



# **Hyperspectral Camera Product Manual**

# Hyperspectral camera

Our extensive portfolio of camera products covers multiple different band ranges and can be used in industrial, scientific research and government units, etc. Whether it's a laboratory, an industrial facility or a site, we can meet your needs. The following different camera models correspond to different spectral resolutions, spatial resolutions, spectral ranges, imaging speeds and configuration options. Contact us immediately to select the best solution for your application.



Type	IQ	FX10 (*)	FX17	GX17	SWIR	FX50	FX120
Spectral range	400 – 1000 nm	400 – 1000 nm 400 – 770 (FX10c) nm	900 – 1700 nm	950 – 1700 nm	1000 – 2500 nm	2700 – 5300 nm	7.7 - 12.3 μm
Spatial pixel count	512	1024	640	480	384	640	616
Number of spectral bands	204	224 / 140 (FX10c) / 100 (FX10+)	224	168	288	154	160
Spectral resolution (FWHM)	7 nm	5.5 / 15 (FX10+) nm	8 nm	8 nm	12 nm	35 nm	100 nm
Spectral sampling / pixel	2.99 nm	2.7 / 6.3 (FX10+) nm	3.5 nm	4.7 nm	5.6 nm	8.44 nm	30 nm
Maximum frame rate	Not applicable	327 FPS across all bands 514 FPS across all bands (FX10c) 707 FPS across all bands (FX10+)	670 FPS across all bands (FX17) 527 FPS across all bands (FX17e)	800 FPS across all bands	450 FPS across all bands	377 FPS across all bands	240 FPS By default, the full image is merged with an exposure time of 1 ms
Field of view range	31°	12°, 24°, 38°, 47°, 51°, 83°	12°, 38°, 53°, 66°, 75°, 90°	12°, 38°, 53°, 66°, 75°, 90°	9°, 17°, 23°, 34°	4°, 45°, 60°	24°, 32°
Aperture	F/1.7	F/1.7	F/1.7	F/1.7	F/2.0	F/2.0	F/2.0
Signal-to-noise ratio	400:1	420:1	1000:1	700:1	1050:1	>1100:1	2500:1 (1.5ms) ; 3000:1 (0.2ms)
Interface	Not applicable	GigE Vision, CameraLink	GigE Vision, CameraLink	CameraLink	CameraLink	GigE Vision, Custom Ethernet	GigE Vision, Custom Ethernet
Size	207 x 91 x 74 mm	150 x 85 x 71 mm	150 x 85 x 75 mm	202 mm x 75 mm x 102 mm	545 x 176 x 178 mm	280 x 202 x 169 mm	250 x 300 x 220 mm
Weight	1.3 kg	1.3 kg	1.56 kg	1.9 kg	14 kg	7 kg	15 kg
Integrated shutter	yes	yes	yes	no	yes	yes	yes
Typical applications	Vegetation research Food analysis Criminal investigation Artwork Analysis Medical industry	Agricultural and vegetation monitoring Plant phenotype Color measurement of printed matter Display and light source detection Food quality assessment  (*) also offers the high-speed FX10+ and the color-optimized FX10c	Food and feed quality assessment and waste sorting Resource recycling Humidity measurement Dangerous goods inspection and security check	Food sorting Food inspection and grading Garbage sorting Resource recycling	Sorting of chemicals and materials Pharmaceutical industry Resource recycling Mineral mapping Food and Agriculture Water content distribution Art research and archiving Evidenc collection	Black plastic sorting Metal industry Geology and Mining	Geology and Mining Environmental analysis Thermal anomaly detection Safety and security

# ONE

## Spectral imaging platform



ONE helps to create new hyperspectral imaging applications at a lower cost, more quickly and more easily, shortening the time to market.

- Spectral data are collected using industry-proven hyperspectral cameras.
- Create the classification model offline using the INSIGHT software.
- The model is applied to the online system with the aid of the CUBE processing platform.
- No programming required and no need to have an in-depth understanding of spectral imaging!

## Spectrometer

Imaging spectrometers can provide distortion-free images with ultra-high optical performance. We have optimized various models required for different application scenarios, such as spectral resolution, detector size, spatial resolution and imaging speed.



### ImSpector V8

The standard series spectrometer can be used in the visible light spectral range of 380-800 nm.



### ImSpector V10E

An enhanced spectrometer specially designed for the VNIR spectral range of 400-1000 nm.



### ImSpector N17E

An enhanced spectrometer specially designed for the NIR spectral range of 900-1700 nm.

## Airborne system

The AFX series is an advanced hyperspectral imaging solution specifically designed for remote sensing applications. The core of AFX is a compact advanced hyperspectral imaging system integrated in powerful microcomputers and high-end GNSS/IMU components.



### AFX10

The all-in-one VNIR hyperspectral imaging solution is suitable for the 400-1000 nm spectral range. The entire system includes a hyperspectral camera, a compact yet powerful computer, and a high-end GNSS/IMU inertial navigation system, which can be installed on various types of unmanned aerial vehicle platforms.

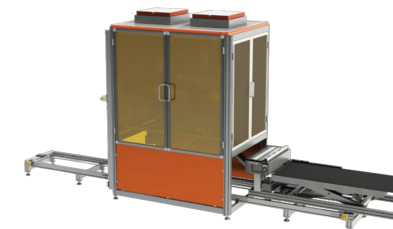


### AFX17

The integrated NIR hyperspectral imaging solution is suitable for the spectral range of 900 to 1700 nm. The entire system includes a hyperspectral camera, a small but powerful computer, and a high-end GNSS/IMU inertial navigation system, which can be installed on various types of unmanned aerial vehicle platforms.

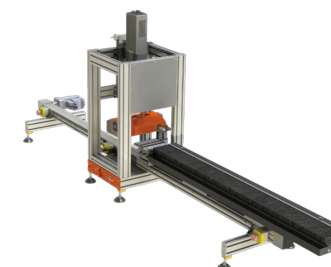
## Geological system

Hyperspectral imaging technology can rapidly map almost all minerals in geological samples such as rock cores. Relevant images can be created using our geological system, where each pixel contains unique and complete spectral information of each mineral. Fast automated algorithms can identify mineral categories and convert the data into mineral maps.



### SisuRock

The fully automatic hyperspectral core imaging system can quickly and easily scan cores and other geological samples. It can image a single core in high-resolution mode and also image an entire box of cores in high-speed scanning mode.



### SisuSCS Single-core scanning platform

The SisuSCS has the same functions as the large SisuROCK, but is smaller in size. Smaller in size and more portable, it is an ideal research tool when studying similar single core samples.

# Software

We offer a variety of easy-to-use and efficient software solutions for data collection, model creation and application development. We can also recommend third-party commercial software solutions that are compatible with cameras.



## INSIGHT

INSIGHT is an offline software tool for users to browse and explore data, as well as create and validate classification models. It is part of the ONE spectral imaging platform.



## IQ Studio

IQ Studio can be used to remotely control the IQ hyperspectral camera and view IQ data. You can also process and analyze IQ hyperspectral data and create applications for it.



## Lumo Systems

The Lumo product series is an optional data acquisition software for cameras, scanning platforms and airborne systems.



## CaliGeoPRO

CaliGeo PRO is a data processing software that can be used for radiometric correction and geospatial calibration of hyperspectral data collected by the AISA and AFX series hyperspectral cameras.

# Accessories

We offer a wide range of different accessories for hyperspectral cameras and systems. Whether it's computing power, scanning platforms, lenses or filters, we can meet all your needs.



## CUBE

An efficient processing platform for receiving data from FX and GX cameras, processing the data in real time based on the classification model created by INSIGHT, and transmitting the results in real time to the target system (such as a sorter or machine vision system).



## LabScanner 40 x 20

The 40 x 20 scanning platform has a compact structure and is suitable for laboratory use.



## LabScanner 100 x 50

A larger scanning platform suitable for laboratory use.



## RS10 Rotating platform

When paired with a hyperspectral camera, it can be used to scan and collect spectral data of static targets or scenes in laboratories and outdoors. The maximum load is 10 kg.



## RS50 Rotating platform

When paired with a hyperspectral camera, it can be used to scan and collect spectral data of static targets or scenes in laboratories and outdoors. The maximum load is 50 kg.