Infrared inspection can be realized with a general-purpose vision system

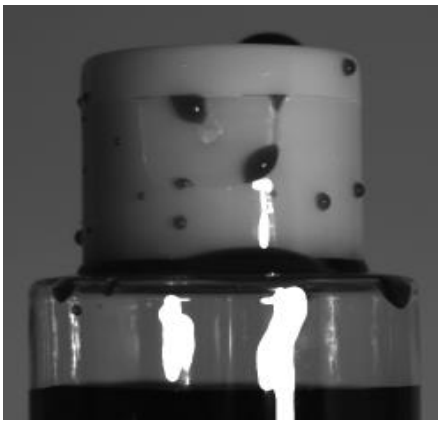
NEW

Shortwave Infrared SWIR Camera for FH Series Image Processing System

FH-SMX-SWIR 330,000 pixels
FH-SMX01-SWIR 1,310,000 pixels

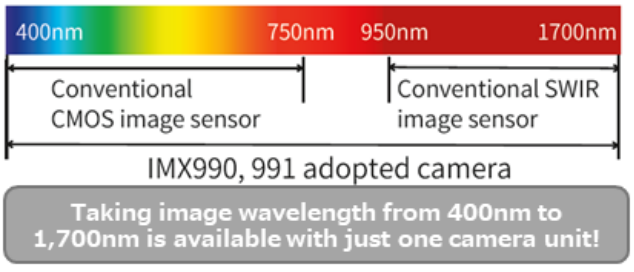
Visible light camera

SWIR Camera

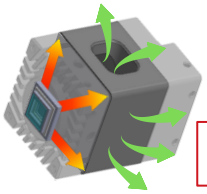


What is a SWIR camera?

SWIR is the wavelength range of 900 nm ~ 2300 nm outside the light seen by humans in the Short Wave InfraRed.
A SWIR camera is a camera with a wide range of sensitivity characteristics from 400 nm ~ 1,700 nm, including the conventional visible light range + the shortwave infrared light region of SWIR.
Omron's SWIR cameras are equipped with SONY's image sensors (IMX990 and IMX991) that can capture images in a wide range of visible light ~ 1,700 nm, and can integrate two types of inspections, visible light and SWIR, with a single camera. In addition to expanding the scope of inspection and applications, it is also expected to reduce inspection system costs and speed up image processing.



Peltier electronic cooling element



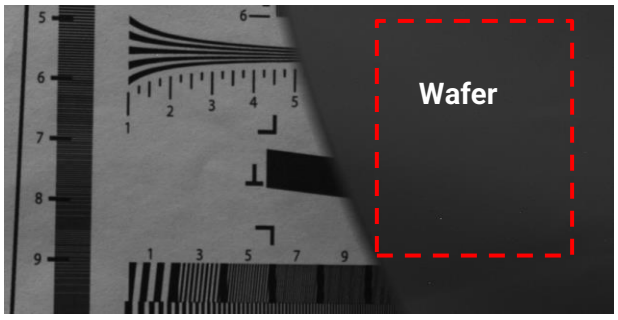
Patent Pending

Discerning heat insulation design

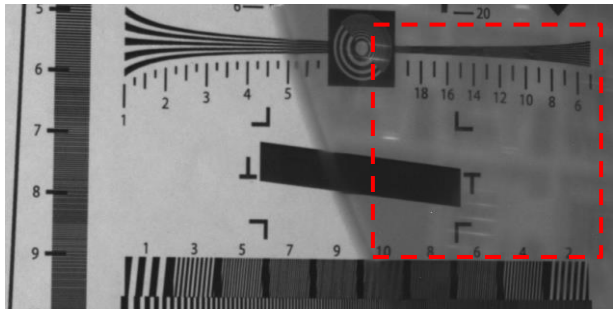
What you can do with SWIR camera

Wafer transmission inspection

Visible light Camera



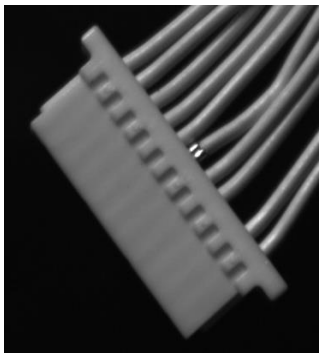
SWIR Camera



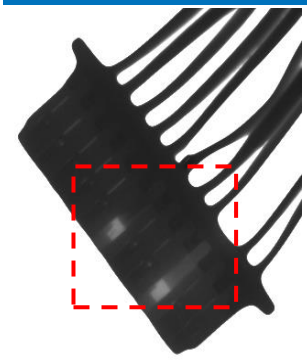
Inspection of the other side of the wafer is possible

Resin Internal Inspection

Visible light Camera



SWIR Camera



IR:1450nm

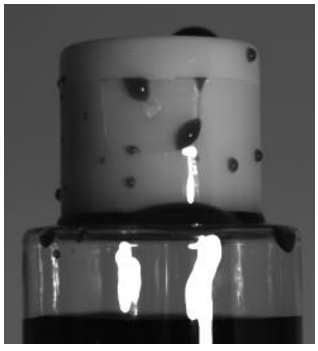
Defect inspection of connector insertion status

*Verification is required each time

Liquid inspection

Visible light Camera

SWIR Camera



IR:1450nm

Highlight transparent liquids and detect dripping

*Depending on the workpiece, it is necessary to select and verify the lighting and lens.
We also have a demonstration machine, so please feel free to contact us
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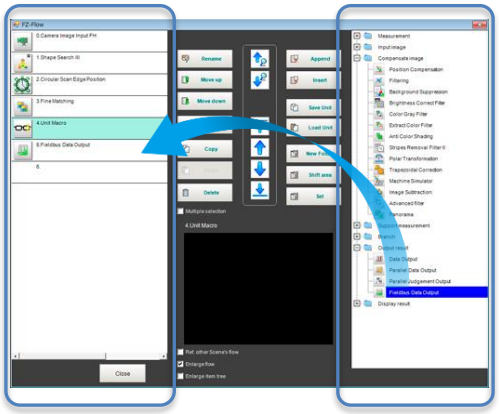
What can you do with the FH × SWIR camera?

Leverage the vision system‘s extensive image library

Flowchart



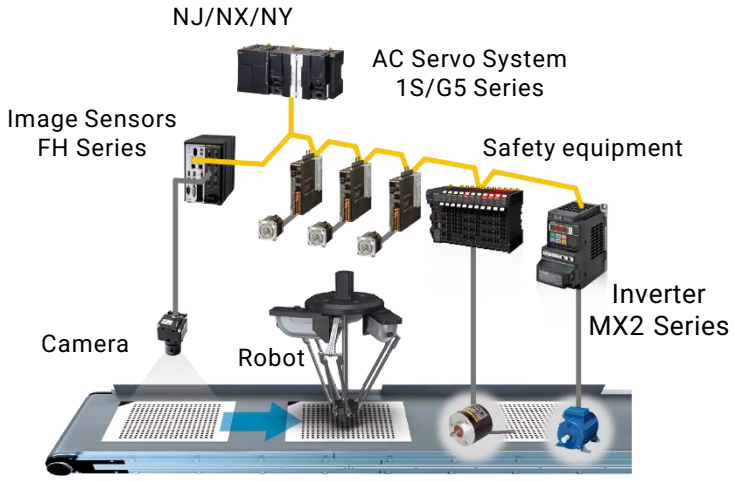
Processing items

Group	Processing item	FH Series
Measure-ment	Search	✓
	Search II	✓
	Flexible Search	✓
	Sensitive Search	✓
	ECM Search	✓
	EC Circle Search	✓
	Shape Search II	✓
	Shape Search III	✓
	EC Corner	✓
	Ec Cross	✓
	Classification	✓
	Edge Position	✓
	Edge Pitch	✓
	Scan Edge Position	✓
	Scan Edge Width	✓
	Circular Scan Edge Position	✓
	Circular Scan Edge Width	✓
	Intersection	✓
	Color Data	✓
	Gravity and Area	✓
	Labeling	✓

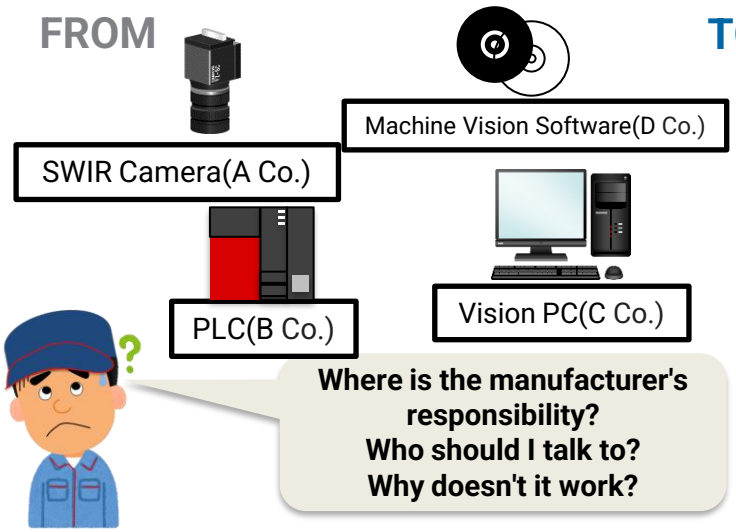
Group	Processing item	FH Series
Measure-ment	Label Data	✓
	Defect	✓
	Precise Defect	✓
	Fine Matching	✓
	Character Inspect	✓
	Date Verification	✓
	Model Dictionary	✓
	2DCode II	✓
	2DCode	✓
	Barcode	✓
	OCR User Dictionary	✓
	OCR	✓
	Circle Angle	✓
	Glue Bead Inspection	✓
	AI FineMatching*	✓
Input image	Camera Image Input FH	✓
	Camera Image Input HDR	✓
	Camera Image Input HDR Lite	✓
	Photometric Stereo Image Input	✓

Group	Processing item	FH Series
Input image	Camera Switch	✓
	Measurement Image Switching	✓
	Multi-trigger Imaging	✓
	Multi-trigger Imaging Task	✓
Compen-sate image	Position Compensation	✓
	Filtering	✓
	Background Suppression	✓
	Brightness Correct Filter	✓
	Color Gray Filter	✓
	Extract Color Filter	✓
	Anti Color Shading	✓
	Stripes Removal Filter II	✓
	Polar Transformation	✓
	Trapezoidal Correction	✓
	Machine Simulator	✓
	Image Subtraction	✓
	Advanced filter	✓
	Panorama	✓
	AI Scratch Detect Filter*	✓

A wide range of products enables complex inspections



Enquiries can be completed by a single vendor



Ratings / Performance

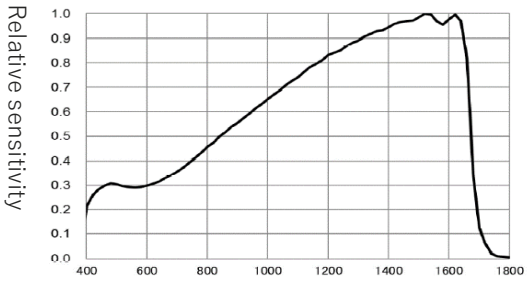
Model	FH-SMX-SWIR	FH-SMX01-SWIR
Image Sensor*1	1/4" 0.3M Progressive SWIR CMOS	1/2" 1.3M Progressive SWIR CMOS
Effective Pixels	**640(H)×512(V)**	**1,280(H)×1,024(V)**
Cell size	5.0(μm)×5.0(μm)	5.0(μm)×5.0(μm)
Frame rate	240fps (4.2ms)	120fps (8.3ms)
Number of lines to be read	8 lines to 512 lines (8 line units)	8 lines to 1024 lines (8 line units)
Video Output	Digital 8bit	
Gain	0 ~ 25.5 dB Range	
Exposure time	Electronic shutter 8μs ~ 100,000μs	
Lens mount*2	C mount	
Supported Controllers *3	FH-5□52/5□51/2052/2051/L551 Series	
Power consumption	8.0W or less (DC13V)	
Vibration resistance	10~150Hz sheet amplitude 0.35mm (acceleration max. 50 m/s2) 3 directions (X/Y/Z) 8 minutes each 10 times	
Shock Resistance	150m/s2 3 times each in 6 directions (up, down, left, right, front, back).	
Ambient temperature*4	Operation: 0~+40° C, Storage: -20~+65° C	
Ambient humidity	Operating and storage: 35~85%RH each (no condensation)	
Ambient atmosphere	Free of corrosive gases	
Protective structure	IEC60529 IP40	
Axis center position accuracy	X,Y ：±0.4mm θX,θY：±1.5°	
Weight	around 490g	
Cable Length	Up to 5m	

*1：If an interval of more than 1-minute elapses between image capturing, the brightness value of the camera may decrease by 1% or more.
*2：Select the lens with reference to the spectral sensitivity characteristics. For details, please contact our sales representative.
*3：Software version: Application software Ver.6.60 or later. For details, please contact our sales representative.
*4：The temperature of the image sensor in this camera is controlled at 15° C to improve image quality. White spots and noise increase when the temperature of the image sensor (the camera's built-in temperature sensor value) is higher than 15° C. It is recommended that the ambient temperature during operation be kept below +34° C or the temperature at the top of the housing be kept below +46° C.

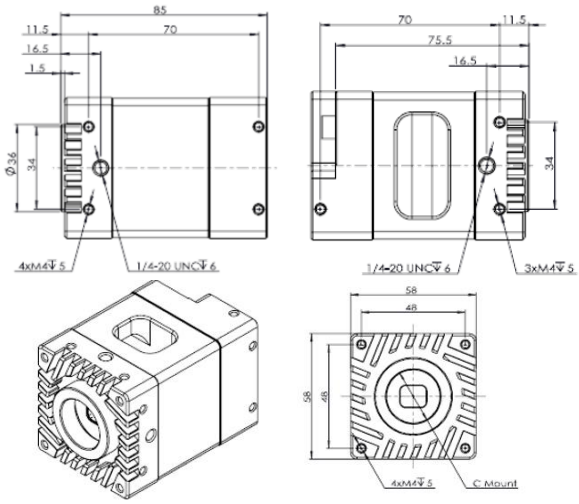
【Export and Trade Control Laws】
This product is classed as a commodity (or technology) requiring acquisition of export permission in accordance with foreign exchange and overseas trade control laws.
When this product is to be taken outside of Japan, adopt the required procedures such as application for export permission by the Japanese government.
When this product is to be taken outside of countries after imported from Japan, please comply with the export and trade control laws of each country and follow the necessary procedures.

Spectral sensitivity characteristics

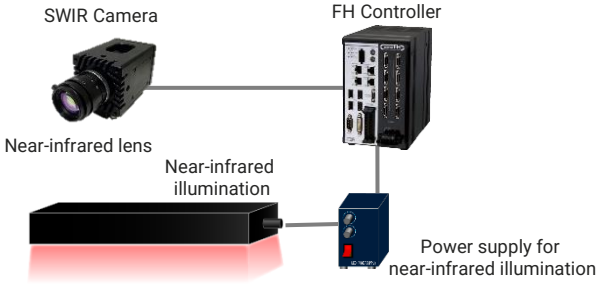
Sensitive to a wavelength range from 400 to 1700 nm.



Dimensions（Unit ： mm）



System configuration



* Depending on the purpose of the application, it is necessary to select the wavelength of the lens illumination.
For details, please contact your OMRON sales representative or dealer.

Note: Do not use this document to operate the Unit.

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