

# Infrared Microscope System

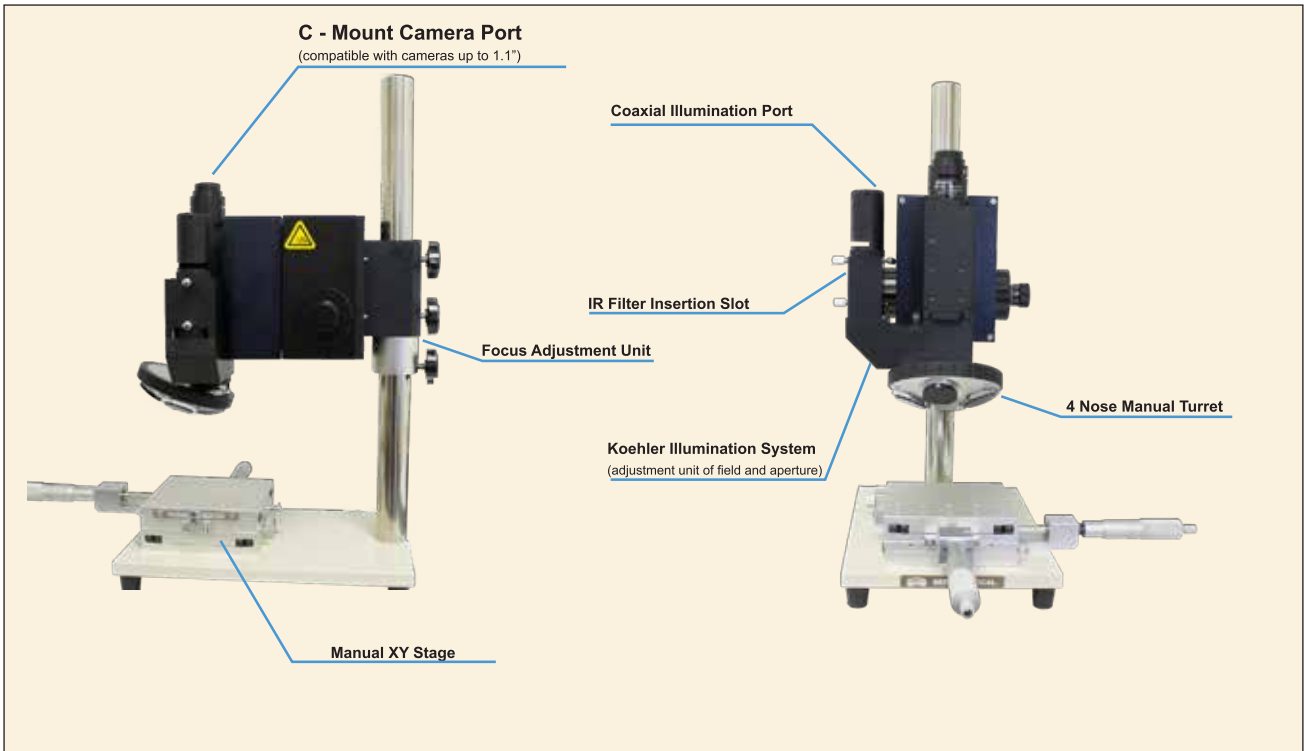
This microscope system enables the user to inspect sub-surface images including MEMS device, 3D stacks, incoming wafers, photovoltaic, and wafer level CSP's with an astonishing level of precision. It also offers many capabilities and flexibility that are not available with traditional microscopes.



# Microscope System

## Specifications

The IR-2200 system is integrated with an infrared table top microscope system and software. This system provides all of the necessary features for high precision measurements, image capture, verification and inspection of materials transparent to the near infrared (NIR) / Shortwave Infrared (SWIR) wavelengths.



<b>Model</b>	IR-2200
<b>Spectral sensitivity Range</b>	400nm - 2000nm
<b>Objective lens</b>	Selection from Seiwa M.Plan APO and PE IR Plan series

<b>Illumination</b>	Koehler illumination
<b>Turret</b>	4 nose manual turret
<b>Stand</b>	Coarse / fine Z focus
<b>Stage</b>	Coarse manual XY stage.

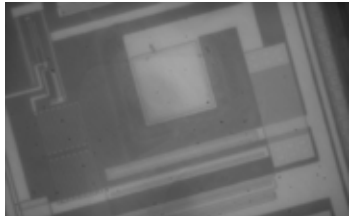
\*(Other options are available upon request)

Visible Wavelength



The surface of silicon wafer is shown because it is absorbing and reflecting the visible wavelength.

Near Infrared (NIR) Wavelength



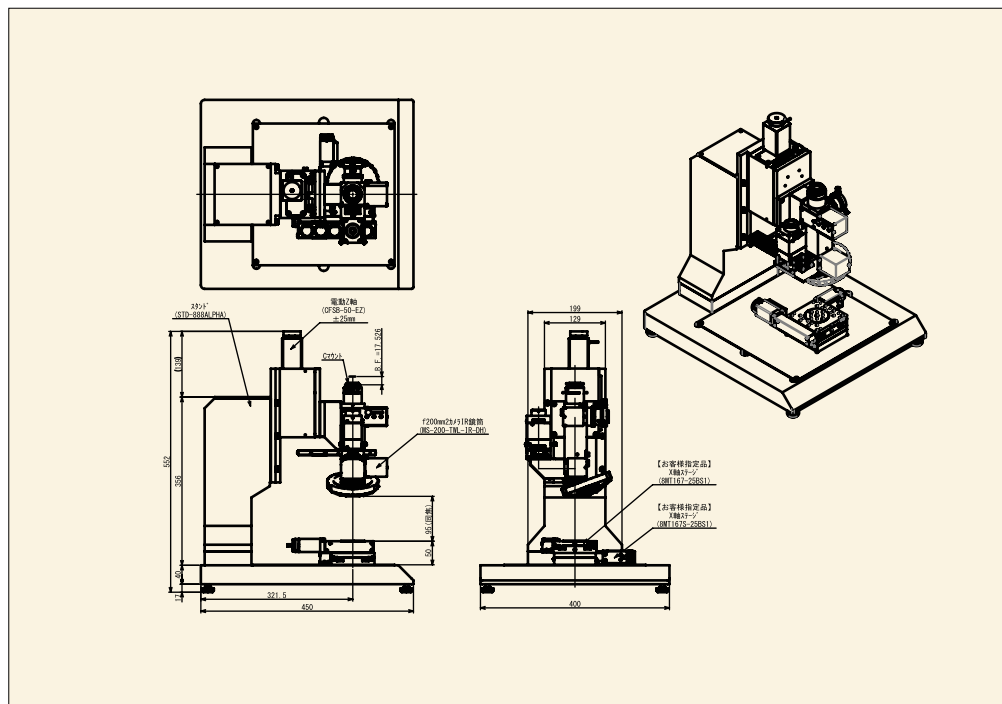
The transparent condition of the silicon wafer is shown because it is being penetrated by the wavelength lights.

## Motorized System

## New IR2200 system



Automated IR Microscope is combined with motorized Z focus and automated X Y stage. These features allow you to take stitching images with different extended exposure, field, and focus. Also, this system allows you to take topography imaging for 3D views and measurements.



### Option: Cameras & Lenses



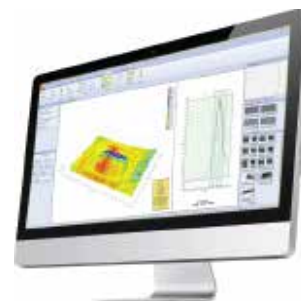
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# Seiwa InSight(software)

## Software

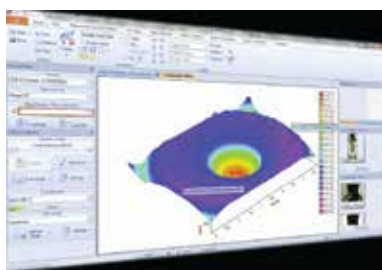
Comprehensive and advanced, but intuitive and easy to use Microscope Software Suite for measurement, analysis, and control of microscopes, cameras, stages, and other connected equipment. The software is built by a basic package (free with all DeltaPix cameras) with optional modules for special functions, in order for the user only to get the functions required for the specific application



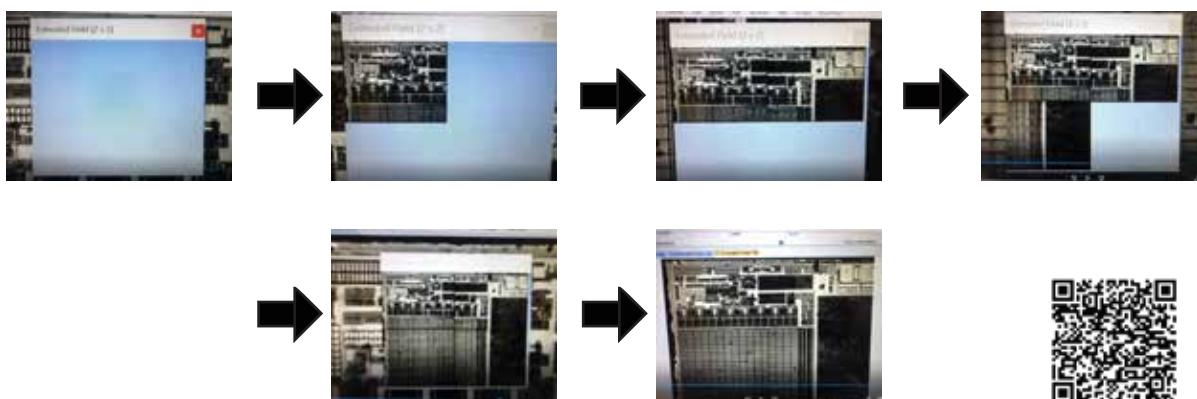
## Seiwa inSight Feature

- The Measurement
  - a)Polygon and Freehand result options
  - b)Circle measurement result options
  - c)Flexible position for measurement result, Etc.
- The Image extender  
(Available with full motorized version)
  - a)Extended Focus  
Large depth of field image
  - b)(Various exposure setting function)
  - c)(Stitching)
- Stage Automation  
(Available with full motorized version)
  - a)Automatic Extended Field
  - b)Automatic XYZ Acquisition
  - c)Focus Automation
  - d)Zoom Automation
- Extended Field
- Topography(2D and 3D measurement)
- Video Recording

## Image example of 3D Topography



## Image example of Stitching



※Sample stitching movie

# Objective Lens Options

## Seiwa M.Plan APO Series:

(Spectral sensitivity range from 400nm - 1100nm)

High-quality apochromatic designs provide excellent contrast and resolution performance. Compatible with PS-888 series microscope and MS-200-TWL video tube microscope.



Model	M.Plan APO	M.Plan APO	M.Plan APO	M.Plan APO
Magnification	2.5 X	5X	10X	20X
Working Distance	32.0mm	35.1mm	36.9mm	22.0mm
Focal Distance	80.0mm	40mm	20mm	10mm
NA	0.06	0.15	0.25	0.4
Resolution	4.6 $\mu\text{m}$	1.7 $\mu\text{m}$	1.2 $\mu\text{m}$	0.8 $\mu\text{m}$
Focal Depth	76.4 $\mu\text{m}$	10.7 $\mu\text{m}$	4.4 $\mu\text{m}$	2.2 $\mu\text{m}$
Wavelength	0.4-1.1 $\mu\text{m}$	0.4-1.1 $\mu\text{m}$	0.4-1.1 $\mu\text{m}$	0.4-1.1 $\mu\text{m}$

## Seiwa PE IR Series:

(High-resolution objectives for near infrared wavelengths up to 1600nm)

Applications include laser marking, laser cutting and photo emission detection. LCD and Silicon thickness corrected versions available.



Model	PEIR1X	PEIR2.5X	PEIR10X	PEIR20X	PEIR50X	PEIR100X
Magnification	1.0 X	2.5 X	10 X	20 X	50 X	100
Working Distance	12mm	28.0mm	30.7mm	12mm	10mm	10mm
Focal Distance	200mm	80mm	20mm	10mm	4mm	2mm
NA	0.03	0.1	0.27	0.5	0.6	0.75
Resolution	22.4	6.7 $\mu\text{m}$	1.3 $\mu\text{m}$	1.3 $\mu\text{m}$	1.1 $\mu\text{m}$	0.9 $\mu\text{m}$
Focal Depth	611 $\mu\text{m}$	55 $\mu\text{m}$	2.2 $\mu\text{m}$	2.2 $\mu\text{m}$	1.5 $\mu\text{m}$	0.9 $\mu\text{m}$
Wavelength	0.8-1.6 $\mu\text{m}$	0.45-1.6 $\mu\text{m}$	0.48-1.6 $\mu\text{m}$	0.8-1.6 $\mu\text{m}$	0.9-1.6 $\mu\text{m}$	0.9-1.4 $\mu\text{m}$

## PE IR 2000 HR Series:

(Color corrected from 1000nm - 2000nm wavelength)

Its high resolution and high throughput design enables collection of weak signals from samples without re-focusing. This lens series is able to correct 0 - 700 micron thickness of silicon and glass.



Model	PEIR20X 2000HR	PEIR50X2000HR
Magnification	20 X	50 X
Working Distance	10mm	10mm
Focal Distance	10mm	4mm
NA	0.6	0.71
Resolution	1.5 $\mu\text{m}$	1.2 $\mu\text{m}$
Focal Depth	2.15 $\mu\text{m}$	1.58 $\mu\text{m}$
Wavelength	1-2 $\mu\text{m}$	1-2 $\mu\text{m}$

# Camera Options / ARTRAY

## ARTCAM-990SWIR&991SWIR series Sony InGaAs sensor IMX990&991

### World's highest image quality 5um x 5um

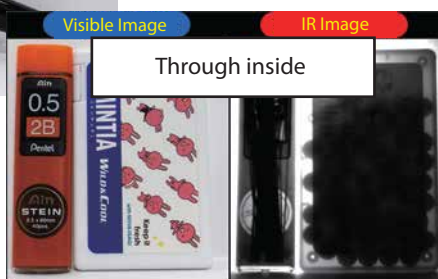
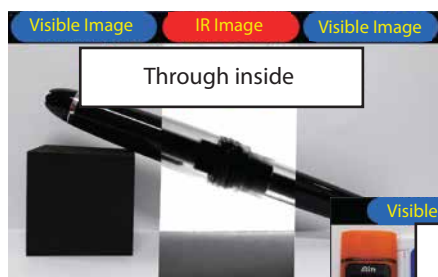
With Artray's know-how, Artray has developed the InGaAs camera ahead of other companies and has achieved the highest image quality in the history of InGaAs cameras.

### The Easiest to use in the World

Artray has adopted the easiest USB3.0 interface that can be used on any PC. Furthermore, because of bus-powered operation, there is only one USB cable to be connected.

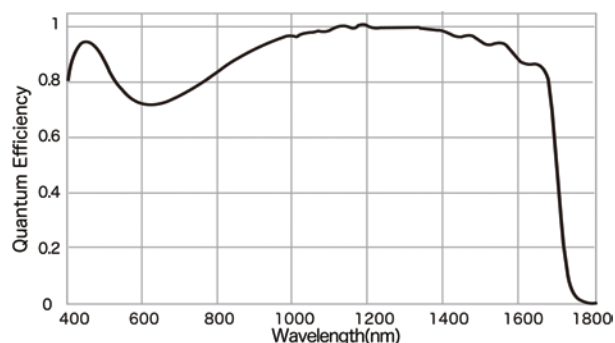
### The compact body

Artray's camera design technology has realized the world's smallest, ultra-compact body of 50 x 47 x 42.7 mm, even though it is an InGaAs camera.



**SenSWIR**

**400 to 1700nm**



Model	ARTCAM-990SWIR	ARTCAM-990SWIR-TEC	ARTCAM-991SWIR	ARTCAM-991SWIR-TEC
Spectral Sensitivity	400 to 1700 nm			
Sensor	IMX990-AABJ-C		IMX991-AABJ-C	
POWER	DC5V USB BUS Power	DC12V External Input	DC5V USB BUS Power	DC12V External Input
Pixels	1.3M		VGA	
Imager size	1/2"		1/4"	
Resolution	1280 x 1024		640 x 512	
Frame rate	70 fps(12bit)		137fps(12bit)	
Lens mount	C-mount			
Pixel size	5 x 5um			

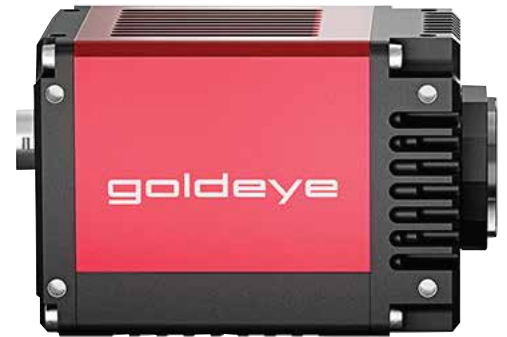


# Camera Options / Allied Vision

## Goldeye series & Alvium SWIR series Sony InGaAs sensor IMX990 & IMX991

### Smart Features

- Multiple acquisition modes. SingleFrame, Multi-Frame, Continuous, or RecorderMode.
- ROI settings for frame rate and data rate control.
- High analog gain mode to increase sensitivity.
- Built-in image correction for optimized image quality.
  - a) Non-uniformity correction with automatic adaptation.
  - b) Defect pixel correction.
  - c) Background correction.
- Look-up tables to increase contrast.
- User sets for simplified camera setup.
- Digital binning to increase sensitivity.
- Auto Gain & Contrast.



**GigE**  
VISION

**CAMERA**  
**Link**

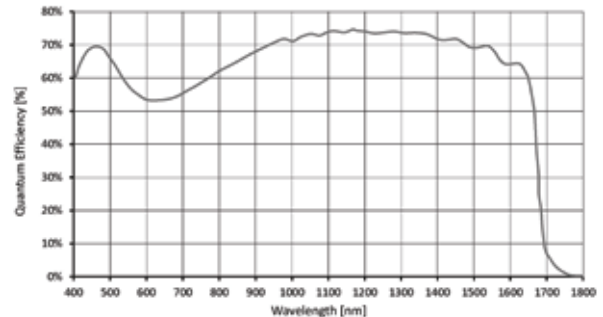
**USB**  
VISION

**SenSWIR**

**400 to 1700nm**

### Camera Highlights

- High Visible & SWIR sensitivity
- Camera Link or GigE Vision options
- Comprehensive I/O control options
- Automated on-board image correction
- Stabilized sensor cooling, fan-less design
- Extended operating temperature range
- Alvium Series , USB3Vision , cameras **Coming soon**



Model	Goldeye G-130 TEC1	Goldeye CL-130 TEC1	Goldeye G/CL-030 TEC1	1800 U-130	1800 U-030
interface	GigE	CameraLink	GigE/CameraLink	Alvium USB 3 Vision	
Spectral Sensitivity	400 to 1700 nm				
Sensor	IMX990		IMX991	IMX990	IMX991
Pixels	1.3M		VGA	1.3M	VGA
Imager size	1/2"		1/4"	1/2"	1/4"
Resolution	1280 x 1024		656 x 520	1296 x 1030	656 x 520
Frame rate	94 fps(8bit)		136fps(8bit)	223 fps(8bit)	119fps(8bit)
Lens mount	C-mount				
Pixel size	5 x 5um				

**Coming soon**

# Camera Options

## ABS InGaAS

The IK1523 camera is a highly sensitive infrared camera (SWIR, NIR).  
The sensitivity interval reaches from 900 nm to 1700 nm.

The optional available M42 or F - mount to C - mount adapter. Via standard USB2.0 interface can be controlled by each PC or notebook.



### Specifications

Model	IK1513	IK1523
Sensor Size	3/4" InGaAs matrix sensor, progressive scan	1/3" InGaAs matrix sensor, progressive scan
Resolution	320 (H) x 256 (V) pixels	640 (H) x 512 (V) pixels
Pixel Size	30 $\mu\text{m}$ x 30 $\mu\text{m}$	25 $\mu\text{m}$ x 25 $\mu\text{m}$
Spectral Range	0.9 $\mu\text{m}$ to 1.7 $\mu\text{m}$	0.9 $\mu\text{m}$ to 1.7 $\mu\text{m}$
Active Sensor Size	9.6mm (H) x 7.68mm (V)	16mm (H) x 12.8mm (V)
A/D Resolution	14 bit	14 bit
Frame Rate	110 fps	30 fps
Exposure Time	35 $\mu\text{s}$ to 1 s	67 $\mu\text{s}$ to 1 s

## CMOS NIR

This camera series uses CMOS sensors with spectral sensitivity from 380nm to 1000nm, 750nm to 950nm, and from 400nm to 1200nm.

Board type cameras also available.



### Specifications

Model	130-HP - WOM	1000MI - NIR - WOM	500MI - NIR - WOM	035IMX-NIR-WON	130MI - NIR - WOM	036MI2-NIR-WON	ARTCAM-130XQE-WOM
Sensor	9.427 x 7.578mm	6.41 x 4.59mm	5.70 x 4.28mm	4.82x3.81mm	6.66 x 5.32mm	4.51x2.88mm	14.24x11.04 mm
Frame Rate (fps)	8.0	4.4	7.5	28.5	30	30	27.7fps(8bit)/14.2fps(12bit)
Pixel Size ( $\mu\text{m}$ )	7.4 (H) x 7.4 (V)	1.67 (H) x 1.67 (V)	2.2 (H) x 2.2 (V)	3.63 (H) x 3.63 (V)	5.2 (H) x 5.2 (V)	6.0(H)x6.0(V)	10(H)x10(V)
Pixel Resolution	1280 (H) x 1024 (V)	3856 (H) x 2764 (V)	2560 (H) x 1920 (V)	1328 (H) x 1048 (V)	1280 (H) x 1024 (V)	640(H)x480(V)	1280(H)x1024(V)

NOTE: for more information and specifications, please view our camera: catalogue

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September 2021