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KEYENCE

96M13065

96M13065-2

16x Speed 480-k pixels Camera

CA-HX048C/CA-HX048M

Instruction Manual

Checking the Package Contents

This package includes the following items. Make sure that all of the items are in the package.

☐ CA-HX048C/CA-HX048M (Camera) 1
☐ Resin mounting bracket (attached to camera) 1
☐ Instruction Manual (this document)

Introduction

■ Symbols

The following symbols are used for the list of precautions to ensure safety and to prevent personal injury and/or property damage when using the device.

DANGER	**It indicates a hazardous situation which, if not avoided, will result in death or serious injury.**
CAUTION	**It indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.**
NOTICE	**It indicates a situation which, if not avoided, could result in product damage as well as property damage.**

Point	**It indicates additional information on proper operation.**

Safety Precautions

■ General precautions

DANGER	• **Do not use this product for the purpose of protecting the human body or any part thereof.** • **Because this product was not designed for use in an explosion-proof area, it must never be used in an explosionproof area.**
CAUTION	• **Verify that this device is operating normally in terms of functionality and performance before the start of work and before the start of device operation.** • **Take appropriate safety measures to avoid any damage in case of device failure.**
NOTICE	• **KEYENCE is unable to guarantee the function or performance of this camera if it is used in a manner that differs from this camera specifications contained in this manual or if this camera is modified.** • **The functions and performance of this camera may not be satisfactory depending on the operating conditions or operating environment if it is used in combination with other devices. Use it with other devices only after careful consideration.** • **Do not subject the controller or connected devices to a sudden change in temperature.** **There is the risk of condensation occurring.**

■ Measures to be taken when an abnormality occurs

CAUTION	**Turn off the power of this camera immediately if one of the following incidents occurs. If you continue to use the device while the abnormality persists, fire, electric shock, or malfunction may result.** **Contact your KEYENCE office for repair service.** **When liquid such as water, oil, and chemicals or other foreign materials enter inside the unit** **When the strong impact is applied or the housing is damaged** **When smoke, foul odor or abnormal noise is emitted from the unit**

■ Supported controllers

This camera is dedicated for use with the XG-8000 Series (version 5.4.0000 or later), XG-7000 Series (version 4.3.0000 or later), XG-X2000 Series, and CV-X Series (version 3.1.0000 or later). For details on the controller models that support connections with this camera, refer to the Controller Instruction Manual of the series that you will use.

■ Usage of dedicated cables

Use the dedicated cables to connect the camera unit to the controller.

Straight type
CA-CH3(3M), CA-CH5(5M), CA-CH10(10M)
L-shape type
CA-CH3L(3M), CA-CH5L(5M), CA-CH10L(10M)
Straight high-flex type
CA-CH3R(3M), CA-CH5R(5M), CA-CH10R(10M)

■ Installation

To use the system properly and safely, avoid installing this unit in the following locations. Doing so may cause fire, electric shock, or product malfunction.

CAUTION	• **Locations where this camera is exposed to direct sunlight** • **Locations where the surrounding air temperature exceeds or drops below the specification range, or where the temperature changes rapidly** • **Locations which are poorly ventilated** • **Locations where the relative humidity drops below 35% or exceeds 85% RH, or where condensation occurs** • **Locations where there are corrosive gas or flammable gas** • **Locations where there are much dust, sodium, or iron powder** • **Locations where water, oil, or chemicals may splash onto this camera** • **Locations where this camera may be directly subjected to vibration or impact** • **Locations where this camera may be affected by radiation noise or static electricity.**

NOTICE	**The camera is connected to a frame ground. A current conducts between the power supply ground and the metal parts and metal connectors of the camera itself and of items such as the lens connected to the camera. Be sure to install the camera in an insulated fashion such as by using the included plastic mounting omponents. If an electric potential difference or noise occurs at the installation location while the camera is installed in an uninsulated fashion, camera damage or malfunctions may occur.**

■ Handling

CAUTION	• **Do not dismantle the camera, modify it, or connect it to anything other than the dedicated controllers. Failure to do so may result in fire, electrical shock, or equipment malfunction.** • **Be sure to power off this camera and its accessories, when you plug/unplug the cable. Otherwise a fire, electrical shock, burn or malfunction could result.**

NOTICE	• **In case of transportation, use the same packaging as when the unit was delivered to avoid damage.** • **If the unit has any dirt on it, wipe it off with a cloth moistened with a mild detergent, then rub with a dry cloth. Do not rub with a wet cloth, benzene, thinner, or alcohol. Doing so could change the color or shape of the unit.** • **Do not enter excessive light (sunlight or intense illumination) into the camera. Doing so may cause the CCD to burn in or be damaged.**

■ Mounting

Be sure that the values are appropriate as specified below or lower when mounting.
Tightening torque . . . . . .0.5 Nm
Tension . . . . . .30 N

Precautions on settings

Depending on the photograph conditions (for example, when the camera sensitivity is increased or the shutter speed is decreased) and the temperature of the usage environment, point defects may occur and narrow lines may be displayed on the screen.
This is not a malfunction. These phenomena arise due to the structure of the camera and the special characteristics of CMOS sensors. If these phenomena occur, examples of ways that you can rectify the situation include lowering the usage temperature, lowering the camera sensitivity, and increasing the shutter speed and ensuring that there is sufficient illumination by using an external light source. You may also be able to improve the situation by using a KEYENCE illumination expansion unit to synchronize the illumination and the shutter.

Precautions on Regulations and Standards

■ CE and UKCA Markings

KEYENCE checked this product's conformance to EMC Directive (CE) and Electromagnetic Compatibility Regulations (UKCA) with the simultaneous use of supported controllers. Therefore, see the user's manual of the supported controller that you are using when using this product in Member States of European Union and United Kingdom.
This is not to guarantee the conformity to EMC Directive (CE) and Electro-magnetic Compatibility Regulations (UKCA) for the entire mechanical system created by the customer.

■ KC mark (Republic of Korea)

Class A device
This product is a industrial electromagnetic wave generating device (Class A) and is intended for use in all establishments other than domestic.

A 급 기기 (업무용 방송통신기자재)
이 기기는 업무용 (A 급) 전자파적합기기로서 판매자또는 사용자는 이 점을 주의하시기 바라며 , 가정외의 지역에서 사용하는 것을 목적으로 합니다 .

Mounting and Adjusting the Lens

■ Selecting the lens

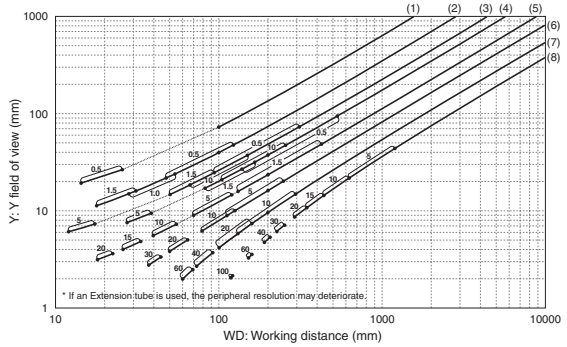
The chart shown below indicates the relationship between the image capturing field of view (the vertical direction of the camera) and the distance to the object working distance. Refer to the chart to select the appropriate lens.

■ Indications in the chart

- The mark ⊷ in the chart indicates the extension length of the Extension tube. (The Extension tube is installed between the lens and the camera.)
- The asterisk (*) in the chart indicates the lens model.

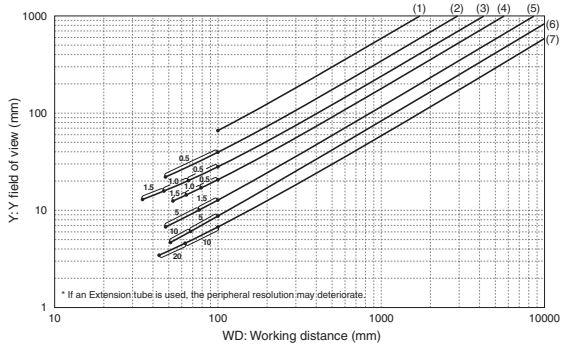
Point	**The values in the chart are typical values. Adjustment is required after mounting the lens.**

When using the high-resolution zoom lens (CA-LH*(G)) with 784 x 596 pixels (0.47-megapixel mode)



(1) CA-LH4 (2) CA-LH8(G) (3) CA-LH12(G) (4) CA-LH16(G) (5) CA-LH25(G) (6) CA-LH35(G) (7) CA-LH50(G) (8) CA-LH75

When using the ultra high-resolution zoom lens (CA-LHR*) with 784 x 596 pixels (0.47-megapixel mode)



(1) CA-LHR5 (2) CA-LHR8 (3) CA-LHR12 (4) CA-LHR16 (5) CA-LHR25 (6) CA-LHR35 (7) CA-LHR50

Specifications

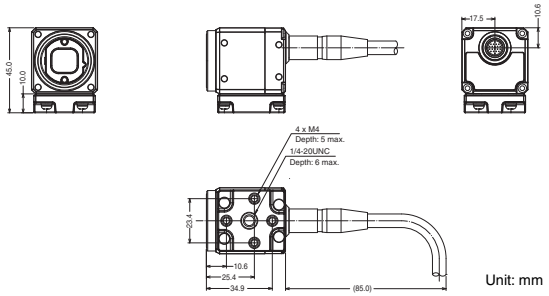
Product name	16x speed color 480-k pixels Camera	16x speed monochrome 480-k pixels Camera
Model	CA-HX048C	CA-HX048M
Image receiving element	Color CMOS image receiving element Square-lattice all-pixel 11/16x* speed reading	Monochrome CMOS image receiving element Square-lattice all-pixel 11/16x* speed reading
Unit cell size	4.8 μm x 4.8 μm	
Image size	Equivalent to 1/3-inch	
Number of effective pixels	In 470-k pixels mode 784(H) x 596(V) In 310-k pixels mode 640(H) x 480(V) In 240-k pixels mode 512(H) x 480(V)	
Scanning system	Progressive • At 11x speed: In 470-k pixels mode: 5.2 ms (monochrome), 5.3 ms (color) In 310-k pixels mode: 3.5 ms (monochrome), 3.6 ms (color) In 240-k pixels mode: 2.8 ms (monochrome), 2.9 ms (color) • At 16x speed*: In 470-k pixels mode: 2.9 ms In 310-k pixels mode: 2.0 ms In 240-k pixels mode: 1.7 ms	
Pixel transfer frequency	130 MHz (11x)/195 MHz (16x)*	
Transfer system	Digital serial transfer	
Electronic shutter	1/15, 1/30, 1/60, 1/120, 1/240, 1/500, 1/1000, 1/2000, 1/5000, 1/10000, 1/20000 Can specify from 0.022 to 1000 ms through numerical value input	
Lens mount	C mount	
Environmental resistance: Ambient operating temperature	0 to +40°C	
Environmental resistance: Ambient operating humidity	35 to 85% RH (No condensation)	
Weight	Approx. 190 g (not including lens)	

* The 16x speed reading is supported when connected to an XG-X2000 Series unit or a CV-X400 Series unit and when transferring data to an XG-8000 Series unit with the XG-EC80L/CA-EC80L/CA-EC80HX equipped or when transferring data to a CV-X200 Series unit with the CA-EC80L/CA-EC80HX equipped.
For details, see the Controller Instruction Manual of the series that you will use.

Outer Dimensions

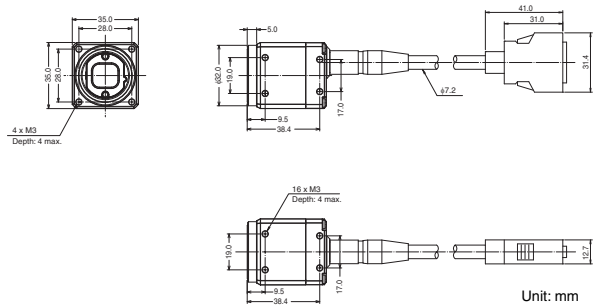
CA-HX48C/CA-HX48M

When the plastic part is mounted (factory default)



Unit: mm

When the plastic part is not mounted



Unit: mm

WARRANTIES AND DISCLAIMERS

(1) KEYENCE warrants the Products to be free of defects in materials and workmanship for a period of one (1) year from the date of shipment. If any models or samples were shown to Buyer, such models or samples were used merely to illustrate the general type and quality of the Products and not to represent that the Products would necessarily conform to said models or samples. Any Products found to be defective must be shipped to KEYENCE with all shipping costs paid by Buyer or offered to KEYENCE for inspection and examination. Upon examination by KEYENCE, KEYENCE, at its sole option, will refund the purchase price of, or repair or replace at no charge any Products found to be defective. This warranty does not apply to any defects resulting from any action of Buyer, including but not limited to improper installation, improper interfacing, improper repair, unauthorized modification, misapplication and mishandling, such as exposure to excessive current, heat, coldness, moisture, vibration or outdoors air. Components which wear are not warranted.

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A6WW1-MAN-2062

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13065E 2072-2a 96M13065 Printed in Japan

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