

# X-ray line scan camera

## C14300 / C14960 series



▲ Package seal inspection  
(Left: Visible image, Right: X-ray image)



▲ Bottle contaminant inspection  
(Left: X-ray image, Right: Visible image)

**Covering from  
thin samples to  
thick samples  
by single unit**



### High dynamic range

Enable to detect from low to high X-ray dose

### Size variation

Detection width (housing size) can be selected according to the inspection items and space needed

### Low noise

High S/N imaging with a low X-ray dose

### High speed

Compatible with high speed inspection up to 200 m/min

### Water proof / Dust proof

Enable to wash the system with camera on, protected from water and dust

\* Only for C14300 series

# Supporting in-line nondestructive inspection of various types from **thin samples** to **thick samples** by single unit.

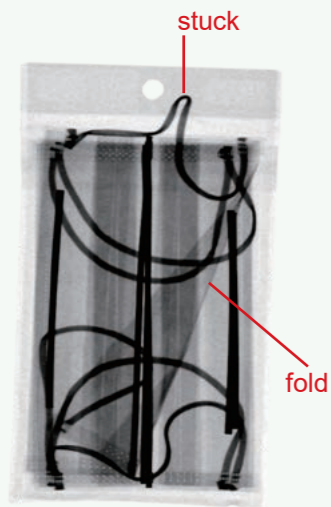
## Inspection of thin samples

Readout noise decreased to **approx. 1/9** of the conventional model (at maximum gain)

Low readout noise made it possible to inspect with low X-ray dose  
Application examples

### [Mask]

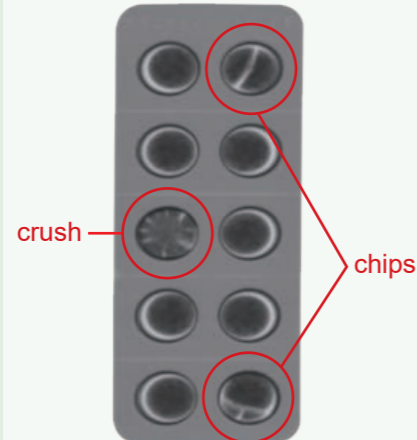
It is possible to detect stuck and folded masks in the package.



Imaging conditions:  
Tube voltage: 20 kV, Tube current: 6.0 mA

### [Tablet]

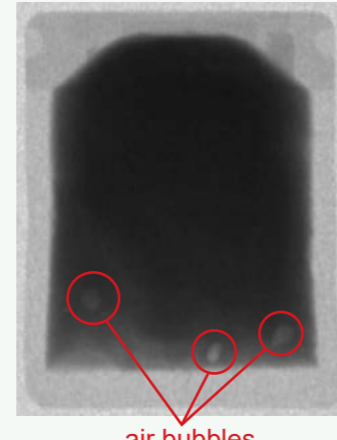
It can detect cracks, chips, and crushed tablets in the blister pack.



Imaging conditions:  
Tube voltage: 20 kV, Tube current: 6.0 mA

### [Pasta sauce]

It can detect contaminants and air bubbles inside retort food products.



Imaging conditions:  
Tube voltage: 30 kV, Tube current: 0.5 mA

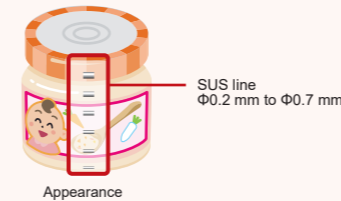
Full well capacity increased to **approx. 8 times** of the conventional model (at minimum gain)

## Inspection of thick samples

High full well capacity made it possible to inspect with high X-ray dose  
Application examples

### [Baby food]

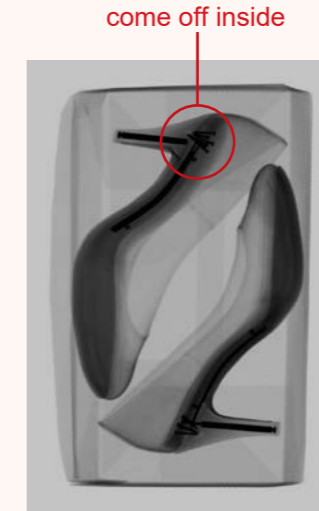
Under detection of metallic objects in baby food, it can detect them which metal lid overlapped.



Imaging conditions:  
Tube voltage: 110 kV, Tube current: 8.0 mA

### [Pin heel]

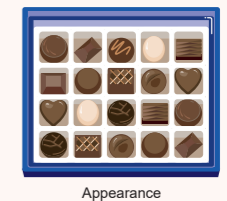
It is possible to inspect bolts/nails that have come off inside the pin heel.



Imaging conditions:  
Tube voltage: 60 kV, Tube current: 4.0 mA

### [Chocolate]

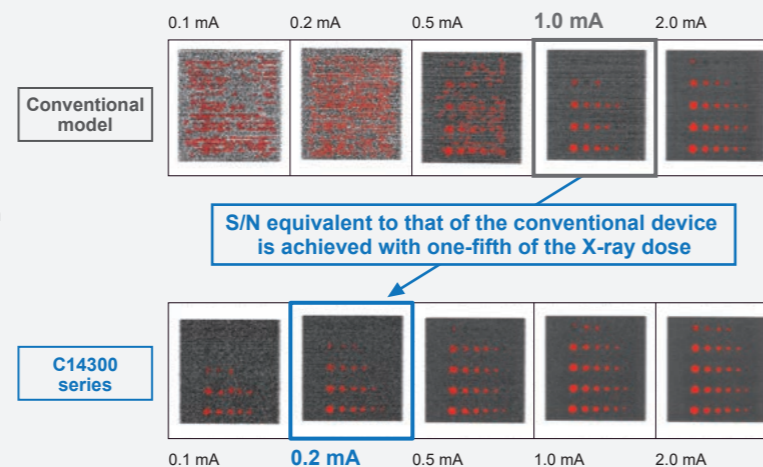
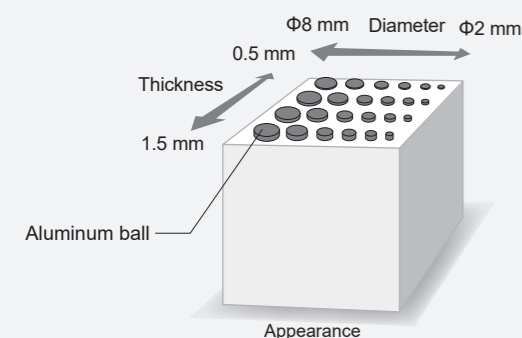
In addition to shape inspection on complex shaped objects such as assorted chocolates, it can measure individual weights from the shade of the image.



Imaging conditions:  
Tube voltage: 110 kV, Tube current: 6.0 mA

## Verification S/N comparison with the conventional model at low X-ray dose

With the aluminum disk positioned on top of 60 mm thickness cube made of PET, we compared the detection accuracy between the conventional model and C14300 series. As a result, C14300 series found to achieve the same S/N imaging with the conventional model by 1/5 dose of X-ray.



Imaging conditions:  
Tube voltage: 30 kV, Tube current: 0.1 mA to 2.0 mA

\* Verification is done with C14300. Similar results can be obtained with the C14960.

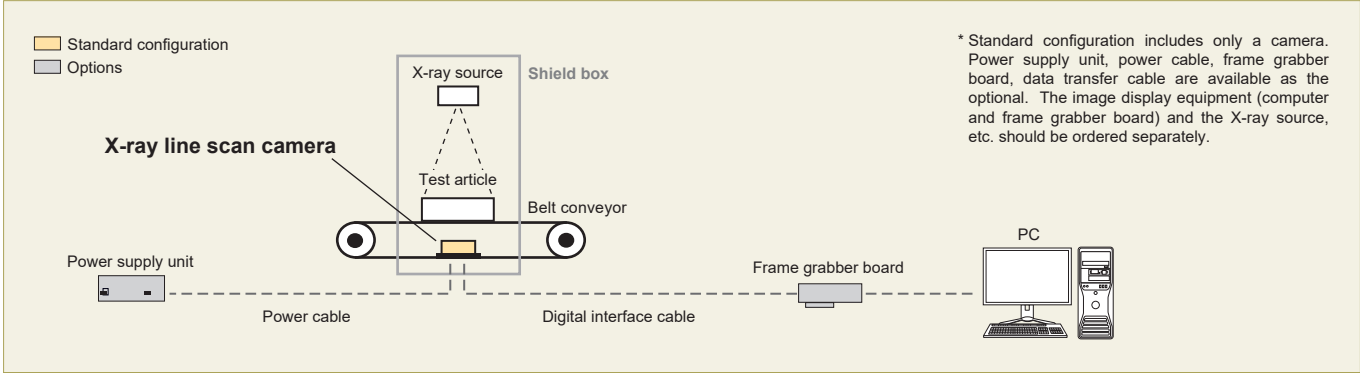
## Specifications

Type number	C14300-05U	C14300-08U	C14300-12U	C14960-14C	C14960-16C	C14960-18C
Scintillator	Gd-scintillator					
Effective X-ray tube voltage range *1	Approx. 25 kV to 160 kV					
Sensor element pitch	0.4 mm					
Detection width *2	256 mm 640 pixels	409.6 mm 1024 pixels	614.4 mm 1536 pixels	716.8 mm 1792 pixels	819.2 mm 2048 pixels	921.6 mm 2304 pixels
Line speed	4 m/min to 200 m/min			4 m/min to 100 m/min		
Digital interface	USB 3.0			Camera Link		
Digital output	14 bit					
Power supply	DC +24 V			DC +15 V to +24 V		
Power consumption	Approx. 6.5 VA	Approx. 8.0 VA	Approx. 9.5 VA	Approx. 9.5 VA	Approx. 10 VA	Approx. 11 VA
Ambient operating temperature	0 °C to +40 °C					
Ambient operating humidity	30 % to 70 % (With no condensation)			30 % to 80 % (With no condensation)		
Ambient storage temperature	-10 °C to +50 °C					
Ambient storage humidity	30 % to 90 % (With no condensation)					

\*1 Low energy models (C14300-05UL, -08UL, -12UL) are also available. For the details, please contact our sales.

\*2 For detection widths other than the above specifications, please contact our sales.

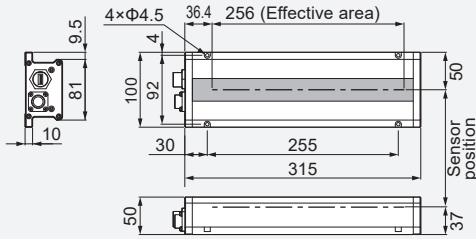
## System configuration / Options



X-ray line scan camera	C14300 series	C14960 series
Power supply unit	A8206-70	A8206-22
Power cable	3 m with external trigger function : A14228-03E 3 m without external trigger function : A14228-03	5 m : A9348-05
Digital interface cable	3 m : A14715-03	Camera Link cable SDR-MDR(for FL4.0) 5 m : A11255-05
Frame grabber board	USB 3.0 : M9982-32	Camera Link : M9982-36

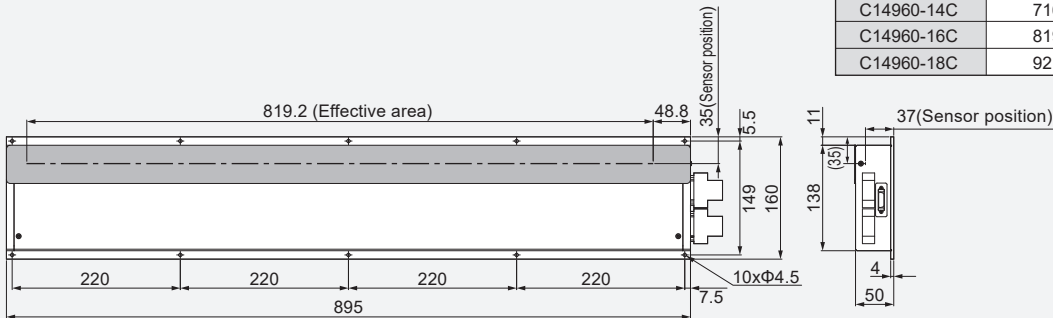
## Dimensional outlines (Unit: mm)

### ● C14300-05U (Approx. 3.4 kg)



Type Number	Derection Width	Number of pixels
C14300-03U	153.6 mm	384 pixels
C14300-04U	204.8 mm	512 pixels
C14300-05U	256 mm	640 pixels
C14300-06U	307.2 mm	768 pixels
C14300-07U	358.4 mm	896 pixels
C14300-08U	409.6 mm	1024 pixels
C14300-09U	460.8 mm	1152 pixels
C14300-10U	512 mm	1280 pixels
C14300-11U	563.2 mm	1408 pixels
C14300-12U	614.4 mm	1536 pixels

### ● C14960-16C (Approx. 15 kg)



Type Number	Derection Width	Number of pixels
C14960-14C	716.8 mm	1792 pixels
C14960-16C	819.2 mm	2048 pixels
C14960-18C	921.6 mm	2304 pixels

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  - Please note the X-ray images on this brochure are taken for test purpose, the images do not reflect actual qualities of the products on the market.
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