USB2.0 InGaAs NIR CAMERA
ARTCAM-0016TNIR-TEC
INSTRUCTION BOOKLET

0.016M pixels   ARTCAM-0016TNIR-TEC

ARTRAY
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 cannot guarantee the safety of improper uses of the camera.
5. For your safety, please follow the directions of this manual.
6. All contents are subject to change.
7. Images in this manual may have been simplified to be easier comprehended.
8. Please contact us if you find any unclear points or mistakes in this manual.
9. Quoting, copying or altering some or all parts of the manual without our permission is prohibited.
10. We are not responsible for any lost or damages on 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 keep the safety of the user, other people and their properties, 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 on human or damages on hardware may occur.

■ For Safe Use

⚠ Warning

●In following circumstances, please stop using the product and turn off the power immediately to prevent the risks of fires and electric shocks. If the product is defective, please contact us for repair or exchange. For your safety, please do not disassemble, modify or repair the camera on your own.

Please stop using the product and turn off the power immediately when:
·The product becomes smoky or gets extremely hot on the surface, or makes unusual smells or sounds.
·Foreign material or water gets into the product.
·The product falls and becomes damaged.

●Do not place the product on unstable surfaces. The product may be fallen and people may get hurt.

⚠ Caution

●Do not expose the product to steam or fumes to avoid electric shocks and fires.

●Do not leave the product in high temperature places such as inside of vehicles or under direct sunlight. High temperature may cause damages to the camera, or even cause fires.

●Do not cover the product with cloth or other materials. The product may get extremely hot and the heat may cause deformations on the parts or even cause fires.

●Please avoid dropping or shocking the product as the product may be damaged.

●Do not touch the cable with a wet hand. Such action may cause electric shocks.

●Please avoid continuously contacting the surface of the camera to your skin when the camera is being used. The surface temperature of the camera may cause 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 the dirt on surface with soft cloth or tissue paper. Do not use alcohol, thinner or benzene to avoid damaging the surface paints.

■ Export Control

This product is a List Control item subject to the Foreign Exchange and Foreign Trade Act and its relevant legislations No.1 10 (2) and (4). To export this product from Japan, obtaining export licenses from the Ministry of Economy, Trade and Industry is required. It is also necessary for our company to manage the information of users and the purposes of use. If the end users or purposes of use change after the purchase and thus cause the need to apply export licenses from Ministry of Economy, Trade and Industry, please contact the sales representative in advance.

■ Guarantee

To save the environment, we do not issue warranty in printed format. Instead, all records of the warranty periods, delivery dates and the customer information are well kept in our system.
For more details, please refer to the sites below:
Hardware Warranty: http: //www.artray.us/download/artray_warranty.pdf

■ Dispose

To dispose this product, please return the camera to us. If you decide to dispose the camera without returning it us, please follow related regulations and have the camera disposed as an industrial waste. Please always keep records of the dispose, and make sure the disposed camera cannot be accessed or used by any 3rd party.

■ Limited Responsibility

We do not guarantee the functions of this product or the descriptions on this manual to be completely adapted to the users' end applications or marketing purposes. We are also not held responsible for any direct or indirect damages caused by our products under any circumstances.

Please do not use this product on applications that require high reliability. This product is not manufactured to be used as medical, nuclear, aerospace, transportation equipment or equipment that is highly related to human safety. We are not held responsible for any damages on the users' property, equipment or personal safety caused by this product.

2. Introduction

ARTCAM-0016TNIR-TEC adopts 128x128 InGaAs (Indium gallium arsenide) sensor. The cameras have a high sensitive spectral response from 950 nm to 1700 nm.

ARTCAM-0016TNIR-TEC adopts USB2.0 interface, so image data can be delivered to PC directly without a capture board. Also, this camera is equipped with an on board memory which avoid data missing during transfer.

3. Main Features

●NIR Detection with High Sensitivity
The InGaAs sensor can detect radiation invisible to human eyes and CCD/CMOS cameras in the wavelength range between 950 nm to 1700 nm bond.

●High Resolution, High Frame Rate
ARTCAM-0016TNIR-TEC uses 128x128 pixel sensor and delivers high-speed imaging at 258 frame/second.

●TEC(Thermoelectric Cooling) Function
ARTCAM-0016TNIR-TEC equipped with Thermoelectric Cooling function to improve the data reliability.

●USB2.0 Interface
This camera adopts USB2.0 interface, so the data can be delivered to PC directly. No capture card is needed.

●InGaAs Camera Viewer Software
The camera comes with ART-VIEWER the bonded viewer software (Windows 7/8/10/11). With this software, users can easily preview images, save images and change camera settings.

●Software Development Kit
For customer who prefers to create their own image processing software or use our camera with other applications, we provide SDK upon requests.

4. The Product

1) Camera

2) USB Cable Type A-B connector cable, 3m approx.

3) AC adapter (DC12V)

4) Introduction Booklet

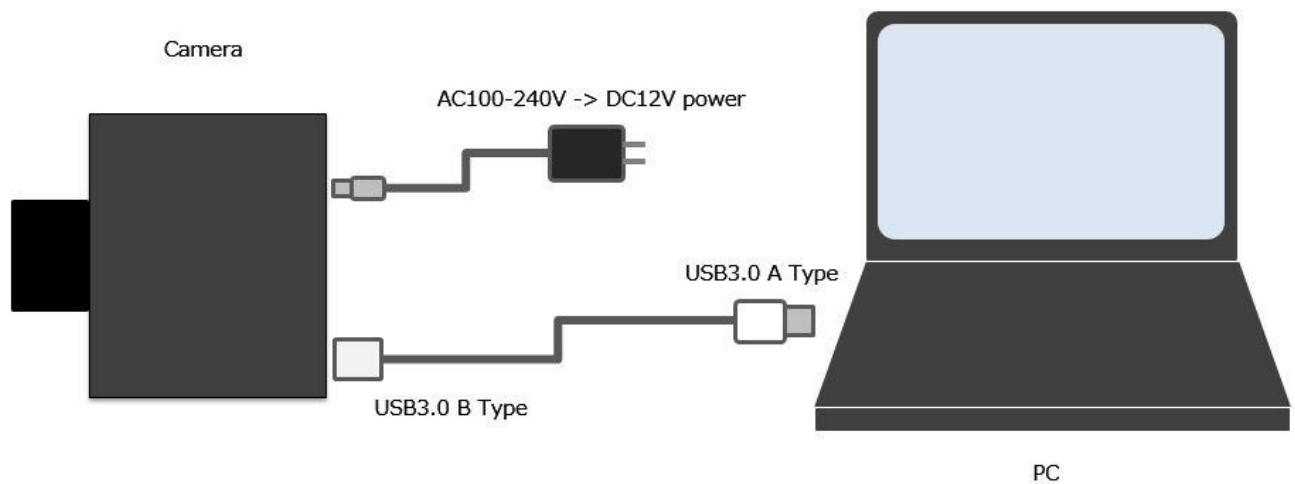5) Viewer software/Device Driver CD

6) Software Development Kit, ARTCCM-SDK

<Options>

1) NIR Lenses (C Mount Lens)

2) 5m extension cable with USB2.0 repeater

5. Connect the Camera

5.1. How to connect a camera

Please connect the camera with our standard USB 2.0 cable, when used with notebook PC or desktop PC, etc.

6. Specifications

6.1. Specification details

	ARTCAM-0016TNIR-TEC
Sensor Type	InGaAs Image Sensor
Sensor Model	G12242-0707W
Number of effective pixels	128(H)x128(V)
Pixel Size	20(H)x20(V)μm
Active Imager Size	2.56(H)x2.56(V)mm
Detected Wavelength	950~1700nm
Shutter Type	Global Shutter
Scan Mode	Progressive Scan
Operability	≥99%
Interface	USB2.0 Bulk Transfer
A/D Resolution	14bit
Frame Rate	258fps
Shutter Speed	1/1000000 ~ 0.013107 sec
Detectivity	1μV/e-
Full Well Capacity	1000Ke-
Synchronization System	Internal Synchronization
Lens Mount	C Mount
Power	DC12V
Power Consumption	Under Approx.20W
Ambient Conditions	Operating Temperature/Humidity : 0~35°C/10~80%(Non condensing) Storage Temperature/Humidity : 0~60°C/10~95%(Non condensing)
External Dimensions	71.5(W)x61.5(H)x61.5(D)mm *Lens, tripod and cables not included
Weight	Approx. 350g *Lens, tripod and cables not included

6.2. Shutter Speed Setting

The exposure time (electronic shutter speed) can be set of the camera.

The exposure time can be calculated by the following formula:

Exposure Time = Shutter Value * 0.2 [μsec] (Setting Range 5 ~ 65535)

Exposure Time (min) = 5 * 0.2 = 1 [μsec.] = 1/1000000 [μsec.]

Exposure Time (max) = 65535 * 0.2 = 13107 [μsec.]

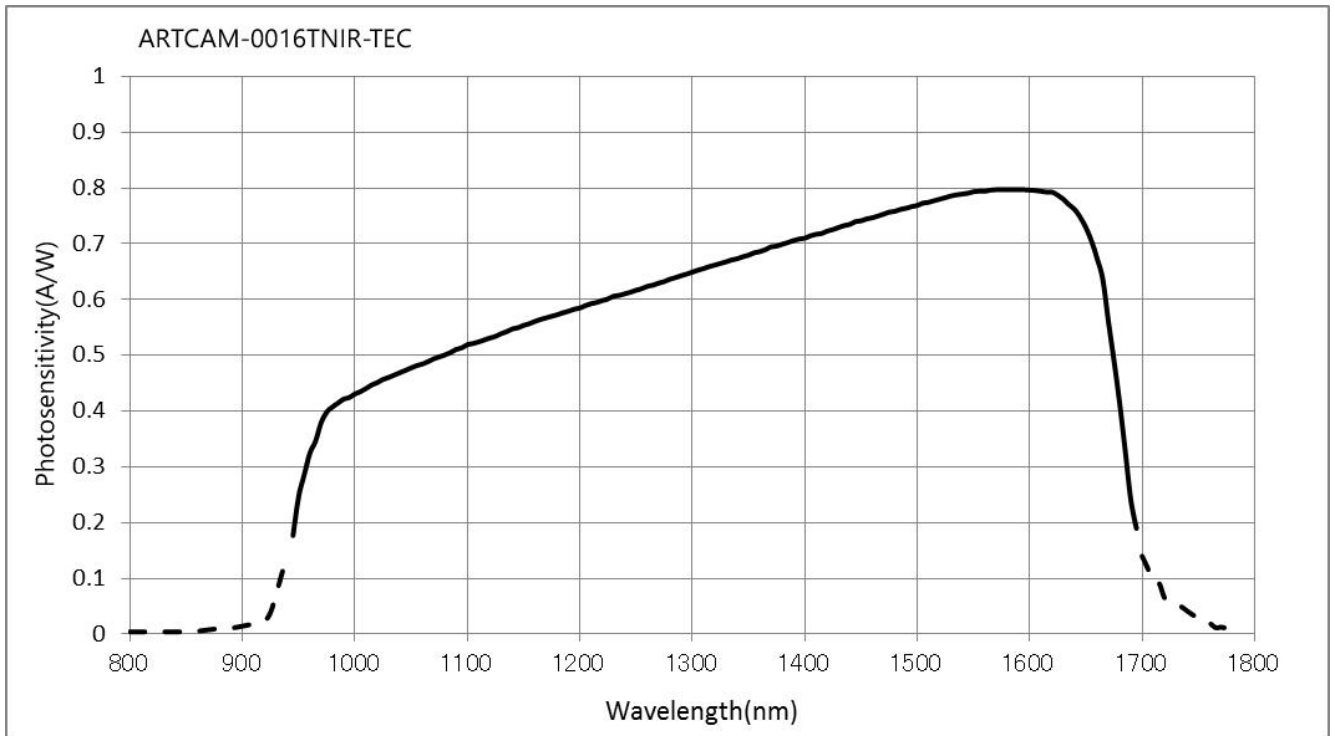≒ 1/76.29 [msec.]

7. External Dimensions

7.1. ARTCAM-0016TNIR-TEC
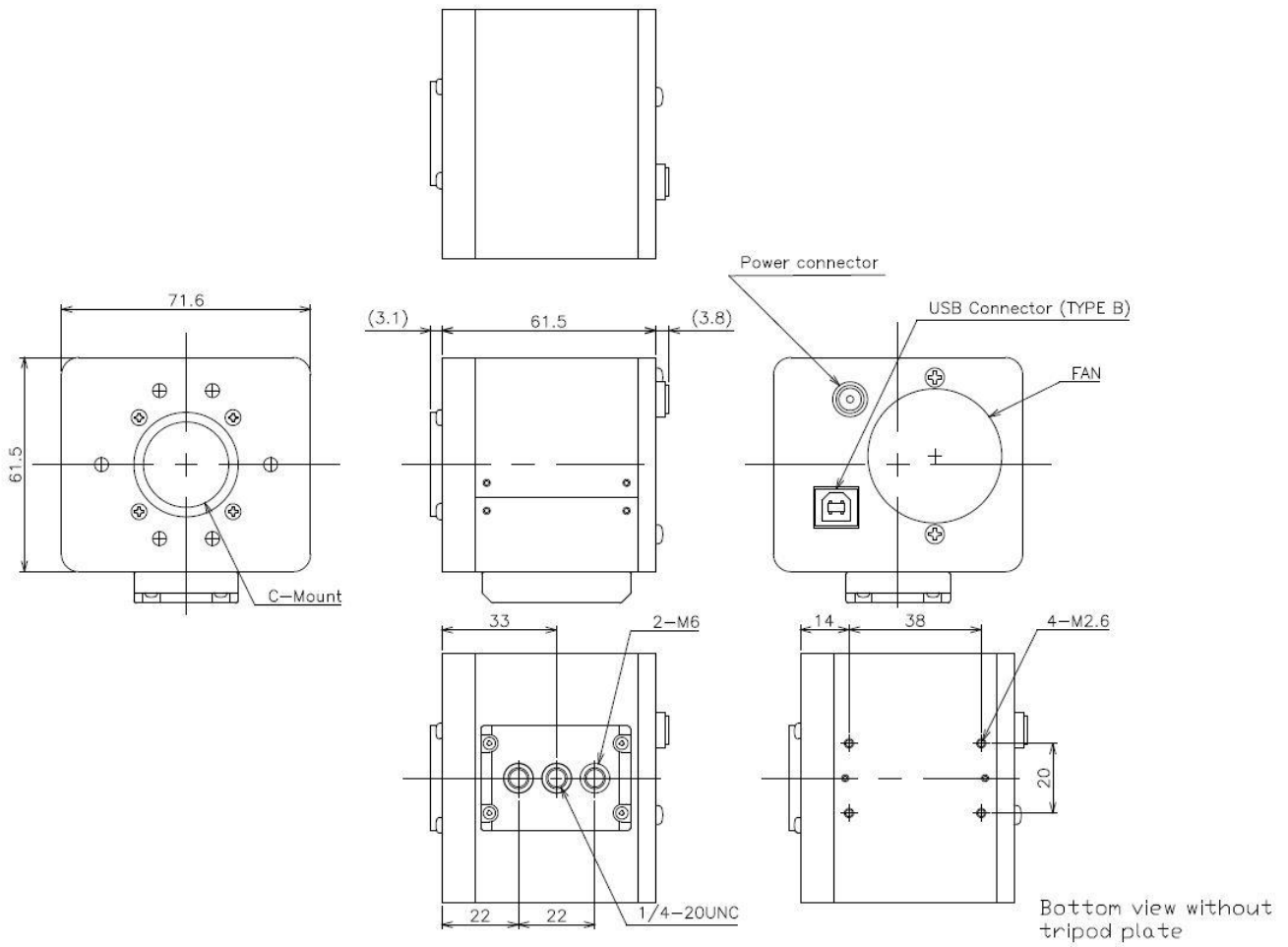
8. Spectral sensitivity characteristics

8.1. ARTCAM-0016TNIR-TEC

9. System Requirements

9.1. Recommended System Requirements

●Host Controller

This camera is applicable to USB 2.0.

●CPU

The driver of this camera is applicable to computer architecture "x86" or "amd64".

The specification of CPU effects directly the imaging process speed, therefore it is highly recommended to utilize 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 keep spare space at least for 8 frames in the memory.

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

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

●OS

This camera is applicable only to the architecture of Windows NT (32bit/64bit).

Standard functions are confirmed with OS after Windows 7.

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) Connection of Multiple USB Devices

When connecting multiple USB devices to one USB host controller, some USB device may fail to function stably depending on the specifications of the host controller.

(Problem of power supply, data transfer bandwidth, etc.)

To avoid power supply problem, it is recommended to use powered USB hub.

(3) USB2.0 Cable Extension

We cannot guarantee the functionality of the USB2.0 camera if the user adopts USB2.0 extension cables or repeaters which are not confirmed by us. With the extension cables or repeaters, the bandwidth of transfer may differ, and thus caused malfunctions such as a low frame rate or recognition failure on the camera.

What may cause the problem is that the regulation of the power lines becomes not enough, and so causes impudence mismatch on data signals.

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

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