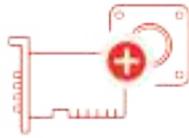**Allied Vision**

// SWIR-, UV-, POLARIZED CAMERAS & ACCESSOIRES
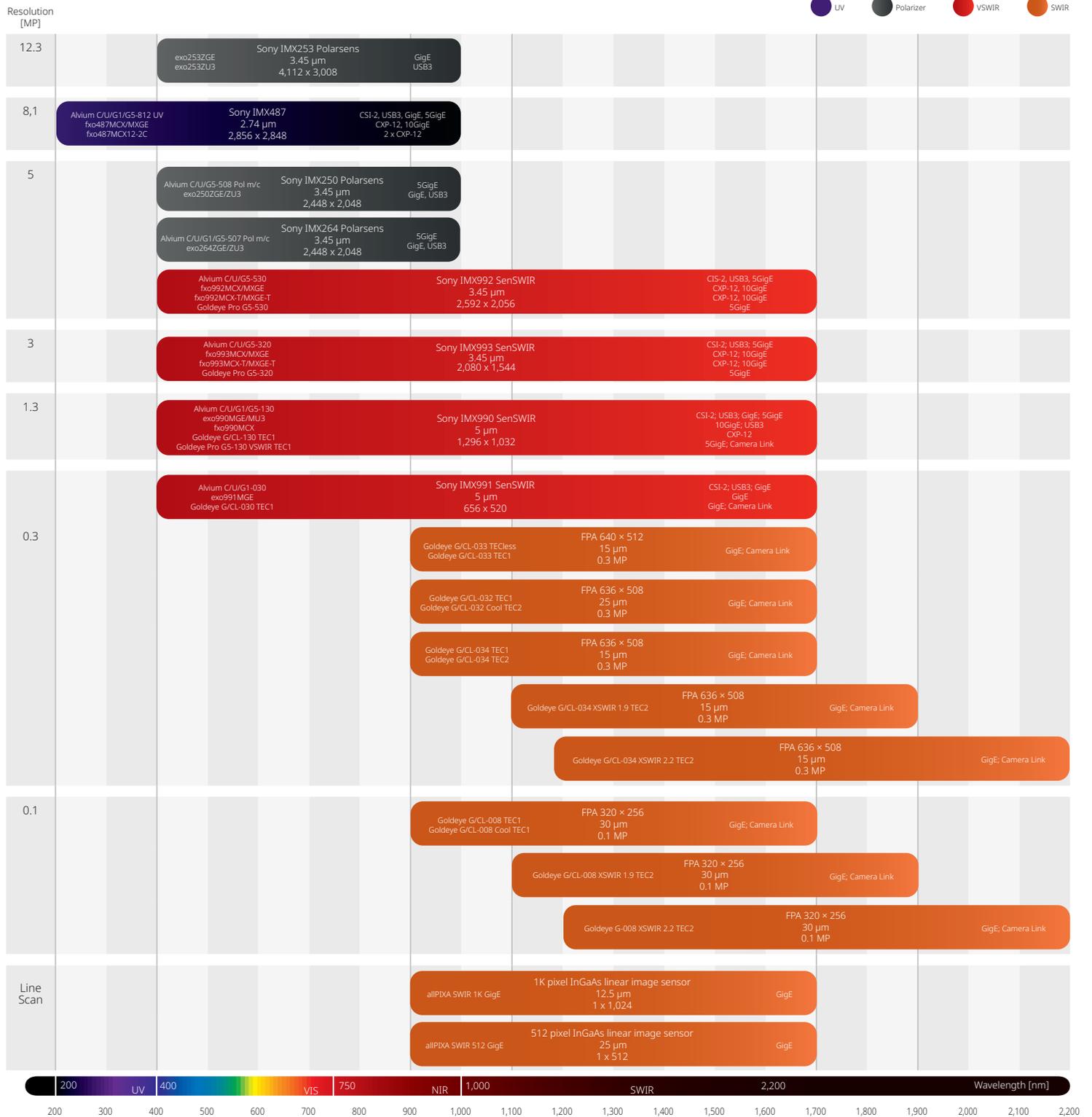
Seeing beyond the Visible

SWIR
SHORT WAVELENGTH INFRARED

UV
ULTRAVIOLET WAVELENGTH

POL
POLARIZED WAVELENGTH

Image Sensors in Allied Vision Cameras
Wavelength Spectrum & Resolution

● UV ● Polarizer ● VSWIR ● SWIR

Resolution [MP]

12.3
exo253ZGE / exo253ZU3 — Sony IMX253 Polarsens — 3.45 µm — 4,112 x 3,008 — GigE, USB3

8,1
Alvium C/U/G1/G5-812 UV / fxo487MCX/MXGE / fxo487MCX12-2C — Sony IMX487 — 2.74 µm — 2,856 x 2,848 — CSI-2, USB3, GigE, 5GigE; CXP-12, 10GigE; 2 x CXP-12

5
Alvium C/U/G5-508 Pol m/c / exo250ZGE/ZU3 — Sony IMX250 Polarsens — 3.45 µm — 2,448 x 2,048 — 5GigE; GigE, USB3
Alvium C/U/G1/G5-507 Pol m/c / exo264ZGE/ZU3 — Sony IMX264 Polarsens — 3.45 µm — 2,448 x 2,048 — 5GigE; GigE, USB3
Alvium C/U/G5-530 / fxo992MCX/MXGE / fxo992MCX-T/MXGE-T / Goldeye Pro G5-530 — Sony IMX992 SenSWIR — 3.45 µm — 2,592 x 2,056 — CIS-2, USB3, 5GigE; CXP-12, 10GigE; CXP-12, 10GigE; 5GigE

3
Alvium C/U/G5-320 / fxo993MCX/MXGE / fxo993MCX-T/MXGE-T / Goldeye Pro G5-320 — Sony IMX993 SenSWIR — 3.45 µm — 2,080 x 1,544 — CSI-2; USB3; 5GigE; CXP-12, 10GigE; CXP-12, 10GigE; 5GigE

1.3
Alvium C/U/G1/G5-130 / exo990MGE/MU3 / fxo990MCX / Goldeye G/CL-130 TEC1 / Goldeye Pro G5-130 VSWIR TEC1 — Sony IMX990 SenSWIR — 5 µm — 1,296 x 1,032 — CSI-2; USB3; GigE; 5GigE; 10GigE; USB3; CXP-12; 5GigE; Camera Link

0.3
Alvium C/U/G1-030 / exo991MGE / Goldeye G/CL-030 TEC1 — Sony IMX991 SenSWIR — 5 µm — 656 x 520 — CSI-2; USB3; GigE; GigE; GigE; Camera Link
Goldeye G/CL-033 TECless / Goldeye G/CL-033 TEC1 — FPA 640 × 512 — 15 µm — 0.3 MP — GigE; Camera Link
Goldeye G/CL-032 TEC1 / Goldeye G/CL-032 Cool TEC2 — FPA 636 × 508 — 25 µm — 0.3 MP — GigE; Camera Link
Goldeye G/CL-034 TEC1 / Goldeye G/CL-034 TEC2 — FPA 636 × 508 — 15 µm — 0.3 MP — GigE; Camera Link
Goldeye G/CL-034 XSWIR 1.9 TEC2 — FPA 636 × 508 — 15 µm — 0.3 MP — GigE; Camera Link
Goldeye G/CL-034 XSWIR 2.2 TEC2 — FPA 636 × 508 — 15 µm — 0.3 MP — GigE; Camera Link

0.1
Goldeye G/CL-008 TEC1 / Goldeye G/CL-008 Cool TEC1 — FPA 320 × 256 — 30 µm — 0.1 MP — GigE; Camera Link
Goldeye G/CL-008 XSWIR 1.9 TEC2 — FPA 320 × 256 — 30 µm — 0.1 MP — GigE; Camera Link
Goldeye G-008 XSWIR 2.2 TEC2 — FPA 320 × 256 — 30 µm — 0.1 MP — GigE; Camera Link

Line Scan
allPIXA SWIR 1K GigE — 1K pixel InGaAs linear image sensor — 12.5 µm — 1 x 1,024 — GigE
allPIXA SWIR 512 GigE — 512 pixel InGaAs linear image sensor — 25 µm — 1 x 512 — GigE

Wavelength [nm]
200 | UV | 400 | VIS | 750 | NIR | 1,000 | SWIR | 2,200

200 300 400 500 600 700 800 900 1,000 1,100 1,200 1,300 1,400 1,500 1,600 1,700 1,800 1,900 2,000 2,100 2,200

Ultra Violet

UV — ULTRAVIOLET WAVELENGTH

Cameras for the near and mid-UV range between 200 nm and 400 nm are used in many industrial and scientific imaging applications. They are particularly suitable for detecting smallest surface defects, cracks, or irregularities in materials, such as semiconductors, glass, metal, or plastic, invisible to the human eye. But they are also important to qualify laser beams, to capture specific spectral material characteristics, or for detecting corona discharges of powerlines allowing for proactive maintenance and reducing the risk of power outages.

Our UV cameras are featuring the IMX487 8MP UV sensor from Sony to enable high-resolution UV imaging with low noise at high frame rates, making it possible to reveal smallest in-visible details and to speed-up processes.

Polarizer

POL — POLARIZED WAVELENGTH

Cameras equipped with Sony IMX Polarsens sensors (IMX250/253/264) offer a valuable advantage in polarized imaging, as they can eliminate the need for additional polarizer filters on the lens, making it easier to adapt to various polarization angles without changing or rotating optical polarization filters.

By using polarized image data difficult imaging tasks can be solved, as for example, minimizing obstructing reflections during surface inspections, enhancing contrast to detect shapes and details of (e.g., black) objects with low contrast, or detecting various material properties such as stress, composition, or surface structure.

With our Polarizer cameras you can simplify your polarized imaging setup and focus on capturing high-quality images.

Infrared Imaging

SWIR
SHORT WAVELENGTH
INFRARED

In everyday life, we are constantly exposed to electromagnetic radiation differing in wavelengths such as visible light, ultraviolet radiation, radio- and micro-waves, or X-rays. Within the electromagnetic spectrum, infrared radiation is in the range between visible light and microwaves.

It covers a wavelength range from 0.75 µm – 14 µm and is separated into near-infrared (NIR), short-wave infrared (SWIR), mid-wave infrared (MWIR), and long-wave infrared (LWIR).

Although infrared radiation in the SWIR region is not visible to the human eye, it interacts with objects in a similar manner as visible light. Thereby, SWIR cameras have the advantage to "see" even at night and under challenging conditions such as fog, haze, or smoke. Another major benefit of SWIR cameras, is their ability to image through glass, making special and often expensive lenses unnecessary as they are required for MWIR or LWIR imaging.
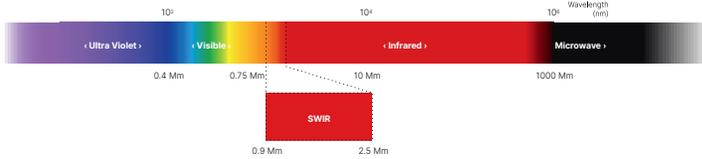
InGaAs Sensor Technology

InGaAs sensors are in several aspects different to monolithic silicon-based sensors. For example, InGaAs sensors:

- consist of two layers - a photon sensitive InGaAs layer and a Silicon-based readout integrated circuit (ROIC).

- have typically more defective and non-uniform pixels, requiring appropriate image correction functions in the camera.

- have a significantly higher dark current, requiring sensor cooling often have lager pixel sizes to reduce image noise under low light conditions. For this reason, many sensors are equipped with thermoelectric cooling (TEC) elements.
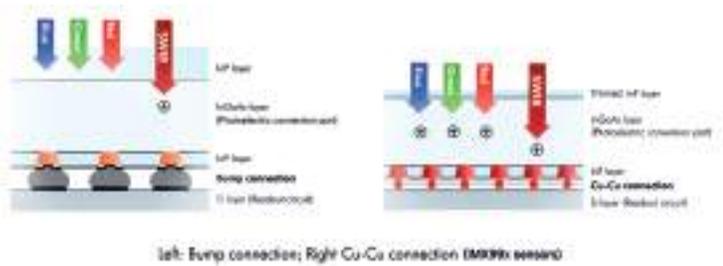
Extended Spectral Range

InGaAs sensors with an extended spectral range can also detect wavelengths above 1.7 µm. This makes it possible, for example, to capture unique spectral material properties, which is particularly advantageous for sorting applications or for determining material concentrations in composite materials. The most important areas of application therefore include: waste recycling (e.g. plastic sorting), the detection of water content or moisture, and the identification of foreign bodies or contaminants in mixtures.

SenSWIR sensor technology

Sony's InGaAs SWIR sensors with SenSWIR technology enable imaging of wavelengths from 0.4 µm to 1.7 µm. The broad spectral range enables users to capture images with high quantum efficiency in the visible as well as the SWIR spectrum with a single camera, reducing overall system costs.

The innovative architecture of the digital InGaAs sensors allows pixel sizes of only 3.45 µm and provides a high image homogeneity due to their copper-to-copper interconnects. The small pixel size is particulary important for SWIR applications with high resolution and precision, such as semiconductor inspection or quality of optics for laser-based measurement systems.
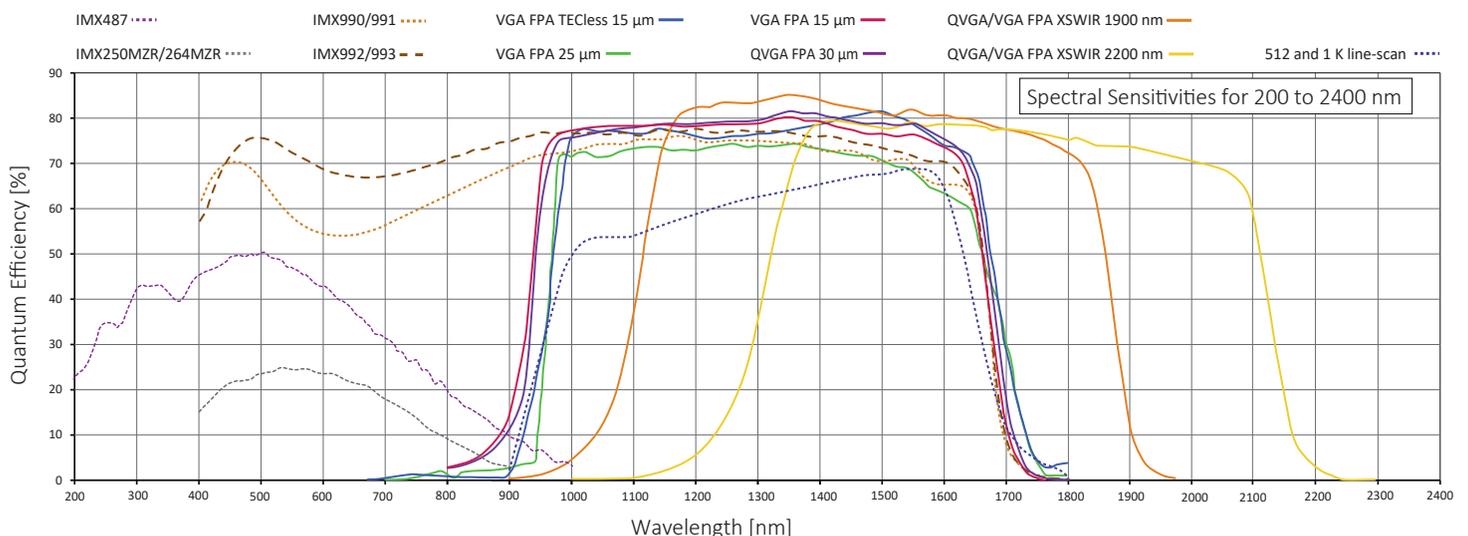
// Food & Beverage

- Optical Sorting and Grading
- Package Inspection
- Fill level Detection
- Liquid Inspection

// Agriculture & Smart Farming

- Growth Monitoring
- Drone-based Imaging
- Humidity Measurement
- Field Analysis

// Security & Traffic

- Surveillance
- Vision Enhancement
- Night Vision

// Spectral Imaging

- Hyperspectral Imaging
- Multispectral Imaging
- Material Classification
- Contamination Detection

// Scientific & Medical

- OCT
- Microscopy
- Cancer Detection

Alvium   Alvium C/U/G1/G5

- Very compact (29mm x 29mm x L), light weight, energy-efficient, and affordable (SWaP+C) camera solution
- High modularity including board-level versions (Flex & Frame) and sensors with removed cover glass
- Support of all TEC-less IMX99x SenSWIR, UV (IMX487), and 5MP Polarsens (IMX264/250) sensors
- Multiple standardized interface options including CSI-2 range extenders FPD-Link III
- 512 MB Burst Mode buffer (5GigE)
- GenICam-compliant feature control and streaming
- Extended feature set including sequencer, convolution filters, or lens shading compensation
- Plug & Play application setup

- Extended temperature range from -20°C to +65°C (housing)
- General Purpose (GigE modles) Inputs/Outputs (GPIOs) opto-isolated inputs

Goldeye/ Goldeye Pro

- Multi-purpose SWIR camera series with two housing designs: compact industrial (55mm x 55mm x 78mm) and advanced scientific (90 mm x 90 mm x 80 mm)
- Support of numerous InGaAs sensors with TEC1 or TEC2 cooling including IMX99x sensors
- Models with strong sensor cooling down to -30°C for long exposure times or eXtended SWIR sensitivity up to 2,200nm
- Standard compliant interfaces, as GigE Vision & Camera Link (Goldeye) or 5GigE Vision (Goldeye Pro)
- 256 MB SDRAM (Goldeye) / 512 MB DDR4 RAM (Goldeye Pro) image buffer
- Advanced image correction features including Non-Uniformity, Defect Pixel, and Background Correction
- Extended operating temperature range: –20°C to +55°C (housing)

- Outstanding image quality with high dynamic range (up to >70dB)
- Comprehensive I/O Control options via optocoupled and non-isolated in- & outputs, or RS232

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Area Scan

Series	Model	MP	Resolution	Sensor	Format	Pixel size in µm	fps per interface
Alvium UV	G1/G5/U/C-812 UV	8.1	2,848 × 2,848	Sony IMX487	Type 2/3	2.74 × 2.74	14 / 58 / 51 / 58
FXO	fxo487MCX12-2C	8.1	2,848 × 2,848	Sony IMX487	Type 2/3	2.74 × 2.74	195
FXO	fxo487MXGE/MCX	8.1	2,840 × 2,840	Sony IMX487	Type 2/3	2.74 × 2.74	87 / 87
EXO	exo253ZGE/ZU3	12.3	4,096 × 3,000	Sony IMX253MZR (polarized)	Type 1/1.1	3.45 × 3.45	10/30
Alvium Polarizer	G5/U/C-508 Pol mono/color	5	2,465 × 2,056	Sony IMX250MZR/MYR (polarized)	Type 2/3	3.45 × 3.46	95 / 84 / 95
Alvium Polarizer	G1/G5/U/C-507 Pol mono/color	5	2,464 × 2,056	Sony IMX264MZR/MYR (polarized)	Type 2/3	3.45 × 3.45	23 / 34 / 34 / 34
EXO	exo250ZGE/ZU3	5	2,448 × 2,048	Sony IMX250MZR (polarized)	Type 2/3	3.45 × 3.45	24.5 / 75
EXO	exo264ZGE/ZU3	5	2,448 × 2,048	Sony IMX264MZR (polarized)	Type 2/3	3.45 × 3.45	24.5 / 35
Alvium SWIR	G5/U/C-530	5.3	2,592 × 2,056	Sony IMX992	Type 1/1.4	3.45 × 3.45	84 / 77 / 84
Goldeye Pro	G5-530 Tec1	5.3	2,592 × 2,056	Sony IMX992	Type 1/1.4	3.45 × 3.45	115
FXO	fxo992MXGE-T/MCX-T	5.2	2,560 × 2,048	Sony IMX992	Type 1/1.4	3.45 × 3.45	132.6 / 132.6
FXO	fxo992MXGE/MCX	5.2	2,560 × 2,048	Sony IMX992	Type 1/1.4	3.45 × 3.45	132.6 / 132.6
Alvium SWIR	G5/U/C-320	3.2	2,080 × 1,544	Sony IMX993	Type 1/1.8	3.45 × 3.45	131 / 125 / 131
Goldeye Pro	G5-320 Tec1	3.2	2,080 × 1,544	Sony IMX993	Type 1/1.8	3.45 × 3.45	159
FXO	fxo993MXGE/MCX	3.1	2,048 × 1,536	Sony IMX993	Type 1/1.8	3.45 × 3.45	173.4 / 173.4
FXO	fxo993MXGE-T/MCX-T	3.1	2,048 × 1,536	Sony IMX993	Type 1/1.8	3.45 × 3.45	173.4 / 173.4
Alvium SWIR	G1/G5/U/C-130	1.3	1,296 × 1,032	Sony IMX990	Type 1/2	5 × 5	88 / 130 / 130 / 130
EXO	exo990MGE/MU3	1.3	1,280 × 1,024	Sony IMX990	Type 1/2	5 × 5	94.4 / 125.4
FXO	fxo990MCX	1.3	1,280 × 1,024	Sony IMX990	Type 1/2	5 × 5	134
Goldeye	G/CL-130 TEC1	1.3	1,280 × 1,024	Sony IMX990	Type 1/2	5 × 5	94 / 94
Goldeye Pro	G5-130 Tec1	1.3	1,296x1,032	Sony IMX990	Type 1/2	5 × 5	135
Alvium SWIR	G1/U/C-030	0.3	656 × 520	Sony IMX991	Type 1/4	5 × 5	249 / 249 / 249
Goldeye	G/CL-030 TEC1	0.3	656 × 520	Sony IMX991	Type 1/4	5 × 5	234 / 234
EXO	exo991MGE	0.3	640 × 512	Sony IMX991	Type 1/4	5 ×5	260
Goldeye	G/CL-033 TECless	0.3	640 × 512	FPA 640 × 512	Type 1	15 × 15	301 / 301
Goldeye	G/CL-033 TEC1	0.3	640 × 512	FPA 640 × 512	Type 1	15 × 15	301 / 301
Goldeye	G/CL-032 TEC1	0.3	636 × 508	FPA 636 × 508	Type 4/3	25 × 25	100 / 100
Goldeye	G/CL-032 Cool TEC2	0.3	636 × 508	FPA 636 × 508	Type 4/3	25 × 25	100 / 100
Goldeye	G/CL-034 TEC1	0.3	636 × 508	FPA 636 × 508	Type 1	15 × 15	303 / 303
Goldeye	G/CL-034 TEC2	0.3	636 × 508	FPA 636 × 508	Type 1	15 × 15	303 / 303
Goldeye	G/CL-034 XSWIR 1.9 TEC2	0.3	636 × 508	FPA 636 × 508	Type 1	15 × 15	303 / 303
Goldeye	G/CL-034 XSWIR 2.2 TEC2	0.3	636 × 508	FPA 636 × 508	Type 1	15 × 15	303 / 303
Goldeye	G/CL-008 TEC1	0.1	320 × 256	FPA 320 × 256	Type 1	30 × 30	344 / 344
Goldeye	G/CL-008 Cool TEC1	0.1	320 × 256	FPA 320 × 256	Type 1	30 × 30	344 / 344
Goldeye	G/CL-008 XSWIR 1.9 TEC2	0.1	320 × 256	FPA 320 × 256	Type 1	30 × 30	344 / 344
Goldeye	G-008 XSWIR 2.2 TEC2	0.1	320 × 256	FPA 320 × 256	Type 1	30 × 30	344 / 344

Line Scan

Series	Camera	Resolution	Sensor	Sensor width in mm	Pixel size in µm	Line rate
allPIXA SWIR	allPIXA SWIR 1K GigE	1 x 1,024	1K pixel InGaAs linear image sensor	12.8	12.5 x 12.5	40kHz
allPIXA SWIR	allPIXA SWIR 512 GigE	1 x 512	512 pixel InGaAs linear image sensor	12.8	25 x 25	40kHz
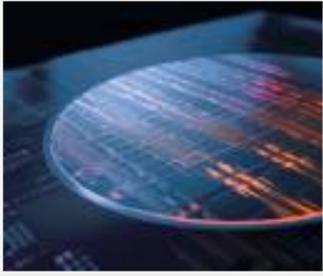
- Wafer Inspection
- Display Inspection
- PCB Inspection
- Subsurface Inspection

- Laser Beam Analysis
- Stability of Laser Signals
- Monitoring of Beam Parameters

FXO

- World fastest high-resolution SWIR and UV camera series in a compact industrial housing (50 mm x 50 mm)
- Support of Sony SenSWIR sensors (IMX990/992/993) optionally with thermo-electric cooling and UV (IMX487) sensors
- CoaXPress-12 for lowest latency and highest speed
- 10 GigE for an easy integration
- Advanced image correction features including Shading and Defect Pixel correction
- 1024 MB image buffer SDRAM
- Support of GenICam and GenTL standards
- Up to 65°C operating temperature
- Electrical and optical inputs TTL-24V

Thermoelectric Cooled Option (TEC) | 10 GigE VISION | CXP-12

- Programmable timer and sequencer with Logical Trigger functions (PLC)
- Poweroutput (4-cannel strobe controller) with 3A max

EXO

- Entry-level camera series with compact and robust industrial design (50mm x 50mm)
- Support of VGA and SXGA resolution TEC less SenSWIR sensors (IMX991/990), as well as 5 and 12 MP Polarsens sensors from Sony (IMX264/250/253)
- Advanced image correction features including Non-Uniformity (Two-Point NUC), Shading, Defect- and dynamic Hot Pixel Correction
- Support of GenICam and GenTL standards
- 256 MB Burst Mode Buffer (GigE)
- Up to 65°C operating temperature
- Electrical and optical inputs TTL-24V including
- Power output (4-channel strobe controller) with 3A max

GigE VISION | USB VISION

- Power output (4-channel strobe controller) with 3A max
- Programmable timer and sequencer with Logical Trigger functions (PLC)

Spectral range in nm	Spectrum	Cooling	Frame Grabber bundle
200 - 900	UV	-	-
200 - 900	UV	-	✓
200 - 900	UV	-	✓
400 - 1,100	Polarizer	-	-
400 - 1,100	Polarizer	-	-
400 - 1,100	Polarizer	-	-
400 - 1,100	Polarizer	-	-
400 - 1,100	Polarizer	-	-
400 - 1,700	VisSWIR	-	-
400 - 1,700	VisSWIR	-	-
400 - 1,700	VisSWIR	TEC1	✓
400 - 1,700	VisSWIR	-	✓
400 - 1,700	VisSWIR	-	-
400 - 1,700	VisSWIR	-	-
400 - 1,700	VisSWIR	-	✓
400 - 1,700	VisSWIR	TEC1	✓
400 - 1,700	VisSWIR	-	-
400 - 1,700	VisSWIR	-	-
400 - 1,700	VisSWIR	-	✓
400 - 1,700	VisSWIR	TEC1	-
400 - 1,700	VisSWIR	TEC1	-
400 - 1,700	VisSWIR	-	-
400 - 1,700	VisSWIR	TEC1	-
400 - 1,700	VisSWIR	-	-
900 - 1,700	SWIR	-	-
900 - 1,700	SWIR	TEC1	-
900 - 1,700	SWIR	TEC1	-
900 - 1,700	SWIR	TEC2	-
900 - 1,700	SWIR	TEC1	-
900 - 1,700	SWIR	TEC2	-
1100 - 1,900	XSWIR	TEC2	-
1200 - 2,200	XSWIR	TEC2	-
900 - 1,700	SWIR	TEC1	-
900 - 1,700	SWIR	TEC1	-
1100 - 1,900	XSWIR	TEC2	-
1200 - 2,200	XSWIR	TEC2	-

allPIXA SWIR

GigE VISION

- Line Scan InGaAs sensors with 512 or 1024 pixels and 25µm x 25µm or 12.5µm x 12.5µm pixel size
- High speed: Up to 40 kHz line rate
- Compact size: 62 mm x 62mm x 52 mm
- GigE Vision
- On-board DSNU, PRNU, and LUT or Gamma correction
- Horizontal binning to increase responsivity
- Operating temperature: -10°C to +50°C
- Frequency converter for external line trigger

Corona II LED illumination for allPIXA SWIR

- Various options including length, working distance and cooling
- Patented reflector technology
- Multiple wavelength ranges: UV, visible, NIR, SWIR
- Equal focussing of different wavelengths
- Higher efficiency compared to rod lenses
- High irradiation power even at longer working distances

Frame Grabbers

Frame grabber set available for CoaXPress-12 and CoaXPress-6 cameras:

- PCIe frame grabbers with up to 8 CoaXPress connections
- Feature-rich set of up to 20 digital I/O lines
- Memento Event Logging Tool
- Extensive camera control functions
- PoCXP (Power over CoaXPress) camera power supply

CXP | CXP-12

Spectral range in nm	Spectrum	Cooling	Frame Grabber bundle
950 - 1,700 nm	SWIR	-	-
950 - 1,700 nm	SWIR	-	-

⬤ Frame Grabber bundle

![Allied Vision logo]

Precision. Delivered.

Machine vision expertise united under one brand.

More than components. One responsible source for your entire vision system.
Allied Vision brings together high-performance cameras, frame grabbers, IP cores, software, and services – engineered to work as one system. Not as isolated components, but as an integrated platform that reduces complexity, eliminates interface risks, and gives you a single partner accountable for performance.

All You Need for Vision – From One Source

Cameras

From simple inspection tasks to the most demanding high-precision applications, Allied Vision offers a comprehensive camera portfolio designed to cover every imaging requirement. Whether mono or color, visible, near-infrared or infrared, high speed or high resolution – our cameras are engineered to deliver reliable performance across a wide range of industries and use cases. All camera families follow a consistent design philosophy and are built to integrate seamlessly into the Allied Vision ecosystem.

Frame Grabbers

Frame grabbers enable reliable, high-speed image acquisition and data transfer in demanding machine vision systems. Designed for precise synchronization and low-latency performance, they ensure stable operation in both line-scan and area-scan applications. As part of the Allied Vision ecosystem, they reduce system load, simplify integration, and provide a dependable interface between cameras, processing, and peripherals – supporting scalable, high-performance inspection solutions.

Software

Machine vision software libraries and tools support efficient development, integration, and scaling of vision systems. Built on a unified architecture, they simplify workflows and enable reliable image processing across diverse applications.

Bundling & Sets

Allied Vision camera and frame grabber bundles combine perfectly matched components into pre-validated system configurations. Developed and tested as a unit, these bundles ensure seamless interoperability, reliable performance, and predictable system behavior.
By reducing integration effort and interface complexity, bundled solutions simplify system design, accelerate commissioning, and increase overall productivity – while maintaining full flexibility for future scalability.

Accessories

Approved machine vision accessories have been selected by our experts to deliver best possible image quality to your application with the greatest possible reliability. Our technicians and engineers conduct extensive tests with accessories such as lenses and interface cables in combination with our cameras. That way, we can recommend the best possible accessories and ensure maximal performance of your Allied Vision camera.

Line Scan Camera Technology

Where continuous image acquisition is required, line scan technology is the solution of choice. We design, develop, and manufacture high-performance line scan cameras, LED line lighting systems, and OEM-customized vision solutions for machine builders and system integrators worldwide. Our portfolio supports a broad range of industrial applications, including factory automation, surface inspection, quality control, classification, and defect detection – helping our customers secure a sustainable competitive advantage.

High-performance 2D and 3D line scan solutions for continuous, high-speed inspection
Our line scan cameras deliver reliable, high-precision imaging even in the most demanding industrial environments, making them ideal for real-time product inspection, process monitoring, and quality control across industries such as paper, textile, and food processing. Seamlessly integrated into your existing systems, they enable continuous inspection, higher process stability, and measurable improvements in product quality.

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