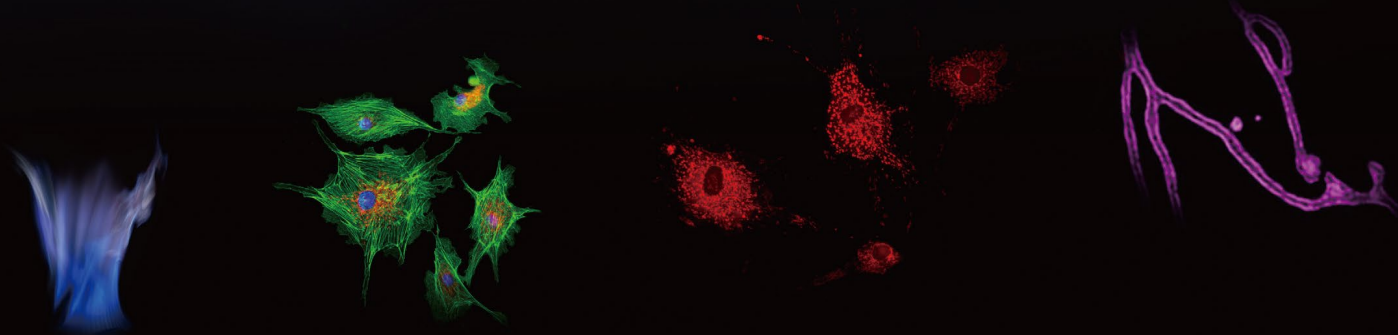




sCMOS Camera

Product Catalog

Features high dynamics, high sensitivity
and low noise for scientific imaging



SHENZHEN SINCEVISION TECHNOLOGY CO., LTD.

Headquarters:
5th Floor, Building 2, Chongwen Industrial Park, Nanshan Zhiyuan, Nanshan District, Shenzhen, China

International Offices

Japan Osaka City 10F, INOGATE OSAKA, 3-2-123 Umeda, Kita-Ku, Osaka, 530-0001, Japan	South Korea Gyeonggi Province Room B 514, Hingdeok IT Valley Complex, 13 Hingdeok 1-ro, Giheung-gu	India Tamil Nadu Chennai, Tamil Nadu
--	---	---

Global Service Centers
Malaysia, Vietnam, Singapore, Thailand

© 2026 SinceVision All Rights Reserved. <http://www.sincevision.com> Email: info@sincevision.com



SinceVision's
LinkedIn Account



SinceVision's
YouTube Account

The product information and images in this brochure are for reference only. As the products are constantly updated,
please refer to the actual products, SinceVision reserves the right of final interpretation and revision of this brochure.

202604V1

Shenzhen SinceVision Technology Co., Ltd.

About SinceVision

Founded in 2014, SinceVision is a manufacturer of sensor technology and scientific cameras.

Our comprehensive product portfolio includes 3D laser profilers, high-speed cameras, laser displacement sensors, spectral confocal sensors, full-spectrum sensors, through-beam edge sensors, and sCMOS cameras.

SinceVision serves across consumer electronics, automotive, lithium battery, photovoltaic, and other key sectors. Our solutions help companies improve product quality, reduce costs, and increase efficiency in applications ranging from semiconductor fabrication and automotive manufacturing to food processing and scientific research.

Backed by a decade of technological expertise, SinceVision has built a strong R&D platform across optics, mechanics, electronics, and software, supported by a mature production and quality control system. We remain committed to high-end innovation, delivering advanced technology and reliable quality to support the growth of machine vision and industrial automation worldwide.

■ **Multiple offices:** Provide our customers with fast and convenient services

International Offices Japan, South Korea, India

Global Service Centers Malaysia, Vietnam, Singapore, Thailand

China Shenzhen, Suzhou (Kunshan), Shanghai, Wuxi, Beijing, Chengdu, Ningde, Taiwan, Wuhan, Xi'an, Hefei, Dongguan

Member of the Following Organizations



Certifications



24/7 Customer Service: We have multiple offices in both China and overseas countries to provide sales, service, and technical support.

International Offices: Japan, South Korea, India

Service Centers: Vietnam, Singapore, Malaysia, and Thailand

CORPORATE CULTURE



Our Vision

To be the first choice for industrial sensing and imaging technology.



Our Mission

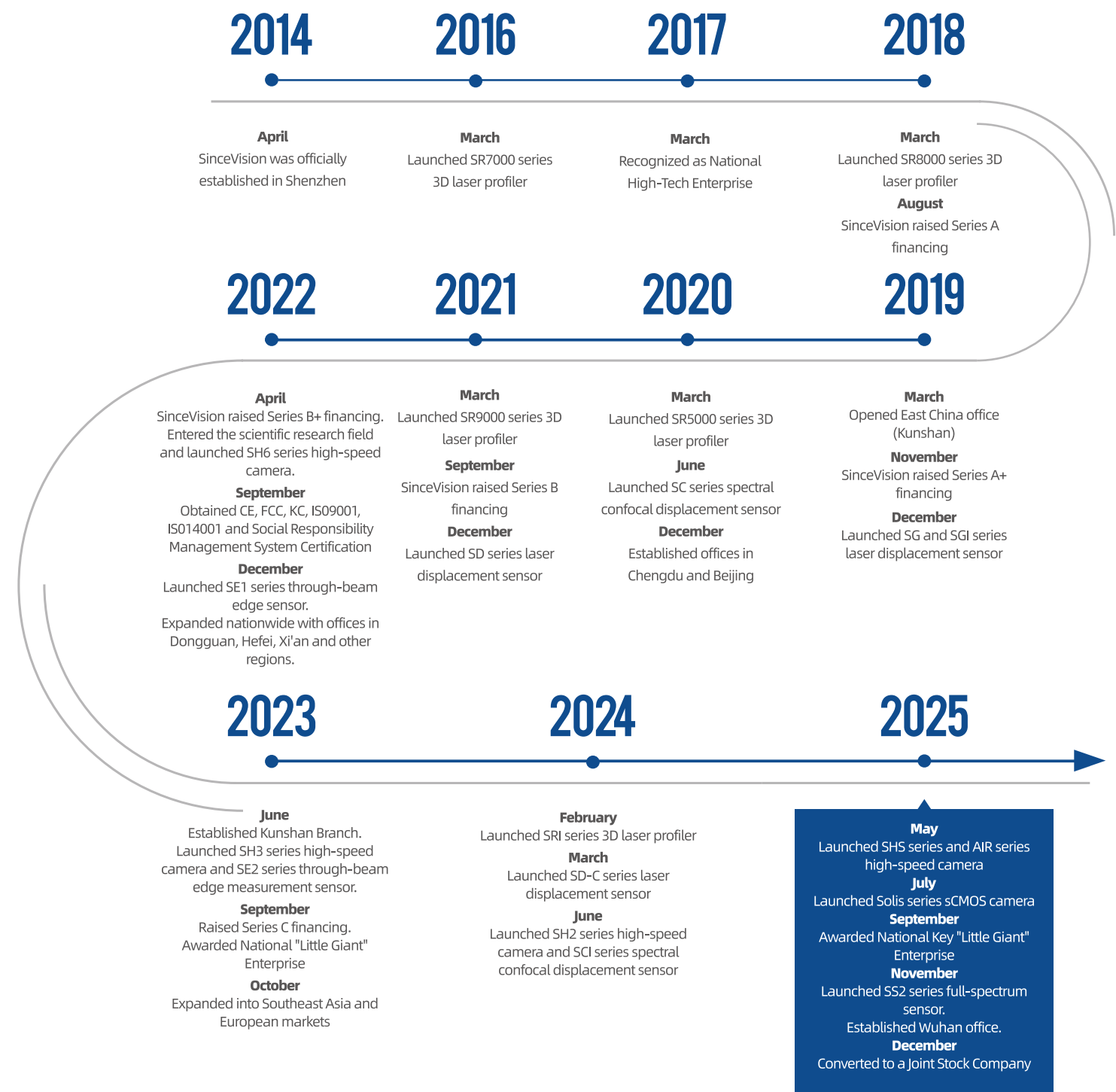
To give manufacturers the technology to build better products, reduce downtime, and lower inspection costs.



Customer First

Our engineers work directly with yours to solve problems quickly and keep your line running.

Development History



■ CONTENTS

01

Product Advantages 07-10

Solis
B0555 Series



- The all-new generation of qCMOS scientific cameras 11-14

Solis
B0465



- A new generation of general-purpose scientific cameras 15-18

Solis
B518



- Comparable to EMCCD scientific cameras 19-22

05
AIR



- High-speed, high-sensitivity scientific camera 23-26

06

Supporting Software

- PhotonEye Scientific Imaging Software 27-28

07

Application Cases

- Biomedical 29-30
- Physical Research 31-32
- Astronomical Observation 33
- Industrial Inspection 33
- Instrument OEM 34

08

Research Papers

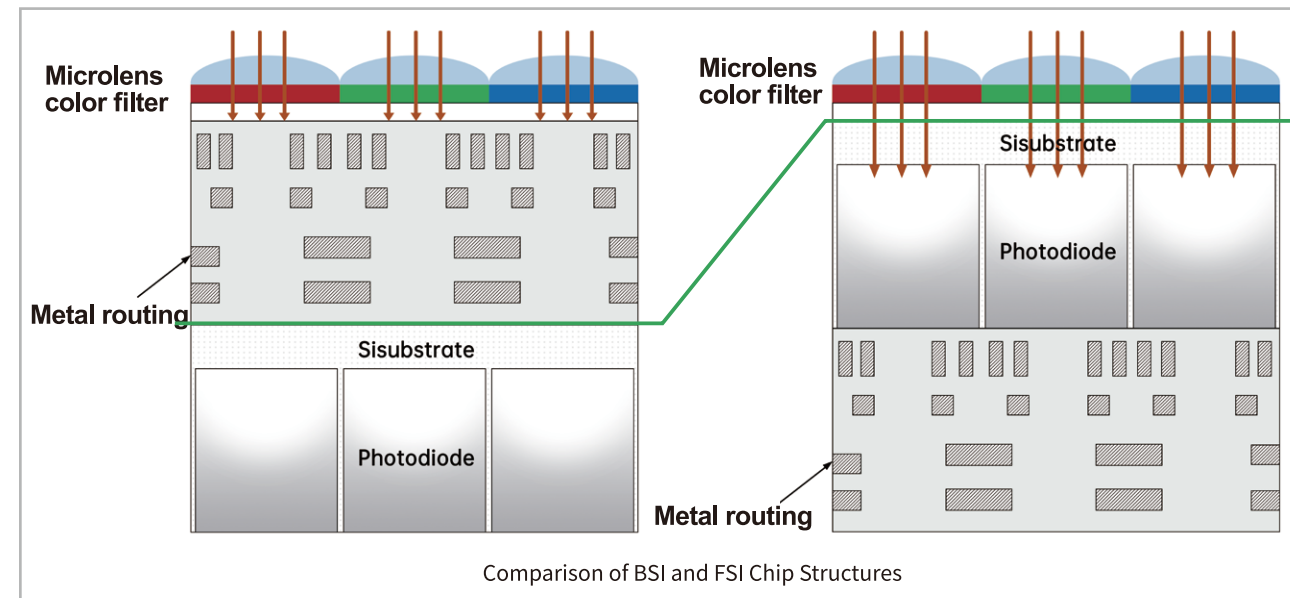
- SinceVision Academic Paper Incentive Program 35-36

CONTENT

Product Advantages

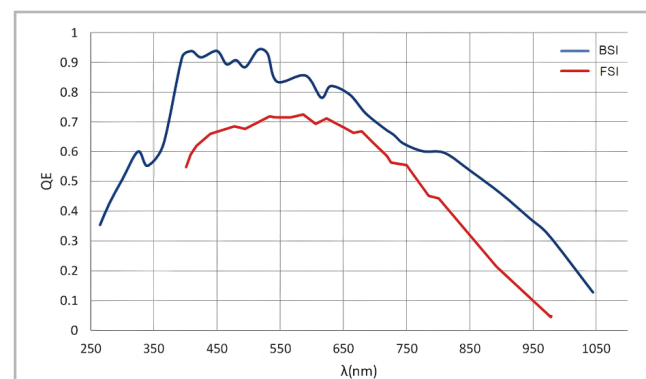
New BSI Chip

Traditional front-illuminated sensor architectures have played a significant role in the industry's long-term development; however, its inherent structural limitations have become a technical bottleneck in the pursuit of maximum sensitivity and signal-to-noise ratio. SinceVision's sCMOS cameras utilize a brand-new back-illuminated chip, which **significantly enhances sensitivity and signal-to-noise ratio**.



UV and IR Enhancement

Optimization of the chip structure has led to a comprehensive leap in performance metrics and a significant improvement in quantum efficiency. By completely eliminating the blocking and absorption effects of metal layers, **the peak quantum efficiency consistently exceeds 90%**, while maintaining extremely high responsivity in the ultraviolet and near-infrared bands. In contrast, traditional FSI chips have a peak quantum efficiency of only 60% to 70% and are unable to respond to the ultraviolet and near-infrared bands.



Comparison of Quantum Efficiency Between BSI and FSI Chips



Sealed cavity structure

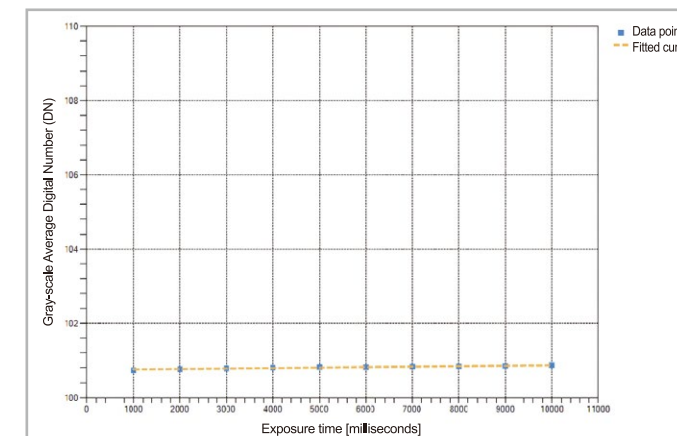
Advanced Refrigeration Sealing Solutions

- **Conventional sealed cavity:**
Low-cost desiccant solution, sealing reliability degrades over time, and the cavity is easily contaminated.
- **SinceVision sealed cavity:**
Utilizes a welding sealing process, ensuring long-lasting and effective airtightness (leakage rate $\leq 10^{-9}$ Pa·m³/s), and zero contamination inside the cavity.

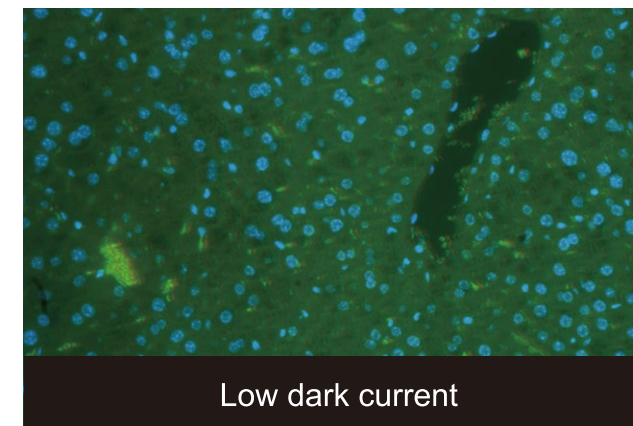
The high-performance sealed chamber effectively suppresses water vapor condensation, particle deposition, and volatile substance buildup under refrigeration conditions, thereby reducing stray light and background noise and ensuring consistent image quality during extended data acquisition.

Extremely low dark current

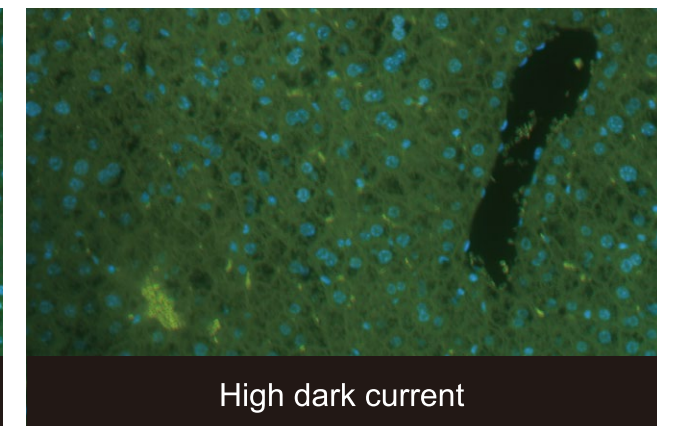
Under cooling conditions of **-30°C**, the dark current can be as low as **0.002 e-/pixel/s**.



Exposure in Dark Field - Grayscale Curve



Low dark current

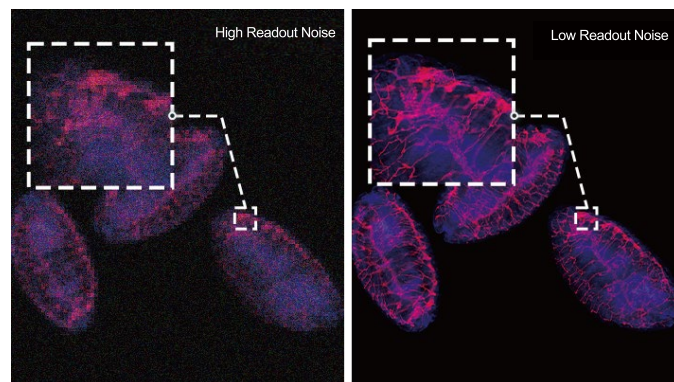


High dark current

Low dark current provides sCMOS cameras with an extremely low noise floor, enabling them to achieve high signal-to-noise ratio imaging even under low-light conditions and supporting precise quantitative analysis during long exposures, making it a cornerstone of cutting-edge scientific research applications.

Extremely Low Readout Noise

With readout noise as low as 0.29e⁻, it delivers exceptional suppression of shadow noise and significantly enhanced low-light detection capabilities, resulting in cleaner images and more reliable data.



Comparison of Readout Noise

Multi-Interface Support

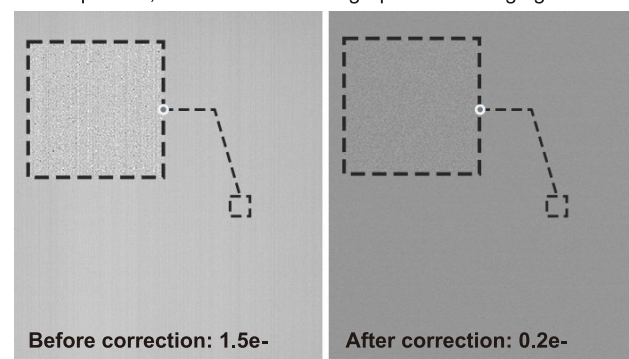
Featuring a new high-speed interface, with options including 10 Gigabit Ethernet, USB 3.1, and CXP-12 Over Fiber-4, it supports data transfer rates of up to 40 Gbps.

SinceVision Port	Other Ports
40Gbps @ CXP-12 Over Fiber-4(CoF)	6.25Gbps@CXP-6(PoC)
10Gbps@10GigE	1Gbps@Gigabit Ethernet
5Gbps@USB3.1Gen1	0.48Gbps@USB2.0
100-400m@CXP-12 Over Fiber-4(CoF)	<40m@CXP-6(PoC)
<100m@10GigE	<100m@Gigabit Ethernet
<5m@UsB3.1Gen1	<5m@USB2.0

Comparison of Transmission Ports

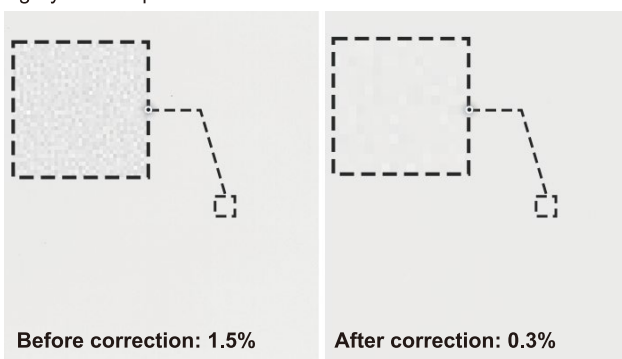
Advanced On-chip Calibration Algorithm

The camera features built-in intelligent algorithms that support one-click Dark Signal Non-Uniformity (DSNU) correction, significantly improving image consistency and measurement stability. Combined with low readout noise, this enables cleaner, more precise, and more reliable high-precision imaging.



Before and After DSNU Calibration Comparison

Supports one-click Photoresponse Non-uniformity (PRNU) correction, effectively eliminating non-uniformity in light sensitivity and sensitivity variations between pixels, ensuring consistent brightness across the entire image and accurate gray-scale reproduction.



Before and After PRNU Calibration Comparison

Strict Quality Control

SinceVision prioritizes stability as a core design principle, establishing comprehensive reliability safeguards across every aspect—from the underlying technical architecture to the manufacturing quality control system.

Every sCMOS camera undergoes rigorous screening of its core components and multiple rounds of environmental and reliability testing, ensuring stable operation even under complex operating conditions.



Class 1000 clean room + class 100 clean booth

Building a Strong First Line of Defense for Precision Manufacturing



High and Low-Temperature Environmental Tests of Products

High- and low-temperature testing from -20°C to 60°C to verify reliability under extreme conditions, with comprehensive test coverage



Heating and Drying Process

48 hours of continuous environmental acclimatization, with temperature fluctuations within ±1°C



Customized Services

SinceVision boasts a PhD-led R&D team that specializes in cutting-edge technologies and processes, spanning multiple interdisciplinary fields including optics, hardware, FPGA, and structural design. From overall specifications and materials to software functionality and system integration, we offer fully customizable solutions **tailored to meet any specific requirements.**



Solis B0555 series

The all-new generation of qCMOS scientific cameras



5.5μm Pixel

240fps@5.2M@True Global Shutter

0.29e- Readout noise

0.002e-/pixel/s @-30°C Dark current

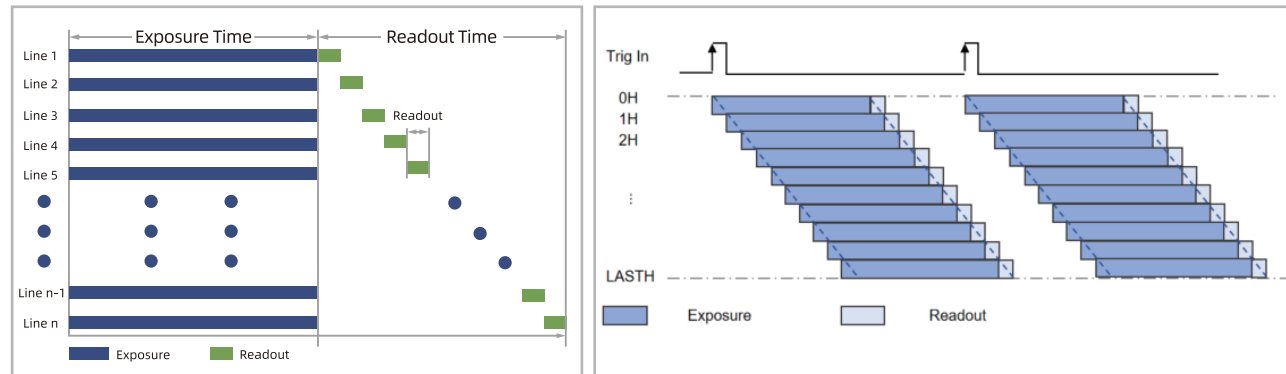
Designed for high-speed, ultra-low-light detection, the Solis B0555 features a custom 5.5μm back-illuminated sensor that balances resolution and light-gathering efficiency. It achieves a frame rate of up to 240 fps with readout noise as low as 0.29e⁻, offering performance comparable to qCMOS and EMCCD sensors. This camera serves as a complete time-resolved photon-counting system, suitable for applications such as live-cell dynamics observation and quantum luminescence detection, enabling highly stable and reproducible imaging of faint signals.

Specification

Model	Solis B0555 PRO	Solis B0555
Maximum Resolution	2560*2048	2560*2048
Full Frame Rate (CXP Optical Port)	240fps @ global shutter; 120fps @ rolling shutter	240fps @ global shutter; 120fps @ rolling shutter
Full Frame Rate (USB)	45fps@12bit	45fps@12bit
Quantum Efficiency	95%@520nm	95%@520nm
Pixel Size	5.5μm	5.5μm
Diagonal Size	18.05mm	18.05mm
Readout Noise	0.34e-(RMS) (Standard Mode) 0.29e-(RMS) (Ultra-Low Noise Mode)	0.6e-(RMS) (Standard Mode)
Full-well Capacity	36Ke-	36Ke-
Dark Current	0.002e-/pixel/s@-30°C , 80e-/s @60°C	0.002e-/pixel/s@-30°C , 80e-/s @60°C
DSNU	0.09e-	0.09e-
PRNU	0.1%	0.1%
Cooling Method	Active cooling (air/water cooling)	Active cooling (air/water cooling)
Maximum Cooling Temperature Difference	55°C below ambient temperature @ water cooling	55°C below ambient temperature @ water cooling
Sealing Method	High temperature welding and vacuum sealing	High temperature welding and vacuum sealing
Region of Interest(ROI)	Support	Support
Acquisition Mode	High dynamic range/single-photon/high-speed high-gain/high-speed low-gain	High dynamic range/high-speed high-gain/high-speed low-gain
Shutter Type	Global/rolling/programmable scanning	Global/rolling/programmable scanning
Bit Depth	12bit/14bit/16bit	12bit/16bit
Color	Monochrome (M)	Monochrome (M)
Non-linear Error	> 99%	> 99%
Binning	2 x 2, 4 x 4	2 x 2, 4 x 4
Dynamic Range	92dB	92dB
Trigger Mode	Software trigger / External trigger (Hardware)	Software trigger / External trigger (Hardware)
Trigger Interface	BNC	BNC
Operating System	Windows/Linux	Windows/Linux
SDK	C++ / Python	C++ / Python
Optical Interface	C port	C port
Data Interface	USB3.1 / CoaXPress-over- Fiber	USB3.1 / CoaXPress-over-Fiber
Exposure Time	4μs-60s	4μs-60s
Fan	Support turning on / off, multiple gear control	Support turning on / off, multiple gear control
Power Supply	24V DC	24V DC
Power Consumption	90W	90W
Dimensions (excluding protrusions)	122D×95W×95H	122D×95W×95H
Weight	1.6kg	1.6kg
Operating Temperature/Humidity (No condensation)	0°C~+40°C, below 90%	0°C~+40°C, below 90%
Storage Temperature/Humidity (No condensation)	-10°C~+60°C, below 90%	-10°C~+60°C, below 90%

Product Features

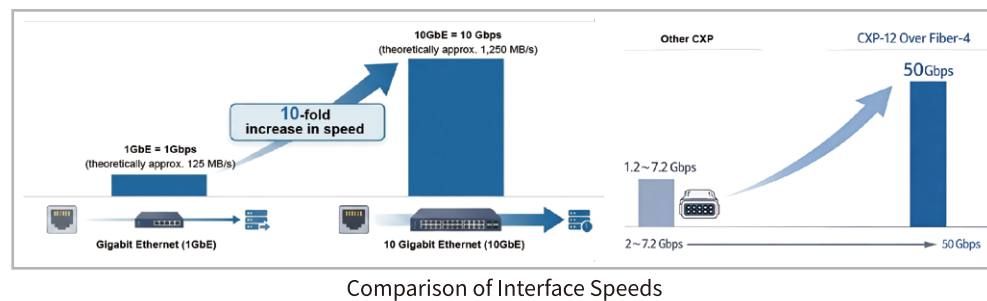
True Global Shutter + Rolling Shutter



Supports both global shutter and rolling shutter modes. The global shutter enables simultaneous exposure and readout of all pixels, preventing distortion during high-speed motion. Solis achieves an ultra-high frame rate of up to **240 fps**, significantly enhancing the temporal accuracy, signal reliability, and imaging stability of high-speed observation, dynamic measurement, and multi-camera imaging systems.

Standard High-speed Interface

Equipped with USB 3.1 Gen 1 and CXP-12-Over-Fiber-4 high-speed interfaces as standard, the maximum data transfer rate has jumped to **40 Gbps**, while the transmission distance for CXP optical ports has been extended to over 100 meters, representing a performance increase of more than **tenfold**.



Comparison of Interface Speeds

Ultra-low Dark Current

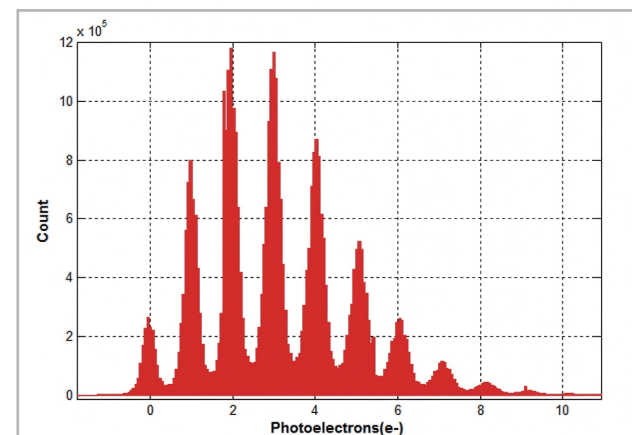
In the field of single-photon and photon-count resolution, even rates as low as **0.5 e-/pixel/s** can affect photon detection.

The Solis B0555 PRO camera achieves an extremely low dark current of **0.002 e-/pixel/s** at **-30°C**.

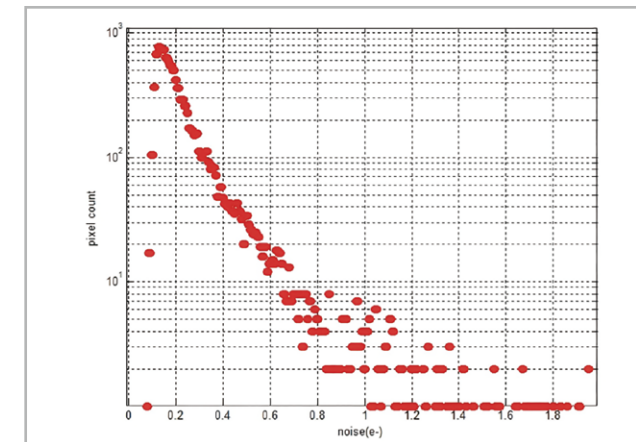


Single-photon Counting

With its extremely low readout noise and dark current noise, the Solis B0555 PRO enables stable single-photon counting. The figure shows a histogram with an average of 3 e-/pixel; in addition to temporal photon resolution, it also achieves spatial photon resolution.

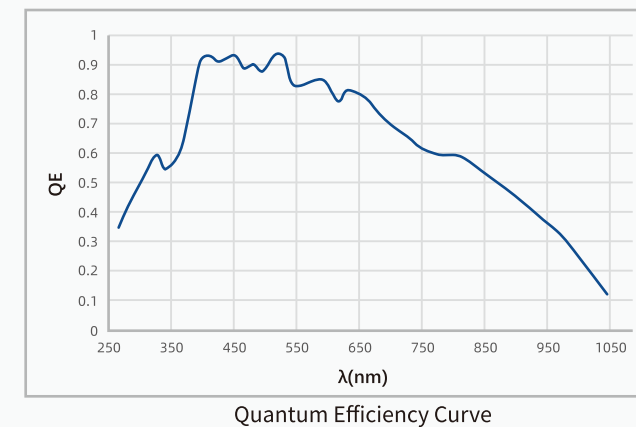


Extremely Low Readout Noise



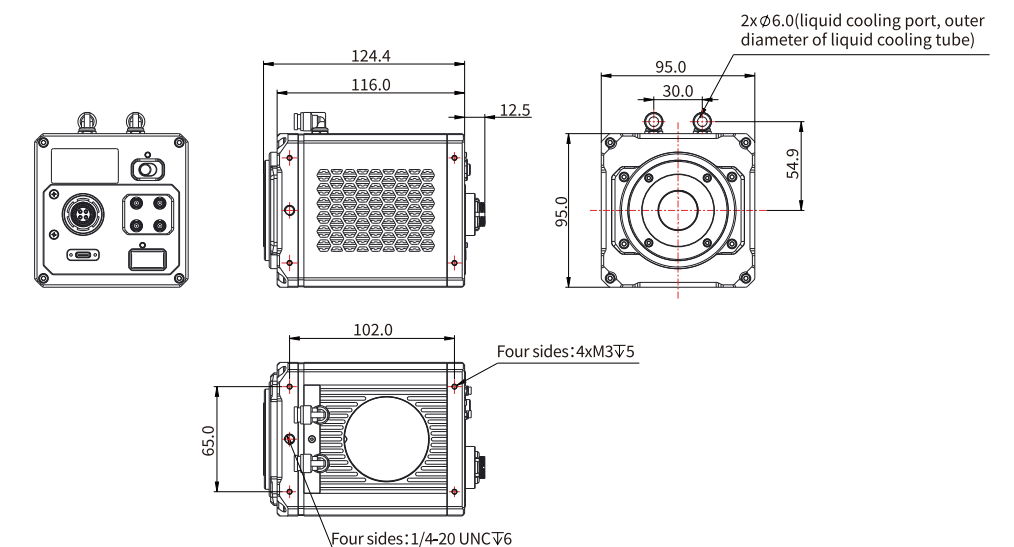
With readout noise as low as **0.29e-(rms)**, it significantly suppresses dark-field background noise, greatly enhancing low-light detection capabilities and the image signal-to-noise ratio. It effortlessly captures subtle signal details, resulting in clearer, more transparent images and more accurate, stable measurement data, providing a reliable foundation for high-precision imaging and quantitative analysis.

High Quantum Efficiency and UV-IR Enhancement



Peak quantum efficiency has been increased to over **95%**, with compatibility across the **200 nm to 1100 nm** wavelength range, and high response efficiency in both the near-infrared and ultraviolet bands.

Structural Dimension



Solis B0465

A new generation of general-purpose scientific cameras



6.5µm Pixel

100fps@4.2M

1.1e- Readout noise

0.02e- @-30°C Readout noise

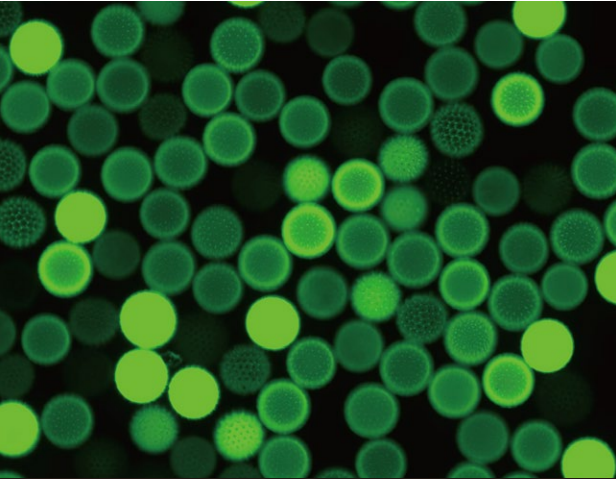
Featuring a brand-new Backside-illuminated (BSI) sCMOS sensor with a standard resolution of 2048×2048 and a pixel size of 6.5 µm, the camera housing is vacuum-sealed using a high-temperature brazing process. Combined with a deep-cooling system capable of a temperature difference of up to 55°C, this design reduces dark current noise to an extremely low level while achieving a readout noise as low as 1.1e-. It meets the demanding requirements of scientific research and industrial inspection, ranging from dynamic studies of living cells to high-resolution tissue imaging.

Specification

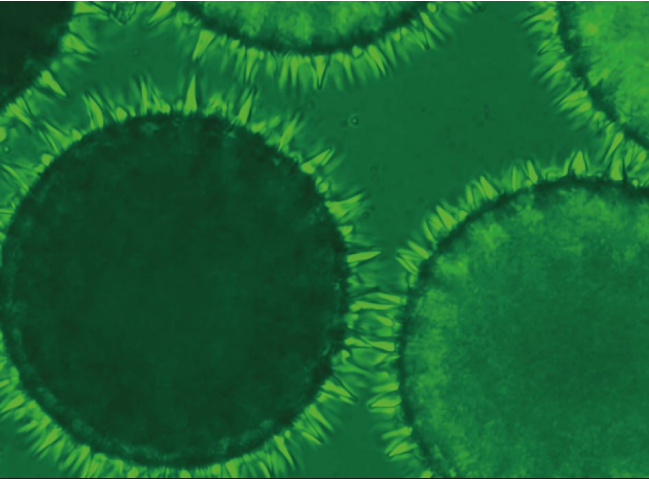
Model	Solis B0465
Maximum Resolution	2048*2048
Full Frame Rate	100fps@10GigE; 40fps@USB
Quantum Efficiency	95%@560nm
Pixel Size	6.5µm
Diagonal Size	18.8mm
Readout Noise	1.1e- (median)
Full-well Capacity	45Ke-
Dark Current	0.5e-/pixel/s@-10°C, 0.08e-/pixel/s@-30°C
DSNU	0.2e-
PRNU	0.3%
Cooling Method	Active cooling (air/water cooling)
Maximum Cooling Temperature Difference	55°C below ambient temperature @ water cooling
Sealing Method	High temperature welding and vacuum sealing
Region of Interest(ROI)	Support
Acquisition Mode	High dynamic range / High sensitivity / High-speed, high-gain / High-speed, low-gain
Shutter Type	Global / Rolling shutter(reset)
Bit Depth	11bit/12bit/16bit
Color	Monochrome (M)
Non-linear Error	> 99%
Binning	2 x 2, 4 x 4
Dynamic Range	90dB
Trigger Mode	Software trigger / External trigger (Hardware)
Trigger Interface	BNC
Operating System	Windows/Linux
SDK	C++/Python
Optical Interface	C port
Data Interface	10 Gigabit Ethernet/USB 3.1 Gen 1
Exposure Time	7.2µs-60s
Fan	Support turning on / off, multiple gear control
Power Supply	24V DC
Power Consumption	90W
Dimensions (excluding protrusions)	121D×84W×84H
Weight	2kg
Operating Temperature/Humidity (No condensation)	0°C~+40°C, below 90%
Storage Temperature/Humidity (No condensation)	-10°C~+60°C, below 90%

■ Product Features

High Resolution, Low Noise



Real-life photos of plant cells



Detailed close-up photo

2048*2048

High resolution

13.312mm*13.312mm

Effective imaging area

Readout noise
as low as 1.1e-

Capture clear images

Better Suited for Microscopes

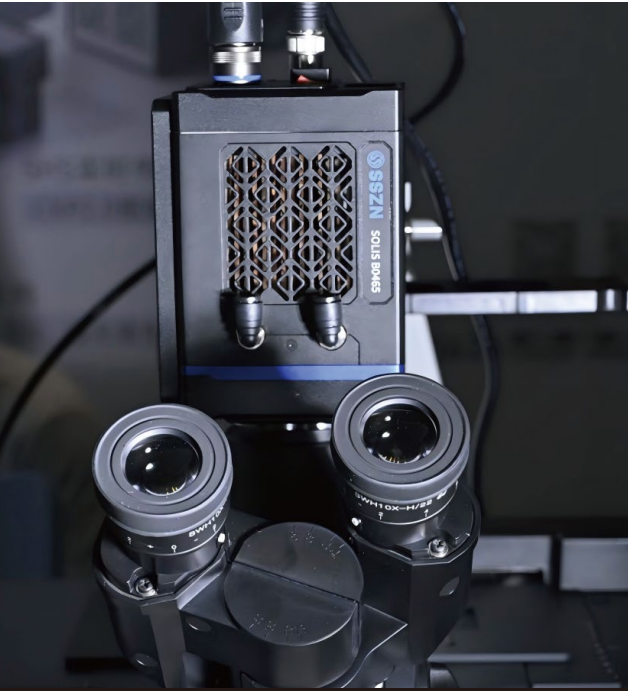


Photo taken with a microscope

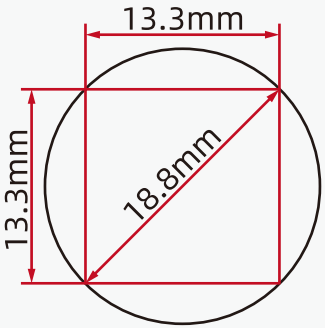
The Solis B0465 scientific camera is compatible with standard C-mount lenses used in industrial cameras and machine vision systems, offering superior integration with microscopes.

6.5μm

Pixel size

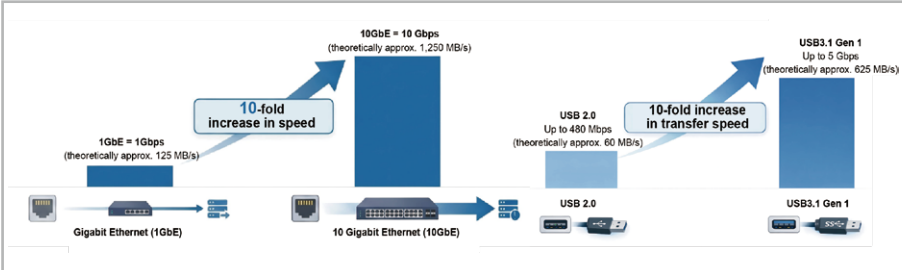
25.4mm

Lens diameter



Lens and Sensor Size

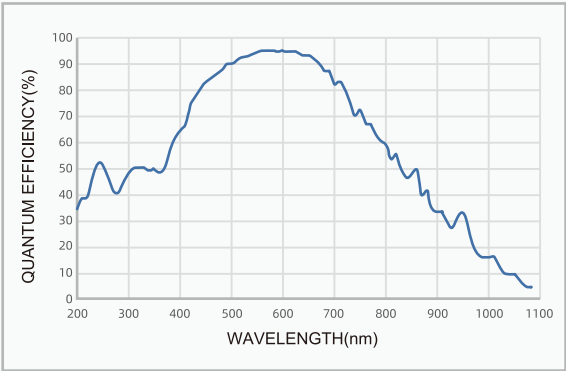
Standard High-speed Interface



Comparison of Interface Speeds

It comes standard with 10 Gigabit Ethernet and USB 3.1 Gen 1 high-speed interfaces, offering **10 times** the data transfer rates of traditional Gigabit Ethernet and USB 2.0 interfaces. Compared to CameraLink interfaces, it does not require a capture card, significantly reducing operating costs and improving ease of use, making it widely adaptable to various application scenarios.

High Quantum Efficiency and UV-IR Enhancement



Quantum Efficiency Curve

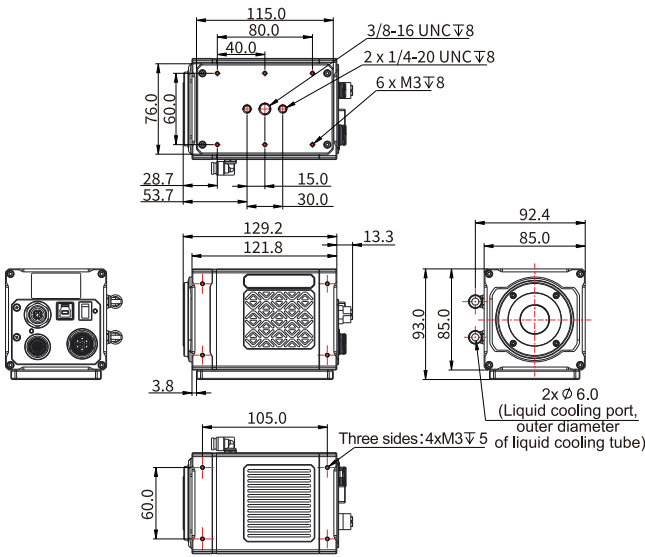
Peak quantum efficiency has been increased to over **95%**, with compatibility across the **200 nm to 1100 nm** wavelength range, and high response efficiency in both the near-infrared and ultraviolet bands.

■ Frame Rate

Mode	Horizontal	Vertical	Frame Rate
High dynamic range High sensitivity Global reset	2048	2048	42
		1536	56
		1024	84
		512	164
		480	174
		320	254
		256	311
		192	400
		128	561
		64	939
High speed, high gain High speed, low gain	2048	2048	100
		1536	130
		1024	201
		512	413
		480	445
		320	660
		256	811
		192	1035
		128	1459
		64	2193

1. Frame rate is affected by your computer's system configuration. Recommended specifications: Windows 10, an Intel Core i7 processor running at 3.4 GHz or higher, a 64-bit system, and a 10-gigabit Ethernet connection.
2. The frame rates listed above represent the maximum values measured under the shortest exposure time (rounded down). If the 10-gigabit Ethernet connection is not operating at full capacity in high-speed mode, the average frame rate is calculated (rounded down).

■ Structural Dimension



Solis B518

Comparable to EMCCD scientific cameras



18μm Pixel

120fps@0.48M

0.45e- Readout noise

0.01e-/pixel/s @ -30°C Dark current

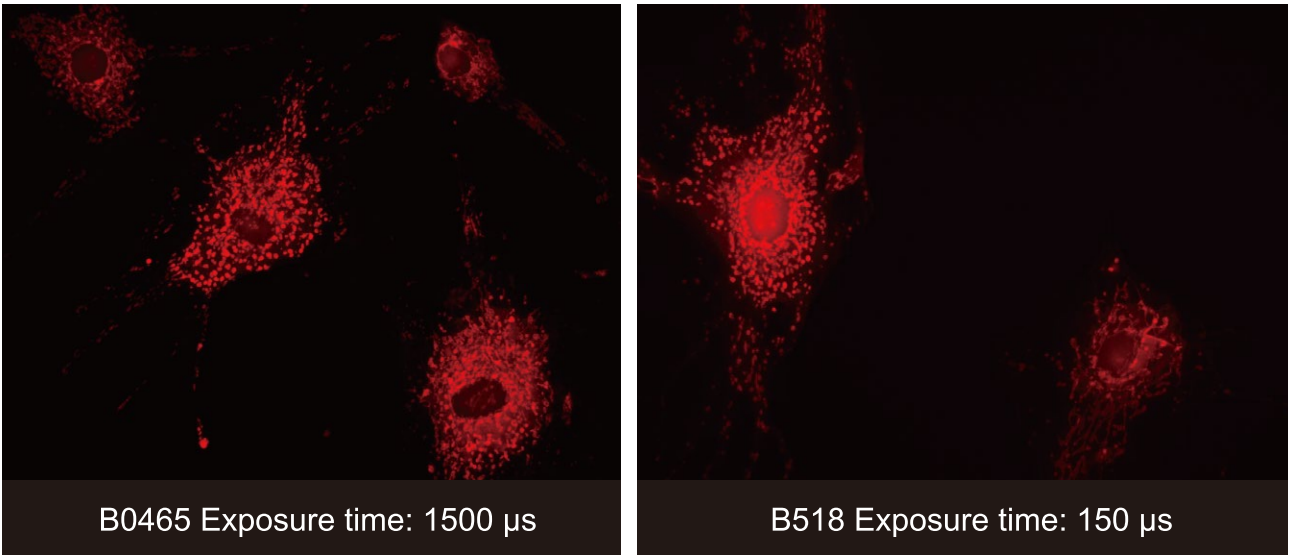
SinceVision’s Solis B518 camera significantly enhances low-light detection capabilities. Equipped with an 18μm back-illuminated sensor, this camera delivers significantly improved photon collection efficiency. Through vacuum-sealed packaging and deep cooling to -60°C, it effectively suppresses dark current and background noise. With a readout noise as low as 0.45e⁻, its performance rivals that of EMCCDs, enabling high signal-to-noise ratio, stable, and repeatable imaging signals under extremely low-light conditions, thereby providing a reliable solution for high-precision low-light detection.

Specification

Model	Solis B518
Maximum Resolution	800*600
Full Frame Rate	120fps
Quantum Efficiency	89.5%@465nm
Pixel Size	18μm
Diagonal Size	18.15mm
Readout Noise	0.45e- (median)
Full-well Capacity	260Ke-
Dark Current	0.01e-/pixel/s@-30°C
DSNU	0.07e-
PRNU	0.04%
Cooling Method	Active cooling (air/water cooling)
Maximum Cooling Temperature Difference	60°C below ambient temperature @ water cooling
Sealing Method	High temperature welding and vacuum sealing
Region of Interest(ROI)	Support
Acquisition Mode	High dynamic range / High-speed, high-gain / High-speed, low-gain
Shutter Type	Rolling
Bit Depth	14bit/16bit
Color	Monochrome (M)
Non-linear Error	> 99%
Binning	2 x 2, 4 x 4
Dynamic Range	90dB
Trigger Mode	Software trigger / External trigger (Hardware)
Trigger Interface	BNC
Operating System	Windows/Linux
SDK	C++/python
Optical Interface	C port
Data Interface	10 Gigabit Ethernet/USB 3.1 Gen 1
Exposure Time	13.44μs-60s
Fan	Support turning on / off, multiple gear control
Power Supply	24V DC
Power Consumption	90W
Dimensions (excluding protrusions)	121D×84W×84H
Weight	2kg
Operating Temperature/Humidity (No condensation)	0°C~+40°C, below 90%
Storage Temperature/Humidity (No condensation)	-10°C~+60°C, below 90%

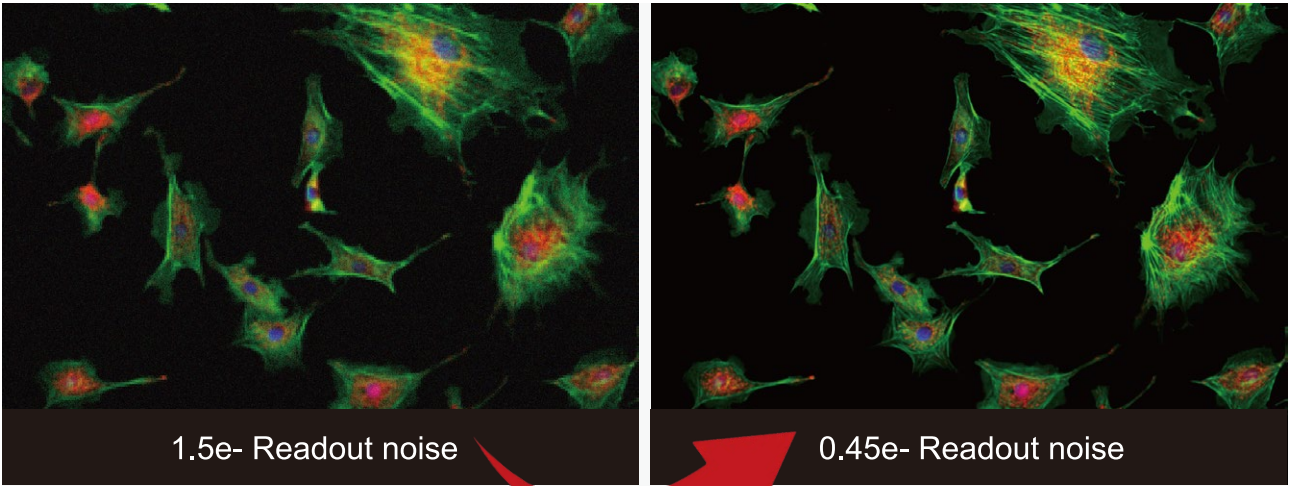
■ Product Features

High Sensitivity



Custom-designed scientific-grade backside-illuminated (BSI) MOS chips, featuring **18-μm** large pixels, offer approximately eight times the sensitivity of products with **6.5μm** pixels. With significantly improved signal-to-noise ratio, they capture clear signals even in low-light conditions and completely eliminate multiplicative noise, making them the top choice for replacing **EMCCD cameras**.

Low Readout Noise



Through image sensor modulation and optimization of low-noise circuitry, the Solis B518 reduces readout noise to **0.45e-**, significantly improving the image signal-to-noise ratio and marking yet another technological breakthrough.

High Frame Rate Transmission

It comes standard with 10 Gigabit Ethernet and USB 3.1 Gen 1 high-speed ports. In high-speed mode, the frame rate can reach **120 fps**, which is at least **twice** as fast as the 60 fps or 30 fps frame rates of traditional products.

Solis B518
High-speed
Mode

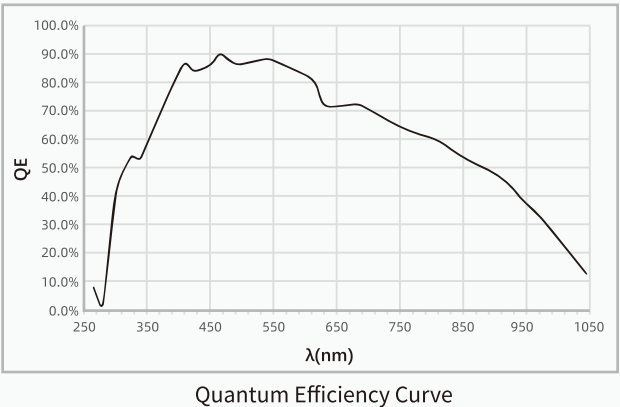
120fps@10 Gigabit Ethernet

Previous
generation
technology

60fps

30fps

High Quantum Efficiency and UV-IR Enhancement



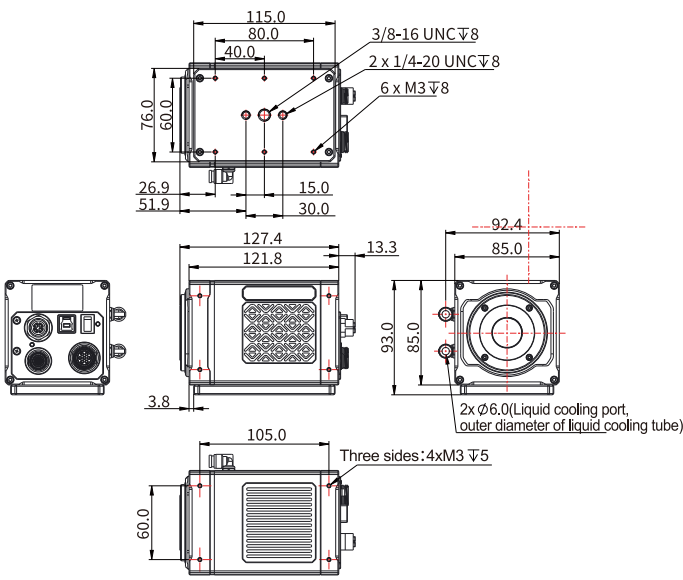
Peak quantum efficiency has been increased to over **89.5%**, with compatibility across the **250 nm to 1100 nm** wavelength range, and it responds to both near-infrared and ultraviolet wavelengths.

■ Frame Rate

Mode	Horizontal	Vertical	Frame Rate
High dynamic range	800	600	31
		512	36.1
		480	39.1
		368	50
		256	71.2
		128	132.8
		64	233.9
High speed, high gain High speed, low gain	800	600	120.1
		512	139.1
		480	148.3
		368	191.4
		256	269.7
		128	502.9
		64	896.8

1. Frame rate is affected by your computer's system configuration. Recommended specifications: Windows 10, an Intel Core i7 processor running at 3.4 GHz or higher, a 64-bit system, and a 10-gigabit Ethernet connection.
2. The frame rates listed above represent the maximum values measured under the shortest exposure time (rounded down). If the 10-gigabit Ethernet connection is not operating at full capacity in high-speed mode, the average frame rate is calculated (rounded down).

■ Structural Dimension



AIR Series

High-speed, high-sensitivity scientific camera



535μm Pixel

1000fps@5.2M

1.8e- Readout noise

0.02e-/pixel/s @ -30°C Dark current

Equipped with a backside-illuminated (BSI) CMOS sensor, it offers excellent light sensitivity. Thanks to its outstanding thermal management design and high level of integration, the device can withstand harsh environments such as high-altitude low-pressure conditions, intense vibration, strong electromagnetic interference, and extreme temperatures. The AIR series features a high-capacity CF card and a built-in battery, enabling offline operation without an external power source. It is suitable for applications in aerospace, drone-mounted systems, and automotive crash testing.

Specification

Model	AIR
Maximum Resolution	2560*2048
Full Frame Rate	1000fps
Quantum Efficiency	95%@520nm
Pixel Size	5.5μm
Diagonal Size	18.12mm
Readout Noise	1.8e-
Full-well Capacity	51Ke-
Dark Current	0.02e-/pixel/s@-30°C
DSNU	0.1%
PRNU	1.5%
Cooling Method	Active cooling (air cooling)
Region of Interest(ROI)	Support
Shutter Type	Rolling
Bit Depth	8bit/10bit/12bit
Color	Monochrome (M) / Color (C)
Non-linear Error	> 99%
Binning	2 x 2, 4 x 4
Dynamic Range	89dB
Trigger Mode	Software trigger / External trigger (Hardware)
Trigger Interface	BNC
Video Output	Ethernet, 3G-SDI
Data Interface	10 Gigabit Ethernet, compatible with 2.5Gbps and 1Gbps.
Input Signal	Trigger, Synchronization, Ready, EST, IRIG-B
Output Signal	Trigger, Synchronization, Ready, EPO
Minimum Exposure Time	1μs
Analog Gain	x2 x4 x8
Power Supply	24V DC
Power Consumption	< 25W
Dimensions (excluding protrusions)	120D×72W×72H
Weight	2kg
Operating Temperature/Humidity (No condensation)	-10°C~+50°C, below 95%
Storage Temperature/Humidity (No condensation)	-10°C-60°C, below 90%

■ Core features



Stack BSI process

Effectively improve quantum efficiency and sensitivity

Pluggable storage

Supports CF card storage

20 minutes of battery life

Built in rechargeable NiMH battery, no risk of combustion or explosion

IRIG-B/IEEE1588

Time code timing

-40°C ~ 70°C

Meet the aircraft-mounting equal limit condition

Adaptable to harsh environments

Vibration resistance design, EMC protection design

■ Core Functions



10GigE



Adapt in harsh temp. environment



IRIG B



Image trigger



Auto exposure
Double exposure



High sensitivity and
high image quality
High dynamic mode



3G-SDI



1TB
CF card storage

■ Frame Rate

Resolution	Frame rate (fps)	Memory (s)	CF card storage time (min)
		64GB	1TB
2560×2048	1000	13	3
2560×1536	1200	14	3
2560×1024	2000	13	3
2560×512	3600	14	3
2560×128	10500	19	5

※ The recording time of the 64GB version is twice as long as that of the 32GB version.
※ The recording time in the above table is calculated based on the bit depth of 8bit image.

■ Storage Configuration

Mode	AIR-501
RAM	32GB/64GB
CF card	1TB

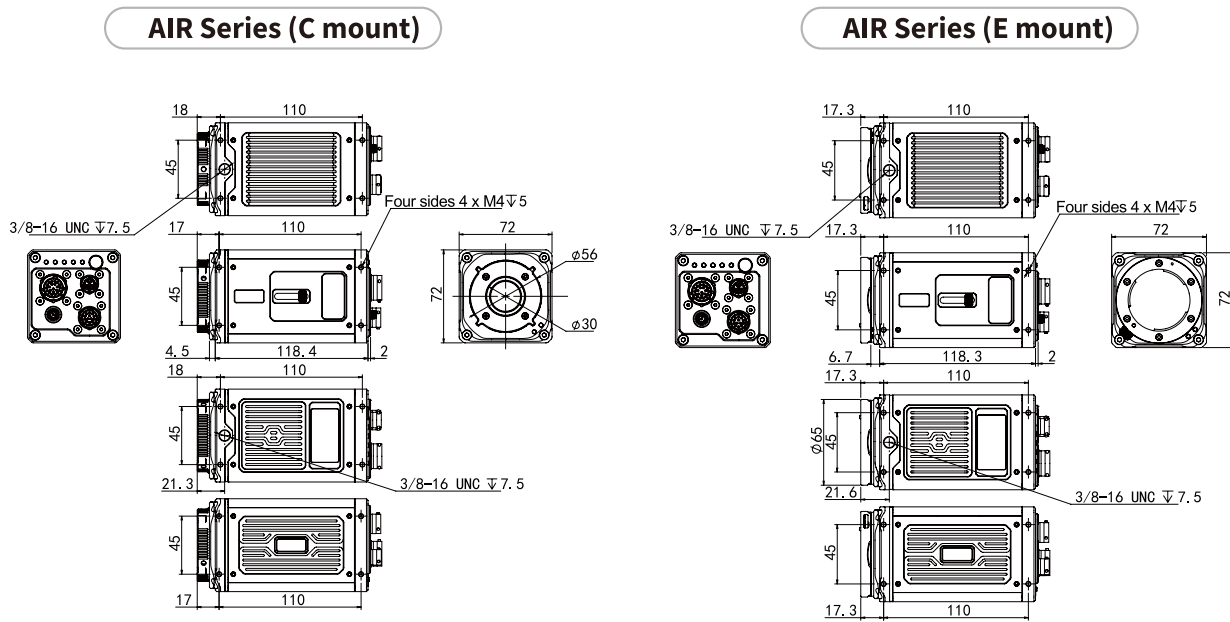
■ Mechanical Specification

Camera dimension	120D×72W×72H	Installation hole position	Top/Bottom: 3/8 mounting hole x1
Camera weight	1.4kg (built-in battery) / 1.1kg (excluding battery)	Power consumption	< 25W
Power supply mode	DC24V	Lens mount	E mount and C mount options available (with locking function)

■ Environmental Adaptability

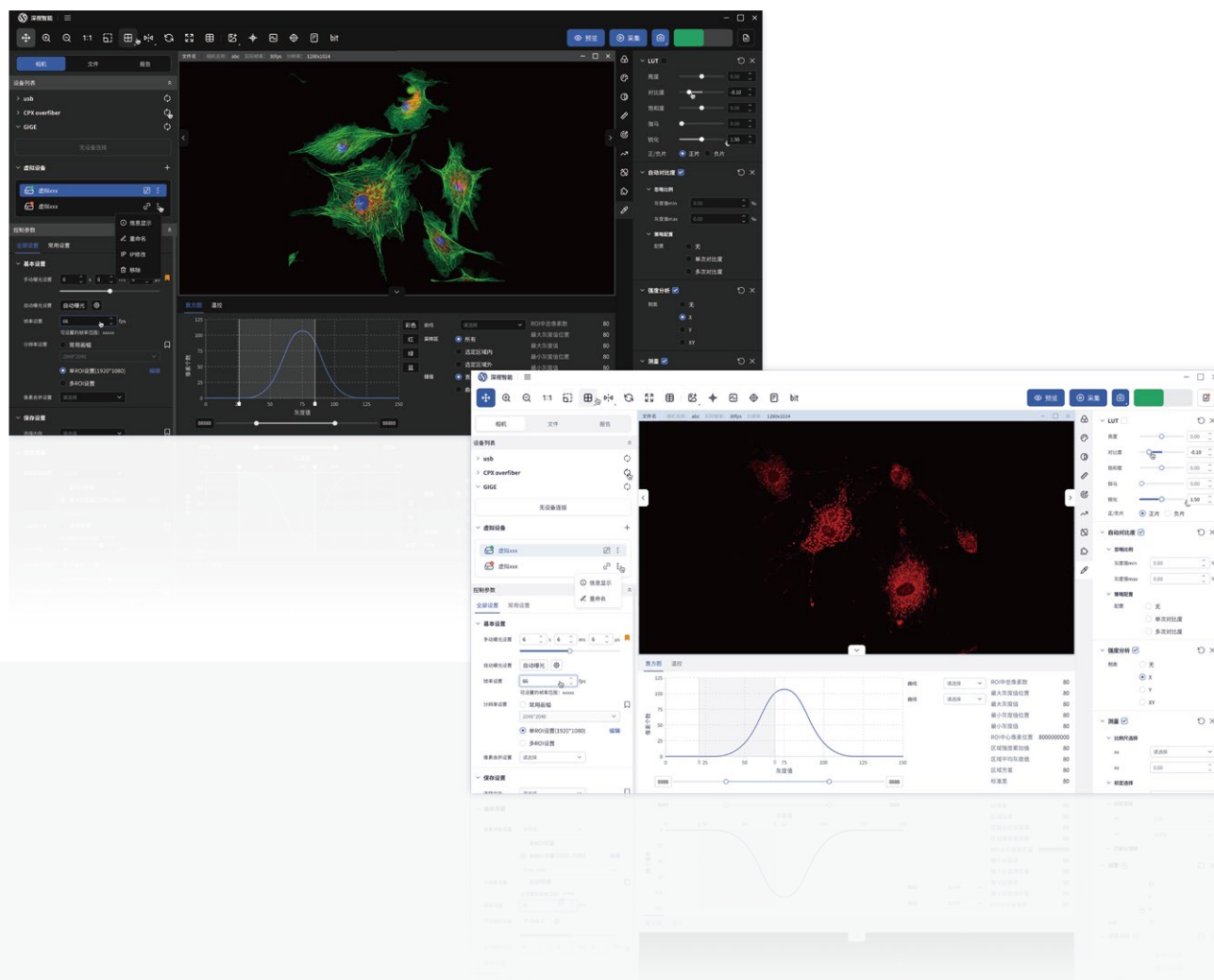
Working temperature	-10~50°C. Customized large temperature version (-40~70°C)	EMC	Meet the requirements of CE102, RE102, CS101, CS114 and RS103 in GJB151B-2013
Working humidity	Below 95% (no condensation)		
Storage temperature	-40~70°C	Vibration resistance	W ₀ :0.08g ² /Hz each for 20 minutes in X, Y and Z direction
Heat dissipation mode	Passive heat dissipation		

■ Structural Dimension



Supporting Software

PhotonEye Scientific Imaging Software



PhotonEye is a comprehensive intelligent control and image processing software designed specifically for high-end scientific cameras. It integrates advanced image algorithms, flexible hardware synchronization, and intelligent temperature control technology to meet the demands of a wide range of demanding applications, including high-dynamic-range, high-sensitivity, and high-speed imaging. It serves as an ideal platform for in-depth visual analysis and precision measurement.

Software Features



Multi-mode Intelligent Imaging

Supports multiple capture modes that automatically adapt to the shooting environment, significantly enhancing image dynamic range, signal-to-noise ratio, and dynamic capture capabilities.



Programmable I/O

Features multiple independently configurable trigger outputs to enable high-precision timing synchronization with external devices.



Intelligent Temperature Control and Thermal Management

One-touch temperature control effectively suppresses dark current noise, ensuring stable imaging over extended periods.



Custom ROI Capture and Display

Supports custom ROI settings with flexible selection, significantly improving frame rate and data read efficiency.



Multi-Camera Synchronized Control and Recording

Supports simultaneous connection and control of multiple cameras, making it ideal for multi-angle collaborative imaging.



Advanced Image Processing Toolkit

Features professional post-processing functions such as built-in image adjustment, filtering, and one-click correction to enhance image quality and analyzability.



Smart File Management and Quick Playback

Supports automatic saving, jumping to specific points, tagging, and exporting to multiple formats after recording, as well as advanced playback features such as virtual trigger frames, range playback, and smooth playback.



Platform-wide interaction and visualization interface

It offers a variety of UI themes, customizable interface elements, and quick-access functions to enhance the user experience and improve operational efficiency.



SDK

We provide SDKs for C++ and Python to help users quickly integrate features.



Pseudo color Fusion

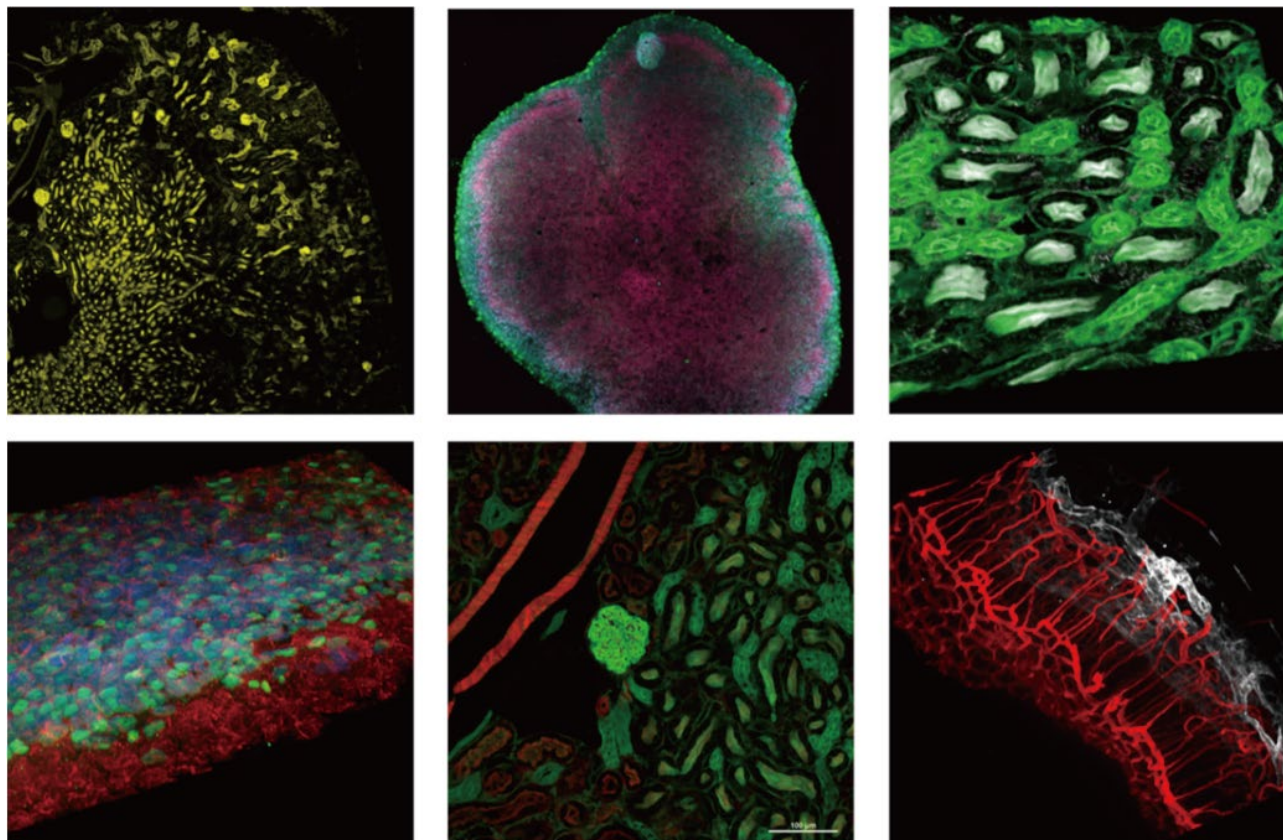
Supports pseudo-color adjustment and the merging of multiple pseudo-color images, helping customers identify target features more quickly and enhancing the presentation of results.



Image stitching

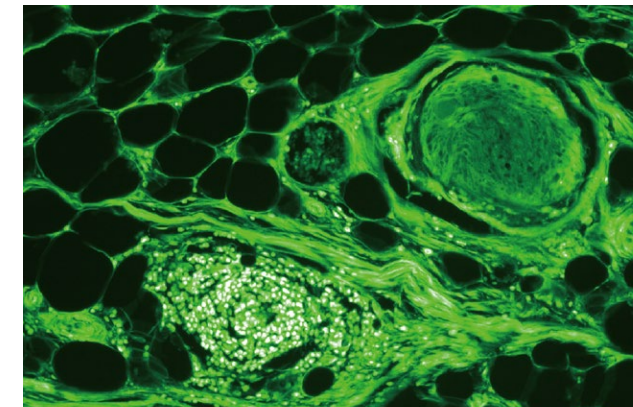
Supports image stitching to expand the field of view, enabling customers to observe and analyze large areas more efficiently.

Application Cases Biomedical Field



In the biomedical field, sCMOS cameras are primarily used for **high-resolution pathological imaging, in vivo fluorescence imaging, and quantitative protein detection.**

- Its high resolution and high sensitivity enable it to clearly identify tumor tissue, aiding in the early diagnosis of cancer;
- It can also capture specific fluorescent signals in living organisms, supporting research into biological mechanisms; And
- It provides a reliable tool for the precise quantification of molecules such as proteins.



Observation of Plant Cells

The autofluorescence of plant cells is easily interfered with by background fluorescence from substances such as lignin, making it difficult to observe with traditional CMOS cameras. However, sCMOS cameras, with their high sensitivity and low readout noise, enable low-phototoxicity imaging, reducing the excitation light dose by more than 50% and effectively minimizing photodamage.

Observation of Embryonic Fibroblasts

Imaging embryonic fibroblasts often requires long-term observation of dynamic processes such as migration, spreading, and division. However, live cells are highly sensitive to phototoxicity and photobleaching. Leveraging advantages such as low readout noise and high sensitivity, sCMOS cameras enable long-term, high-quality dynamic imaging of embryonic fibroblasts at lower excitation light doses, thereby reducing photodamage and enhancing quantitative observation capabilities.

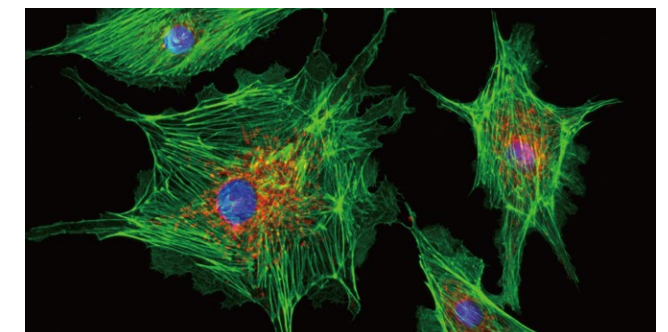
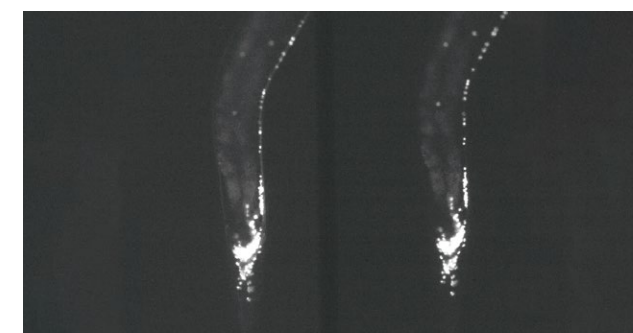


Image of Embryonic Fibroblasts



Real-life Photo of a Nematode

Observation of Fluorescent Nematodes

Observe nematode activity under a fluorescence microscope at 20x magnification, using a split-beam optical path to view the fluorescent labels and the nematodes' trajectories from different angles.

Observation of Mouse Brain Cells

High-sensitivity sCMOS cameras capture clear morphological maps of neurons in the mouse brain, enabling the screening and localization of active neurons. Through microelectrode injection and patch-clamp recording, complete waveforms of ion channel currents and action potentials within neurons are obtained, allowing for the assessment of their electrophysiological functional states.

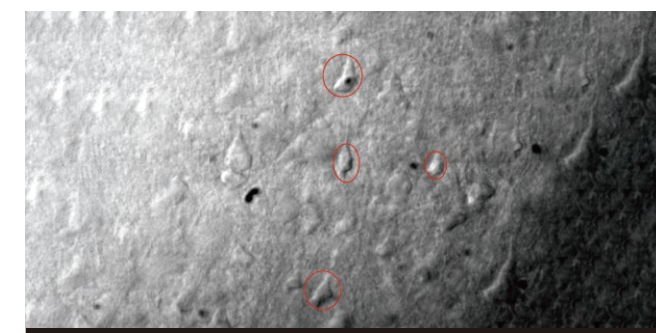
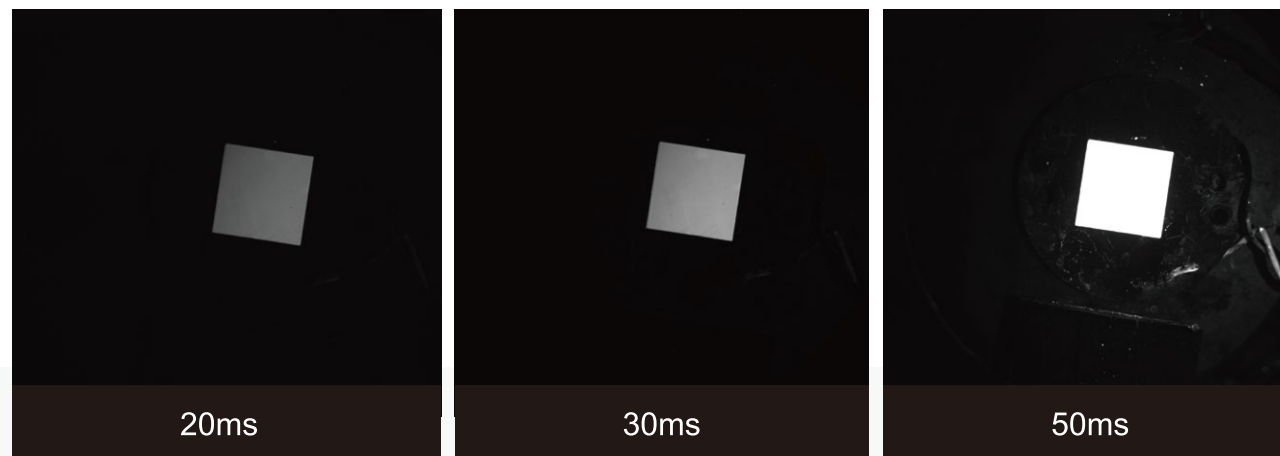
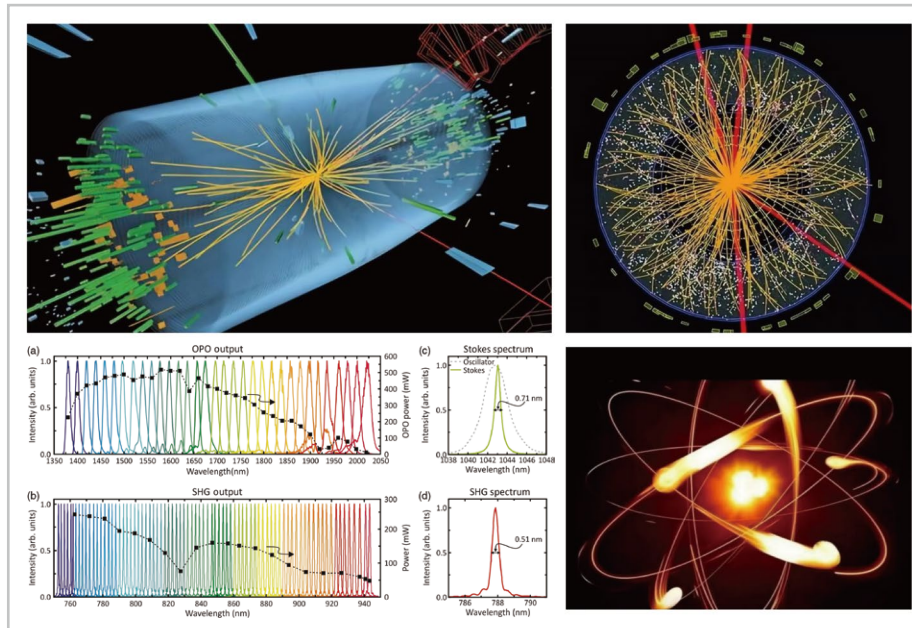


Photo of Neurons in a Mouse Brain

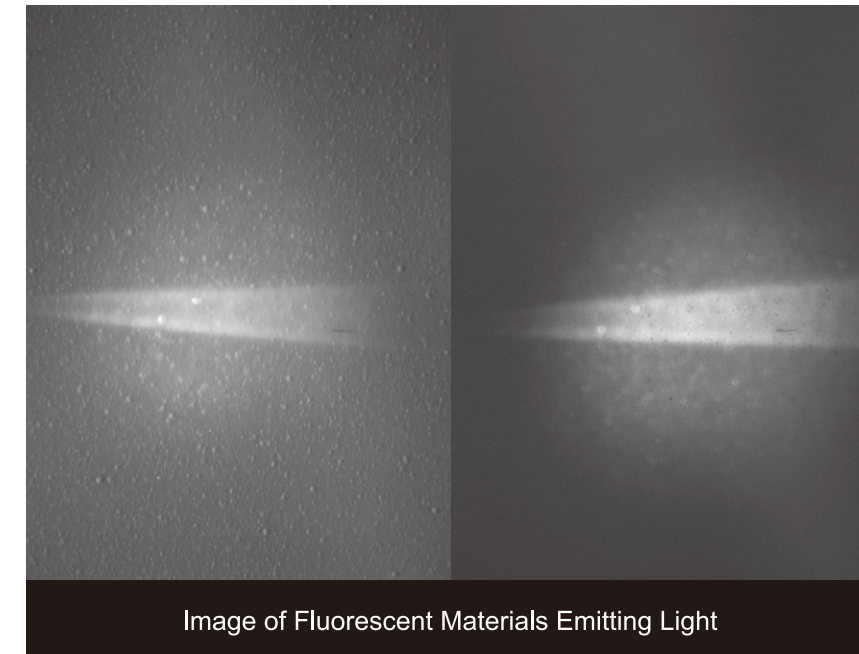
Application Cases Field of Physics Research

sCMOS cameras combine high sensitivity, low noise, high frame rates, and large sensor sizes. They are widely used in physics research for applications such as **quantum optical imaging, single-photon detection, fluorescence spectroscopy, observation of ultrafast dynamic processes, laser spot analysis, and experiments in plasma and condensed matter physics**. These cameras enable the capture of faint light signals with a high signal-to-noise ratio and the precise recording of transient physical processes.



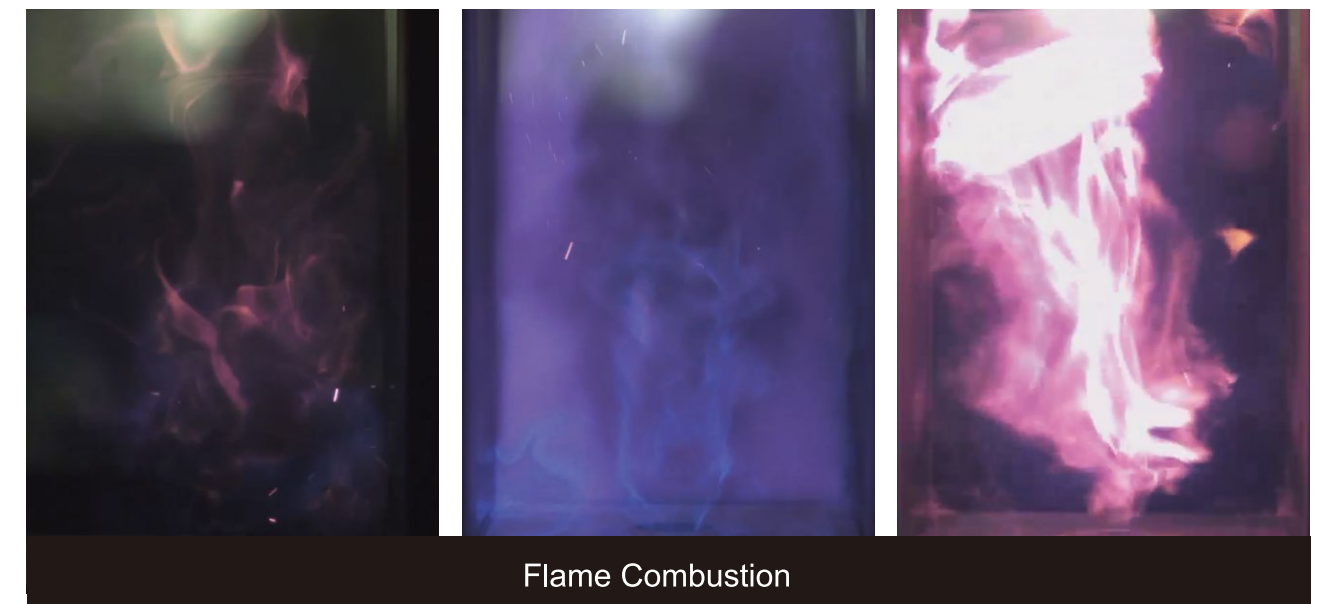
Photoluminescence

This study analyzes the brightness of pressure-sensitive coatings after exposure to light. The emitted light from this material exhibits an oxygen quenching effect: the higher the oxygen content, the lower the light intensity. By capturing the fluorescence intensity at different time points using a camera, a correlation can be established between light intensity and oxygen partial pressure; thus, when oxygen content remains constant, the light intensity reflects the pressure.



Laser-induced fluorescence

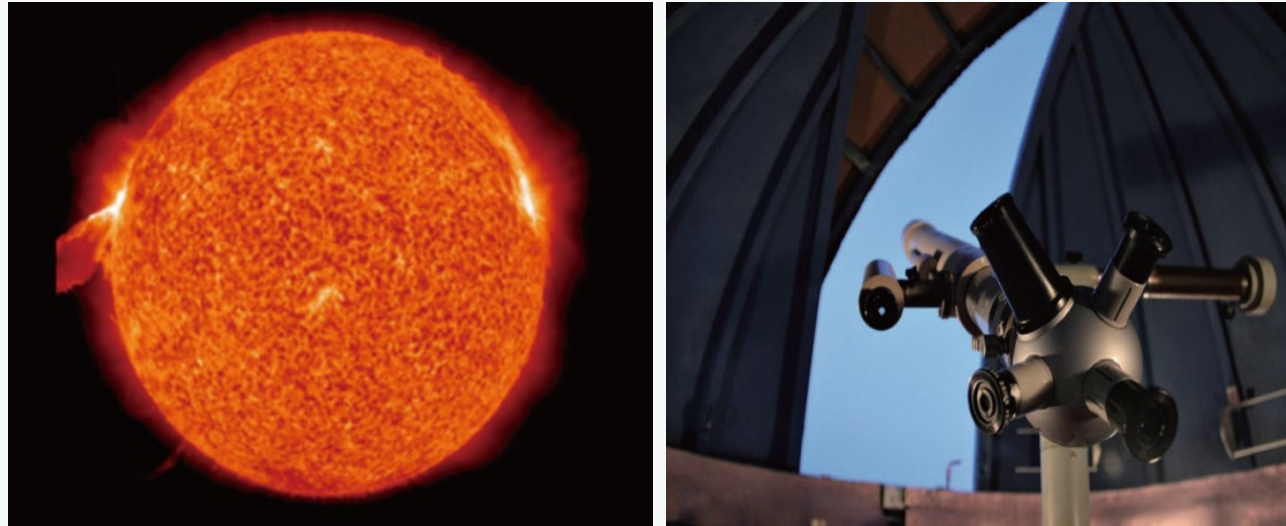
This experiment primarily investigates the fluorescence characteristics of a specific fluorescent material following excitation; this material is primarily used in the field of aircraft engines. The excitation light has a wavelength of 980 nm, while the emitted light has wavelengths of 540 nm, 560 nm, and 680 nm. Due to the relatively weak intensity of the emitted light, a high-sensitivity camera is required for observation.



Methane Combustion Experiment

In methane combustion experiments, the self-luminescence intensity of the OH radical is very weak, Conventional sCMOS cameras struggle to meet the demands of high-frame-rate imaging, and high-speed cameras often fail to capture faint light signals. The AIR series of sCMOS cameras, however, offers extremely high sensitivity, enabling clear recording of such radical luminescence and combustion transient processes at a **resolution of 2560×2048 and a frame rate of 1000 fps**. This provides critical visual evidence for elucidating combustion mechanisms and improving energy efficiency.

Application Cases - Astronomical Observation



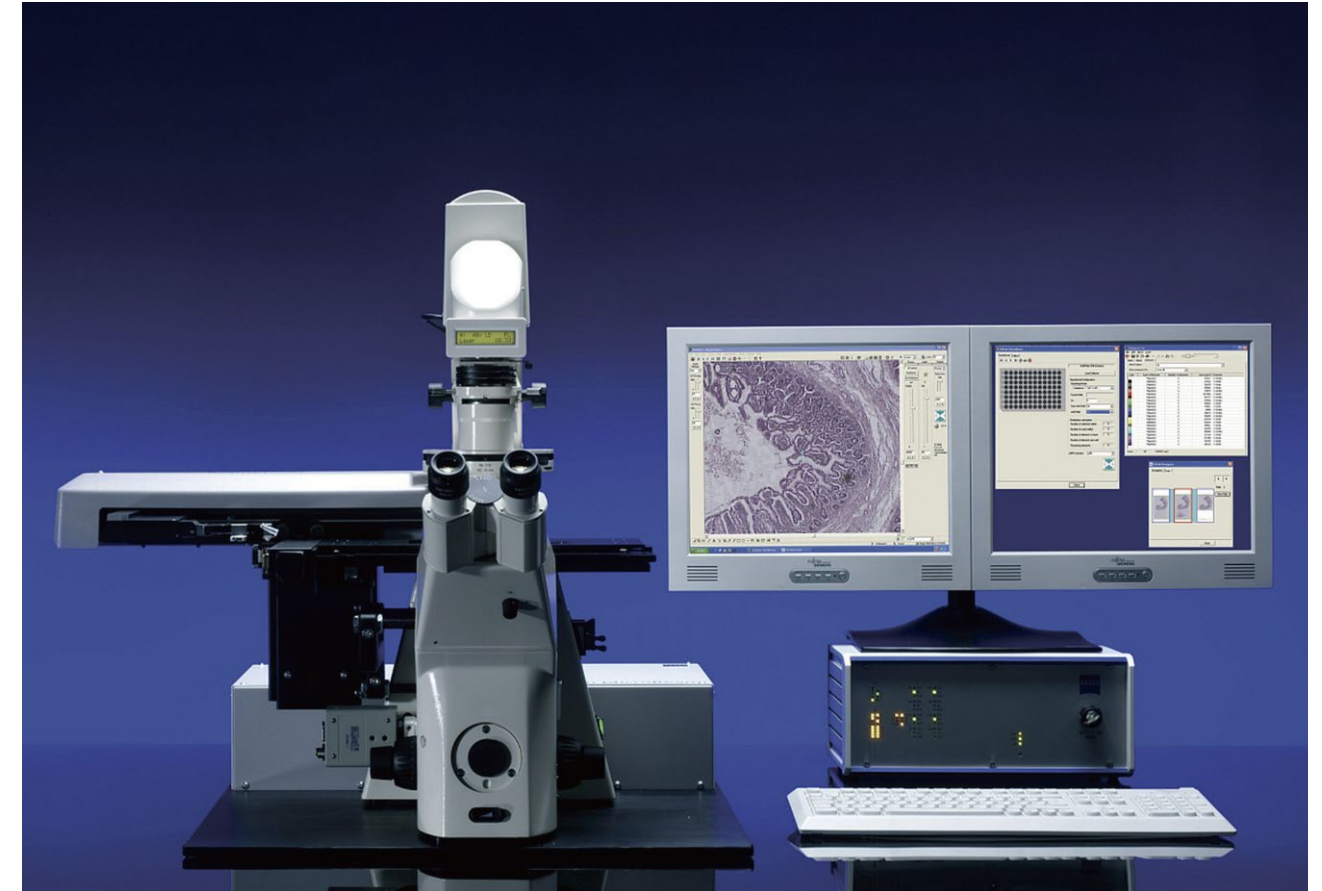
The applications of sCMOS cameras in astronomical observations primarily include **high-precision imaging, spectral analysis, atmospheric correction, and the observation of specific celestial objects**. Imaging technologies based on image sensors and cameras are used in telescopes around the world.

Application Cases - Industrial Inspection



- Compared to standard industrial cameras, the key features of scientific-grade industrial cameras are high sensitivity, low noise, high dynamic range, and high resolution.
- In the field of industrial inspection, CMOS cameras are primarily used for **high-precision scientific measurements, industrial inspection, and high-performance imaging in scientific research experiments**. They serve as essential tools for high-end manufacturing, scientific exploration, and intelligent systems, and their high precision and reliability will continue to drive advancements in fields such as life sciences, semiconductors, and new energy.

Application Cases - Instrument OEM

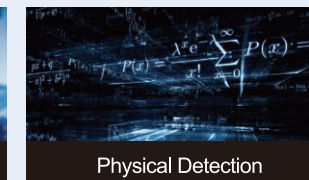


As a critical component of the high-end scientific instrument supply chain, instrument OEMs can **effectively shorten the R&D cycle for complete systems, enhance product performance consistency and system competitiveness**, and serve as a key driver of **independent innovation, differentiated development, and domestic substitution** in the high-end instrument sector.

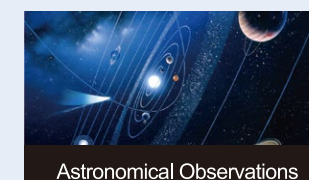
We offer OEM services for various fields, including **life sciences, physical detection, astronomical observation, and industrial equipment integration**, such as spectral imaging, gene sequencers, and streak imaging.



Life Sciences



Physical Detection



Astronomical Observations



Industrial Equipment Integration

Precision, Scientific and Technological Innovation Brings Prosperity

SinceVision Launched Academic Paper Incentive Program

Project Background

Basic scientific research is the foundation of the country. In order to better motivate scientific researchers who have worked hard in the field of scientific research, at the same time, promote the in-depth application of domestic instruments in the academic field and help scientific research achievements to a new height.

SinceVision has launched a paper award program to encourage more researchers to use our high-speed cameras and scientific camera products to conduct scientific research and publish high-level academic papers. We look forward to your sharing the achievements and joy of scientific research with us.

Activity Period

The incentive policy of this paper collection activity lasts until December 31, 2026 (the incentive plan will be revised according to the results two years later).

Target people

For everyone, such as participants from universities, research institutes, enterprises and individuals.

Requirements

1. Conduct research using our high-speed cameras and scientific cameras and publish high-quality academic papers;
2. The article (main text or SI) or supplementary materials must clearly indicate our brand (Chinese: 深视智能; English: SINCEVISION), equipment model, and equipment images; please ensure that the product model and company name are written correctly, otherwise the award will not be awarded;
3. The applicant must be the first author (including the first co-first author) or corresponding author of the paper, and each paper can only be applied for once. If the corresponding author and the first author of the same paper apply at the same time, the application of the corresponding author shall prevail;
4. The paper must have been formally accepted by the journal and published online;
5. The paper must be the first application for our award, and the main text and SI must not contain any product information of other competing companies in the same industry.



Reward Standards

1. Publish papers in the top journals of NATURE, SCIENCE, and reward 10,000 CNY/article;
2. Publish papers in SCI- Q1 (impact factor (IF)≥15) and reward 3,000 CNY/article;
3. Published papers in SCI-Q1 (8≤IF<15) and SCI-Q2, and awarded 1,200 CNY/article;
4. Other SCI and EI retrieval journals and core journals, with an impact factor of IF≥2.0, will be awarded 600 CNY/article.

Note: the paper is subject to the ranking at the publication time of the Chinese Academy of Sciences (CAS), and will not be revised if there is any change in the later period.

Application process

I. Ways of Application

1. Mail application:
Please get ready of your company, name, contact information and detailed information of papers that meet the requirements to apply for awards, and send them to the official Email address of SinceVision (wangchangshun@cnsszn.com or miaoxinguo@cnsszn.com). The content of the Email must include the full text of the paper, the cover of the published journal and the electronic version of the directory page to ensure the accuracy and completeness of the information, so that we can accurately verify your application qualification.
2. Contact the sales representative to register:
You can also sign up directly with the local sales representative of SinceVision, and the sales representative will help you complete the initial registration.

II. Evaluation and Award Issuance

After you submit your application through any of the above methods and provide complete information, we will immediately start the review process. Your application materials will be carefully and professionally reviewed by the [Expert Review Committee of Shenzhen SinceVision Technology Co., Ltd.](#) Once your paper is passed, the corresponding reward will be deposited into your pre-registered bank account, ensuring that your research achievements receive timely and fair recognition and feedback.

Note: during the application process, please ensure that the personal data provided are true and valid. If it is false, the application qualification will be cancelled; If the information is incomplete, the evaluation committee shall have the right to ask for supplement and perfection, and if it fails to supplement within the time limit, it shall be deemed as a waiver of the application.

Others

1. If you publish papers of the same sensor for many times, it can apply for awards for many times;
2. The time when the paper is officially accepted by the journal must be within the validity period of this policy (January 1, 2025 to December 31, 2026);
3. If your papers are awarded, it is assumed that the author authorizes SinceVision (Shenzhen SinceVision Technology Co., Ltd.) to use the author's name and achievement name for publicity and promotion activities, including but not limited to media promotion, on-site display, network promotion and academic promotion.
4. The final interpretation right of this policy belongs to Shenzhen SinceVision Technology Co., Ltd., and the reward amount will be dynamically adjusted according to the annual budget and academic influence; SinceVision will fulfill the relevant tax obligations to the tax authorities on behalf of the applicant in accordance with the statutory time limit and procedures.

SinceVision is cordially looking forward to your participation!

Here, you can show your scientific research results and win exclusive awards. On the road of scientific research, we expect more talents to break through the difficulties of scientific research, let wisdom shine and illuminate the journey of scientific research with the help of SinceVision high-speed cameras. We will accompany you all the way, witness your glorious moment and work together with you to create brilliant scientific research.

sCMOS DIGITAL CAMERA

See beyond the dark