Allied Vision

// ALLIED VISION INFRARED CAMERAS

See more. Achieve more.

// WELCOME TO ALLIED VISION

We Focus on What Counts: You

For more than 30 years, we at Allied Vision have been helping people see the bigger picture.

Allied Vision has become one of the leading camera manufacturers worldwide in the machine vision market by offering customers the best possible imaging solutions for their application.

From raising production standards to detecting disease faster or simply knowing who crossed the finish line first, we know that precision and truth are vital factors in every situation. This is why we focus on what counts: the individual needs of our customers and end users. Being close to our customers means that we ask the right questions in order to tailor solutions to their needs and provide support where it matters most.

Focusing on what counts for our customers also means delivering best-in-class quality and reliability. Our total Quality Management (TQM) is certified in accordance with ISO 9001 and the ISO 13485 standard for medical devices. The three-year warranty on our current camera models reflects our commitment to quality.

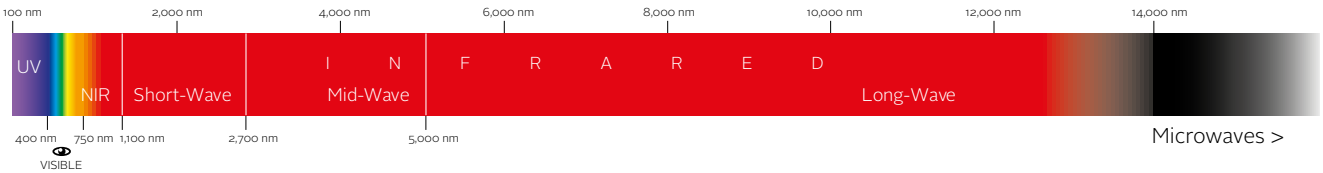
With eight locations in Germany, Canada, the United States, Singapore and China, Allied Vision is also represented by a network of sales partners in over 30 countries.

From our people to our products, the Allied Vision way is about striving for the precision we all need to advance the world we live in.

// INFRARED IMAGING

Imaging beyond the visible

In everyday life, we encounter electromagnetic radiation in many different forms such as visible light, ultraviolet light, radio waves or X-rays, differing in their wavelengths. Within the electromagnetic spectrum, infrared radiation is located between visible light and microwaves.

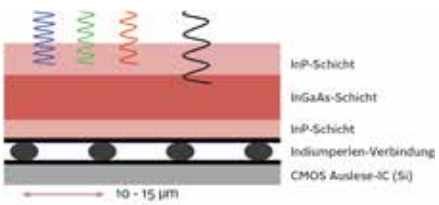


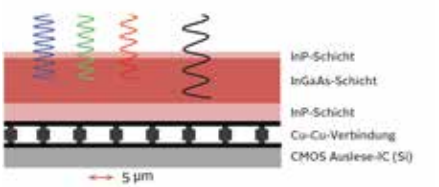
It covers a spectrum from 0.75 µm - 14 µm wavelength and is separated into near-infrared (NIR), short-wave infrared (SWIR), mid-wave infrared (MWIR), and long-wave infrared (LWIR). To detect light in these differnt spectral ranges specific detector materials are used. For example, silicon-based standard CCD/CMOS sensor can detect light only up to 1,100 nm, because silicon gets transparent beyond this wavelength.
And, Indium Gallium Arsenid (InGaAs) based sensors are very popular to detect light in the SWIR range. Although infrared radiation in the SWIR region is not visible to the human eye, it interacts with objects in a similar manner as visible wavelengths. Thereby, SWIR cameras have the advantage to „see" even at night and under challenging conditions like dust or haze. Another major benefit of SWIR cameras, is their ability to image through glass, which makes special and very expensive lenses unnecessary like they are often used for MWIR or LWIR imaging.

InGaAs Sensors: A hybrid architecture

Popular SWIR sensors are based on InGaAs material and work similar to silicon based CCD or CMOS sensors by converting photons into electrons – so called quantum detectors.

In contrast to monolithic silicon based sensors, InGaAs sensors are made of two layers, a photosensitive InGaAs layer and a silicon based read-out integrated circuits (ROIC). Combining these materials is a relatively complex and error prone process. Currently, it is not possible to unite the two layers by achieving fully homogenous connections between them, independent of the hybridization technology used (e.g. InP bumps or copper-to-copper connections). Therefore, InGaAs sensors have many more defective and non-uniform pixels which makes proper image correction in the camera inevitable.
In addition, their dark current values are much higher and a proper and cost effective cooling is needed to reduce image noise and enable longer exposure times. For that reason, most InGaAs sensors are equipped with thermoelectric cooling (TEC) elements.





// GOLDEYE SWIR CAMERA FAMILY

Scientific precision, industrial quality

Allied Vision's Goldeye models are short-wave infrared cameras (SWIR) based on high-performance InGaAs sensors. They enable you to see beyond the visible at very high frame rates and to capture low-noise images with high linearity and dynamic range. Thereby comprehensive on-board image correction and optimization features support you to get the best possible imaging results.

High versatility

The modular design of the Goldeye offers you SWIR cameras in multiple flavors. We offer a wide variety of resolutions, interfaces, lens-mounts, optical filters, and sensor cooling options (TEC1, TEC2, TECless). Whether your application is industrially demanding, cost sensitive, or for lab-use, the Goldeye camera platform offers you a high grade of flexibility to select the camera for your needs and to scale your system appropriately.

Ruggedized industrial design

Goldeye cameras come in two housing designs: the compact, rugged industrial version and the advanced scientific version with fan and nitrogen filled cooling chamber. Also they are equipped with lockable connectors and have an extended operating temperature range enabling a secure operation under harsh conditions.

Simplified setup and maintenance

Standardized GigE Vision or Camera Link interfaces, GenICam-like feature control, and a free comprehensive GUI-viewer application provide you a plug & play feeling when evaluating your Goldeye camera and speed up the integration into your system. The ability to update firmware in the field also simplifies your system maintenance.

Eased system integration

Goldeye cameras support multiple features to facilitate your system integration, like Power over Ethernet, enabling single cable solutions, comprehensive I/O control functionality, or multiple mounting options.

// SWIR APPLICATIONS

Enhance your vision

Short-wave infrared cameras capture a reality that is not visible by human eyes. They open new possibilities for advanced machine vision applications.

Moisture Detection

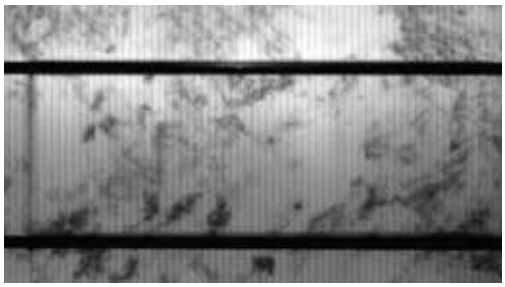
Water content
Water absorbs infrared light and appears darker in the image. This makes it possible to provide information on the water content of plants and the need for irrigation.

Food inspection
Infrared imaging can be used to scan the chemical composition of food products. This can be used to detect bruised fruit or to check their level of ripeness.

Hyperspectral Imaging

Recycling/Plastic sorting
Each inorganic material has a different chemical composition and crystalline structure resulting in an unique spectral response corresponding to its specific light absorption characteristics.
Hyperspectral Imaging combines digital imaging with spectroscopy to obtain detailed information across multiple ranges of the electromagnetic spectrum. This can be used to sort plastic materials automatically for recycling purposes.

Solar cell inspection



Solar Cell & Module Inspection
In wafer and solar cell production, electro-luminescence (light emission as a response to electric current) is used in the final production step of quality inspection to detect micro-cracks and printing problems. Photoluminescence (light emission as a response to light) can be applied through-out the entire manufacturing process.

Distinguish different materials

Banknote Authentication
SWIR cameras are able to „see“ through surfaces that are non-transparent to the human eye. This transparency of materials at specific wavelengths can be used to reveal tamper-proof security codes on banknotes.

Non-Destructive Quality Inspection
Some plastics are transparent to infrared light. This property can be used, for example, to inspect a product through a sealed plastic packaging.

Detect temperature uniformity

Glass industry
Because of their ability to perform thermal imaging of hot objects between 250°C and 800°C, SWIR cameras can monitor the temperature uniformity and cooling rate of different materials, like glass or metal during a manufacturing process.

// SPECIFICATIONS

Goldeye – Excellence in Infrared

Key Facts

// Winner of Vision System Design Innovators Gold Award 2015 with state-of-the-art InGaAs focal plane arrays (FPA)

// Comprehensive feature set (see Smart Features)

// Power over Ethernet

// QVGA and VGA resolutions

// Extended operating temperature range: –20°C to +55°C (housing)

// Dimensions (L × W × H in mm), including connectors and default mount
Standard: 93.2 × 55 × 55
Cool: 105.8 × 80 × 80

// Inputs / Outputs
1 in / 1 out (TTL), 1 in / 2 out (opto-isolated)

// SPECIFICATIONS – OUR CAMERAS AT A GLANCE

Goldeye

Goldeye G/CL

Camera model	Sensor	Shutter	Mega-pixels	Resolution	Max. frame rate in fps	Pixel size in µm	Spectral range in nm	Standard mount	Power over Ethernet
G/CL-008 TEC1	InGaAs FPA with TEC1 cooling (Min. ΔT = 20 K)	Global	0.1	320 x 256	344	30 x 30	900 to 1700	C-Mount	IEEE 802.3af (PoE)
G/CL-030 TEC1	IMX991 with TEC1 Cooling (Min. ΔT = 25 K)	Global	0.3	656 x 520	234	5 x 5	400 to 1700	C-Mount	IEEE 802.3af (PoE)
G/CL-032 TEC1	InGaAs FPA with TEC1 cooling (Min. ΔT = 30 K)	Global	0.3	636 x 508	100	25 x 25	900 to 1700	C-Mount	IEEE 802.3af (PoE)
G/CL-033 TEC1	InGaAs FPA with TEC1 cooling (Min. ΔT = 25 K)	Global	0.3	640 x 512	301	15 x 15	900 to 1700	C-Mount	IEEE 802.3af (PoE)
G/CL-033 TECless	InGaAs FPA without TEC cooling	Global	0.3	640 x 512	301	15 x 15	900 to 1700	C-Mount	IEEE 802.3af (PoE)
G/CL-034 TEC1	InGaAs FPA with TEC1 cooling (Min. ΔT = 25 K)	Global	0.3	636 x 508	303	15 x 15	900 to 1700	C-Mount	IEEE 802.3af (PoE)
G/CL-130 TEC1	IMX990 with TEC1 Cooling (Min. ΔT = 25 K)	Global	1.3	1280 x 1024	94	5 x 5	400 to 1700	C-Mount	IEEE 802.3af (PoE)

Goldeye G/CL Cool

Camera model	Sensor	Shutter	Mega-pixels	Resolution	Max. frame rate in fps	Pixel size in µm	Spectral range in nm	Standard mount	Power over Ethernet
G/CL-008 Cool TEC1	InGaAs FPA with TEC1 cooling (Min. ΔT = 30 K)	Global	0.1	320 x 256	344	30 x 30	900 to 1700	C-Mount	IEEE 802.3af (PoE)
G/CL-032 Cool TEC2	InGaAs FPA with TEC2 cooling (Min. ΔT = 60 K)	Global	0.3	636 x 508	100	25 x 25	900 to 1700	C-Mount	IEEE 802.3at (PoE+)

Modular concept		
// IR band-pass and long pass filters	// F-Mount, M42-Mount	// Silver housing design

Family-specific:

Power requirements	DC 10.8 V to 30 V or PoE /PoE+
Power consumption	Min. 5 W @ 12 V DC (cooling switched off)
Regulations	CE: 2014/30/EU (EMC), 2011/65/EU, incl. amendment 2015/863/EU (RoHS); FCC Class B

Smart Features

// Multiple acquisition modes: SingleFrame, MultiFrame, Continuous, or RecorderMode

// ROI settings for frame rate and data rate control

// High analog gain mode to increase sensitivity

// Auto Exposure and Auto Contrast for image enhancement even in challenging conditions

// Custom user sets and look-up tables (LUTs)

// Digital binning to increase sensitivity

// Optimized image quality:

- Non-uniformity correction (NUC) with automatic adaptation
- Defect pixel correction
- Background correction

// OUR SOFTWARE

Versatile Software Development Kit for Easy Integration

Integrating your camera into an image-processing system couldn't be easier with our Vimba Software Development Kit (SDK). It comes with everything you need to develop your application – whether you program it yourself or rely on a third-party library.

Vimba is compatible with all popular image processing software. It is platform and operating system-independent, supports all Allied Vision camera interfaces and all common programming languages. With its cross-compiling function, you can even re-use your code from one platform to another. In short, Vimba is as flexible as you need it to be.

For optimal system performance, Vimba's modular architecture allows you to install only the components you need to minimize overhead. The integrated camera drivers reduce CPU load.

Download Vimba free of charge and get started quickly with convenient tools such as the Vimba Viewer and our extensive ready-to-use example collection.

Features

vimba

// Operating systems:
Windows, Linux, Linux ARMv7

// Interfaces: GigE Vision, FireWire, USB3 Vision, Camera Link

// APIs: C, C++, .NET

// Based on GenICam

// OUR SERVICE

Good is not enough

At Allied Vision, we aim for perfection for our products and services. Our status as market leader is the result of our relentless pursuit of not only building the best cameras on the market, but also offering extremely reliable customer service.

Our experts are here to advise you in selecting the right infrared camera for your application. With our "Test Your Sample" service, you can send us the object you intend to inspect to our laboratories in order to determine which combination of camera and accessories obtains the best result.

After purchasing your camera, you can rely on our global network of technical support engineers to assist you in integrating your camera into your system and help you years later in the unlikely event of problems in the field.

Our support teams in Germany, Canada, the USA, China, and Singapore and our distribution partners in over 30 countries literally speak the language of all our customers.

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