

InGaAs/GaAsSb CAMERA

ARTCAM-2350SWIR

INSTRUCTION BOOKLET

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## 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

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](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. Structure

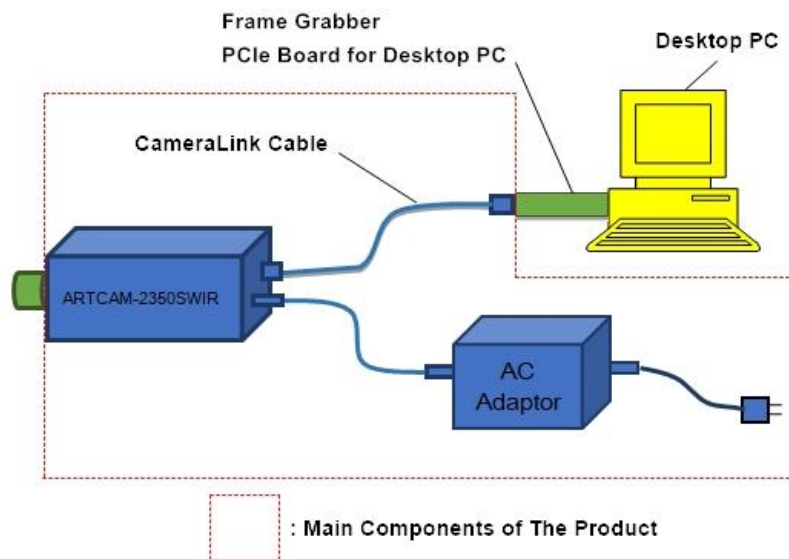
Table 1 shows the main components of ARTCAM-2350SWIR.

**Table 1 Main components of ARTCAM-2350SWIR\***

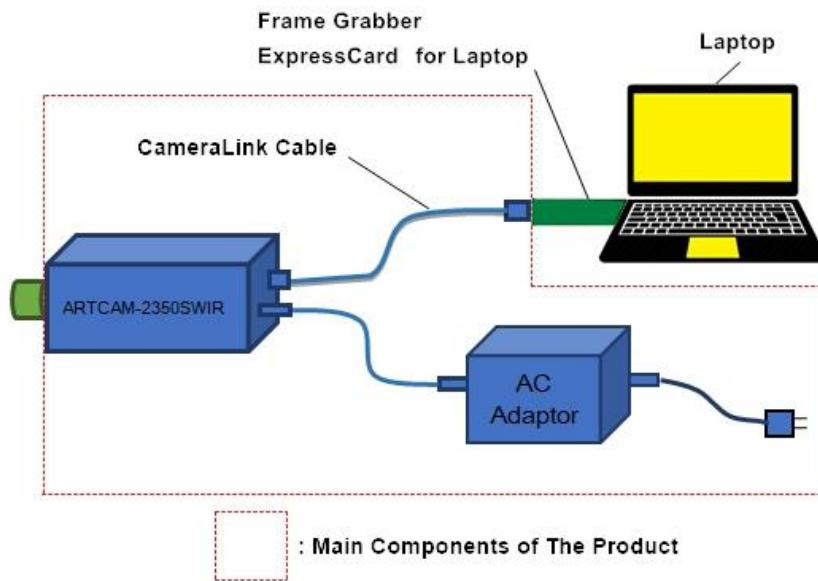
Item	Pcs	Model	Remark
NIR Area Camera	1	ARTCAM-2350SWIR	
CameraLink Cable	1	OKI Electric Cable CL-S-MS-050 (for grabber board) or CL-S-SS-050 (for grabber card)	5m length
AC Adaptor	1	GST280A24	1m length
Adapter Power Cord Cable	1	–	1.8m length
Power Adapter Cable 6PIN to 4PIN	1	–	5m length
Sample Software	1	–	
Instruction Booklet	1	–	This Booklet
Installation Guide for Camera Link Converter	1	–	

\* This product does not include lens, frame grabber, USB3.0 cable, Converter, Desktop PC and Laptop, which are options.

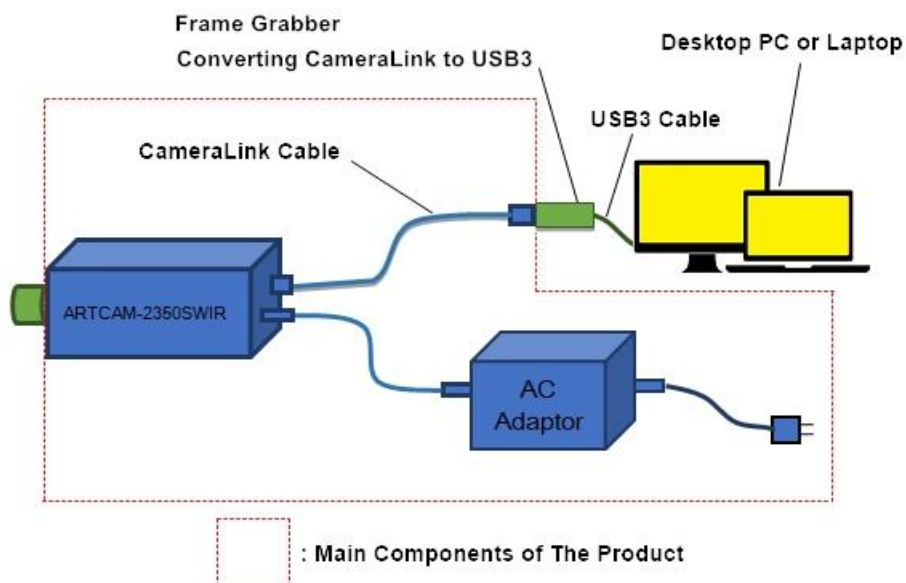
(a)



(b)



(c)



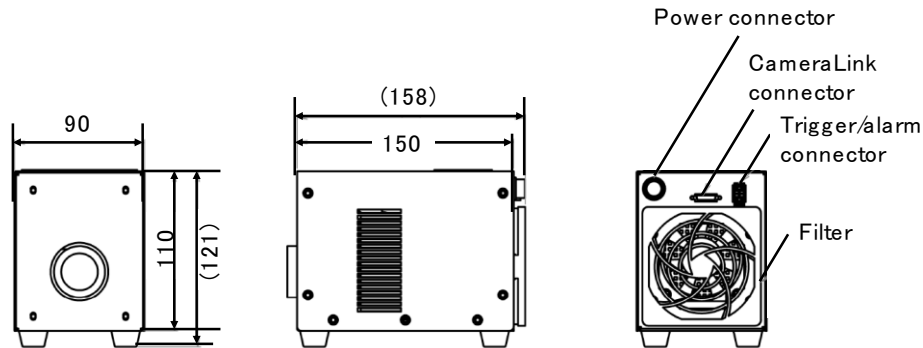
**Figure 1** Three type for ARTCAM-2350SWIR

- (a) CameraLink Frame Grabber PCIe Board for Desktop PC;
- (b) CameraLink Frame Grabber ExpressCard for Laptop;
- (c) External Frame Grabber Converts CameraLink into USB3.

### 3. Preparation Before Use

#### 3-1 Appearance

Figure 2 shows the appearance drawing of ARTCAM-2350SWIR.



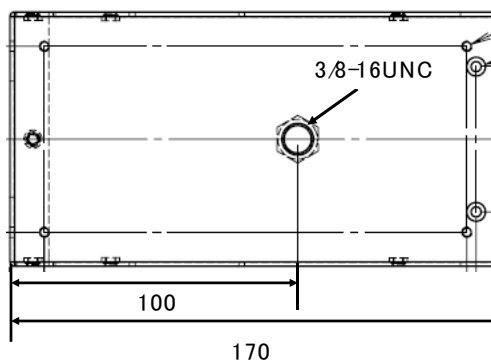
**Figure 2 Appearance drawing of ARTCAM-2350SWIR**

#### 3-2 Setup

##### 3-2-1 Installation

When the camera body of ARTCAM-2350SWIR is installed, use a tap on the bottom of the camera body in Figure 3.

- Fix the camera body to a flat plate with flatness of less than 0.1 mm.
- Use one 3/8-16UNC screw with a length of less than 20mm and high strength.



**Figure 3 Drawing of the bottom panel of ARTCAM-2350SWIR**

##### 3-2-2 Placement

Put the camera body of ARTCAM-2350SWIR at a well-ventilated place and with a proper distance away from a wall in case the inlet or exhaust port is covered. Do not place it sideways with the inlet port faced on the top and/or bottom side.



### 3-3 Connection

#### 3-3-1 Power Cable

Connect ARTCAM-2350SWIR to power source with DC +24V by using the attached power cable. Pay careful attention to the polarity of the power cable.

- Camera side: one 4-pin round receptacle connector
- Power source side: connect to GST280A24

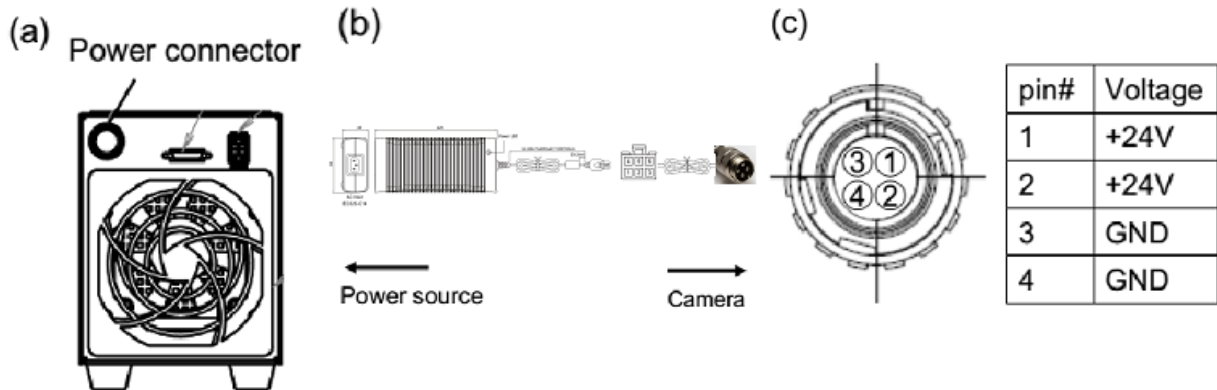


Figure 4 (a) Power connector at the rear panel of ARTCAM-2350SWIR, (b) Drawing of power cable, (c) Pin assignment of power cable.

#### 3-3-2 CameraLink Cable

- 1) Set a frame grabber (grabber board or grabber card) in the PC.
  - 2) Connect ARTCAM-2350SWIR and the frame grabber or external frame grabber converts CameraLink into USB3 by an attached Camera Link cable.
  - 3) Fix the cable with a rock screw.
- Camera side: SDR-type connector
  - Frame grabber side: MDR-type connector (for grabber board) or SDR-type connector (for grabber card)

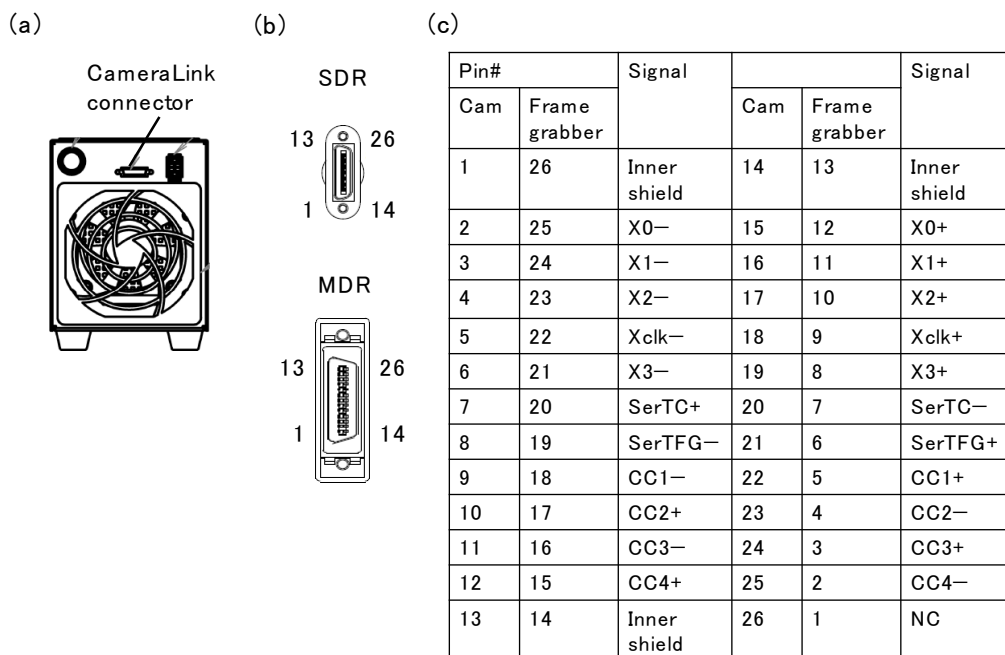


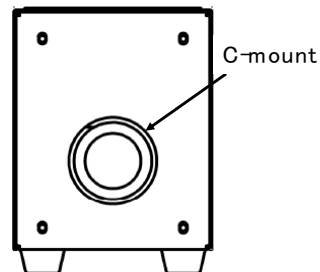
Figure 5 (a) CameraLink connector at the rear panel of ARTCAM-2350SWIR, (b) Drawing of SDR/MDR-type connector for CameraLink cable, (c) Pin assignment of CameraLink cable.

### 3-3-3 Lens

Prepare a lens compatible for objective performance for magnification rate, field of view and mount the lens to the front panel of ARTCAM-2350SWIR.

- Mount Type of Lens: C-mount

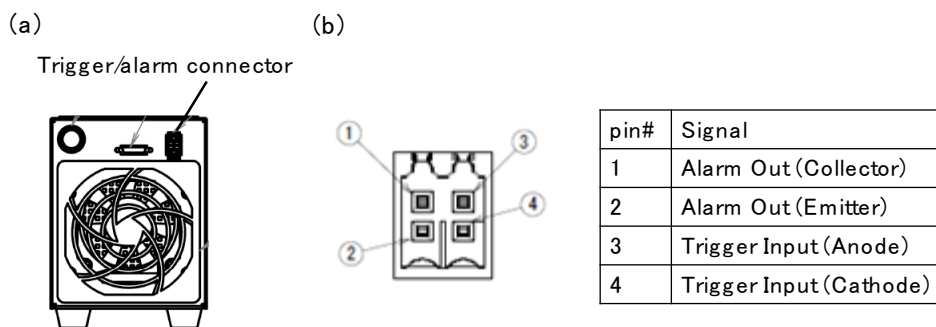
Caution: In mounting a lens, do not screw it by more than 10 mm in the flange of C-mount. Too much screw-in could result in damage of FPA.



**Figure 6 C-mount flange at the front panel of ARTCAM-2350SWIR**

### 3-3-4 External Trigger Input and Alarm Output

If external trigger input or external alarm output is used, use a trigger / alarm connector at the rear panel of ARTCAM-2350SWIR.



**Figure 7 Trigger/alarm connector at the rear panel of ARTCAM-2350SWIR**

#### 4. Specifications

**Table 2 Specification of ARTCAM-2350SWIR**

Item	Specification
Detector	InGaAs/GaAsSb type-II quantum well
Wavelength range	1000 – 2350 nm
Pixel number	320 (Horizontal) x 256 (Vertical)
Frame rate, exposure time	(100fps, 9ms), (100fps, 1ms), (150fps, 6ms), (200fps, 4.5ms), (200fps, 1ms), (250fps, 3.5ms), (300fps, 3ms), (320fps, 2.5ms), (320fps, 1ms)
Defect rate <sup>*1,2</sup>	< 1 %
Cooling	Thermoelectric (TE) cooling
Bit length	16-bit (0 to 65535)
Interface	CameraLink, Base configuration 16-bit x 1-tap (clock frequency: 48MHz)
Operation temperature	+5 to +30 degC
Storage temperature	+5 to +30 degC
Humidity	30 to 80%RH (non-condensing)
Supply voltage	DC 24 V $\pm$ 10 %
Power consumption	$\leq$ 10 A
Power connector	Hirose, LF10WBR-4P
Trigger/alarm connector	Weidmuller, S2L-SMT 3.50/04/90G 3.2SN BK BX
Dimension	90 x 110 x 170 mm (except lens and projection)
Weight	Approx. 2.5 kg
Lens mount	C-mount

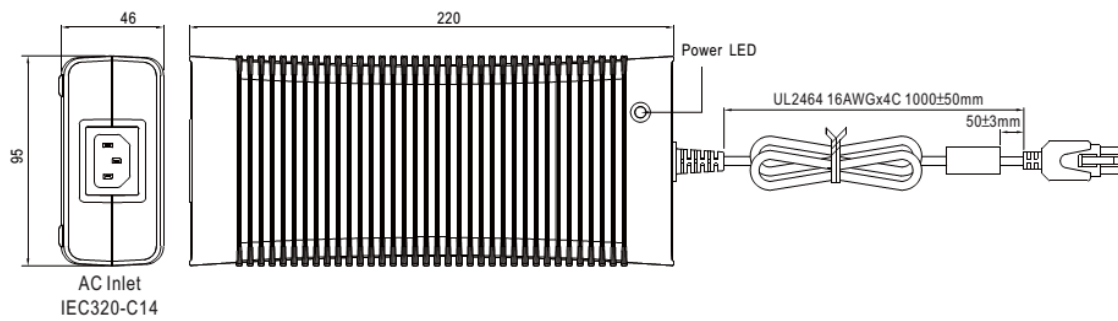
\*1: Defective pixels include ones corrected in manufacturing and with output of zero value.

\*2: Defective pixels increase in progress of time in principle.

**Table 3 Specification of AC adaptor (GST280A24)**

Item	Specification
Voltage Range	85 ~ 264VAC
Frequency Range	47 ~ 63Hz
Power Factor (Typ.)	PF>0.95 / 230VAC PF>0.98 / 115VAC at full load
Efficiency (Typ.)	93%
AC Current (Typ.)	3A / 115VAC 1.5A / 230VAC
Inrush Current (max.)	120A / 230VAC
Leakage Current (max.)	1.5mA / 240VAC

■ Mechanical Specification



## 5. Operation

### 5-1 Start-up

- (1) After making sure of connections between ARTCAM-2350SWIR, cables and the frame grabber, switch on the PC and power supply.
- (2) Start to supply +24V to ARTCAM-2350SWIR by the power supply.
- (3) Wait for about 5 minutes for stabilization.
- (4) Execute a sample software for image capture of an attached CD in the PC. The camera setting, image capture and monitoring can be done by the software.  
Regarding how to use the above software, refer to “user’s guide of sample software for image capture” in the attached CD.

### 5-2 Shut Down

- (1) Stop the power supply.
- (2) If ARTCAM-2350SWIR will not be used for a long time, it is recommended that the plug is pulled out from the AC outlet.

### 5-3 External Trigger Input

ARTCAM-2350SWIR can capture images by not only its inner clock but also an external trigger. Its circuit has an input insulated by photo couplers. Every rise to DC +24V in the trigger signal executes one shot at the exposure time at current setting.

### 5-4 External Alarm Output

Not only to monitor inner status of ARTCAM-2350SWIR but also to output alarm from it can be done by the software. Its circuit has an open collector insulated by photo couplers. When any error occurs in ARTCAM-2350SWIR, it makes output pins short-circuited.

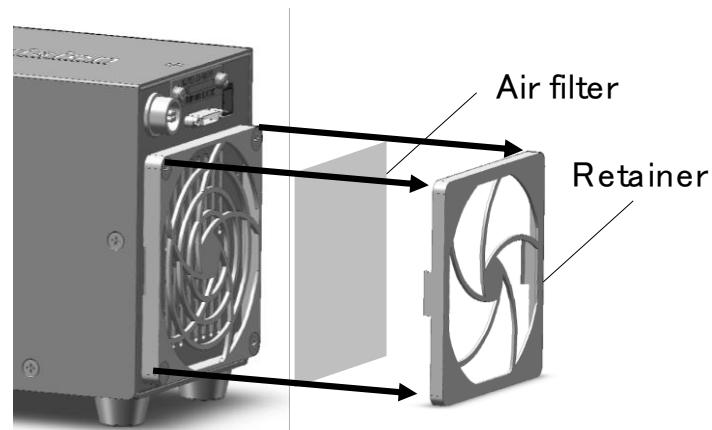
## 6. Maintenance

### 6-1 Camera Body

In cleaning the camera body, remove the cables from it and attach the lens cap to the lens mount. Cleaning the body with cables connected could result in electric shock. Use a cloth which hardly generates dust such as nonwoven fabric. Do not use alcohol, thinner, benzene and strongly acid or alkaline chemicals for cleaning.

### 6-2 Air Filter

When the air filter at the rear panel of ARTCAM-2350SWIR is soiled and blocked, take it off together with a retainer as shown in Figure 8 and make it clean. If the air filter is dirty so that it should be exchanged, make contact with us.



**Figure 8 How to take the air filter off at the rear panel of ARTCAM-2350SWIR**



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