Spectrum Link Everything

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Website

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

















CHNSpec Technology （Zhejiang）Co.,Ltd

About us



CHNSpec is a high-quality domestic hyperspectral camera manufacturer, mainly engaged in the research and development, production and sales of spectral analysis equipment and color detection equipment. Its products include portable hyperspectral cameras, line scanning hyperspectral cameras, imaging hyperspectral cameras, UAV hyperspectral measurement systems, microscopic hyperspectral imaging systems, colorimeter, spectrophotometer, transmittance haze meter, gloss meter, paint color matching software, etc., which are widely used in domestic and foreign universities, scientific research institutions, plastics, coatings, printing and other fields.

CHNSpec is located in Xiasha Higher Education Park, Hangzhou. The company's main person in charge has a senior professional title and a doctorate degree or above. The company has introduced R&D teams from well-known universities such as Zhejiang University and China University of Metrology. The development of CHNSpec has attracted the attention of domestic experts and scholars, and has cooperative relations with authoritative research institutions such as the Zhejiang Provincial Key Laboratory of Modern Metrology, Test and Instrumentation, and the National Engineering Center for Metrology and Test Technology of the Ministry of Education. Under the care of all experts, CHNSpec's technical level and R&D capabilities have achieved leapfrog development and achieved remarkable results.

CHNSpec has many invention patents, including one US invention patent, several utility model patents, appearance patents, and software copyrights. In addition, there are many patents in the announcement stage. CHNSpec has published many papers in domestic first-level scientific journals and included in SCI and EI.



Academician of Chinese Academy of Science Mr. Chen visited us.
General manager Mr Yuan introduced our products to him.



Academician Mr. Zhuang came to visit us



CHINA INSTRUMENTS MANUFACTURERS ASSOCIATION Vice Chairman visited us



Qualification And Honor



Patented Technology



Participation In Standard Development



Calibration specification for platinum-cobalt colorimeters



Leather color fastness test Accelerated aging Color change under Conditions(QB/T 5250-2018)



"Leather color fastness test colortransfer to PVC film test" (QB/T 5252-2018)



Hyperspectral method for Quantitative Analysis of Polyester-Cotton Blended Textiles



Color fastness test fabric staining Rating hyperspectrometry

Product Certificate



CE certificate



Full test report



RoHS Certificate



FCC certificate



UKCA certificate

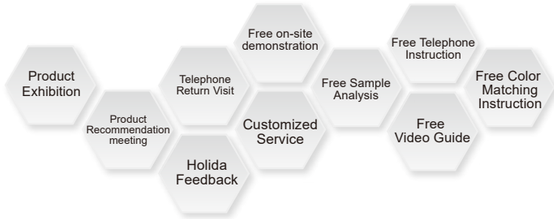


National Metrology Institute verification certificate

Marketing And Sales

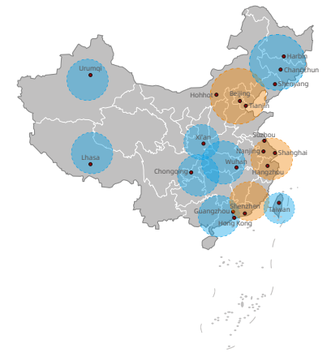
Customer service

CHNSpec has always been customer-centric and put forward for customers For professional application solutions, cost-effective production Product and intimate technical support services to help customers takeBe successful.



Sales Network

CHNSpec sales business throughout the country, currently North China,East China, Central China, South China, Southwest, northwest all have me Our service network. The international market is also expanding In China, the current business involved in the following countries: the United States, Russia Ross, Korea, India, Vietnam, Bangladesh, South Korea Africa and other countries and regions.



Cooperative Customer

Testing Institution	河北省计量监督检测院	浙江省纺织测试研究院	国家皮革质量监督检验中心（浙江）	中国标准化研究院公共安全标准化研究所	深圳市计量质量检测研究院	DiLAC 国防科技实验室认可委员会
School	清华大学	北京大学				
Plastic		北京现代	LEADER	KINGFA 金发科技	HAIERS 海尔	WOTE 沃特股份
Electronic Appliance	oppo		HUAWEI	vivo	Hisense	GREE 格力
Spin	COATS	adidas	CONVERSE	YISHION 宜新	苏州多诺纺织科技有限公司	SHANGTEX
Food	康师傅	TSINGTAO 青岛啤酒	海天	今麦郎		
Home Decoration	顾家家居 KUKA	IKEA 宜家家居	立邦	TUBAO 兔宝宝	Bairuinet	中国·多乐
Coating	SHERWIN WILLIAMS.	CAPAROL	DAIHO 大宝漆	KEYTEC COLOURS	展辰涂料	三棵树

FIGSPEC

Portable Spectroradiometer



FS-9100



FS-9200/FS-9300

The FigSpec® series spectroradiometers are the latest products from CHNSpec.
FS-9100 is a standard handheld spectroradiometer with a wavelength range of 300-1100 nm. It features high cost-effectiveness, fast and accurate measurement, and easy operation, making it suitable for applications in vegetation research, forestry science, and agricultural surveys.
FS-9200 has all the functions of the standard handheld spectroradiometer but extends the wavelength range to 300-1700 nm. It also has a longer battery life and can be used for water body research, climate change studies, and ecosystem monitoring, helping to assess water quality changes and analyze the impact of climate change on ecosystems.
FS-9300 has a wavelength range of 300-2500 nm and supports accessories such as a pistol-style aiming device and a contact probe handle. It offers more functions and is suitable for a wider range of applications.

- The device uses a fiber optic probe for measurements, making it lightweight and highly flexible in actual operation, allowing it to adapt to various complex measurement scenarios.
- Designed as a handheld device, it comes with a dedicated carrying case, ensuring easy transportation and storage, which enhances its portability.
- The device features real-time display of the probe's tilt angle and is equipped with a laser pointer to precisely indicate the measurement location, greatly facilitating angle and position adjustments during operation.
- It is controlled via a high-definition touchscreen and also supports PC software and Bluetooth connectivity, enabling both remote and local operation, offering users multiple control options.
- An integrated high-definition camera provides a clear view of the measurement area, helping users accurately position the target for spectral analysis.
- The main unit is specially designed with excellent dustproof and waterproof capabilities, ensuring high durability and resistance to environmental factors, reducing the risk of damage.

Technical Parameters

Model	FS-9100	FS-9200	FS-9300
Detector			
Type	CMOS Linear Sensor	300-950nm: CMOS linear array sensor 950-1700nm:InGaAs detector, two-stage cooling	300-1000nm: CMOS linear array sensor 1000-2500nm: InGaAs detector, two-stage cooling
Optical parameters			
Spectral Bands	300-1100nm	300-1700nm	300-2500nm
Wavelength repeatability	± 0.1nm @ VIS，± 0.5nm @ SWIR		
Wavelength accuracy	± 0.5nm @ VIS，± 1.1nm @ SWIR		
Spectral resolution	Up to 1.7nm	300-950nm up to 1.7nm 950-1700nm up to 6.5nm	300-1000nm up to 1.7nm 1000-2500nm up to 15nm
Input	Spatial light (1.5m optical fiber optional)	1.5m optical fiber	
Field of view	Standard 25°, 1°/8°/15° optional		
Indicated laser wavelength	650nm	/	
Indicated laser power	5mW	/	
Maximum radiation	VNIR 2 times sunlight/SWIR 10 times sunlight		
Signal-to-noise ratio	380:1	300-950nm 380:1 950-1700nm 1200:1	300-1000nm 380:1 1000-2500nm 1200:1
Spectral sampling interval	0.45nm	Visible light: 0.4nm, short-wave infrared: 5.0nm	
Number of hardware spectral averages	Up to 100 times		
Electrical parameters			
Operating system	windows11		
Camera	12 megapixels	/	
LCD screen	5.5 inches 720×1280 (IPS)	7 inches 1280×800 (IPS+HD+300ANSI)	
Integration time	1ms~1000ms (1s) automatic optimization integration time		
Data output interface	TYPE-C—USB2.0, Bluetooth		
Geographic location	Built-in GPS positioning system		
Angle data	JY60 gyroscope optical test angle ±180°	/	
Power supply	Built-in battery: lithium battery 4500mAh	Built-in battery Li-ion battery 9000mAh	
Battery life	Estimated 4 hours	Estimated 6 hours	
Power supply	External power adapter: 12V 5A charging	External power adapter 12V 6A charging	
Storage temperature	-20℃~+65℃		
Operating temperature	-10~45℃	-10~50℃	-20~50℃
Working humidity	＜90%RH (no condensation)		
Physical parameters			
Waterproof rating	IP65	IP54	
Dimensions	272×210×106 mm	359.8×336×117.8 mm	
Weight	2.3kg	4.8kg	

FIGSPEC

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	300 measurements can be performed on a single charge (measurement conditions: one measurement every 2 seconds, exposure time 20 milliseconds)

Parameters

Model	FS-IQ-VIS	FS-IQ-VISNIR	FS-IQ-SWIR
Spectral Range	400-700nm	400-1000nm	900-1700nm
Spectral Bands	500	1200	1024
Spectral Resolution (FWHM)	2.5 nm	2.5 nm	6nm
Spatial Pixels	1920 * 1920	1920 * 1920	1280*1280
Frame Rate	Full-band 41fps,390fps after ROI	Full-band 128fps,3300fps after ROI	8bit/1024 bands 132 frames/SEC, 12bit/1024 bands 70 frames/SEC, 8bit/512 bands 253fps, up to 1800fps after ROI
Spectroscopic method	Grating	Grating	Grating
Dynamic range	12 bits	12 bits	12 bits
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 °	14.59°
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	USB3.0	USB3.0
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

FIGSPEC

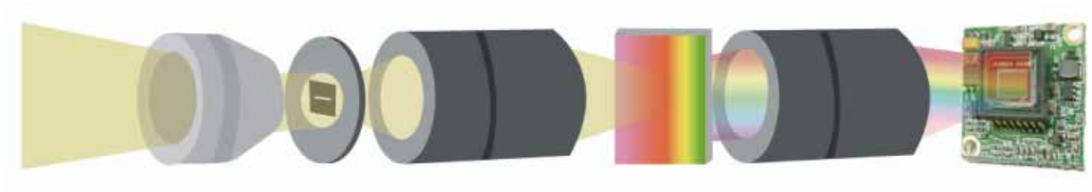
FS1A - Hyperspectral Camera (Line Scan)



Short-wave near-infrared:

· Spectral range: 900-2500 nm, wavelength resolution better than 10 nm, capable of up to 250 spectral channels

· Widely used in component identification, material discrimination, machine vision, agricultural product quality assessment, and other fields.



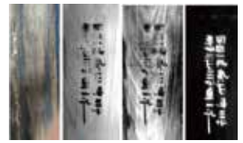
Typical application



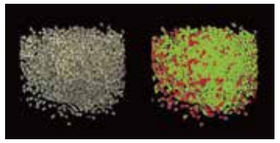
Nondestructive Core Scanning



Resource Recycling Sorting



Detection in Cultural Heritage Conservation



Agricultural Product Quality Analysis

Parameters

Spectral Range	900-2500nm
Spectral Bands	≥250
Spectral Resolution (FWHM)	≤10nm
Spatial Pixels	≥640
Frame Rate	200fps
Dispersion Device	Transmission Grating
Spectral Sampling Interval	≤6.5nm
F-number	F/2.5
Detector Type	MCT
Target Size	≥9.6×7.68mm
Pixel Size	≥15um×15um
Effective Bit Depth	≥14bits
Lens Focal Length	25mm
Field of View	21.7°@f=25mm
Instantaneous Field of View	0.59mrad@f=25mm
Cooling Method	Stirling Cooling
Effective Slit Length	≥9.6mm
Slit Width	≤25um
Operating Temperature	0-40°C
Storage Temperature	0-50°C
Camera Interface	USB 3.0 or Gigabit Ethernet
Application Software	FIGSPEC SCAN2.0 and FIGSPEC Studio Application Software,Image Analysis Software
Data Format	Compatible with .spe, .hdr, and .scp formats

FIGSPEC

Hyperspectral Camera FS1X Series (Line Scan)



Visible light:

- Spectral range: 400-700nm, wavelength resolution better than 2.5nm, up to 600 spectral channels
- Acquisition speed: up to 41fps for the full spectrum, up to 390fps after band selection (supports multi-region band selection)
- Widely used in surface color and texture detection of various industrial products such as printing and textiles. The single pixel repeatability of color measurement can reach dE*ab<0.1

Visible near infrared (400-1000nm):

- Wavelength resolution better than 2.5nm, up to 1200 spectral channels
- The number of spatial pixels can reach 1920

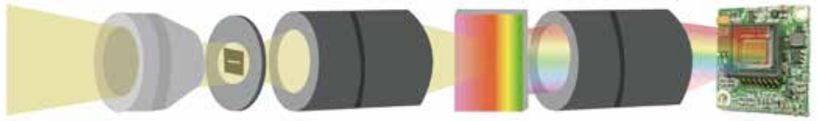
Visible light, near infrared, short wave infrared (400-1700nm):

- Wavelength resolution better than 13nm,up to 680 spectral channels
- Spatial pixel count up to 1280

Shortwave infrared (900-1700nm):

- Wavelength resolution better than 6nm, up to 1024 spectral channels
- The number of spatial pixels can reach 1280

Measurement principle



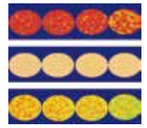
Typical application



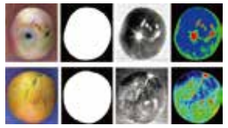
Printed matter inspection



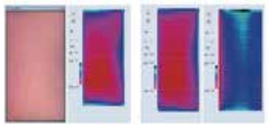
Textile testing



Drug composition analysis



Fruit and vegetable sorting



Screen detection

Parameters

Model	FS-10	FS-12	FS-12-HW	FS-13	FS-14	FS-17
Spectral Range	400-700nm	400-1000nm	400-1000nm	400-1000nm	400-1700nm	900-1700nm
Spectral Bands	600	1200	670	1200	680	1024
Spectral Resolution (FWHM)	2.5nm	2.5nm	5nm	2.5nm	13nm	6nm
Spatial Pixels	1920	1920	1920	1920	1280	1280
Frame Rate	Full-band 41fps,390fps after ROI	Full-band 41fps,390fps after ROI	128fps	Full-band 128fps,3300fps after ROI	100fps	8bit/1024 bands 132 frames/SEC,12bit/1024 bands 70 frames/SEC, 8bit/512 bands 253fps, up to 1800fps after ROI
Spectroscopic method	Grating	Grating	Reflection grating	Grating	Grating	Grating
Slit width	25um	25um	25um	25um	25um	25um
Transmission efficiency	50%	60%	60%	60%	60%	60%
Stray light	0.5%	0.5%	0.5%	0.5%	1%	0.5%
Pixel size	5.86um	5.86um	5.86um	5.86um	5um	5um
Detector	CMOS	CMOS	CMOS	CMOS	InGaAs	InGaAs
SNR(Peak)	500/1	600/1	600/1	600/1	600/1	600/1
Camera output	USB3.0	USB3.0	USB3.0	USB3.0	USB3.0	USB3.0
Camera interface	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount
Accessories	USB3.0 transmission line	USB3.0 transmission line	USB3.0 Transmission line	USB3.0 transmission line	Lens, USB cable, power supply	Lens, USB cable, power supply
ROI	Single area	Single area	Multiple areas	Multiple area	Multiple area	Multiple area
Dimension	Length x width x height:22.8cmx 7cmx8.6 cm	Length x widthx height:22.8cmx 7cmx8.6 cm	Length x width x height:85mm* 74mm*45mm	Length x width x height:22.8cmx 7cmx8.6 cm	Length x width x height:22cmx 11cmx9.5cm	Length x width x height :16.6cmx 7.5cmx7.4cm
Weight	1250g	1250g	250g	1250g	1.3kg	700g
Power dissipation	5W	5W	5W	5W	5W	5W

FIGSPEC

Industrial online high-speed short-wave infrared hyperspectral camera

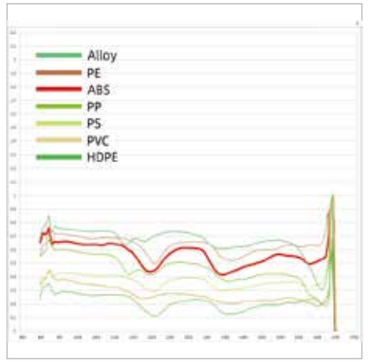


FS-19S Series is an online high-speed short-wave infrared hyperspectral camera specially launched by CHNSpec for the industrial sorting field. Its high frequency characteristics meet the requirements of the industrial field for scanning speed. Its sturdy structure and compact body also make its installation scenario more flexible.

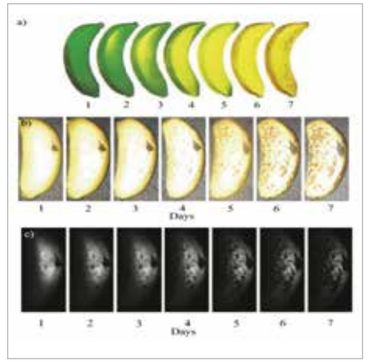
- Spectral Range: 900-1700nm
- Frame Rate: up to 7800fps
- Spectral Resolution (FWHM): 8nm
- Provide hyperspectral image processing software
- Applicable to various environments



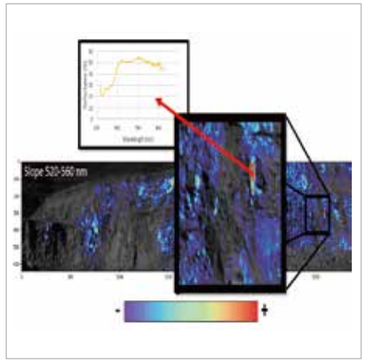
Application fields



Plastic sorting



Fruit and vegetable sorting



Ore sorting

Parameters

Model	FS-19SS	FS-19MS	FS-19XS	FS-19S	FS-19-MY	FS-19M	FS-19X
Spectral Range	900-1700nm						
Spectral Bands	250	206	150	200		150	100
Spectral Resolution (FWHM)	< 8nm	< 9nm	< 13nm	< 8nm		< 9nm	< 13nm
Spatial Pixels	640						
Frame Rate	1460fps	1770fps	2400fps	1700fps	8 spectral channels > 7800fps 16 spectral channels > 4900fps	2400fps	3500fps
Lighting method	Passive lighting (excluding light source)						
Spectral method	Transmission grating						
Slit width	25um						
Transmission efficiency	＞60%						
Stray light	＜0.5%						
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)						
Detector	InGaAs						
SNR(Peak)	600/1						
Camera output	Cameralink				GigE		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 region				Multiple regions		Single region
Size	Length*Width*Height: 240mm*143mm*90mm			Length*Width*Height: 347mm*122mm*136mm			

FIGSPEC

Full-Spectrum Hyperspectral Imager FS-2A



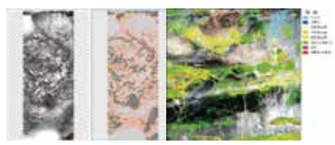
The FigSpec® series imaging hyperspectral cameras employ a high-diffraction-efficiency transmission grating dispersion module and a high-sensitivity area array camera, combined with built-in scanning imaging and an auxiliary camera. This design addresses operational challenges associated with traditional hyperspectral cameras, such as the need for external push-broom imaging mechanisms and complex focusing procedures. They can be directly integrated with standard C-mount imaging lenses for rapid spectral image acquisition.

Short-Wave Infrared (SWIR)

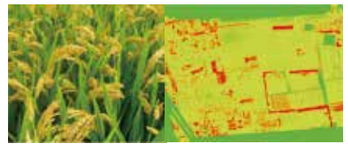
· Spectral Range: 900–2500 nm,Spectral Resolution (FWHM): <10 nm

· Spectral Bands: 250,Spatial Pixels: 640 × 640 pixels

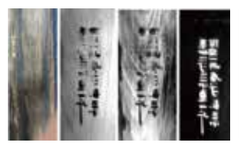
Typical application



Geological and Mineral Exploration



Precision Agriculture and Crop Monitoring



Cultural Heritage and Conservation Detection



Military and Police Applications

Parameters

Spectral Range	900-2500nm
Spectral Bands	≥250
Spectral Resolution (FWHM)	≤10nm
Spatial Pixels	≥640×640
Frame Rate	200fps
Dispersion Device	Transmission Grating
Push-Broom Scanning Method	Built-in Push-Broom
Spectral Sampling Interval	≤6.5nm
F-Number	F/2.5
Detector Type	MCT
Target Size	≥9.6×7.68mm
Pixel Size	≥15um×15um
Effective Bit Depth	≥14bits
Lens Focal Length	25mm
Field of View	21.7°@f=25mm
Instantaneous Field of View	0.59mrad@f=25mm
Cooling Method	Stirling Cooling
Effective Slit Length	≥9.6mm
Slit Width	≤25um
Operating Temperature	0-40°C
Storage Temperature	0-50°C
Camera Interface	USB 3.0 or Gigabit Ethernet
Application Software	FIGSPEC CAM and FIGSPEC Studio Application Software,Image Analysis Software
Data Format	Compatible with .spe, .hdr, and .scp formats
Auxiliary Imaging Function	The auxiliary framing camera enables real-time monitoring of the capture area
Power Supply Method	Built-in Battery Power Supply

FIGSPEC

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 micro-scope to achieve rapid spectral image acquisition.

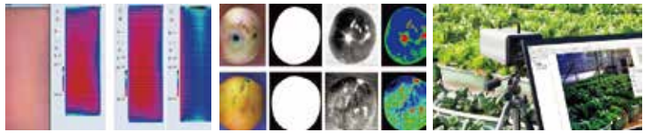
Visible spectrum/NIR:

- Spectral Range: 400-1000nm, pectral Resolution (FWHM) better than 2.5nm, up to 1200 Spectral Bands
- Spatial Pixels up to 1920*1920

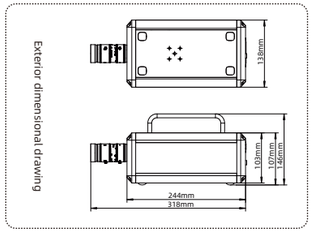
SW-NIR:

- Spectral Range: 900-1700nm, Spectral Resolution (FWHM) better than 6nm, up to 1024 Spectral Bands
- Spatial Pixels up to 1280*1280

Application fields



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



Parameters

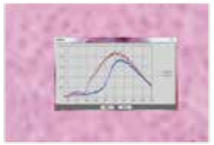
Model	FS-20	FS-22	FS-23	FS-24	FS-27
Spectral Range	400-700nm	400-1000nm	400-1000nm	400-1700nm	900-1700nm
Spectral Bands	150	600	1200	680	1024
Spectral Resolution (FWHM)	2.5nm	5nm	2.5nm	13nm	6nm
Spatial Pixels	480*480	1920*1920	1920*1920	1280*1280	1280 * 1280
Frame Rate	Full-band 41fps,390fps after ROI	Full-band 41fps,390fps after ROI	Full-band 128fps,3300fps after ROI	100fps	8bit/1024 bands 132 frames/SEC,12bit/1024 bands 70 frames/SEC, 8bit/512 bands 253fps, up to 1800fps after ROI
Spectroscopic method	Grating	Grating	Grating	Grating	Grating
Dynamic range	12 bits	12 bits	12 bits	12 bits	12 bits
Slit width	25um	25um	25um	25um	25um
Transmission efficiency	60%	60%	60%	60%	60%
Stray light level	0.5%	0.5%	0.5%	0.5%	0.5%
Pixel size	5.86um*5.86um	5.86um*5.86um	5.86um*5.86um	5um*5um	5um*5um
Detector type	CMOS	CMOS	CMOS	InGaAs	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	16mm	25mm
Minimum working distance	100mm-∞	100mm-∞	100mm-∞	100mm-∞	150mm
Field angle	25°	25°	25°	22.6°	14.5 °
Minimum exposure time	34us	34us	21us	/	1us
Maximum exposure time	10 seconds	10 seconds	10 seconds	/	10 seconds
SNR	600/1	600/1	600/1	600/1	600/1
Data interface	USB3.0	USB3.0	USB3.0	USB3.0	USB3.0
Camera lens interface	C-Mount	C-Mount	C-Mount	C-Mount	C-Mount
Accessories	USB3.0	USB3.0	USB3.0	Lens, USB3.0 data cable, power adapter	USB3.0
ROI	Single area	Single area	Multi area	Multi area	Multi area
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	Auxiliary framing camera to monitor the shooting area
Power supply mode	Built-in battery	Built-in battery	Built-in battery	Built-in battery	Built-in battery
Host engine size *	25.5cm*13.8 cm*10.7cm	25.5cm*13.8 cm*10.7cm	25.5cm*13.8 cm*10.7cm	/	24.8cm*14.5 cm*14.5cm
Weight**	Less than 2.8KG	Less than 2.8KG	Less than 2.8KG	/	2535g
Power dissipation	50W	50W	50W	/	50W

* size without lens and handle ** weight without lens

FIGSPEC

Microscopic hyperspectral imaging system

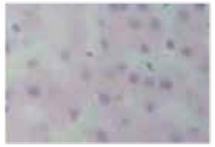




Any point spectrum



400-1000NM
Hyperspectral imaging



single spectrum imaging

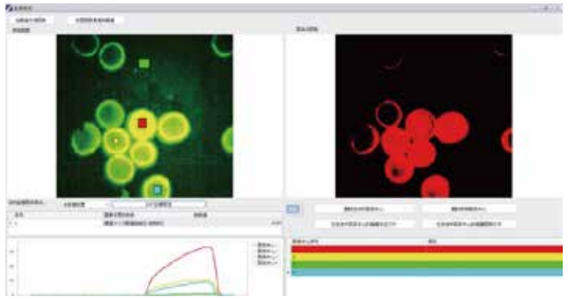


- Combining the advantages of microscope and imaging spectrometer, hyperspectral data acquisition of microscopic images can be performed at any time.
- It can transform existing biological microscopes, fluorescence microscopes, stereo microscopes, metallographic microscopes, etc., and easily transform 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.

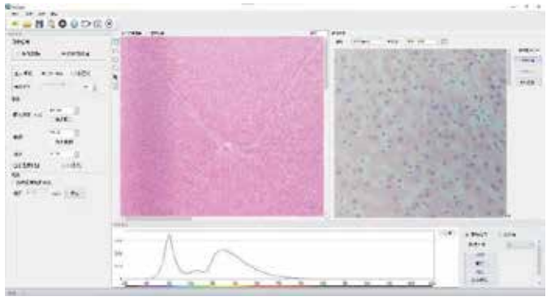
System composition

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

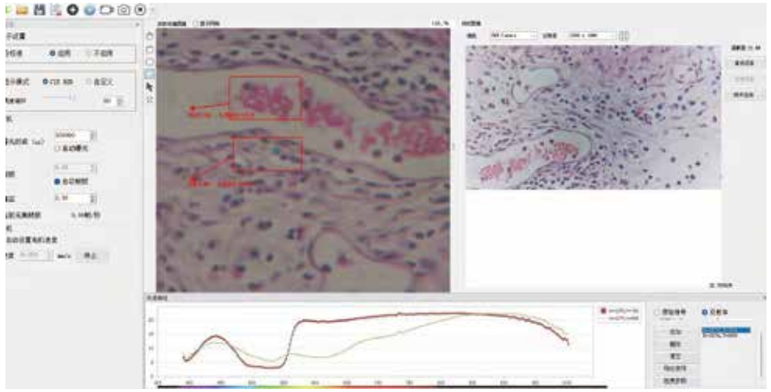
Applications



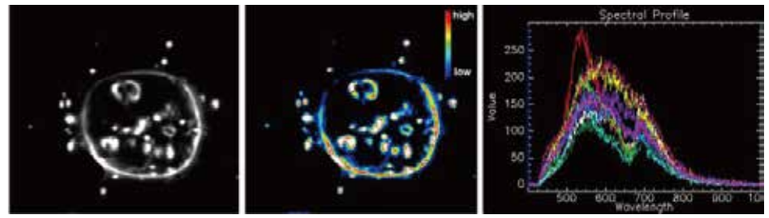
△Differences in spectral characteristics of plant cells based on microscopic hyperspectral technology



△Analysis of spectral characteristics of human diseased cells based on microscopic hyperspectral technology



△Analysis of red blood cell spectral characteristics based on microscopic hyperspectral technology



△ Spectral analysis of algae samples with different pollution levels based on microscopic hyperspectral technology

FIGSPEC

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
Spectral Range	400-1000nm
Spectral Bands	1200
Spectral Resolution (FWHM)	2.5nm
Spatial Pixels	1920*1920
Frame Rate	5 seconds
Spectroscopic splitting method	Transmission grating light splitting
Dynamic range	12 bits
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)

FIGSPEC

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 Bands：1200
- Spectral Resolution (FWHM)：2.5nm
- Head level range：360°
- Vertical range of PTZ：±60°
- Network connection: Supported



Parameters

Hyperspectral camera

Spectral Range	390-1010nm
Spectral Bands	1200
Spectral Resolution (FWHM)	2.5 nm
Spatial Pixels	1920 * 1920
Spectroscopic method	Grating
Dynamic range	12 bits
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 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	Negative 60° to Positive 60°

Port

Port	USB3.0/100M Network interface

General norm

Operating temperature and humidity	0~40℃; Humidity less than 80%

FIGSPEC

Solar-Induced Fluorescence Hyperspectral Measurement System



Line-Scan Hyperspectral Camera(FS-SIF-1A)



Imaging Hyperspectral Camera (FS-SIF-2A)



Hyperspectral UAV System (FS-SIF-6A)

CHNSpec has recently launched the FS-SIF Series Hyperspectral Measurement Systems designed for Solar-Induced Chlorophyll Fluorescence (SIF) detection, including the FS-SIF-1A line-scanning hyperspectral camera, the FS-SIF-2A imaging hyperspectral camera, and the FS-SIF-6A hyperspectral UAV system. This product represents one of the most advanced hyperspectral SIF measurement solutions internationally, featuring an innovative patented optical design and ultra-high-sensitivity detectors, with exceptional spectral resolution (0.3 nm) and a high signal-to-noise ratio (600:1).

Product Features

The line-scanning hyperspectral camera (FS-SIF-1A) can be deployed for solar-induced chlorophyll fluorescence (SIF) detection in large-scale crop fields.

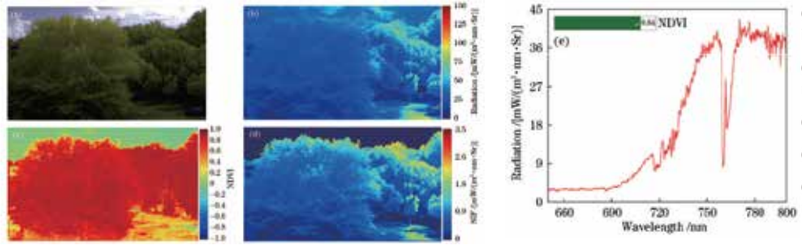
The imaging hyperspectral camera (FS-SIF-2A) is suitable for tower-based or fixed-point monitoring.

The hyperspectral UAV system (FS-SIF-6A) offers flexible deployment and is not constrained by satellite overpass times, enabling rapid acquisition of vegetation SIF information over target areas. Compared to fixed tower-based observation, it can capture continuous time-series SIF data, while the airborne platform can obtain SIF information from a wider area within a given time period.

Product Advantages

The solar-induced chlorophyll fluorescence (SIF) hyperspectral measurement system measures variations in chlorophyll fluorescence induced by sunlight during plant photosynthesis by simultaneously recording the downward solar irradiance and the upward reflected radiation. This enables estimation of gross primary production (GPP) and ecosystem respiration (RECO), the two key biosphere carbon sources that determine carbon emissions. The airborne platform serves as a complement to satellite-based and tower-based SIF observation systems. Compared to satellite platforms, it offers flexible deployment, is not constrained by satellite overpass times, and allows rapid acquisition of vegetation SIF information over the study area. Compared to fixed tower-based observations, it provides continuous time-series SIF data, and within a given time frame, the airborne platform can capture SIF information from a much larger area. The entire system is deeply developed based on the DJI M400 platform, featuring high integration and a simple, user-friendly operation process.

System Applications



(a) Hyperspectral false-color composite image from instrument observation

(b) Infrared reflectance image at the 750 nm near-infrared wavelength window

(c) NDVI image

(d) SIF image

(e) Canopy reflectance spectrum and NDVI analysis results

Hyperspectral Imaging Data and NDVI Analysis Results from Field Observations

Parameters

Model	FS-SIF-1A	FS-SIF-2A	FS-SIF-6A
Spectral Range	660-790nm	660-790nm	660-790nm
Spectral Bands	1200	1200	1200
Spectral Resolution (FWHM)	0.3nm	0.3nm	0.3nm
Spatial Pixels	1920	1920	1920
Frame Rate	Full band 128 fps, achievable up to 3300 fps with ROI	Full band 128 fps, achievable up to 3300 fps with ROI	Full Band 128 fps
Dispersion Method	Transmission Grating	Transmission Grating	Transmission Grating
Slit Width	15um	15um	15um
Transmission Efficiency	60%	60%	60%
Stray Light	0.5%	0.5%	0.5%
Pixel Size	5.86um	5.86um	5.86um
Detector	CMOS	CMOS	CMOS
SNR (Peak)	600/1	600/1	600/1
Camera Output	USB3.0	USB3.0	USB3.0
Camera Interface	C-Mount	C-Mount	C-Mount
Accessories	Lens, USB Cable	Lens, USB Cable	Reflectance Calibration Panel
ROI	Multiple Regions	Multiple Regions	Multiple Regions
Weight	1.3kg	/	/
Lens Focal Length	25mm	25mm	25mm
Lens Field of View	25°,Interchangeable lenses with other field of view angles available	225°,Interchangeable lenses with other field of view angles available	25°,Interchangeable lenses with other field of view angles available
Calibration Method	Batch processing supported for reflectance correction and region-based correction	Batch processing supported for reflectance correction and region-based correction	Batch processing supported for reflectance correction and region-based correction
Data Format	Compatible with .spe, .hdr, and .scp formats	Compatible with .spe, .hdr, and .scp formats	Compatible with .spe, .hdr, and .scp formats
Application Software	FIGSPEC UAV,FigSpec MS-PreMerge Mosaic Software, FIGSPEC Studio Application Software,Image Analysis Tool	FIGSPEC UAV,FigSpec MS-PreMerge Mosaic Software, FIGSPEC Studio Application Software,Image Analysis Tool	FIGSPEC UAV,FigSpec MS-PreMerge Mosaic Software, FIGSPEC Studio Application Software,Image Analysis Tool

FIGSPEC

Intelligent Airborne Hyperspectral Nest System FS-AP-60C



Tackling Industry Challenges, Revolutionizing Monitoring Solutions

Currently, most industrial applications of drones still rely on manual or semi-automated operations, requiring continuous human intervention throughout the process. This not only leads to high labor costs but also deters many potential users due to the technical barriers involved.CHNSpec has deeply analyzed these industry challenges and seamlessly integrated drone technology with advanced spectral imaging to develop the Intelligent Airborne Hyperspectral Nest System. This innovation successfully breaks through the limitations of traditional monitoring methods.By incorporating an innovative drone hangar design, the system enables remote and unmanned ecological monitoring, significantly improving the efficiency of ecological management. It provides solid technical support for the implementation of the "Low-Altitude + Governance" model, paving the way for smarter and more sustainable environmental solutions.

Drone Smart Base Station: Full-Process Automated Assurance

As the core hub of the system, the Drone Smart Base Station integrates eight key functions: intelligent drone storage, autonomous takeoff and landing, smart mission execution, automatic recovery, auto power replacement, data transmission, intelligent analysis, and hot-swappable battery support. From energy replenishment and task execution to data acquisition and analytical processing, the entire workflow requires no manual intervention, achieving full closed-loop management of automated drone operations in unattended scenarios. This establishes a solid foundation for highly efficient and stable monitoring operations.



Unmanned Operations: Flexible, Secure, Efficient, and Precise

The system incorporates a lightweight hyperspectral payload, seamlessly integrated with the industry-leading DJI M400 drone and CHNSpec's FS-AP automated nest to enable fully automated mission planning and execution. The drone features autonomous flight capability, supporting intelligent path planning and dynamic obstacle avoidance. It can adapt its flight route in real time based on actual environmental conditions, ensuring safe and precise monitoring even in challenging scenarios such as complex terrain or harsh weather. This significantly enhances operational flexibility and safety in practical applications.

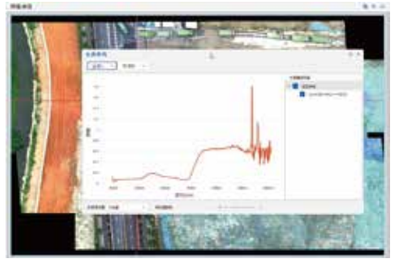
Remote Monitoring and Management: Real-Time Control at Your Fingertips

The ground station provides comprehensive real-time data feedback, allowing users to remotely monitor equipment status, mission progress, and live data streams through an intuitive visual interface. During operations, users can continuously track performance and manually take control when necessary to ensure flawless task execution. No matter where they are located, users can efficiently manage monitoring operations — truly embodying the concept of "strategizing from within a command center, achieving success across vast distances."

Built-in Intelligent Algorithms: Self-Upgrading, Infinitely Scalable

The system incorporates a variety of advanced deep learning algorithms, allowing users to freely import custom algorithm models based on their specific application needs, and independently train and upgrade them. Whether for water quality monitoring, vegetation analysis, or other complex monitoring scenarios, the system continuously expands its application scope and improves monitoring accuracy through iterative algorithm optimization, meeting diverse operational requirements.





Real-Time Inversion Capability: Data-Driven Decisions, Every Second Counts

The hyperspectral sensor captures data in real time, which is rapidly processed and inverted by the system before being instantly uploaded to the cloud platform. In response to sudden environmental incidents such as water pollution or forest fires, the system can quickly provide accurate monitoring data, delivering immediate support for emergency decision-making. This significantly shortens response times and improves incident handling efficiency.

Adapts to Multiple Scenarios: One System, Multiple Applications, Comprehensive Coverage

The system incorporates a range of specialized algorithms, such as water quality monitoring and vegetation index analysis, enabling a single platform to be widely deployed across agriculture, forestry, water quality assessment, urban management, and other fields.In agriculture, it supports crop growth monitoring and precision fertilization guidance.In forestry, it enables forest resource inspection and early pest/disease warning.For water quality, it provides real-time pollution tracking and analysis.In urban management, it assists with ecological environment assessment and urban greening monitoring.By maximizing its capabilities in low-altitude integrated remote sensing, the system delivers efficient and versatile performance for diverse applications.

Third-Party Data Calibration Support: Accurate, Reliable, and Trustworthy

The system supports integration of high-precision data from third-party laboratories or online monitoring stations to automatically calibrate airborne remote sensing analysis results. This effectively corrects systematic errors and ensures the accuracy and reliability of monitoring data. Whether for scientific research, environmental monitoring, or operational decision-making, it provides users with trustworthy data support.

System Composition: Golden Combination, Synergistic Performance

Products	Models	Functional Overview
Hyperspectral Camera	CHNSpec FS60C	Exceptional spectral data acquisition capability, capturing high-resolution and high-precision spectral information
Unmanned Aerial Vehicle (UAV)	DJI M400	Stable performance and precise positioning, providing a reliable flight platform for hyperspectral data collection
UAV Automated Hangar	CHNSpec FS-AP	Integrates UAV storage, takeoff/landing, power replacement, and data processing to enable fully automated operational workflows

Furthermore, the data server and network configured in the automated UAV hangar enable automatic data download and computation upon the drone's return, with results uploaded directly to the user's server. Real-time data is transmitted via the drone's communication link to the remote controller and forwarded to the user's data platform, ensuring both timeliness and integrity of data transfer.

CHNSpec's Intelligent Airborne Hyperspectral Nest System delivers cutting-edge technology, outstanding performance, and broad applicability, opening up new opportunities for ecological and environmental monitoring. In the future, CHNSpec will continue to deepen innovation, optimize product performance, and expand application boundaries, contributing further technological strength to promote the digital-intelligent transformation of ecological monitoring and protect our green mountains and clear waters.

FIGSPEC

FS6B - Airborne Full-Spectrum Hyperspectral Camera



The Full-Band Airborne Hyperspectral Imaging System features a broad spectral range of 400–2500 nm, integrating both VISNIR and SWIR hyperspectral cameras. The VISNIR camera (400–1000 nm) offers up to 1920 spatial channels, 1200 spectral channels, and a spectral resolution better than 2.5 nm, while the SWIR camera (900–2500 nm) provides 640 spatial channels, 250 spectral channels, and a spectral resolution better than 10 nm.
The system incorporates a high-diffraction-efficiency transmission grating module coupled with a high-sensitivity area array camera, along with achromatic lenses and an ultra-lightweight housing material. It is designed to meet demanding applications such as camouflage and counter-camouflage in military operations, soil composition analysis, mineral exploration, as well as modern precision agriculture, forestry, and ecological environmental monitoring.

- Spectral method:Transmission Grating
- Spectral Range: 400–2500 nm
- Easy to operate, supports single-person operation
- 8 GB RAM, 512 GB SSD

Parameters

Spectral Range	VISNIR(400-1000nm)	SWIR(900-2500nm)
Combined Spectral Range	400-2500nm	
Spectral Bands	≥1200	≥250
Combined Spectral Bands	≥1450	
Spectral Sampling Interval	≤0.6nm	≤6.5nm
Spectral Resolution (FWHM)	≤2.5nm	≤10nm
Spatial Pixels	≥1920	≥640
Combined Spatial Pixels	≥640	
Frame Rate	128fps	200fps
Dispersion Device	Transmission Grating	
F-Number	F/2.5	F/2.5
Detector Type	CMOS	MCT
Target Size	≥11.3×7.1mm	≥9.6×7.68mm
Pixel Size	≥5.86um×5.86um	≥15um×15um
Effective Bit Depth	≥12bits	≥14bits
Lens Focal Length	25mm	25mm
Field of View	25.36°@f=25mm	21.7°@f=25mm
Combined Field of View	21.7°@f=25mm	
Instantaneous Field of View	0.23mrad@f=25mm	0.59mrad@f=25mm
Combined Instantaneous Field of View	0.59mrad@f=25mm	
Cooling Method	Internal Air Cooling	Stirling Cooling
Effective Slit Length	≥11.3mm	≥9.6mm
Slit Width	≤25um	
Pixel Binning Method	1×1,2×2,4×4	1×1
Power Supply Requirement	≤72W	
Operating Temperature	0-40°C	
Storage Temperature	0-50°C	
Camera Interface	USB3.0	
Built-in Embedded Data Acquisition and Processing Unit	Embedded Processor with 512 GB SSD Storage	
Application Software	FIGSPEC UAV,FIGSPEC Merge Mosaic Software，FIGSPEC Studio Application Software Image Analysis Tool	
Data Format	Compatible with .spe, .hdr, and .scp formats	
Calibration Method	Batch Processing Supported for Reflectance Correction and Regional Correction	
Observation Method	Real-time monitoring via ground station: Aircraft sampling location, hyperspectral imagery, and spectral data functionality	
Operation Method	Easy to operate,requires no professional drone pilot and supports single-person operation	

FIGSPEC

UAV Hyperspectral Camera FS60-CL Series



FS60-C series is a new generation of drone-mounted hyperspectral cameras launched by CHNSpec. It is compatible with DJI M400 flight platforms and can meet the application needs of geological and mineral resource surveys, precision agriculture, crop growth and yield assessment, forest pest monitoring and fire prevention monitoring, coastline and marine environment monitoring, grassland productivity and grassland monitoring, lake and watershed environment monitoring, remote sensing teaching and scientific research, meteorological research, ecological environment protection and mine environment monitoring, water quality testing, soil monitoring, agricultural and livestock product quality testing, military, national defense and homeland security, disaster prevention and other industries.

- Spectral Range: 400-2500nm
- Spectral Resolution (FWHM): better than 2.5nm
- Spectral Bands: 1200
- Spatial Pixels: 1920



Parameters

Produc del	FS60-CL	FS62-CL	FS64-CL	FS6A
Spectral Range	400-1000nm	900-1700nm	400-1700nm	900-2500nm
Spectral Bands	1200	1024	680	≥250
Spectral Resolution (FWHM)	2.5nm	6.5nm	13nm	≤10nm
Spatial Pixels	1920	1280		≥640
Frame Rate	Full band 128fps	Full band 70fps	100fps	200fps
Spectroscopic method	Transmission Grating Spectroscopy			
Slit width	25um			
Spectral efficiency	60%			
Stray light	0.5%			
Pixel size	5.86um*5.86um	5um*5um		≥15um*15um
Detector	CMOS	InGaAs		MCT
SNR (Peak)	600/1			
Camera output interface	USB			
Camera lens interface	C-Mount			
Built-in embedded data acquisition and processing unit	Embedded processor 512GSSD storage			
Heat dissipation method	Internal air cooling			Stirling Refrigeration
Camera size	155*95*119mm (length*width*height)	135*82*100mm (length*width*height)	/	
Camera weight	≤840g	≤740g	/	
Accessories	Reflectivity Calibration Plate			
Lens focal length	25mm			
Lens field of view	> 25°	14.59°		21.7°@f=25mm
Operation method	Easy to operate, no professional drone operator is required, and single-person operation is possible			
Observation method	Through the ground station to observe the aircraft sampling location, hyperspectral images, spectral data in real time, function			
Correction method	Reflectivity correction and area correction support batch processing			
Data format	Compatible with spe format, hdr format, scp format			
Application software	FIGSPEC UAV, FIGSPEC Merge puzzle software, FIGSPEC Studio application software image analysis software			

FIGSPEC

Multispectral camera FS-50L series



FigSpec® FS-50L series is a new generation of drone-mounted multispectral camera launched by CHNSpec. It is compatible with DJI M400 flight platform and has 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.

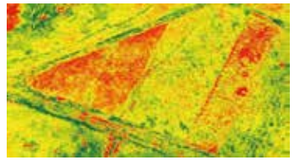
- Ultra-high spectral channels: 30-180 spectral channels (different models)
- 2K spatial resolution
- Global shutter, 12bit high precision sampling data
- Ground station real-time preview data acquisition
- DJI X-Port control and power supply, 512GSSD mass storage
- DJI M400 UAV customization, plug and play
- FIGSPEC UAV real-time flight control software, FIGSPEC Merge puzzle software, FIGSPEC Studio image analysis software



Parameters

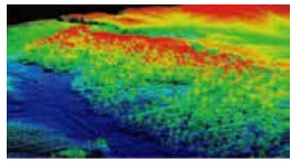
Model number	FS-50/30L	FS-50/60L	FS-50/90L	FS-50/120L	FS-50/150L	FS-50/180L
Spectral Range	400-1000nm	400-1000nm	400-1000nm	400-1000nm	400-1000nm	400-1000nm
	about 20nm	about 10nm	about 6.6nm	about 5nm	about 4nm	about 3.3nm
	Output a wavelength	Output a wavelength	Output a wavelength	Output a wavelength	Output a wavelength	Output a wavelength
Spectral Bands	30	60	90	120	150	180
Spectral Resolution (FWHM)	3.5nm	3.5nm	3.5nm	2.5nm	2.5nm	2.5nm
Spatial Pixels	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 Studio image analysis software					
Shooting method	Real-time acquisition					

Typical application



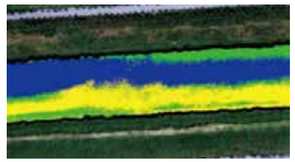
Crop growth assessment Crop growth assessment

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.

FIGSPEC

Multispectral camera FS-500L Series



FS-500L
4 spectral channels + RGB

FS-600L
6 spectral channels

FS-620L
4 spectral channels + RGB
+ long-wave infrared

FS-900L
9 spectral channels
(RGB replaceable)

【Product Series Overview】

FigSpec® Multispectral Cameras - Four Main Models Covering 4-9 Channels for Full-Scenario Needs, with Multi-Combination Options Including Spectral, RGB, and Thermal Infrared.

【Four Core Advantages】

- 19 Customizable Wavelengths | Freely selectable bands in the 400nm-1000nm range
- Dual Red-Edge Standard | Innovative vegetation-sensitive dual red-edge bands for more accurate agricultural remote sensing (720 nm, 840 nm)
- Multi-Channel Synchronized Imaging with No Delay | No imaging time lag
- Full Compatibility with DJI Ecosystem | Powered via X-Port/SkyPort, integrated control with DJI Pilot, plug-and-play with M400



【Featured Product】FS-900L (9-Channel Multispectral)

9-Channel Core Model | 3.14Mpx Effective Pixel | Global Shutter | Ultra-High Ground Resolution of 3.75cm@100m

Ultra-Light & Portable | Body ≤ 400 g | SkyPort Interface | 16-bit Raw TIFF (with GPS) for Precision Imaging

Parameters

Model	FS-500L	FS-600L	FS-620L	FS-900L
Configuration	4-channel multispectral + 1 RGB	6-channel multispectral	4-channel multispectral+ 1RGB+1-channel thermal infrared (LWIR)	9-channel multispectral
Sensor Size	Multispectral: 1/2″; RGB: 1/3″	1/2″	Multispectral: 1/2″; RGB: 1/3”	1/3.1"
Effective Pixels	Multispectral: 1.3 Mpx; RGB: 11.9 Mpx	1.3 Mpx	Multispectral: 1.3Mpx； RGB:11.9Mpx； LWIR:0.3Mpx	3.14Mpx
Shutter Type	Multispectral: Global; RGB: Rolling	Global	Multispectral: Global; RGB: Rolling	Global
Quantization Bit Depth	Multispectral: 12-bit; RGB: 8-bit	12-bit	Multispectral: 12bit； RGB:8bit	12bit
Field of View	Multispectral: 54.2° × 44.5°; RGB: 49.1° × 40.5°	54.2°×44.5°	Multispectral: 54.2°×44.5°； RGB： 49.1°×40.5°	42.0°×32.1°
Ground Resolution	Multispectral: 9.6cm@120 m; RGB: 2.86cm@120m	9.6cm@120 m	Multispectral: 9.6cm@h120m； RGB:2.86cm@h120m	4.5cm@h120m
Coverage Width	Multispectral: 123m×98m@120m; RGB: 109m×88m@120m	123m×98m@120 m	Multispectral: 123m×98m@h120m RGB:109m×88m@h120m	92m×69m@h120m
Spectral Channels[1]	555nm@27nm, 660nm@22nm, 720nm@10nm, 840nm@30nm, RGB	450nm@30nm, 555nm@27nm, 660nm@22nm, 720nm@10nm, 750nm@10nm, 840nm@30nm	555nm@27nm, 660nm@22nm, 720nm@10nm, 840nm@30nm, RGB； LWIR：8μm~14μm	450nm@30nm,555nm@27nm, 660nm@22nm,720nm@10nm, 750nm@10nm,800nm@35nm, 840nm@30nm,900nm@35nm, 940nm@30nm
Optical Window	Sapphire optical glass window			
Main Unit Dimensions	182 mm × 169 mm × 129 mm (including gimbal)			≤85mmx80mmx85mm
Main Unit Weight	≤ 900 g (including gimbal)	≤ 940 g (including gimbal)	≤ 1000 g (including gimbal)	≤ 400 g
Mounting Interface	X-Port			SkyPort
Power Supply	X-Port			SkyPort
Power Consumption	≤ 43 W (peak)			≤ 30 W (peak)
Image Format	Multispectral: 16-bit raw TIFF (with GPS); RGB: 8-bit JPEG (with GPS)	16-bit raw TIFF (with GPS)	Multispectral: 16-bit raw TIFF (with GPS); RGB: 8-bit JPEG (with GPS); LWIR: 16-bit TIFF (with GPS)	16-bit raw TIFF (with GPS)
Storage Media	Standard: 128 GB SD card			
Processing Software	FigSpec MS-PreMerge, FigSpec Studio			
Parameter Settings	DJI Pilot			
Triggering	Timed trigger, overlap trigger, flight control trigger			
Capture Rate	Maximum support: 10 Hz			1HZ
Operating Temperature	0°C to +45°C (relative wind speed ≤ 1 m/s)			
Storage Temperature	-30°C to +70°C			
Environmental Humidity	RH ≤ 85% (non-condensing)			

[1] Standard wavelengths, with customization available for the following 19 wavelengths (consult sales for configuration options and pricing): Panchromatic, 410 nm @ 35 nm, 450 nm @ 30 nm, 490 nm @ 25 nm, 530 nm @ 27 nm, 555 nm @ 27 nm, 570 nm @ 32 nm, 610 nm @ 30 nm, 650 nm @ 27 nm, 660 nm @ 22 nm, 680 nm @ 25 nm, 720 nm @ 10 nm, 720 nm @ 15 nm (longpass), 750 nm @ 10 nm, 780 nm @ 13 nm, 800 nm @ 35 nm, 840 nm @ 30 nm, 900 nm @ 35 nm, 940 nm @ 30 nm (tolerance ±5 nm).

FIGSPEC

Ground-Based Multispectral Camera FS-500E/600E/620E



FS-500E
4 spectral channels + RGB



FS-600E
6 spectral channels



FS-620E
4 spectral channels + RGB +
long-wave infrared

[Product Series Overview]

FigSpec® Multispectral Cameras – Three main models covering all scenarios with 4–6 channels, featuring spectral + RGB + thermal infrared multi-configuration options.

[Four Core Advantages]

- 19 customizable wavelengths | Independent selection within 400nm–1000nm band
- Dual red edge as standard | Innovative vegetation-sensitive dual red edge bands for more accurate agricultural remote sensing (720nm & 840nm)
- Multi-channel, zero-lag synchronous imaging | No imaging time difference
- Multi-modal integrated fusion | Capture 3D data in a single shot: multispectral + RGB+ long-wave infrared

Parameters

Product Model	FS-500E	FS-600E	FS-620E
Configuration	4-channel multispectral + 1 RGB	6-channel multispectral	4-channel multispectral + 1RGB + 1-channel thermal infrared (LWIR)
Target Surface Size	Multispectral: 1/2″; RGB: 1/3″	1/2″	Multispectral:1/2″; RGB: 1/3″
Effective Pixels	Multispectral:1.3Mpx; RGB:0.8Mpx	1.3Mpx	Multispectral:1.3Mpx; RGB:0.8Mpx; LWIR:0.3Mpx
Shutter Type	Multispectral: Global; RGB: Rolling	Global	Multispectral: Global; RGB: Rolling Shutter
Quantization Bit Depth	Multispectral:12bit; RGB:8bit	12bit	Multispectral:12bit; RGB:8bit; LWIR:8bit
Field of View (FOV)	Multispectral: 54.2°×44.5° ; RGB: 49.1°×40.5°	54.2°×44.5°	Multispectral:54.2°×44.5°; RGB: 49.1°×40.5°
Ground Resolution	Multispectral:9.6cm@h120m; RGB:2.86cm@h120m	9.6cm@h120m	Multispectral:9.6cm@h120m; RGB:2.86cm@h120m
Coverage Width	Multispectral: 123m×98m@h120m; RGB: 109m×88m@h120m	123m×98m@h120m	Multispectral:123m×98m@h120m; RGB:109m×88m@h120m
Spectral Channels[1]	555nm@27nm, 660nm@22nm, 720nm@10nm, 840nm@30nm,RGB	450nm@30nm,555nm@27nm, 660nm@22nm,720nm@10nm, 750nm@10nm, 840nm@30nm	555nm@27nm, 660nm@22nm, 720nm@10nm, 840nm@30nm, RGB; LWIR: 8μm~14μm
Optical Window	Sapphire optical glass window		
Main Unit Dimensions	127mmx80mmx88mm		
Main Unit Weight	≤490g	≤530g	≤590g
Mounting Interface	Provides mounting threaded holes		
Power Supply	24V/2.5A		
Power Consumption	≤36W(Peak)		
Image Format	Multispectral: 16-bit raw TIFF; RGB: 8-bit JPEG	16-bit raw TIFF	Multispectral: 16-bit raw TIFF; RGB:8bit JPEG; LWIR:8bit JPEG
Storage Medium	Comes standard with 128GB SD card		
Processing Software	FigSpec MS-PreMerge，FigSpec Studio		
Communication Interface	Gigabit Ethernet		
Capture Trigger	Timed trigger, API trigger		
Capture Frequency	Maximum 10Hz		
Operating Ambient Temperature	0°C to +45°C (no wind)		
Storage Ambient Temperature	-30°C to +70°C		
Environmental Humidity	RH(%) ≤ 85% (non-condensing)		

[1] Standard wavelengths, with customization available from the following 19 wavelengths (consult sales for configuration options and pricing): panchromatic, 410nm@35nm, 450nm@30nm, 490nm@25nm, 530nm@27nm, 555nm@27nm, 570nm@32nm, 610nm@30nm, 650nm@27nm, 660nm@22nm, 680nm@25nm, 720nm@10nm, 720nm@15nm (long-pass), 750nm@10nm, 780nm@13nm, 800nm@35nm, 840nm@30nm, 900nm@35nm, 940nm@30nm (tolerance ±5nm).

FIGSPEC

All-weather measurable

Airborne PV EL/PL Detector



Color Spectrum EP-DU/EP-NU Series Airborne EL/PL Detectors are engineered for drone inspections of large-scale photovoltaic plants. Fully compatible with the DJI M350/M400 drone platforms, they feature a lightweight design, comprehensive detection modes, and intelligent, user-friendly controls—significantly enhancing the efficiency, accuracy, and operational flexibility of airborne PV inspections across various precision requirements and project scales.

- All-Mode, All-Weather Operation for Unrestricted Inspections: Supports nighttime EL / daytime EL / daytime PL full-mode detection, completely eliminating interference from ambient light such as sunlight, moonlight, starlight, and artificial lighting. This enables truly stable 24/7 all-weather operation, delivering clear inspection results whether for routine daytime batch inspections or precise nighttime troubleshooting, and adapting to complex outdoor climatic conditions.
- Lightweight Design for Efficient Deployment: Features an ultra-lightweight design that minimizes the payload on the drone. This facilitates quick assembly/disassembly, transportation, and on-site deployment, significantly enhancing operational mobility and efficiency.
- Intelligent and User-Friendly Operation: Equipped with a remote controller featuring an integrated high-brightness screen, supporting real-time image preview and flexible parameter adjustment for an intuitive user experience. It also features a multi-language operation interface, greatly lowering the skill barrier and improving on-site workflow fluency

Typical applications



Photovoltaic power station inspection



Incoming inspection



Post-installation inspection



Post-disaster inspection

Parameters

Types	Night test	All-weather test	
Model	EP-NU-1200	EP-DU-300	EP-DU-500
Inspection Mode	UAV-mounted inspection		
EL Video	Enables high-definition string-level EL video function		
Remote Controller with Screen	Remote control aircraft, gimbal, infrared camera; adjustable camera configuration parameters; real-time inspection images viewable on display screen; photo capture function controllable.		
UAV Positioning	GPS + GLONASS + BeiDou + Galileo		
UAV Battery	1 set (standard)		
Operating Temperature	-10～50℃		
Controllable Rotation Range	Tilt: -(120, 60); Pan: -(310, 310)		
Pixel	12 million pixels	3 million pixels	5 million pixels
GPS Recording	EL imaging automatically records GPS/BeiDou positioning coordinates (latitude/longitude)		
Defect Location	Satellite-based latitude/longitude positioning enables precise navigation to locate each defective module's coordinate point		
Field of View	46.3°× 36°	39.1°x 29.8°	
Measurement Environment	Light/moonlight/starlight has no effect on detection	Daylight, moonlight, starlight, and artificial light have no effect on the test; all-weather adaptable	
Preview Function	Real-time preview, Users can directly view overall or partial internal defects of the modules through the live feed		
Image Format Output	JPEG		
Operation Interface	Chinese / (English optional)		
Night Vision Function	Supported		
Weight	＜1KG		
Dimensions	133*80*76mm	106*80*76mm	

Accessories

String control box



EP-CB-M

Module control box



EP-CB-S

UAV



M400

FIGSPEC

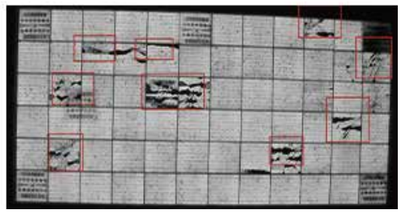
Fast speed

Portable PV EL/PL Detector









The Caipu Technology EP-D/EP-N series is the latest generation of portable EL/PL detection equipment designed for the photovoltaic industry. It includes multiple models such as the EP-D-130/300/500 and EP-N-2000/2500/4800, featuring core advantages of full-scenario adaptability and high efficiency with intelligence, fully meeting various detection needs for photovoltaic panels.

- Unrestricted full-scenario detection: Equipped with three core functions — daytime EL, daytime PL, and nighttime EL. Unaffected by ambient light such as sunlight, artificial light, moonlight, or starlight, enabling "all-weather" operation during the day, under lights, at night, and even in rainy weather. Delivers stable and clear imaging results in complex outdoor scenarios.
- Compatible with module and string measurement
- Built-in AI large model algorithm for automatic identification of defects such as cracks, micro-cracks, broken grids, fragments, and short circuits.
- Lightweight, compact, and easy to operate; can be fully controlled via a tablet.
- Utilizes an advanced hyperspectral imaging system for richer and clearer detection details.

Typical applications



Laboratory testing



Incoming inspection



Post-installation inspection



Post-disaster inspection

Parameters

Type	Night test			All-weather test		
Model	EP-N-2000	EP-N-2500	EP-N-4800	EP-D-130	EP-D-300	EP-D-500
Total Pixels	20 million	25 million	48 million	1.3 million	3 million	5 million
Image Sensor	Near-infrared enhanced high-precision imaging sensor			InGaAs high-precision imaging sensor		
Field of View	46.3°×36°	60.66°×46.5°	46.3°×36°	39.1°×29.8°		
Operating Environment	Light/moonlight/starlight has no effect on detection			Daylight, moonlight, starlight, and artificial light have no effect on the test; all-weather adaptable		
Detection Speed	Adjustable, 0.5s	Adjustable, 80ms				
Imaging Accuracy	Clear imaging of micro-cracks under low current					
Video Detection	Real-time video detection capable					
Transmission Method	USB 3.0					
Data Processing	EL images support manual defect classification, AI defect classification, overall power station defect recording, and report generation functions					
Dimensions	113*97*85mm					
Weight	Less than 1KG					
Advantages	Fast photo capture, customizable lens			All-weather adaptable, customizable lens		

Accessories

String control box



EP-CB-M

Module control box



EP-CB-S

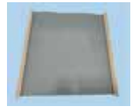
Tripod



EP-TH-1

FIGSPEC

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	