May 16, 2025
Ver1.03

USB3.0 UV CMOS Camera
ARTCAM-9701UV
INSTRUCTION BOOKLET

1.3 M Pixels ARTCAM-9701UV

ARTRAY CO., LTD.

Contents

1. Attention

■About this manual

1. Before using the camera, please read this manual thoroughly.
2. Please keep this manual reachable and always refer to the contents when needed.
3. Please contact us if the manual is lost or damaged. We will provide a replacement.
4. We do not guarantee the safety of the camera when used improperly.
5. For your safety, please follow the instructions in this manual.
6. All contents are subject to change.
7. Images in this manual may have been simplified for easier comprehension.
8. Please contact us if you find any unclear points or mistakes in this manual.
9. Quoting, copying or altering any or all parts of this manual without our permission is prohibited.
10. We are not responsible for any loss or damages to your profits due to the use of our products.
11. Please understand that our oversea branches do not provide maintenance or repair services.

■About the Icons

To ensure the safety of the user, other people and their property, please pay attention to the following icons.

Warning

If the user fails to follow the instruction, serious injury or death may occur.

Caution

If the user fails to follow the instruction, physical injury to humans or damage to hardware may occur.

■For Safe Use

Warning

●Under the following circumstances, please stop using the product and turn off the power immediately to prevent the risks of fire and electric shock. If the product is defective, please contact us for repair or replacement. For your safety, please do not disassemble, modify or repair the camera yourself.

Please stop using the product and turn off the power immediately if:

・The camera emits smoke, becomes abnormally hot, or produces unusual smells or sounds.

・Foreign objects or water have entered the camera.

・The camera was damaged due to impact.

●Do not place the product on unstable surfaces, as it may fall and cause injury

Caution

●Do not expose the product to steam or fumes as this may result in electric shock or fire.
●Do not place or store the product in high-temperature environments such as near open flames, inside vehicles or under direct sunlight. It may adversely affect internal components of the product and could potentially cause a fire.
●Do not cover the product with cloth or other materials. The product may overheat, which could deform its components or lead to a fire.
●Avoid dropping or subjecting the product to strong impact as this may cause damage.
●Do not touch the cable with wet hands as this may result in electric shock.
●Avoid prolonged contact with the surface of the camera while it is powered on. The surface may become hot and could cause low-temperature burns.

■Other Notices
●Please do not use the camera under strong lights such as sun light for a long period. Also, please do not expose the camera under strong lights even when the product is not being used because the sensor might be damaged.

■Maintenance
● Wipe any dirt from the camera with a soft cloth or tissue. Do not use alcohol, thinner or benzene to avoid discoloration or damage to the surface coating.

■Notice on Radio Interference
●Using the camera near a radio or television receiver may cause reception interference.

■Export Control
This product is a Catch-all Control item subject to the Foreign Exchange and Foreign Trade Act and its relevant legislations. Except for exports to the 27 white countries designated by Cabinet Order, export licenses are required if the products are intended for military use or if the end user of the product is related to all kinds of military activities. If your circumstances cause the need to apply export licenses, please notify us before you place orders. Also, please notify us in advance if the end users or purposes of use change after the purchase and thus cause the need to apply export licenses.

About the Japanese Security Export Controls, please refer to the webpage for Security Export Control Policy, the Ministry of Economy, Trade and Industry:
www.meti.go.jp/policy/anpo/englishpage.html

The above is based on the applicable laws and regulations in effect at the time of issuance of this document. Please ensure to check the latest laws and regulations before exporting this product.

■Guarantee
To support environmental sustainability, we do not issue printed warranty documents. Instead, all records of the warranty periods, delivery dates and the customer information are securely stored in our system.

For more details, please refer to the following link:
Hardware Warranty: http://www.artray.us/download/artray_warranty.pdf

●We do not guarantee that the functions of this product or the descriptions on this manual are suitable for the customer's intended use or marketability. Furthermore, we assume no liability for any direct or indirect damages arising from the use of this product.

●Please do not use this product in applications requiring high reliability. This product is not designed or intended for use in medical devices, nuclear facilities, aerospace equipment, transportation systems, or any other equipment critical to human safety. We are not held responsibility for any damages on the users' property, equipment or personal safety caused by this product.

■Disposal
●To dispose this product, please return the camera to us. If you decide to dispose the camera without returning it to us, please follow relevant regulations and ensure that it is treated as industrial waste.
Always keep records of the disposal and ensure that the disposed camera cannot be accessed or used by any third party.

2. Introduction

ARTCAM-9701UV is an ultraviolet camera that has high sensitivity to the wavelength band between 200 nm to 1000 nm.
Adopting USB3.0 interface, thus enables direct data transfer to PC without a capture card.

3. Main Features

- UV Detection with High Sensitivity

The adopted CMOS sensor has high sensitivity to the wavelength band between 200nm to 1000nm. Therefore, it is able to detect beyond the visible light region and visualizing things that difficult to be seen by unaided eyes or common CCD / CMOS cameras.

- USB3.0 Interface

Adopting USB3.0 interface, thus enables direct data transfer to PC without a capture board or a host adapter card.

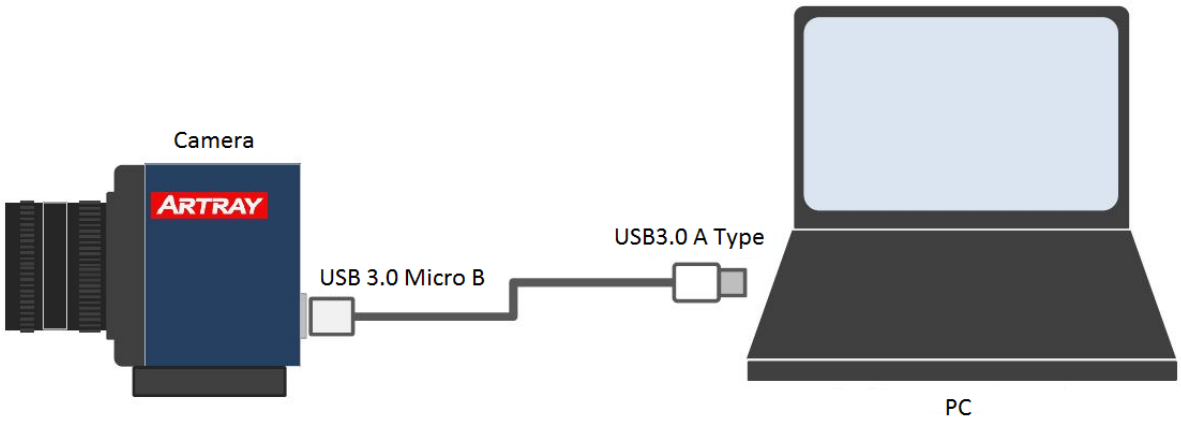
4. The Product

1) Camera
2) USB3.0 cable (USB3.0 A – micro B Type 3.0m)
3) Software CD

<Optional>
1) C Mount Lens

5. Connections

5.1. Connecting Method (an example)



6. Specifications

6.1. Camera Specifications

6.1.1. Camera specification list

Items	
Image pickup device	Gpixel 1.3megapixel CMOS sensor GLUX9701BSI
Number of total pixels	1344(H) × 1054(V)
Number of effective pixels	1280(H) × 1024(V)
Pixel Size	9.76(H) [μm] × 9.76(V) [μm]
Imaging area	12.49(H) × 9.99(V)[mm] (Diagonal 15.994[mm], Approx.1 inch)
Detection frequency band	200～1000nm
Shutter Type	Rolling Shutter
A/D Resolution	12bit
Interface	USB3.0 Bulk
Number of output bits	12bit
Frame Rate	25 fps
Shutter Speed	37μsec ~ 2sec ※1
ROI	ON/OFF ※Default value : OFF Vertical only (Horizontal only available on software)
Trigger	ON/OFF ※Default value : OFF
Mirroring	ON/OFF ※Default value : OFF Vertical and Horizontal
Synchronization System	Internal Synchronization
Lens Mount	C Mount
External trigger input (optional)	SMA female connector (optional) BNC conversion adapter included
Power	5.0V (±0.5V) USB BUS Power
Power Consumption	Under Approx.3.0W
Ambient Conditions	Operating Temperature/Humidity：0～35°C/10～80%(Non condensing) Storage Temperature/Humidity：0～60°C /10～95%(Non condensing)
External Dimensions	50.0(W) × 47.0(H) × 42.7(D) mm ※2 Exclude lens, tripod mount and projections
Weight	Approx. 110g

※1 3.24μsec when Short Exposure Mode is set
※2 All by nominal value

6.2. Functions of camera

6.2.1. Gain setting

This camera has two types of gain, both of which can be set on the software.

Pixel Gain can switch between High Gain and Low Gain.

PGA Gain corresponds to a gain range of 1.0× to 16.0× for values from 2 to 62, adjustable in 0.25× increments.

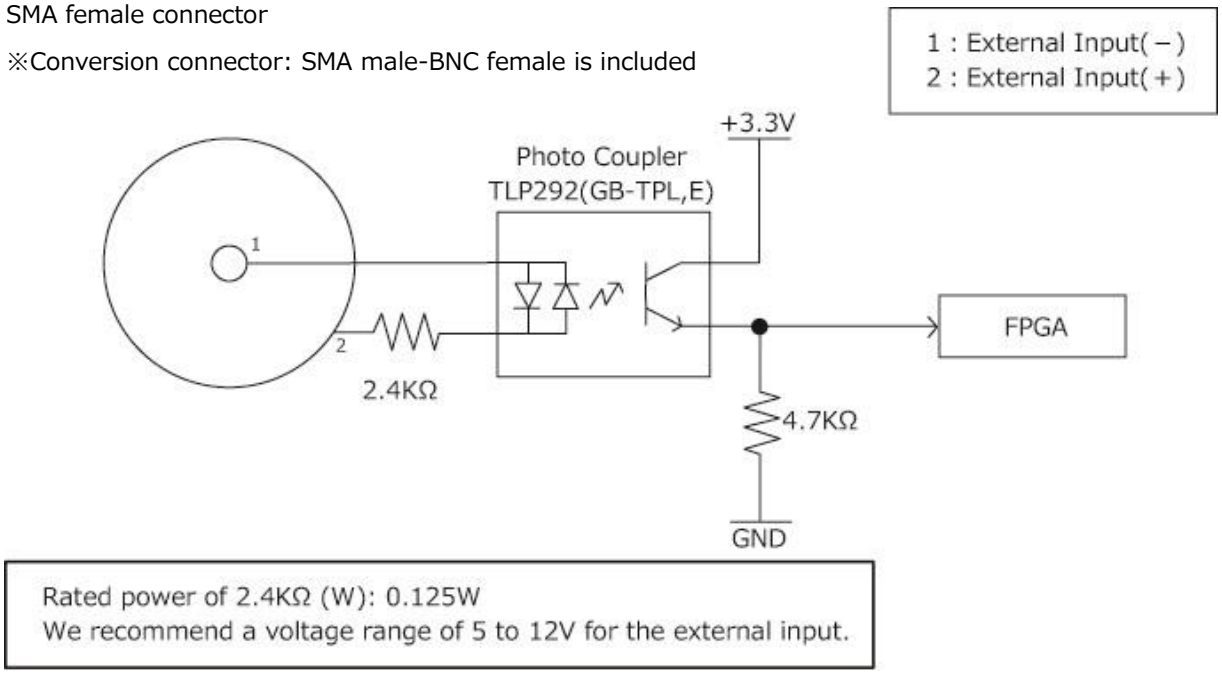
The gain range is calculated using the formula of Gain [x] = (Gain Setting - 2) × 0.25 + 1.0 [x]

6.3. External Trigger Function (Optional)

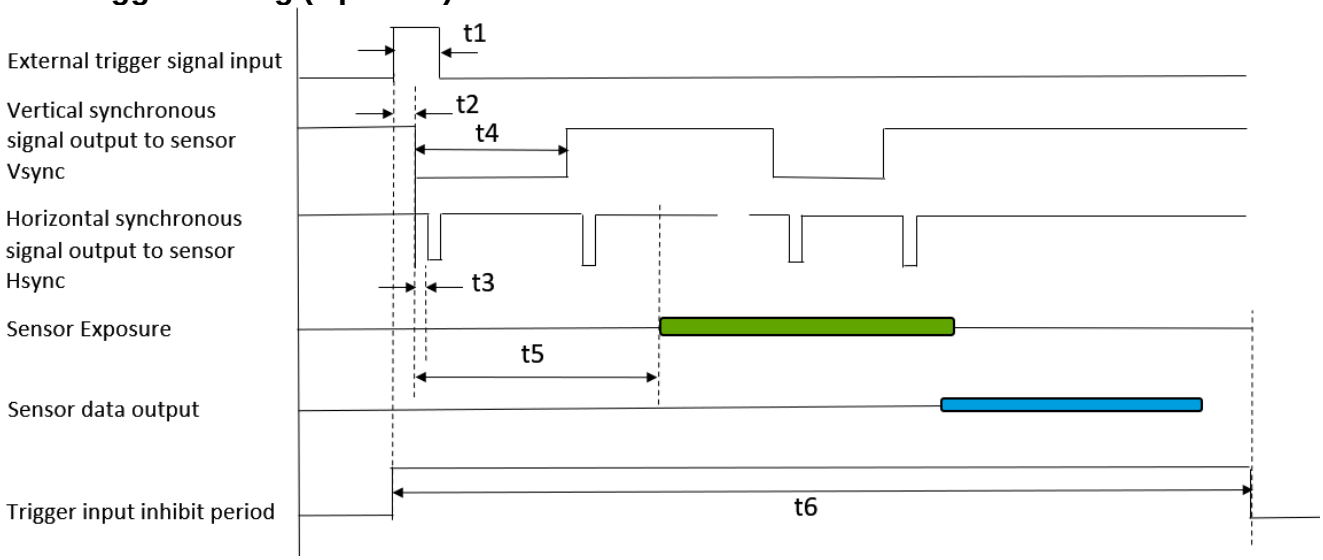
This camera could be equipped with an external trigger electronic circuit as an option, which is insulated by a photocoupler, and thus enables synchronized shooting by the input signal received from the external circuit.

SMA female connector

※Conversion connector: SMA male-BNC female is included



6.4. Trigger Timing (Optional)



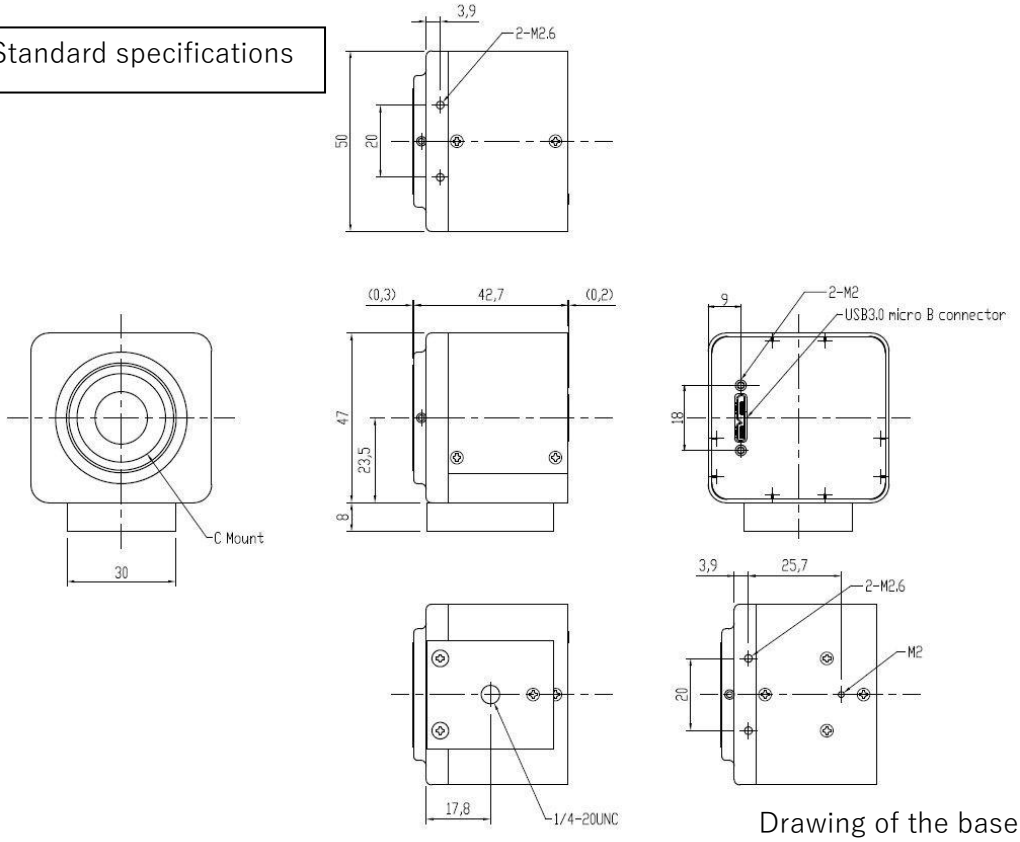
	Item	Time
t1	Valid trigger input pulse	10μs or more
t2	From the rising edge of the external trigger input to the falling edge of the vertical synchronous signal output to the sensor	Less than 1μs
t3	From the falling edge of Vsync to the falling edge of Hsync output to the sensor	1 CLK_PIX(27ns)
t4	Low period of Vsync	1H time (37.1μs)
t5	From the falling edge of Vsync to the start of exposure	(8+Exp_Ctrl setting value+1)*1H time
t6	Trigger input inhibition period	2Frame time

※1H=37.1us
※Exposure time = 1Frame time - (Exp Ctrl setting value + 1)*1H time
※1Frame time = exposure time + 1H time (Min value = 40.17ms at full size)
※When inputting triggers consecutively, please make the interval between triggers longer than t6.

7. Dimensional Outline

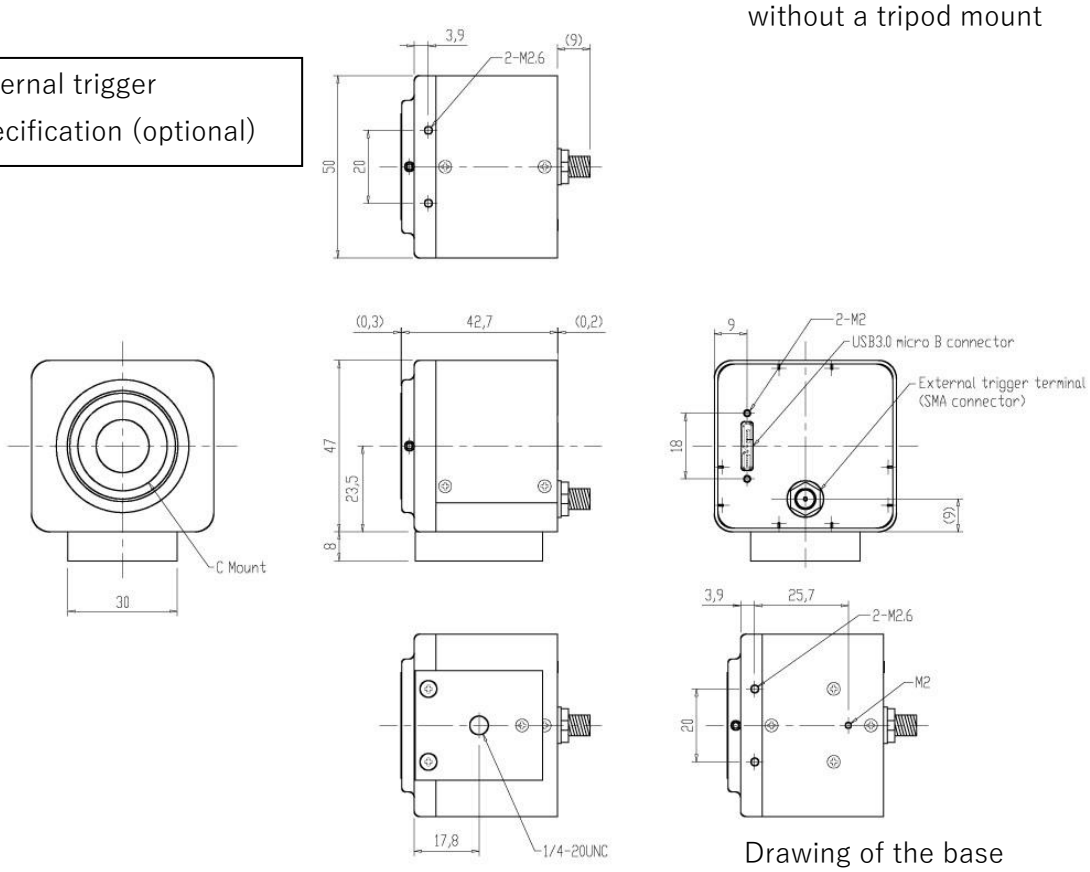
7.1. Camera Dimensions

Standard specifications



Drawing of the base without a tripod mount

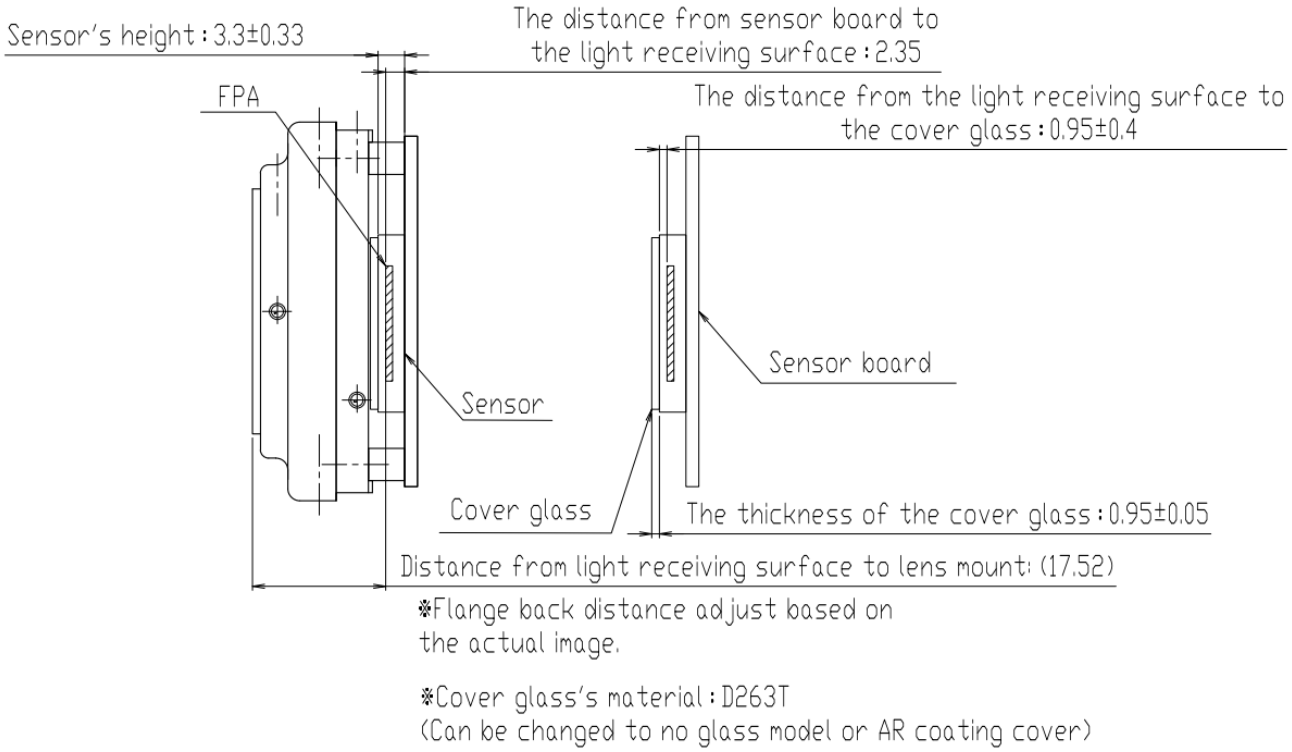
External trigger specification (optional)



Drawing of the base without a tripod mount

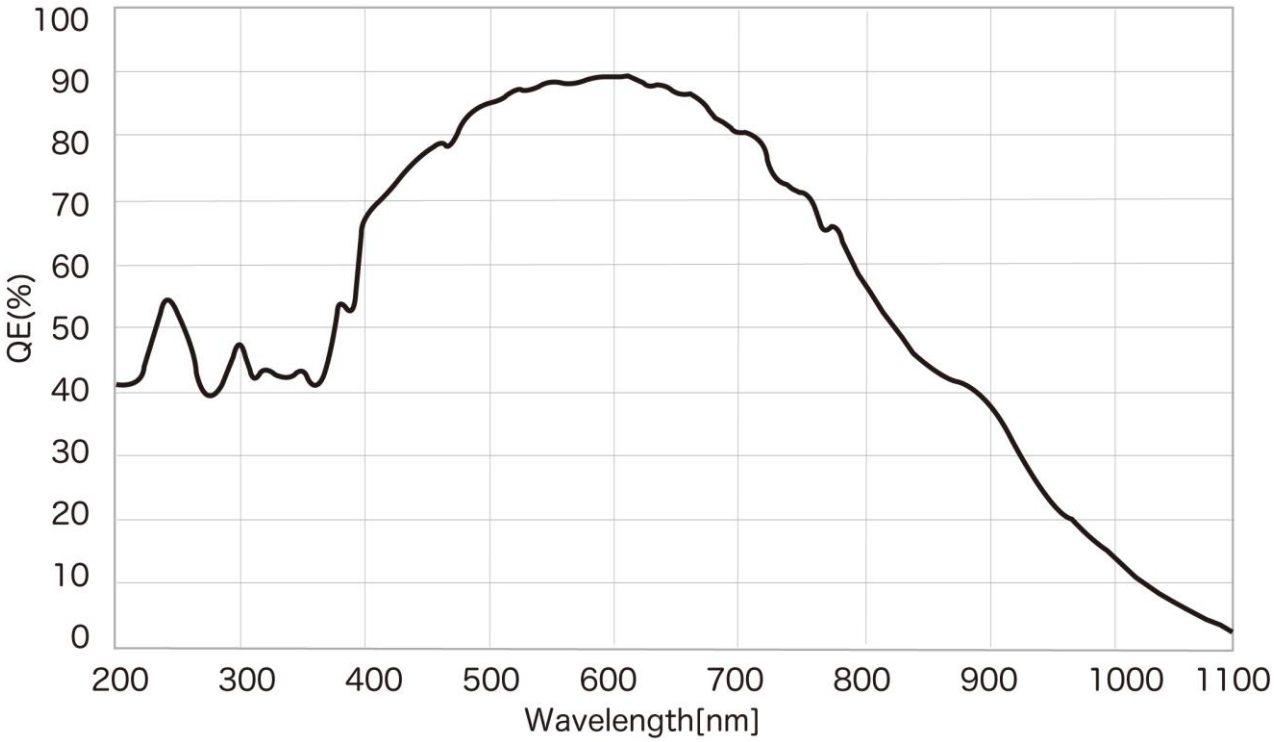
※The dimension might be changed.

7.2. Schematic Diagram of the Sensor



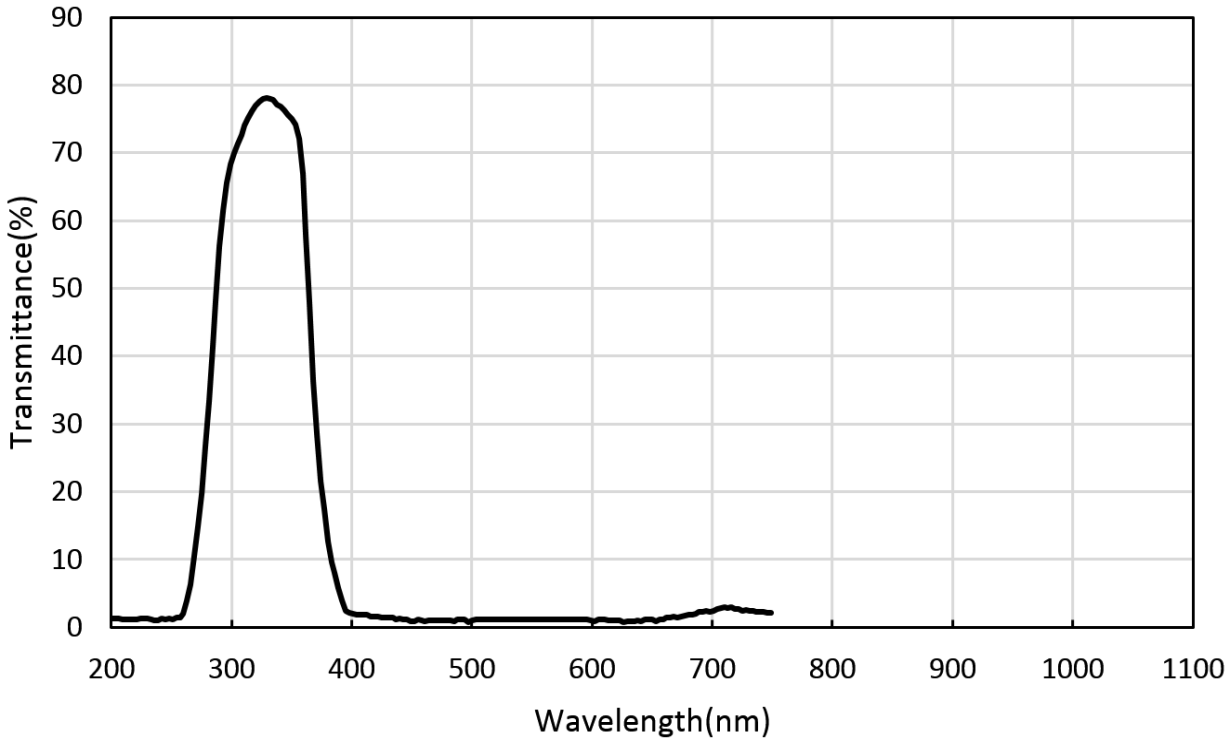
8. Spectral Sensitivity Characteristics

8.1. ARTCAM-9701UV



8.2. UV Bandpass Filter (U340) (Optional)

ARTCAM-9701UV is possible to choose to install an additional filter U340, which can absorb visible wavelengths and only allow ultraviolet wavelengths to pass.
Please refer to the following Spectral sensitivity line chart for detail.



9. Systems Requirements

9.1. Recommended System Requirements

●Host Controller

This camera is applicable to USB3.0.

Connecting to USB2.0 host controller may cause low-speed or failure to function properly.

●CPU

The driver for this camera is compatible with computer architecture "x86" or "amd64."

The speed of the imaging process is directly affected by the CPU specification.

Therefore, it is highly recommended to use a high-end CPU if possible.

●Memory

In the viewer software, there is a data buffer which can store 4 to 8 frames.

Therefore, it is necessary to reserve at least 8 frames of memory for storing the image.

(For example, when using 1.3MP color camera, 1280 x 1024 x 3 x 8 [byte] = 30[MB] is required.)

It is highly recommended to keep enough memory space especially when using high resolution camera.

●OS

Please note that this camera is applicable only to the architecture of Windows NT (32bit/64bit).

Standard functions are confirmed with OS after Windows 10.

In addition, it is recommended to use Windows 11.

Caution

■Please refer the restrictions below when you use ARTCAM series.

(1) Recommended System Requirements

If the system specifications do not meet the requirements recommended above, it may be difficult to run at the maximum frame rate.

(2) Use of other USB3.0 Hardware

The data on our camera/converter is transferred in bulk mode. Therefore, when using our camera/converter, please refrain from using other bulk-transferred USB3.0 hardware, such as memory sticks, external hard drives, external DVD players, or CD-ROMs etc.

We recommend installing a PCI USB host card to the PC and connecting external USB hardware to this port only.

(3) USB3.0 Cable Extension

We cannot guarantee the functionality of the USB3.0 camera if the user adopts USB3.0 extension cables or repeaters which are not confirmed by us. The use of extension cables or repeaters can result in variations in bandwidth, potentially leading to malfunctions such as a low frame rate or failure in recognition by the camera.

One potential cause of the issue could be insufficient regulation of the power lines, which can result in a mismatch in data signal strength.

* For inquiries regarding the recommended extension cable, please contact our sales department.

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