

Hikrobot Co., Ltd.

ID6000 Series Logistics Code Reader

User Manual

HIKROBOT

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Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 Danger	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.
 Caution	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
 Note	Provides additional information to emphasize or supplement important points of the main text.

Available Model

This manual is applicable to the ID6000 Series Logistics Code Reader.

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Chapter 1 Safety Instruction

The safety instructions are intended to ensure that the user can use the device correctly to avoid danger or property loss. Read and follow these safety instructions before installing, operating and maintaining the device.

1.1 Safety Claim

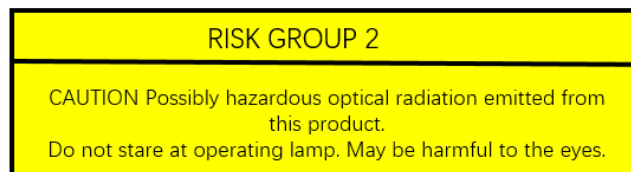
- To ensure personal and device safety, when installing, operating, and maintaining the device, follow the signs on the device and all safety instructions described in the manual.
- The note, caution and danger items in the manual do not represent all the safety instructions that should be observed, but only serve as a supplement to all the safety instructions.
- The device should be used in an environment that meets the design specifications, otherwise it may cause malfunctions, and malfunctions or component damage caused by non-compliance with relevant regulations are not within the scope of the device's quality assurance.
- Our company will not bear any legal responsibility for personal safety accidents and property losses caused by abnormal operation of the device.

1.2 Safety Instruction

Caution

- Do not install the device if it is found that the device and accessories are damaged, rusted, water ingress, model mismatch, missing parts, etc., when unpacking.
- Avoid storage and transportation in places such as water splashing and rain, direct sunlight, strong electric fields, strong magnetic fields, and strong vibrations.
- Avoid dropping, smashing or vigorously vibrating the device and its components.
- It is forbidden to install the indoor device in an environment where it may be exposed to water or other liquids. If the device is damp, it may cause fire and electric shock hazard.
- Place the device in a place out of direct sunlight and ventilation, away from heat sources such as heaters and radiators.
- In the use of the device, you must be in strict compliance with the electrical safety regulations of the nation and region.
- Use the power adapter provided by the official manufacturer. The power adapter must meet the Limited Power Source (LPS) requirements. For the specific power consumption of the device, please refer to the device's specifications.
- Do not cover the device's plug or outlet for disconnecting power supply.
- It is strictly forbidden to wire, maintain, and disassemble the device is powered on. Otherwise, there is a danger of electric shock.

- Make sure that the device is installed in good condition, the wiring is firm, and the power supply meets the requirements before powering on the device.
- For a device with a power switch, please use the switch to power on and off. It is strictly forbidden to plug and unplug the power cord.
- If the device emits smoke, odor or noise, please turn off the power and unplug the power cord immediately, and contact the dealer or service center in time.
- It is strictly forbidden to touch any terminal of the device when operating it. Otherwise there is a danger of electric shock.
- It is strictly forbidden for non-professional technicians to detect signals during device operation, otherwise it may cause personal injury or device damage.
- It is strictly forbidden to maintain the device is powered on, otherwise there is a danger of electric shock.
- Avoid aiming the image sensor at strong light in direct mode or reflection mode, such as laser beams, otherwise the image sensor will be damaged.
- If the device does not work properly, please contact your dealer or the nearest service center. Never attempt to disassemble the device yourself. We shall not assume any responsibility for problems caused by unauthorized repair or maintenance.
- Caution: If the device has battery, risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.
- Please dispose of the device in strict accordance with the relevant national or regional regulations and standards to avoid environmental pollution and property damage.
- Looking directly at the device may cause harm to the eyes. Protective measures like wearing protective glasses should be taken in the process of installation, maintenance and debugging.
- For the device with this sticker:



- The beam of the light of this device is classified as Risk Group 2 (RG2) retinal blue light or thermal hazard, and the beam of the light at the distance of 1.25 m is classified as Risk Group 1 (RG1). The safety distance is 5.5 m.
- Possible hazardous optical radiation emitted from this product. Do not stare at operating light source. May be harmful to the eyes.
- If appropriate shielding or eye protection is not available, turn on the light only at a safe distance or in the area that is not directly exposed to the light.
- When assembling, installing or maintaining the device, do not turn on the light, or wear eye protection.

Note

- Check whether the device's package is in good condition, whether there is damage, intrusion, moisture, deformation, etc. before unpacking.
- Check the surface of the device and accessories for damage, rust, bumps, etc. when unpacking.
- Check whether the quantity and information of the device and accessories are complete

after unpacking.

- Store and transport the device according to the storage and transport conditions of the device, and the storage temperature and humidity should meet the requirements.
- It is strictly prohibited to transport the device in combination with items that may affect or damage the device.
- Please read the manual and safety instructions carefully before installing the device.
- Quality requirements for installation and maintenance personnel:
 - Qualification certificate or working experience in weak current system installation and maintenance, and relevant working experience and qualifications. Besides, the personnel must possess the following knowledge and operation skills.
 - The basic knowledge and operation skills of low voltage wiring and low voltage electronic circuit connection.
 - The ability to comprehend the contents of this manual.
- Do not contact the device with strong acids, alkalis, oils, greases or organic solutions such as thinners.
- Please install the device strictly according to the installation method in this manual.
- Do not expose the device to flash light, high-frequency switching lighting equipment, or sunlight, which may affect the test performance.

1.3 Electromagnetic Interference Prevention

- Make sure that the shielding layer of cables is intact and 360° connected to the metal connector when using shielded cables.
- Do not route the device together with other equipment (especially servo motors, high-power devices, etc.), and control the distance between cables to more than 10 cm. Make sure to shield the cables if unavoidable.
- The control cable of the device and the power cable of the industrial light source must be wired separately to avoid bundled wiring.
- The power cable, data cable, signal cable, etc. of the device must be wired separately. Make sure to ground them if the wiring groove is used to separate the wiring and the wiring groove is metal.
- During the wiring process, evaluate the wiring space reasonably, and do not pull the cables hard, so as not to damage the electrical performance of the cables.
- If the device is powered on and off frequently, it is necessary to strengthen the voltage isolation, and consider adding a DC/DC isolation power supply module between the device and the adapter.
- Use the power adapter to supply power to the device separately. If centralized power supply is necessary, make sure to use a DC filter to filter the power supply of the device separately before use.
- The unused cables of the device must be insulated.
- When installing the device, if you cannot ensure that the device itself and all equipment connected to the device are well grounded, you should isolate the device with an insulating bracket.
- To avoid the accumulation of static electricity, ensure that other equipment (such as

- machines, internal components, etc.) and metal brackets on site are properly grounded.
- During the installation and use of the device, high voltage leakage must be avoided.
- Use a figure-eight bundle method if the device cable is too long.
- When connecting the device and metal accessories, they must be connected firmly to maintain good conductivity.
- Use a shielded network cable to connect to the device. If you use a self-made network cable, make sure that the shielding shell at the aviation head is well connected to the aluminum foil or metal braid of the shielding cable.

Chapter 2 Overview

2.1 Introduction

The device is mainly used in logistics code reading scenario. The image is acquired via the image sensor, and processed by the algorithm of the device to analyze the meaning of codes in the image. The device can quickly transmit images and code analysis results in real time via the GigE cable. Through the client software, you can acquire images and set different parameters.

2.2 Key Features

- Provides ultra-high resolution to cover a larger field of view.
- Adopts CMOS sensor to provide high-quality images, applicable to high-speed scenario.
- Adopts built-in deep learning algorithm to read different types of codes with good robustness.
- Supports recognition of multiple codes in the field of view.
- Supports gigabit Ethernet transmission to output images.
- Supports networking of multiple devices via code reading platform.

Note

- The specific functions may differ by device models.
 - Refer to the device's datasheet for specific parameters.
-

Chapter 3 Appearance

Note

Appearance here is for reference only. Refer to the device's specification for detailed dimension information.

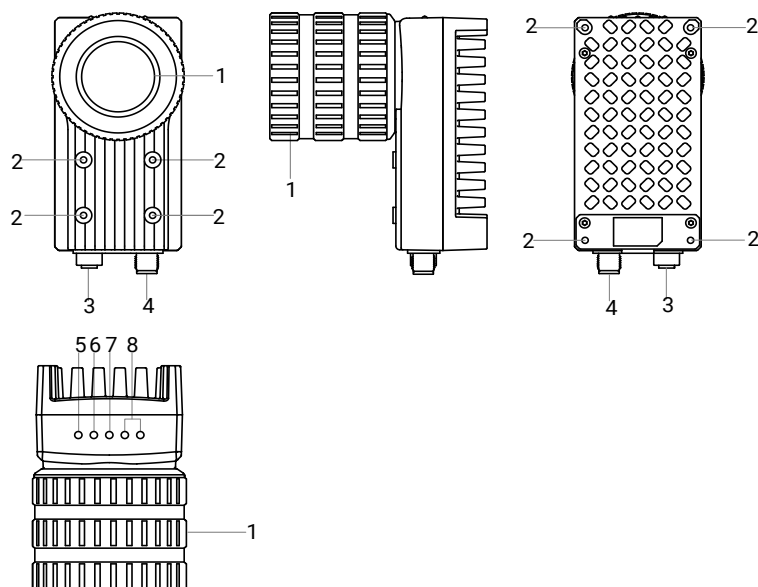


Figure 3-1 Device with Lens Cap but Without Cable (Type I)

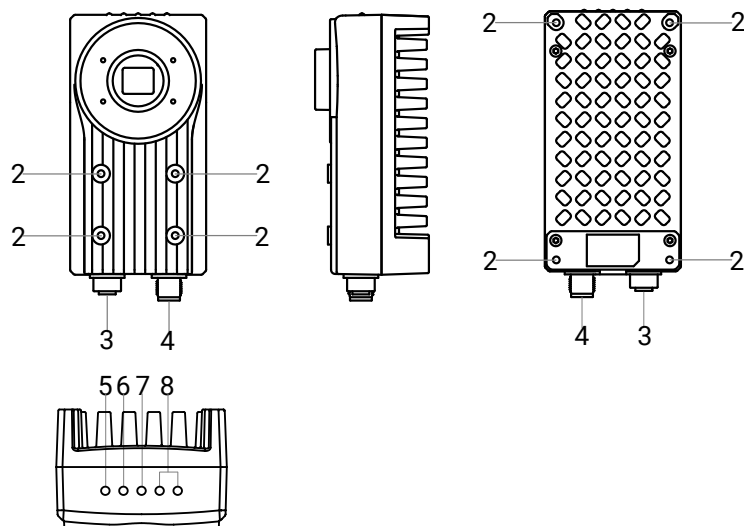


Figure 3-2 Device Without Lens Cap and Cable (Type II)

Table 3-1 Component Description

No.	Name	Description
1	Lens Cap	It refers to the device's lens cap. Refer to the device's datasheet for lens mount.  Note Some devices do not have the lens cap.
2	Screw Hole	There are 4 screw holes on the device, and are used to fix the device to installation position. It is recommended to use the supplied M4 screw.  Note If other screws are used, it is recommended to use the metric M4 screws, and the length of the screws should be less than the size of the sum of the thickness of the mounting plate and the depth of the screw holes.
3	Gigabit Ethernet Interface	It refers to gigabit Ethernet interface for transmitting data.
4	12-Pin Connector	It provides power, I/O, and serial port signal. Refer to section Connector for details.
5	PWR Indicator	It is the power indicator. The indicator is solid blue when the device operates normally.
6	LNK Indicator	It is network connection indicator. The indicator is solid green when the network transmission is normal.
7	ACT Indicator	It is network transmission indicator. The indicator is flashing yellow when the network transmission is normal. The indicator flashing speed is related to data transmission speed.
8	U1/U2 Indicator	The device has 2 user-defined indicators, U1 and U2. They are used to indicate whether some functions of the device are normal or not.

Chapter 4 Connector and Indicator

4.1 12-Pin M12 Connector

Read the following section to get definitions of 12-pin M12 connector.

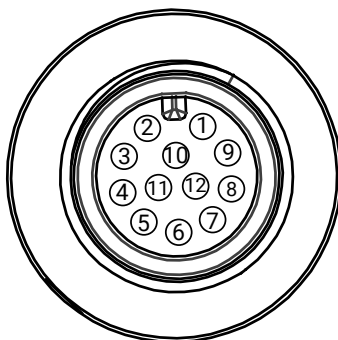


Figure 4-1 12-Pin M12 Connector

Table 4-1 Pin Definitions

No.	Signal	I/O Signal Source	Description
1	DC-PWR	--	Direct current power supply positive
2	GND	--	Power supply ground
3	OPTO_OUT0	LineOut0 signal line	Opto-isolated output 0
4	OPTO_OUT1	LineOut1 signal line	Opto-isolated output 1
5	OPTO_OUT2	LineOut2 signal line	Opto-isolated output 2
6	OUT_COM	LineOut0/1/2 signal ground	Common-ended output
7	OPTO_IN0	LineIn0 signal line	Opto-isolated input 0
8	OPTO_IN1	LineIn1 signal line	Opto-isolated input 1
9	OPTO_IN2	LineIn2 signal line	Opto-isolated input 2
10	IN_COM	LineIn0/1/2 signal ground	Common-ended input
11	RS-232_R	--	RS-232 serial port input
12	RS-232_T	--	RS-232 serial port output

 Note

You should refer to the table above and the label attached to the power and I/O cable to wire the device.

4.2 Indicator Status

The device's indicator is used to indicate the operation status of the device.

 Note

When the indicator is flashing rapidly, flashing slowly, or flashing very slowly, its unlit interval is 0.2 sec to 0.3 sec, 1 sec, and 2 sec respectively.

The device has one PWR indicator, one LNK indicator, one ACT indicator, and 2 user-defined indicators (U1 and U2).

Table 4-2 Indicator Description

Device Status	PWR Indicator	LNK Indicator	ACT Indicator	U1/U2
Device Powered On (Factory Settings)	Solid blue	Solid green	Slow/fast flashing yellow	U1: Unlit U2: Slow flashing blue
Power Supply Exception	Unlit			
Network Exception	Solid blue	Unlit		U1: Unlit U2: Slow flashing blue
Device Software Not Started	Solid blue	Solid green	Flashing yellow	U1/U2: Unlit
Device Exception	Solid blue	Solid green	Solid yellow	U1/U2: Solid blue

Chapter 5 Device Installation

5.1 Installation Preparation

You need to prepare following accessories before installation.

Table 5-1 Accessories

No.	Name	Quantity	Description
1	Power and I/O Cable	1	It refers to the 12-pin to open cable. You need to purchase separately.
2	Network Cable	1	It refers to the GigE network cable with aviation connector to RJ45. You need to purchase separately.
3	DC Switch Power Supply	1	It refers to a DC switch power supply above 12 V / 2 A or 24 V / 1 A. You need to purchase it separately.
4	Lens	1	It refers to C-mount lens. You need to purchase it separately.
5	Fixed Bracket	1	It is used to fix the device. You need to purchase separately.
6	Light Source	1	It is used to provide light during image acquisition. You need to purchase separately.
7	Waterproof Lens Cap	1	It refers to waterproof lens cap with IP65. It is provided in the package for some devices.

5.2 Install Device

Before You Start

- Make sure the device in the package is in good condition and all the assembly parts are included.
- Make sure all the related equipment is power-off during the installation.

Steps

Note

Here we take type I device as an example to introduce installation.

1. Use M4 screws to fix the device to the bracket, and select one of installation methods to install the device to the installation position.

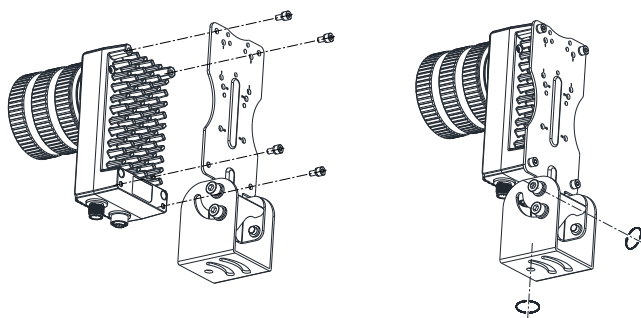


Figure 5-1 Installation Method 1: Rear Installation

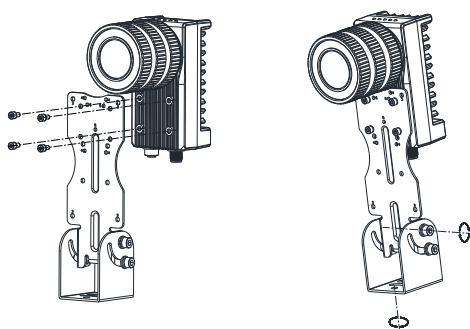


Figure 5-2 Installation Method 2: Front Installation

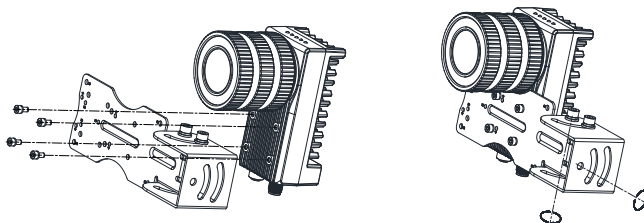


Figure 5-3 Installation Method 3: Side Installation

2. (Optional) Use M4 screws to install the light source on the device via the bracket.

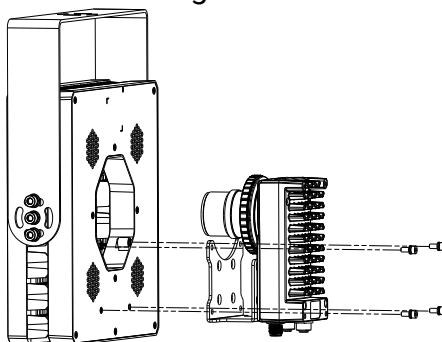


Figure 5-4 Light Source Installation

3. Use GigE network cable with aviation connector to RJ45 to connect the device to a switch or a NIC. The connector is designed with screw threads for tightening connection between the device and cable, avoiding influence caused by vibration.

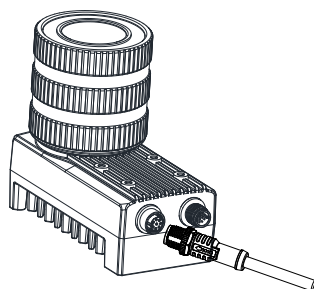


Figure 5-5 Network Cable Wiring

4. Use power and I/O cable to connect the device to a DC switch power supply. The connector is designed with screw threads for tightening connection between the device and cable, avoiding influence caused by vibration.

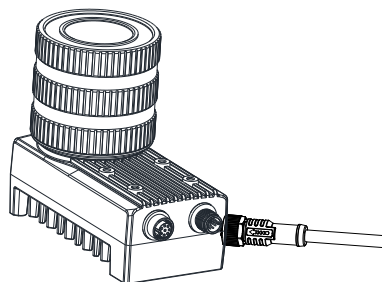


Figure 5-6 Power and I/O Wiring

Chapter 6 Device Connection

Device connection to the client software is required for device's configuration and remote operations. This section introduces how to install the client software, set PC and device network, connect the device to the client software, etc.

6.1 Install Client Software

IDMVS is a client software for device configuration and remote operations.

Steps

Note

- The client software is compatible with 32/64-bit Windows 7/10, 64-bit Windows 11, and 32/64-bit Linux operating systems. Here we take Windows as an example.
 - You can get the client software installation package from <https://en.hikrobotics.com/>. It is recommended to use the client software with version of V5.0.0 and later.
 - The graphic user interface may differ by different versions of client software you use.
-

1. Double click the installation package to start installing the client software.
2. Select the language.
3. Read and check **Terms of the License Agreement**.
4. Click **Start Setup**.
5. Select installation directory and click **Next**.

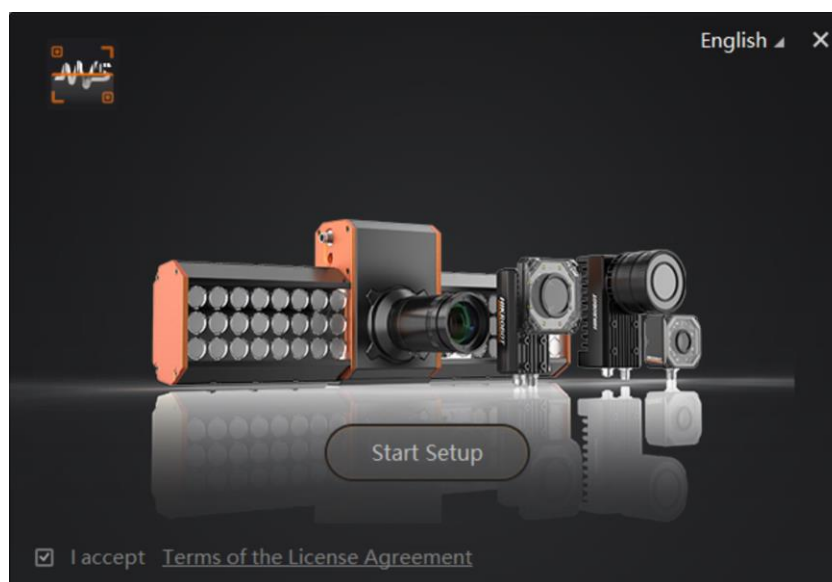


Figure 6-1 Installation Interface

6. Finish the installation according to the interface prompts.

6.2 Turn off Firewall

To ensure stable client running and image transmission, you are recommended turning off Windows firewall before using the client software.

Steps

Note

For different Windows versions, the path name or interface may differ. Please refer to the actual condition.

1. Go to Windows Firewall.
 - Windows 7 system: Click **Start** → **Control Panel** → **Windows Firewall**.
 - Windows 10 system: Click **Start** → **Control Panel** → **System and Security** → **Windows Defender Firewall**.
 - Windows 11 system: Click **Start** → **Settings** → **Privacy & security** → **Windows Security** → **Firewall & network protection**.
2. For Windows 7 and 10 system, click **Turn Windows Defender Firewall on or off** on the left. For Windows 11, select the network and turn off in **Microsoft Defender Firewall**.
3. Select **Turn off Windows Defender Firewall (not recommended)**.

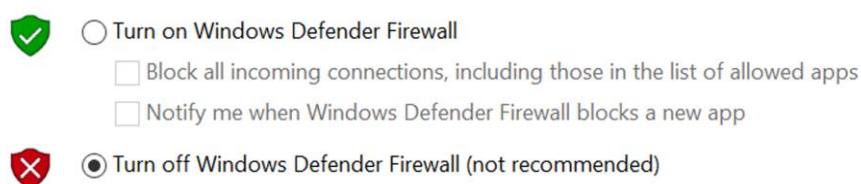


Figure 6-2 Windows Defender Firewall

4. Click **OK**.

6.3 Set PC Environment

To ensure stable data transmission and normal communication between the PC and the device via client software, you need to set the PC network and make sure that they are in the same network segment.

Steps

Note

For different Windows versions, the specific setting path and interface may differ. Please refer to the actual condition.

1. Go to PC network settings page: **Start** → **Control Panel** → **Network and Internet** → **Network and Sharing Center** → **Change adapter settings**.
2. Select NIC and set the IP obtainment mode.
 - Select **Obtain an IP address automatically** to get an IP address of the PC automatically.
 - Or select **Use the following IP address** to set an IP address for the PC manually.

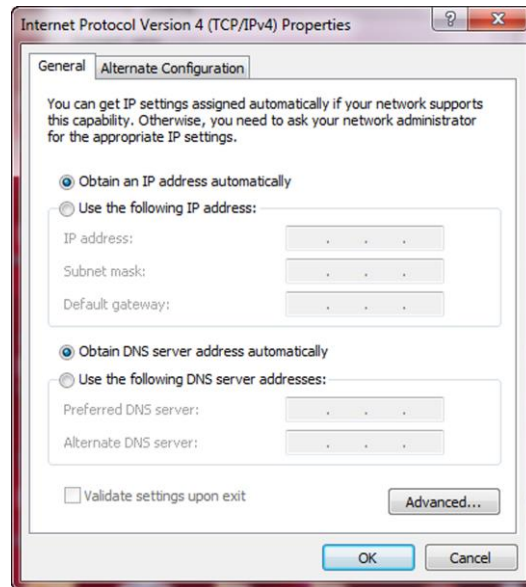


Figure 6-3 Set PC Network

3. Set NIC property via the PC.
 - 1) Go to NIC settings page: **Control Panel** → **Hardware and Sound** → **Device Manager** → **Network Adapter**.
 - 2) Select corresponding network interface card, and click **Advanced**.
 - 3) Set **Jumbo Packet** value to 9014 Bytes.

6.4 Set Device Network and Connect to Client Software

You can set and operate the device in the client software only when the device is in the same network segment with the PC where the client software is installed.

Steps

1. Double click the client software to run it.
2. Click  to find the device.
3. Right click the device to be connected, and click **Modify IP**.
4. Set the IP address of the device in the same network segment with the PC, and click **OK**.

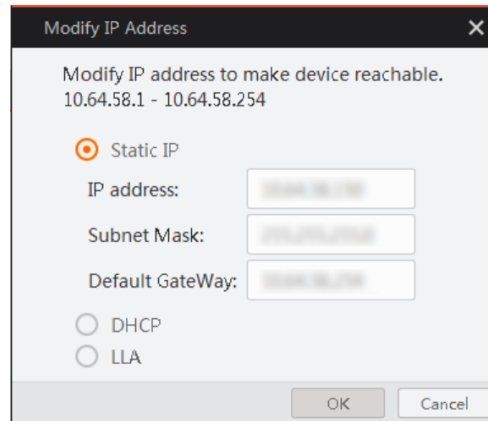


Figure 6-4 Modify IP Address

5. Double click the device in device list or click  to connect it to the client software.

Chapter 7 Basic Operation

7.1 Client Software Layout

The main window of the client software is displayed after the device is connected to the client software.

Note

- The graphic user interface may differ by different versions of client software you use.
- Refer to the user manual of the client software for detailed operation guide.

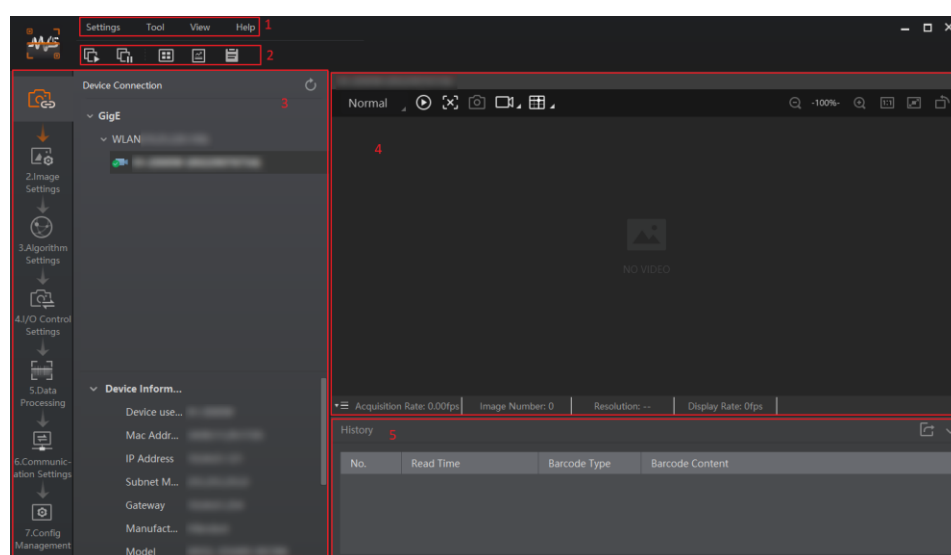


Figure 7-1 Main Window

Table 7-1 Main Window Description

No.	Name	Description
1	Menu Bar	Provides access to function modules including Settings, Tool, View, and Help.
2	Control Toolbar	Provides access to functions such as starting/ending batch acquisition, switching the window division mode, viewing real-time statistics during acquisition, and viewing device logs.
3	Device Configuration Wizard Panel	The wizard for device configurations. In the Device Information field, you can view information about a device and its corresponding network interface.
4	Live View Window	Displays the live view of the selected device(s).

No.	Name	Description
5	History Panel	Displays the code reading history of device(s). You can also view the real-time reading results during acquisition.

The device configuration wizard panel and control toolbar help you perform some basic operations of the device.

Table 7-2 Device Configuration Wizard Panel Description

No.	Module Name	Description
1	Device Connection	You can connect or disconnect device, modify device IP address, view device information, etc.
2	Image Settings	You can set image parameters, light parameters, etc.
3	Algorithm Settings	You can add different code type, set code quantity, etc.
4	I/O Control Settings	You can set parameters related to input and output.
5	Communication Settings	You can select different communication protocols, and set parameters for output result.
6	Data Processing	You can set filtering rule for output result.
7	Configuration Management	You can save and load user parameters, and restart the device.

7.2 Basic Operation

Steps

1. After connecting the device, go to the left corner of live view window, and select the running mode.

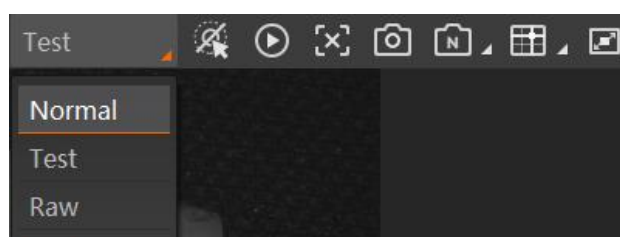


Figure 7-2 Select Running Mode

Note

Stopping the real-time acquisition is required before selecting the running mode.

Table 7-3 Running Mode Description

Device Mode	Description
Test Mode	It is used during device debugging. The device outputs images that are acquired in real time, and displays code information.
Normal Mode	It is used during device normal operation. After reading code in image, the device outputs image and code information.
Raw Mode	It is used during testing image data. The device outputs raw data and displays code information.

2. Click  in the live view window to view images and the code reading effect.

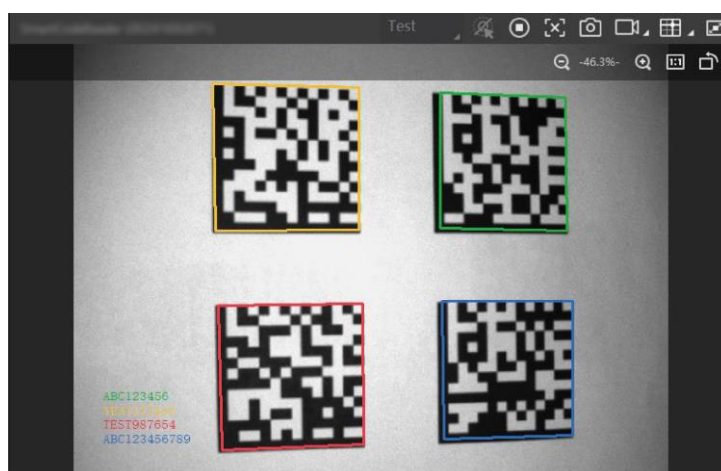


Figure 7-3 Code Reading Effect

Note

If the effect is not very good, you can go to **Image Settings** to adjust related parameters, such as exposure time, gain, and Gamma.

3. (Optional) Go to history panel to view codes recognized by the device.

History									
No.	Read Time	Output Total Cos	Cost Time(ms)	PPM	Barcode Type	Waybill	Barcode Content	Overall Gr	Code Score
34	2023/6/21 16:05:15:149	3155481	120	2.6	Code 128		313200953000000...	F	/
33	2023/6/21 16:05:14:894	3155223	115	13.6	QRCode		313200953002023...	A	/
32	2023/6/21 16:05:14:894	3155223	115	5.2	Code 128		313200953	F	/

Figure 7-4 History Record

Chapter 8 Device Settings

8.1 Feature Tree Introduction

After the device is connected to the client software, and you can right click the device in **Device Connection**, and click **Feature Tree**.

 Note

The parameters of the feature tree may differ by device models and firmware versions.

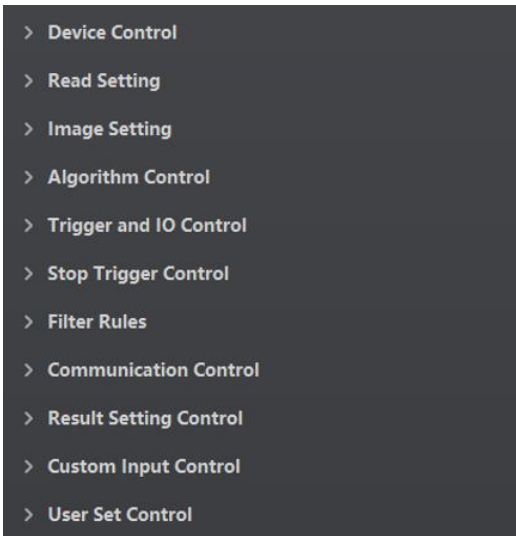
- 
- A screenshot of a software interface showing a vertical list of menu items. Each item is preceded by a right-pointing chevron (>). The items are: Device Control, Read Setting, Image Setting, Algorithm Control, Trigger and IO Control, Stop Trigger Control, Filter Rules, Communication Control, Result Setting Control, Custom Input Control, and User Set Control.
- > Device Control
 - > Read Setting
 - > Image Setting
 - > Algorithm Control
 - > Trigger and IO Control
 - > Stop Trigger Control
 - > Filter Rules
 - > Communication Control
 - > Result Setting Control
 - > Custom Input Control
 - > User Set Control

Figure 8-1 Feature Free

Table 8-1 Feature Tree Description

Name	Description
Device Control	It allows you to view the device's information, edit its name, and restart device.
Read Setting	It allows you to set the device's running mode and select code types.
Image Setting	It allows you to set frame rate, exposure, gain, Gamma, etc.
Algorithm Control	It allows you to set algorithm-related parameters.
Trigger and IO Control	It allows you to set parameters of input and output.
Stop Trigger Control	It allows you to stop device trigger via TCP, UDP, I/O, and serial port. You can also set code reading timeout duration or max. code amount to be read to stop trigger.

Name	Description
Filter Rules	It allows you to set the filtering rule of codes.
Communication Control	It allows you to set parameters related to different communication protocols.
Result Setting Control	It allows you to set parameters of outputted contents.
Custom Input Control	It allows you to set parameters of private data sending/receiving.
MultiCamera Control	It allows you to set parameters of multi-camera to let them operate in a collaborative way.
User Set Control	It allows you to save and load configured user set.

8.2 Image Quality Settings

This section introduces how to set image-related parameters of the device via client software.

Note

For different models of the device, the specific parameters may differ, and the actual device you purchased shall prevail.

8.2.1 Set Image

You can set parameters like exposure time, gain, Gamma, acquisition frame rate, acquisition burst frame count, etc. in **Image Settings** area.

Note

- For specific parameter range like exposure time, gain and acquisition frame rate, refer to the device's specification for details.
 - Specific parameters of this function may differ by device models.
-

Table 8-2 Set Image Parameters

Name	Description
Exposure(μ s)	You can increase exposure time to improve image brightness.  Note Increasing exposure time may reduce acquisition frame rate, and impact image quality.
Gain(dB)	You can increase gain to improve image brightness.  Note

Name	Description
	Increasing gain will create more image noises, and impact image quality.
Gamma	Gamma allows you to adjust the image contrast. It is recommended to reduce Gamma to increase brightness in dark background.
Acquisition Frame Rate(fps)	Acquisition frame rate refers to the image quantity that is acquired by the device per second.
Acquisition Burst Frame Count	Acquisition burst frame count refers to the output image quantity when the device is triggered once.



Figure 8-2 Set Image Parameters

Note

The value range of exposure time and gain, and the maximum value of acquisition frame rate are related to the device model. Refer to the device's specifications for specific parameters.

8.2.2 Set Other Parameters

You can select other parameters in the **Image Settings**.

Note

The displayed parameters may differ by device model.

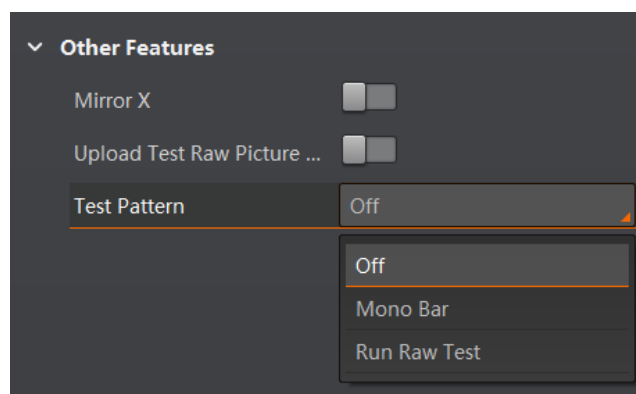


Figure 8-3 Set Other Parameters

Mirror X

If this function is enabled, the image will be reversed in a horizontal way. This function is enabled by default.

Test Pattern

Test pattern refers to the device's test images, and it is off by default. When exceptions occur in images acquired by the device in real time, you can check if images under the test pattern have similar problems to determine the cause of an exception.

SmoothMode

If this function is enabled, the acquisition frame rate will be increased. When the network is poor, it is recommended to disable the function, otherwise it may affect image quality.

Upload Test Raw Picture

If this function is enabled, the **Test Pattern** will be shown at the bottom of the interface. You can import test images in RAW and BMP formats to the directory of the device, add or delete the test images.

- Click to import test images.
- Click to import a file folder of test images.
- Click to delete the selected test images.
- Click to clear all test images.

Note

When **Run Raw Test** is selected as **Test Pattern** in **Other Features**, the test images cannot be deleted.



Figure 8-4 Test Image

8.3 Code Algorithm Settings

The device supports reading multiple types of 1D code and 2D code, and you can add and set code parameters via the client software.

8.3.1 Select Code

Select code before you set code parameters via the client software. In **Algorithm Settings**, you can add different types of codes according to actual demands.

In **Algorithm Settings**, select the types of codes to be read, and set the **Number of 1D Code**, **Number of 2D Code**, and **Number of Stack Code** according to actual demands.

Note

- For different models of the device, the specific parameters may differ, and the actual device you purchased shall prevail.
 - Selected symbology quantity and added code quantity may affect the code recognition time. Note that selecting more symbologies or adding more codes may consume more time to recognize codes in the image. Please select according to the actual demands.
 - The device may output actual code quantity when the mismatch between the actual code quantity and the code quantity set in the client software occurs.
-

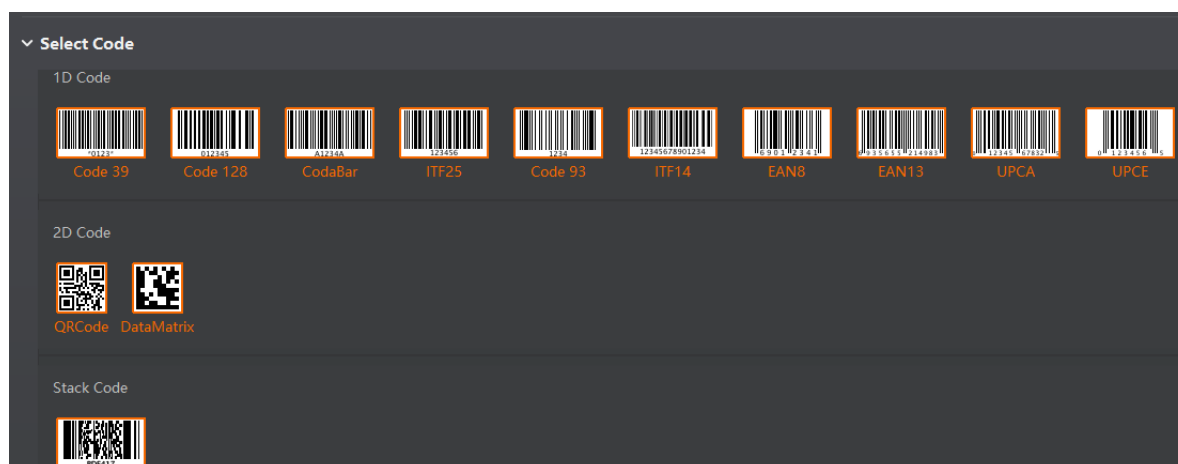


Figure 8-5 Select Code

8.3.2 Set Code Reading ROI

Algorithm ROI (Region of Interest) allows the device to execute algorithms and code reading on the specific area you selected, improving code reading efficiency.

Currently, multiple ROIs can be configured, and the device will output codes according to the ROI No. (e.g. Region 1, Region 2, and Region 3...) in turn. The client software supports

drawing single group of ROI and drawing ROIs in batch.

Note

- If no code is recognized in the algorithm ROI, the device will output “noread”.
 - Before drawing ROIs, make sure that there is an image in the live view window after stopping preview.
 - If no algorithm ROI is enabled, the full screen is the algorithm ROI by default.
 - This function may differ by device models.
-

Draw Single Group of ROI

Steps

1. Go to **Algorithm Settings**, and find **Algorithm ROI**.
2. Click **Draw** in **Draw ROI** to draw the ROI in the live view window.

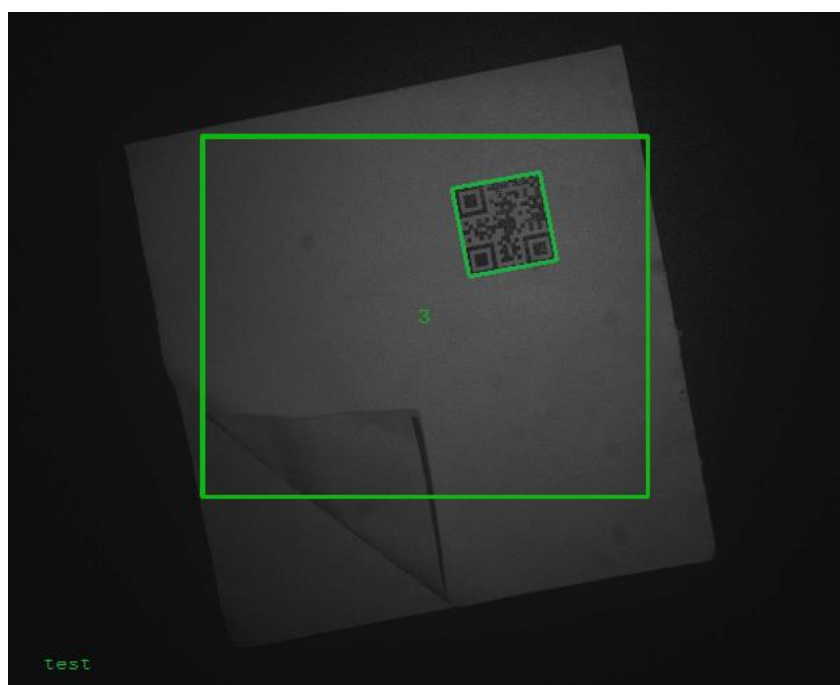


Figure 8-6 Draw ROI

3. (Optional) Repeat the above step to draw multiple ROIs according to actual demands.
-

Note

The client software only parse codes in the ROI you drawn.

4. (Optional) Set other ROI-related parameters according to the actual demands.
 - **ROI Index**: It indicates different ROIs and ranges from 0 to 149 corresponds 1 to 150 ROIs.
 - **AlgoRegionWidth**: It refers to the width in algorithm ROI.
 - **AlgoRegionHeight**: It refers to the height in algorithm ROI.
 - **AlgoRegionLeftX**: It refers to the X coordinate of the upper-left corner in algorithm ROI.

- **AlgoRegionLeftY**: It refers to the Y coordinate of the upper-left corner in algorithm ROI.

ROI Index	3
AlgoRegionWidth	979
AlgoRegionHeight	792
AlgoRegionLeftX	469
AlgoRegionLeftY	709

Figure 8-7 ROI Parameters

5. (Optional) Click **Execute** in **Restore Max. Algorithm ROI** to restore the ROI to the full screen.
6. (Optional) Click **Execute** in **Clear All ROI** to delete all ROIs.
7. (Optional) Right-click the ROI and click **Delete** to delete the selected ROI.
8. (Optional) After you enable the **ROI Link IO Enable** in **Feature Tree** → **Trigger and IO Control**, and when the code is not read in any ROI, the linked output device will output a message.

Draw ROIs in Batch

Steps

1. Go to **Algorithm Settings**, click **All Features**, and find **Algorithm ROI**.
2. Click **Batch** to set parameters according to actual demands.
 - **Area Offset**: It sets the pixel quantity from the starting point when the ROI is in horizontal and vertical direction from the full resolution.
 - **Area Size**: It sets the pixel quantity in the horizontal and vertical direction of the ROI.
 - **ROI Number**: It sets the row and column quantity.
 - **Row Spacing**: It sets the interval between rows.
 - **Column Spacing**: It sets the interval between columns.
3. Click **OK** after settings.
4. Repeat other optional steps mentioned in section [Draw Single Group of ROI](#) according to actual demands.

Batch Create ROI

Area Offset: 0, 0

Area Size: 2368, 1760

ROI Number(Row×Col): 2 × 2
*Maximum Number:150

Row Spacing(pixel): 2
*Range:0~1504

Column Spacing(pixel): 2
*Range:0~2112

OK Cancel

Figure 8-8 Draw ROIs in Batch

8.3.3 Set Algorithm Parameter

In **Algorithm Parameter**, select **1DCode**, **2DCode** or **StackCode** as **Arithmetic Type**, and then you can set the related parameters.

Note

- You should have selected at least one type of 1D code, 2D code or stacked code.
 - For different models of the device, the specific parameters may differ, and the actual device you purchased shall prevail.
-

Set 1D Code

Waiting Time

Waiting time refers to the maximum running time of algorithm, and its unit is ms. The code reader will stop parsing the images and return results if the time is exceeded the waiting time configured. When the value is set as 0, the actual running time of algorithm will prevail.

Code Color

It defines the readable code color. **WhiteCodeOnBlackWall** means that the client software can recognize the white code with black background. **BlackCodeOnWhiteWall** means that the client software can recognize the black code with white background. **Adaptive** means that the device can recognize both types of codes mentioned above. However, the reading time will be longer compared with the above two modes.

Code 39 Check

Enable this parameter if Code 39 uses the parity bit.

Note

You need to select **Code 39** in **Select Barcode**.

ITF 25 Check

Enable this parameter if ITF 25 uses the parity bit.

Note

You need to select **ITF 25** in **Select Barcode**.

Algo Debug Info

If it is enabled, some key information in the algorithm process will be saved to the image file for troubleshooting of reading failure.

Note

When the function is enabled, all information will be saved, which takes up a large amount

of memory. It is recommended to enable it only for troubleshooting.

Set 2D Code

Waiting Time

Waiting time refers to the maximum running time of algorithm, and its unit is ms. The code reader will stop parsing the images and return results if the time is exceeded the waiting time configured. When the value is set as 0, the actual running time of algorithm will prevail.

Algorithm Running Mode

It is used to be set the algorithm operating mode. It includes **HighSpeed**, **HighPerformance**, and **Balance**. **HighSpeed** focuses on recognition speed, and the algorithm can recognize the code rapidly, while **HighPerformance** refers to the algorithm can recognize the code that has distortion, spot or white gap, but its recognition speed is slow. **Balance** refers to the algorithm makes a balance between speed and performance.

2D Code Max. Size

It refers to the max. recognizable code width. The 2D code will not be recognized if its width exceeds the configured value.

Mirror Mode

It is useful when the recognized image is a mirror one, mirroring in X coordinate. Three modes are available: **Adaptive**, **Mirror**, and **NonMirror**.

Downsampling Level

It refers to the pixel sample size that the code reader takes. Increasing this parameter will improve the code reading efficiency at the expense of code recognition rate.

Code Color

It defines the readable code color. **WhiteCodeOnBlackWall** means that the client software can recognize the white code with black background. **BlackCodeOnWhiteWall** means that the client software can recognize the black code with white background. **Adaptive** means that the device can recognize both types of codes mentioned above. However, the reading time will be longer compared with the above two modes.

Discrete Flag

- **Continuous** stands for the minimum units in the "L" shaped sides of the DM code are continuous, or the minimum units in the concentric square like  or  in the QR code are continuous. Usually the continuous code uses squares as the minimum units.
- **Discrete** stands for the minimum units in the "L" shaped sides of the DM code are discrete, or the minimum units in the concentric square like  or  in the QR code are discrete. Usually the discrete code uses dots as the minimum units.
- **Adaptive** stands for the device can recognize both continuous code and the discrete code.

QR Distortion Correction

If the QR code or DM code is distorted, you can enable this parameter to improve code recognition rate. The parameter is disabled by default.

Note

If you enable this parameter, the more time will be consumed to recognize the codes in the image.

DM Code Shape

It defines the recognizable code shape. **Square** stands for square mode: If the 2D code is square shaped, it can be recognized by the device. **Rectangle** stands for rectangle mode: If the 2D code is rectangle shaped, it can be recognized by the device. **Adaptive** stands for compatible mode: The device can recognize 2D codes of both the above-mentioned two shapes.

DM Code Type

It includes **All**, **ECC140**, and **ECC200**.

Algo Debug Info

If it is enabled, some key information in the algorithm process will be saved to the image file for troubleshooting of reading failure.

Note

When the function is enabled, all information will be saved, which takes up a large amount of memory. It is recommended to enable it only for troubleshooting.

Set Stack Code

Waiting Time

Waiting time refers to the maximum running time of algorithm, and its unit is ms. The code reader will stop parsing the images and return results if the time is exceeded the waiting time configured. When the value is set as 0, the actual running time of algorithm will prevail.

8.3.4 Set Waybill Cutout

During the code reading, if both code information and waybill information are required simultaneously, you can use the waybill cutout function. For images captured by the device, this function can get waybill information from the images for parcel tracking.

Steps

1. Go to **Algorithm Settings** → **Waybill Cutout**.

2. Enable **Waybill Cutout Enable**. After this function is enabled, the device will read the captured waybill images, and send waybill data (such as coordinates and angle) to the client software. The client software will execute waybill cutout based on waybill data, and save this cropped image to the local. You can go to **Settings** → **Capturing** to set the saving path.
3. Select the output format of the cropped image. **Mono8**, **Jpg**, and **Bmp** are available.
 - When the output format is set to **Mono8**, the saved image is the original raw image, and the file is in .raw format.
 - When the output format is set to **Jpg**, you can adjust the image quality via **JPG Quality**. This parameter ranges from 1 to 100, and the larger the value, the higher the image quality.
4. Go to **Feature Tree** → **Communication Control**, select **SmartSDK**, and enable **Bill Info Enable** in **Bill Algorithm Params**. You can set the following parameters.
 - **Bill Combine Enable**: After it is enabled, the device will output the cropped image that contains all waybill images within the field of view.
 - **Bill Sort Enable**: After it is enabled, the output waybills will be ranked based on quality information, such as missing corners or off-center coordinates in the captured image.

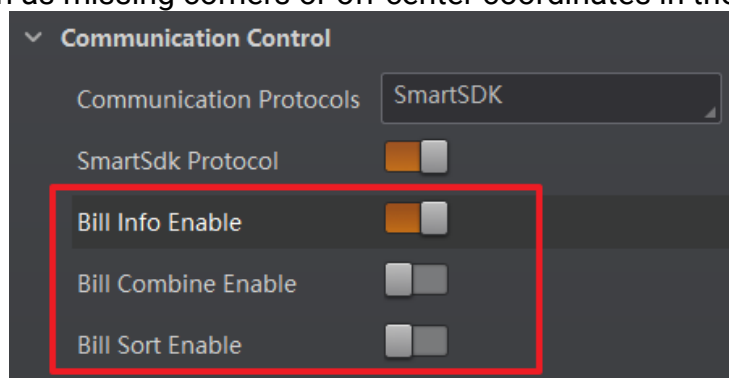


Figure 8-9 Set Bill Information

Note

When the **Bill Sort Enable** is enabled, the code data will be mismatched with the images. When it is disabled, they will be restored to a correct match.

8.4 Signal Input Settings

8.4.1 Set Signal Input

In the signal input module, you can set the trigger-related parameters. You can enable trigger mode to let the acquisition of image data occur only when the trigger source is generated.

Steps

1. Click **I/O Control Settings** on the navigation bar to enter the I/O Control Settings panel.

2. Click **Input** → **Trigger Mode**, and select **On** as **Trigger Mode**.
3. Select a source type from the drop-down list of **Trigger Source**.

Note

- The trigger source includes Software, LineIn 0/1/2, Counter 0, TCP Start, UDP Start, and Serial Start.
- For specific trigger source, refer to the actual device you got.

4. Set **Trigger Delay** according to the needs. The trigger delay function allows the device to add a delay between the receipt of trigger signal and the moment the trigger becomes active. It is 0 by default and the unit is μs . The sequence diagram of trigger delay is shown below.

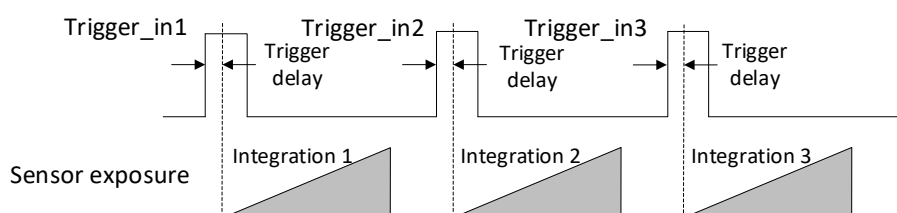


Figure 8-10 Sequence Diagram of Trigger Delay

5. Configure trigger-related parameters according to the selected trigger source. Refer to the section below.

Set and Execute Software Trigger Mode

In software trigger, the software sends trigger signal to the device via I/O interface to acquire images.

Steps

1. Click **I/O Control Settings** → **Input** → **Trigger Mode**.
 2. Select **On** as **Trigger Mode**.
 3. Select **Software** as **Trigger Source**.
 4. Click **Execute** in **Trigger Source** to send trigger commands.
- You can also enter **Auto Trigger Time**, and then enable **Enable Auto Trigger** to let the client software automatically send trigger signal to device according to the interval you set.

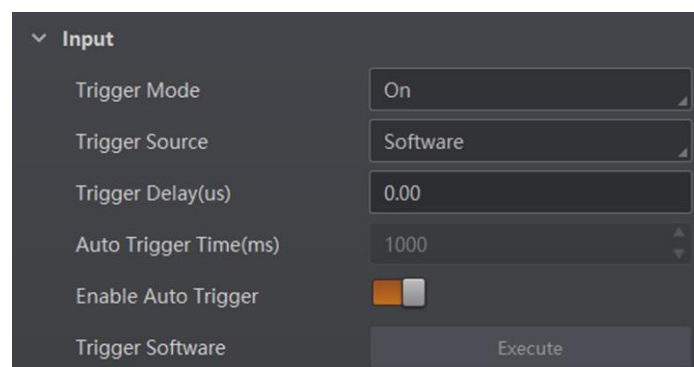


Figure 8-11 Set and Execute Software Trigger Mode

Set and Execute Hardware Trigger Mode

Steps

1. Go to **I/O Control Settings** → **Input** → **Trigger Mode**.
 2. Select **On** as **Trigger Mode**.
 3. Select the specific line as **Trigger Source** according to the actual demands.
 4. Set **Debounce Time** and **Trigger Activation** according to the actual demands.
- **Trigger debounce:** The trigger debounce function allows the device to filter out unwanted short external trigger signal that is input to the device. The sequence diagram of trigger delay is shown below.

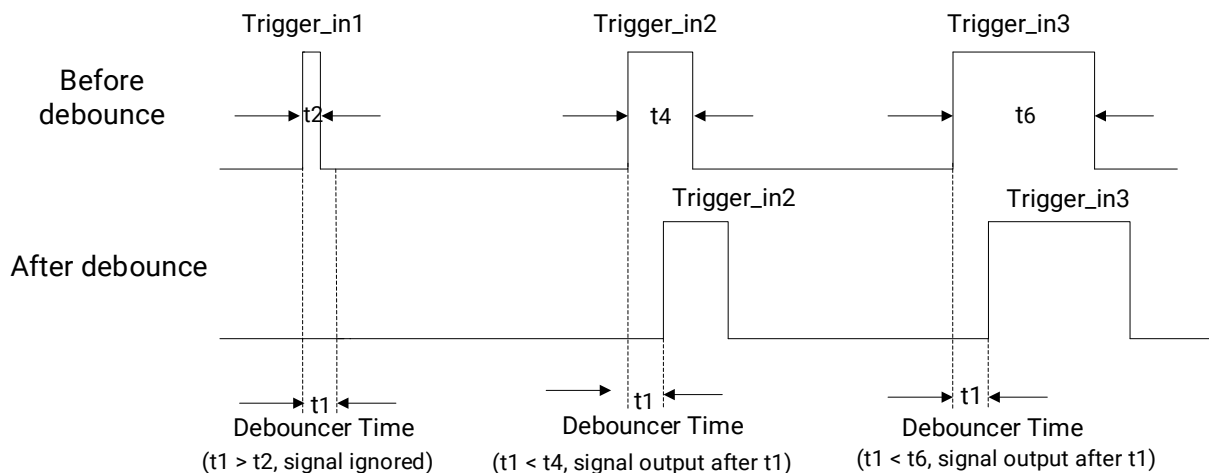


Figure 8-12 Sequence Diagram of Trigger Debounce

- **Trigger activation:** When selecting **Rising Edge** or **Falling Edge** as **Trigger Activation**, you can set **Trigger Delay**. When selecting **Level High** or **Level Low** as **Trigger Activation**, you can set **Start Delay Time** and **End Delay Time**.

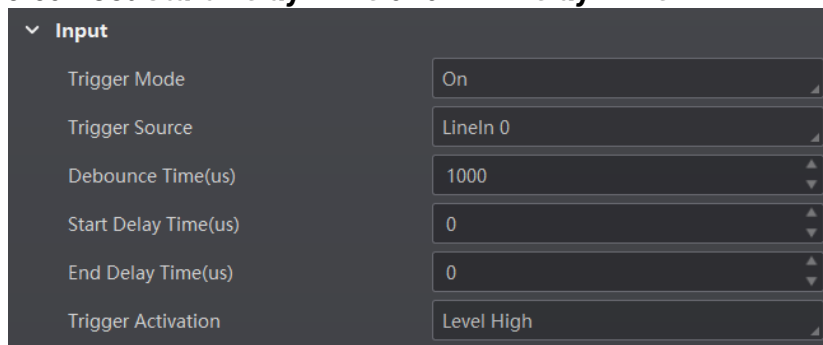


Figure 8-13 Set Trigger Activation

Set and Execute Counter Trigger Mode

Counter specifies that the trigger source will be generated after the set number of valid signals appears. For example, if you set the **Count Number** to **3**, the trigger source will be

generated after 3 signals appear.

Steps

1. Go to **I/O Control Settings** → **Input** → **Trigger Mode**.
2. Select **On** as **Trigger Mode**.
3. Select **Counter 0** as **Trigger Source**.
4. Set **Trigger Delay**, **Count Number**, **Count Source**, and **Trigger Activation**

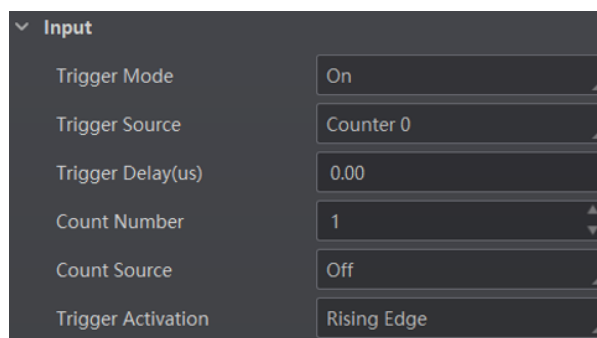


Figure 8-14 Set and Execute Counter Trigger Mode

Set and Execute TCP Trigger Mode

You can select TCP server or TCP client as the source for the trigger signal. When the server receives the specified string text, the trigger signal will be output.

Steps

1. Go to **I/O Control Settings** → **Input** → **Trigger Mode**.
2. Select **On** as **Trigger Mode**.
3. Select **TCP Server Start** or **TCP Client Start** as **Trigger Source**.
4. Set following parameters according to actual demands.
 - **TCP Trigger Port**: It sets the port No. of the server.
 - **TCP Trigger Text Format**: When receiving the specified trigger text, the server will output a trigger signal. You can select the text format from **Str** or **Hex**.
 - If **Str** is selected, enter the text in string format in the box next to **TCP Start Trigger Text**.
 - If **Hex** is selected, enter the text in hexadecimal format in the box below **TCP Trigger Start String**. If needed, you can click **+** to open the ASCII Cross Reference Table and click a table cell to add the corresponding content to the text box.
 - **TCP Start Trigger Text**: It sets the trigger text of TCP Start, and it is **Start** by default.

Note

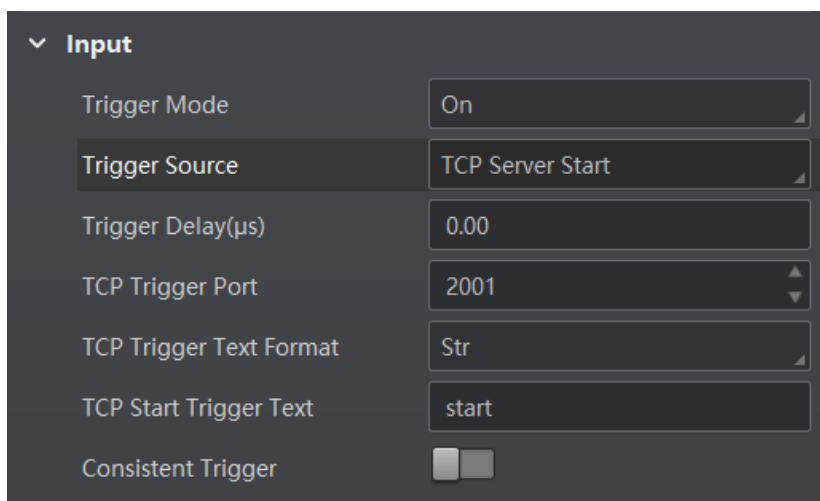
You can also configure the string text for sending a TCP handshake request and receiving a TCP handshake response via **Trigger and IO Control** module on the feature tree.

- **TCP Server Handshake Request Text**: Customize the handshake request command under the TCP.

- **TCP Server Handshake Response Text:** Customize the handshake response command under the TCP.
 - **Consistent Trigger:** Configure whether the code reader keeps triggering until receiving the corresponding stop trigger command.
-

Note

The stop trigger command can be set in the stop trigger settings module to configure the end trigger condition for the corresponding trigger source.



Input	
Trigger Mode	On
Trigger Source	TCP Server Start
Trigger Delay(μs)	0.00
TCP Trigger Port	2001
TCP Trigger Text Format	Str
TCP Start Trigger Text	start
Consistent Trigger	☐

Figure 8-15 Set and Execute TCP Trigger Mode

Set and Execute UDP Trigger Mode

UDP start specifies the UDP server as the source for the trigger signal. When the server receives the specified string text, the trigger signal will be output.

Steps

1. Go to **I/O Control Settings** → **Input** → **Trigger Mode**.
2. Select **On** as **Trigger Mode**.
3. Select **UDP Start** as **Trigger Source**.
4. Set following parameters according to actual demands.
 - **UDP Trigger Port:** It sets the port No. of the server.
 - **UDP Trigger Text Format:** When receiving the specified trigger text, the server will output a trigger signal. You can select the text format from **Str** or **Hex**.
 - If **Str** is selected, enter the text in string format in the box next to **UDP Start Trigger Text**.
 - If **Hex** is selected, enter the text in hexadecimal format in the box below **UDP Trigger Start String**. If needed, you can click  to open the ASCII Cross Reference Table and click a table cell to add the corresponding content to the text box.
 - **UDP Start Trigger Text:** It sets the trigger text of UDP Start, and it is **Start** by default.

 Note

You can also configure the string text for sending a UDP handshake request and receiving a UDP handshake response via **Trigger and IO Control** module on the feature tree.

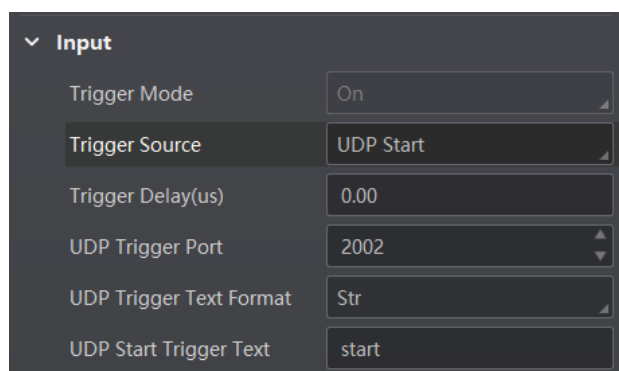


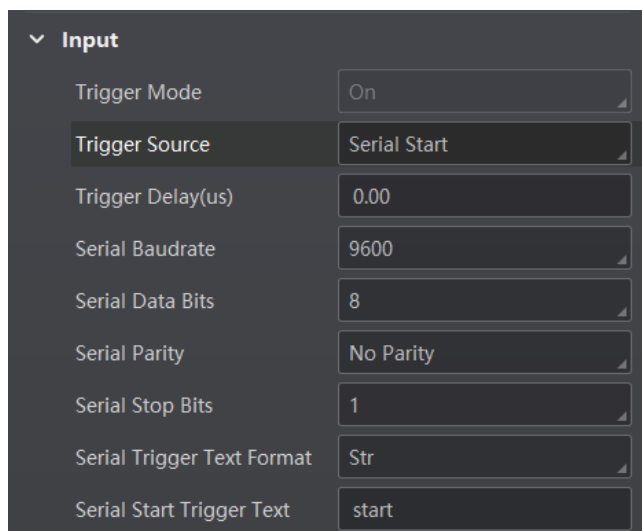
Figure 8-16 Set and Execute UDP Trigger Mode

Set and Execute Serial Port Trigger Mode

Serial start specifies the serial port as the source for the trigger signal. When the serial port receives the specified string text, the trigger signal will be output.

Steps

1. Go to **I/O Control Settings** → **Input** → **Trigger Mode**.
 2. Select **On** as **Trigger Mode**.
 3. Select **Serial Start** as **Trigger Source**.
 4. Set **Serial Baudrate**, **Serial Data Bits**, **Serial Parity**, and **Serial Stop Bits**.
 5. Set following parameters according to actual demands.
- **Serial Trigger Text Format**: When receiving the specified trigger text, the server will output a trigger signal. You can select the text format from **Str** or **Hex**.
 - If **Str** is selected, enter the text in string format in the box next to **Serial Start Trigger Text**.
 - If **Hex** is selected, enter the text in hexadecimal format in the box below **Serial Trigger Start String**. If needed, you can click  to open the ASCII Cross Reference Table and click a table cell to add the corresponding content to the text box.
 - **Serial Start Trigger Text**: It sets the trigger text of Serial Start, and it is **Start** by default.



▼ Input	
Trigger Mode	On
Trigger Source	Serial Start
Trigger Delay(us)	0.00
Serial Baudrate	9600
Serial Data Bits	8
Serial Parity	No Parity
Serial Stop Bits	1
Serial Trigger Text Format	Str
Serial Start Trigger Text	start

Figure 8-17 Set and Execute Serial Port Trigger Mode

8.4.2 Stop Trigger

The device supports stopping trigger via TCP, UDP, I/O, and serial port. You can also set code reading timeout duration or max. code quantity to be read to stop trigger. After stopping trigger is completed, the device cannot make response to trigger again.

Note

For specific trigger stopping methods, refer to the actual device you got.

Stop Trigger via TCP

When the TCP server receives the specified string text, the trigger will be stopped.

Steps

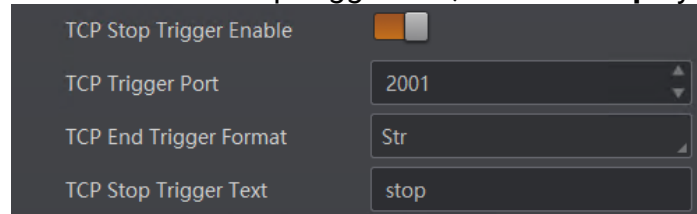
1. Go to **I/O Control Settings** → **Stop Trigger**.
2. Enable **TCP Stop Trigger Enable**.
3. Set following parameters according to actual demands.
 - **TCP Trigger Port**: It is 2001 by default.

Note

- The port No. configured here should differ from that in the TCP server port in the communication settings. Otherwise, parameter configuration will fail.
 - This function shares the same port No. with the TCP Trigger Mode, and the settings for both will take effect.
-
- **TCP End Trigger Format**: You can select the text format from the drop-down list, including **Str** and **Hex**.
 - If **Str** is selected, enter the text in string format in the box next to **TCP Stop Trigger**

Text.

- If **Hex** is selected, enter the text in hexadecimal format in the box below **TCP Trigger End String**. If needed, you can click **+** to open the ASCII Cross Reference Table and click a table cell to add the corresponding content to the text box.
- **TCP Stop Trigger Text:** It sets the stop trigger text, and it is **stop** by default.



TCP Stop Trigger Enable	☒
TCP Trigger Port	2001
TCP End Trigger Format	Str
TCP Stop Trigger Text	stop

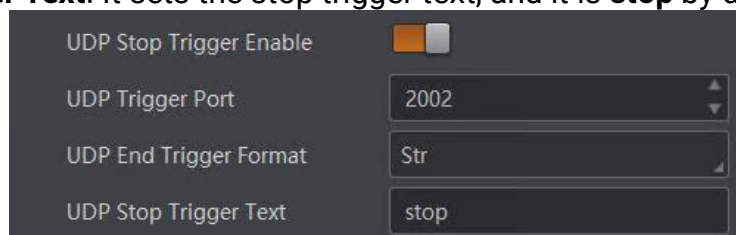
Figure 8-18 Stop Trigger via TCP

Stop Trigger via UDP

When the UDP receives the specified string text, the trigger will be stopped.

Steps

1. Go to **I/O Control Settings** → **Stop Trigger**.
 2. Enable **UDP Stop Trigger Enable**.
 3. Set following parameters according to actual demands.
- **UDP Trigger Port:** It is 2002 by default.
 - **UDP End Trigger Format:** You can select the text format from the drop-down list, including **Str** and **Hex**.
 - If **Str** is selected, enter the text in string format in the box next to **UDP Stop Trigger Text**.
 - If **Hex** is selected, enter the text in hexadecimal format in the box below **UDP Trigger End String**. If needed, you can click **+** to open the ASCII Cross Reference Table and click a table cell to add the corresponding content to the text box.
 - **UDP Stop Trigger Text:** It sets the stop trigger text, and it is **stop** by default.



UDP Stop Trigger Enable	☒
UDP Trigger Port	2002
UDP End Trigger Format	Str
UDP Stop Trigger Text	stop

Figure 8-19 Stop Trigger via UDP

Stop Trigger via I/O

Stopping trigger via IO allows you to select hardware or software trigger source to stop the

device from acquiring images.

Note

The output signal may differ by the device models.

Steps

1. Go to **I/O Control Settings** → **Stop Trigger**.
2. Enable **IO Stop Trigger Enable**.
3. Select sources from **LineIn 0/1/2** and **SoftwareTriggerEnd** as **IO Stop Trigger Selector**.
4. (Optional) Set trigger polarity (rising edge and falling edge) if **LineIn 0/1/2** is selected as **IO Stop Trigger Selector**. If the trigger source of the input signal is the same as that of the trigger stopping via I/O, there is no need to select.

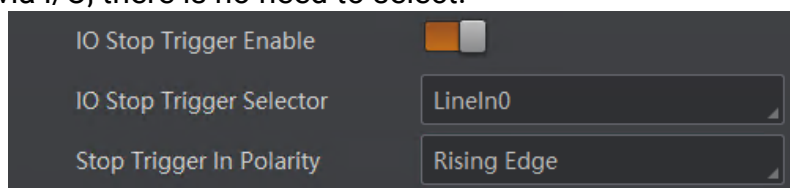


Figure 8-20 Stop Trigger via I/O

5. (Optional) Click **Execute** in **Software Stop Trigger** to stop trigger if **SoftwareTriggerEnd** is selected as **IO Stop Trigger Selector**.

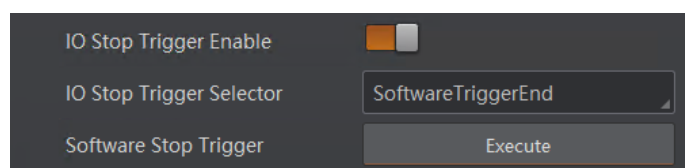


Figure 8-21 Software Trigger End

Stop Trigger via Serial Port

When the specified serial port receives the specified string text, the trigger will be stopped.

Steps

1. Go to **I/O Control Settings** → **Stop Trigger**.
2. Enable **Serial Stop Trigger Enable**.
3. Set following parameters according to actual demands.
 - **Serial End Trigger Format**: When receiving the specified trigger text, the server will output a trigger signal. You can select the text format from **Str** or **Hex**.
 - If **Str** is selected, enter the text in string format in the box next to **Serial Stop Trigger Text**.
 - If **Hex** is selected, enter the text in hexadecimal format in the box below **Serial Trigger Stop String**. If needed, you can click  to open the ASCII Cross Reference Table and click a table cell to add the corresponding content to the text box.

 Note

Hex is supported only when the data bits of the serial port is 8.

- **Serial Stop Trigger Text:** It sets the trigger text of serial port stop, and it is **stop** by default.
- **Serial Baudrate:** It sets the baud rate of the serial port, and it is 9600 by default.
- **Serial Data Bits:** It sets the data bits of the serial port, and it is 8 by default.
- **Serial Parity:** It sets the parity of the serial port, and it is **No Parity** by default.
- **Serial Stop Bits:** It sets the stop bits of the serial port, and it is 1 by default.

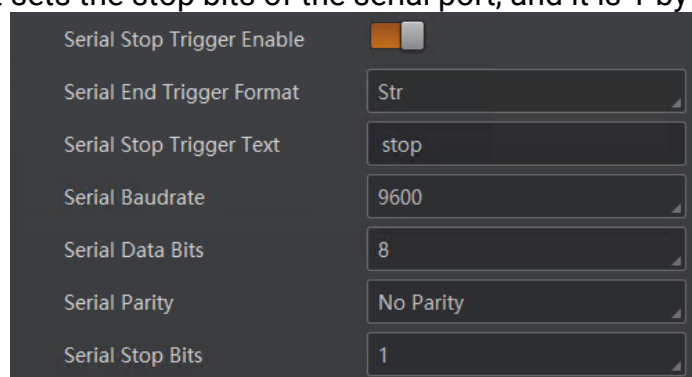


Figure 8-22 Stop Trigger via Serial Port

Stop Trigger via Timeout Duration

 Note

TimeOut Stop Trigger Enable is only available when the device running mode is set to **Normal** and the Trigger Mode is On.

When the trigger time reaches the specified maximum value (ms), the trigger will be stopped. You can enable **TimeOut Stop Trigger Enable**, and set **Maximum Output Limited Time** according to actual demands.

 Note

The range of **Maximum Output Limited Time** is between 0 ms and 10000 ms.

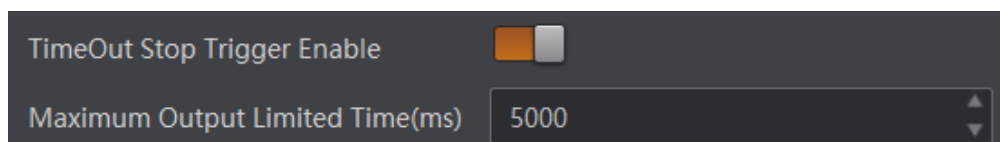


Figure 8-23 Stop Trigger via Timeout Duration

Stop Trigger via Code Number

Note

CodeNum Stop Trigger Enable is only available when the device running mode is set to **Normal** and the Trigger Mode is On.

This function means that the code quantity output by the device is restricted to the settings you configured here.

You can enable **CodeNum Stop Trigger Enable**, and set **CodeNum Stop Trigger Min** and **CodeNum Stop Trigger Max** according to actual demands.

Note

- If the number of outputted codes is less than the value configured for **CodeNum Stop Trigger Min**, the device will output codes continuously.
 - If the number of outputted codes is greater than the value configured for **CodeNum Stop Trigger Max**, the device will stop outputting codes.
 - If the number of outputted codes is between the values configured for **CodeNum Stop Trigger Min** and **CodeNum Stop Trigger Max**, the device will read and output codes according to trigger signals.
 - If **CodeNum Stop Trigger Min** is the same as the **CodeNum Stop Trigger Max**, the device will stop outputting codes when the number of outputted codes reaches the configured number.
-

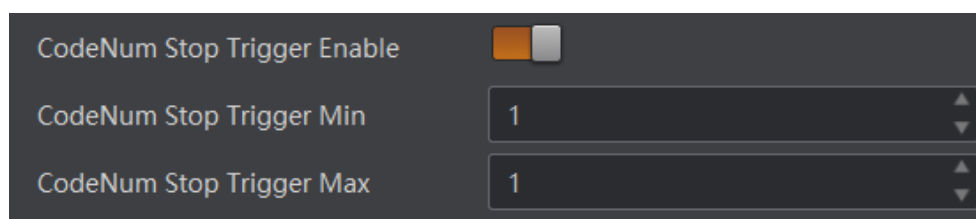


Figure 8-24 Stop Trigger via Code Number

8.5 Signal Output Settings

8.5.1 Select Output Signal

The device's output signal can control external devices like PLC, flashing light, etc. Click **I/O Control Settings** → **Output** → **Line Out Selector** to select output signal.

Note

The specific output signals may differ by device models.

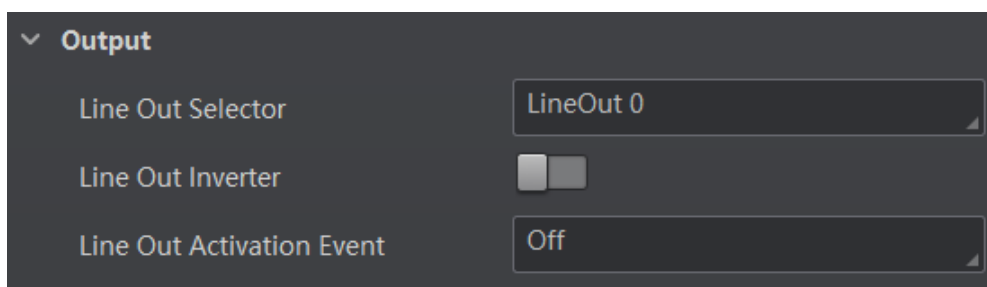


Figure 8-25 Select Output Signal

8.5.2 Set Event Source

Note

The specific event sources may differ by device models and firmware versions.

The device supports outputting different trigger signals according to the event source you select. Click **I/O Control Settings** → **Output** → **Line Out Activation Event** to select event source.

The device supports following event sources.

Note

- **Off** refers to no event source.
 - You need to set different parameters when selecting various event sources.
-

Select Acquisition Start Active

If you select **AcquisitionStartActive** as **Line Out Activation Event**, you can set its output delay time and duration.

- **Line Out Delay Time:** It sets the delay time for outputting the output signal.
- **Line Out Duration:** It sets the time duration of the output signal.

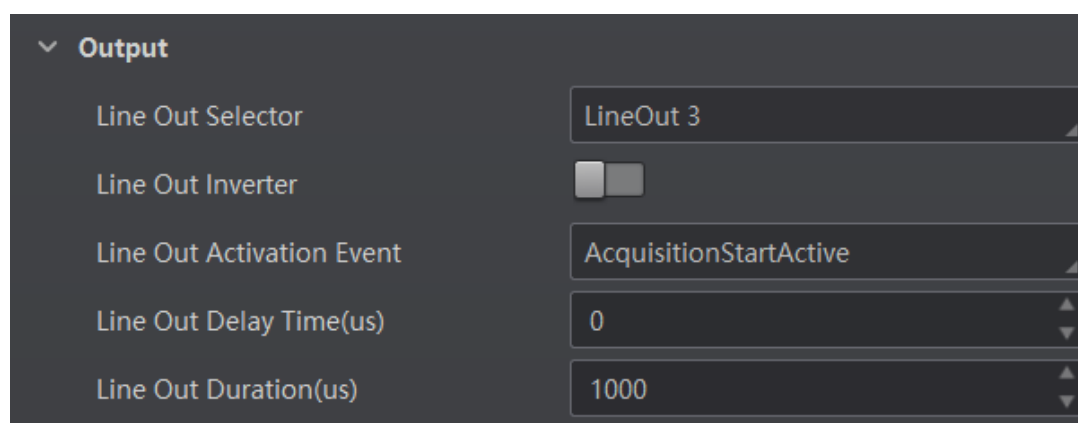


Figure 8-26 Select Acquisition Start Active

Select Acquisition Stop Active

If you select **AcquisitionStopActive** as **Line Out Activation Event**, you can set its output delay time and duration.

- **Line Out Delay Time:** It sets the delay time for outputting the output signal.
- **Line Out Duration:** It sets the time duration of the output signal.

The screenshot shows a configuration panel titled 'Output' with a dropdown arrow. It contains five settings: 'Line Out Selector' is set to 'LineOut 3'; 'Line Out Inverter' is a toggle switch currently turned off; 'Line Out Activation Event' is set to 'AcquisitionStopActive'; 'Line Out Delay Time(us)' is set to '0'; and 'Line Out Duration(us)' is set to '1000'.

Figure 8-27 Select Acquisition Stop Active

Select Frame Burst Start Active

If you select **FrameBurstStartActive** as **Line Out Activation Event**, you can set its output delay time and duration.

- **Line Out Delay Time:** It sets the delay time for outputting the output signal.
- **Line Out Duration:** It sets the time duration of the output signal.

The screenshot shows a configuration panel titled 'Output' with a dropdown arrow. It contains five settings: 'Line Out Selector' is set to 'LineOut 3'; 'Line Out Inverter' is a toggle switch currently turned off; 'Line Out Activation Event' is set to 'FrameBurstStartActive'; 'Line Out Delay Time(us)' is set to '0'; and 'Line Out Duration(us)' is set to '1000'.

Figure 8-28 Select Frame Burst Start Active

Select Frame Burst Stop Active

If you select **FrameBurstStopActive** as **Line Out Activation Event**, you can set its output

delay time and duration.

- **Line Out Delay Time:** It sets the delay time for outputting the output signal.
- **Line Out Duration:** It sets the time duration of the output signal.

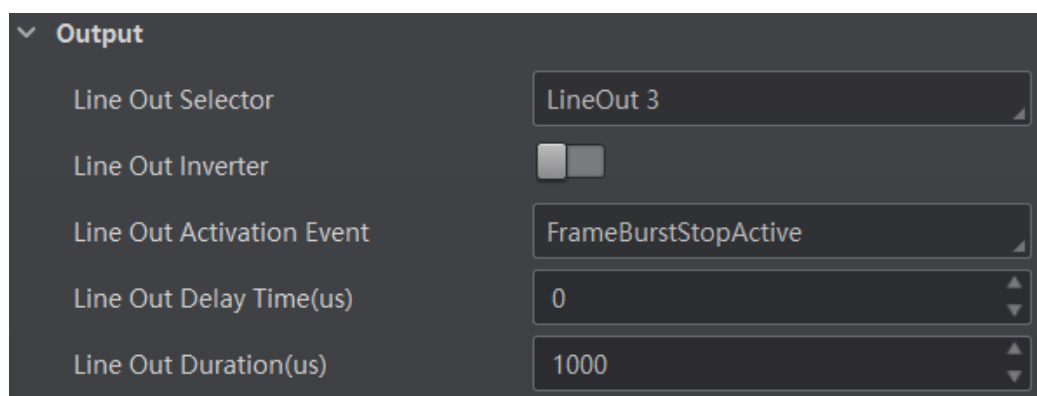


Figure 8-29 Select Frame Burst Stop Active

Select Exposure Start Active

If you select **ExposureStartActive** as **Line Out Activation Event**, you can set its output delay time, duration and advance time.

- **Line Out Delay Time:** It sets the delay time for outputting the output signal.
- **Line Out Duration Time:** It sets the time duration of the output signal.
- **LineOut Ahead Time:** It sets the advance time of outputting the output signal.

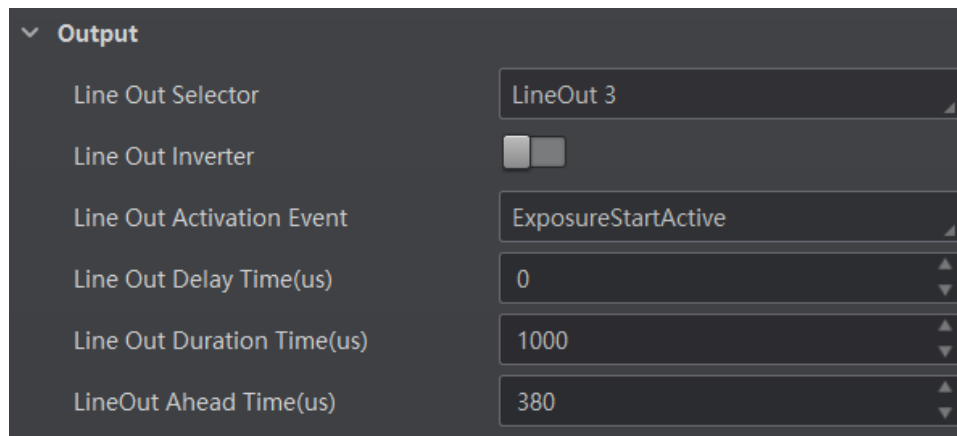


Figure 8-30 Select Exposure Start Active

Select Soft Trigger Active

If you select **SoftTriggerActive** as **Line Out Activation Event**, you can set its output delay time, duration, and execute outputting signal manually.

- **Line Trigger Software:** Click **Execute** in **Line Trigger Software** to output the signal manually.
- **Line Out Delay Time:** It sets the delay time for outputting the output signal.

- **Line Out Duration:** It sets the time duration of the output signal.

The screenshot shows a configuration window titled 'Output'. It contains several settings:

- Line Out Selector:** A dropdown menu set to 'LineOut 3'.
- Line Out Inverter:** A toggle switch that is currently turned off.
- Line Out Activation Event:** A dropdown menu set to 'SoftTriggerActive'.
- Line Trigger Software:** A button labeled 'Execute'.
- Line Out Delay Time(us):** A numeric input field set to '0'.
- Line Out Duration(us):** A numeric input field set to '1000'.

Figure 8-31 Select Soft Trigger Active

Select Hard Trigger Active

If you select **HardTriggerActive** as **Line Out Activation Event**, you can set its output delay time, duration, trigger source, and trigger activation.

- **Hardware Trigger Source:** It sets the hardware trigger source.
- **Hardware Trigger Activation:** It sets the trigger activation of input signal, including **Rising Edge** and **Falling Edge**.
- **Line Out Delay Time:** It sets the delay time for outputting the output signal.
- **Line Out Duration:** It sets the time duration of the output signal.

The screenshot shows the same configuration window as Figure 8-31, but with different settings for the 'HardTriggerActive' event:

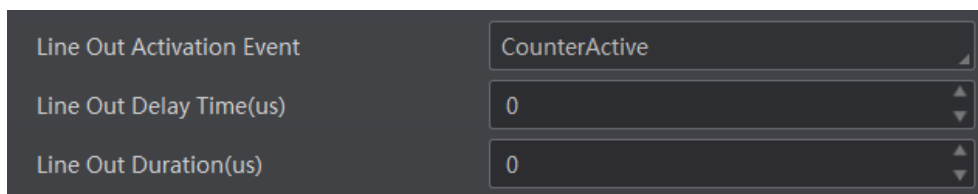
- Line Out Selector:** A dropdown menu set to 'LineOut 3'.
- Line Out Inverter:** A toggle switch that is currently turned off.
- Line Out Activation Event:** A dropdown menu set to 'HardTriggerActive'.
- Hardware Trigger Source:** A dropdown menu set to 'LineIn 0'.
- Hardware Trigger Activation:** A dropdown menu set to 'Rising Edge'.
- Line Out Delay Time(us):** A numeric input field set to '0'.
- Line Out Duration(us):** A numeric input field set to '1000'.

Figure 8-32 Select Hard Trigger Active

Select Counter Active

If you select **CounterActive** as **Line Out Activation Event**, you can set its output delay time and duration.

- **Line Out Delay Time:** It sets the delay time for outputting the output signal.
- **Line Out Duration:** It sets the time duration of the output signal.



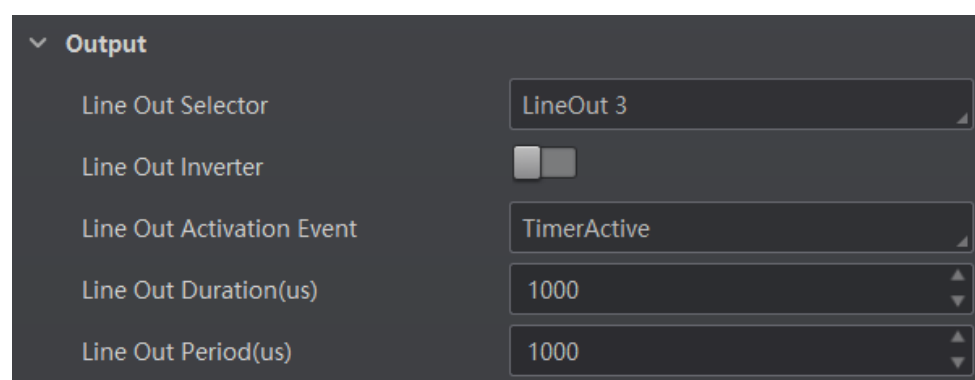
Line Out Activation Event	CounterActive
Line Out Delay Time(us)	0
Line Out Duration(us)	0

Figure 8-33 Select Counter Active

Select Timer Active

If you select **TimerActive** as **Line Out Activation Event**, you can set its output duration and period.

- **Line Out Duration:** It sets the time duration of the output signal.
- **Line Out Period:** It sets the time period of the output signal.



Output	
Line Out Selector	LineOut 3
Line Out Inverter	☐
Line Out Activation Event	TimerActive
Line Out Duration(us)	1000
Line Out Period(us)	1000

Figure 8-34 Select Timer Active

Select No Code Read

If you select **NoCodeRead** as **Line Out Activation Event**, you can set its output delay time and duration.

- **Line Out Delay Time:** It sets the delay time for outputting the output signal.
- **Line Out Duration:** It sets the time duration of the output signal.

The screenshot shows a configuration window titled 'Output' with a dropdown arrow. It contains five settings:

Parameter	Value
Line Out Selector	LineOut 3
Line Out Inverter	☐
Line Out Activation Event	NoCodeRead
Line Out Delay Time(us)	0
Line Out Duration(us)	1000

Figure 8-35 Select No Code Read

Select Read Success

If you select **ReadSuccess** as **Line Out Activation Event**, you can set its output delay time and duration.

- **Line Out Delay Time:** It sets the delay time for outputting the output signal.
- **Line Out Duration:** It sets the time duration of the output signal.

The screenshot shows the same configuration window as Figure 8-35, but with 'Line Out Activation Event' set to 'ReadSuccess'.

Parameter	Value
Line Out Selector	LineOut 3
Line Out Inverter	☐
Line Out Activation Event	ReadSuccess
Line Out Delay Time(us)	0
Line Out Duration(us)	1000

Figure 8-36 Select Read Success

Select Light Strobe Long

If you select **LightStrobeLong** as **Line Out Activation Event**, you do not need to set any parameters.

Select Command Control IO

If you select **CommandControlIO** as **Line Out Activation Event**, you can set the following parameters.

- **Control Start Str:** It sets the start string of command control.
- **Control Stop Str:** It sets the stop string of command control.
- **Control IO Consist Output Enable:** When it is enabled, the client starts output when receiving the start string and ends output only when receiving the stop string.

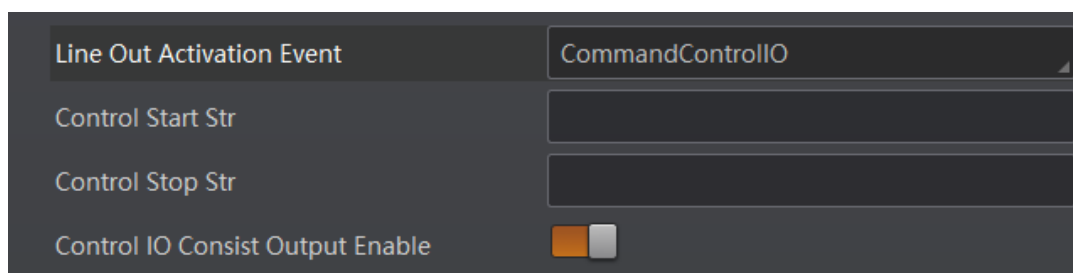


Figure 8-37 Select Command Control IO

8.5.3 Enable Line Inverter

The line inverter function allows the device to invert the electrical signal level of an I/O line, and meets requirements of different devices for high or low electrical signal level. You can go to **I/O Control Settings** → **Output** → **Line Out Inverter** to enable it.

Note

The **Line Out Inverter** function is disabled by default.

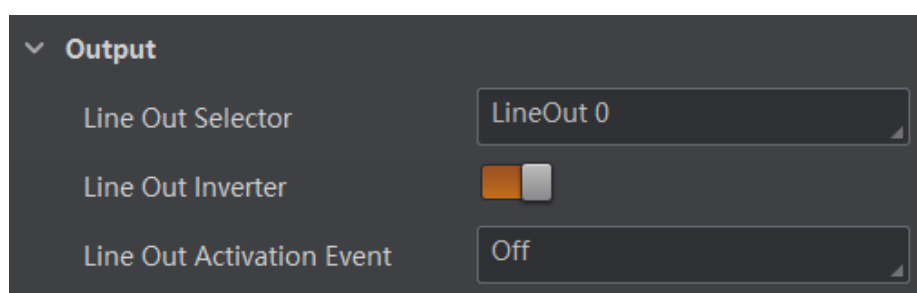


Figure 8-38 Enable Line Out Inverter

8.5.4 Set LED Indicator

The device has 2 user-defined indicators, U1 and U2. They are used to indicate whether some functions of the device are normal or not after you selecting specific events. Go to **I/O Control Settings** → **LED**, and set corresponding events according to actual demands. When the event you select occurs, indicators will flash once.

Table 8-3 Indicator Description

No.	Parameters	Description
1	Off	No events.
2	Read Success	The indicators flash once when the device reads codes.
3	Who Am I	When multiple code readers are connected, you can select this option and click Execute next to the parameter to make the indicator flash once, helping you identify the

No.	Parameters	Description
		currently connected code reader.
4	System Running	The indicators flash once when the device system operates.
5	Be Triggered	The indicators flash once when the device receives trigger signals.
6	LineOut 0	The indicators flash once when LineOut 0 outputs signals.
7	LineOut 1	The indicators flash once when LineOut 1 outputs signals.
8	LineOut 2	The indicators flash once when LineOut 2 outputs signals.

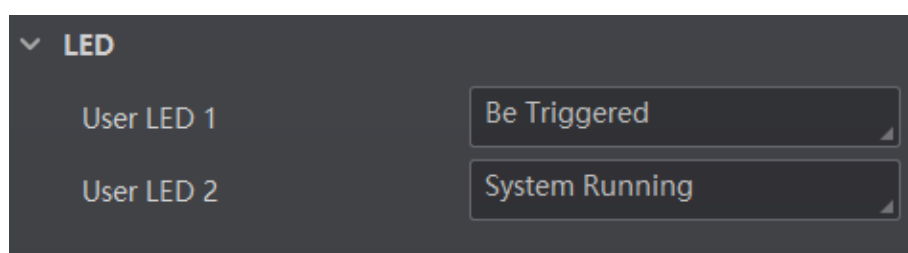


Figure 8-39 Set LED Indicator

8.6 Communication Settings

The communication protocol is used to transmit and output code reading result and image. The communication protocol is related to the device modes. With various device modes, the device supports different communication protocols and corresponding parameters.

- If the device's running mode is **Test** or **Raw**, the device only supports **SmartSDK** protocol and no parameter settings are required.
- If the device's running mode is **Normal**, the device supports **SmartSDK**, **TCP Client**, **Serial**, **FTP**, **TCP Server**, and **UDP** communication protocols, and you need to set corresponding parameters.

Note

- The supported communication protocols may differ by device models.
- The specific parameters of communication protocols may differ by device models.
- If you need communication command for reference, you can open the Communication Commands document by clicking **Help** → **Communication Matrix** on the top menu bar.

8.6.1 Set SmartSDK

If you select **SmartSDK** as the communication protocol, you can configure the following parameters:

Table 8-4 SmartSDK Communication Protocol

Parameter	Description
SmartSDK Protocol	If it is enabled, the device will output data via SmartSDK.
Encode JPG Flag	The device will compress images in JPG format after enabling it.
Quality of JPG	It sets the image compression quality, and it ranges from 50 to 99.

8.6.2 Set TCP Client

If you select **TCP Client** as the communication protocol, you can configure the following parameters:

Table 8-5 TCP Client Communication Protocol

Parameter	Description
Output Result Buffer	If it is enabled, when the TCP server is abnormal, the device will cache the images. When the server returns to normal, the device will send the cached images to the server. You can configure Output Result Buffer Number to determine the number of the images that the device will cache.
TCP Protocol	If it is enabled, the device will output data via the TCP server.
TCP Dst Addr	Enter the IP address of the server that receives data output by the code reader.
TCP Dst Port	Enter the port No. of the server that receives data output by the code reader.
Heartbeat Enable	If it is enabled, the software will send heartbeat packet to the server at a fixed interval to check whether the information transmission is working properly.
Barcode as Heartbeat	If it is enabled, the code read by the software can be sent as heartbeat packets.
Heartbeat Text	Set the beginning and end of the heartbeat data. The value is heartbeat by default.
Heartbeat Time	Set the interval for sending heartbeat packets. If no heartbeat response is received within the configured time, the software will unoccupy the code reader.

8.6.3 Set Serial

If you select **Serial** as the communication protocol, you can configure the following

parameters:

Table 8-6 Serial Communication Protocol

Parameter	Description
Serial Protocol	If it is enabled, the code reader will output data via serial port.
Serial Baudrate	Set the baud rate of the serial port of the PC that receives data.
Serial Data Bits	Set the data bits of the serial port of the PC that receives data.
Serial Parity	Set the parity bits of the serial port of the PC that receives data.
Serial Stop Bits	Set the stop bits of the serial port of the PC that receives data.

8.6.4 Set FTP

If you select **FTP** as the communication protocol, you can configure the following parameters:

Table 8-7 FTP Communication Protocol

Parameter	Description
Output Result Buffer	If it is enabled, when the FTP server is abnormal, the device will cache the images. When the FTP server returns to normal, the device will send the cached images to the server. You can configure Output Result Buffer Number to determine the number of the images that the device will cache.
FTP Protocol	If it is enabled, the code reader will output data via FTP server.
FTP Host Addr	Set the IP address of the FTP host.
FTP Host Port	Set the port No. of the FTP host.
FTP User Name	Set the user name of the FTP.
FTP User PWD	Set the password of the FTP.

8.6.5 Set TCP Server

If you select **TCP Server** as the communication protocol, you can configure the following parameters:

Table 8-8 TCP Server Communication Protocol

Parameter	Description
TCP Server Enable	If it is enabled, the code reader will output data via TCP server.
TCP Server Port	Set the port No. of the TCP server that receives data outputted by code reader.

8.6.6 Set UDP

If you select **UDP** as the communication protocol, you can configure the following parameters:

Table 8-9 UDP Communication Protocol

Parameter	Description
UDP Protocol Enable	If it is enabled, the code reader will output data via User Datagram Protocol (UDP).
UDP Dst IP	Set the IP address of the PC that receives the output data.
UDP Dst Port	Set the port No. of the PC that receives the output data.

8.7 Data Processing Settings

In **Data Processing**, you can set filter rules for reading codes and other data processing related parameters.

Note

The specific parameters may differ by device models and firmware versions.

8.7.1 Set Filter Rule

You can set rules via **Filter Rule** to filter unwanted codes to improve the reading efficiency.

Normal Filter Mode

If the device's running mode is normal, trigger mode is on, filter mode is normal, you can set following parameters according to actual demands:

- **Instant Output Mode Enable:** If it is enabled, the device will output code data immediately once a code is read. If not enabled, the code data will be outputted after the device trigger process ends.
- **Min. Output Time(ms):** Define the minimum time duration (unit: ms) for data output. The duration starts from trigger time. Note: The parameter is only available when the running mode is set to Normal mode and the trigger mode is enabled.
- **Numeral Filter:** If it is enabled, the device will only parse and read the numeral contents of the barcodes, and the non-numeral contents will be filtered out.
- **CodeLen Max Num:** It refers to the max. length of the code for output.
- **Code Offset Num:** Define the offset for the start character of the code data. For example, if you set the value to 3, the code reader will output data starting from the third character of the code data. The first and second characters will not be outputted.
- **Begin with Specific Character for Result:** If it is enabled, the device will only read the

codes which begin with a specific character string.

- **Include Specific Character in Barcode:** If it is enabled, the device will only read the codes which include a specific character string.
- **Character:** Enter the character string.
- **Exclude Specific Character in Barcode:** If it is enabled, the device will only read the codes without a specific character string.
- **Character:** Enter the character string.
- **Regular Expression Filter Enable:** If it is enabled, the device will only read the codes which contain the configured character string(s).
- **Max. Code Length:** If the length of a code is longer (in terms of the number of characters) than the configured value, the device will not parse the code.
For example, if you set the value to 9, the device will not parse the codes which contain more than 9 characters.
- **Min. Code Length:** If the length of a code is shorter (in terms of the number of characters) than the configured value, the device will not parse the code.
For example, if you set the value to 6, the device will not parse the codes which contain fewer than 6 characters.
- **Read Times Threshold:** If the reading results of a code is same for the configured times, the code will be regarded as valid and its data will be outputted. Or the code will be regarded as invalid and its data will not be outputted.

Note

The parameters, such as **Instant Output Mode Enable**, **Min. Output Time**, **CodeLen Max Num**, and **Code Offset Num**, are only available when the running mode is set to Normal mode and the trigger mode is enabled.

Regular Expression Filter Mode

The device supports filtering codes via the regular expression.

Steps

1. Select **Regular Expression** as the **Filter Mode**, and click **Set** in **Regular Expression Filter** to enter regular expression filter settings window.
2. Import local files or add customized filter rules to set the regular expression.
 - Import local files: Click **Import** to import local .xml files, and click **OK** to finish.

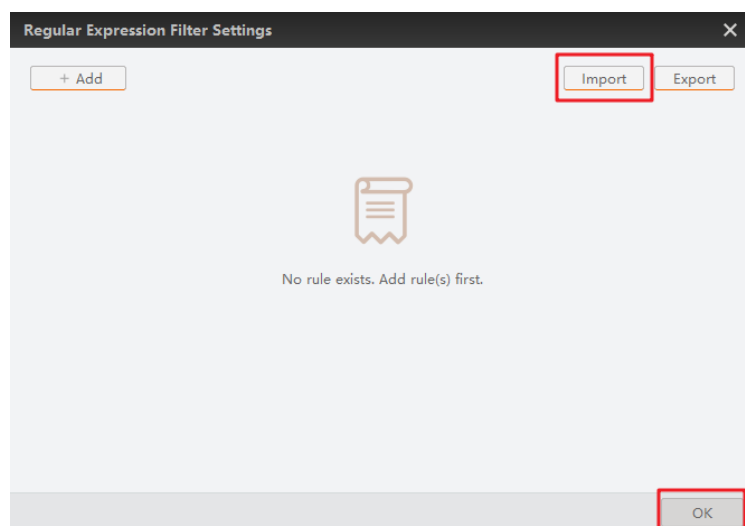


Figure 8-40 Regular Expression Filter Settings

- Add customized filter rule: Click **Add** and set related parameters in the popped-up window, and click **OK** after configuring parameters.

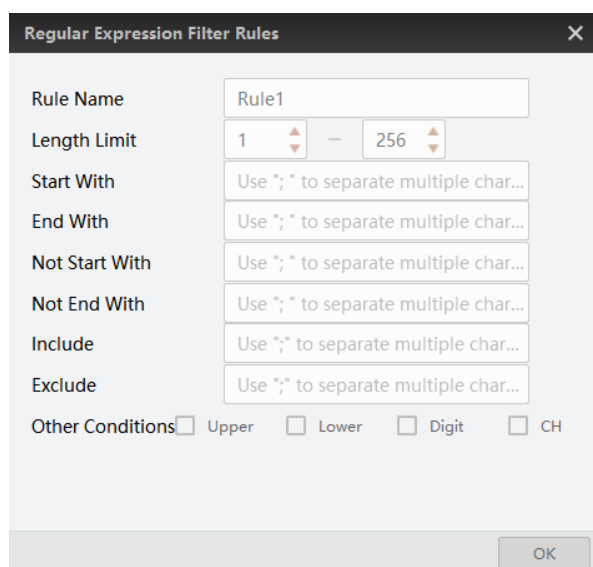


Figure 8-41 Customized Regular Expression Filter Rules

Table 8-10 Filter Rule Parameters

Parameter	Description
Rule Name	The default rule name is Rule 1, and you can edit it according to actual demands.
Length Limit	It sets the length range of the code, and its upper limit is 256.
Start With	It sets the specific starting characters of the code. You can use semicolon to separate if there are multiple characters.

Parameter	Description
	 Note If multiple characters are used, code meeting one of these characters is valid.
End With	It sets the specific ending characters of the code. You can use semicolon to separate if there are multiple characters.  Note If multiple characters are used, code meeting one of these characters is valid.
Not Start With	It excludes the specific starting characters of the code. You can use semicolon to separate if there are multiple characters.  Note If multiple characters are used, code meeting one of these characters is valid.
Not End With	It excludes the specific ending characters of the code. You can use semicolon to separate if there are multiple characters.  Note If multiple characters are used, code meeting one of these characters is valid.
Included	It sets the code with specific content. You can use semicolon to separate if there are multiple characters.  Note If multiple characters are used, code meeting all these characters is valid.
Excluded	It sets the code without specific content. You can use semicolon to separate if there are multiple characters.  Note If multiple characters are used, code meeting all these characters is valid.
Other Conditions	You can select uppercase, lowercase, or digit.

3. After setting filter rule, enter the code in **Code Check** to check if the filter rule is successful.

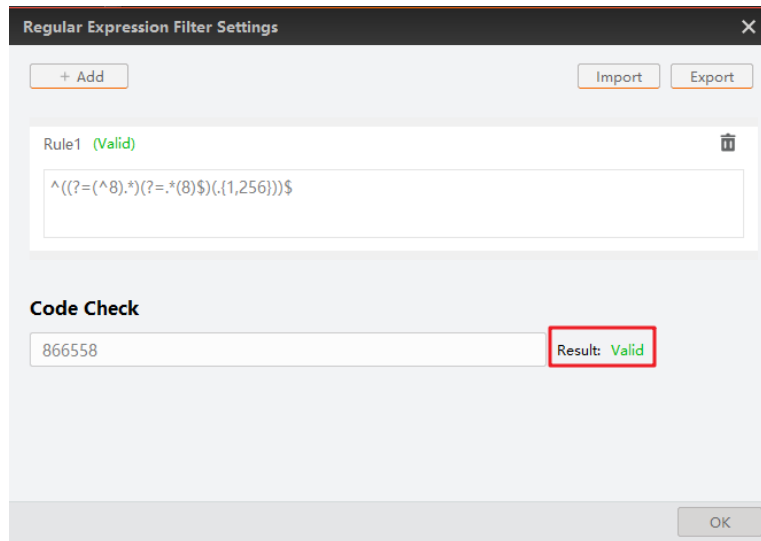


Figure 8-42 Code Check

Note

If the filter rule you configured is correct, the result is valid. Otherwise, it is invalid.

4. (Optional) Click  to delete unwanted filter rules.

5. (Optional) Click **Export** to export configured filter rules to local PC.

Note

The filter rule parameters of the regular expression may differ by device models and firmware versions.

8.7.2 Data Processing Settings

You can configure the contents contained in the output code information.

Note

- The actual parameters displayed may vary with different communication protocols. For details about communication settings, refer to section [Communication Settings](#).
 - The specific parameters and parameter order may differ by the device's running mode, trigger mode, device models and firmware versions.
-

SmartSDK

- **Sorting Rules:** Specify the sorting rules of output images. Multiple sorting rules are supported.
- **One By One Enable:** If it is enabled, the device will send one piece of code information

each time in accordance with the specified interval. You can set the interval via **One By One Interval** and the default value 100 ms.

FTP

When the communication protocol is FTP, set the following parameters of data processing:

- **FTP Picture Name Format:** Click **Edit** to edit the output format of FTP picture name.

Note

You can select the formats or enter the formats in the preview box.

- **FTP Upload Directory String:** Click  to select device IP, Image, Year, Month, and Day.
- **FTP Upload Directory:** View the configured FTP upload directory. Data are separated by "/".
- **FTP Picture OK/NG Directory:** After the function is enabled, the reading-succeeded pictures are saved in OK directory, and the reading-failed pictures saved in NG directory.

Note

If the function is disabled, all pictures are saved in one directory.

- **Local Save Picture Mode:** It includes **Off** and **NoRead**. You can select **NoRead** to let the device save images when no code is read.
- **Local Picture Type:** It sets the image saving type, including JPEG and BMP.
- **Local Override Strategy:** It includes **Off**, **Max Count**, **Loop Max Count**, and **Reserve Space**.
 - **Off** means that disk will not be overridden.
 - **Max Count** means that the device will save image quantity configured in **Local Override Max. Count**, and no more imaged will be saved when the disk is full.
 - **Loop Max Count** means that after the image quantity is reached the number configured in **Local Override Max. Count**, the device will delete the first image and continue to save the latest image.
 - **Reserve Space** means that the device will save images when the disk is safe in terms of storage space. If the available disk space is lower than configured value, and images will be deleted.
- **Local Override Max. Count:** You need to set this parameter when selecting **Max Count** or **Loop Max Count** as **Local Override Strategy**.
- **Local Picture Name Content:** It selects what contents you want to display in file name, including frame time, trigger No., and frame No.
- **Local Time Format:** It selects a format type from the drop-down list for the time stamp contained in the file name. Take YYYYMMDD_HHMMSSFFF as an example, (from the left to the right) YYYY represents year, MM represents month, DD represents date, HH represents hour, MM represents minute, SS represents second, and FFF represents millisecond.
- **Local Save Picture Strategy:** It sets the picture saving method. Four methods are

available, including recently frame, all frames, range frames and specific frame. If specific frame is selected as **Local Save Picture Strategy**, you need to set **Local Picture Index**.

- **Output Retrans Enable**: If this parameter is enabled, the data is allowed to retransmit to FTP server, and you should set specific value in **Output Retrans Number**.

Note

If data retransmission is still failed after the times allowed for data retransmission is reached, the retransmission will be discarded.

- **FTP Transmission Conditions**: It sets the condition to upload the data outputted by the device to FTP server.
 - **All** refers to upload the data always.
 - **Read Barcode** refers to upload the data only when the barcode is read by the device.
 - **No Read Barcode** refers to upload the data only when no barcode is read by the device.
- **FTP Transmission Result Contain**: It selects contents to upload to the FTP server.
 - **Just Result** refers to only upload the content of the barcode.
 - **Just Picture** refers to only upload the barcode picture.
 - **Result and Picture** refers to upload both the content of the barcode and the picture.
- **FTP File Format**: It includes CSV, XLS, and TXT.
- **FTP File Content Configuration**: You can set FTP file content. Barcode type, trigger number, frame number, code reading time, and code reading content can be selected.
- **FTP Result File Content Configuration**: You can set FTP result file content. The <frame_num>, <trigger_num>, and <ftp_code_content> can be configured by default.
- **FTP NoRead String**: The string is output during NoRead customization, None by default.
- **FTP Time Format**: It selects a format type from the drop-down list for the time stamp contained in the file name. Take YYYYMMDD_HHMMSSFFF as an example, (from the left to the right) YYYY represents year, MM represents month, DD represents date, HH represents hour, MM represents minute, SS represents second, and FFF represents millisecond.
- **FTP Save Picture Strategy**: It sets the FTP picture saving method when no code is read. Four methods are available, including recently frame, all frames, range frames and specific frame. If specific frame is selected as **FTP Save Picture Strategy**, you need to set **FTP Picture Index**.
- **FTP Picture Index**: In a complete trigger process, if the barcode cannot be recognized, this parameter can be used to decide to output the image. When the parameter is set to n, the nth image is output if the number of images is no less than n, or the last image is output if the number of images is less than n.
- **Sorting Rules**: It decides the output order of codes, and you can select it according to actual demands.
- **One By One Enable**: If it is enabled, the device will send one piece of code information each time in accordance with the specified interval. You can set the interval via **One By One Interval** and the default value 100 ms.
- **FTP NoRead Picture Classification**: You can select **WholeFrame** or **SingleFrame**.

Other Communication Protocols

When the communication protocol is TCP Client, Serial, or TCP Server, set the following parameters of data processing.

Note

Here we use "***" to represent the specific protocol name.

- **NoRead Image Index:** It sets the specific image that is outputted when no code information is read. For example, if you set this parameter as 5, and the 5th image will be output.
 - ***** Output Barcode Name Enable:** If this parameter is enabled, the outputted code information will contain the name of the code.
 - ***** Output Barcode Position Enable:** If this parameter is enabled, the outputted code information will contain the position of the code.
 - ***** Output Barcode Angle Enable:** If this parameter is enabled, the outputted code information will contain the angle of the code.
 - ***** Output Barcode MainPackageID Enable:** If this parameter is enabled, the outputted barcode information will contain the package ID.
 - ***** Output NoRead Enable:** If this parameter is enabled, when no code is recognized, the device will output the content you set in **TCP Output NoRead Text**.
 - ***** Output NoRead Text:** When no code is recognized, the device will output the content you set here.
-

Note

The default content is **NoRead**.

- ***** Output Start Text:** The contents of the start part of the data outputted. You can set the contents according to actual condition.
- ***** Output Stop Text:** The contents of the end part of the data outputted. You can set the contents according to actual condition.
- ***** Output Barcode Enter Character Enable:** Whether to show carriage return character in the data.
- ***** Output Barcode Newline Character Enable:** Whether to show new-line character in the data.

8.8 Custom Input Control

The device receives the private data of user via protocol, and then parses it according to the protocol's parsing rules (the header, the location of the private data, and the trailer). Finally, it sends the parsed data for code reading. You can follow the steps below for private data settings.

Before You Start

Make sure that the device mode is **Normal** and **Trigger Mode** is **On** before using this function.

Steps

1. Right click the connected device, and select **Feature Tree**.
2. Find **Custom Input Control**, and select **On** in **CustomProtocolEnable**.
3. Select **Custom Protocol Source** according to your needs.
 - **TCP**: After you select **TCP**, set **CustomTCPPort** (port No. of the server).
 - **Serial**: After you select **Serial**, set **CustomSerialBaudrate** (baud rate of the serial port), **CustomSerialDataBits** (data bits of the serial port), **CustomSerialParity** (parity of the serial port), and **CustomSerialStopBits** (stop bits of the serial port).
 - **UDP**: After you select **UDP**, set **CustomUDPPort** (port No. of the server).
4. Enable **Custom Msg Trigger Enable**, and the image acquisition will be triggered after user's private data is received.
5. Set the private data according to the parsing rules.
 - **CustomHeadText**: It sets the protocol header for data parsing.
 - **MsgLength**: It sets the length of the private data.
 - **CustomTailText**: It sets the protocol trailer for data parsing.
 - **Custom Output NORec Text**: It sets the alternative content displayed when the input cannot be identified.
 - **Output CustomRec Delimiter**: It sets the separator that separates adjacent configuration data.

Custom Input Control	
CustomProtocolEnable	On
Custom Protocol Source	UDP
CustomUDPPort	2002
CustomHeadText	
MsgLength	0
CustomTailText	
Output CustomRec Delimiter	
Custom Msg Trigger Enable	☒
Custom Output NORec Text	

Figure 8-43 Custom Input Control Parameters

8.9 Main-Sub Networking

When multiple devices acquire images and parse codes at the same time, the main-sub networking function enables multiple devices to work together.

The main principle of main-sub networking is to set one of the multiple devices as the main device (main station), and the other devices as sub devices (sub station). The sub devices send the code results to the main device that integrates or forwards, and sends

the code results to the connected PC or client software to realize the collaborative work function of multiple devices.

Before You Start

Make sure that the device mode is **Normal** and **Trigger Mode** is **On** before using this function.

Note

The function of main-sub networking may differ by device models.

Steps

1. Go to **MultiCamera Control**, and select **Multicast** according to actual demands.

- **Off**: This function is disabled.
 - **Main**: Set it as the main device.
 - **Sub**: Set it as the sub device.
-

Note

Devices in the same multicast group must be configured with the same ID.

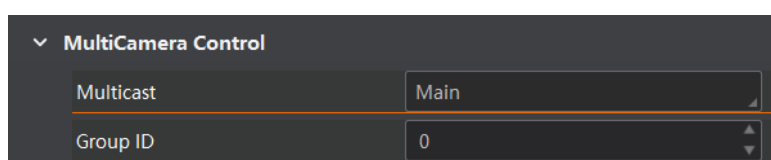
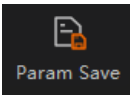


Figure 8-44 Multi Camera Control Parameters

8.10 User Set Customization

The Parameter Saving module allows you to set and manage the user set. A user set is a group of parameter values with all the settings needed to control the device, and you can save, load and switch different user sets.

Click  on the toolbar to add/load/delete user set.

Saving Settings

If you have set the device parameters as desired, you can save them into the user set. Go to **Param Save**, and click **User Set1/2/3** to save the current device settings.

Loading Settings

You can load the user set to restore the device to the saved group of parameter values again if required. Go to **Param Save**, and click **Default** or **User Set1/2/3** to load settings.

Note

The **Default** refers to restore the device parameter settings to the factory ones.

Adding/Deleting Settings

You can click  to add user set. Up to 8 user sets can be added.

You can select the user set to delete. **Default** or **User Set1/2/3** cannot be deleted.

Start Settings

The selected user set will be automatically loaded after the device being powered on. For example, if you select **Default**, the device parameter settings will be restored to the factory settings.

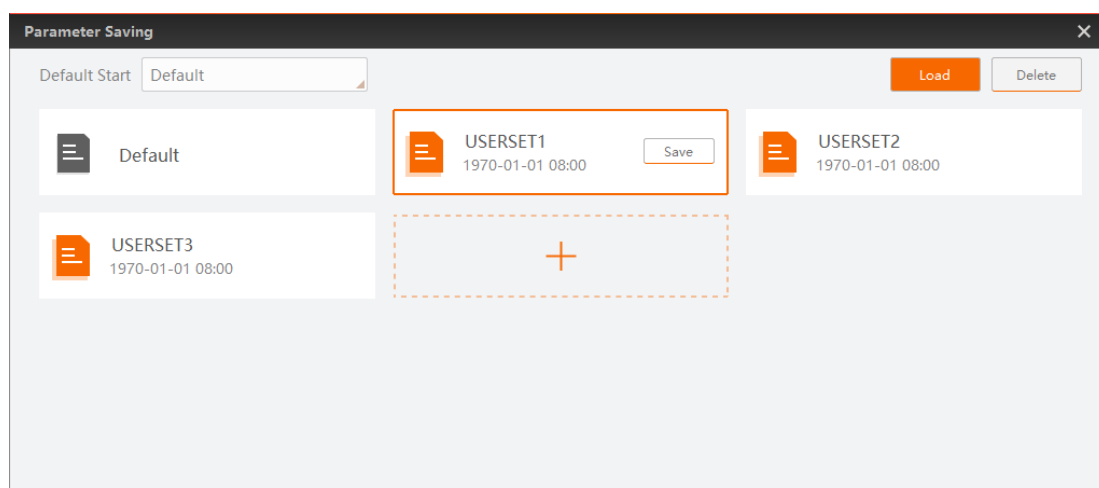
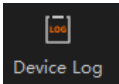


Figure 8-45 User Set Customization

Chapter 9 Device Maintenance

9.1 View Log

You can view the device logs and export them to the local PC.

Click  in the toolbar to open the device log window, and you can view different types of logs, including device errors, warning, and informational log, etc.

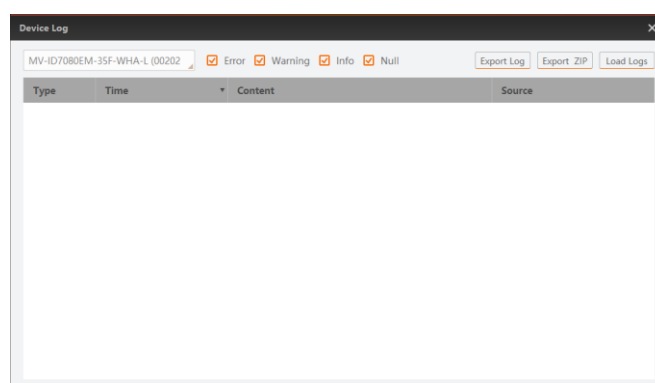


Figure 9-1 View Log

9.2 Update Firmware

There are two methods for firmware update.

Update via UDP

The device supports updating firmware via the client software.

Note

- Disconnect the device with client software.
 - Please use the firmware package of the corresponding device model for upgrading.
 - Do not power off the device or disconnect network during upgrading.
 - The device will restart automatically after the firmware is updated successfully.
-

Select the device to be updated in the device list, right-click the device, and click **Firmware Update**. Click  to select update file from local PC, and click **Update** to update firmware.

Note

You can also go to **Tool** → **Firmware Updater** to update firmware.

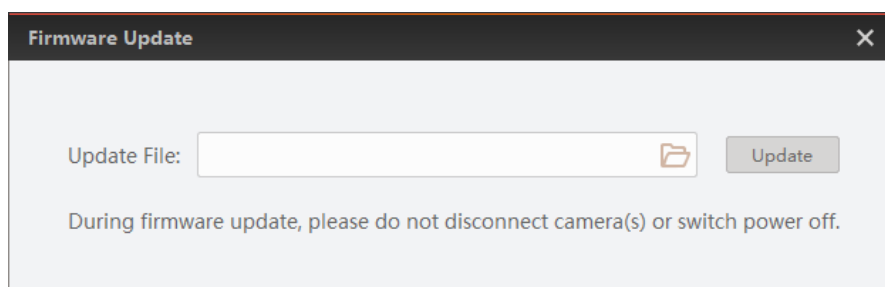


Figure 9-2 Update Firmware via UDP

Update via TCP

Note

Connect the device to client software first.

Select the device to be updated in the device list, right-click the device, and click **Firmware Update**. Click  to select update file from local PC, enter port No. of TCP update, and click **Update** to update firmware.

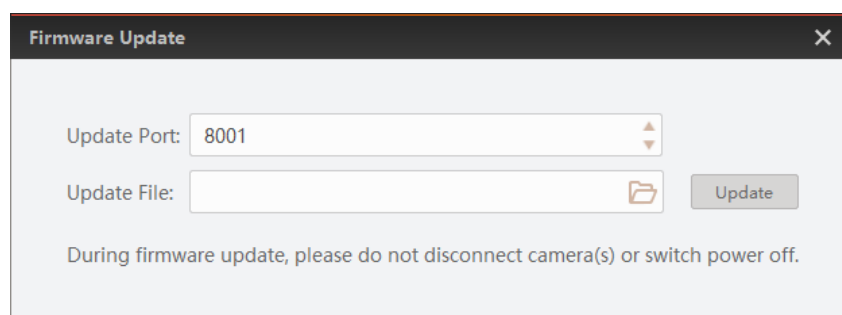


Figure 9-3 Update Firmware via TCP

9.3 Set NTP Time Sync

After enabling NTP time synchronization, the device will synchronize time according to the configured interval.

Steps

1. Go to **Device Control**, and enable **NTP Timing**.
 2. Set parameters according to actual demands.
-

Note

Configure NTP server settings before using NTP time synchronization function.

3. Click **OK** after settings.

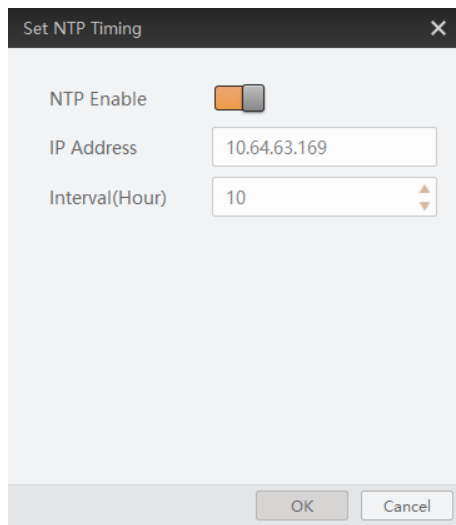


Figure 9-4 Set NTP Timing

9.4 Restart Device

You can restart the device via client software. Go to **Device Control**, and click **Device Reset**.

Chapter 10 I/O Wiring

10.1 Input Signal

The device's LineIn 0/1/2 are opto-isolated inputs, and their internal circuit is as follows.

Note

- The input voltage ranges from 5 VDC to 30 VDC.
- The breakdown voltage is 30 VDC. Keep voltage stable.

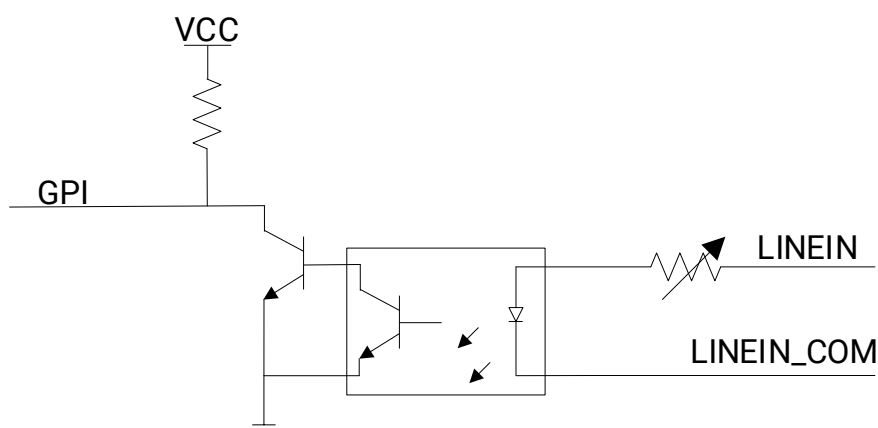


Figure 10-1 Internal Circuit of Input Signal

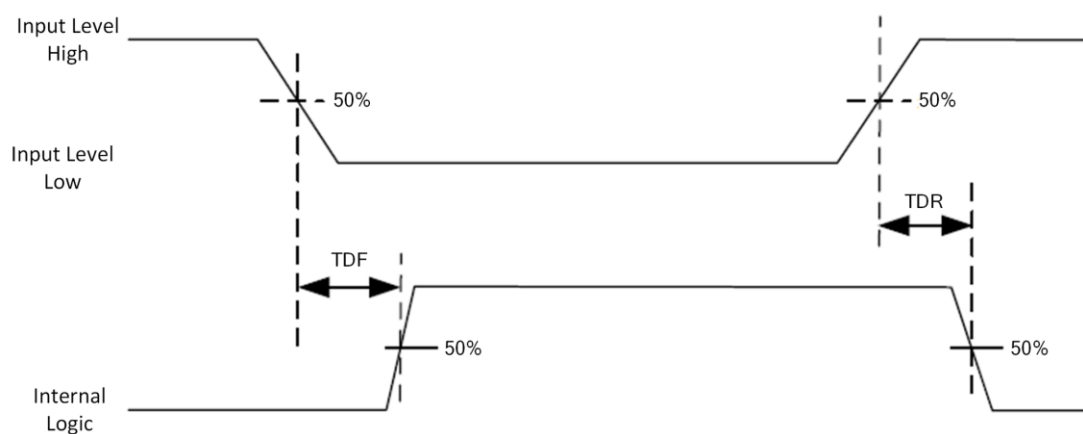


Figure 10-2 Input Logic Level

Table 10-1 Input Electrical Features

Parameter Name	Parameter Symbol	Value
Input Logic Level Low	VL	1.5 VDC
Input Logic Level High	VH	2 VDC
Input Falling Delay	TDF	81.6 μ s
Input Rising Delay	TDR	7 μ s

10.2 Output Signal

The device's LineOut 0/1/2 are opto-isolated outputs, and their internal circuit is as follows.

Note

- The output voltage ranges from 5 VDC to 30 VDC.
- The maximum output current is 100 mA.
- Do not directly connect with inductive load (e.g. DC motor, etc.) when outputting.

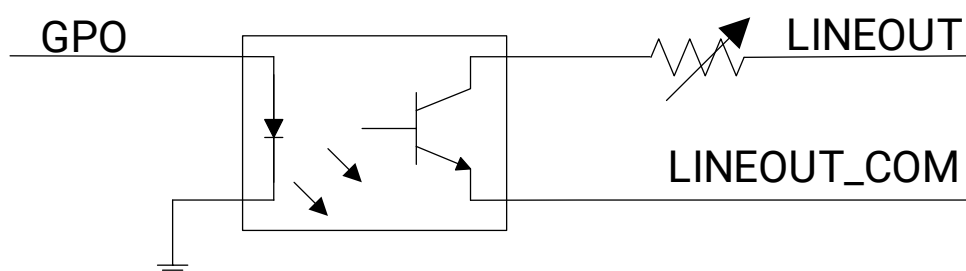
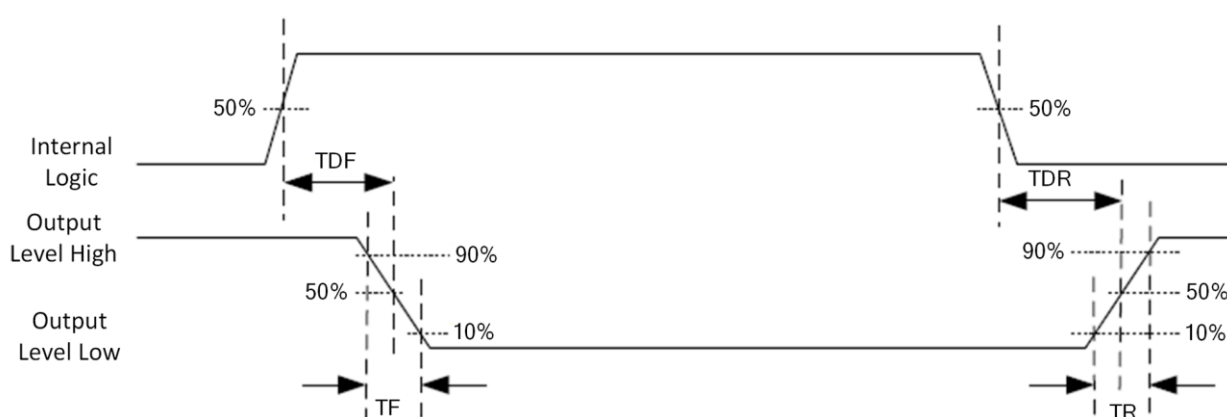
**Figure 10-3 Internal Circuit of Output Signal****Figure 10-4 Output Logic Level**

Table 10-2 Output Electrical Features

Parameter Name	Parameter Symbol	Value
Output Logic Level Low	VL	2 VDC
Output Logic Level High	VH	3.2 VDC
Output Falling Delay	TDF	6.3 μ s
Output Rising Delay	TDR	68 μ s
Output Falling Time	TF	3 μ s
Output Rising Time	TR	60 μ s

Note

If the external voltage and resistance change, the corresponding current of output signal and output logic level low may differ.

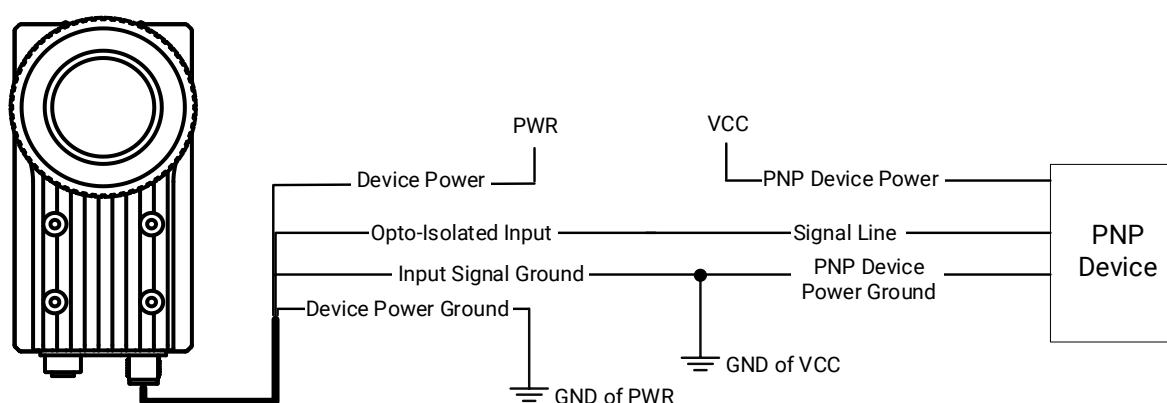
10.3 Input Signal Wiring

The device can receive external input signal via its I/O interface. This section introduces how to wire the device to different types of external devices.

Note

- Here we take LineIn0 as an example to introduce the input signal wiring.
- Input signal wiring may differ with different types of external devices.

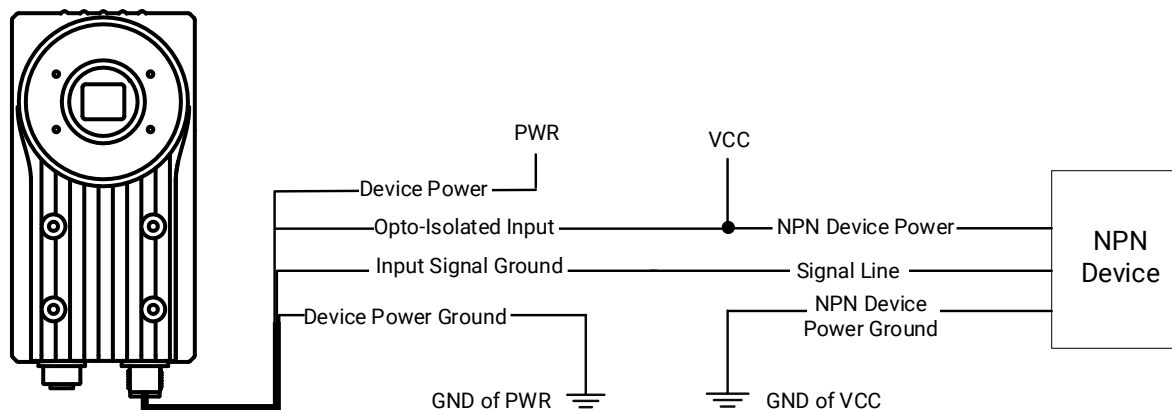
PNP Device

**Figure 10-5 Input Signal Connecting to PNP Device**

NPN Device

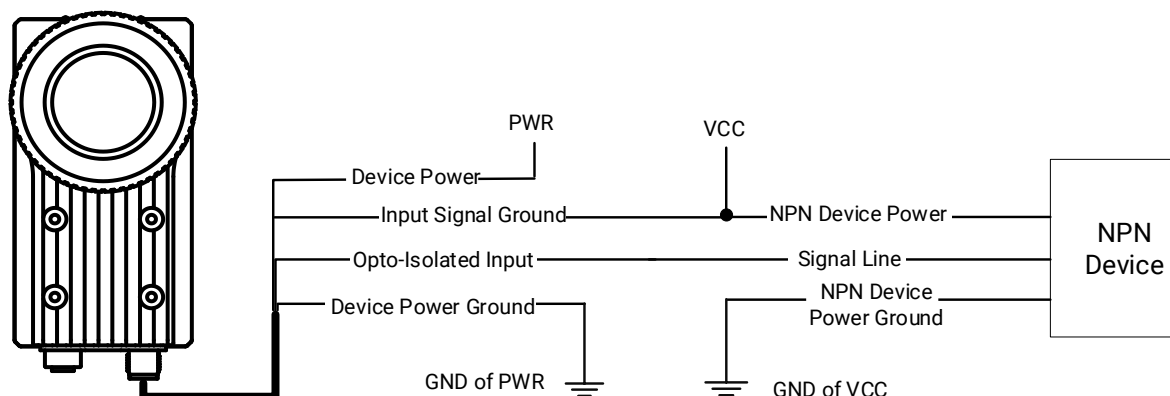
If the VCC of NPN device is 12 VDC or 24 VDC and pull-up resistor is not used, its wiring is as follows.

- MV-ID6200EM-00C-NNG



**Figure 10-6 Input Signal Connecting to NPN Device Without Pull-Up Resistor
(MV-ID6200EM-00C-NNG)**

- Other Devices



**Figure 10-7 Input Signal Connecting to NPN Device Without Pull-Up Resistor
(Other Devices)**

If the VCC of NPN device is 12 VDC or 24 VDC and a 1 K Ω pull-up resistor is used, its wiring is as follows.

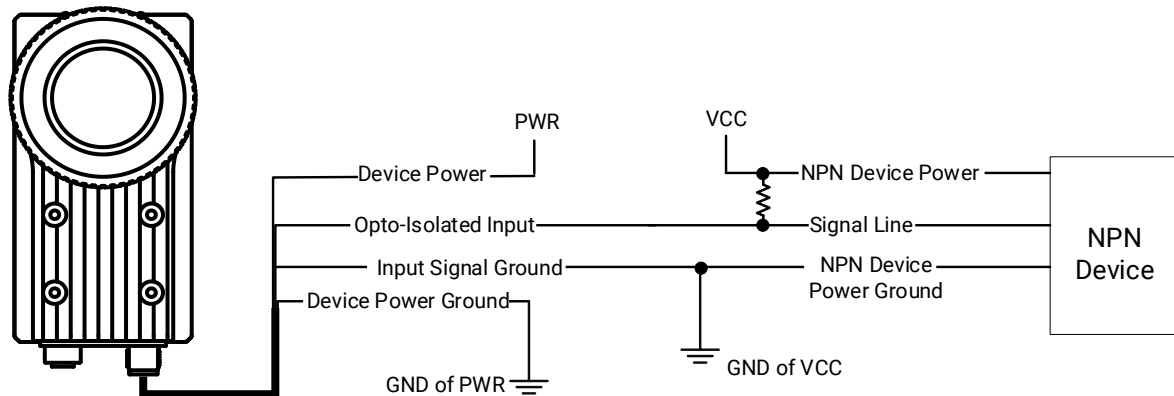


Figure 10-8 Input Signal Connecting to NPN Device with Pull-Up Resistor

10.4 Output Signal Wiring

The device can output signals to external devices via its I/O interface. This section introduces how to wire the device to different types of external devices.

Note

- Here we take LineOut0 as an example to introduce the input signal wiring.
- Output signal wiring may differ with different types of external devices.
- The voltage of VCC should not higher than that of PWR. Otherwise, the device's output signal may have exception.

PNP Device

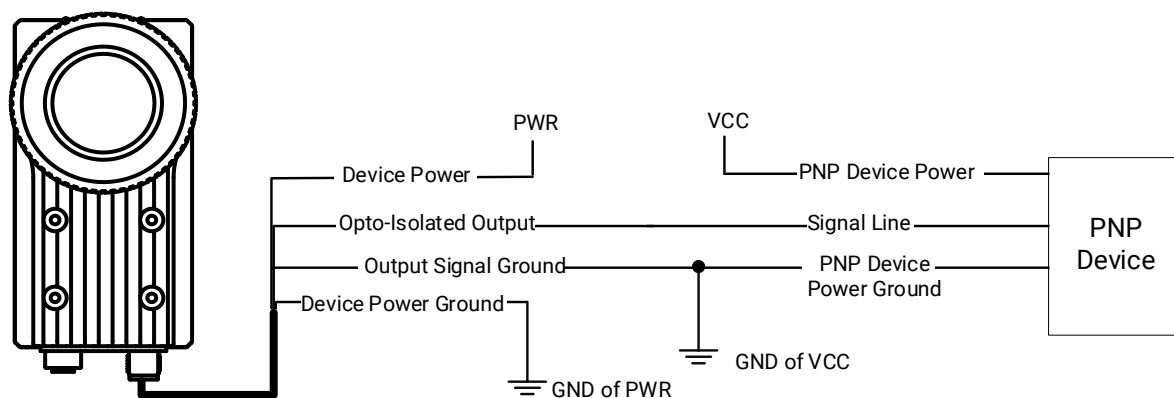


Figure 10-9 Output Signal Connecting to PNP Device

NPN Device

If the VCC of NPN device is 12 VDC or 24 VDC and pull-up resistor is not used, its wiring is as follows.

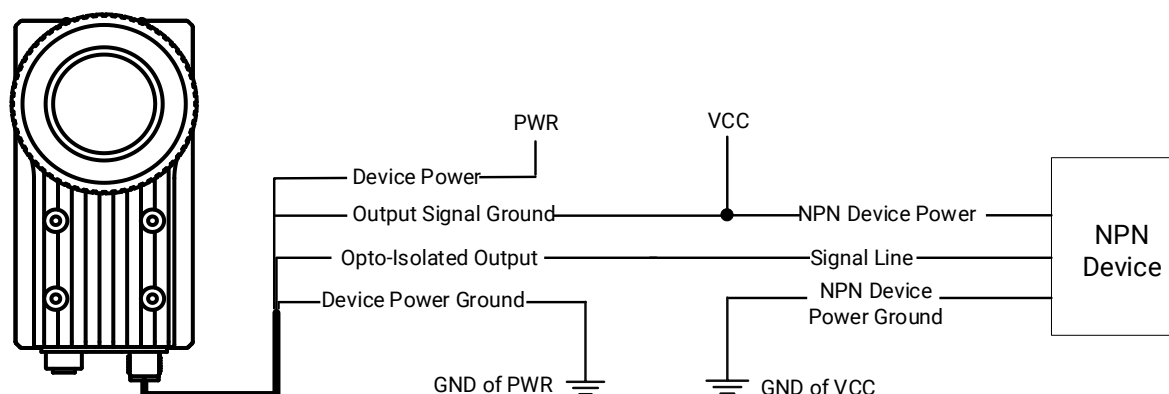


Figure 10-10 Output Signal Connecting to NPN Device Without Pull-Up Resistor

If the VCC of NPN device is 12 VDC or 24 VDC and a 1 K Ω pull-up resistor is used, its wiring is as follows.

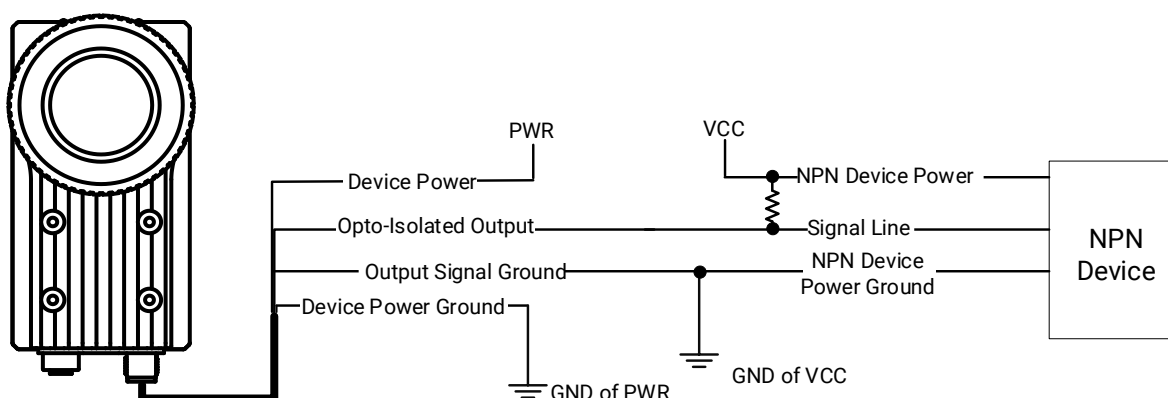


Figure 10-11 Output Signal Connecting to NPN Device with Pull-Up Resistor

10.5 RS-232 Serial Port

The device supports output via RS-232 serial port. The 9-pin male connector and 25-pin male connector are commonly used serial ports, as shown below. You can refer to the table below for the specific pin name and function.

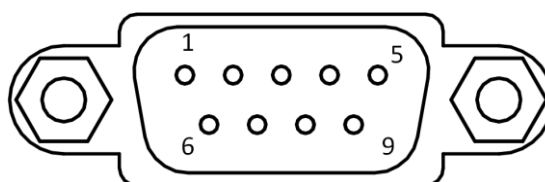


Figure 10-12 9-Pin Male Connector

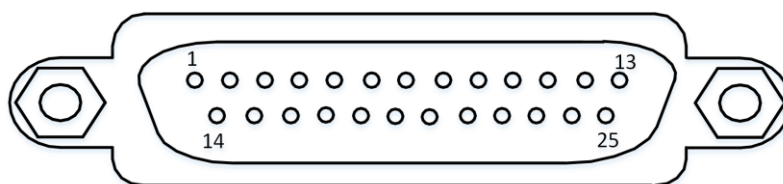


Figure 10-13 25-Pin Male Connector

Table 10-3 Pin Definitions

Serial Port Type	Pin No.	Name	Function
9-Pin Male Connector	2	RX	Receive data
	3	TX	Send data
	5	GND	Signal ground
25-Pin Male Connector	2	TX	Send data
	3	RX	Receive data
	7	GND	Signal ground

You can refer to the serial port wiring below to connect the device with an external device.

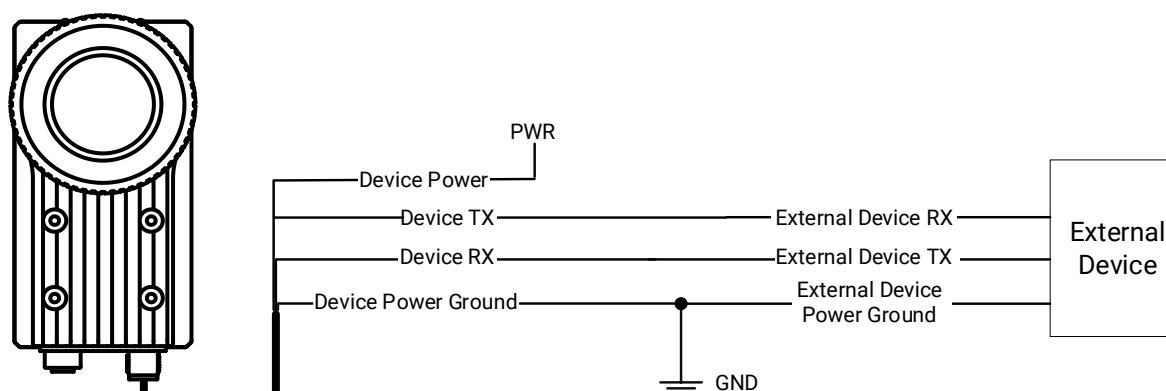


Figure 10-14 RS-232 Serial Port Wiring

Chapter 11 FAQ (Frequently Asked Question)

11.1 Why there is no device listed after I run the IDMVS client software?

Table 11-1 Question 1

Possible Cause	Solution
The device is powered off.	Check the device's power connection (observe whether the PWR indicator is solid blue) to make sure the device is powered on normally.
Network exception occurs.	Check the network connection (the LNK indicator is solid green or the ACT indicator is flashing yellow) to make sure the device can be connected to the network normally.

11.2 Why the image is very dark?

Table 11-2 Question 2

Possible Cause	Solution
The lens aperture is not opened.	Open the lens aperture.
Too small value of exposure and gain.	Increase exposure and gain appropriately.

11.3 Why the image quality is very poor during the live view?

Table 11-3 Question 3

Possible Cause	Solution
The network may be Fast Ethernet.	Confirm whether the network transmission speed is 1 Gbps and NIC is the gigabit NIC, etc.
Incorrect jumbo packet settings.	Set jumbo packet value as 9 KB, or 9014 bytes.

11.4 Why there is no image in the live view?

Table 11-4 Question 4

Possible Cause	Solution
Trigger mode is enabled, but there is no trigger signal.	Send the trigger signal to the device, or disable the trigger mode.
Incorrect running mode settings, and no codes are recognized within the field of view.	Set the running mode as the test mode.

11.5 Why codes within the field of view cannot be recognized?

Table 11-5 Question 5

Possible Cause	Solution
Correct code types are not selected in the Algorithm Settings .	Go to Algorithm Settings , and select different types of codes according to actual demands.

11.6 Why the recognized codes are incomplete?

Table 11-6 Question 6

Possible Cause	Solution
Number of codes exceeds the limit.	Go to Algorithm Settings to reset the number of codes.
Numeral Filter is enabled.	Go to Data Processing → Filter Rule to disable the Numeral Filter function.
The code length is limited.	Go to Data Processing → Filter Rule to edit the code length.

Chapter 12 Revision History

Table 12-1 Revision History

Version No.	Date	Revision Details
V2.0.0	Feb. 5, 2026	Edit the overall structure and content.



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