

**Nondestructive X-ray inspection**

# **X-ray line scan camera C9750**

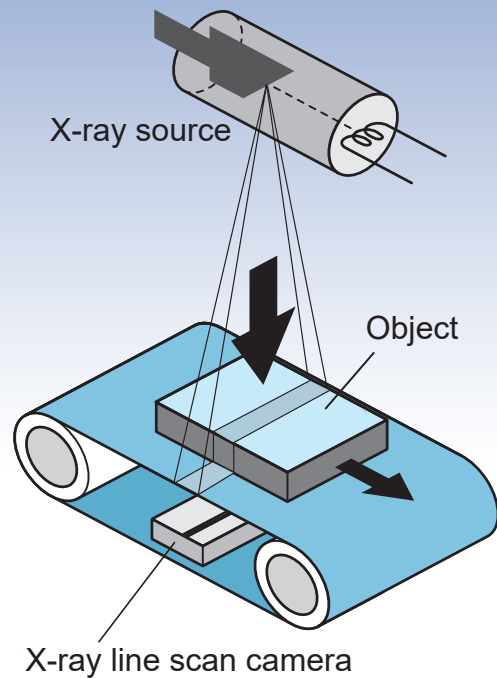


Foreign objects, such as pieces of metal, glass or stone, can be detected inside an object in an instant.



# Detector for nondestructive X-ray inspection / in-line X-ray inspection

In an instant, the line scan camera detects foreign bodies, such as pieces of metal, glass, or stone, inside any object.



The X-ray line scan camera can take a high-sensitivity, high-resolution transparent X-ray image of an inspected object transported on a belt conveyor or similar apparatus.

Since the content of an object, which is not visible with the naked eye, can be inspected without contact or destruction, this camera is suitable for broad interior X-ray observation, enabling the detection of a foreign body mixed in food, electronic components, etc.

By adopting a thin sensor head with a thickness of only 50 mm, installation inside a conveyor is also possible. Moreover, the wide inspection area enables internal observation of a large object, which was difficult until now.

With its 12 bit digital-signal output, data processing and analysis with a computer can be performed through a frame grabber board.



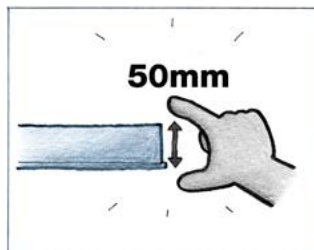
▲ C9750-10FCN



▲ C9750-05FCV (Customized product)

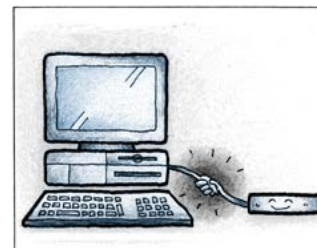
\* Please consult Hamamatsu for specification and dimensional outline.

## FEATURES



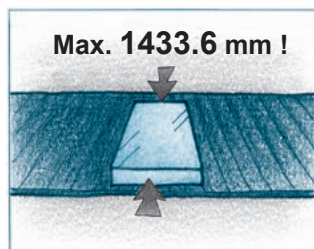
### ● Only 50 mm in thickness

By adopting a line sensor as a detector, the thickness of the sensor head is reduced to a maximum of 50 mm. Installation inside a belt conveyor is also possible. It is available for vertical shaped camera (V type) which can be installed at narrow space.



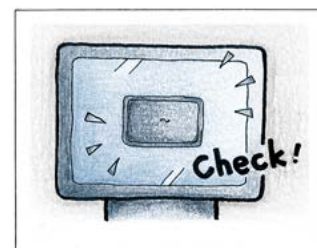
### ● Connection to a computer is possible.

Using the commercial frame grabber board, the 12 bit digital output enables easy connection to a computer or other external instrument. Acquired image processing, data processing and filing can be performed, allowing the configuration of any system.



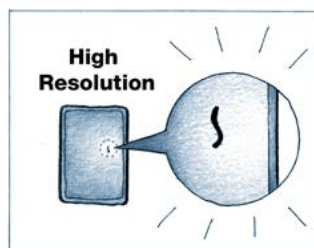
### ● Detection width

Detection width is selectable from 51.2 mm to 1433.6 mm.



### ● Pausing the image

Using the optional processor board (installed into a computer), the scrolled image can be paused or scrolled, and the sensor head controlled arbitrarily.



### ● Spatial resolution

A high spatial resolution is realized in addition to a high sensitivity. Even low-contrast or small-sized foreign object inside an object can be clearly observed. (Max. 1/4096)

### ● High speed

Line speed: 800 m/min is realized (by using 1.6 mm pitch).

### ● Sensitivity setting is possible.

Sensitivity at low energy and the lifetime by X-ray irradiation are improved by implementing multigain module. (option)

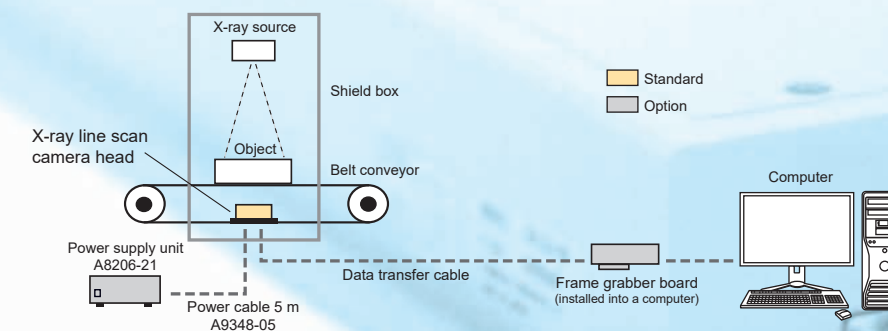
\* The minimum detectability differs according to certain conditions, such as the dimension of the object being checked, the quality of the material, the X-ray intensity, and the transport speed.

## MEASUREMENT EXAMPLES



\*MFX ... Microfocus X-ray source

## SYSTEM CONFIGURATION EXAMPLE



Note

- The C9750 X-ray line scan camera consists of only a sensor head. The image display equipment (computer and frame grabber board) and the X-ray source, etc. should be ordered separately.
- The data transfer cable is optional. Please consult Hamamatsu for connector formats.
- The power supply unit is also optional.

# SPECIFICATIONS

Type number	C9750-05FCN	C9750-05FCN-C	C9750-10FCN	C9750-10FCN-C
Detection method	Scintillator method			
Recommended use range *1	Approx. 25 kV to 160 kV			
Sensor element pitch *2	0.4 mm			
Detection width	256 mm : 640 pixels		512 mm : 1280 pixels	
Resolution	1/ 640		1/ 1280	
Line speed *3	4 m/min to 100 m/min			
A/D converter	12 bit			
Digital interface	RS-422	Camera Link	RS-422	Camera Link
Ambient operating temperature	0 °C to +40 °C			
Ambient storage temperature	-10 °C to +50 °C			
Ambient operating humidity	30 % to 80 % (with no condensation)			
Power supply	DC +5 V / DC +15 V			

\*1 Low kV (10 kV to 40 kV) is available as option (M10313-01).

\*2 0.8 mm and 1.6 mm pitch are available as option.

\*3 Maximum line speed is changed by pixel number. Please consult Hamamatsu.

\* Please consult Hamamatsu for these options.

The specifications are available below.

## Line speed

	0.2 mm pitch camera	0.4 mm pitch camera	0.8 mm pitch camera	1.6 mm pitch camera
Standard	2 m/min to 50 m/min	4 m/min to 100 m/min	8 m/min to 200 m/min	16 m/min to 800 m/min

\* Maximum line speed is changed by sensor length (more than 2432 pixels). Please consult Hamamatsu.

## Number of pixels / Detection width

Element pitch	Number of pixels	Detection width
0.2 mm	256 pixels to 4096 pixels	51.2 mm to 819.2 mm
0.4 mm	128 pixels to 3200 pixels	51.2 mm to 1280 mm
0.8 mm	128 pixels to 1792 pixels	102.4 mm to 1433.6 mm
1.6 mm	128 pixels to 896 pixels	204.8 mm to 1433.6 mm

## Description of model name

C9750-□□□□ CN  
① ②

## Number of pixels

01 ... 128 pixels  
to to  
32 ... 4096 pixels

## Pixel pitch

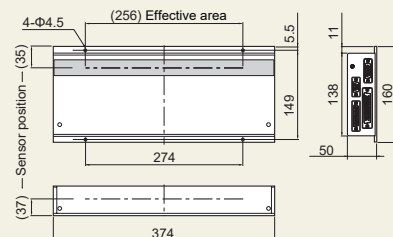
T ... 0.2 mm  
F ... 0.4 mm  
E ... 0.8 mm  
S ... 1.6 mm

# OPTIONS

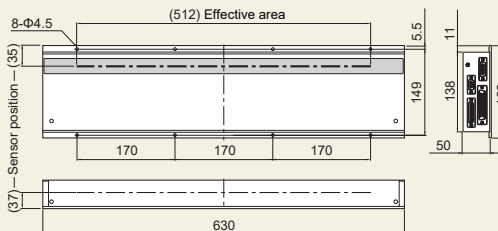
- Additional function module Low energy: M10313-01
- Power supply unit: A8206-21
- Power cable 5 m: A9348-05

# DIMENSIONAL OUTLINES (Unit: mm)

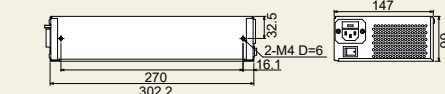
## ● C9750-05FCN (Approx. 5.0 kg)



## ● C9750-10FCN (Approx. 9.0 kg)



## ● A8206-21 (Option) (Approx. 2.0 kg)



\*Please consult Hamamatsu for X-ray irradiation allowance area.

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