

USB2.0 CMOS CAMERAS SMALL TYPE

ARTCAM-SS Series

INSTRUCTION BOOKLET

| | |
|--------------|----------------------|
| 0.36M pixels | ARTCAM-036SS Series |
| 1.3M pixels | ARTCAM-130SS Series |
| 2.0M pixels | ARTCAM-D131SS Series |
| 3.0M pixels | ARTCAM-300SS Series |
| 5.0M pixels | ARTCAM-500SS Series |
| 9.0M pixels | ARTCAM-900SS Series |
| 10.0M pixels | ARTCAM-1000SS Series |

ARTRAY

ARTRAY CO., LTD.

Contents

| | |
|-----------------------------|----|
| 1. Attention..... | 3 |
| 2. Introduction..... | 6 |
| 3. Main Features..... | 6 |
| 4. The Product..... | 7 |
| 5. Connect the Camera..... | 8 |
| 6. Specifications..... | 9 |
| 7. External Dimensions..... | 13 |
| 8. Recommended PC..... | 17 |

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, physical injury on human or damages on hardware may occur.



Caution

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

Electro Magnetic Interference

●The camera may interference with electronic devices such as TV and radio. Please do not place the camera next to such equipment.

■Export Control

The Government of Japan controls military sensitive goods and technologies including relevant dual-use goods and technologies.

This product is a Catch-all Control item subject to the Foreign Exchange and Foreign Trade Act and its relevant legislations. Except for exporting to the 27 white countries designated in the Cabinet Order, export licenses are required if the products are going to be used 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.

*The 27 white countries not under the UNSC Arms Embargo :

Argentina, Australia, Austria, Belgium, Bulgaria, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Republic of Korea, Luxemburg, Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States

About the Japanese Security Export Controls, please refer to the webpage for Security Export Control Policy, The Ministry of Economy, Trade and Industry :

<http://www.meti.go.jp/policy/anpo/englishpage.html>

■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

2. Introduction

ARTCAM-SS Series is CMOS cameras for industrial use.

This series adopt USB2.0 interface, so the data can be delivered to PC directly without a capture board.

We provide a variety including cased cameras, board cameras which can be easily incorporated to other equipment, and so on.

3. Main Features

- High Resolution, High Frame Rate

We provide high speed CMOS cameras of a wide range of resolutions from 0.36 mega pixels to 10 mega pixels.

- USB2.0 Interface

Artray SS series adopts USB2.0 interface, so the data can be delivered to PC directly and no capture board is needed.

- Small and Light

Artray SS series is available with C-mount. The small dimensions and light weight makes it easily to be installed in different places. Also, the board type SS series camera with board lens is easy to be incorporated with other machines.

- Varieties to Your Needs

Artray SS series has a variety including cased cameras, cameras with mini B connectors, board type with board lens and board type with C-Mount cameras.

For ARTCAM-036SS / 130SS / 500SS series, monochrome and near infrared types are available upon your choice.

- ROI (Region Of Interest)

One major benefit of CMOS sensor is the ROI function which enables readout of designated partial images with a faster transmission speed.

- Sub-sampling function

This function results in a more pleasing output image with reduced subsampling artifacts and improves the frame rate.

- Global shutter (ARTCAM-036SS series)

ARTCAM-036SS series adopts global shutter which is very suitable for machine vision.

- Bounded Viewer Software

We provide the Viewer Software - ART-Viewer (Windows XP/Vista/7).

With this software, users can easily preview, save images and change camera settings.

- Direct Show compatible

Except for being recognized as a standard USB device on the PC, some of the cameras may also be recognized as a DirectShow device.

(Please check if the model is DirectShow compatible with the sales representative before purchase)

- 2D Measurement & Filing Software(Optional)

Useful 2D measuring functions are available with the optional 2D Measuring & Filing Software - ART-MEASURE.

- Recording Software(Optional)

The optional recording software - ART-REC allows the user to save movies in AVI format.

- Software Development Kit(Optional)

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 SS series : One end of the cable integrated to the camera, 1.8m approx.

SSK series : TYPE A-mini B connector, 1m approx.

SS-OP series : TYPE A- mini B connector (1m approx.) or one end customized TYPE A connector
(1.8m approx.) 2 types available.

3) Instruction Booklet

4) Viewer software/Device Driver CD

<Options>

1) C Mount lens

2) 2 Measurement & Filing Software [ART-MEASURE]

3) Recording Software [ART-REC]

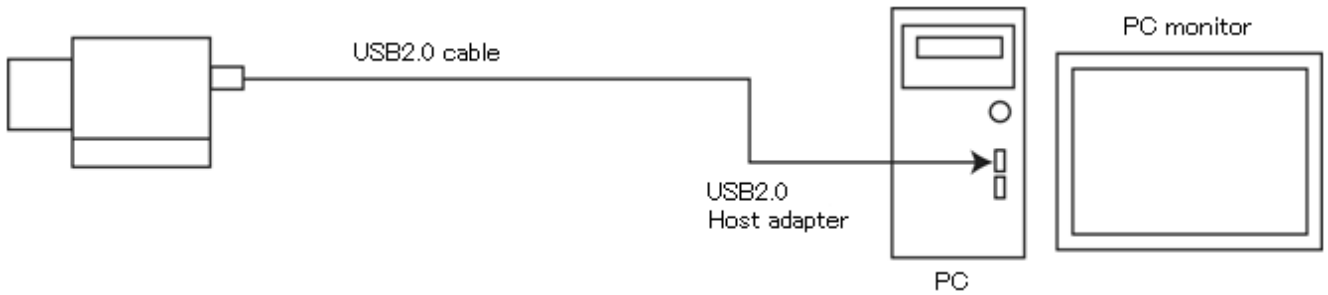
4) Software Development Kit [ARTCCM-SDK]

5) LabView DLL

6) 5m extension cable with USB2.0 repeater

5. Connect the Camera

5-1 How to connect a camera



5-2 Shutter Speed

Shutter speed can be changed on the standard viewer software ART-Viewer.

The shutter speed is set directly on the sensor register, so please refer to the following formulas for the real exposure time.

| Model | Method |
|---------------|--|
| 036SS Series | Range : 1~32767(Exposure Time : 1/32967~1sec) $\text{Exposure Time} = (\text{Shutter Value} \times (640 + 88)) \times 0.0417 \quad [\mu\text{sec}]$ *640x480 pixels at 24MHz |
| 130SS Series | Range : 1~16383(Exposure Time : 1/17991~1.033sec) $\text{Exposure Time} = (\text{Shutter Value} \times (1280 + 234) - 180) \times 0.0417 \quad [\mu\text{sec}]$ *1280x1024 pixels at 24MHz |
| D131SS Series | Range : 1~16383(Exposure Time : 1/12320~1.330sec) $\text{Exposure Time} = (\text{Shutter Value} \times 1948) \times 0.0417 \quad [\mu\text{sec}]$ *1600x1200 pixels at 24MHz |
| 300SS Series | Range : 1~16383(Exposure Time : 1/9760~1.679sec) $\text{Exposure Time} = (\text{Shutter Value} \times (2048 + 411)) \times 0.0417 \quad [\mu\text{sec}]$ *2048x1536 pixels at 24MHz |
| 500SS Series | Range : 1~16383(Exposure Time : 1/8702~2.173sec) $\text{Exposure Time} = (\text{Shutter Value} \times (2592 + 592) - 426) \times 0.0417 \quad [\mu\text{sec}]$ *2592x1944 pixels at 24MHz |
| 900SS Series | Range : 1~8191(Exposure Time : 1/8702~2.42 sec) $\text{Exposure Time} = ((\text{Shutter Value} \times (3486 + 60)) \times 2) + 2761 \times 0.0417 \quad [\mu\text{sec}]$ *3488x2616 pixels at 24MHz |
| 1000SS Series | Range : 1~8191(Exposure Time : 1/3507~1.348sec) $\text{Exposure Time} = (\text{Shutter Value} \times 3952 + 2891) \times 0.0417 \quad [\mu\text{sec}]$ *3840x2748 pixels at 24MHz |

6. Specifications

6-1 Color Model(1)

| | ARTCAM- 036SS 036SSK 036SS-OP 036SS-OP-CM | ARTCAM- 130SS 130SSK 130SS-OP 130SS-OP-CM | ARTCAM- D131SS D131SSK D131SS-OP D131SS-OP-CM | ARTCAM- 300SS 300SSK 300SS-OP 300SS-OP-CM |
|------------------------|---|---|---|---|
| Sensor Type | CMOS Color Image Sensor | | | |
| Active Pixels | 752(H)×480(V) | 1280(H)×1024(V) | 1600(H)×1200(V) | 2048(H)×1536(V) |
| Active Imager Size | 4.51(H)×2.88(V)mm 1/3" | 6.66(H)×5.32(V)mm 1/2" | 4.73(H)×3.52(V)mm 1/3.2" | 6.55(H)×4.92(V)mm 1/2" |
| Scan Mode | Progressive Scan | | | |
| Pixel Size | 6.0(H)×6.0(V)μm | 5.2(H)×5.2(V)μm | 2.8(H)×2.8(V)μm | 3.2(H)×3.2(V)μm |
| Shutter Type | Global Shutter | Rolling Shutter | | |
| Color Filter Array | RGB Bayer Pattern | | | |
| Frame Rate | 60fps | 15fps | 4.5fps | 6fps |
| Shutter Speed | 1/32967~1s | 1/17992~1s | 1/12320~1.330s | 1/9760~1.679s |
| Interface | USB2.0 Bulk transfer | | | |
| Synchronization System | Internal Synchronization | | | |
| Lens Mount | C MOUNT (036SS, 036SSK, 036SS-OP-CM) Board Lens Mount M12 P0.5(036SS-OP) | C MOUNT (130SS, 130SSK, 130SS-OP-CM) Board Lens Mount M12 P0.5(130SS-OP) | C MOUNT (D131SS, D131SSK, D131SS-OP-CM) Board Lens Mount M12 P0.5(D131SS-OP) | C MOUNT (300SS, 300SSK, 300SS-OP-CM) Board Lens Mount M12 P0.5 (300SS-OP) |
| Power | DC5V(Supplied by USB port) | | | |
| Power Consumption | Under Approx. 2W | | | |
| Ambient Conditions | Operating Temperature/Humidity : 0~35°C /10~80%(Non condensing) Storage Temperature/Humidity : 0~60°C /10~95%(Non condensing) | | | |
| External Dimensions | 33.8(W)×33.8(H)×50.5(D)mm (036SS) 33.8(W)×33.8(H)×41.5(D)mm(036SSK) 28.0(W)×28.0(H)×26.0(D)mm(036SS-OP) 33.8(W)×33.8(H)×28.8(D)mm (036SS-OP-CM) *Lens, tripod not included. | 33.8(W)×33.8(H)×50.5(D)mm (130SS) 33.8(W)×33.8(H)×41.5(D)mm(130SSK) 28.0(W)×28.0(H)×26.0(D)mm(130SS-OP) 33.8(W)×33.8(H)×29.3(D)mm (130SS-OP-CM) *Lens, tripod not included. | 33.8(W)×33.8(H)×50.5(D)mm (D131SS) 33.8(W)×33.8(H)×41.5(D)mm(D131SSK) 28.0(W)×28.0(H)×26.0(D)mm(D131SS-OP) 33.8(W)×33.8(H)×29.5(D)mm (D131SS-OP-CM) *Lens, tripod not included. | 33.8(W)×33.8(H)×50.5(D)mm (300SS) 33.8(W)×33.8(H)×41.5(D)mm(300SSK) 28.0(W)×28.0(H)×26.0(D)mm(300SS-OP) 33.8(W)×33.8(H)×29.5(D)mm (300SS-OP-CM) *Lens, tripod not included. |
| Weight | Approx.60g(036SS) Approx.56g(036SSK) Approx.12g(036SS-OP) Approx.32g(036SS-OP-CM) *Lens, cable not included. | Approx.60g(130SS) Approx.56g(130SSK) Approx.12g(130SS-OP) Approx.32g(130SS-OP-CM) *Lens, cable not included. | Approx.60g(D131SS) Approx.56g(D131SSK) Approx.12g(D131SS-OP) Approx.32g(D131SS-OP-CM) *Lens, cable not included. | Approx.60g(300SS) Approx.56g(300SSK) Approx.12g(300SS-OP) Approx.32g(300SS-OP-CM) *Lens, cable not included. |

6-2 Color Model (2)

| | ARTCAM- 500SS 500SSK 500SS-OP 500SS-OP-CM | ARTCAM- 900SS 900SSK 900SS-OP 900SS-OP-CM | ARTCAM- 1000SS 1000SSK 1000SS-OP 1000SS-OP-CM |
|------------------------|---|---|---|
| Sensor Type | CMOS Color Image Sensor | | |
| Active Pixels | 2592(H)×1944(V) | 3488(H)×2616(V) | 3840(H)×2768(V) |
| Active Imager Size | 5.70(H)×4.28(V)mm 1/2.5" | 6.10(H)×4.58(V)mm 1/2.3" | 6.41(H)×4.59(V)mm 1/2.3" |
| Scan Mode | Progressive Scan | | |
| Pixel Size | 2.2(H)×2.2(V)μm | 1.75(H)×1.75(V)μm | 1.67(H)×1.67(V)μm |
| Shutter Type | Rolling Shutter | | |
| Color Filter Array | RGB Bayer Pattern | | |
| Frame Rate | 3.75fps | 3.2fps | 2.2fps |
| Shutter Speed | 1/8702~2.173s | 1/8702~2.42s | 1/3502~1.348s |
| Interface | USB2.0 Bulk transfer | | |
| Synchronization System | Internal Synchronization | | |
| Lens Mount | C MOUNT (500SS, 500SSK, 500SS-OP-CM) Board Lens Mount M12 P0.5(500SS-OP) | C MOUNT (500SS, 500SSK, 500SS-OP-CM) Board Lens Mount M12 P0.5(500SS-OP) | C MOUNT (1000SS, 1000SSK, 1000SS-OP-CM) Board Lens Mount M12 P0.5(1000SS-OP) |
| Power | DC5V(Supplied by USB port) | | |
| Power Consumption | Under Approx. 2W | | |
| Ambient Conditions | Operating Temperature/Humidity : 0~35°C /10~80%(Non condensing) Storage Temperature/Humidity : 0~60°C /10~95%(Non condensing) | | |
| External Dimensions | 33.8(W)×33.8(H)×50.5(D)mm (500SS) 33.8(W)×33.8(H)×41.5(D)mm(500SSK) 28.0(W)×28.0(H)×26.0(D)mm(500SS-OP) 33.8(W)×33.8(H)×28.9(D)mm(500SS-OP-CM) *Lens, tripod not included. | 33.8(W)×33.8(H)×50.5(D)mm (900SS) 33.8(W)×33.8(H)×41.5(D)mm(900SSK) 28.0(W)×28.0(H)×26.0(D)mm(900SS-OP) 33.8(W)×33.8(H)×28.9(D)mm(900SS-OP-CM) *Lens, tripod not included. | 33.8(W)×33.8(H)×50.5(D)mm (1000SS) 33.8(W)×33.8(H)×41.5(D)mm(1000SSK) 28.0(W)×28.0(H)×26.0(D)mm(1000SS-OP) 33.8(W)×33.8(H)×28.9(D)mm(1000SS-OP-CM) *Lens, tripod not included. |
| Weight | Approx.60g(500SS) Approx.56g(500SSK) Approx.12g(500SS-OP) Approx.32g(500SS-OP-CM) *Lens, cable not included. | Approx.60g(900SS) Approx.56g(900SSK) Approx.12g(900SS-OP) Approx.32g(900SS-OP-CM) *Lens, cable not included. | Approx.60g(1000SS) Approx.56g(1000SSK) Approx.12g(1000SS-OP) Approx.32g(1000SS-OP-CM) *Lens, cable not included. |

6-3 Monochrome Model

| | | | |
|------------------------|--|--|---|
| | ARTCAM- 036SS-BW 036SSK-BW 036SS-BW-OP 036SS-BW-OP-CM | ARTCAM- 130SS-BW 130SSK-BW 130SS-BW-OP 130SS- BW-OP-CM | ARTCAM- 500SS-BW 500SSK-BW 500SS-BW-OP 500SS-BW-OP-CM |
| Sensor Type | CMOS Monochrome Image Sensor | | |
| Active Pixels | 752(H)×480(V) | 1280 (H)×1024(V) | 2592(H)×1944(V) |
| Active Imager Size | 4.51(H)×2.88(V)mm 1/3" | 6.66(H)×5.32(V)mm 1/2" | 5.70(H)×4.28(V)mm 1/2.5" |
| Scan Mode | Progressive Scan | | |
| Pixel Size | 6.0(H)×6.0(V)μm | 5.2 (H)×5.2(V)μm | 2.2(H)×2.2(V)μm |
| Shutter Type | Global Shutter | Rolling Shutter | |
| Frame Rate | 60fps | 15fps | 3.75fps |
| Shutter Speed | 1/32967~1s | 1/17992~1s | 1/8702~2.173s |
| Interface | USB2.0 Bulk transfer | | |
| Synchronization System | Internal Synchronization | | |
| Lens Mount | C MOUNT (036SS-BW, 036SSK-BW, 036SS-BW-OP-CM) Board Lens Mount M12 P0.5(036SS-BW-OP) | C MOUNT (130SS-BW, 130SSK-BW, 130SS-BW-OP-CM) Board Lens Mount M12 P0.5(130SS-BW-OP) | C MOUNT (500SS-BW, 500SSK-BW, 500SS-BW-OP-CM) Board Lens Mount M12 P0.5(500SS-BW-OP) |
| Power | DC5V(Supplied by USB port) | | |
| Power Consumption | Under Approx. 2W | | |
| Ambient Conditions | Operating Temperature/Humidity : 0~35°C /10~80%(Non condensing) Storage Temperature/Humidity : 0~60°C /10~95%(Non condensing) | | |
| External Dimensions | 33.8(W)×33.8(H)×50.5(D)mm (036SS-BW) 33.8(W)×33.8(H)×41.5(D)mm(036SSK-BW) 28.0(W)×28.0(H)×26.0(D)mm(036SS-BW-OP) 33.8(W)×33.8(H)×28.5 (D)mm(036SS-BW-OP-CM) *Lens, tripod not included. | 33.8(W)×33.8(H)×50.5(D)mm (130SS-BW) 33.8(W)×33.8(H)×41.5(D)mm(130SSK-BW) 28.0(W)×28.0(H)×26.0(D)mm(130SS-BW-OP) 33.8(W)×33.8(H)×29.3 (D)mm(130SS-BW-OP-CM) *Lens, tripod not included. | 33.8(W)×33.8(H)×50.5(D)mm (500SS-BW) 33.8(W)×33.8(H)×41.5(D)mm(500SSK-BW) 28.0(W)×28.0(H)×26.0(D)mm(500SS-BW-OP) 33.8(W)×33.8(H)×28.9(D)mm(500SS-BW-OP-CM) *Lens, tripod not included. |
| Weight | Approx.60g(036SS-BW) Approx.56g(036SSK-BW) Approx.12g(036SS-BW-OP) Approx.32g(036SS-BW-OP-CM) *Lens, cable not included. | Approx.60g(130SS-BW) Approx.56g(130SSK-BW) Approx.12g(130SS-BW-OP) Approx.32g(130SS-BW-OP-CM) *Lens, cable not included. | Approx.60g(500SS-BW) Approx.56g(500SSK-BW) Approx.12g(500SS-BW-OP) Approx.32g(500SS-BW-OP-CM) *Lens, cable not included. |

6-4 NIR Model

| | | | |
|------------------------|---|--|--|
| | ARTCAM- 036SS-NIR 036SSK-NIR 036SS-NIR-OP 036SS-NIR-OP-CM | ARTCAM- 130SS-NIR 130SSK-NIR 130SS-NIR-OP 130SS-NIR-OP-CM | ARTCAM- 500SS-NIR 500SSK-NIR 500SS-NIR-OP 500SS-NIR-OP-CM |
| Sensor Type | CMOS Monochrome Image Sensor | | |
| Active Pixels | 752(H)×480(V) | 1280 (H)×1024(V) | 2592(H)×1944(V) |
| Active Imager Size | 4.51(H)×2.88(V)mm 1/3" | 6.66(H)×5.32(V)mm 1/2" | 5.70(H)×4.28(V)mm 1/2.5" |
| Scan Mode | Progressive Scan | | |
| Pixel Size | 6.0(H)×6.0(V)μm | 5.2 (H)×5.2(V)μm | 2.2(H)×2.2(V)μm |
| Shutter Type | Global Shutter | Rolling Shutter | |
| Frame Rate | 60fps | 15fps | 3.75fps |
| Shutter Speed | 1/32967~1s | 1/17992~1s | 1/8702~2.173s |
| Interface | USB2.0 Bulk transfer | | |
| Synchronization System | Internal Synchronization | | |
| Lens Mount | C MOUNT (036SS-NIR, 036SSK-NIR, 036SS-NIR-OP-CM) Board Lens Mount M12 P0.5(036SS-NIR-OP) | C MOUNT (130SS-NIR, 130SSK-NIR, 130SS-NIR-OP-CM) Board Lens Mount M12 P0.5(130SS-NIR-OP) | C MOUNT (500SS-NIR, 500SSK-NIR, 500SS-NIR-OP-CM) Board Lens Mount M12 P0.5(500SS-NIR-OP) |
| Power | DC5V(Supplied by USB port) | | |
| Power Consumption | Under Approx. 2W | | |
| Ambient Conditions | Operating Temperature/Humidity : 0~35°C /10~80%(Non condensing) Storage Temperature/Humidity : 0~60°C /10~95%(Non condensing) | | |
| External Dimensions | 33.8(W)×33.8(H)×50.5(D)mm (036SS-NIR) 33.8(W)×33.8(H)×41.5(D)mm(036SSK-NIR) 28.0(W)×28.0(H)×26.0(D)mm(036SS-NIR-OP) 33.8(W)×33.8(H)×29.7(D)mm(036SS-NIR-OP-CM) *Lens, tripod not included. | 33.8(W)×33.8(H)×50.5(D)mm (130SS-NIR) 33.8(W)×33.8(H)×41.5(D)mm(130SSK-NIR) 28.0(W)×28.0(H)×26.0(D)mm(130SS-NIR-OP) 33.8(W)×33.8(H)×30.5 (D)mm(130SS-NIR-OP-CM) *Lens, tripod not included. | 33.8(W)×33.8(H)×50.5(D)mm (500SS-NIR) 33.8(W)×33.8(H)×41.5(D)mm(500SSK-NIR) 28.0(W)×28.0(H)×26.0(D)mm(500SS-NIR-OP) 33.8(W)×33.8(H)×30.1 (D)mm(500SS-NIR-OP-CM) *Lens, tripod not included. |
| Weight | Approx.60g(036SS-NIR) Approx.56g(036SSK-NIR) Approx.12g(036SS-NIR-OP) Approx.32g(036SS-NIR-OP-CM) *Lens, cable not included. | Approx.60g(130SS-NIR) Approx.56g(130SSK-NIR) Approx.12g(130SS-NIR-OP) Approx.32g(130SS-NIR-OP-CM) *Lens, cable not included. | Approx.60g(500SS-NIR) Approx.56g(500SSK-NIR) Approx.12g(500SS-NIR-OP) Approx.32g(500SS-NIR-OP-CM) *Lens, cable not included. |

7. External Dimensions

7-1 C-MOUNT, CASED, USB CABLE TYPE

ARTCAM-036SS/036SS-BW/036SS-NIR

ARTCAM-130SS/130SS-BW/130SS-NIR

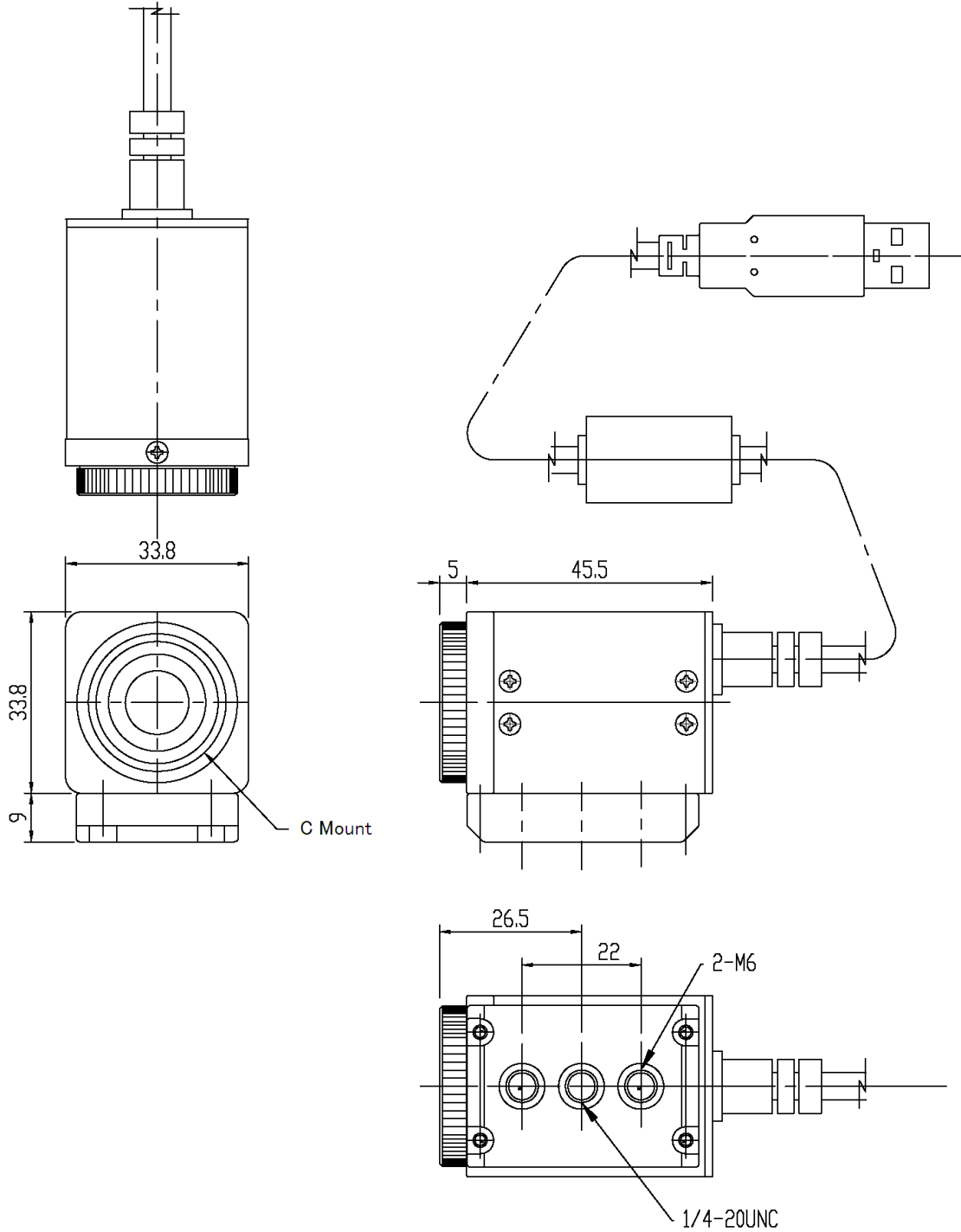
ARTCAM-D131SS

ARTCAM-300SS

ARTCAM-500SS/500SS-BW/500SS-NIR

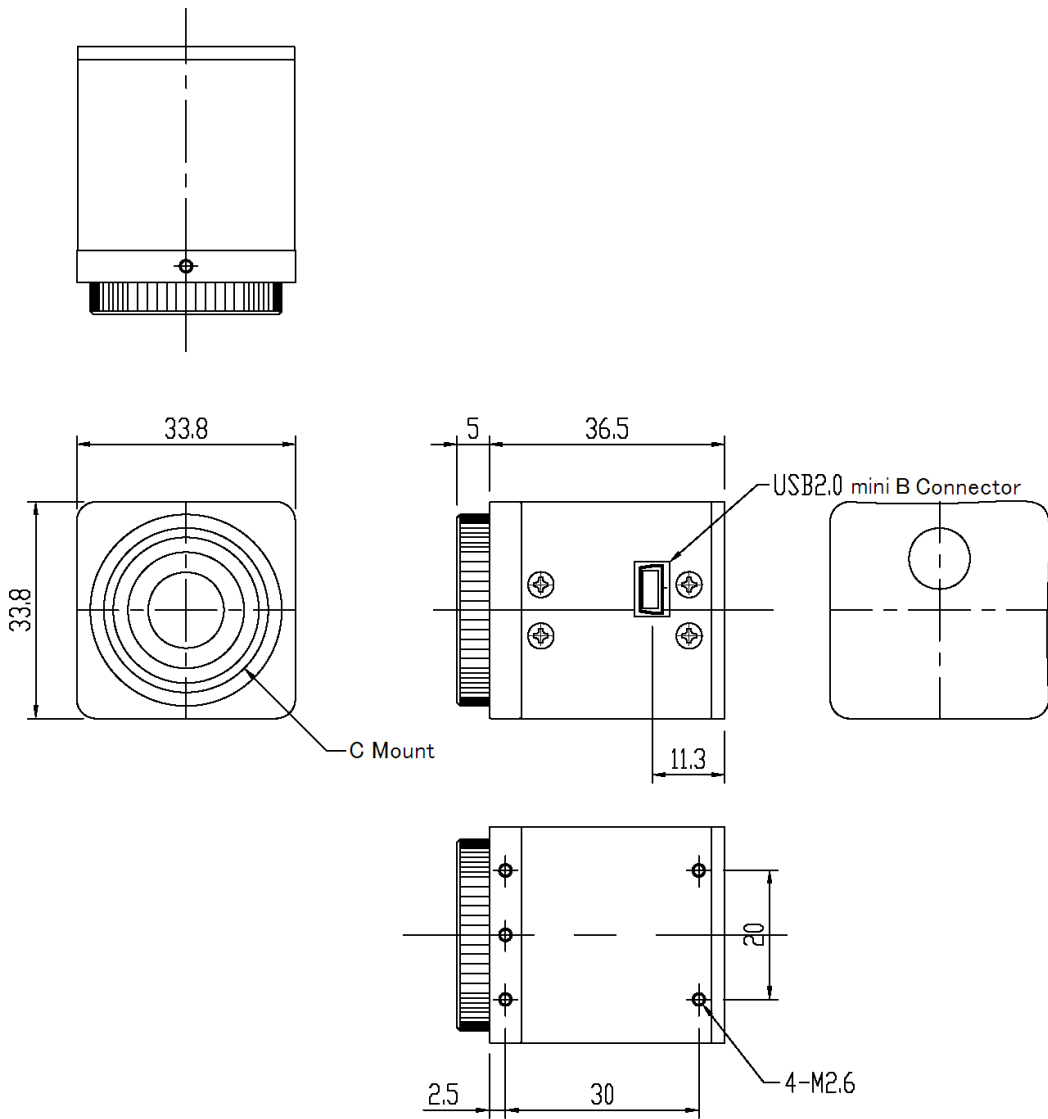
ARTCAM-900SS

ARTCAM-1000SS



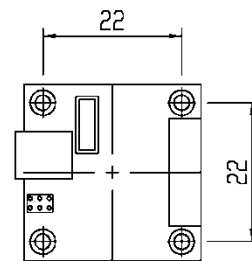
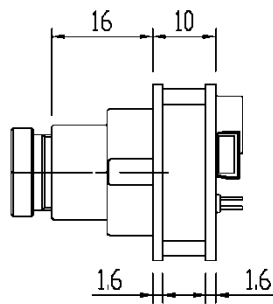
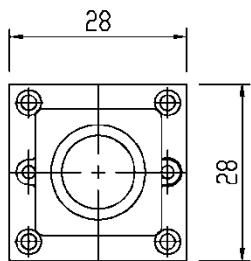
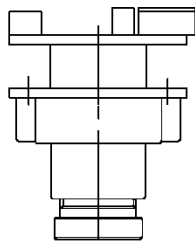
7-2 C MOUNT, CASED, USB MINI B CONNECTOR TYPE

- ARTCAM-036SSK/036SSK-BW/036SSK-NIR
- ARTCAM-130SSK/130SSK-BW/130SSK-NIR
- ARTCAM-D131SSK
- ARTCAM-300SSK
- ARTCAM-500SSK/500SSK-BW/500SSK-NIR
- ARTCAM-900SSK
- ARTCAM-1000SSK



7-3 BOARD LENS, BOARD TYPE

- ARTCAM-036SS-OP/036SS-BW-OP/036SS-NIR-OP
- ARTCAM-130SS-OP/130SS-BW-OP/130SS-NIR-OP
- ARTCAM-D131SS-OP
- ARTCAM-300SS-OP
- ARTCAM-500SS-OP/500SS-BW-OP/500SS-NIR-OP
- ARTCAM-900SS-OP
- ARTCAM-1000SS-OP



7-4 C-MOUNT, BOARD TYPE

- ARTCAM-036SS-OP-CM/036SS-BW-OP-CM/036SS-NIR-OP-CM
- ARTCAM-130SS-OP-CM/130SS-BW-OP-CM/130SS-NIR-OP-CM
- ARTCAM-D131SS-OP-CM
- ARTCAM-300SS-OP-CM
- ARTCAM-500SS-OP-CM/500SS-BW-OP-CM/500SS-NIR-OP-CM
- ARTCAM-900SS-OP-CM
- ARTCAM-1000SS-OP-CM

*The length of this spacer varies by model

