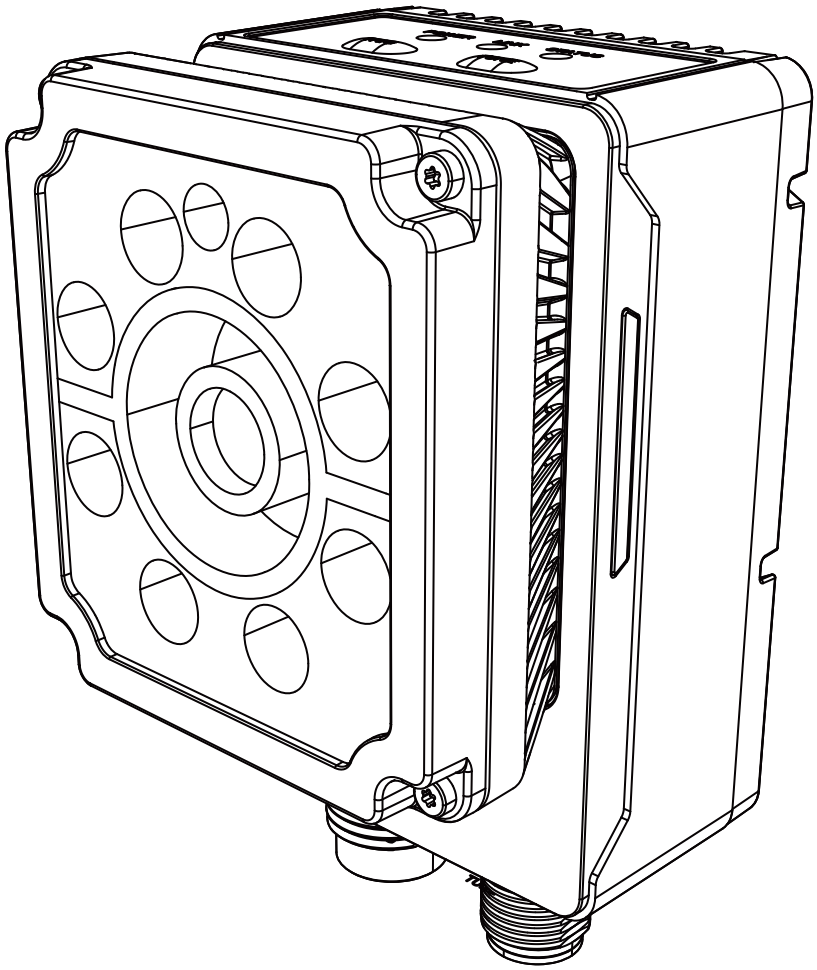
LANBAO

PID-P3016/3050/3060series Industrial code reader operation manual



Shanghai Lanbao Sensing Technology Co., Ltd.

Foreword

Overview

This manual introduces the product information, basic parameters and quick operations of the smart code reader of PID-P3016/3050/3060 series (hereinafter referred to as "the Reader"). Read carefully before using the Reader, and keep the manual safe for future reference.

Safety Instructions

The following categorized signal words with defined meaning might appear in the manual.

Signal Words	Meaning
DANGER	Indicates a high potential hazard which, if not avoided, will result in death or serious injury.
WARNING	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
CAUTION	Indicates a potential risk which, if not avoided, could result in property damage, data loss, reductions in performance, or unpredictable results.
Antistatic	Electrostatic sensitive device.
Danger! High Voltage	Indicates high pressure danger.
Laser radiation	Denotes intense laser radiation.
Fan warning	Indicates dangerous moving parts. Keep away from moving fan blades.
Beware of mechanical injury	Indicates mechanical injury caused by equipment components.
TIPS	Provides methods to help you solve a problem or save time.
NOTE	Provides additional information as a supplement to the text.

Important Safeguards and Warnings

This section introduces content covering the proper handling of the Reader, hazard prevention, and prevention of property damage. Read carefully before using the Reader, and comply with the guidelines when using it.

Operating Requirements

- Do not install or place the Reader in a location that exposes it to sunlight or heat sources. Make sure that the shell temperature is below 60 ℃.
- Keep the Reader away from dampness, dust or soot. If the Reader is not connected to a lens, close the lens cap to avoid dust.
- Install the Reader horizontally on a stable surface to prevent it from falling.
- Do not drip or splash liquid onto the Reader, and make sure that there is no object filled with liquid on the Reader to prevent liquid from flowing into it.
- Install the Reader in a well-ventilated place, and do not block the ventilation of the Reader.
- Operate the Reader within the rated range of power input and output.
- Do not dissemble the Reader.
- Transport, use, and store the Reader under the allowed humidity and temperature conditions.
- The Reader is a class I electrical appliance. Make sure that the power supply is connected to a power socket with protective earthing.

Power Requirements

- Use the power cords that are recommended for the region and conform to the rated power.
- Use the standard power adapter. We assume no responsibility for any issues caused by the use of a non-standard power adapter.
- Make sure the power supply meets the SELV (Safety Extra Low Voltage) requirements, and rated voltage conforms to the IEC60950-1 standard. The requirements of the power supply are subject to the controller label.
- Before you connect the device to its power supply, make sure the power supply is connected to an earthed power socket.

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1 Overview

1.1 Product Introduction

The Reader uses a high-performance photosensitive chip, the maximum transmission rate of 1000 Mb/s can meet the requirements of most industrial applications for transmission rate, can work stably in a variety of harsh environments, is a high reliability, cost-effective reader.

1.2 Features

Easy to install and operate, comprehensive functions. Functions:

- Light sources in multiple colors (red, white, and blue). You can separately control each light source multiple light sources at a time.
- Multiple focal lengths. Supports electronic focus and focus with one click.
- 1000 Mpbs industrial Ethernet port with IP65 protection.
- Various I/O ports, Ethernet, RS-232, and GPIO ports, and multiple communication protocols.
- Decoding of various types of codes and code quality evaluation.
- Deep-learning algorithms and parameter polling ensure recognition effects in complex scenarios.

1.3 Product Structure

1.3.1 Dimensions

The following figures show the dimensions of the product.

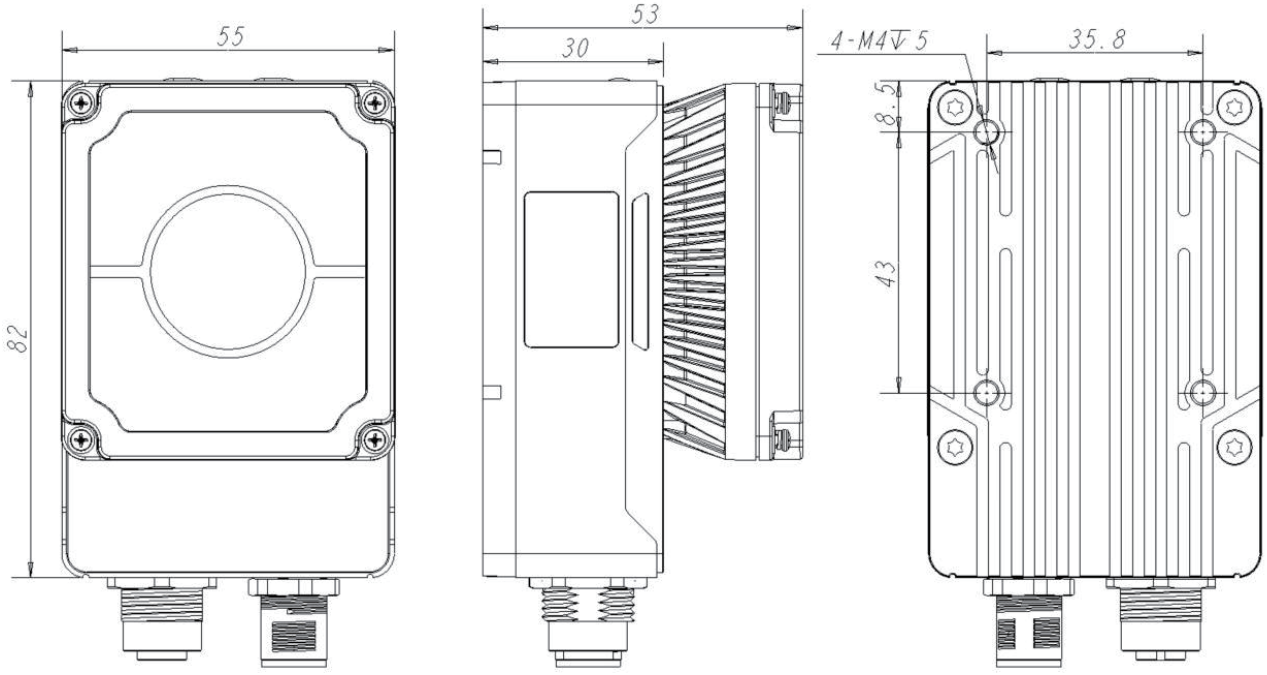


Figure 1-1 82 × 55 × 53 (excluding port height, unit: mm)

1.3.2 Product Appearance

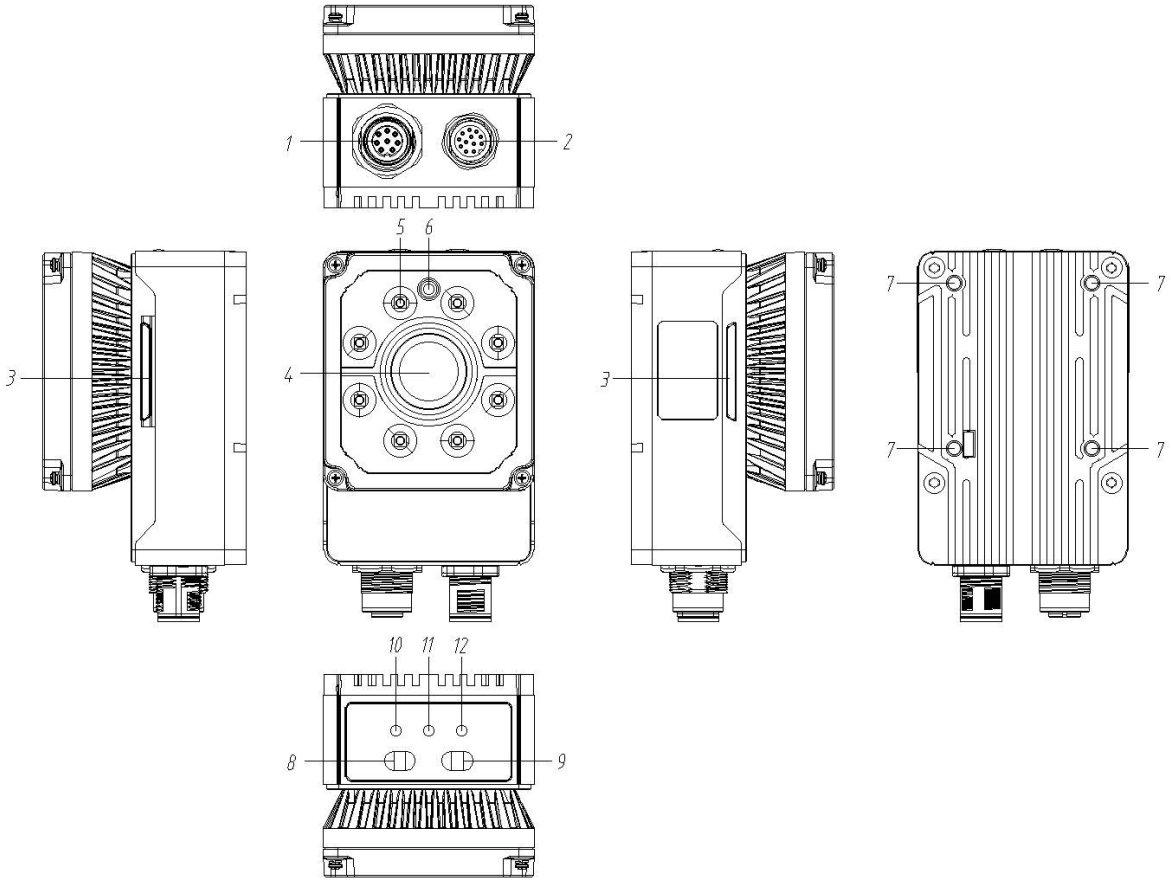
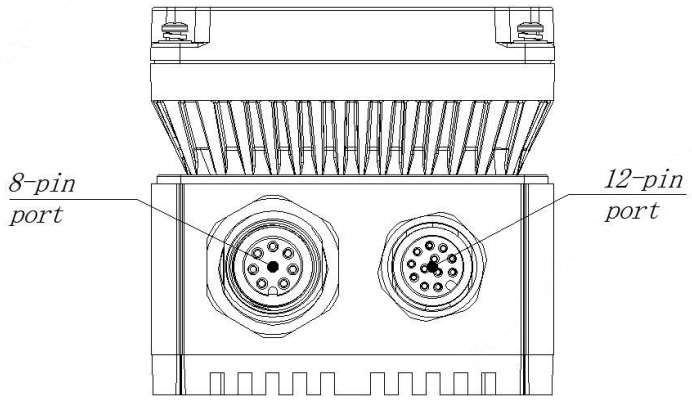


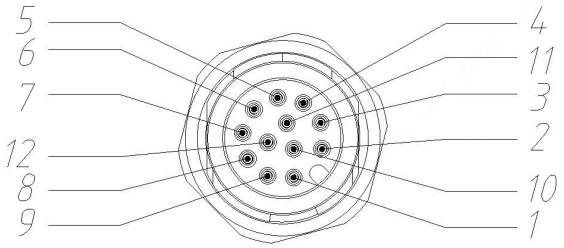
Figure 1-2 Appearance

Table1-1 Component description

No.	Name	Description
1	Network port	Network connection indicator. The indicator is in solid green if the network connection is normal. The indicator flashes green during data transmission.
2	Power supply and I0 port.	12-pin I/O ports, including power supply, I/O, RS-232 serial ports, and more.
3	Decoding indicator	Red: read code failed Green light on: read code successfully. Light Off : Wait to Read Code Training
4	Image sensor	Used to collect image data..
5	Polarized or non-polarized illuminator	LED Light Source: Used to fill light when collecting images to ensure the image effect. Divided into 4-channel control, can be controlled respectively steady on, stroboscopic and off;
6	Sighting device	Used for positioning.
7	Installation hole	Used for fixing the device through M3 screws
8	Trigger button	When the device is in trigger mode, you can press the button to trigger decoding
9	Intelligent parameter setting button	Press the hold the button for 3 seconds the device beeps, you can start setting the parameter.
10	Power indicator	On: the camera connect to the power supply normally
11	LINK Indicator	On: The network connection is normal; Flashes: the data is transmitting.
12	STATUS Indicator	On: The SENSOR is in the triggered state and is pulling streams Off: The camera is not pulling stream

1.3.3 Description





12-pin port: M12 A-CODE male connector, power port + trigger I/O + RS-232 serial port 8-pin port: M12 ACODE female connector, 100M network port	12-pin port

Figure 1-3 Device port

The following table describes the pins of the 12-pin port.

Table1-2 Pin signal description

Pin	Signal	Description	Cable description	Cable color	
1	OPT_OUT2	Opto-isolated output 2	Brown or White		Brown and white
2	RS232_TXD	Sender of RS-232 serial port	Serial port of DB9 female		Gray
3	RS232_RXD	Receiver of RS-232 serial port	Serial port of DB9 female		Purple
4	SIGNAL_GND	Grounding of RS-232 serial port	Serial port of DB9 female		Black and white
5	OPT_IN1	Opto-isolated input 1	Yellow cable		Yellow
6	OPT_IN_GND	Grounding of opto-isolated input	Purple or white cable		Purple and white
7	POWER	Power supply of the camera	DC 5.5 female connector		Red
8	POWER_GND	Grounding of camera power	DC 5.5 female connector		Black
9	OPT_OUT_G	Grounding of opto-isolated	Green cable		Green
10	OPT_IN0	Opto-isolated input 0	Orange cable		Orange
11	OPT_OUT0	Opto-isolated output 0	Blue cable		Blue
12	OPT_OUT1	Opto-isolated output 1	Brown cable		Brown
–	–	Block	–		White (bushing)

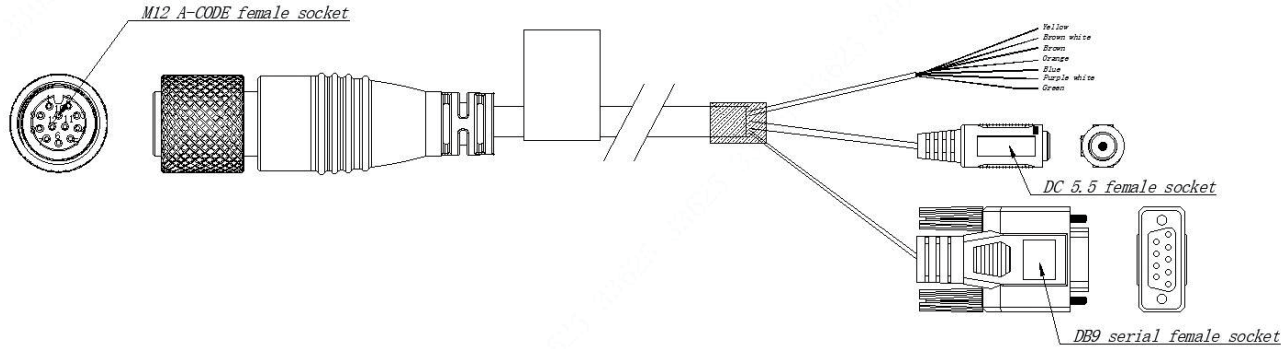


Figure 1-4 I/O cable for the code reader (PID-P3016/3050/3060 series)

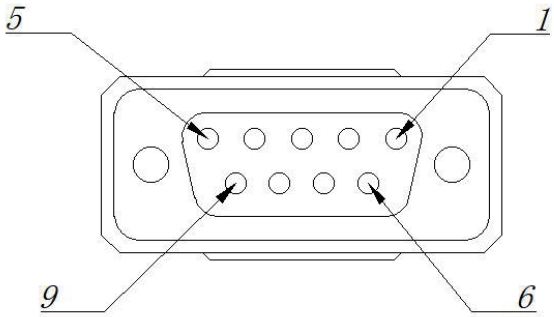


Figure 1-5 Female connector of the serial port

Table1-3 Pin signal description

Pin	Signal	Description	Cable color
2	RS232_TXD	Sender of RS-232 serial port	Gray
3	RS232_RXD	Receiver of RS-232 serial port	Purple
5	SIGNAL_GND	Grounding of RS-232 serial port	Black and white (bushing)

- We recommend you use the cable shown in the preceding cables.
- The pin 7 and pin 8 for power supply has been turned into a DC 5.5 female connector, so no wiring is required.
- The pin 2, 3, and 4 for the RS-232 serial port has been turned into a DB9 female serial port, so no wiring is required.
- For other pins, you can connect them to cables as needed.

2 Electrical Specifications

2.1 cal specifications of power supply and network port

Table2-1 Electrical specifications of power supply and network port

Parameter	Description
Power supply specifications	DC +9V～+26V, ＜ 1% ripple, connected to the 12-pin connector for power supply. At least 24 AWG cable is required.
Data output port	Gigabit Ethernet
I/O port	1 RS-232 serial port (non-isolated) 2 opto-isolated input （LINE0 to LINE1） 3 opto-isolated output (LINE2 to LINE4)
Certifications	CE and FCC

- Power supply should meet the SELV (Safety Extra Low Voltage) and LSP requirements.

2.2 Electrical Specifications of I/O Ports

2.2.1 Opto-isolated Input

Table2-2 Voltage parameters of opto-isolated input

Input voltage	Description
+26 VDC	Maximum voltage, which must be not exceeded. Otherwise, the device might be damaged.
0-+24 VDC	Safe operating voltage input range
0-+6 VDC	Indicates logic 0
6-+9 VDC	The input status changes within this range, within which the logic status is unsteady.
＞+9 VDC	Indicates logic 1

Typical circuit of opto-isolated input:

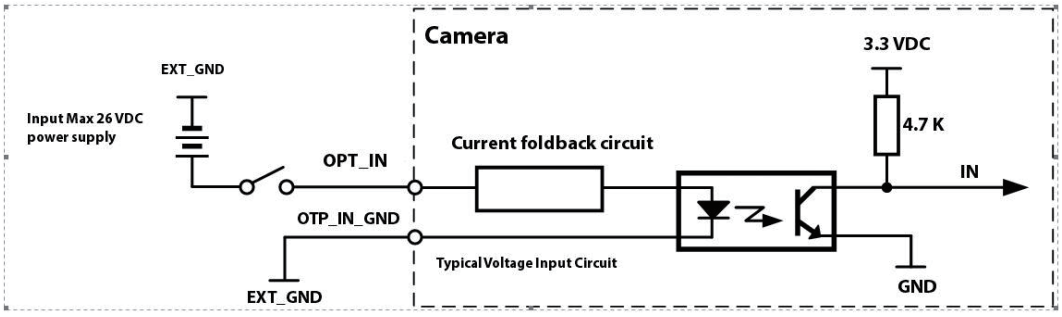


Figure 2-2 Typical circuit of opto-isolated input

The relationship between sink current and input voltage:

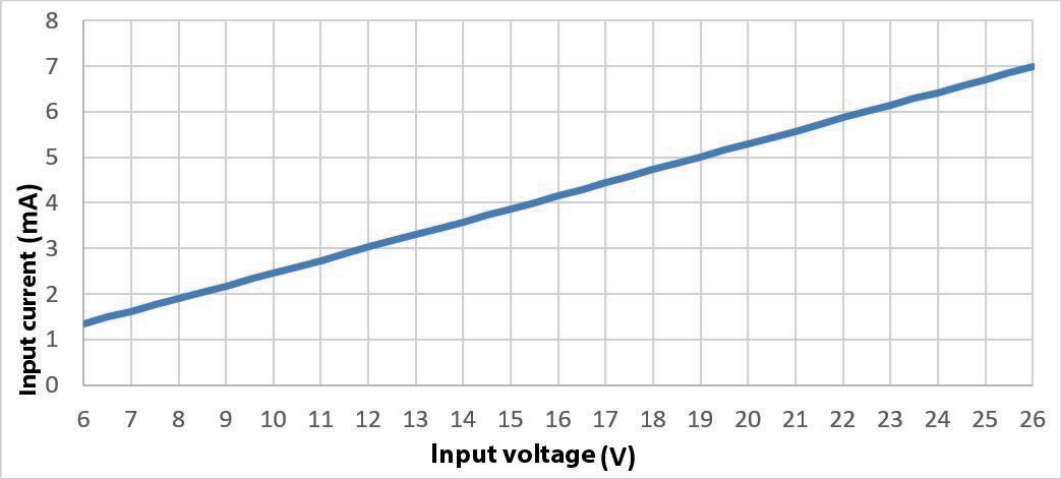


Figure 2-3 Characteristic curve of optocoupler input

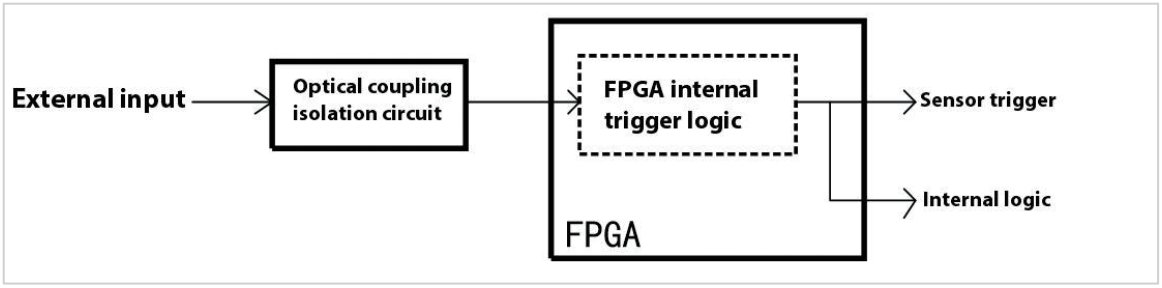
- The maximum sink current for the opto-isolator input is 7 mA.
- The values above are typical values measured at an ambient temperature of 25 ℃, and there are individual differences between different cameras.

The relationship between the input signal amplitude and trigger delay is as follows:

Table2-3 The relationship between the Optical coupling input signal amplitude and trigger delay is as follows:

Input signal Amplitude (Vp-p)	Rising Edge Rising Edge Trigger Delay tDR (us)	Falling Edge Falling Edge Trigger Delay tDF (us)
9	18.80	23.70
12	7.20	31.30
20	3.00	38.40
24	2.40	40.10
26	2.20	41.40

- The trigger delay refers to the delay input from the external opto-coupler input port to FPGA pin input, without taking the internal logic delay of FPGA in to account.



The minimum input pulse width requirements for triggering input signals are shown in the table below:

Table2-4 The minimum input pulse width requirements

Input signal Amplitude (Vp-p)	Minimum positive pulse width(us)	Minimum negative pulse width(us)
9	36.00	90.00
12	10.10	90.00
20	3.10	90.00
24	2.40	90.00
26	2.10	90.00

2.2.2 Opto-isolated Output

Table2-5 Opto-isolated Output

Voltage	Description
+26 VDC	Maximum voltage, which must be not exceeded. Otherwise, the device might be damaged.
<+3.3 VDC	The I/O output may be faulty
+3.3 to +24 VDC	I/O output safe operating voltage range

Typical circuit of opto-isolated input:

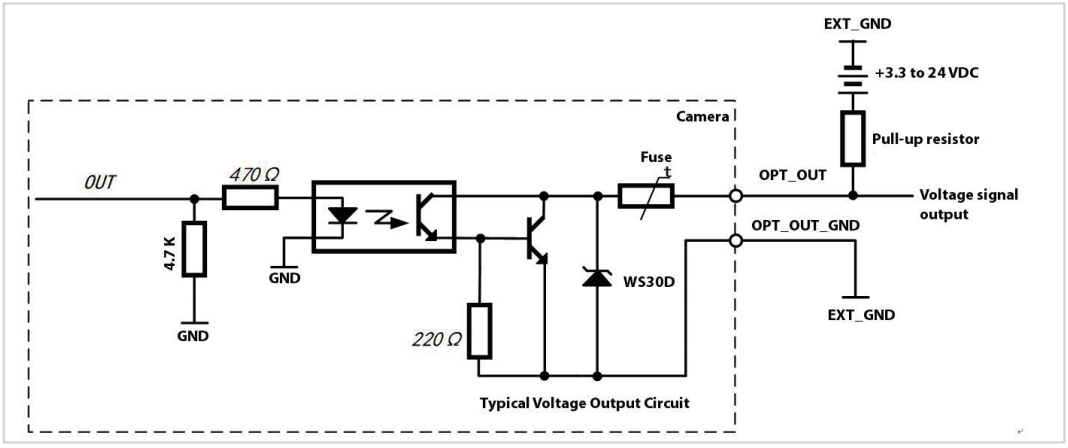


Figure 2-4 Typical circuit of opto-isolated input

When the 1kΩ pull-up resistor is used, the rise/fall time and rise/fall edge delay time of the output under different external power supply voltages are specified.

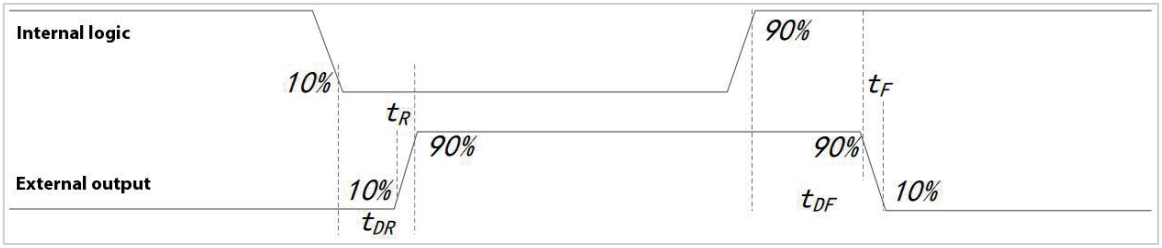


Table2-6 The relationship between the Opto-coupler output signal amplitude and trigger delay is as follows:

External Power Voltage (V))	Rising Time tR (us)	Falling Time tF (us)	Rising Edge Rising Edge Trigger Delay tDR (us)	Falling Edge Falling Edge Trigger Delay tDF (us)
5	19.70	3.20	39.9	8.06
12	24.06	5.22	44.8	11.8
24	30.11	8.10	44.8	53.2

- The output delay refers to the delay from the internal logic output of the FPGA to the external opto-isolator output pin, without taking into account the internal logic delay of FPGA.
- The values above are typical values measured at an ambient temperature of 25 ℃, and there are individual differences between different cameras.

Relationship between opto-coupler output voltage drop and output current is shown in the following figure:

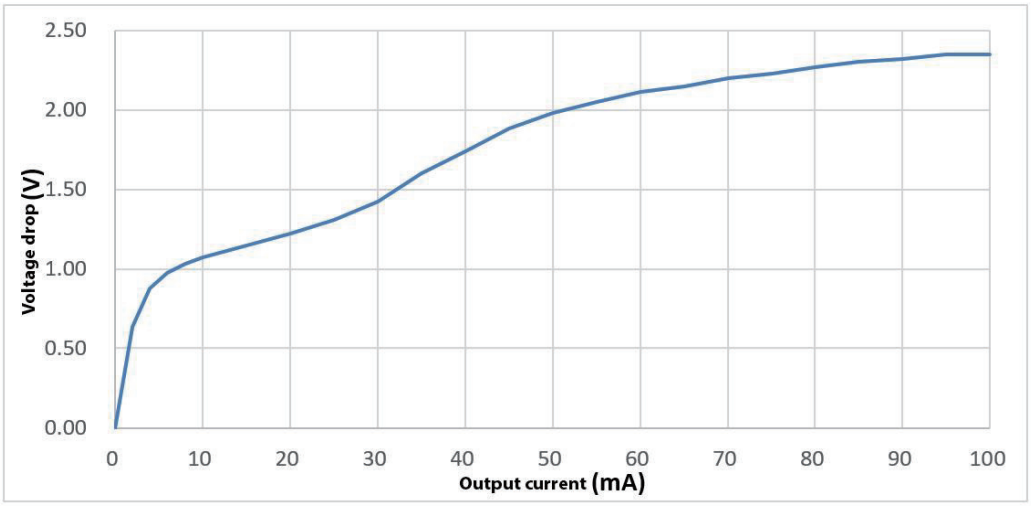


Figure 2-5 **Characteristic Curve of Optocoupler Input**

- The maximum on-voltage drop at the optocoupler output is 2.35 V (measured at the maximum output current of 100 mA).
- The values above are typical values measured at an ambient temperature of 25 ℃, and there are individual differences between different cameras.

2.3 I/O external cable connection

2.3.1 Opto-isolated Input

Optocoupler isolated inputs support sensors with NPN/PNP/ push-pull structure outputs.

2.3.1.1 NPN output sensor

Method1: A pull-up resistor is not added (Recommended).

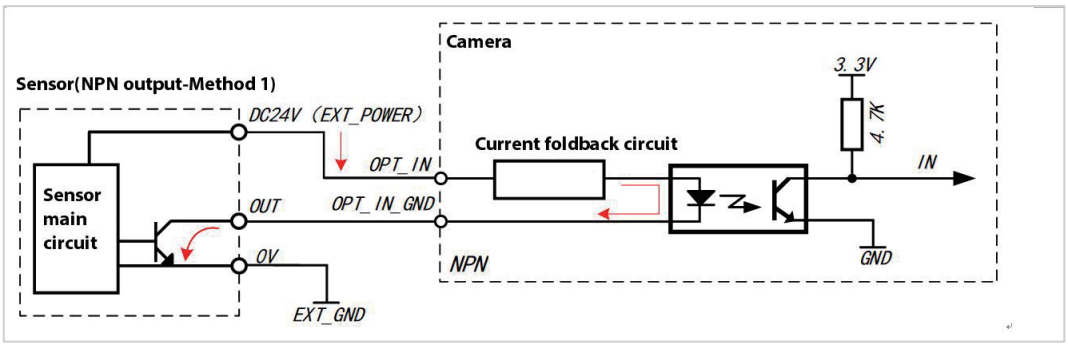


Figure 2-6 **NPN Wiring Method 2**

Method 2 :Add pull-up resistor is added.

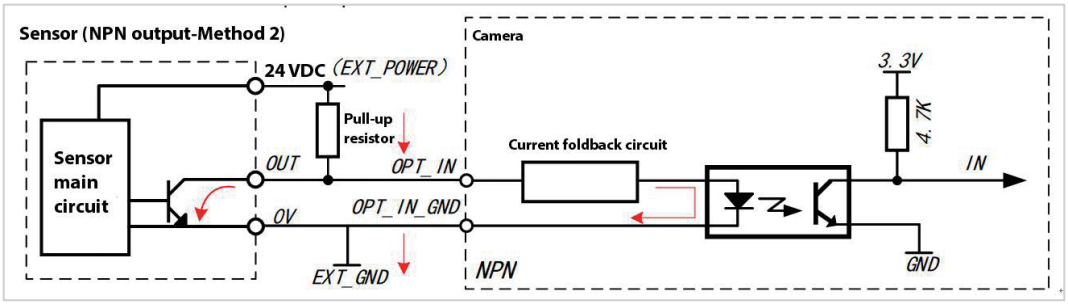


Figure 2-7 **NPN Wiring Method 1**

- EXT_POWER refers to the positive value of the external power supply connected to the user, and EXT_GND refers to the ground where the external power supply connected to the user is connected. They can be a single switching power supply or a sensor power supply.
- This method is suitable for the sensor with NPN open collector output structure.
- The recommended value for pull-up resistor are as follows: 1 kΩ at 3.3 V, 1 kΩ at 5 V, 2.4 kΩ at 12 V, and 4.7 kΩ at 24 V. When the output current capacity needs to be improved, the resistor can be selected below 1kΩ, but the rated power should be used above 1W.
- In some models, OPT_IN_GND and OPT_OUT_GND share the name OPT_GND.

2.3.1.2 PNP Output Sensor

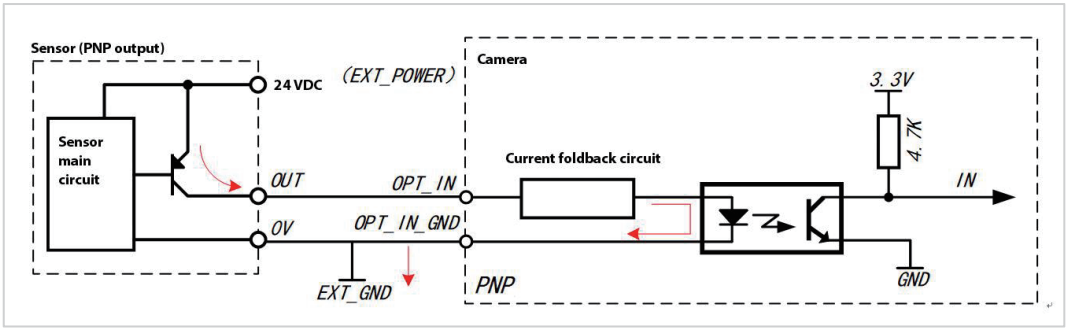


Figure 2-8 **Patch Wiring Method**

2.3.1.3 TTL outputs or push-pull outputs sensor

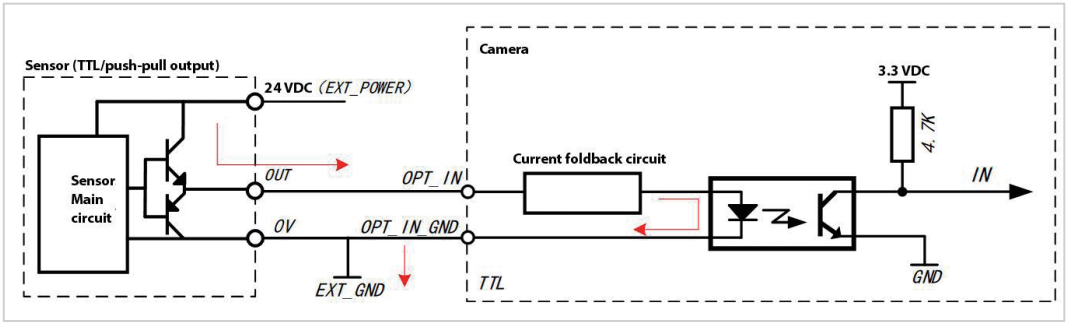


Figure 2-9 **TTL/push-pull wiring method**

2.3.2 Opto-isolated output

The transistor output of camera is separated from the internal loop by an opto-isolator. Therefore the transistor output can be used as NPN output or PNP output.

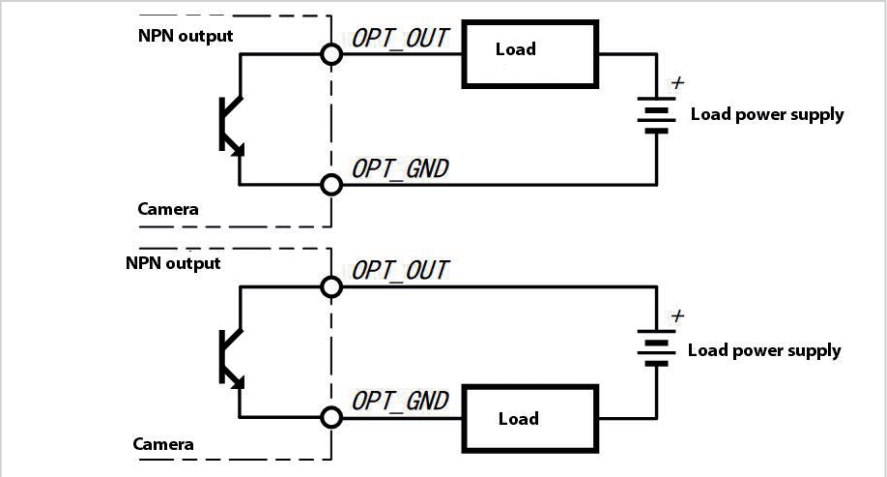


Figure 2-10 **Opto output Topology**

2.3.2.2 Code reader as NPN output

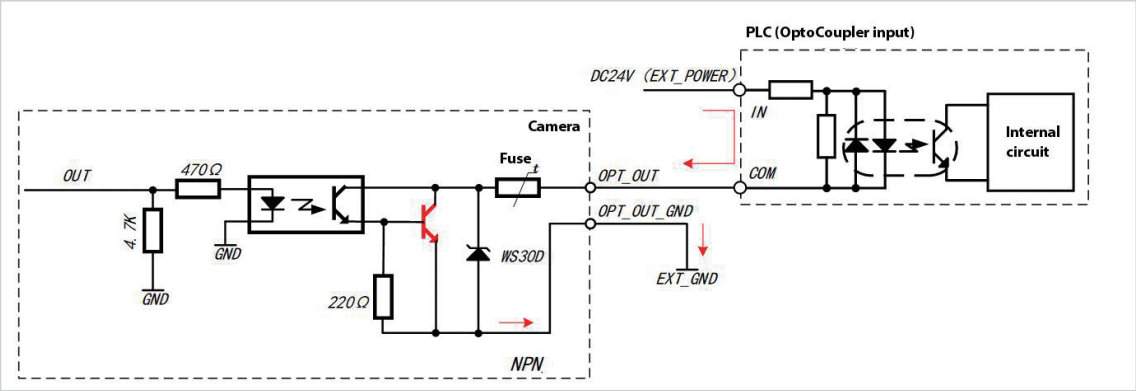


Figure 2-11 **NPN Output Wiring Method**

2.3.2.3 GPIO is used as an output port

When GPI0 is used as output, it is similar to optocoupler output. The main difference is that GPI0 is connected in non-isolated mode and the GPI0 signal ground is in common with the camera power supply ground.

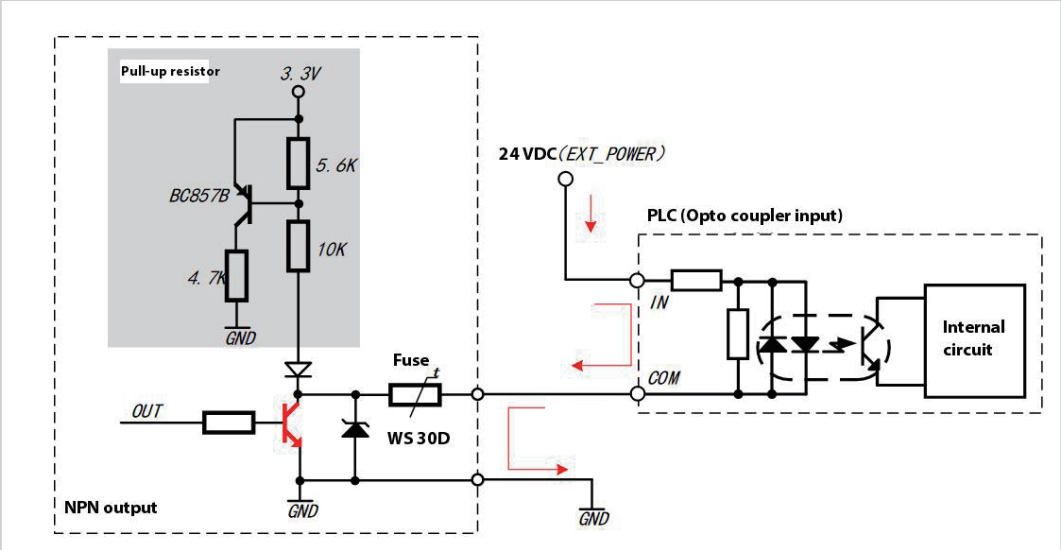


Figure 2-12 **GPI0 Output Wiring Method**

- Please do not apply voltage that exceeds the maximum switching capacity to the output terminal or connect a load.
- The port fuse is not a user-replaceable part. If the fuse is blown due to overcurrent such as short circuit, please contact the after-sales service.
- GPIO is a bidirectional port that must be set in the correct direction (input or output) before a external circuit is connected. Do not change the direction setting during the operation of the camera. Incorrect direction setting will damage the GPIO port circuit.
- The GPIO port is non-isolated and has poor anti-interference performance. Please do not use it in a place with serious electrical interference. You are advised to preferentially use optically-isolated input-output ports.
- The recommended resistor for the optocoupler is 1 kΩ at 3.3 V, 1 kΩ at 5 V, 2.4 kΩ at 12 V, and 4.7 kΩ at 24 V. When the output current capacity needs to be improved, the resistor can be selected below 1kΩ, but the rated power should be used above 1W.

2.3.2.4 Inductive load wiring method for relays

If the output of the camera is connected to an inductive load such as an relay, the model with a built-in fly-wheel diode must be used (or an external fly-wheel diode); otherwise, this may lead to the damage of the output port due to instantaneous overvoltage.

The following image shows an example of a DC inductive load suppressor circuit. For most applications, an additional diode A is enough, but for applications requiring rapid make-and-break, a voltage-regulator diode is recommended. Ensure that a voltage-regulator diode can meet the current requirements of the output circuit.

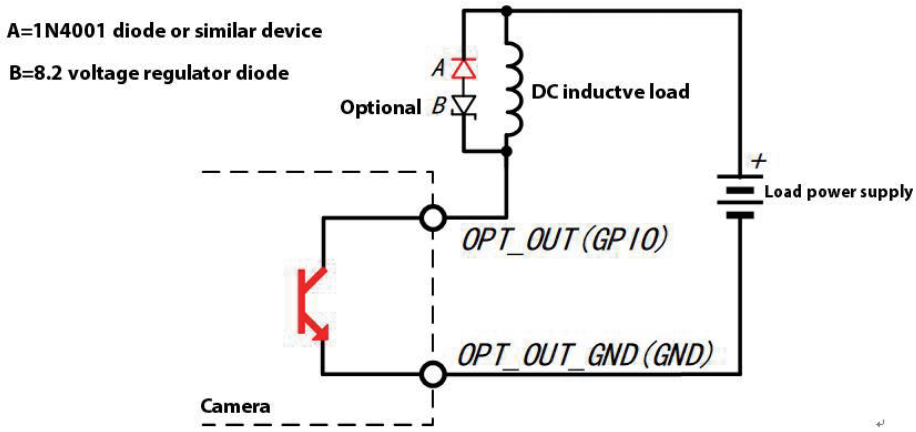


Figure 2-13 **Inductive Load Wiring Method**

2.4 How to avoid EMI and ESD?

Cameras are installed in industrial sites where equipment that generates EMI (electromagnetic interference) may exist, and are themselves susceptible to ESD (electrostatic discharge). Serious EMI and ESD can lead to false triggering or sudden stop of current sampling. EMI and ESD can also adversely affect image quality of cameras and the reliability of data transmission between camera and PC.

In order to avoid the problems mentioned above caused by EMI and ESD, customers are recommended to take the following precautions:

(1) Use high quality shielded cables, which can play a good effect on shielding EMI and ESD;

(2) Choose a cable with right length. Do not coil the excessive camera cable into a loop. If the cable is really excessively long, bend it back and forth instead of coiling into a loop.

(3) The power cord of the camera is routed in parallel with data cable;

(4) Do not route the camera cable in parallel with other high current and voltage switching cables (such as stepper motor drive and solenoid valve); Do not place the camera cable near the interference sources mentioned above;

(5) You are advised to connect all the grounding (GND) wires to a single point, i.e. single point grounding. For example, a distribution board can be used to connect the grounding wires of the whole system to a single point. This is done to avoid plenty of ground circuits (which are a major cause of EMI problems).

(6) Use a line filter for the main power supply of the camera, or use a separate power supply;

(7) Install the camera and cables as far away from spark generating equipment as possible, such as brush motor and relay. A metal shielding enclosure can be additionally used if necessary;

(8) The following measures can be taken to reduce the risk of ESD:

(8.1) The mounting surface is made of conductive material;

(8.2) The humidity in the installation environment is properly controlled. Dry air is easy to produce ESD;

3 Installation

3.1 Installation Precautions.

When installation, pay attention to static electricity, electromagnetic interference, lightning strike and surge as well as heat dissipation of the cameras.

3.1.1 Safety Protection Conditions

Although the interior of the camera is designed to protect against lightning, surge, EMI and ESD, from the perspective of safety, it is necessary to avoid or reduce these effects from the installation environment and installation method.

The following is the basic protection method, please refer to methods as much as possible.

- Use shielded network cables in SSTP mode. When meeting the requirements of use, there are no requirements for the network cable, because in order to achieve good softness, the thickness of copper wire, shielding aluminum foil thickness, shielding net density, PVC outer protective performance and other aspects are not good enough.
- The network cable should be as short as possible If the cable is too long and has too much left over, use a snake pattern of wiring instead of winding the cable. This reduces the coupling of electromagnetic interference.
- The power control wire can be used with a shielded wire, and it should avoid winding. Power cables and network cables can wire in parallel. Do not intertwine.
- Power cables and network cables should be kept away from equipment with high current, high voltage, and frequent on-off and stop-start, such as stepper motors, especially the cables of such equipment and walk the line. These devices have strong electromagnetic radiation that is easily coupled to the camera's transmission line.
- The protective ground of all devices should be connected together and connected to the protective ground at a single point to avoid multiple grounding points. Multipoint grounding tends to cause voltage differences between devices and form a loop, which is prone to electromagnetic interference coupling.
- The AC power supply terminal of the switch power supply for the camera and that of the PC must come from the same AC bar. In this way, their protection ground can be connected together to avoid multi-point grounding. Do not directly use this AC power source for high-power mechanical and electrical equipment.

- Add a magnetic ring to the camera's power control line to absorb electromagnetic interference signals.
- Ensure a certain humidity, you need to wear an ESD bracelet, ESD clothes and shoes to reduce ESD damage.

3.1.2 Heat Dissipation Requirements

Environmental Requirements.

- Temperature and humidity.
  - ✧ The ambient temperature cannot exceed 50 °C, and it is best to for the Reader to work in an air-conditioned environment.
  - ✧ The ambient humidity when the camera is working: 20%–80%, non-condensing.
  - ✧ Storage Temperature –30°C to +80℃ (–30 °F to +185 °F)
  - ✧ Storage humidity: 20%–80%. non-condensing.
- Do not coil the excessive camera cable into a loop. If the cable is really excessively long, bend it back and forth instead of coiling into a loop to ensure the performance of EMI.
- During transportation and assembly, it is necessary to pay attention not to bump the keys and prevent damage to the pot cover.

3.2 Hardware Installation

3.2.1 Packing list

After unpacking the box, check if there is obvious damage to the appearance of the equipment, and make sure the components are complete against the packing list , see.

Table3-1 **Parts list.**

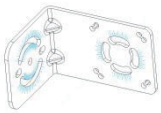
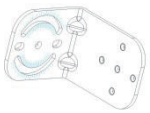
Parts List		
1	Code Reader	1
2	M4×10 cross flat tail nickel plated screw	4

3.2.2 INSTALLATION

To use the device normally, you need to prepare for the items in Table 1-3 before installation.

Table3-2 **Matching Part No.**

No.	Item Name	Figure	Quantity	Description
1	Smart Quick-hand Code Reader Complete machine		1	Device the manual referred to
2	Power I/O Interface		1	Need to buy independently

	Cable			
3	Network cable		1	Need to buy independently
4	Switched-mode Power Supply or Power adapter		1	Select an appropriate power adapter or switching power supply based on the power supply and power consumption of the device. For details, see the technical specifications of the corresponding device and purchase them separately
5	Bracket		1	Figure 3-1 and 3-2 show the installation effect. You need to purchase the device separately.
6	Switching bracket		1	Used for fixing device, combined with a fixed bracket to achieve multi-angle adjustment of the reader fixing mode.

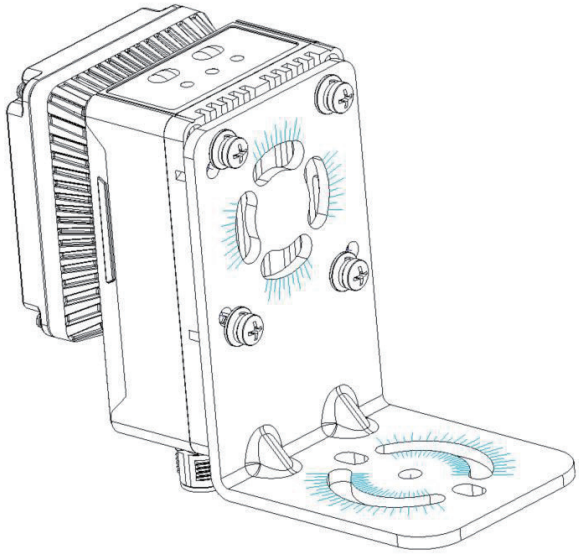


图 1-1 Bracket Mounting method 1

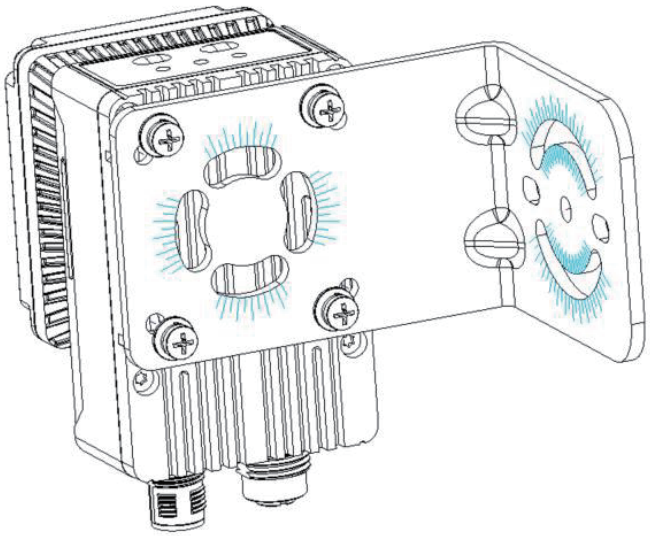


图 1-2 Bracket Mounting method 2

3.3 Network settings

Select Control Panel > Network and Internet > Network and Sharing Center > Change Adapter Configuration. Select the corresponding network port and right-click Properties. The following dialog box is displayed:

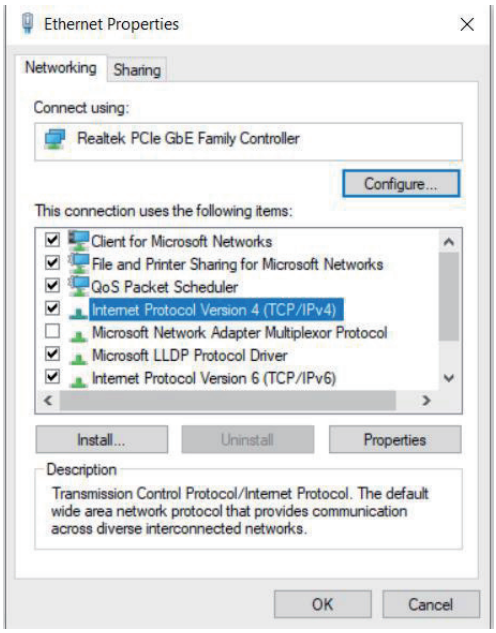


图 1-3 Configure network properties

Double-click IPv4 in the red box in the figure. The IP address setting page is displayed. Configure the network port to automatically obtain an IP address or a static IP address.

Ensure that the PC and the device are on the same LAN. Make sure that PC and the device are on the same network (LAN)

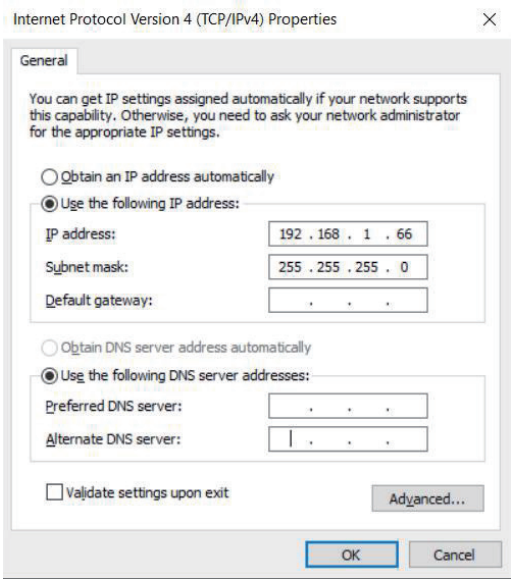


图 1-4 Network Card Configuration of Windows

To ensure the normal running of the client and data transmission stability, you are advised to set the following network port Settings:

1、Click "Configuration" in Figure 3-3 to enter the "Advanced" page, and set "Jumbo Packet" to the maximum value "9014 bytes".

2、Set Connection Speed and Duplex Mode to 1.0Gbps Full Duplex, as shown in the following figure.

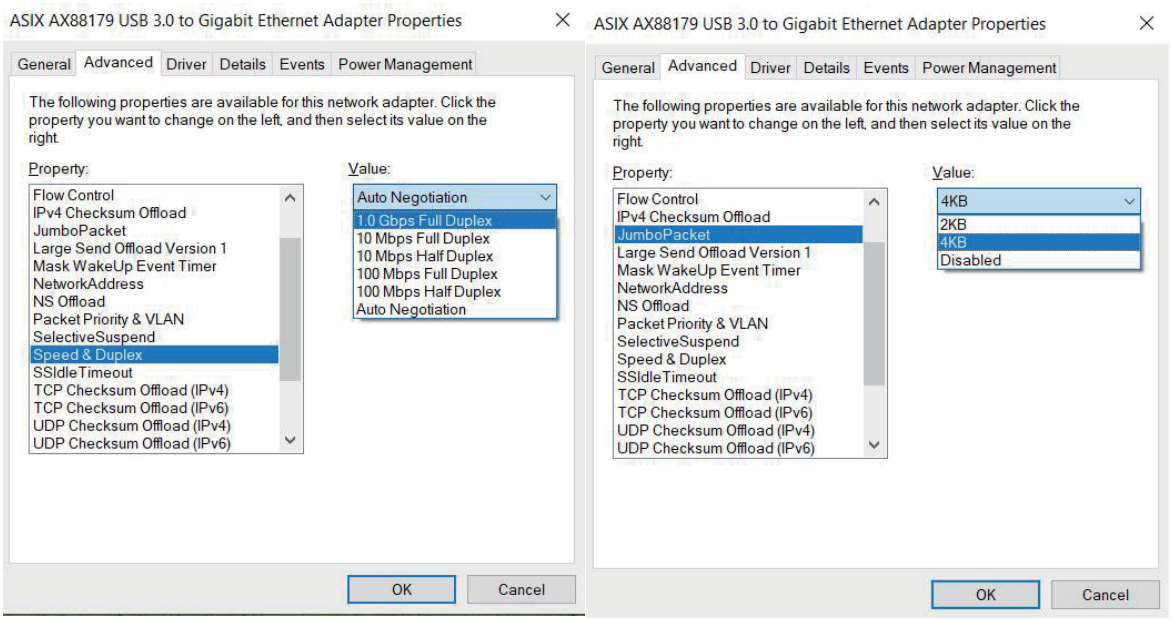


图 1-5 Configure network Advanced properties

3.4 Installing Client

You can debug and configure parameters through East ID client. EasyID client can be installed on Windows7/10 32/64bit operating system.

Installation Package acquiring path:

- Contact technical support to obtain the installation package.
- Enter the official website of Huarui (www.irayple.com), choose "Service Support" -> "Download Center" -> "Machine Vision" -> "Software" to obtain the download link.

Find the path of EasyID installation package on the desktop of Windows, double-click to run the program EasyID _vX.X.XX_XXXXXXXX. exe or right-click to open it, and then enter the installation page of EasyID.

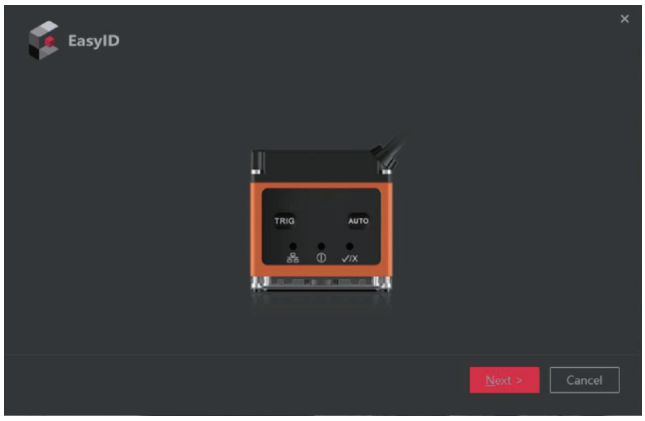


Figure 3-2 **EasyID Installation page**

Click Next, and then select the driver based on the device type. Click , and then select the installation location based on your habits and the hard disk space on your computer.

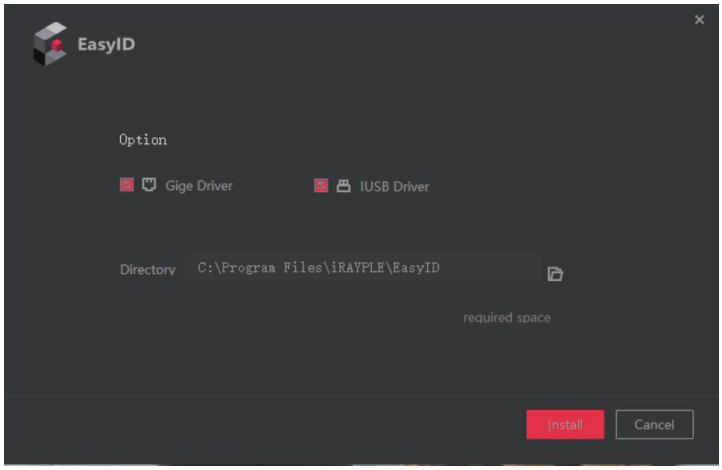


Figure 3-3 **Drive and installation path selection**

Click "Install" to proceed to the next step and wait patiently for the software to be automatically installed.

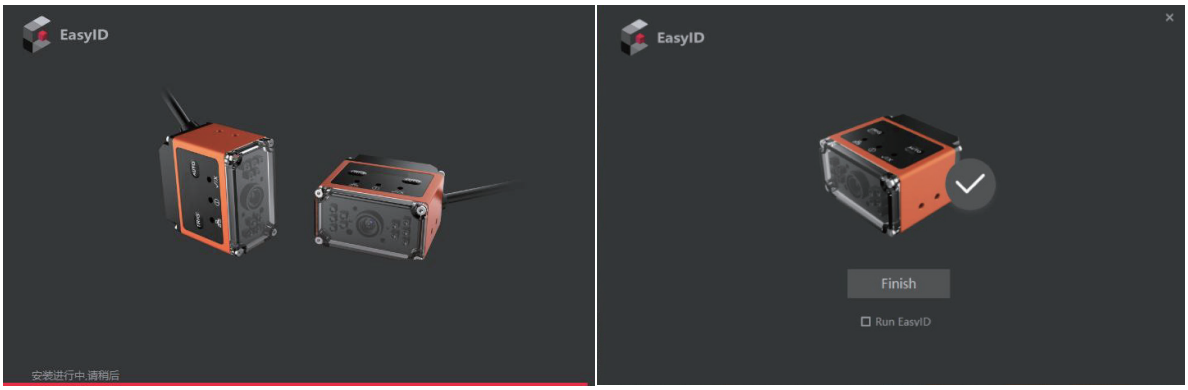


Figure 3-4 **Client installation page**

After selecting Run Easy ID, click Finish. After the installation finished, the software runs automatically.

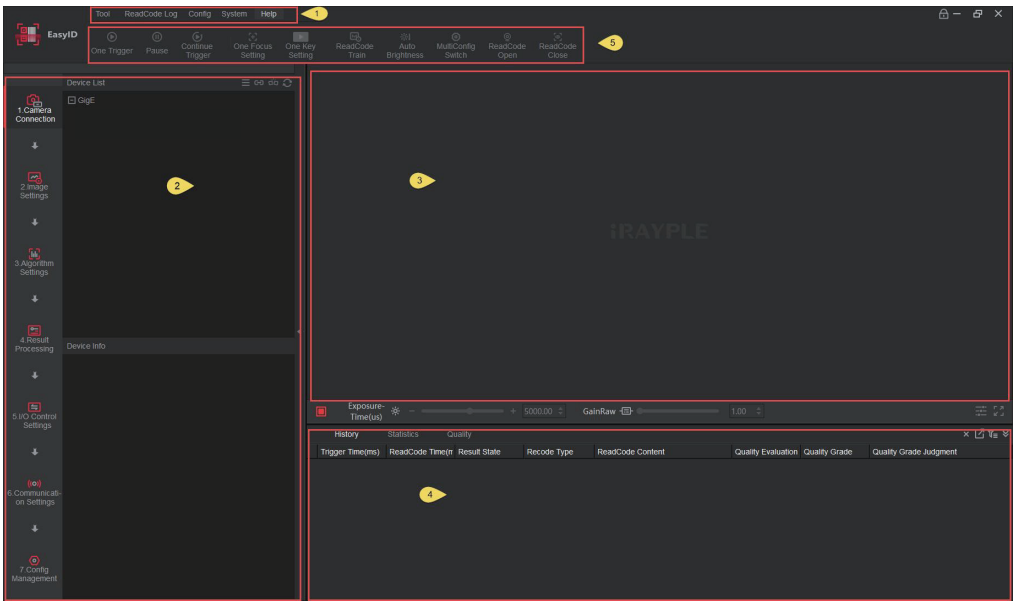


Figure 3-5 **Homepage**

Table3-3 Client Introduction

No.	Name	Description
1	Menu Bar	Frequently used table, including tools, logs, configuration, system and help
2	Parameter Configuration Area	The main operation area of the client is used for detailed parameter configuration of the reader, including image configuration, algorithm configuration, result processing, input/output configuration, communication configuration, configuration management, etc
3	Image area	The reader pulls the display area of the picture, while configuring the most commonly used configuration items and displaying some device pull information, such as the number of received pictures, network transmission speed, frame rate, image gray level, resolution, etc
4	Result area	Display real-time decoding information, statistics information and code quality information of the reader.
5	Quick Toolbar	Commonly used shortcut keys, including trigger, one - key training, automatic brightness, visual mode switch.

3.5 Connecting Camera

➢ Connect the code reader, ensure that the power supply and network work normally and then open the EasyID software, and then you can find the camera in the device list

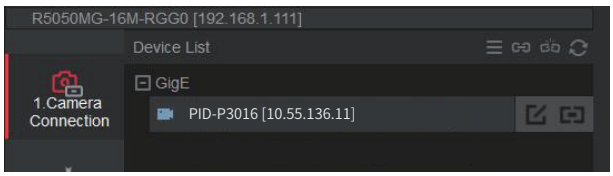


Figure 3-6 **Device List**

- Device list will display camera in the same network segment with the PC. When new devices are connected to the network, click to refresh the list.

➢ Click to enter the IP configuration page. Ensure that the IP address of the device and the industrial personal computer are on the same network segment.

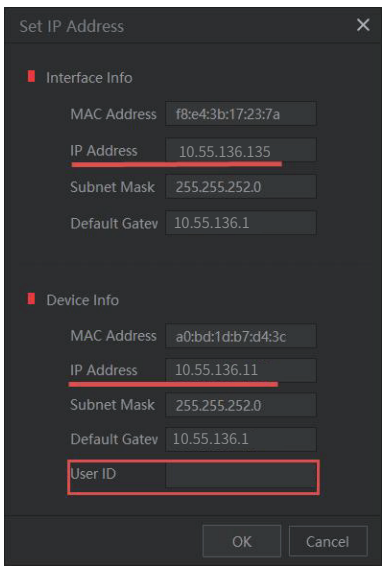


Figure 3-7 **Reader IP Configuration Figure**

- You can set a special name for the device. The value can contain up to 16 bytes in English, Chinese, and special characters.

➢ Click  on the right of the device list or double click the device in the device list to connect devices. After successfully connect, the device status as shown in the following figure..

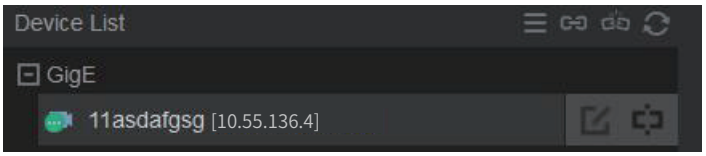


Figure 3-8 **Code Reader connected successfully**

3.6 Web Client Operations

3.6.1 Basic Functions

After the camera is connected, move the mouse to the image area on the right, select "Free Stream" , and then click the Play button  to enter the pull stream page.

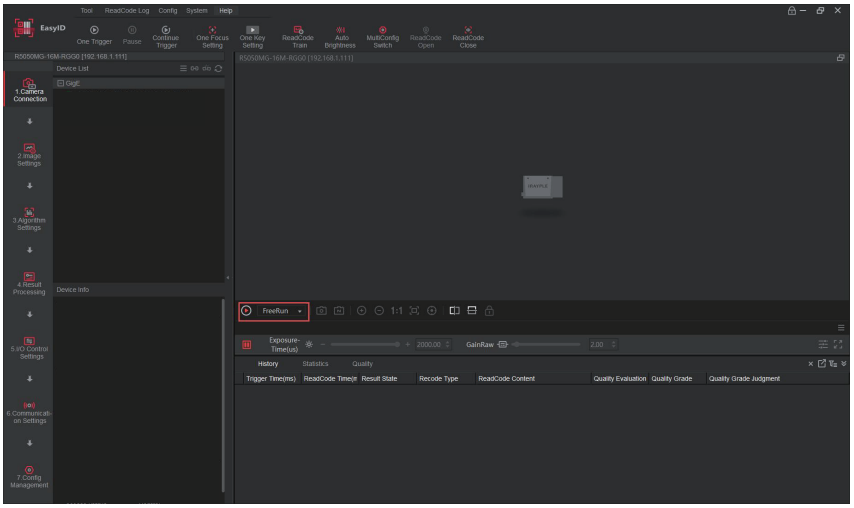


Figure 3-9 **Client Page**

Place 1D/QR codes in appropriate places within the reader's field of vision to ensure that the image is not too blurry. At this time, since the decoding function is enabled by default, the device will automatically decode and display the results in real time in the screen. Meanwhile, the decoding result information will be updated synchronously in real time in the history list below, including decoding time, time consuming, bar code category, code content and so on.

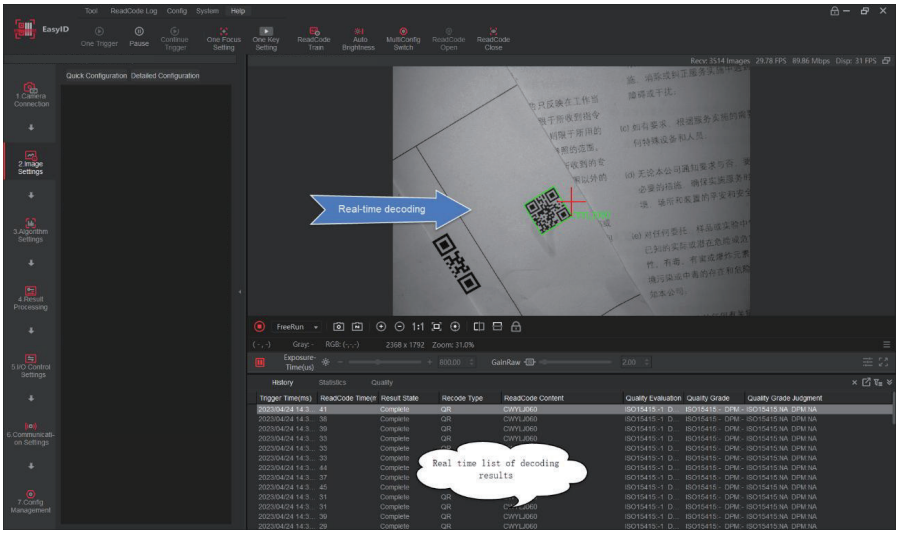


Figure 3-10 **Real-time Decoding page**

3.6.1.2 Image display introduction

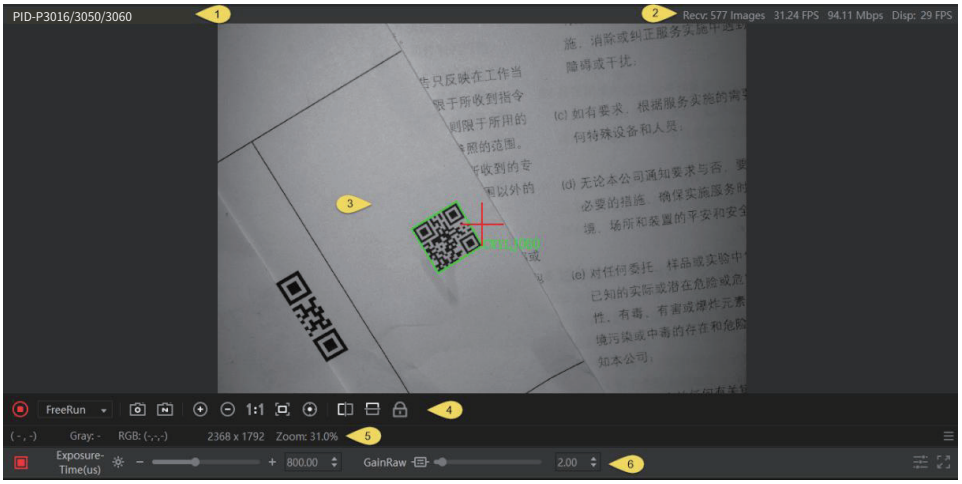


Figure 3-11 **Image display area**

Table3-4 Description

No.	Name	Icon/Button	Description
1	Basic Information	-	Display the model and IP address of the reader that are connecting
2	Real-time information	/	Display the number of pictures, frame rate, bandwidth and more.
			Switch windows. Supports connecting multiple cameras. Supports up to 4 × 4 windows.
3	Pull stream display area	/	Display pull stream of the camera. If the code reading mode is enabled and the code is recognized, the code identified will be selected in the form of a green box and its code value will be displayed; Hover the mouse to any part of the image and scroll the mouse wheel to zoom in or out to a picture.
4	Operation buttons		Play. Click it to enable stream pulling of the reader
		FreeRun	Trigger mode drop-down menu: including free pull, single frame trigger, multi-frame trigger, level trigger *1
			Single snapshot. Click to capture the image

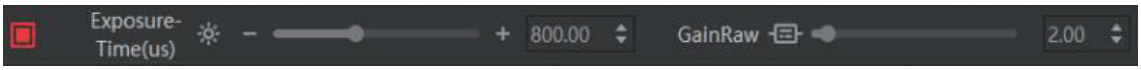
			Click the button, and then keep capturing the image and save it to the defined path. Select System > Image Saving to configure the image saving path.
			Click it to zoom in image
			Click it to zoom out image
		1:1	Click it, and then the image will be displayed in 1 : 1 format.
			Click it to restore the full view mode.
			Click it, and then the center of the reader's field of view will be adjusted to the center of the view
			X flip: the image after the point is flipped on the X axis
			Y flip: the image after the point is flipped with the Y axis
			Algorithm R0I area lock: After locked, the R0I area cannot be changed and dragged. After unlocking, the R0I box can be dragged and adjusted.
5	Image messages	/	Click the button on the right , You can select the mouse position, gray values, RGB values, resolution and zoom ratio in the pop-up window and follow the mouse position on the left to display in real-time.
6	Shortcut bar		Supports the most frequently used easy operations: exposure and gain.

- Only when the video is paused, can you switch FreeRun, SingleFrame, MultiFrame, PhaseMode mode in the drop-down menu.

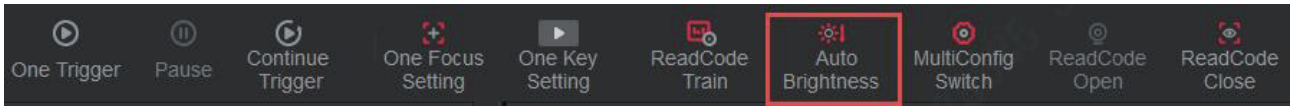
3.6.1.3 Quick Operations of image

➢ If the Screen is too bright or too dark:

You can quickly adjust the image effect through Exposure and Gain at the bottom of the picture.



You can also adjust picture automatically by clicking "Auto Brightness" in the "Shortcut bar" above the software.

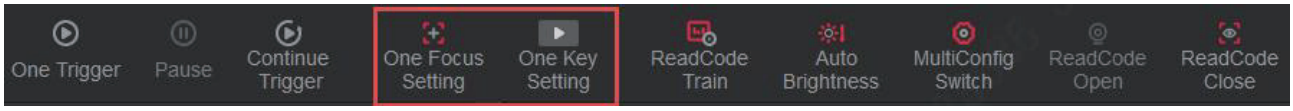


➢ The image is not clear:

Fixed-focal camera can focus clearly by adjusting the installation distance between the device and the code;

Vari-focal camera can focus clearly by adjusting the focal length through the focusing wrench of the device ;

Auto-focal camera can focus automatically by clicking One Key Adjust Focus/ One Key Configuration in the Shortcut bar above the software.



3.6.2 Viewing Device Information

Select the name of the device, and then view the basic information including IP address, model, manufacturer, and firmware version, SN and more under the Device Info.

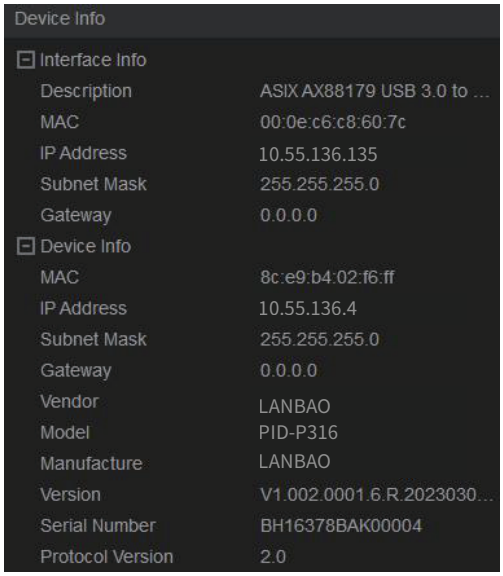


Figure 3-12 **Device information**

- If an abnormal device needs to be checked by the vendor, you need to provide information, such as Model, Firmware Version, and SN, to the relevant sales or technical support personnel.

4 Settings

4.1 Configuration list

4.1.1 Image configuration

Click Image Configuration to set the camera's exposure, ISP, trigger parameters, illuminator, and more.

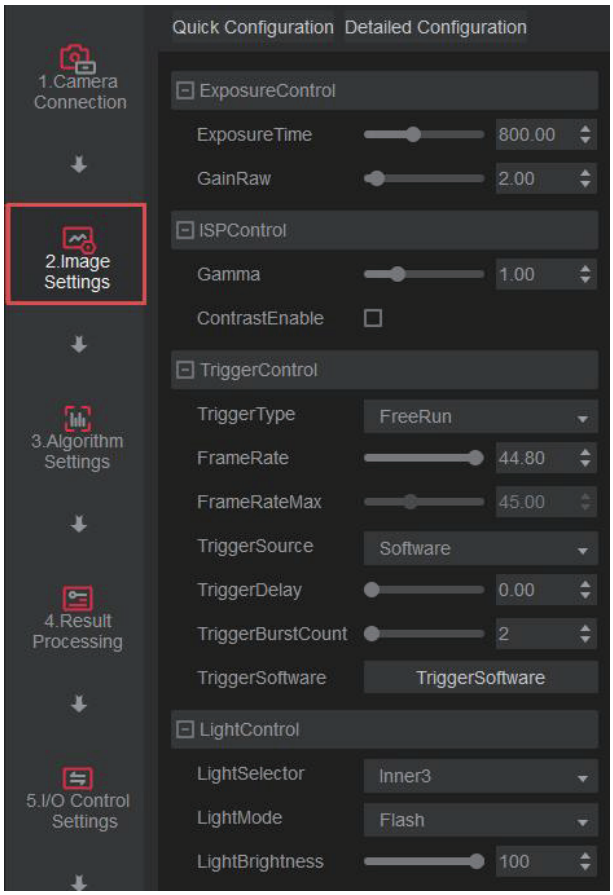


Figure 4-1 **Image configuration parameters**

Table4-1 Description of image configuration parameters

Parameters		Range or Options	Description
Exposure Configuration	Exposure Time*	Unit us	Increasing the exposure time can improve the image brightness, but it can reduce the frame rate to a certain extent and motion blur is likely to appear when shooting moving objects.
	Gains	1-23	Increasing the gain can improve the image brightness, but it can increase the image noise
ISP Configuration	Gamma value	0-4	The higher the value, the more obvious the black and white contrast of the image (the more black and white, the more white)
	Contrast Enable	Y/N	Select the check box to enable the function, and the default value is 80 after enabling.

Parameters		Range or Options	Description
Illuminator configuration	Light Select*	Red and white light source/red light source/external light source0	Optional light source control 1、Built-in illuminator: 2 methods to configure 2、External illuminator(external 0), available when external illuminator.
	Illumination Mode	Off/On/Flashes	Fill light mode: Off/On/Flashes
	Brightness	10-100/ 10-20	The range of Flashes mode is 10 to 100, and the range of On mode is 10 to 20
Trigger Configuration	Trigger Mode	Free/Single Frame/Multiframe/Level	4 trigger modes are available, including free, single frame, multiframe, and level modes.
	Frame Rate	0.5–maximum value	The frame rate range might be different depending on the device models.
	Maximum frame rate	–	Displays the supported maximum frame rate, and it cannot be operated *When the exposure is higher, the maximum frame rate will decrease accordingly
	Trigger Source	Software trigger/Line 0/Line 1	Software trigger refers to communication or instruction trigger; Line0 and Line2 are triggered by external input signals respectively
	Trigger Delay	0-1000000, unit:us	Trigger delay time
	Trigger counting	1-255	It refers to the maximum number of frames that can be captured by one trigger, which is valid in multiframe mode.
	Software trigger	–	Only works in single frame/multi-frame trigger mode. Click to simulate software trigger once

- To ensure that the power consumption of the machine is in a good working range, the exposure value has a certain correlation with the brightness of the internal illuminator of the equipment. If the internal illuminator is high, the maximum exposure is limited to a certain range, depending on the camera model.
- Excessive exposure will affect the frame rate of the camera. If a higher frame rate is required while ensuring the image brightness, it is recommended to adjust the parameters such as Gain, Gamma and illuminator properly.

4.1.2 Configuring Algorithm

Supports the configuration of various algorithm parameters of the Reader, which is mainly divided into three configuration parts: quick settings, detailed configuration and quality evaluation.

4.1.2.1 Quick settings

As shown in the figure below.

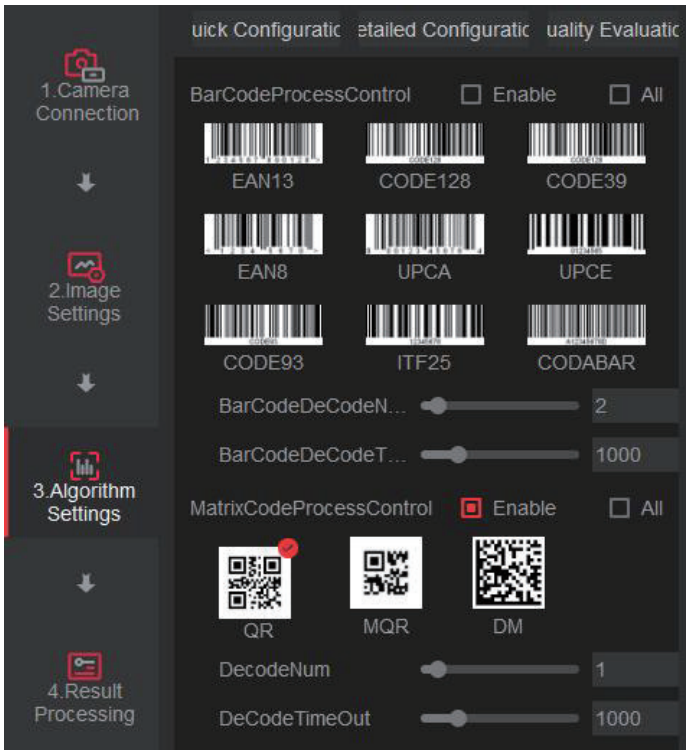


Figure 4-2 **Algorithm Configuration**

Table4-2 parameters list of algorithm Configuration

Parameters		Range or Options	Description
Barcode configuration	Enable	Y/N	The QR code recognition function can be enabled after selection
	Code type	/	You can select multiple Barcode types of barcode, including Optional ： EAN13, CODE128, CODE39, EAN8, UPCA, UPCAE, CODE93, ITF25, and CODABAR.* 1
	Maximum Decode Number	0-8	Maximum number of decoded frames
	Timeout Duration	0-5000, unit:us	The value is 200 by default. You need to adjust the time if the identification takes a long time due to the special environment.
QR code configuration	Enable	Y/N	Select the check box to enable QR Code recognition function.
	Code type	/	Configuring the type of the QR code, supports single or multiple choice. The optional types: QR/MQR/DM*2.
	Maximum Decode Number	0-5	Maximum number of decoded frames
	Timeout Duration	0-5000, unit:us	The value is 500 by default. You need to adjust the time if the identification takes a long time due to the special environment.

- One dimensional code types： Code 39, Code 93, Code128, CodaBar, EAN8, EAN13, UPCA, UPCE, ITF25, 2 of 5 (Industrial 2 of 5) standard25，GS1-128. Due to restrictions, only part of EasyID can be displayed. If you need special categories, please contact sales or technical support for customized authority.

- QR code supports: QR, Data, Matrix, Micro QR, GS1 DM, GS1 QR. Due to restrictions, only part of EasyID can be displayed. If you need special categories, please contact sales or technical support for customized authority.

If the barcode is identified successfully, you can view the real-time decoding effect on the right page of the client (select the identified code in the green box and display the code content), and view the identified decoding information, including trigger time, time consumption, status, category, data and quality evaluation, in historical record.

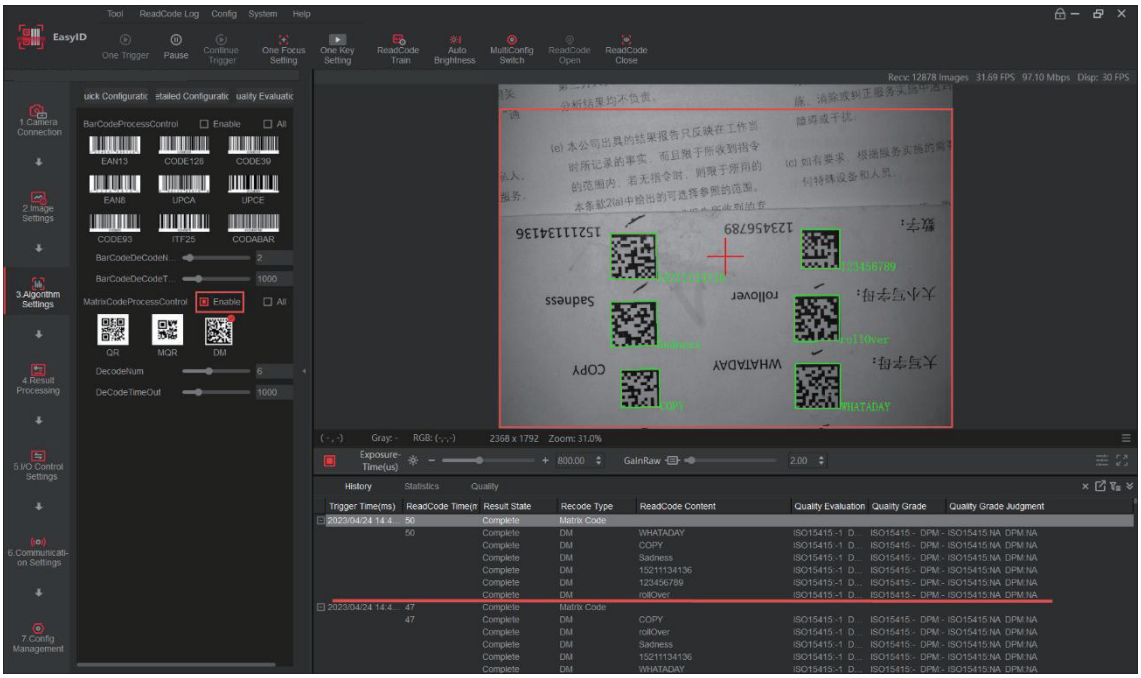


Figure 4-3 **Decode successfully**

4.1.2.2 Detailed configuration of algorithm.

The detailed configuration page contain three parts,

A、Detailed configuration

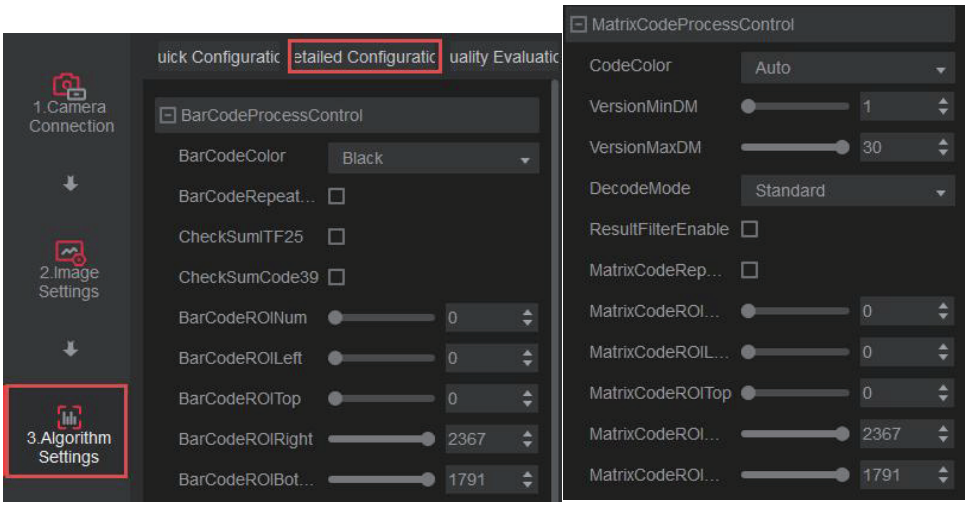


Figure 4-4 **Detailed configuration**

Table4-3 Parameter Description

Parameter		Range or Options	Description
Barcode configuration	Barcode Enable	Y/N	On/Off, Enable or disable one-dimensional barcode.
	Maximum Decode Number	0-32	The maximum number of barcode reads varies by model
	Decode Timeout	0-5000, unit:us	Barcode read timeout period. If it exceeds the timeout period, the read ends
	Polarity	Auto/Black/White	Auto is preferred. It supports both black code and white code
	Bar Code Repeated Filter Enable	Y/N	On/Off. Enable or disable the repeated bar code filtering function.
	ITF25 parity	Y/N	On/Off, Enable or disable ITF25 verify function.
	Code 39 parity	Y/N	On/Off, Enable or disable Code 39 verify function.
	Bar Code ROI Num	0-1	Bar Code ROI Num
	QR Code ROI Left/Top/Right/Bottom	Max Resolution	You can draw the ROI area based on the four corner coordinate values of one-dimensional ROI as shown in Figure 4-10. Note that this function is different from the multi-ROI (Figure 4-11).
QR Code Config	QR code configuration	Y/N	Enable or disable this function.
	Polarity	Auto/Black/White	Auto is preferred. It supports both black code and white code
	Version Min QR	1-30	Minimum value of QR code version range
	Version Max QR	1-30	Maximum value of QR code version range.-QR code supports max version is 40
	Maximum Decode Number	0-16	The maximum number of QR codes to be read. It might be different depending on device models.
	Decode Timeout	0-5000, unit:us	QR code reading timeout time. If it times out, the code reading will end.
	Decode Mode	Standard/Medium/ Difficult	The capabilities and time-consuming of the three modes are gradually increased, and the standard mode is preferred.
	Result Filter Enable	Y/N	Enable or disable result filtering function. The device can filter results by code length and regular expression.
	Code Repeated Filter Enable	Y/N	On/Off. Enable or disable the repeated bar code filtering function.
	The number of QR code ROI	0-1	The number of QR code ROI
	QR Code ROI Left/Top/Right/Bottom	Max Resolution	You can draw the ROI area based on the four corner coordinate values of QR code ROI as shown in Figure 4-10. Note that this function is different from the multi-ROI (Figure 4-11).

B、Image Pre-processing

Due to the influence of the material of the object, the inherent characteristics of the detection target, the type of light source, the external environment and other factors, the image acquired by the camera may not meet the requirements of efficient and stable reading detection. You can pre-process the original imageto improve the image effect and enhance the reading efficiency. Preprocessing configuration

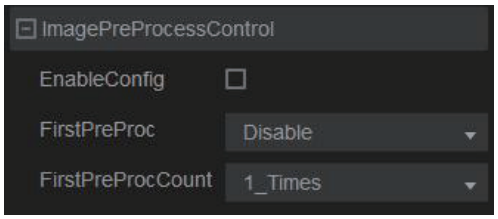


Figure 4-5 **Image pre-processing setup**

Table4-4 Description of image Process parameters

Parameters		Range or Options	Description
Image Pre-processing	Enable switch	Y/N	Select the check box to enable the processing function[*1]. Select Image output settings > JPEG image compression enable > not enabled, and then you can view the effect of image pre-processing.
	First preprocessing	/	For codes in special environment, the following appropriate preprocessing algorithms can be selected for processing to achieve better recognition effect, optionally: Disable, mean filtering, median filtering, corrosion, expansion, open operation, close operation, Sharpening, reverse color, corrosion 3x1, expansion 3x1, corrosion 1x3, expansion 1x3. *[2]
	The number of preprocessing	1-6	Preprocessing times can be used 1-6 times for processing, the more times, the more obvious the effect achieved

Select Image output settings > JPEG image compression enable > not enabled, and then you can view the effect of image pre-processing.

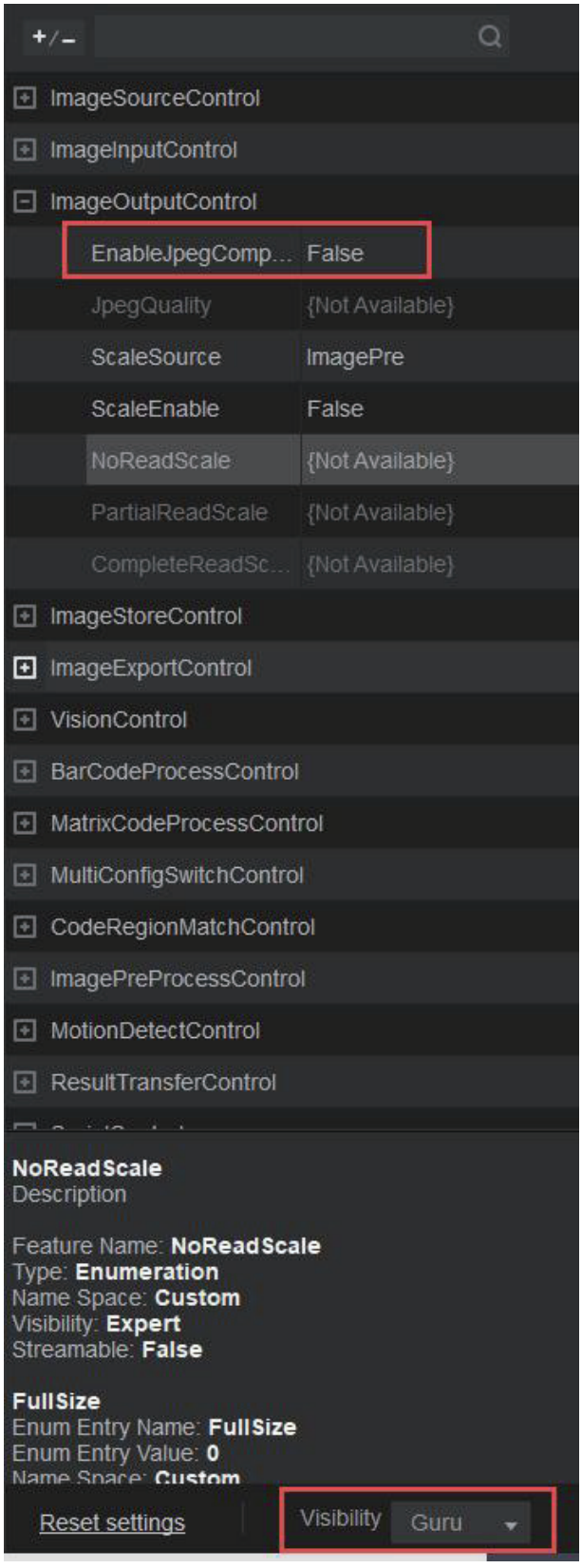
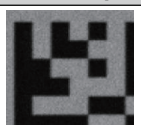
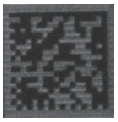
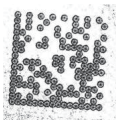
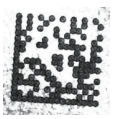
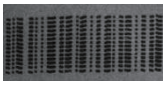
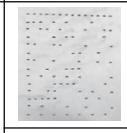
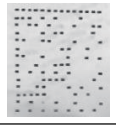
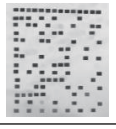


Figure 4-6 **Parameters of image output configuration**

The pre-treatment effect is explained in the table below:

Table4-5 Effect

Type	Function	Before preprocessing	After preprocessing
Median filter	Noise suppression, Black and white point noise is removed and module boundary sharpness is retained		
Mean filter	Blur image, remove the noise in the code to make the module inside.		
Corrosion	The black block gets bigger		
Expansion	The white block gets bigger		
Opening operation	Remove white interference in the module and maintain the proportion of black and white block size		
Closing operation	Remove the black interference in the module and maintain the proportion of black and white block size		
Sharpening	Deblurring, sharp and obvious module boundary		
Inverse color	Inverse color of black and white		
Specific direction expansion corrosion: horizontal * vertical	Referred to expansion corrosion, which acts in a single direction		
Corrosion 3 times	  Original Image Once	 2 Time(s)	 3 Time(s)

C、Algorithm R0I Settings

Algorithm R0I: Two R0I methods to set up.

Method 1: Use coordinate values to set the R0I region

- Confirm the code type to be identified
- Set the "R0I Number" to 1 according to "Detailed Parameter Description of Algorithm"
- Enter the corresponding values respectively in the lower "R0I left/up/right/down boundary coordinates", and you can see the corresponding recognition effect in the right image display area.

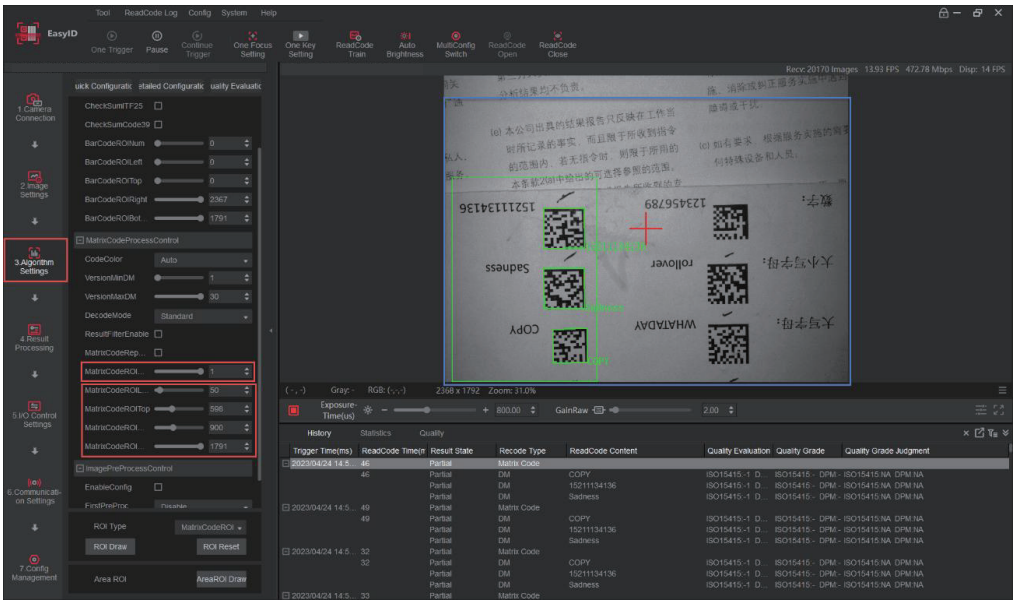
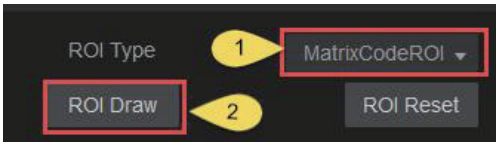


Figure 4-7 **Setting algorithm ROI through coordinates**

Method 2: draw R0I regions.

- Select the R0I type: bar code R0I/QR code R0I
- Click R0I drawing, and then press and hold the left mouse button in the pop-up window to select the appropriate area to draw the R0I box. If the drawing area does not meet the requirements, drag the mouse to select the frame. After drawing, click **Save**.



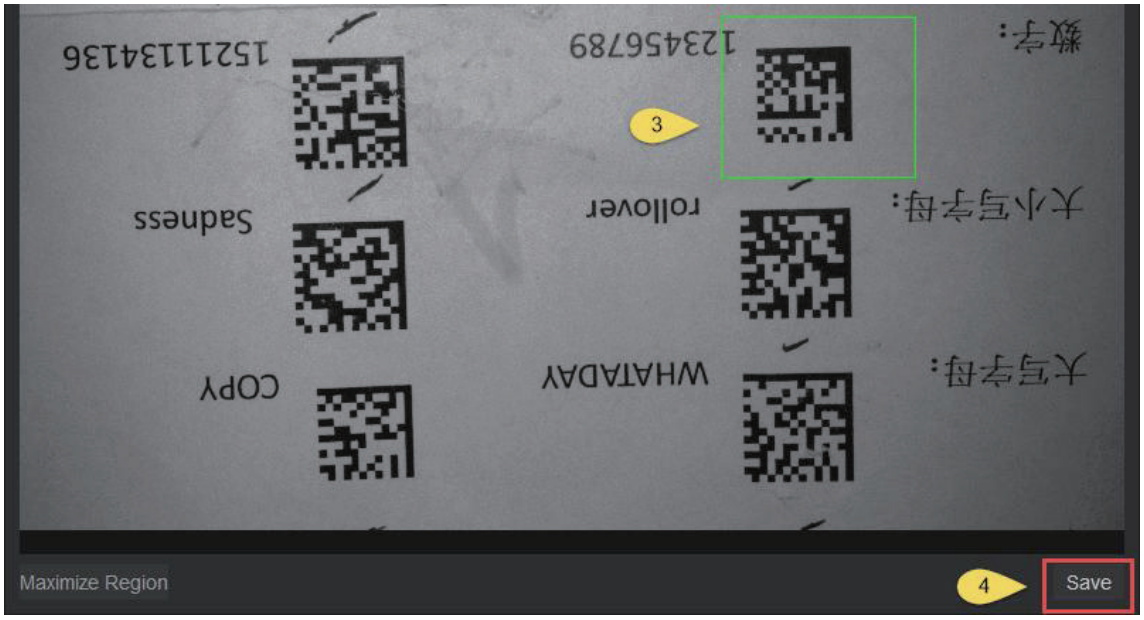


Figure 4-8 **R0I drawing**

- Enter the EasyID home page to view the effect in the image display area.

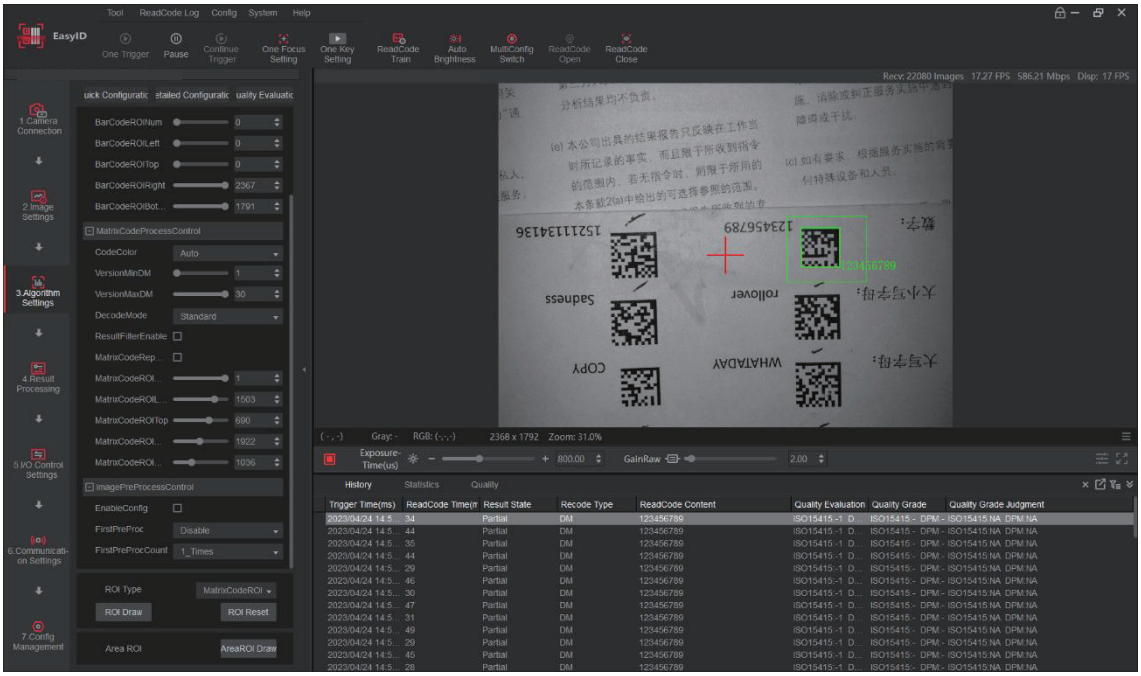


Figure 4-9 **Algorithm R0I drawing**

The result of decoding result R0I

Figure 4-10 **Region R0I entrance**

Click Regional R0I Draw, and then the page is displayed. Select "Multi-zone function" check box, and then draw the required R0I region in the left as required. Up to 16 different regions can be set. You can select an area based on the actual scenario under Area Property Name, and select Advanced Settings below to set the desired area. In area 2, set the number of reads to 2

Figure 4-11 **Region R0I settings**

Table4-6 Description of R0I settings

Parameters		Range or Options	Description
Settings	Code Region Match Enable	Y/N	Enable or disable this function.
	Area name select	Region1-16	You can select the drop-down list to select the current operated region.
	Code Region Enable	Y/N	Enable or disable the currently operated region.
	Area name	Customizable	You can customize the region name.
	Code Region Left corner X/Y Lower right corner X/Y	Related to the pixels of the device model	The coordinates of the upper left and lower right corners can be configured by directly selecting numbers or drawing box on the page.
	Grid R0I	/	The number of rows and columns can be set by yourself. The maximum number is depending on the specific model
Advanced Configuration	Advanced Configuration Enable		
	Code Region Match Criterion	4/3/2 Points in Region	It means that the number of corner points of the code successfully read in the area (there are 4 in total for one code). Take 3 points in region as an example. If all 3 points are in the region, the code reading is successful.
	Code Region Username Output Enable	Y/N	Enable or disable region name output.
	Code Region Expected Code Number	Related to the number of codes that can be read	The expected number of codes that can be read per region.
	Code Region No Read String	Customizable	Outputs characters when the bar code is not read. You can customize it or keep it as default.
	Code Region Partial Read String	Customizable	Outputs characters when the number of codes is less than the expected value. You can customize it or keep it as default.
	CodeOverReadString	Customizable	Outputs characters when the number of codes exceeds the expected value. You can customize it or keep it as default.
	Code Region Good Read String	Customizable	Outputs characters when the number of codes is the expected value. It is usually the default value.

Close the regional R0I window when the settings are complete.

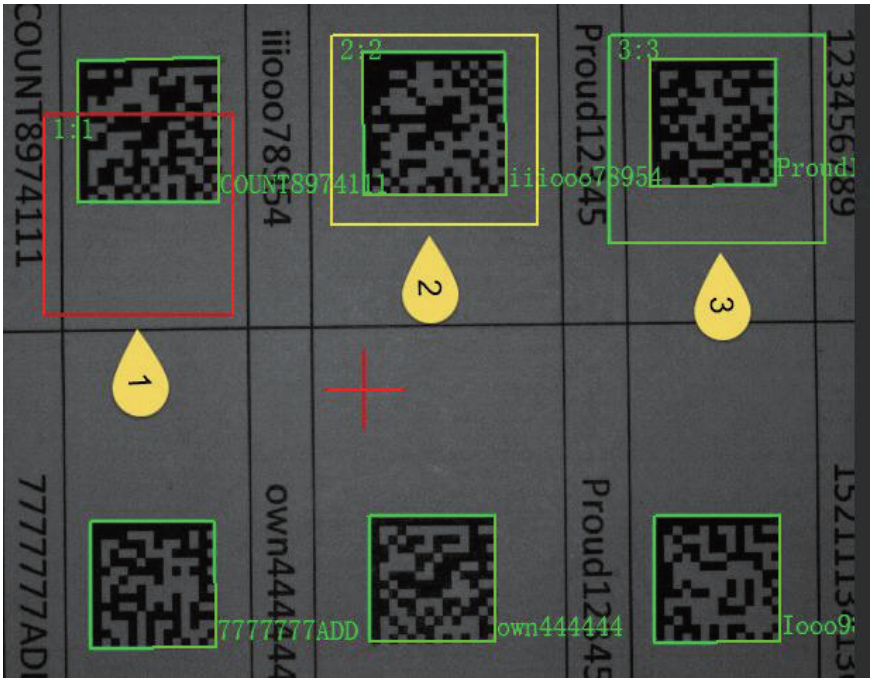


Figure 4-12 **Zone R0I setting effect**

The red box shows unrecognized code, the yellow box shows partial recognition, and the green box shows all recognition The code is still visible in the rest of the camera's field of view, but the result is not processed in any way.

4.1.2.3 Quality evaluation page (affected by scenes and images, results are for reference only)

Select Algorithm Configuration > Quality Evaluation, you can set various quality evaluation parameters.

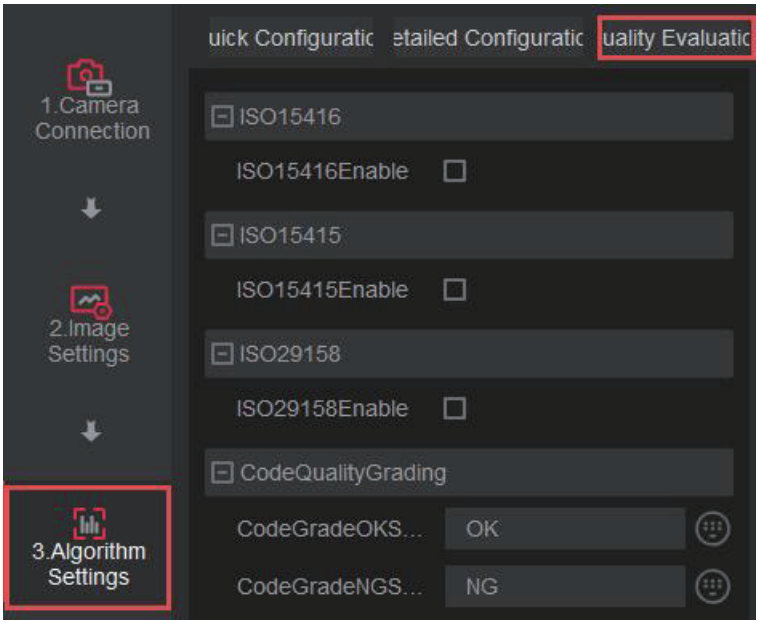


Figure 4-13 **Parameters of Quality Evaluation**

Table4-7 Code quality evaluation

Parameters		Options	Description
ISO15416 quality evaluation	ISO15416 standard quality evaluation Enable	Y/N	Select the check box to enable the function.
	Decoding enabled	Y/N	Select the check box to enable the function.
	Symbol contrast enable	Y/N	Select the check box to enable the function.
	Decoding enabled	Y/N	Select the check box to enable the function.
	Minimum Edge Contrast	Y/N	Select the check box to enable the function.
	Modulation	Y/N	Select the check box to enable the function.
	Minimum reflectivity	Y/N	Select the check box to enable the function.
	Defect	Y/N	Select the check box to enable the function.
ISO15415 quality evaluation	ISO15415 standard quality evaluation	Y/N	Select the check box to enable the function.
	Characters contrast	Y/N	Select the check box to enable the function.
	Modulation	Y/N	Select the check box to enable the function.
	Reflectance margin	Y/N	Select the check box to enable the function.
	Locate image damage	Y/N	Select the check box to enable the function.
	The heterogeneity of the axis	Y/N	Select the check box to enable the function.
	Heterogeneous grid	Y/N	Select the check box to enable the function.
	Horizontal printing stretch	Y/N	Select the check box to enable the function.
	Vertical printing stretch	Y/N	Select the check box to enable the function.
	Unused error correction	Y/N	Select the check box to enable the function.
	Decode successfully/failed	Y/N	Select the check box to enable the function.
	Format information damaged	Y/N	Select the check box to enable the function.
	Version information damaged	Y/N	Select the check box to enable the function.
ISO29158 quality evaluation	ISO29158 standard quality evaluation	Y/N	Select the check box to enable the function.
	DPM standard cell contrast	Y/N	Select the check box to enable the function.
	DPM standard cell modulation	Y/N	Select the check box to enable the function.
	DPM standard reflectance margin	Y/N	Select the check box to enable the function.
	DPM standard locate graphics damage	Y/N	Select the check box to enable the function.
	DPM standard the heterogeneity of the axis	Y/N	Select the check box to enable the function.
	DPM standard heterogeneous network	Y/N	Select the check box to enable the function.
	DPM standard horizontal print scaling	Y/N	Select the check box to enable the function.
	Enable vertical print scaling for DPM standard	Y/N	Select the check box to enable the function.
	Unused error correction	Y/N	Select the check box to enable the function.
	Decode successfully/failed	Y/N	Select the check box to enable the function.
	Format information damaged	Y/N	Select the check box to enable the function.
	Version information damaged	Y/N	Select the check box to enable the function.
Code quality evaluation	xx	/	Options: A/>=B/>=C/>=D
	OK	Custom	Supports enter custom Chinese and English characters, and up to 32 bytes can be entered.
	NG	Custom	Supports enter custom Chinese and English characters, and up to 32 bytes can be entered.

ISO15416 quality evaluation

Select the check box, and then set the standard in Code Quality Evaluation

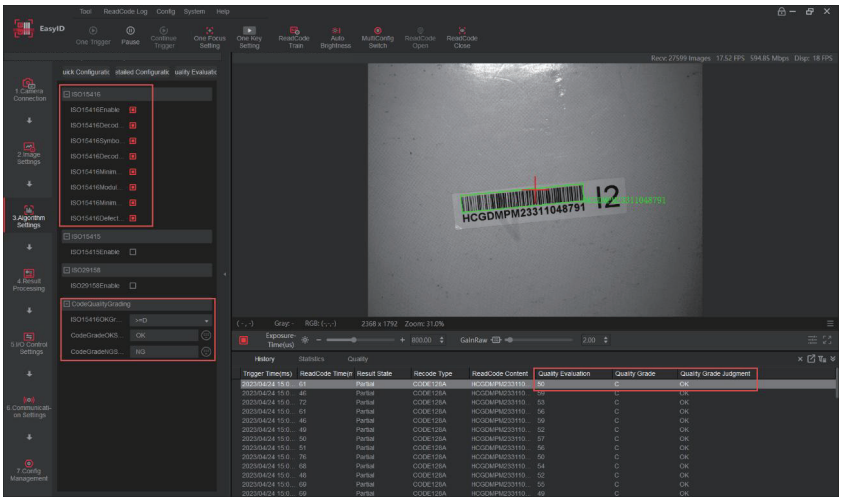


Figure 4-14 **ISO15416 quality evaluation example**

ISO15415 quality evaluation:

Select the check box, and then set the standard in Code Quality Evaluation

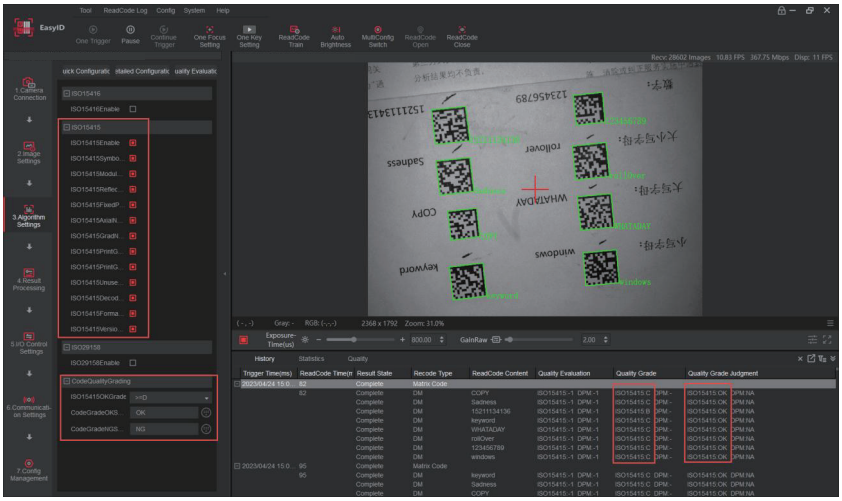


Figure 4-15 **ISO15415 quality evaluation example**

ISO29158 quality evaluation

Select the check box, and then set the standard in Code Quality Evaluation

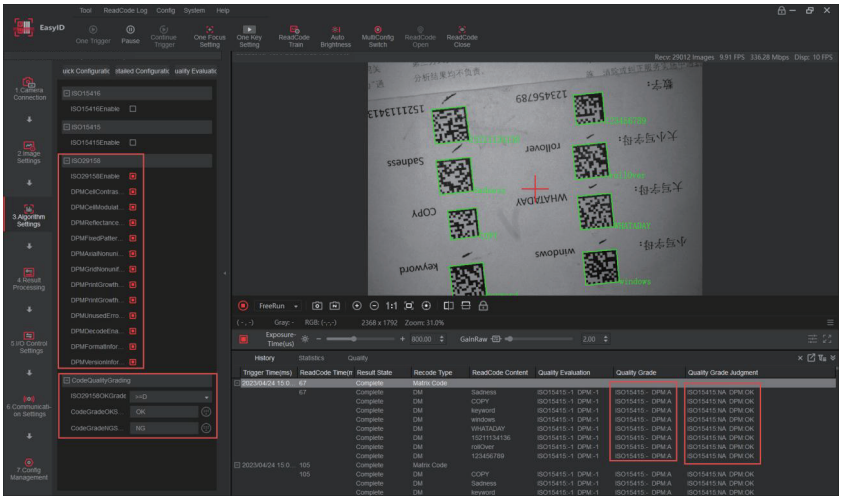


Figure 4-16 **ISO29158 quality evaluation example**

4.1.3 Result processing configuration

On the configuration page of result processing, you can configure the result, including selecting transmission mode, enabling result packaging, tail data, filling code value length and more.

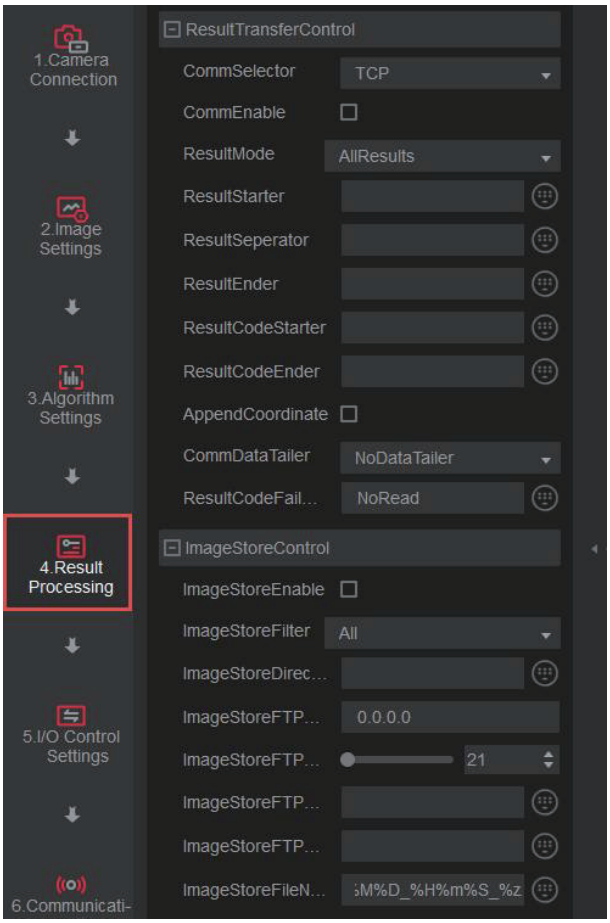


Figure 4-17 **Result processing page**

Table4-8 Parameter description of results processing

Parameters		Range or Options	Description
Result transmission mode	Transmission mode selection	TCP/Profinet/ModbusTcp/ FINS/EthernetIP/MC/Seria l port results packing	Select the communication way from the drop-down menu when outputting data, including TCP/Profinet /ModbusTcp/FINS/EthernetIP/.
	Results package	Y/N	Enable or disable the currently selected communication method.
	Result ouput configuration	All/all read/partially read/partially or all read/partially or no read/no read/custom	Control the data output logic according to the code reading results. All: Output data regardless of the result. Read all: Output data when the result meets all conditions. Partial or all: Output data as long as the code is read Partial or none: the opposite logic of Read All. None: Output data when all code is read.
	data Starter	Custom	The settings between the data can be customized or select from the keypad list

Parameters		Range or Options	Description
	Data Seperator	Customizable	The settings between the data can be customized or selected from the keypad list.
	Result Ender	Custom	The settings between the data can be customized or selected from the keypad list.
	Result Code Starter	Custom	The settings of decoding results can be customized or selected from the keypad list.
	Result Code Ender	Custom	The settings of decoding results can be customized or selected from the keypad list.
	Code Coordinates	Y/N	When enable the function, the coordinate of the code will output
	Tail data	No data/add carriage return/add line feed/add carriage return and line feed	The last tail data of the whole set of data
	Message sent when there are no code reading	Custom	The settings of decoding results can be customized or select from the keypad list
Image saving configuration	Image saving	Y/N	
	Filter	All/all read/partially read/partially or all read/partially or no read/no read	Control the Image output logic according to the code reading results. Output without conditions: Output data regardless of the result. Read all: Output data when the result meets all conditions. Partially: Output data when the code is partially read. Partial or all: Output data as long as the code is read Partial or none: the opposite logic of Read All. No read: Output data when there are no code reading.
	Image storage directory	Custom	The settings of image storage directory can be customized or selected from the keypad list.
	IP address of FTP server	Custom	Configure the IP
	The port of the FTP server	1-65535	Custom, You can set 1 to 65535.
	The username of FTP server	Custom	Usename settings. It can be customized or selected from the keypad list.
	The password of the FTP server	Custom	Password settings. It can be customized or selected from the keypad list.
	The name of the save file	Custom	Format. It can be customized or selected from the keypad list.

Notes: Y: enable this function; N: not enable this function.

4.1.4 Input/Output control

Input/output configuration page of the camera.

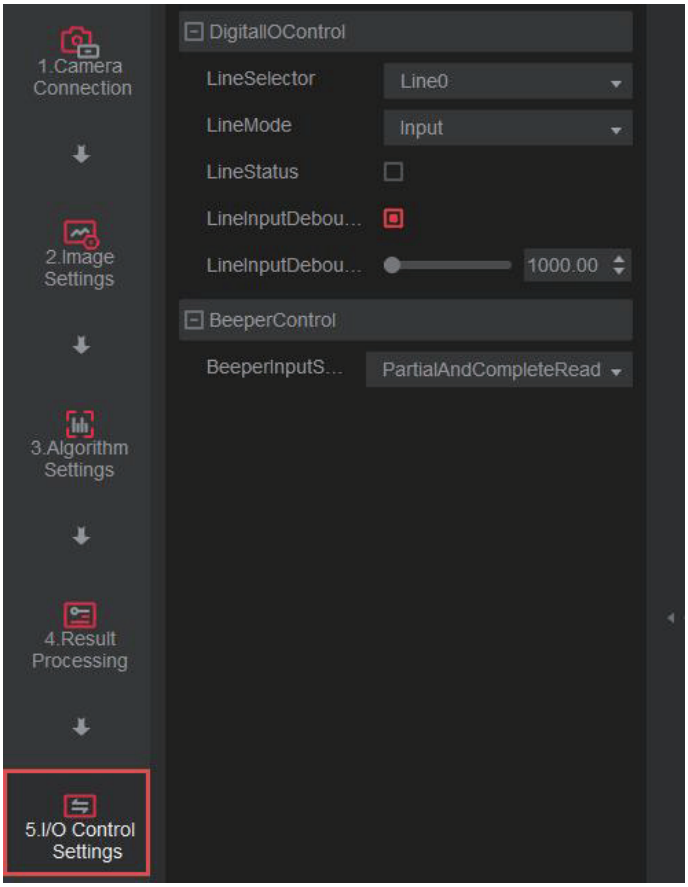


Figure 4-18 I/O configuration

Table4-9 Parameter description of I/O configuration

Parameters		Range or Options	Description
I/O configuration	Optical coupling Selection	Select I/O channels	The I/O channels might be different depending on the device models.
	Line Mode	Configure I/O functions	Select input or output. In general, you do not need to configure this parameter.
	Line Input Debounce Enable	Y/N	Enable or not enable debounce function.
	Input debounce filter	1000-255000, unit:us	Debounce time
Buzzer	Buzzer	All/all read/partially read/partially or all read/partially or no read/no read/custom output	Control the Buzzer output logic according to the code reading results. No read: no output Output when code reading is over. All read: Output data when the result meets all conditions Partially read: Output data when partially read. Partial or all read: Output data as long as there are code reading. partially or no read: the opposite logic of all read. No read: Output data when there are no code reading.

Notes: Y: enable this function; N: not enable this function.

4.1.5 Communication configuration

The communication configuration of the camera includes serial port configuration, network communication configuration, communication soft trigger configuration, and networking configuration.

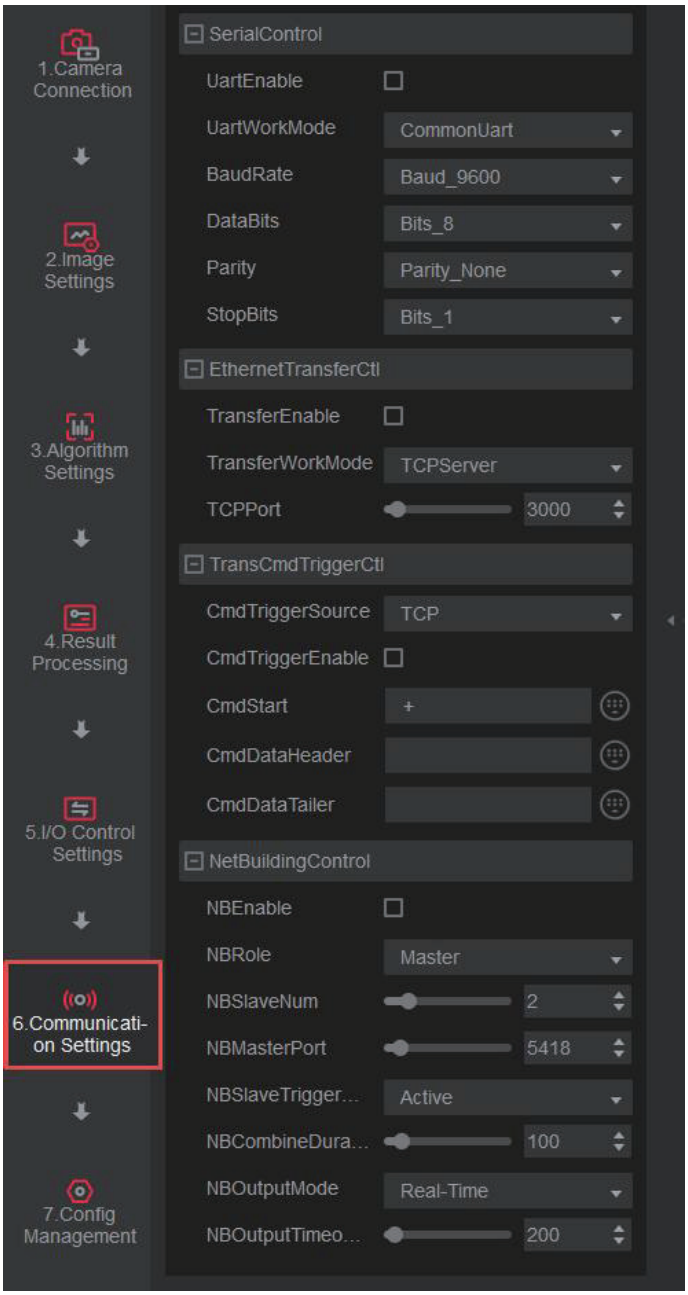


Figure 4-19 **Communication Configuration**

Table4-10 Parameter description of communication

Parameters		Range or Options	Description
Serial port configuration	Serial port communication enable	Y/N	Enable or not enable serial port transmission.
	Serial port communication mode	Common/HostLink mode	Common/HostLink mode, it is common mode by default.

Parameters		Range or Options	Description
	Baud Rate	9600/38400/ 57600/ 115200	9600/38400/ 57600/115200 , It is 9600 by default
	Data Bits	8/7 bit	8/7/6/5 bit, it is 8 by default.
	Odd-even examination	None/Even/Odd	None/Even/Odd, it is none by default.
	Stop Bits	1 or 2 digits	It is 1 digits by default.
Ethernet communication configuration	Transfer enable	Y/N	Enable or disable network transmission.
	Transfer Work Mode	TCP server/TCP client /Profinet/ModbusTcp server /FinsUDP client /FinsTCP client /EthernetIP server /MCUdp client /MCTcp client	Communication mode
	Port number	20 to 65535	Port number
Communication soft trigger configuration	Trigger Source	TCP/serial port triggering source	TCP/serial port triggering source
	Trigger	Y/N	Enable or not enable soft trigger
	Trigger Start character	Custom	It can be customized or selected from the keypad list.
	Cmd Data Header	Custom	It can be customized or selected from the keypad list.
	Cmd Data Tailer	Custom	It can be customized or selected from the keypad list.
Networking Configuration	Enabling networking configuration		
	Networking role	Main camera/ sub camera	

Notes: Y: enable this function; N: not enable this function.

Networking role setting indicates that the main and sub cameras are set respectively:

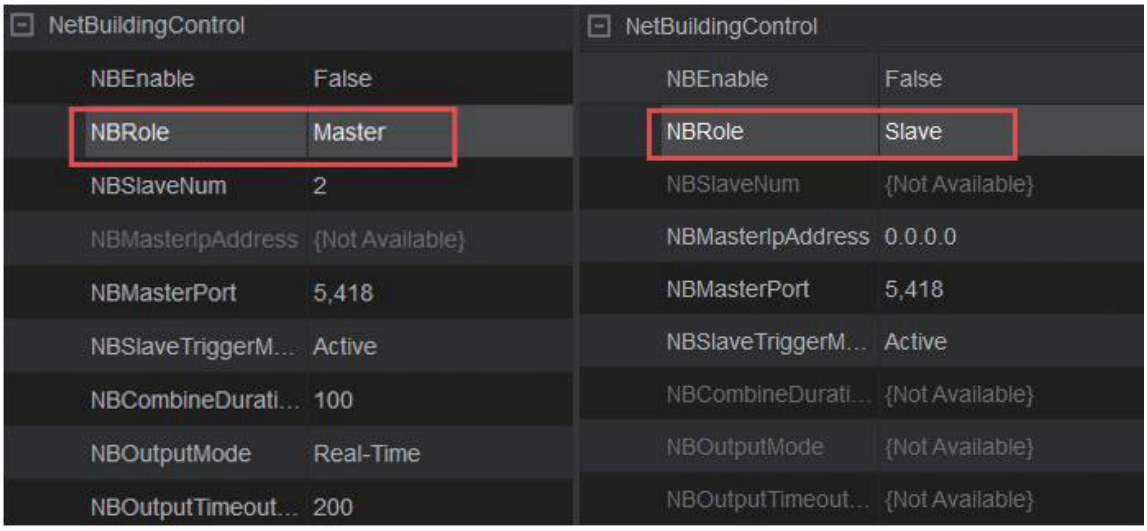


Figure 4-20 Camera Settings

Table4-11 Parameter description of networking camera

Parameters		Range or Options	Description
Main camera configuration	Number of sub camera	1-8	Up to 8 camera are supported
	Port of main camera	1024-65535	Custom, You can set 1024 to 65535.
	Trigger mode of sub camera	Please select the active mode/the passive mode.	Optional
	Output binding duration	10-1000	Custom. 10 to 1000 can be selected
	Output Mode	Real-time output/ Delayed output	Optional
	Timeout duration/ delay duration	50 to 5000	Custom. 50 to 5000 can be selected
Sub camera configuration	IP address of main camera	Custom	IP address configuration of main camera .
	Port of main camera	1024-65535	Custom, You can set 1024 to 65535.
	Trigger mode of sub camera	Please select the active mode/the passive mode.	Optional

4.1.6 Configuration Management

After configuring the camera parameters, you can save to user configuration 1 or user configuration 2 as needed, and then load the corresponding configuration after startup. You can also restart the device to set the startup configuration and import and export related configuration files.

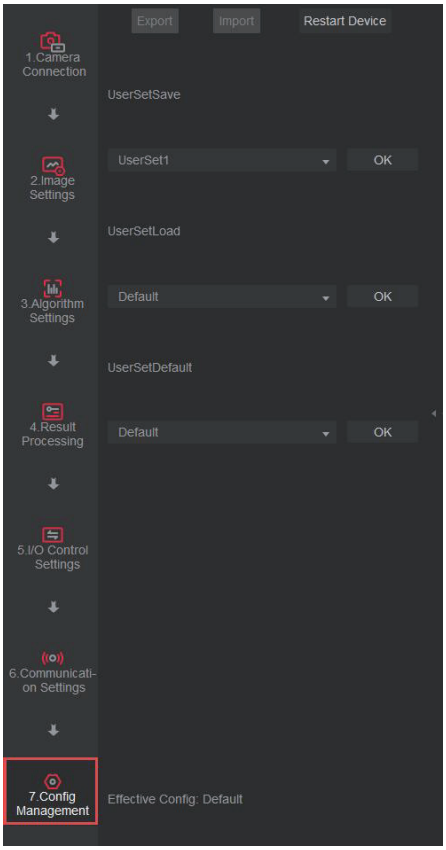


Figure 4-21 **Configuration Management**

Table4-12 Parameter description of configuration management

Parameters	Range or Options	Description
Export	–	Operation button , Click it to export configuration files. Note: When import or export files, the camera should pause acquiring stream.
Import	–	Operation button. Click it to import configuration files. Note: When import or export files, the camera should pause acquiring stream.
Restart	–	Operation button. Click it to restart the device.
Save configuration	User configuration	Select configuration number, and then click OK to save the configuration to designated number.
Configuration Loading	Default/User configuration1 to 8	After selecting configuration number, click OK. The camera will load configuration automatically.
Default configuration	Default/User configuration1 to 8	After selecting number, click OK. The camera will be powered on and load the configuration by default.

4.2 Quick Settings

Easy ID client will list some common configuration, as shown in the figure below. For some simple scenarios, these quick settings can meet the requirements of decoding.

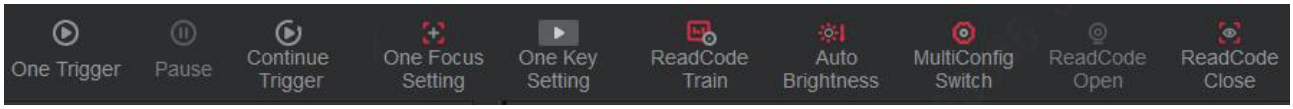


Figure 4-22 **Quick settings**

Table4-13 Parameter description of quick settings

Parameters	Range or Options	Description
Single trigger	/	Operation button. Click it to trigger acquiring stream. This function is enabled only when the device is playing videos.
Pause	/	Operation button. Click it to stop acquiring stream.
Real-time trigger	/	Click it, and then the device is in real-time acquiring stream status. This function is enabled only when pull stream is paused.
Adjust focus with one click	/	Operation button. Click it to enter one click Focusing page.
One Key Setting	/	Operation button. Click it to enter one click configuration page.
Read Code Training	/	Operation button. Click OK in the pop-up window after triggered, and then the device will adjust algorithm configuration to improve decoding results.
Auto Brightness		Operation button. Click OK in the pop-up window after it is enabled. Device will automatically adjust the paramters of image to meet the requirements of decoding.
Switching Configurations	/	Operation button. Click it to enter multi configuration switching page. For details, see the following chapter.
Read Code enabled	/	Operation button. Click it, and then the device enter the visual mode and start decoding.
Read code not enabled	/	Operation button. After clicking it, the device enter preview mode, and only pull stream function is enabled.

4.2.2 Adjust focus with one click

The one-key focus function is only available for devices with auto-focus function.

Click One-key focus, and then click Confirm in the subsequent pop-up window, and the device will enter the auto-focus state until the image reaches the clearest state, as shown below.

If you have clicked Play before opening the function to make the device in a free pull state, the whole process of focusing screen changes can be displayed in real time.

If the device works abnormally, you can also click Pause to cancel the focus function.

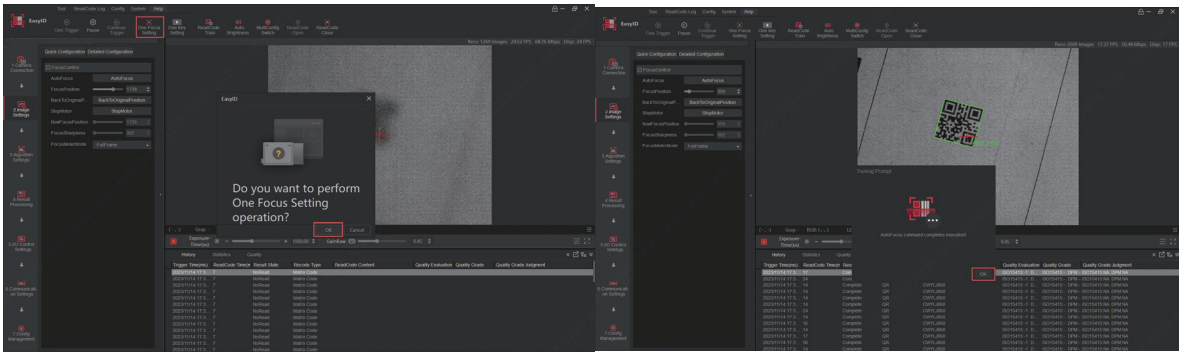


Figure 4-23 **Comparison of effects before and after one-key focus**

4.2.3 Auto Brightness

The reader can automatically adjust the brightness according to the image effect, and make the image meet the decoding requirements by automatically adjusting the image parameters and the built-in illuminator.

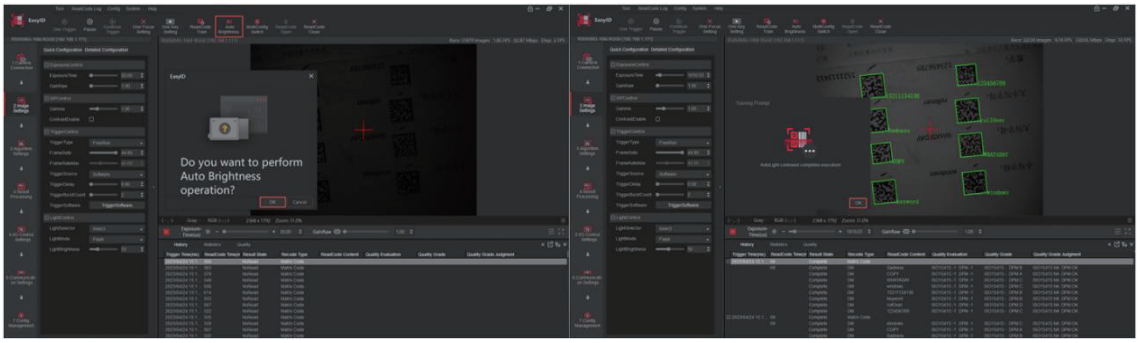


Figure 4-24 **Comparison of before and after**

4.2.4 One Key Setting

One key settings refers to the collection of adjusting focus with one key, auto brightness, read code training. After clicking "One-key settings", the device automatically adjusts the focus, image parameters, built-in illuminator brightness, algorithm configuration to achieve the best image and decoding effect. The function is under continuous optimization. Currently, the effect is good for simple scenarios. If the requirements cannot be met, please refer to 4.1 for detailed parameter configuration

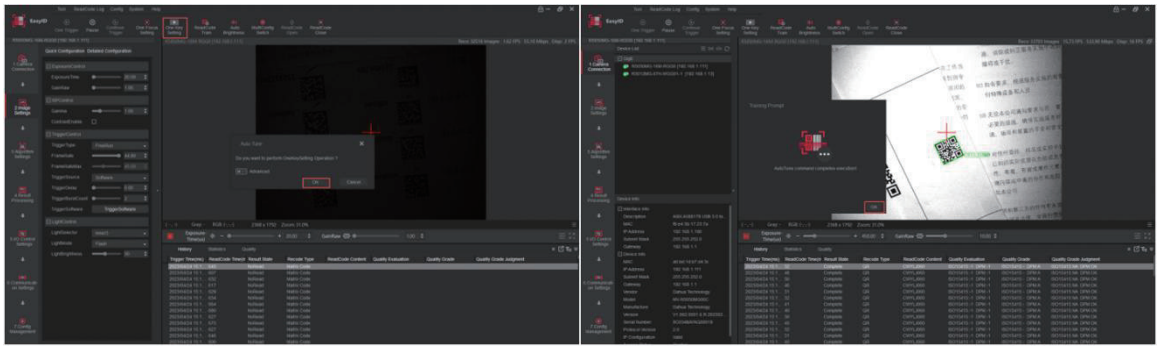


Figure 4-25 **One Key Setting Comparison**

4.2.5 Switching Configurations

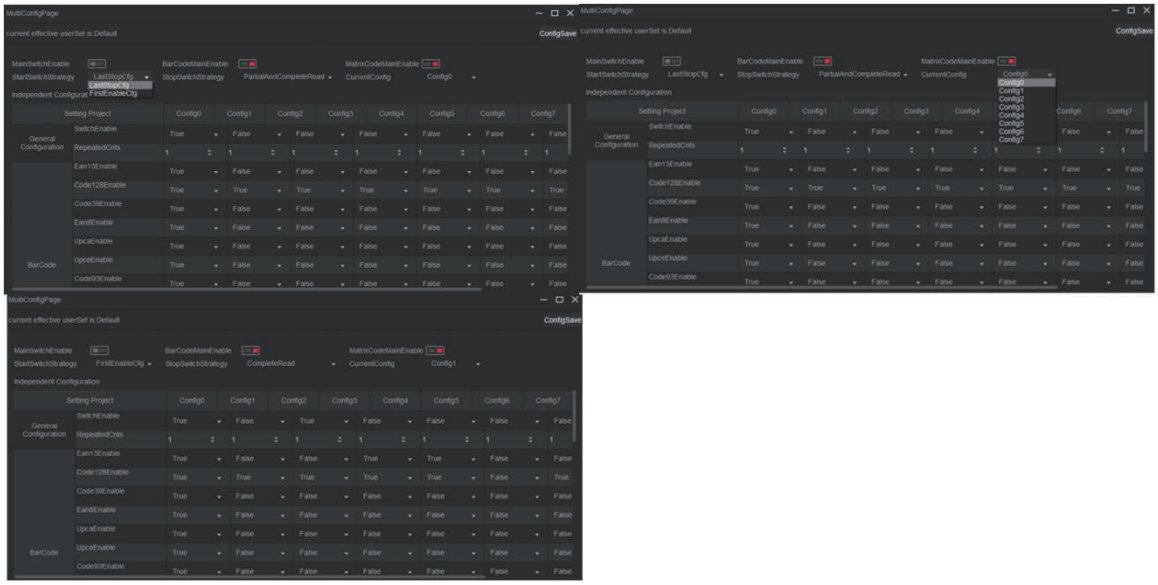


Figure 4-26 **Switching Configurations**

Table4-14 Parameters description of switching configurations

Parameters	Range or Options	Description
Multi configurations switching	On/Off	Only when it is on can configuration switching take effect. 8 configuration groups: Default; UserSet1–UserSet1. In every group, you can configure the parameters of Config 0–7. Note: After enabling it, the parameters in the group configuration will be locked and commissioning is not allowed.
Start Switch Strategy	Last Stop/First Stop	Start polling with the parameter when you last stopped polling/Start polling with the parameter when you first polled
QR Code Enable	On/Off	Enable or disable bar code.
Matrix Code Enable	On/Off	Enable, and the QR code reader enabled.
Stop Switch Strategy	Partial or all/All	Stop output in these two cases.
Current Configuration	Group 0 to 7	8 configuration groups: The configuration groups that the reader is currently using.
Grouping configuration	Group 0 to 7	Different parameters can be configured in different groups according to the actual situation to facilitate polling.

4.3 Menu Bar

Easy ID menu bar includes the following functions.

4.3.1 Tools

The tool bar consists of two parts: camera tool (firmware upgrade) and USB NIC driver installation (driver installation is used for pulling data).

Instructions:

Select Tool > camera tool, and then Firmware Version Upgrade is displayed.

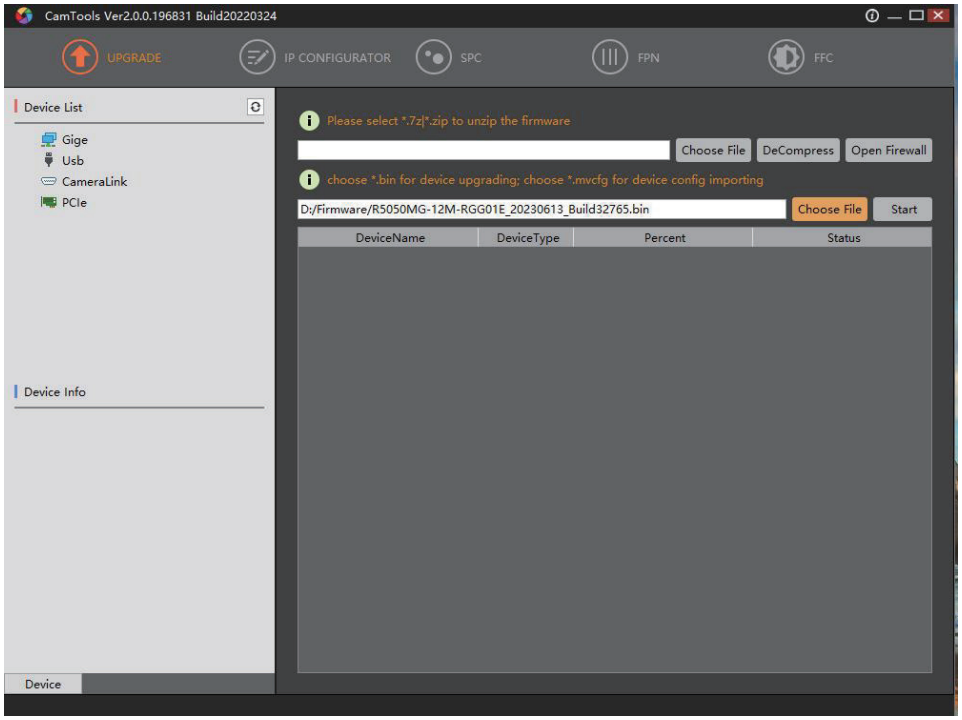


Figure 4-27 **Device firmware version upgrade procedures**

Select the cameras to upgrade from the device list and check the IP address. Click Select on the right, and then select and import the suitable firmware version. Click Start to start upgrading firmware.

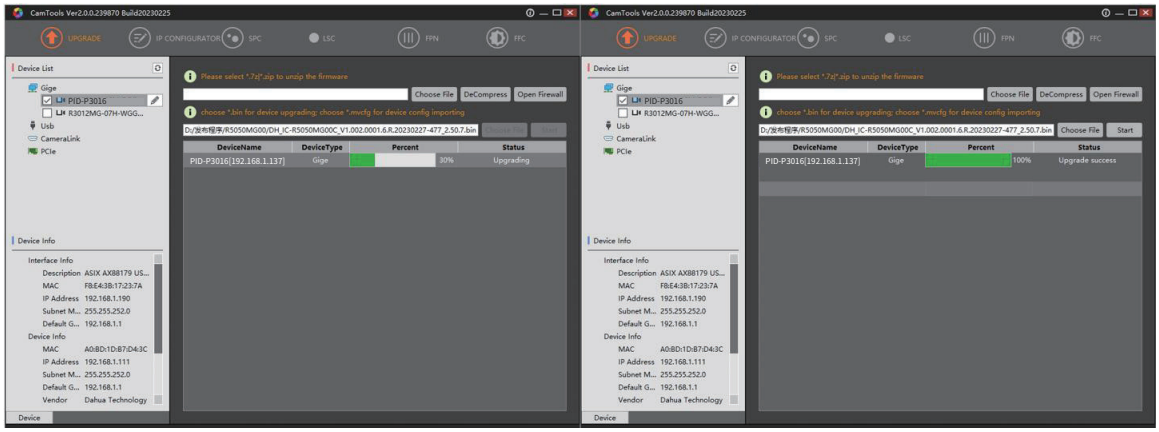


Figure 4-28 **Firmware upgrade**

After upgrading firmware, the device will automatically power off and restart. After that, you can go to the homepage to view the device version.

- When upgrading the firmware, disconnect the camera from the EasyID main page. Otherwise, the message Connection Failed will be displayed.

4.3.2 ReadCode Log

This function records the operation logs of the reader. If there is a device, you can export the logs and send the device information to technical support.

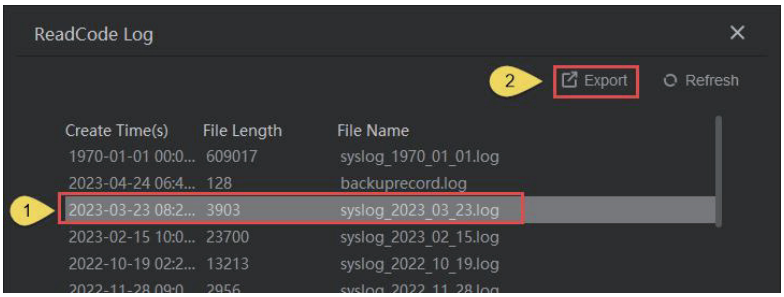


Figure 4-29 **Device Log Export**

4.3.3 Configuration

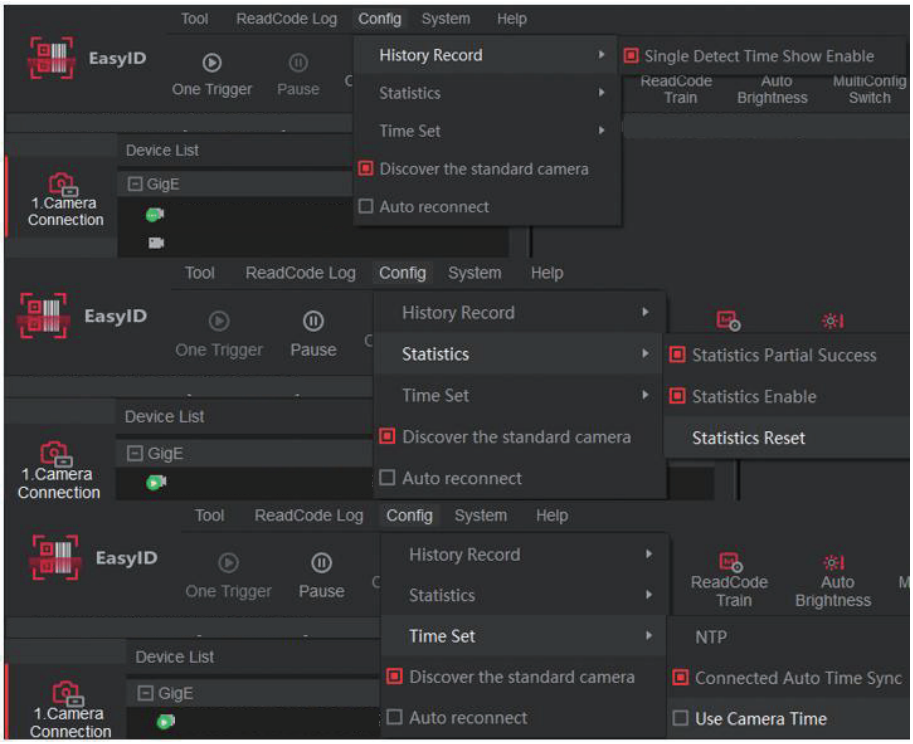


Figure 4-30 **Configuration**

Table4-15 Parameter description

Parameters	Description
History Record	Enable single-item time consuming
Statistics	Reading partial bar codes means the read is successful (when this function is disabled, if 10 bar codes need to be read and 8 bar codes are actually read, the bar code reading will fail). You can enable, disable, and clear statistics.
Time settings	**NTP Mode**, **Get System Time**, **Auto Time Sync**, **Connected Auto Time Sync**, and **Use Camera Time** are available.
Discover the standard camera	Select it to find earlier version cameras.
Auto-Reconnect	Enable the function, and then the camera can be automatically reconnected after disconnection.

4.3.4 System

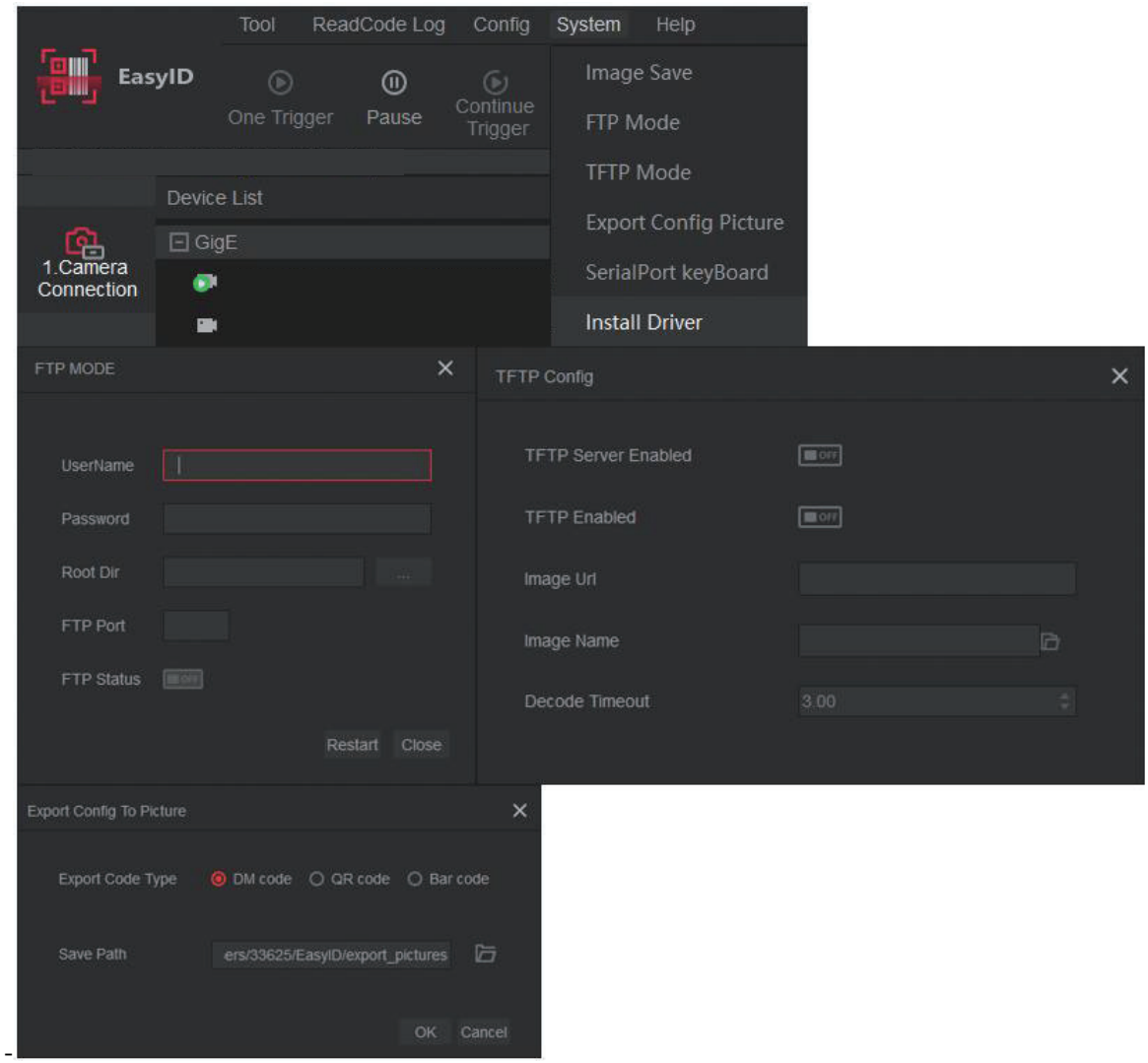


Figure 4-31 **Configuration**

Table4-16 System settings

Parameters	Description
Image Save	You can save images according to the reading status, and select the storage path.
FTP Services	Start the FTP server that comes with EasyID, which is generally used with the FTP image storage function of the camera. FTP image storage: You can store images according to different reading status, and customize the image name and storage path.
TFPT Mode	Start the TFTP server that comes with EasyID. The commissioning function is encrypted.
Export Configuration Picture	Export the parameter configuration as a picture (Code128/DM or QR code), and the code reading device can read and configure the parameters by reading the code.
Virtual keyboard	Output focus or specify output to a certain position with mouse.
Install drivers	Used for installing drivers

4.3.4.2 Image Storage

Picture Save is one of the most commonly used functions, which can save all decoded pictures according to the usage scenario for traceability. Besides, if the image is unable to decode, you can provide the images to sales or technical support for parameter adjustment or algorithm optimization. Save image

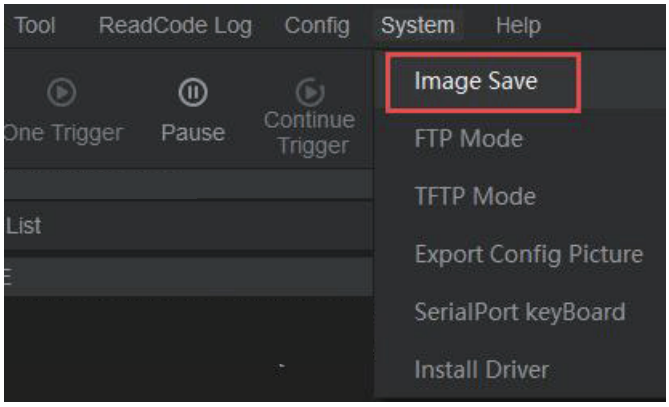


Figure 4-32 **Image saving**

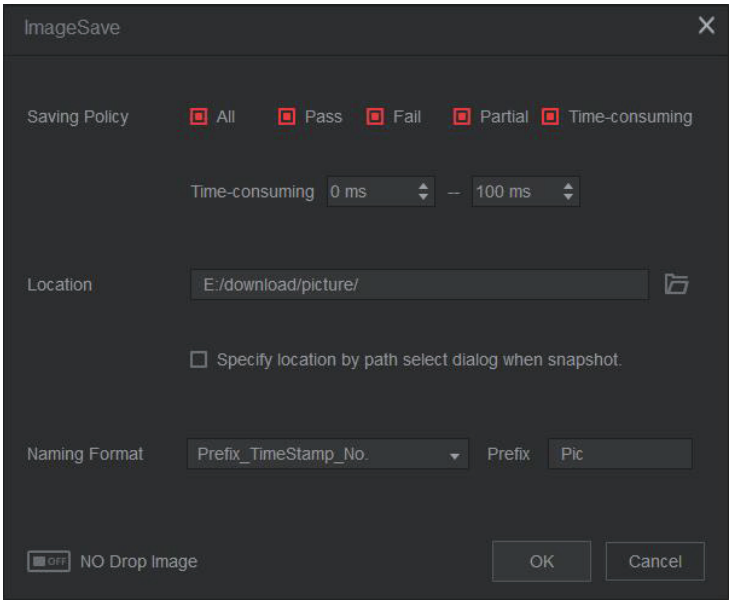


Figure 4-33 **Image saving**

You can save the images in BMP or JPEG format.

You can select storage strategies including all pictures, decoding, decoding failure, partially decoded.

Save images in the following two methods:

- Click Auto Save in the control bar of the image display page, and then every image received will be saved.
- Click Manual Save in the control bar of the image display page to save images manually.

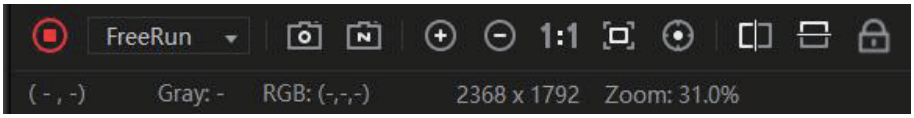


Figure 4-34 **Image saving**

4.3.4.3 Virtual keyboard

Virtual keyboard of the EasyID client can debug device quickly.

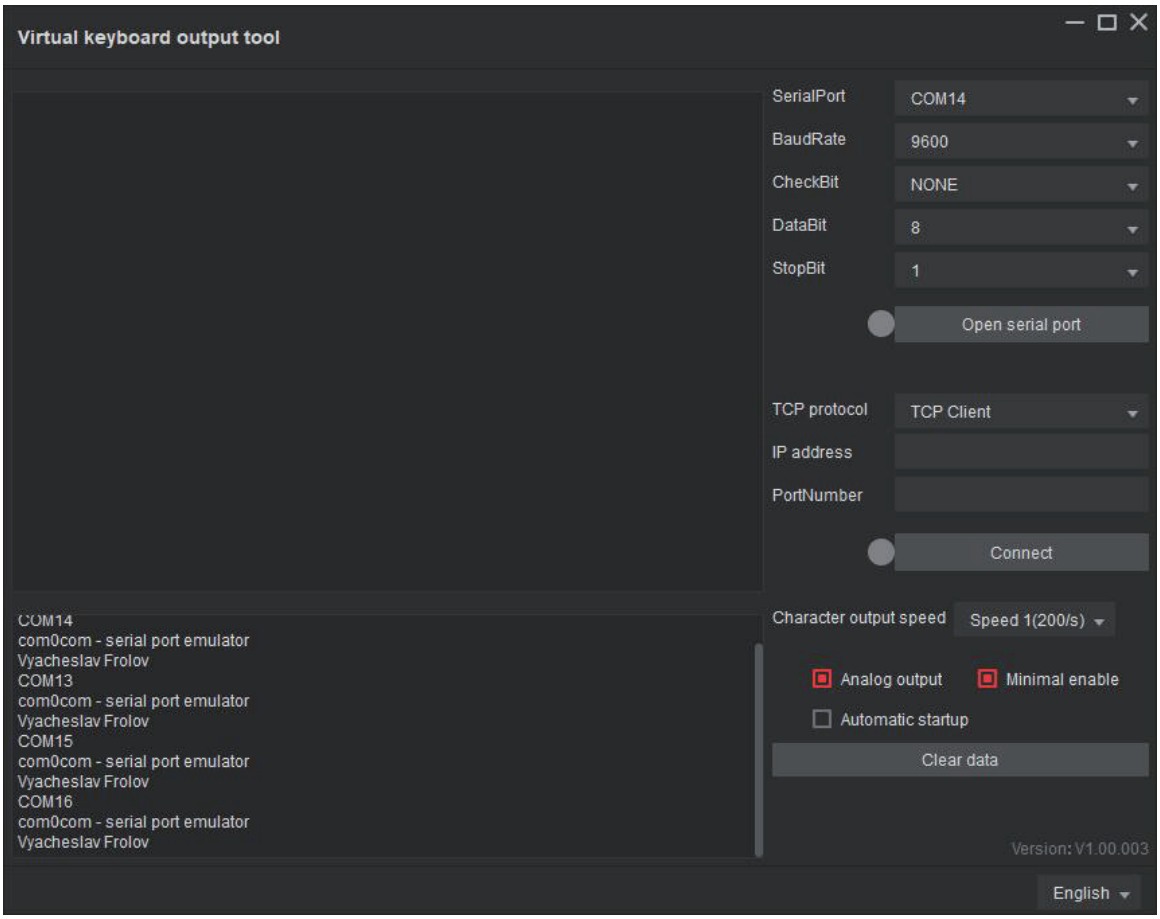


Figure 4-35 **Virtual keyboard**

Table4-17 Parameters for virtual keyboard

Parameters	Description
virtual serial port keyboard	For details on serial port configuration, see "Communication Settings". You can click **Open serial port**, and then use virtual keyboard through serial port.
virtual network port keyboard	For details on network port configuration, see "Communication Settings". You can click **Connect**, and then use virtual keyboard through network port.
Character Output Speed	5 levels are optional: Speed 1 (200/s); Speed 2 (250/s); Speed 3 (330/s); Speed 4 (500/s); Speed 5 (1000/s). Under the premise of normal use, low speed transmission is preferred, which is more stable and reliable.
Analog Output	Enable or disable output function of virtual keyboard.
Minimal enable	Enable or disable the minimization function.
Auto run at startup	Enable or disable automatic startup.
Clear data	Click to clear the data.
Switch Language	Change the language between English and Chinese.
Display column	On the left is the display bar for content display.

Serial Port Simulation

- Check the serial port number of the receiving end by referring to the connected cable.

➢ Double-click EasyID client to open it, and then select Configuration List > Serial Port Configuration. Select the check box of serial port to enable this function, and then configure the parameters according to actual needs.

➢ Open the EasyID client, and then select Configuration List > Results Method. Select Packing Serial Port Results, and then configure results output.

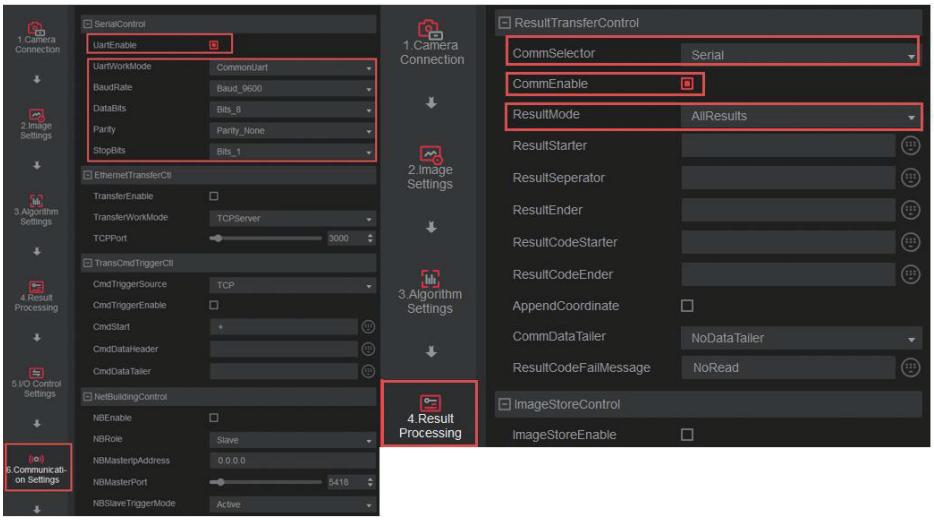


Figure 4-36 **Serial Port Setup of EasyID Client**

➢ Select Virtual Keyboard Output Tools, and then select serial port number, check serial port configuration. After check, click Open. When the device recognizes the code, it will output data and display it on the left.

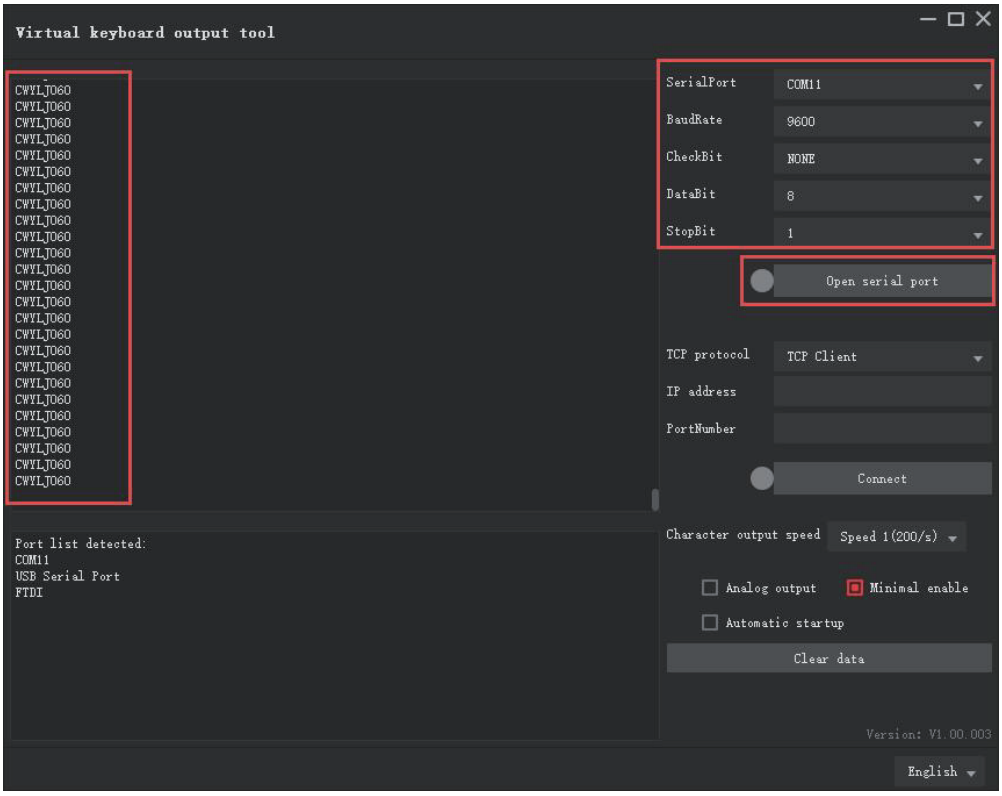


Figure 4-37 **Serial Port output result**

- Check parameter configuration of EasyID client and output tool and ensure the data are exactly the same, otherwise, the serial port may be disconnected or garbled.

TCP Service Settings: The reader can serve as either a TCP client or a TCP server.

Use TCP server serve as a TCP client as an example, the configuration is similar to the configuration of serial port communication.

➢ Open EasyID client, select configuration list > network communication configuration. Select the check box of Transmission, and then configure the Reader as the TCP client. Set the serial port and enter the IP address.

➢ Open EasyID client, select configuration list > Result Processing. Select the check box of Transmission, and then configure the Reader as the TCP client. Set the serial port and enter the IP address.

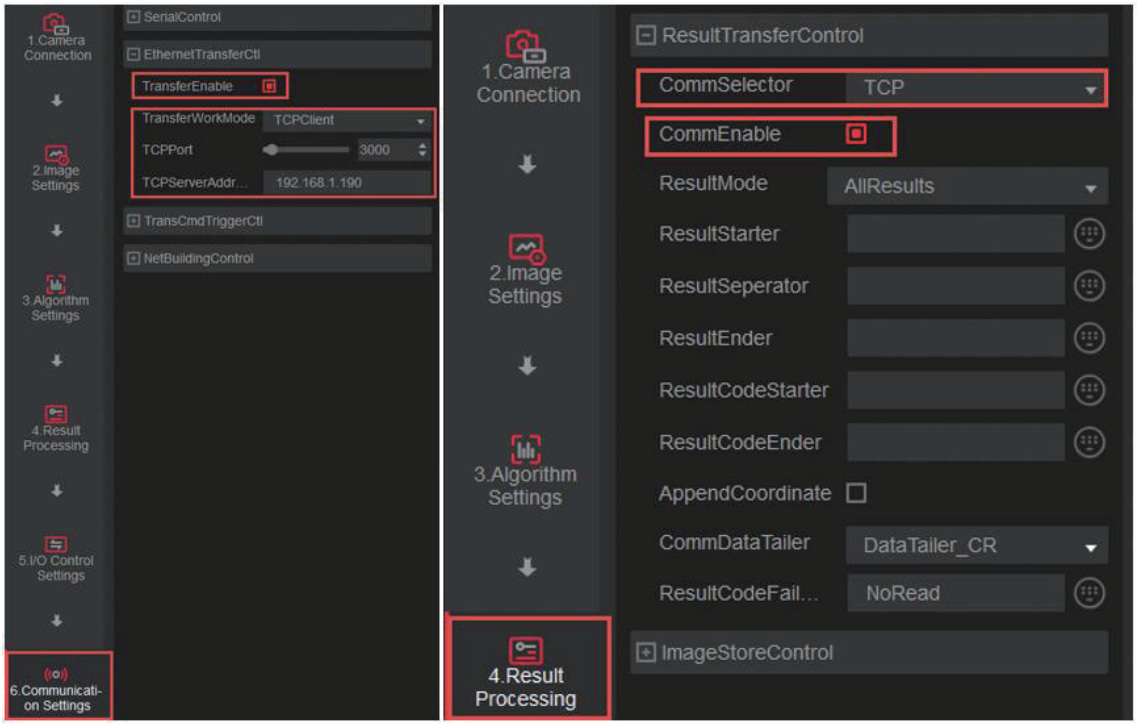


Figure 4-38 **TCP configuration on EasyID Client**

➢ Enter the "Virtual Keyboard Output Tool", and then select TCP protocol as "TCP server". Make sure that the port number and EasyID are configured, and then click "Open". When the device recognizes the code, the data will be output and displayed in the left.

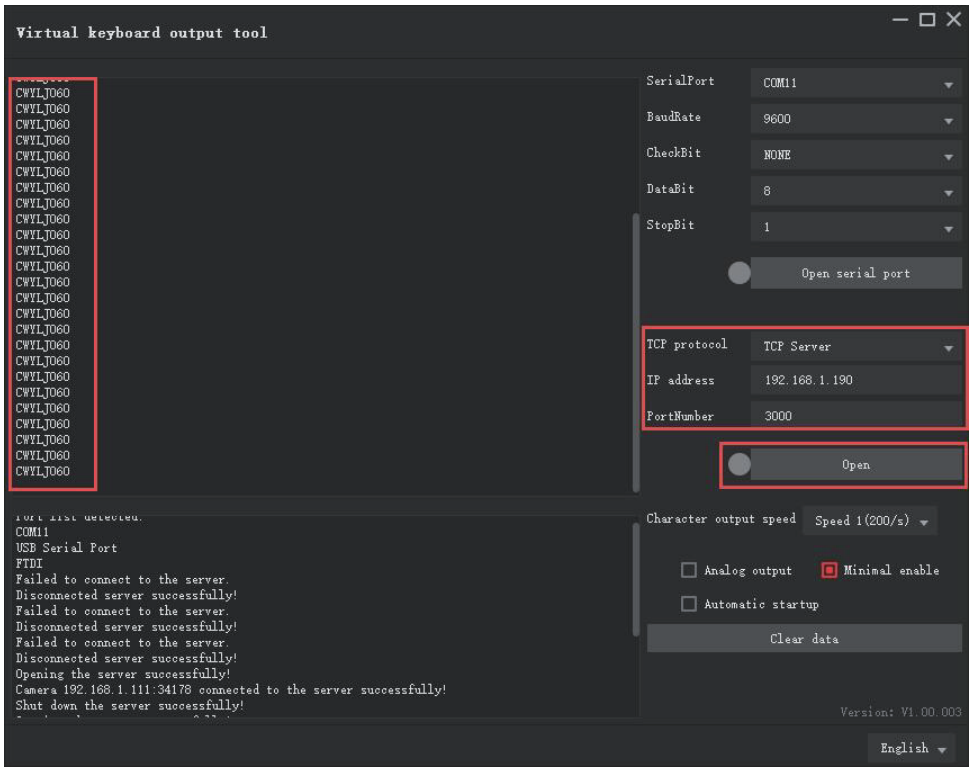


Figure 4-39 **TCP transmission results**

4.3.5 Help

Table4-18 Parameter description of menu

Parameters	Range or Options	Description
Automatic startup	/	Select the check box, and then the system will automatically start
Language	/	You can select Chinese or English
User's Manual	/	Click to view the User's Manual
About	-	You can view the version information of the client and company information.

- Algorithm results will be displayed in list on the page.
- Click Export to the results in txt format.
- Configure the filter to filter the results.

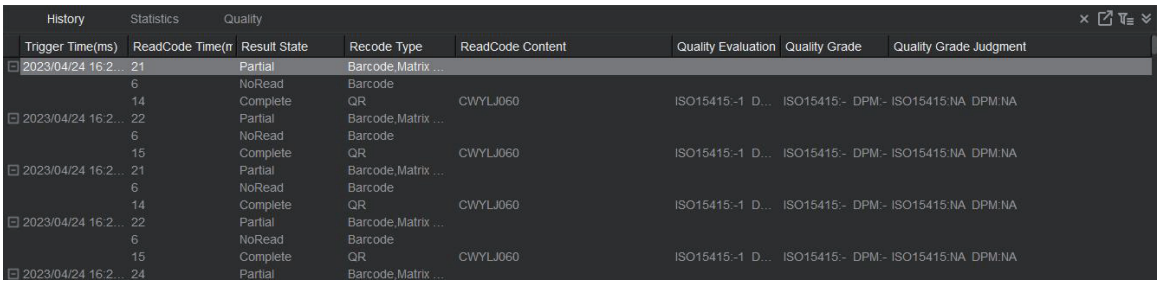


Figure 4-40 **Algorithm display**

In start read mode, you can enable the statistics function to display related statistics. Click Clear to clear the statistics and start again.

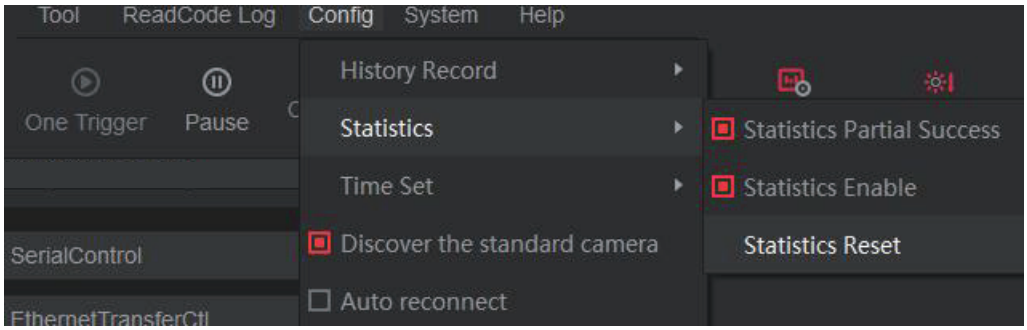


Figure 4-41 **Statistics Operations**

Figure 4-42 **Statistical information display**

Click the detailed quality evaluation information to expand the detailed quality evaluation index. Select a certain read record to display the detailed quality evaluation information.

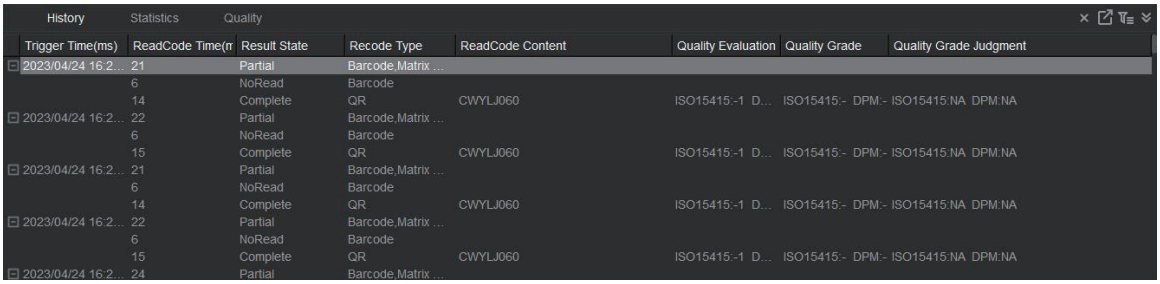


Figure 4-43 **Quality Evaluation**

5 Frequently Ask Questions

5.1 No cameras are detected

Possible reasons:

- ✧ Cameras are not enabled, and the power supply cannot meet the requirements.
- ✧ Abnormal network cable connection.
- ✧ The camera and the client are not under the same network segment.
- ✧ Non-standard protocol camera or not

Solutions:

- ✧ Check the power supply: Make sure that the power supply and cable are suitable.
- ✧ Check network connection: Check the indicator of the reader is working normally, and the camera and the client are on the same network segment.

5.2 The system can detect cameras but failed to connect

Possible reasons:

- ✧ The camera is not started as expected.
- ✧ The camera and the client are not on the same network segment.
- ✧ The camera is connected with other clients.

Solutions:

Restart the camera, try modifying IP to make it in the same LAN with the client. You can also try disconnect other connected clients and connect the current client again.

5.3 Camera is offline

Possible reasons:

- ✧ Hardware problems, such as poor contact of network card and network cable.
- ✧ Problems of hardware settings, such as unmatched configurations of network cards and cameras.

Solutions:

- ✧ Cross check hardwares, if failure happens, replace the hardware
- ✧ Check the NIC configuration.

5.4 The effect of the algorithm does not live up to expectation.

Possible reasons:

- ✧ Filed of view or illumination does not meet the requirements.
- ✧ Illogical parameter configuration or algorithm failed to start.
- ✧ The code has a defect.

Solutions:

- ✧ Check the camera FoV and the illuminator. Review the camera parameters such as trigger mode, trigger delay, input smoothing, exposure, gain and illumination.
- ✧ Check whether the algorithm is started. Review the parameters of algorithm, including type, specification, scale, timeout, number, filter and error code rate.

5.5 Cannot enable external trigger

Possible reasons:

- ✧ Incorrect cable connection of external trigger.
- ✧ The trigger mode is not set to external trigger.

Solutions:

- ✧ Select the required trigger mode and make sure that the external cable connection is correct.

6 Clean and Maintenance

This section mainly introduces the clean and replacement of the color filter.

To avoid dust on the image sensor, a piece of fully transparent glass is installed in black&white cameras. A low-pass color filter, which lets colors with lower frequency than NIR (Near Infrared) pass, is installed in color cameras. If you want to use a different color filter or not use at all, replace the whole color filter bracket outside the image sensor (no need to disassemble the cover).

If the color filter surface requires cleaning, use special detergent made for optical materials so that no marks left after cleaning.

Hotline

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LANBAO CATALOG 2025-0402