M615

Cooled MWIR Module

Product Manual

V1.0.1

Historical Versions

Version	Date	Description
V1.0.0	2024-07	Initial version
V1.0.1	2024-09	Revise lens options

Table of Contents

1. Product Description

The M615 Cooled MWIR module is provided with the high-performance MCT cooled IRFPA detector, and carried with the self-developed image processing algorithm. It reaches the frame rate of up to 100Hz, and has the noise equivalent temperature difference (NETD) as low as 15mK. It supports multiple digital video interfaces, is suitable for multiple focus and continuous zoom lenses, and is widely applied in vision enhancement, dynamic loading, border and costal defense and other scenarios. SDK is provided, which is simple and easy to use, reducing secondary development costs.

2. Lens Options

Table 2.1 Lens Options

Array Format	Focal Length/F#	Lens Type	FOV H×V	IFOV
640×512	50mm/F2.0	Straight fixed focus	10.97°×8.78°	0.300 mrad
640×512	100mm/F2.0	Straight fixed focus	5.19°×4.4°	0.150 mrad
640×512	18-275mm/F5.5	Straight continuous zoom	2.0°×1.6°～29.86°×24.08°	0.055 mrad
640×512	15-300mm/F4.0	Straight continuous zoom	1.83°×1.46°～35.49°×28.72°	0.050 mrad
640×512	25-460mm/F4.0	Straight continuous zoom	1.22°×0.98°～21.74°×17.46°	0.033 mrad
640×512	33-660mm/F4.0	Straight continuous zoom	0.83°×0.66°～16.55°×13.27°	0.023 mrad
640×512	88-1100mm/F5.5	Straight continuous zoom	0.5°×0.4°～6.24°×5.0°	0.014 mrad
640×512	88-1100mm/F5.5	Reflex continuous zoom	0.5°×0.4°～6.24°×5.0°	0.014 mrad

3. Product Performance Parameters

Table 3.1 Product Performance Parameters

Performance Indicators		
Detector Type	Medium-sized MCT cooled IRFPA detector	Small-sized MCT cooled IRFPA detector
Resolution	640×512	
Pixel Pitch	15μm	
Frame Rate	100Hz/50Hz/30Hz（1）	
F#	F2.0/F4.0	F4.0/F5.5
Spectral Band	3.7±0.2μm～4.8±0.2μm	
NETD	≤15mK@25°C	
Detector Defective Pixel Rate	≤0.5%	
Cooling Time@25°C	≤7min	
Image Adjustment		
Brightness/Contrast Adjustment	Auto/Manual	
Polarity	Black-hot/White-hot (default)	
Cross Reticle	Display/Blank/Move	
Digital Zoom	1.0~8.0× continuous zoom (step size: 0.1)	
Image Processing	NUC	
	DNR	
	DDE	
Image Flip	Horizontal/Vertical/Diagonal mirror image	
Power Supply		
Power Supply Range	24~36V DC (with isolation board), typical voltage of 28V DC	11~13V DC (without isolation board), typical voltage of 12V DC
Power Consumption@25°C	Steady status ≤16W, peak ≤35W	Steady status ≤10W, peak ≤25W
Interface		
Analog Video	PAL	
Digital Video	CameraLink/SDI	
Serial Communication Interface	RS422 (default baud rate: 115200)	
External Synchronization	Internal synchronization (default)/External synchronization output/External synchronization input/Adaptive synchronization	
Physical Characteristics		

Weight (g)	≤870 (with isolation board)	≤480 (without isolation board)
Dimensions (mm)	144×75×81 (with isolation board)	120×88×57 (without isolation board)
Environment Adaptability		
Operating Temperature Range	-40°C～+60°C	
Storage Temperature Range	-45°C～+65°C	
Temperature Shock	-45°C～+65°C（≤5°C/min）	
Random Vibration	6.06g (2)	4.2g (3)
Impact	Final peak sawtooth wave, 40g, 11ms (3 times in 3 axes and 6 directions)	
MTTF	≥6000h	≥6000h
Storage Life	≥10 years	

Note:

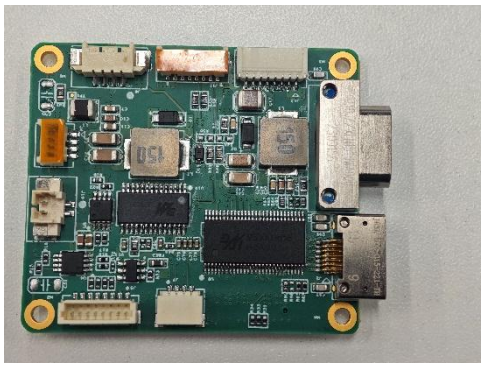
(1) Frame rate: Cameralink, 100Hz/50Hz optional; SDI, 720P@50Hz/1080P@30Hz, optional;

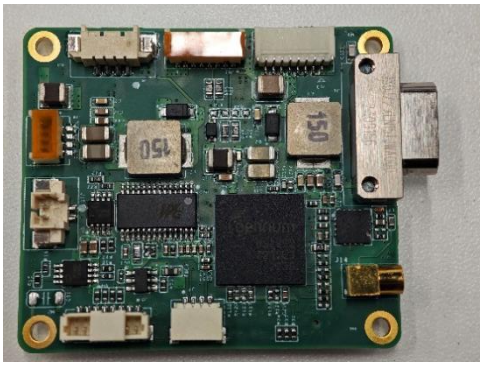
(2) Medium random vibration: 20Hz~80Hz, +3dB/OCT; 80Hz~350Hz, 0.04g2/Hz; 350Hz~2,000Hz, -3dB/OCT; 3 axial directions x, y, z, 5min per axis;

(3) Small random vibration: 10Hz~80Hz, 0.02~0.04g2/Hz; 80Hz~350Hz, 0.04g2/Hz; 350Hz~500Hz, 0.04~0.02g2/Hz; 3 axial directions x, y, z, 5min per axis.

4. Selection of User Expansion Components

Table 4.1 Selection of User Expansion Components

Model	Picture	Main Interfaces
01-Cameralink User Expansion Component		• Power supply interface • RS422 serial communication interface • PAL analog video interface • CamerLink digital video interface • External synchronization signal interface

Model	Picture	Main Interfaces
03-SDI User Expansion Component		● Power supply interface ● RS422 serial communication interface ● PAL analog video interface ● SDI digital video interface ● External synchronization signal interface

5.Structure and Dimensions

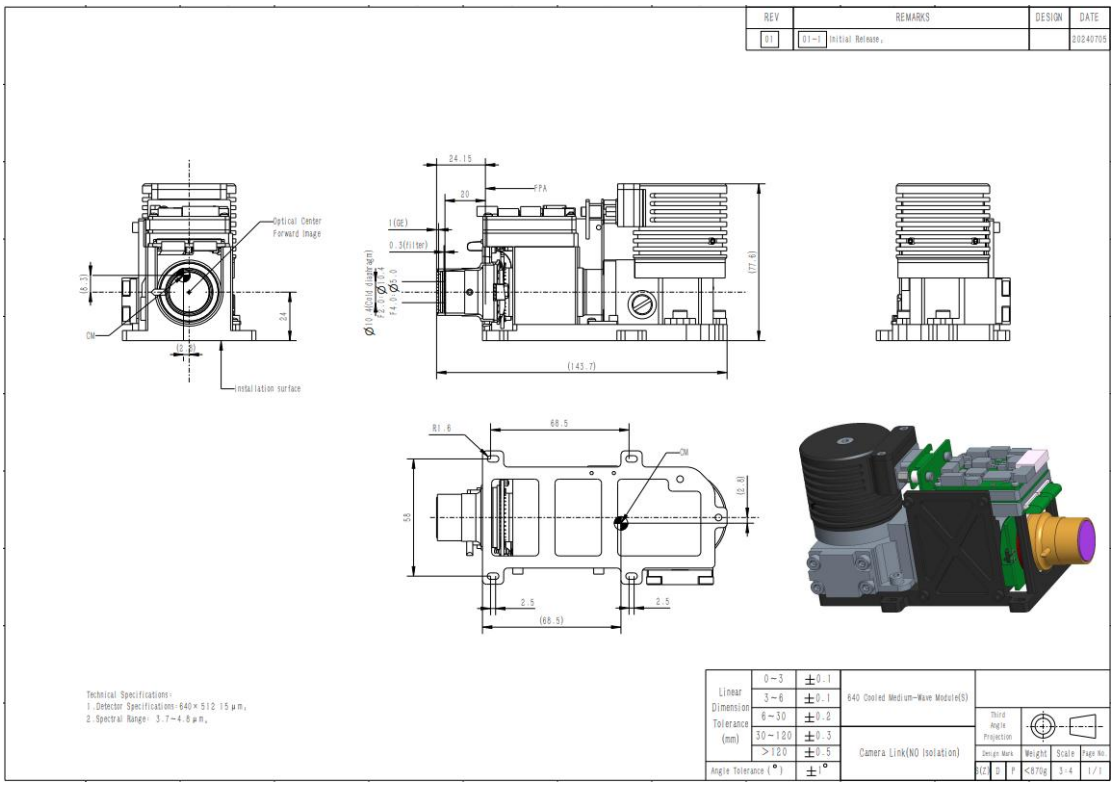


Figure 5.1 Structures and Dimensions of Medium-sized 01-Cameralink User Expansion Component without Isolation Board and Lens

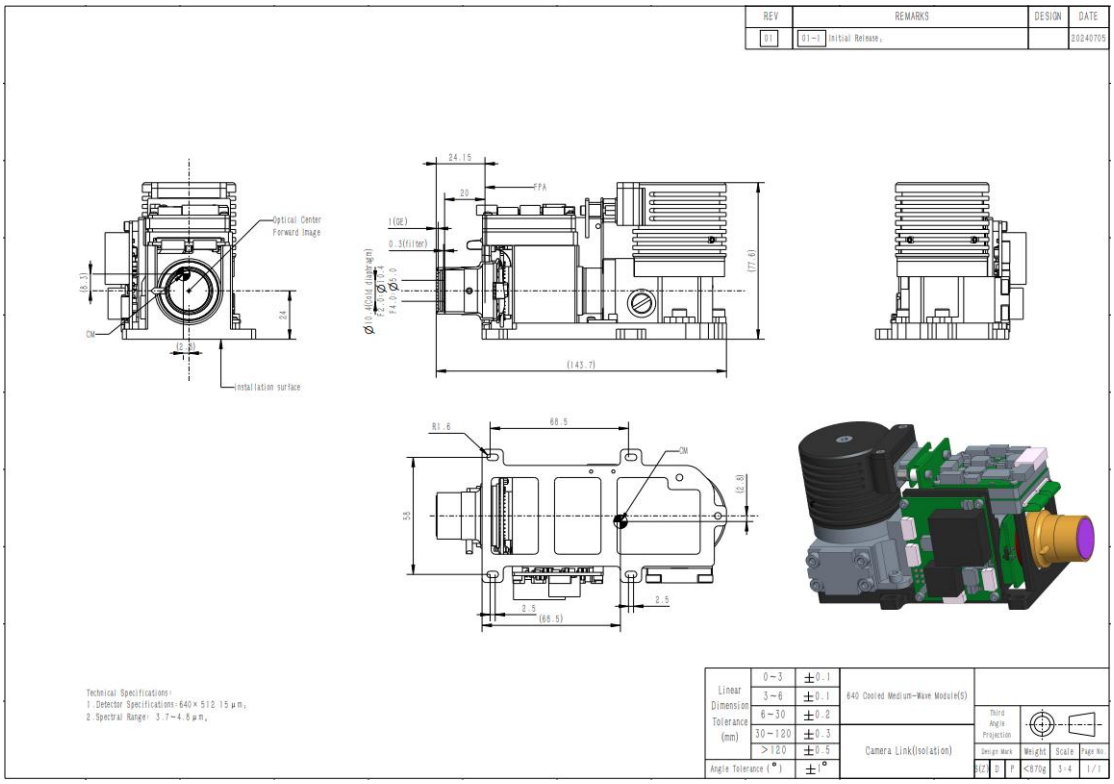


Figure 5.2 Structures and Dimensions of Medium-sized 01-Cameralink User Expansion Component with Isolation Board and without Lens

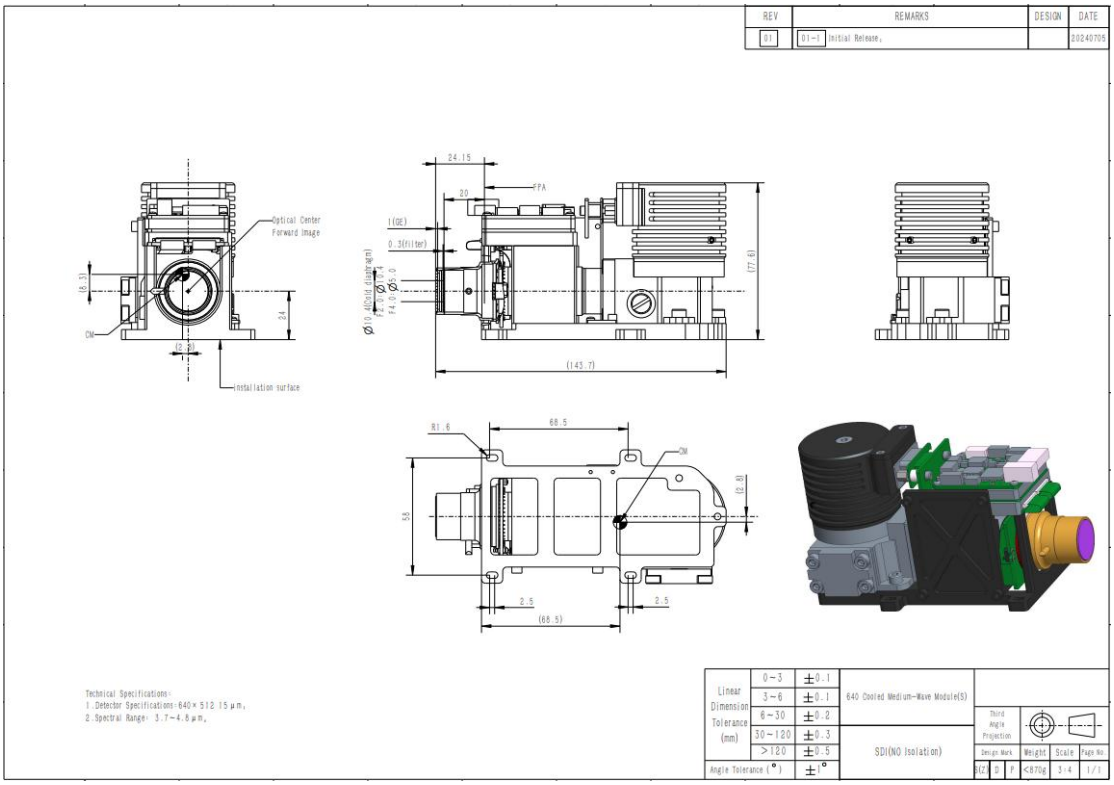


Figure 5.3 Structures and Dimensions of Medium-sized 03-SDI User Expansion Component without Isolation Board and Lens

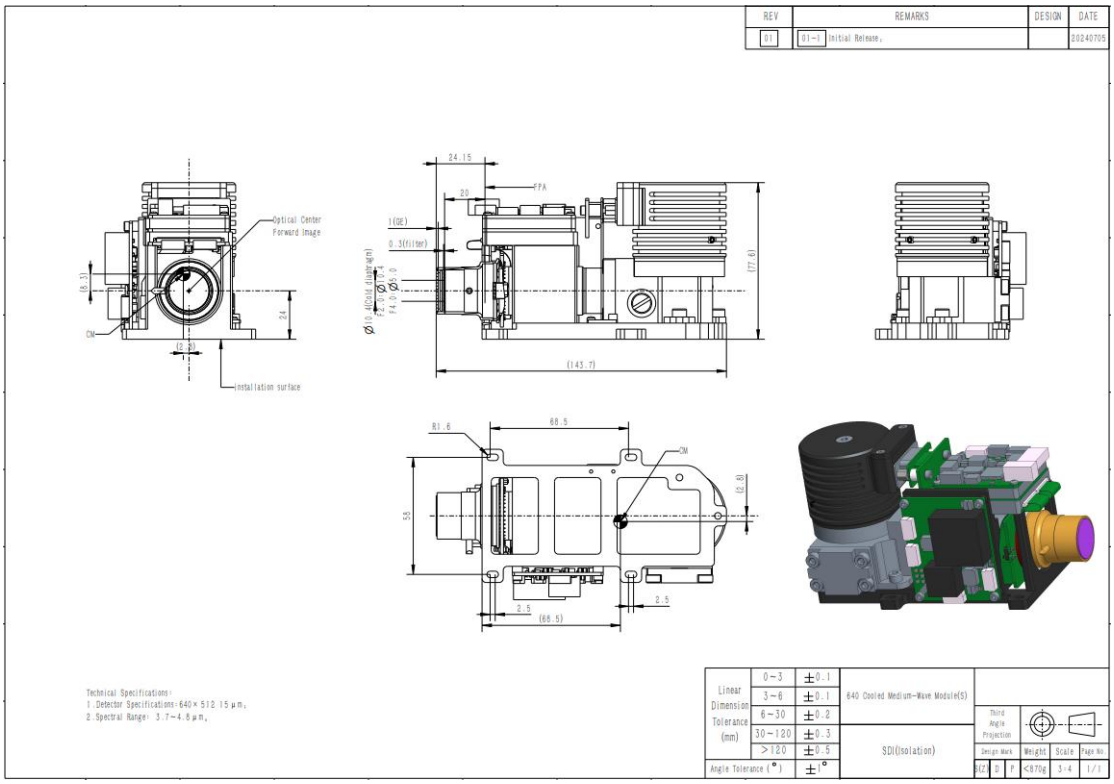


Figure 5.4 Structures and Dimensions of Medium-sized 03-SDI User Expansion Component with Isolation Board and without Lens

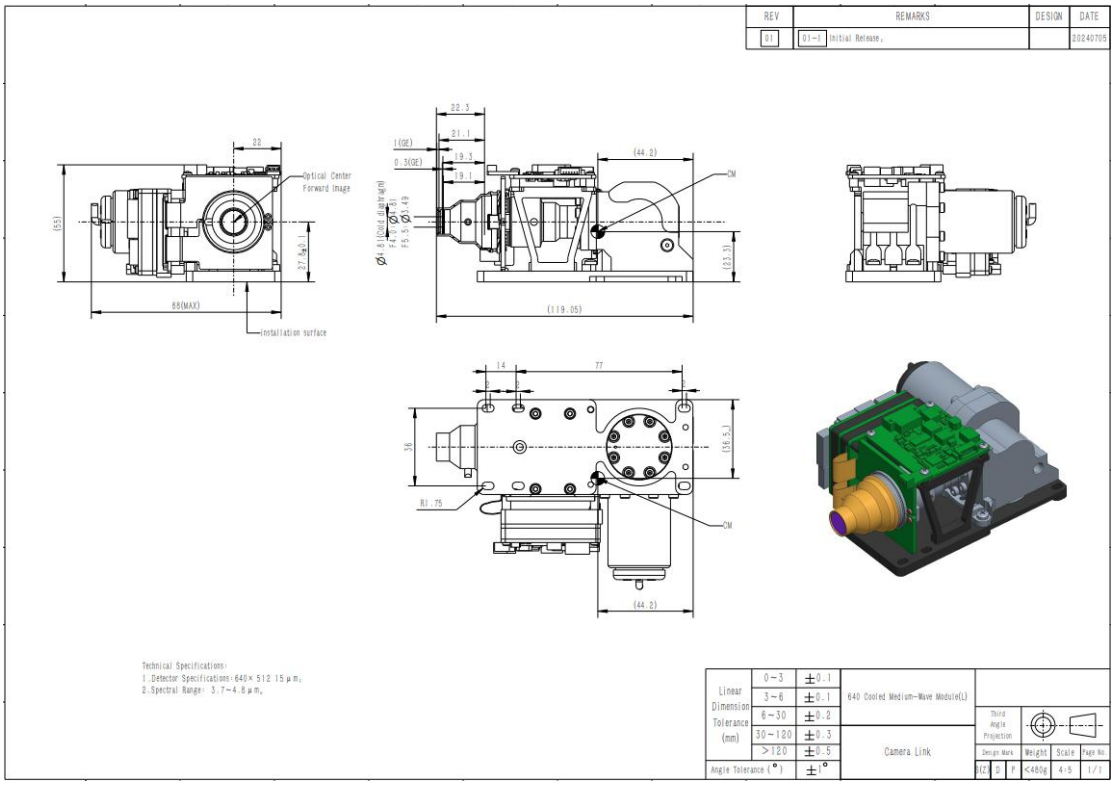


Figure 5.5 Structures and Dimensions of Small-sized 01-Cameralink User Expansion Component without Isolation Board and Lens

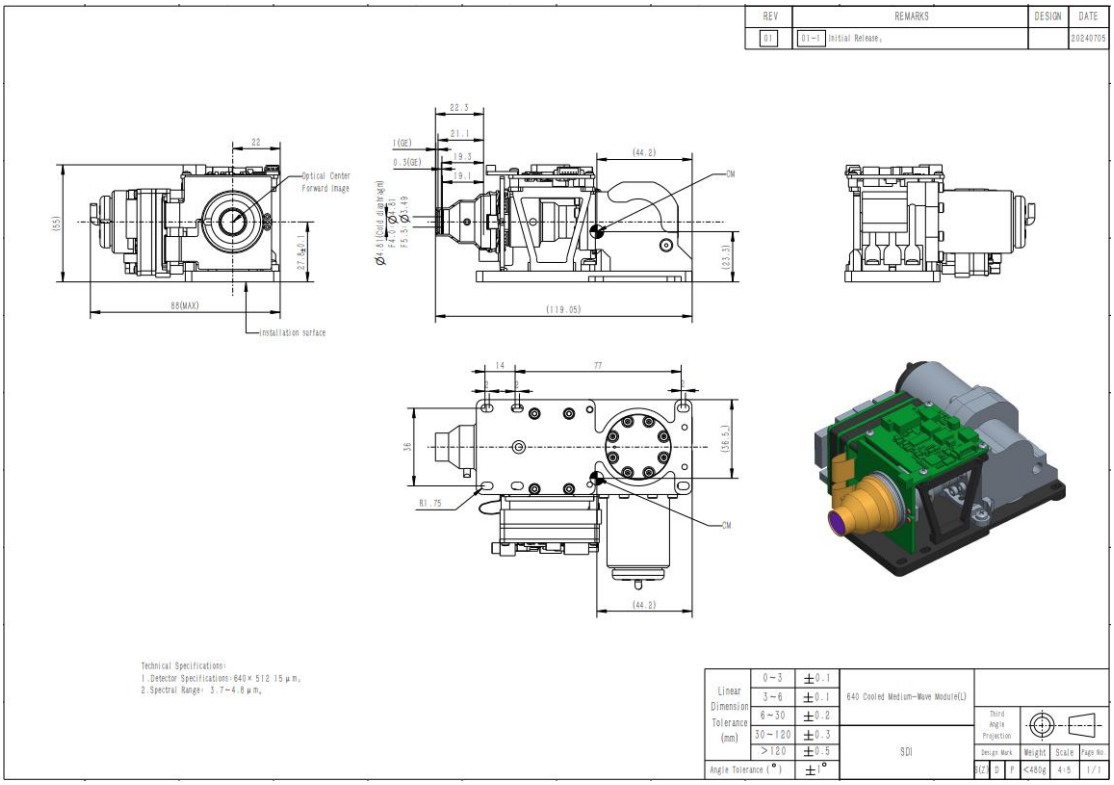


Figure 5.6 Structures and Dimensions of Small-sized 03-SDI User Expansion Component without Isolation Board and Lens

Note: After being suitable for different lenses, the structure has different dimensions.

6. Precautions

To protect yourself and others from harm or to safeguard your device from damage, please read all the following information carefully before using your device to avoid affecting your warranty rights.

1. The ideal ambient temperature is -20°C to 50°C, and the module should be powered on as per the product requirements for ambient voltage. Malfunctions caused by abnormal power-on are not covered in the warranty.
2. Do not touch the detector window with your hands or collide with them by using any objects;
3. Do not touch the module and cables with wet hands, and do not bend or damage the connecting cables.
4. Unauthorized updates to the module program are prohibited. If updates are required, please contact technical support. Unauthorized disassembly of the module is prohibited. In case of a malfunction,

please contact technical support for guidance and repair. Any malfunctions caused by unauthorized repairs will not be covered by warranty.

5. Do not use chemical solvents or diluents to clean any part of the module. You can use a special lens cleaning cloth to clean the detector window. Under electrostatic protection conditions, it is allowed to use an anti-static brush or a clean, soft, dry cloth to clean the mechanical shell and circuit board surface.
6. Do not plug or unplug other cables without disconnecting the power;
7. Do not connect the provided cables incorrectly to prevent damage to the module. If the cables cannot be inserted smoothly, do not insert and remove them forcibly. Please check whether the pin is crooked, whether the insertion position is incorrect, or whether the plug is reversed.
8. Pay attention to the prevention of electrostatic discharge. When handling the module, wear an anti-static wristband and finger cots. Avoid direct contact without protection.
9. The time interval between shutting down and restarting should not be less than 10 seconds.
10. During use, adapt the integral time to the scene and perform background correction.
11. Avoid damage caused by contact with other objects during use;
12. The module should be sealed in an anti-static bag and then put into shock-absorbing sponges in the package box. When not in use, please place the module in an anti-static bag for sealed storage;
13. During storage, pay attention to protecting the module against water, moisture, impact, and drops. Damage caused by improper storage or any other natural disaster is not covered by warranty;
14. When cleaning the lens, first use a blower to blow away particles and dust. Then use degreased cotton to apply lens cleaning solution and gently wipe from the center to the edges in a single direction. Replace the cotton after each wipe. During use, minimize the frequency of wiping.