analysis and monitoring field based on hyperspectral technology such as river, lake, forestry, agriculture and base.

- Spectral range：390-1010nm
- Spectral channel number：1200
- Spectral resolution：2.5nm
- Head level range：360°
- Vertical range of PTZ：Positive 90° to negative 90°
- Network connection: Supported

Parameters

Hyperspectral camera

Spectroscopic method	grating
Image resolution	1920 * 1920
Dynamic range	12 bits
Spectral channel number	1200
Spectral range	390-1010nm
Spectral resolution	2.5 nm
Slit width	25um
Transmission efficiency	60% or higher
Stray light level	0.5% or less
Pixel size	5.86 * 5.86 um um
Detector type	CMOS
Standard lens focal length	12mm, 16mm, 25mm, 35mm, 50mm optional
Minimum working distance	100mm
Field Angle	25 °
Minimum exposure time	21us
Maximum exposure time	Ten seconds
Signal-to-noise ratio	600/1
Camera lens interface	C/EF port
Imaging function	There are ROI capabilities that can achieve ROI for a single region
Auxiliary imaging function	The auxiliary view camera monitors the shooting area
Sensor imaging surface dimensions	11.3 * 7.1 mm

Holder

Horizontal range	Horizontal 360°
Vertical range	Positive 90° to negative 90°
Cruise scan mode	Preset point, auto scan, Frame scan, panoramic scan

Network

client	Support wins10 and later systems
Support protocol	IPv4/IPv6, HTTP, HTTPS
Interface protocol	FIGSPEC SDK

Port

port	USB3.0/1000M Network interface 231815

General norm

Operating temperature and humidity	-20 ℃~40℃; Humidity less than 80%

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FS60C/62C UAV hyperspectral measurement system

- Dji M350/300RTK is used as the flight bearing platform.
- Ultra-high speed spectral scanning imaging device with high signal-to-noise ratio provides high stability spectral image acquisition.
- The self-developed image processing algorithm with high efficiency and low power consumption can greatly prolong the flight time and reduce the power consumption of the system.
- Through real-time measurement of spectral image information of plants, water bodies, soil and other ground objects, application and precision agriculture, crop growth and yield assessment, forest pest monitoring and fire prevention monitoring, coastline and Marine environment monitoring, lake and watershed environmental monitoring and other applications.
- Compact system design, imaging spectrometer host spectral resolution up to 2.5nm.
- The whole machine consists of: high stability head, hyperspectral imager, embedded data acquisition, processing and storage unit, wireless image transmission system, GPS-RTK navigation system, ground receiving workstation, ground control system, reflectivity calibration board.

Parameters

Hyperspectral camera FS-60C

Lighting mode	Passive lighting (without light source)
Spectroscopic method	Transmission grating
Spectral range	400-1000nm
Spectral band	1200
Spectral resolution (FWHM)	2.5 nm
Slit width	25um
Transmission efficiency	> 60%
Stray light	< 0.5%
Number of spatial pixels	Max. 1920 (software configurable)
Pixel size	5.86 um
Imaging speed	Full band 128Hz, after ROI can achieve 3300Hz
probe	CMOS
Signal-to-noise ratio	600/1
Camera output	USB3.0 or Gigabit network
Camera interface	C-Mount
attachment	USB3.0 or Gigabit network
ROI	Multiple regions
Embedded data acquisition Processing storage unit	Embedded processor 512GSSD storage
dimension	20.5 cmx18.5 cmx12.9 cm
weight	1200g
Power dissipation	40W

- Easy to operate, no need for professional drone operator, can achieve single operation
- The ground station can observe the sampling site of the aircraft in real time and set the preview and correction functions of the route data collected point by point by using the ground station: radiometric correction, reflectivity correction, and area correction support batch processing
- Real-time common vegetation index calculation function
- Support custom real-time analysis model input function
- ENVI is perfectly compatible with multiple data formats

Hyperspectral camera FS-62C

Spectroscopic method	Transmission grating
Spectral range	900-1700nm
Spectral channel number	1024
Spectral resolution (FWHM)	6.5nm
Slit width	25um
Transmission efficiency	> 60%
Stray light	< 0.5%
Number of spatial pixels	1280
Pixel size	5um
Imaging speed	Full band 70Hz, maximum 1800Hz
probe	InGaAs
Signal-to-noise ratio	600/1
exportation	start
Camera interface	C-Mount
attachment	Lens, USB cable, power supply
ROI	Multiple regions
Built-in processing unit	Windows operating system, 8GB of RAM 512GB SSD and camera integrated Design (optional 1TB)
Heat dissipation mode	Internal air cooling heat dissipation
Mode of operation	Easy to operate, no need for professional drone operation Hand control, can achieve single operation

Observation mode	Real-time observation of aircraft sampling sites, hyperspectral images and spectral data by ground stations
Correction mode	Radiometric correction, reflectivity correction, and area correction support batch processing
Data format	Compatible with spe, hdr, and scp formats
Camera size	Less than 135*82*100 mm (L * W * H) (Including lens and built-in embedded data acquisition and processing unit, excluding head) Less than 190*129*100 mm (L * W * H) (Including lens and built-in embedded data acquisition and processing unit, including head)
Camera weight	≤ 740g (including lens and built-in embedded data acquisition and processing unit, excluding PTZ) ≤ 1085g (including lens and built-in embedded data acquisition and processing unit, including head)
attachments	Reflectance calibration board
Lens focal length	25mm
Camera scene	> 25°
Application software	FIGSPEC UAV real-time flight control software,FIGSPEC Merge puzzle software, FIGSPEC Studion image analysis software

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FS-60UC Series UAV hyperspectral measurement system

- Dji M350/300RTK is used as the flight bearing platform.
- Ultra-high speed spectral scanning imaging device with high signal-to-noise ratio provides high stability spectral image acquisition.
- The self-developed image processing algorithm with high efficiency and low power consumption can greatly prolong the flight time and reduce the power consumption of the system.
- Through real-time measurement of spectral image information of plants, water bodies, soil and other ground objects, application and precision agriculture, crop growth and yield assessment, forest pest monitoring and fire prevention monitoring, coastline and Marine environment monitoring, lake and watershed environmental monitoring and other applications.
- Compact system design, imaging spectrometer host spectral resolution up to 2.5nm.
- The whole machine consists of: high stability head, hyperspectral imager, embedded data acquisition, processing and storage unit, wireless image transmission system, GPS-RTK navigation system, ground receiving workstation, ground control system, reflectivity calibration board.

Parameters

Product model	FS-60UC	FS-62UC	FS-64UC
Spectroscopic method	Transmission grating spectroscopy		
Spectral range	400-1000nm	900-1700nm	400-1700nm
Spectral band	1200	1024	250
Spectral resolution	2.5nm	6.5nm	18nm
Slit width	25um		
Spectral efficiency	＞60%		
Stray light	＜0.5%		
Spatial pixel count	1920	1280	640
Pixel size	5.86um*5.86um	5um*5um	
Imaging speed	Full band 128Hz	Full band 70Hz	Full band 200Hz
Detector	CMOS	InGaAs	
SNR(Peak)	600/1		
Camera output interface	USB		USB or Gigabit Ethernet
Camera lens interface	C-Mount		
Built-in embedded data acquisition and processing unit	Embedded processor with 512G SSD storage		
Heat dissipation method	155*95*119mm(L*W*H)	Internal air cooling heat dissipation	/
Camera size	≤840g	135*82*100mm(L*W*H)	/
Camera weight	≤740g		
Accessories	Reflectance calibration panel		
Lens focal length	25mm		
Lens field of view	＞25°		
Flying platform	DJI M350 RTK / M300 RTK		
Aircraft size	In unfolded state, without propellers.:L*W*H 810*670*430 mm		
Aircraft weight	In folded state, with propellers.:L*W*H 430*420*430 mm		
Maximum takeoff weight of aircraft	Empty weight without battery: about 3.77kg. Empty weight with battery: about 6.47kg		
Fastest ascent speed of aircraft	9.2kg		
Fastest horizontal flight speed of aircraft	6m/s		
Maximum flight time	23m/s		
Operation mode	55 minutes (measured by flying forward at a speed of about 8 meters per second until the remaining battery level is 0% in a windless environment and under no-load conditions. For reference only. The actual usage time may vary due to different flight modes, accessories and environments)		
Observation mode	It is easy to operate and does not require a professional drone operator. Single-person operation can be achieved		
Correction method	Real-time observation of the aircraft sampling location, hyperspectral image and spectral data through the ground station. Functions include radiance correction, reflectance correction and area correction, which support batch processing.		
Data format	Compatible with spe format, hdr format and scp format.		
Application software	FIGSPEC UAV, FIGSPEC Merage mosaic software, and FIGSPEC Studion application software and image analysis software.		

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Lidar UAV hyperspectral system FS60-UCR

The FS60-UCR series Lidar UAV hyperspectral system is a multifunctional unmanned aerial vehicle detection device that integrates lidar and hyperspectral imaging to obtain lidar and hyperspectral image data.

The main functions include: hyperspectral imaging, with a spectral range of 400-1700nm; a multi-threaded lidar with a ranging distance of up to 300m; an ultra-clear preview camera; a built-in control system in the host; high-precision inertial navigation and solid-state storage. It is suitable for being carried by various drones.

- Spectral range: 400-1700nm
- Spectral resolution: better than 2.5nm
- Spatial pixel count: 1920
- High-precision multi-threaded lidar synchronous measurement
- Ranging distance: 300m.
- Mounted on DJI M350/300 to measure large-area data images.
- Equipped with acquisition and analysis software.

Parameters

Product model	FS-60UCR	FS-62UCR	FS-64UCR
Spectral splitting method	Transmission grating spectral splitting		
Spectral range	400-1000nm	900-1700nm	400-1700nm
Spectral bands	1200	1024	250
Spectral resolution	2.5nm	6.5nm	18nm
Slit width	25um		
Spectral efficiency	> 60%		
Stray light	< 0.5%		
Spatial pixel count	1920	1280	640
Pixel size	5.86um*5.86um	5um*5um	
Imaging speed	Full band 128Hz	Full band 70Hz	Full band 200Hz
Detector	CMOS	InGaAs	
SNR (Peak)	600/1		
Camera output interface	USB		USB or Gigabit Ethernet
Camera lens interface	C-Mount		
Built-in embedded data acquisition and processing unit	Embedded processor with 512GB SSD storage		
Heat dissipation method	155*95*119mm(L*W*H)	Internal air cooling	/
Spectral camera size	135*82*100mm(L*W*H)		
Accessories	Reflectance calibration plate		
Focal length of spectral camera lens	25mm		
Field of view of spectral camera lens	> 25°		
Measurement accuracy of lidar system	5cm		
Lidar ranging distance	300m		
Lidar scanning field of view angle	40.3° (vertical) * 360° (horizontal)		
Lidar point frequency	640,000 points/second (single echo) 1,280,000 points/second (double echo) 1,920,000 points/second (triple echo)		
Lidar built-in camera pixel	26 million (6252*4168)		
Lidar lens focal length	16mm		
Flight platform	DJI M350 RTK / M300 RTK.		
Aircraft size	Unfolded state, without blades: length * width * height 810*670*430 mm Folded state, with blades: length * width * height 430*420*430 mm		
Aircraft weight	Empty aircraft without battery: about 3.77 kg. Empty aircraft with battery: about 6.47 kg		
Maximum takeoff weight of aircraft	9.2kg		
Fastest ascent speed of aircraft	6m/s		
Maximum horizontal flight speed of aircraft	23m/s		
Longest flight time	55 minutes (measured in a windless environment and under no-load conditions by flying forward at a speed of approximately 8 meters per second until the remaining battery power is 0%. For reference only. The actual usage time may vary due to different flight methods, accessories, and environments)		
Operation mode	Easy to operate. No professional drone operator is required. Single-person operation can be realized		
Observation mode	Real-time observation of the aircraft sampling location, hyperspectral image, and spectral data through the ground station. Function		
Correction mode	Radiance correction, reflectance correction, and area correction support batch processing		
Data format	Compatible with spe format, hdr format, and scp format		
Application software	FIGSPEC UAV, FIGSPEC Merage mosaic software, FIGSPEC Studion application software, image analysis software		

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VIS-NIR-SWIR(400-1700nm) hyperspectral analysis system

- Single sensor optical path (400-1700nm) hyperspectral detection;
- The spectral resolution is less than 18nm;
- Spatial resolution 640;

Line Scan Camera (FS-14)

Imaging Camera (FS-24)

UAV hyperspectral camera FS-64UC

Lidar UAV hyperspectral system FS64-UCR

Parameters

FS-14 Line Scan Camera

Product name	FS-14 Line Scan Camera
sSpectroscopic method	Transmission grating
Spectral range	400-1700nm
Spectral band number	>250
Spectral resolution (FWHM)	18nm
Slit width	25um
Transmission efficiency	>60%
Stray light	<0.5%
Number of spatial pixels	640
Pixel size	5um
Lens focal length	16mm
Imaging speed	200fps
Probe	InGaAs
SNR(Peak)	600/1
Camera output	USB3.0
Camera interface	C-Mount
Attachment	Lens, data cable, power supply
Technical support	Can provide SDK, support secondary development
ROI	Multiple regions

FS-24 Imaging Camera

Product name	FS-24 Imaging Camera
Spectroscopic method	Transmission grating spectroscopy
Image resolution	640*640
Dynamic range	12 bits
Imaging speed	5s
Spectral band number	250
Spectral range	390-1710nm
Spectral resolution	18nm
Slit width	25um
Transmission efficiency	≥60%
Stray light	≤0.5%
Pixel size	5um*5um
Probe	InGaAs
Matching lens focal length(mm)	25mm
Minimum working distance(mm)	100mm
Field Angle	25°
Minimum exposure time	21us
Maximum exposure time	10s
SNR(Peak)	600/1
Camera output	USB3.0
Camera interface	C
Attachment	USB3.0 transmission line
ROI	There are ROI capabilities that can achieve ROI for a single region
Auxiliary imaging function	The auxiliary view camera monitors the shooting area
Power supply mode	Built-in battery power

FS64-UCR Lidar UAV hyperspectral system

Product name	FS64-UCR Lidar UAV hyperspectral system
System measurement accuracy	5cm
Odometry	300m
Scan the Angle of view	40.3°(vertical)*360°(horizontal)
Dot frequency	640,000 points/second (single echo) 1.28 million points/second (double echo) 1.92 million points/second (triple echo)
Built-in camera image cable	26 million (6252*4168)
Lens focal length	16mm
Main engine weight	1Kg
Operating temperature	-20°C~+50 C
Storage temperature	-20°C~+65 C
Class of protection	IP64
Storage capacity	512GB internal storage / 512GB extended storage
Data copy mode	Type-C
Mount interface	DJI Skyport interface
Flying platform	M300/M350 RTK
Control mode	Support key start acquisition, including power supply and data acquisition
Remote control	Support remote control APP control device work
Data copy speed	Max 300M/s
Storage mode	Built-in storage and TF card storage
Equipment control software	M300/M350 UAV remote control integrated control software
Software	Acquisition software, splicing software and analysis software
Lighting mode	Passive lighting (without light source)
Spectroscopic method	Transmission grating
Spectral range	400-1700nm
Spectral band	250
Spectral resolution (FWHM)	18nm
Slit width	25um
Transmission efficiency	>60%
Stray light	<0.5%
Number of spatial pixels	640
Pixel size	5um
Imaging speed	Full band 200HZ
Probe	InGaAs
Signal-to-noise ratio	600/1
Camera output	USB3.0 or Gigabit network
Camera interface	C-Mount
Attachment	USB3.0 transmission line or Gigabit network transmission line
ROI	Multiple regions
Embedded data acquisition processing storage unit	Embedded processor 512GSSD storage

FS64-UC UAV hyperspectral camera

Product name	FS-64UC UAV hyperspectral camera
Spectroscopic method	Transmission grating spectroscopy
Spectral range	400-1700nm
Spectral band number	250
Spectral resolution (FWHM)	18nm
Slit width	≤25um
Spectral efficiency	>60%
Stray light	<0.5%
Number of spatial pixels	6.4
Pixel size	5um*5um
Imaging speed	Full band 200Hz, Max 4000HZ
Probe	InGaAs
SNR(Peak)	600/1
Camera output interface	USB
Camera lens interface	C-Mount
ROI function	Multiple zones can be implemented
Built-in embedded data acquisitionand processing unit	windows operating system, 8GB memory 1TB SSD with HDMI interface, USB3.0 interface, and camera integrated design
Heat dissipation mode	Internal air cooling heat dissipation
Mode of operation	Easy to operate, no need for professional drone operator, can achieve single operation
Observation mode	Real-time observation of aircraft sampling sites, hyperspectral images, spectral data through ground stations
Correction mode	Radiometric correction, reflectivity correction, and area correction support batch processing
Data format	Compatible with spe, hdr, and scp formats
Application software	FIGSPEC UAV,FIGSPEC Merage Puzzle Software FIGSPEC studio Application software Image analysis software
Attachment	Reflectance calibration board
Lens focal length	25mm
Lens field of view	>25°

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Multispectral camera FS-50 series

The FigSpec® FS-50 series is a new generation of unmanned multispectral cameras from Color Spectrum Technology Company, adapted to the DJI M350/M300RTK flight platform, with 30-180 spectral channels and 2K resolution.

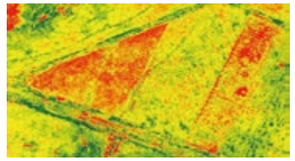
It can meet the application needs of precision agriculture, military defense and homeland security, disaster prevention and forestry monitoring, river and lake ecology, target identification and other industries.

- Ultra-high spectral channels: 30-180 spectral channels (different models)
- 2K spatial resolution
- Global shutter, 12bit high precision sampling data
- Ground station real-time preview data acquisition
- DJI X-Port control and power supply, 512GSSD mass storage
- Dji M350/M300 RTK UAV customization, plug and play
- FIGSPEC UAV real-time flight control software, FIGSPEC Merge puzzle software, FIGSPEC Studion image analysis software

Parameters

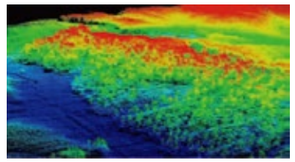
Model number	FS-50/30	FS-50/60	FS-50/90	FS-50/120	FS-50/150	FS-50/180
Number of spectral channels	30	60	90	120	150	180
Spectral channel wavelength	400-1000nm	400-1000nm	400-1000nm	400-1000nm	400-1000nm	400-1000nm
	Per 20nm	Per 10nm	Per 6.6nm	Per 5nm	Per 4nm	Per 3.3nm
	Output a wavelength	Output a wavelength	Output a wavelength	Output a wavelength	Output a wavelength	Output a wavelength
Spectral resolution/half wave width	3.5nm	3.5nm	3.5nm	2.5nm	2.5nm	2.5nm
Spatial resolution	1920					
Sampling rate	128 line/S					
Image sensor	1/1.1 inch CMOS					
Effective pixel	1920					
Shutter type	Global shutter					
Quantization number	12bit					
Visual field	25.36 °					
Ground resolution	2.8 cm @ h120m					
Covering width	54m@h120m					
Optical window	High transmittance optical glass window					
Main engine size	≤155*95*119mm					
Main engine weight	≤840g					
Installation/power supply port	X-Port					
Work loss	45w					
Picture format	12bit.SPE (compatible with third party analysis software such as envi)					
Data storage space	512SSD					
Application software	FIGSPEC UAV real-time flight control software, FIGSPEC Merge puzzle software, FIGSPEC Studion image analysis software					
Shooting method	Real-time acquisition					

Typical application



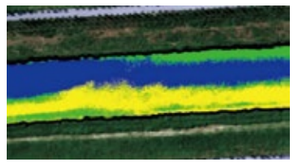
Crop growth assessment Crop growth assessment

FigSpec Studio software is built with NDVI and other vegetation factors to accurately quantify the state of vegetation canopy at different spatial scales, quantitatively assess the health, stress and growth of crops and vegetation, and provide data support for crop growth assessment, yield prediction, disease and pest detection, etc.



Coverage evaluation

Based on the spectral fingerprint information of plants, accurate classification of plants in the region and crop area statistics are carried out to provide quantitative vegetation canopy data to provide data support for scientific research and production of agriculture and forestry ecological industry.



Water quality analysis and monitoring

Using the spectral data and chemical analysis results, the analysis model is constructed to realize the inversion of the classification and water quality parameters of black and odorous water bodies. Combined with spatial information to monitor the impact of domestic sewage and industrial wastewater on surrounding water bodies, help pollution source investigation and water environment assessment.

Water eutrophication monitoring

Spectral data are used to form a classification index to monitor water eutrophication and conduct spatial information statistics. Following the evaluation standards of water eutrophication status, it assists in analyzing water pollution sources such as farmland, aquaculture and fishery, and provides data and powerful data collection tools for pollution source investigation and water environment assessment.

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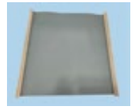
Optional Accessories

Parts Material Code	Name	Applicable instrument type	Picture
3.06.10.1007-0	Hyperspectral camera standwith whiteboard	FS-1X/2X Series FS-IQ Series	
5.19.01.0021-0	Hyperspectral camera bench (translation table with light source)	FS-1X/2X Series FS-IQ Series	
5.20.01.0015-0	Hyperspectral camera technology service fee	Full range of hyperspectral products	
3.01.18.1020-0	Hyperspectral tripod with crossbar	FS-2X Series FS-IQ Series	
3.05.12.0090-0	Reflectance calibration cloth 18%	FS-60C/60UC/60UCR FS-62C/62UC/62UCR FS-64C/64UC/64UCR	
3.05.12.0068-0	Reflectance calibration cloth 80%	FS-60C/60UC/60UCR FS-62C/62UC/62UCR FS-64C/64UC/64UCR