Smart Code Reader (3000Pro)

User Manual

V1.0.0

Foreword

Overview

This manual introduces the configuration and operations of 3000 Pro smart code reader (hereinafter referred to as the "the Reader"). Read carefully before using the device, and keep the manual safe for future reference.

Safety Instructions

The following categorized signs and words with defined meaning might appear in the Manual.

Signal	Description
 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, lower performance, or unpredictable result.
	Provides methods to help you solve a problem or save your time.
	Provides additional information as a supplement to the text.

Revision History

Version No.	Content	Release date
V1.0.0	First release.	Jun. 2025

Important Safeguards and Warnings

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

Operation Requirements

- Do not install or place the device in a location that exposes it to sunlight or heat sources.
- Keep the device away from dampness, dust or soot.
- Install the switch horizontally on a stable surface to prevent it from falling.
- Do not drop or splash liquid onto the product, and make sure that there is no object filled with liquid on the product to prevent liquid from flowing into the product.
- Put the device in a well-ventilated place, and do not block its ventilation.
- Operate the device within the rated range of power input and output.
- Do not disassemble the device without professional instruction.
- Transport, use and store the device under allowed humidity and temperature conditions.
- The device is a class I electrical appliance. Make sure that the power supply of the device is connected to a power socket with protective earthing.

Power Requirement

- Use the power cords that are recommended for the region and conform to the rated power!
- Use the standard power adapter. Otherwise, it might result in personal injury and device damage.
- The power source shall conform to the requirement of the Safety Extra Low Voltage (SELV) standard, and supply power with rated voltage which conforms to Limited power Source requirement according to IEC60950-1. Please note that the power supply requirement is subject to the device label.
- The device is a class I electrical appliance. Make sure that the power supply of the device is connected to a power socket with protective earthing.

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1 Introduction

1.1 Overview

The smart code reader adopts high performance photo-sensitive chip and the maximum transmission rate of 100 Mb/s can meet the requirements of most industrial applications. It can work stably in various poor and complex environments, which makes it a handheld code reader with high stability at low cost.

1.2 Features

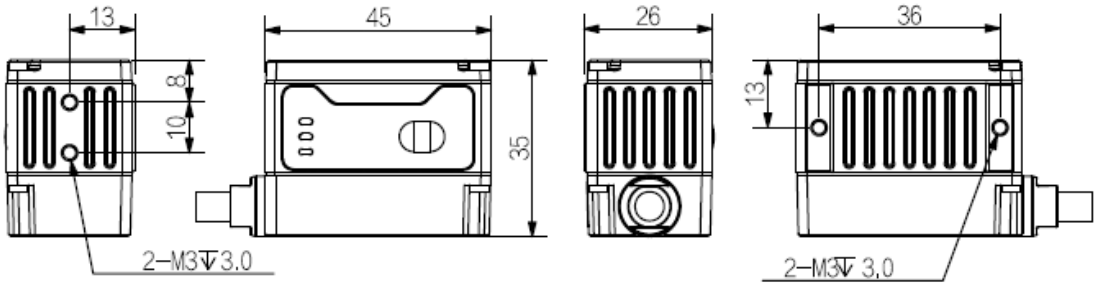
- Small size, easy to install, and various working distances are supported.
- Supports the integrated light sources with red and white light sources, which is suitable for various situations.
- Supports multiple ports, such as IO port, Ethernet port, RS-232 port and GPIO port, and multiple communication protocols.
- Adopts industrial-grade M12 connector, which is IP65 rated.
- Supports multiple options of code types, and code quality evaluation function.

1.3 Appearance and Interface

1.3.1 Dimensions

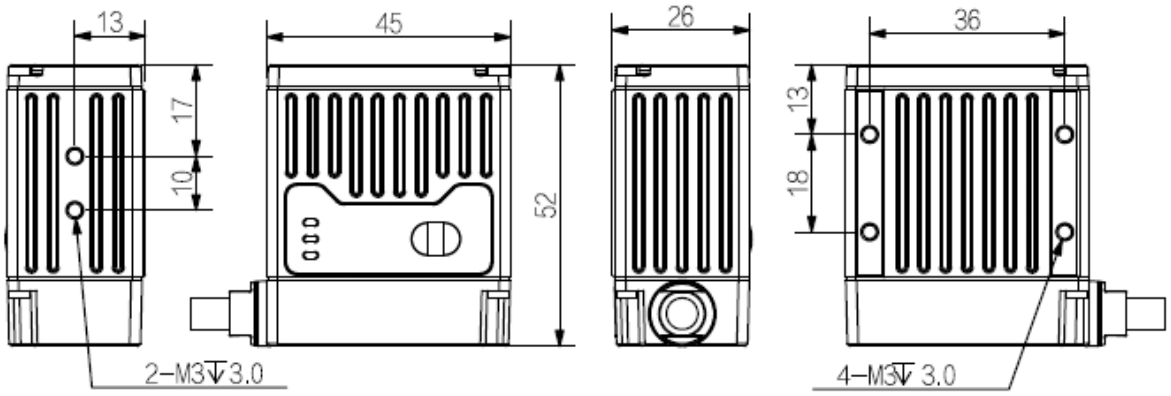
The dimensions of the 7mm model of smart code reader are in the figure below

Figure 1-1 7mm model (45mmx35mmx26mm)



The dimensions of the 16mm model of smart code reader are in the figure below

Figure 1-2 16mm model (45mmx52mmx26mm)



1.3.2 Appearance

Figure 1-3 7 mm adjustable focus model

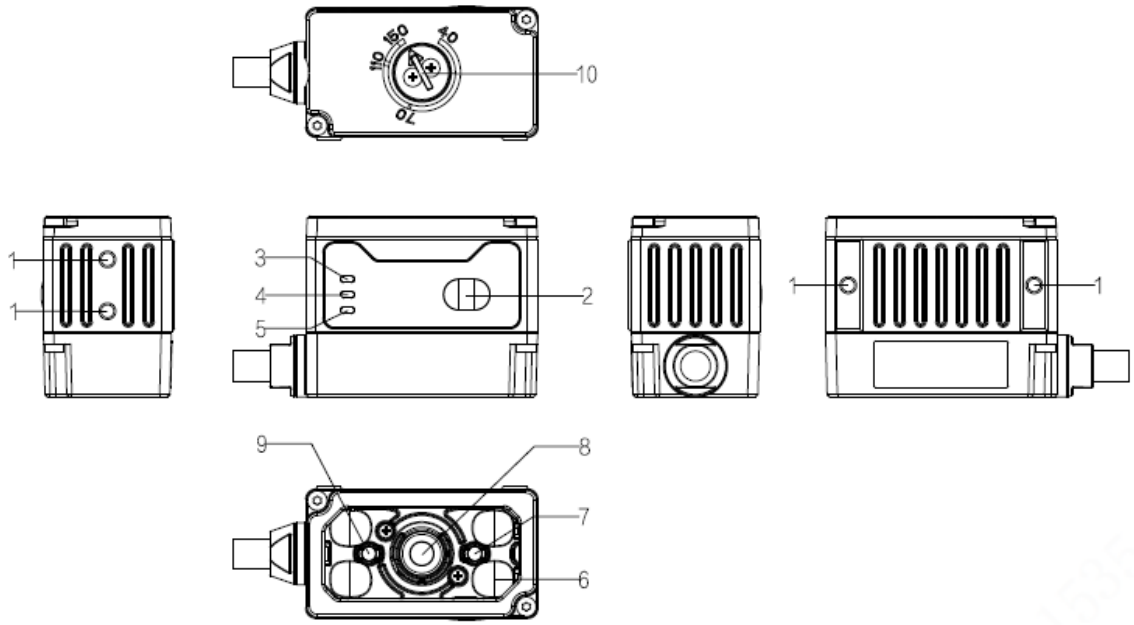


Figure 1-4 16mm adjustable focus model

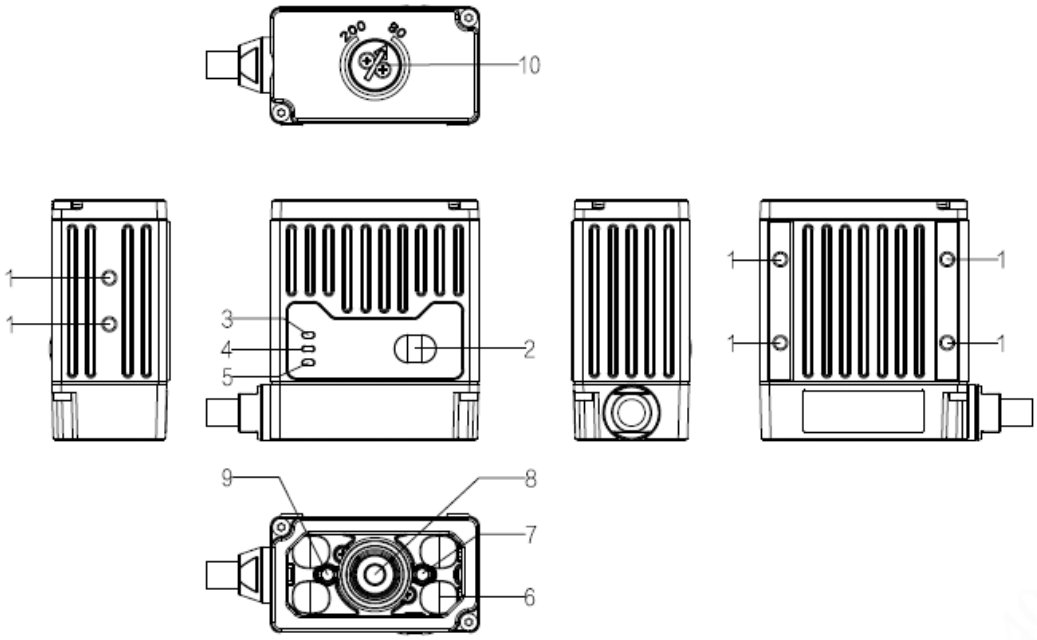


Table 1-1 Device component introduction

S./N.	Parameter	Description
1	Screw Hole	For fixing the device, and user can use the M3 screws packed in the package.
2	TRIG Button	When the trigger mode is set to serial mode or Ethernet mode, user can press the button to trigger the image acquiring function. Long press the button for 3 seconds, quickly press the button once after hearing the beep sound, the reader will perform smart adjustment of image parameters.
3	LINK Indicator	Network indicator is solid green after network is connected normally.
4	POWER Indicator	It is solid when the power supply is normal; off when it is abnormal.
5	OK/NG Indicator	If the project is OK, the indicator is solid green; if the project is NG, the indicator is solid red.

S./N.	Parameter	Description
6 m	Light Source	● LED light sources are for filling light when acquiring images to improve the image quality. ● Red light model has red lights on the two sides of the reader, and the lights can be set to the solid, flashing, off mode. ● White light model has white lights on the two sides of the reader, and the lights can be set to the solid, flashing, off mode. ● Blue light model has blue lights on the two sides of the reader, and the lights can be set to the solid, flashing, off mode.
7	Red Dot Indicator	When the project is NG, the indicator is solid for 500 ms.
8	Sensor	For acquiring images.
9	Green Dot Indicator	When the project is OK, the indicator is solid for 500 ms.
10	Focusing Nut	Use the wrench to adjust the focal length to improve the image definition to achieve the better image quality.

The focus adjustment is as the figure in the below.

Figure 1-5 Focus length adjustment diagram of 7 mm model

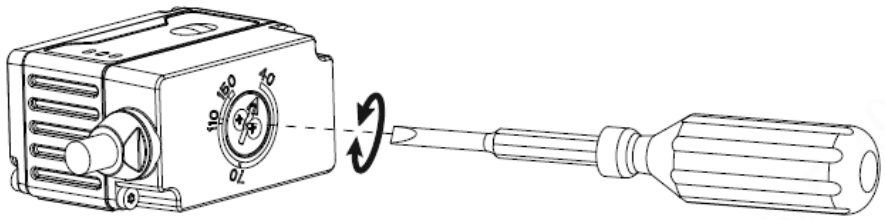
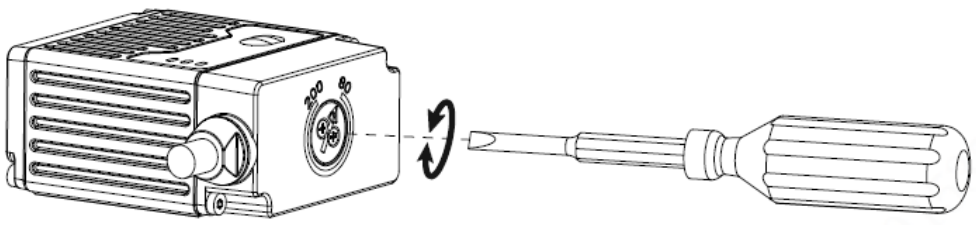


Figure 1-6 Focus length adjustment diagram of 16mm model



1.3.3 Interface

Figure 1-7 Device port

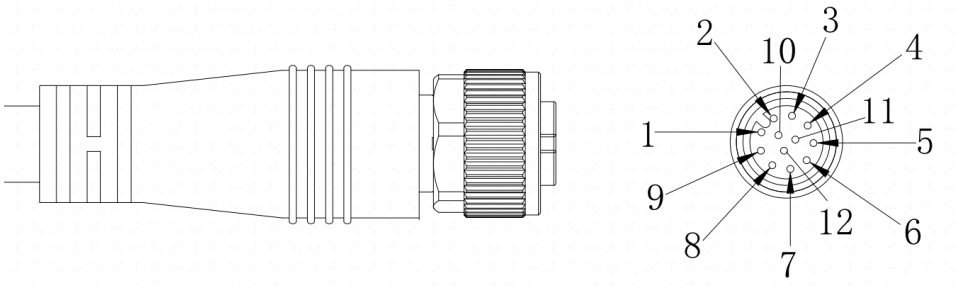
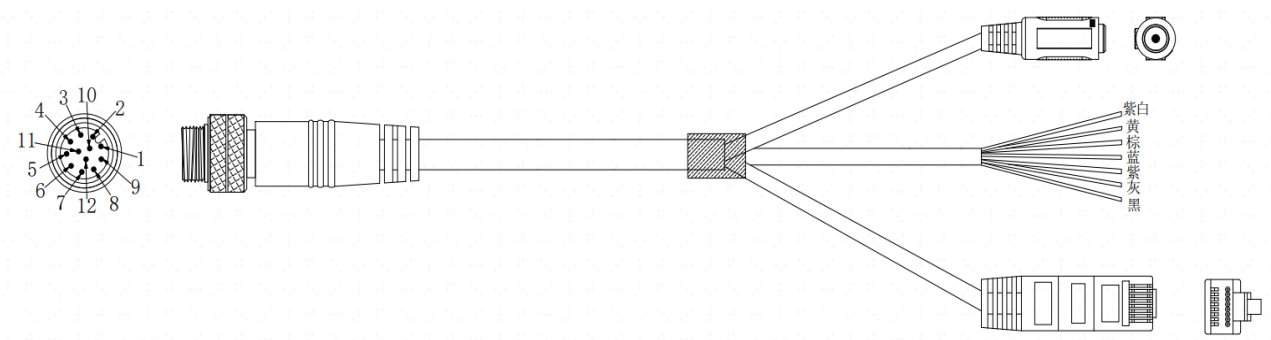


Figure 1-8 Cable connector diagram



The specific pin signals of the device are defined as follows:

Table 1-2 Definition description

No.	Item	Description	Recommend Cable Description	Recommend Cable Color	
1	Power indicator light	Power input	DC 5.5 female receptacle		Red
2	POWER_GND	Power supply ground	DC 5.5 female receptacle		Black
3	OPT_OUT0	Optocoupler output	Brown scattered wire		Brown
4	OPT_GND	Optocoupler GND	Purple-White scattered wire		Purple-White
5	OPT_IN0	Optocoupler input	Yellow scattered wire		Yellow
6	DIRECT_IO	Configurable IO	Blue scattered wire		Blue
7	MD1_P	RJ-45 network port.	RJ-45 network port.		Green
8	MD1_N	RJ-45 network port.	RJ-45 network port.		Green and white
9	MD0_P	RJ-45 network port.	RJ-45 network port.		Orange

No.	Item	Description	Recommend Cable Description	Recommend Cable Color	
10	MD0_N	RJ-45 network port.	RJ-45 network port.		Orange and white
11	RS232_RXD	Receiving data by serial port	Purple scattered wire		Purple
12	RS232_TXD	Sending data by serial port	Gray scattered wire		Gray

- We recommend you use the cable mentioned above when performing the wiring.
- The DC 5.5 female receptacle of the cable can be connected to the DC 5.5 male connector of the power adapter.
- The RJ45 male connector of the cable can be connected to the RJ45 female receptacle of the network port of the computer.
- The scattered-lines part of the cable can be used based on your needs.
- The grounding and power supply ports of bidirectional and configurable IO cable are the common ports.

- If the power ports are connected in reverse, the device will not be able to operate.
- If the input port of the IO cable is connected in reverse, the input function will not be available, but if the output port of the IO cable is connected in reverse, it will cause damages on the circuits.

2 Electrical Specifications

2.1 Power and Network Port

Table 2-1 Power and Network Port

Item	Description
Power Supply	DC +9V~+24V, <1% ripple, powered through 12-core M12 connector. 26AWG cable or thinner cable.
Data Output Ports	100M Ethernet
I/O Port	1 opto-isolated input 1 opto-isolated output 1 GPIO port (can be configured to input or output mode)
Authentication	CE, UKCA, KC, UL

- The power supply must comply with SELV and LPS specifications.
- The device shell is sprayed with insulating paint.

2.2 I/O Ports

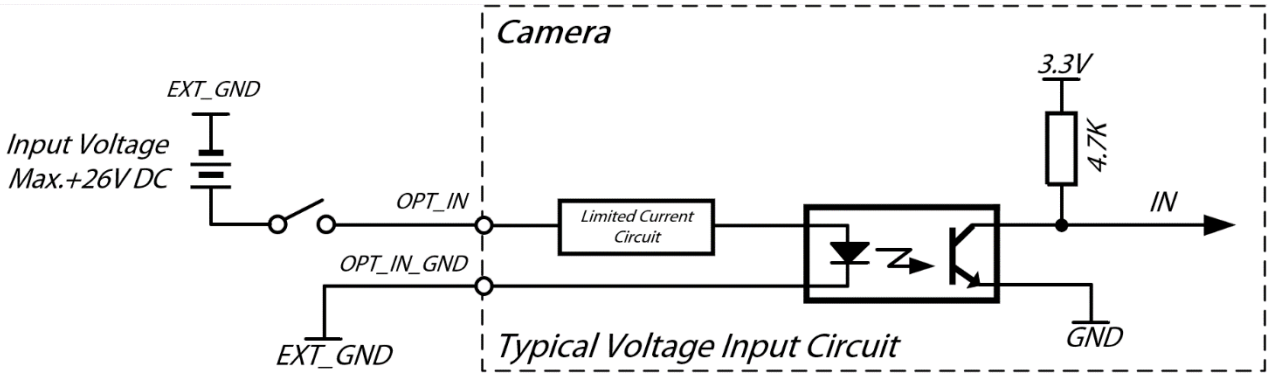
2.2.1 Opto-isolator Input

Table 2-2 Parameter description

Input voltage	Description
+26VDC	Extreme voltage. The input voltage cannot exceed the value. Otherwise, the device might be damaged.
+0VDC ~+24VDC	Security working voltage range of I/O input
+0VDC ~+6VDC	Logic 0
+6VDC ~+9 VDC	The input status changes and the logic status is unsteady within this voltage range
>+9VDC	Logic 1

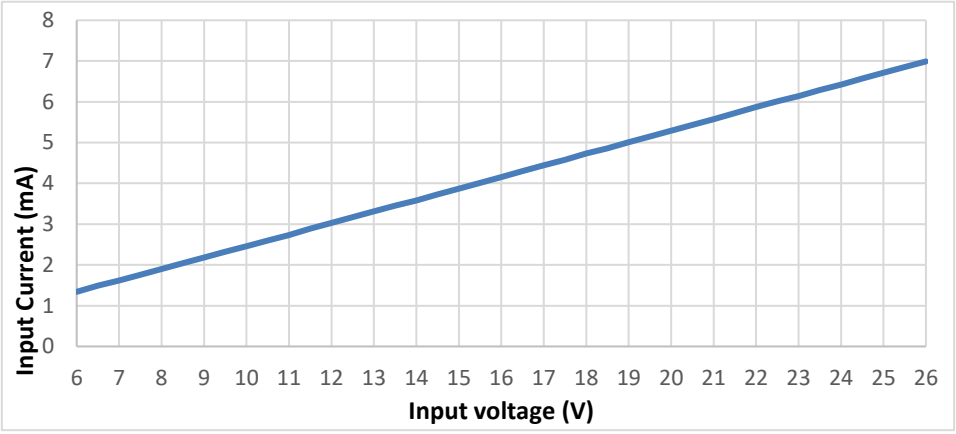
The typical circuit diagram of opto-isolated input port is as follows.

Figure 2-1 Opto-isolated output typical circuit



The relationship between the sink current and input voltage of opto-isolated input port is as follows.

Figure 2-2 Opto-isolated input chart



- The maximum input current of the opto-isolator input can up to 7mA.
- Values in the line chart are obtained at an environmental temperature of 25°C (77°F). Therefore, the actual values may vary among the different models of camera in the different environments.

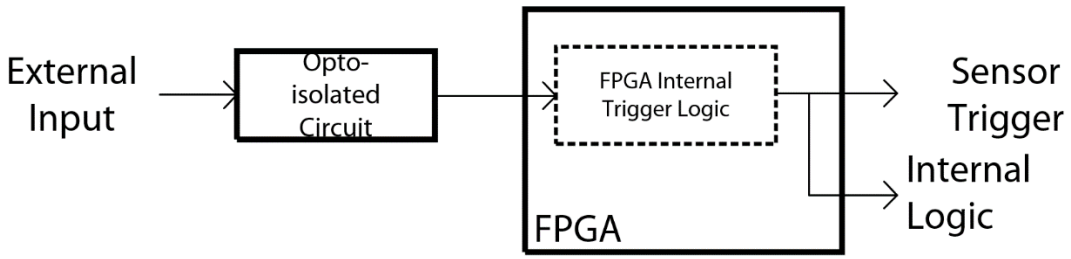
The relationship between the input signal amplitude and trigger delay is as follows.

Table 2-3 Opto-isolated input signal amplitude and trigger delay

Input signal Amplitude (Vp-p)	Rising edge Trigger Delay tDR (us)	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 input delay measures the time delay value from external opto-isolated input port to the FPGA input pin, which means the internal logic delay of the FPGA is not included.

Figure 2-3 Delay logic diagram



Minimum input pulse width of trigger input signal is described in the table below.

Table 2-4 Opto-isolated input signal and minimum pulse width

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

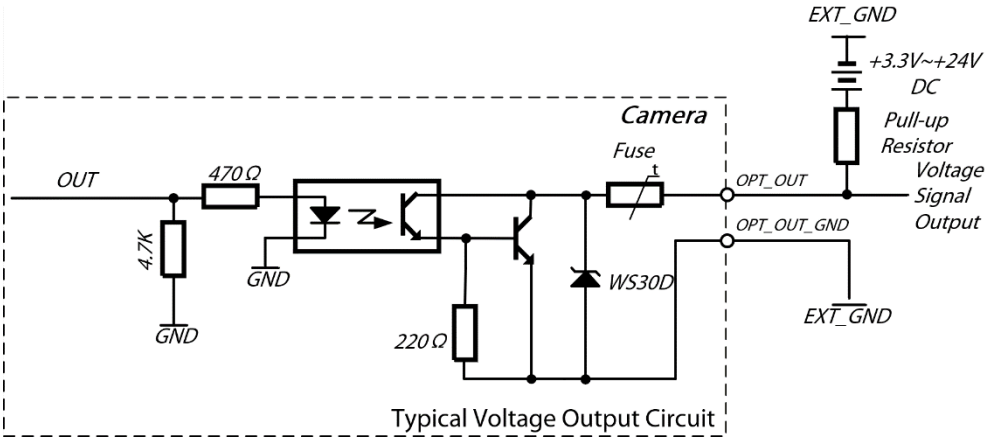
2.2.2 Opto-isolator Output

Table 2-5 Opto-isolator Output

Voltage	Description
+26 VDC	Limiting voltage. Input voltage must not exceed this limit. Otherwise, it may cause damage to the equipment.
<+3.3VDC	Possible error on I/O output.
+3.3 VDC~+24VDC	Security working range of I/O output

The typical circuit diagram of opto-isolated output is as follows.

Figure 2-4 Opto-isolated output typical circuit



The rising/falling time and rising/falling edge trigger delay time when using the 1 kΩ pull-up resistor are described in the table below.

Figure 2-5 Voltage output and delay diagram

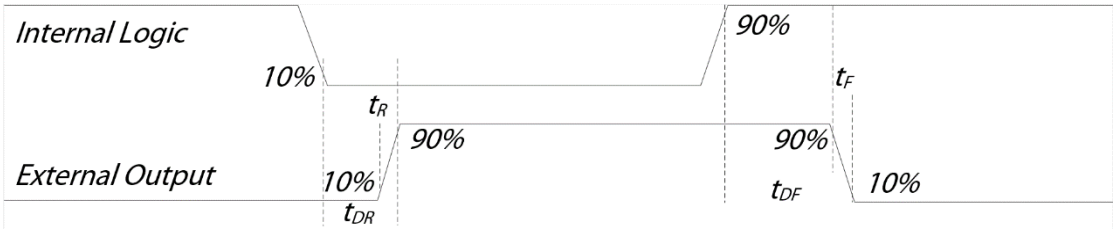


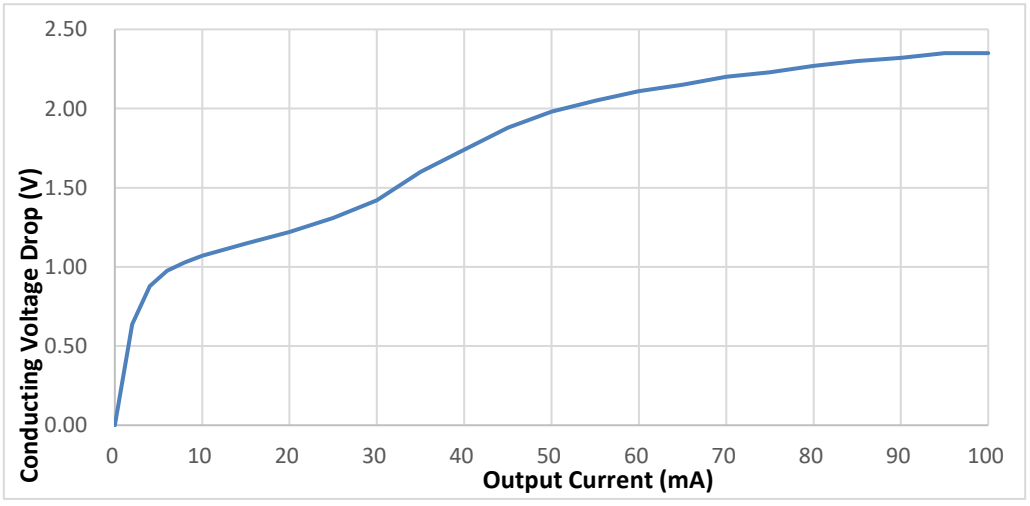
Table 2-6 Opto-isolated output signal amplitude and trigger delay

External Power Voltage (V)	Rising Time tR (us)	Falling Time tF (us)	Rising edge Trigger Delay tDR (us)	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 measures the delay time value from FPGA internal logic output to the external opto-isolated output pin, which means the FPGA internal logic delay is not included.
- Values in the line chart are obtained at an environmental temperature of 25°C (77°F). Therefore, the actual values may vary among the different models of camera in the different environments.

The relationship between the output conducting voltage drop and output current is shown in the chart below.

Figure 2-6 Opto-isolated output chart



- The maximum conducting voltage drop at the opto-isolated output end is 2.35V. This result is obtained under the maximum output current 100mA.
- Values in the line chart are obtained at an environmental temperature of 25°C (77°F). Therefore, the actual values may vary among the different models of camera in the different

environments.

2.2.3 GPIO

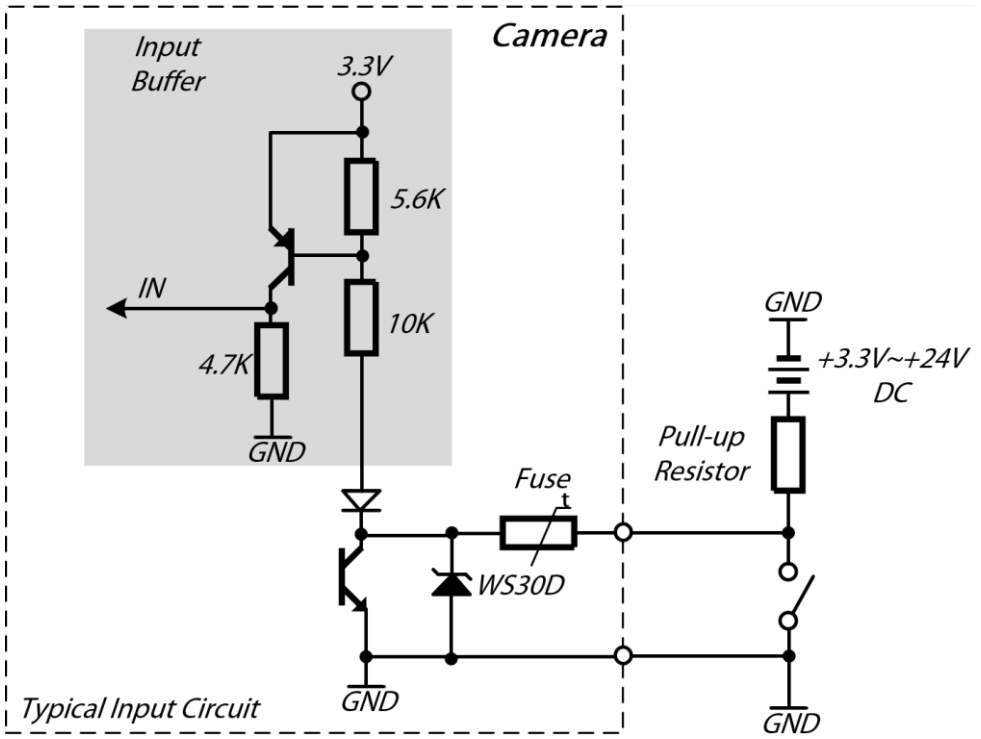
2.2.3.1 GPIO as Input Port

Table 2-7 GPIO as input voltage parameters

Input voltage	Description
+26 VDC	Limiting voltage. Input voltage must not exceed this limit. Otherwise, it may cause damage to the equipment.
+0 VDC ~+24VDC	The security working voltage range in input mode (min 3.3 VDC in external pull-up condition)
+0 VDC ~+0.8VDC	Logic 0
> +0.8VDC~+2.2VDC	The input status changes and the logic status is unsteady within this voltage range
>+2.2VDC	Logic 1

The typical circuit diagram of GPIO input port is as follows.

Figure 2-7 GPIO input typical circuit



The relationship between the GPIO input signal amplitude and trigger delay is described in the table below.

Table 2-8 GPIO input signal amplitude and trigger delay

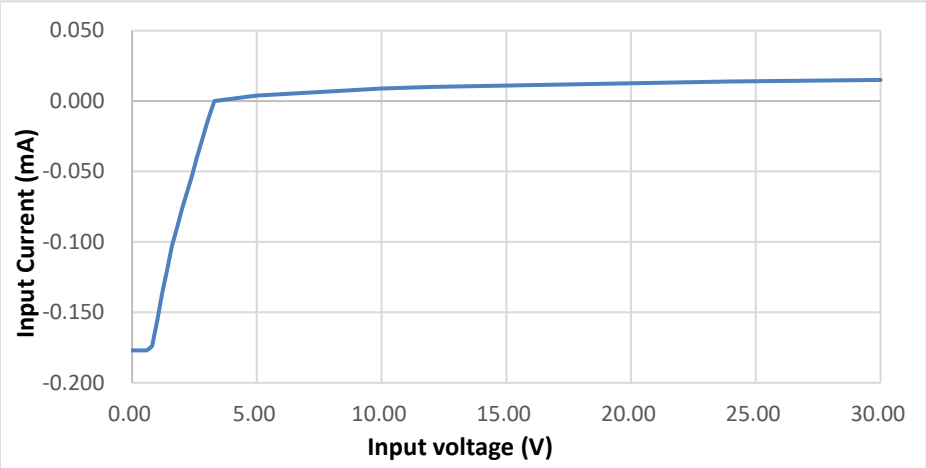
Input signal Amplitude (Vp-p)	Rising edge Trigger Delay tDR (us)	Falling Edge Trigger Delay tDF (us)
3.00	6.783	0.339

5.00	6.563	0.200
9.00	6.164	0.106
10.00	6.416	0.960

- The trigger input delay measures the time delay value from the external GPIO port to the FPGA input pin, which means the internal logic delay of the FPGA is not included.
- The shortest input positive pulse supported by the GPIO input port is about 20μs (typical value); the shortest input negative pulse is about 2μs (typical value).
- The GPIO interface delay is less than the opto-isolated interface.

The relationship between the sink current and input voltage of external power supply is as follows.

Figure 2-8 GPIO input characteristics chart



- The maximum sink current of the GPIO input port is 15μA. This value is measured at an external input voltage of 30V.
- Values in the line chart are obtained at an environmental temperature of 25°C. Therefore, the actual values may vary among the different models of camera in the different environments.

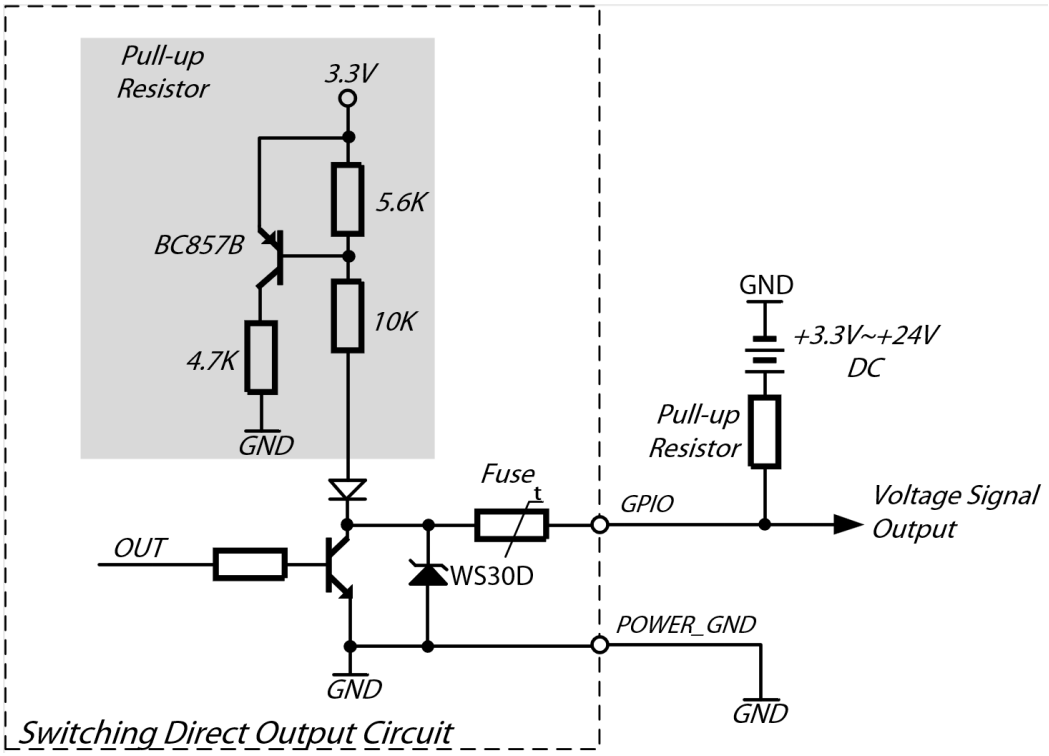
2.2.3.2 GPIO as Output Port

Table 2-9 GPIO as output voltage parameters

Voltage	Description
+26 VDC	Limiting voltage. Output voltage cannot exceed the limit. Otherwise, the device might be damaged.
+3.3VDC~+24VDC	The security working voltage range in output mode
<3.3VDC	Possible error on I/O output.

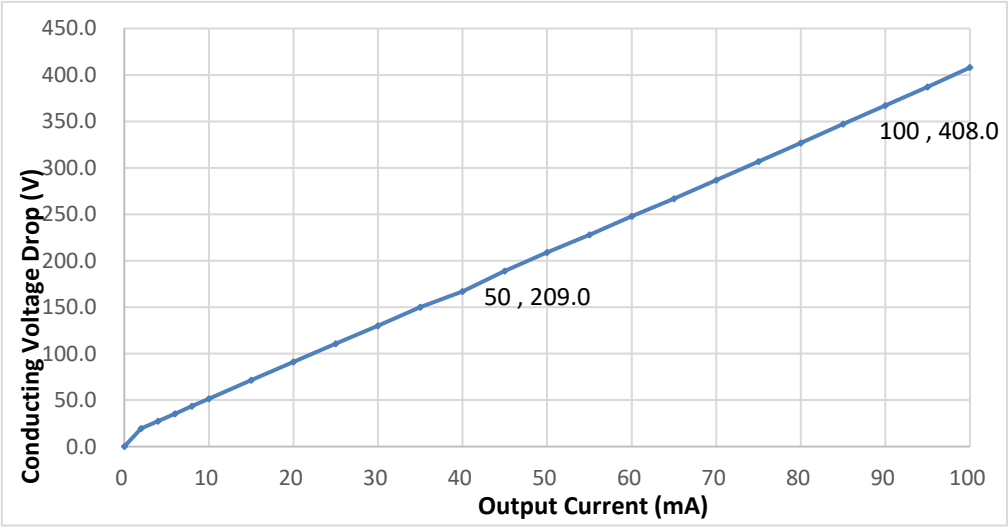
The maximum of the sink current when the GPIO is as output port is 50mA. The typical circuit is as follows.

Figure 2-9 GPIO output typical circuit



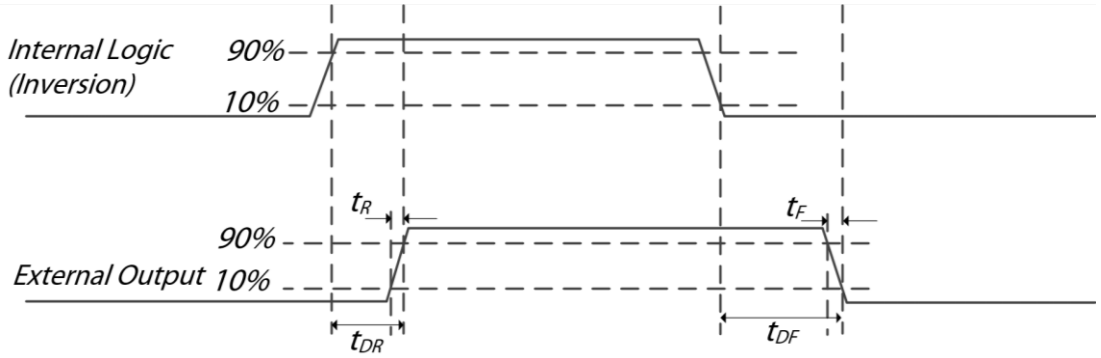
Conducting voltage drop (between GPIO and GND) and output current (flows into GPIO pin)

Figure 2-10 GPIO output characteristics chart



- Values in the line chart are obtained at an environmental temperature of 25°C (77°F). Therefore, the actual values may vary among the different models of camera in the different environments.
- The maximum conducting voltage drop when the GPIO is as the output port is 0.41V (100mA output current).

Figure 2-11



The rising/falling time, and rising/falling edge trigger delay time are shown as below when the pull-up resistance is 470 Ω.

Table 2-10 GPIO output signal amplitude and trigger delay time

External Power Voltage (V)	Rising Time tR (us)	Falling Time tF (us)	Rising edge Trigger Delay tDR (us)	Falling Edge Trigger Delay tDF (us)
Null	—	—	5.43	0.35
5	0.16	0.02	1.80	39
12	0.22	0.04	2.37	71

- The output delay refers to the time delay between the FPGA pins and GPIO pins, which means the internal logic delay of the FPGA is not included.
- When no external pull-up resistor exists, the shortest output positive pulse is 11 μs and the shortest output negative pulse is 1 μs.
- The GPIO interface delay is less than the opto-isolated interface.

2.3 External I/O Wiring

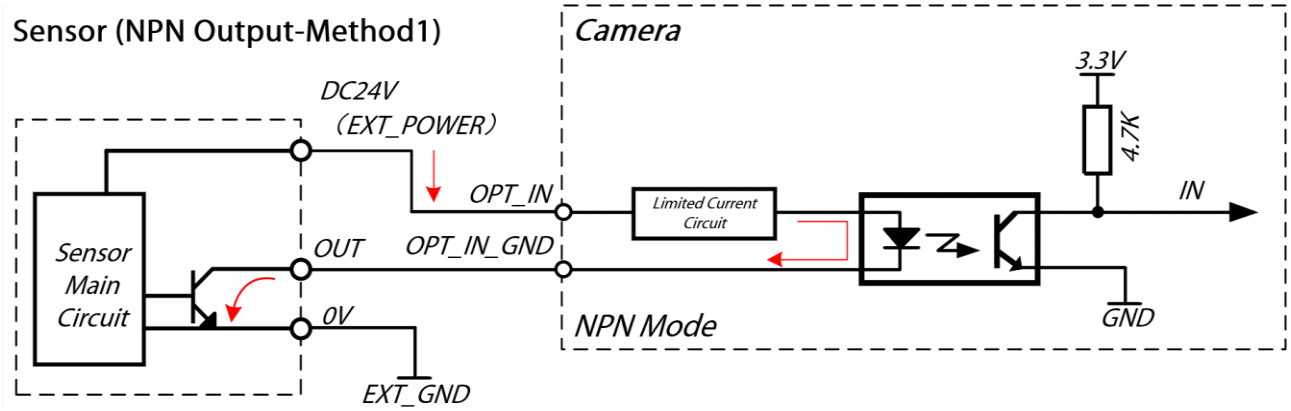
2.3.1 Opto-isolator Input

The opto-isolated input can be used with the sensors supporting the NPN, PNP, and push-pull output structures.

2.3.1.1 NPN Output Structure

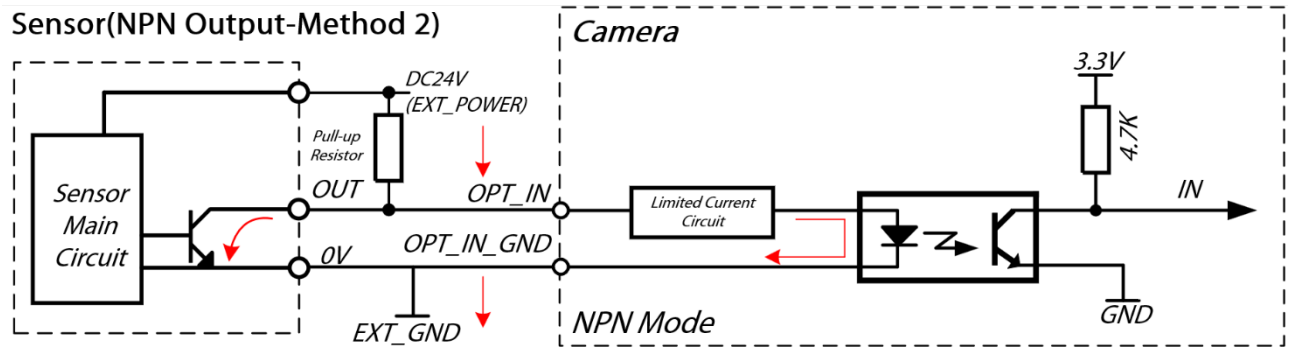
- Method 1: No Pull-up Resistor (Recommend)

Figure 2-12 Wiring Method of NPN Output Structure (1)



- Method 2: Add Pull-up Resistor

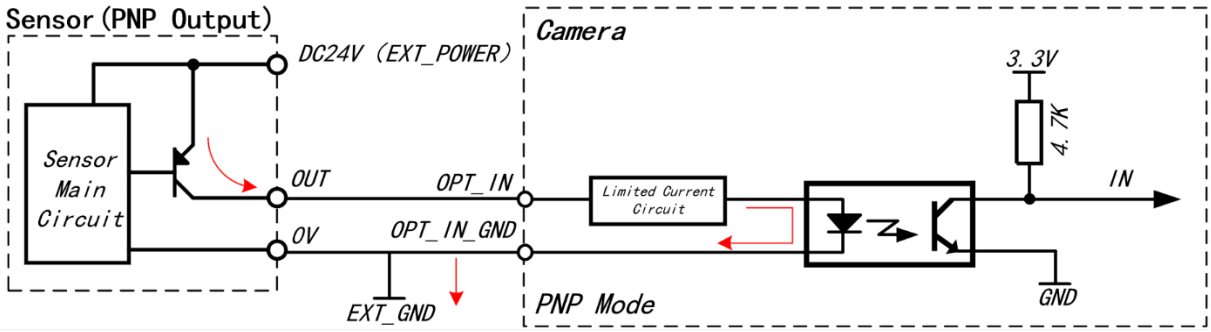
Figure 2-13 Wiring Method of NPN Output Structure (2)



- "EXT_POWER" refers to the external positive port of power supply; "EXT_GND" refers to the external power grounding port. The power supply can be the independent switch-type power supply, also can be the power supply of the sensor.
- This wiring method is suitable for the sensors with NPN open-collector output structure.
- If the external pull-up resistance is adopted, the voltage and pull-up resistance shall be 1kΩ at 3.3V, 1kΩ at 5V, 2.4kΩ at 12V, 4.7kΩ at 24V. If user needs to improve the current capacity, the pull-up resistor shall be less than 1kΩ, and the rated power of shall be more than 1W.
- In some models, the "OPT_IN_GND" and "OPT_OUT_GND" are integrated as one common port, namely "OPT_GND".

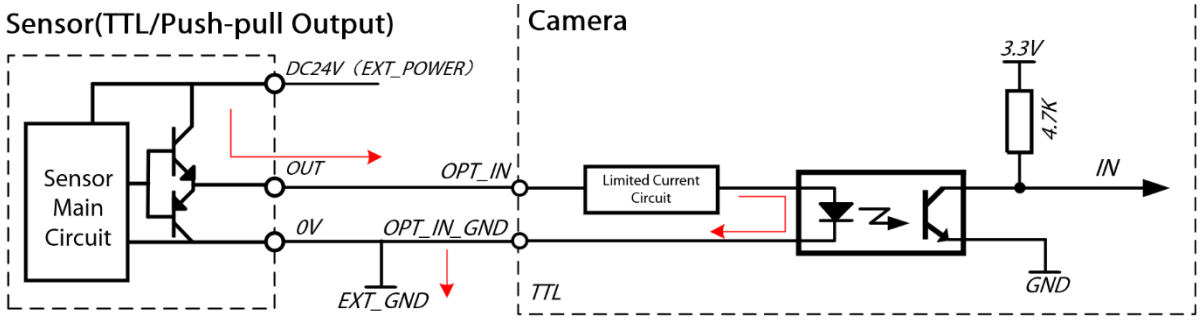
2.3.1.2 PNP Output Structure

Figure 2-14 Wiring Method of PNP Output Structure



2.3.1.3 TTL or Push-pull Output Structure

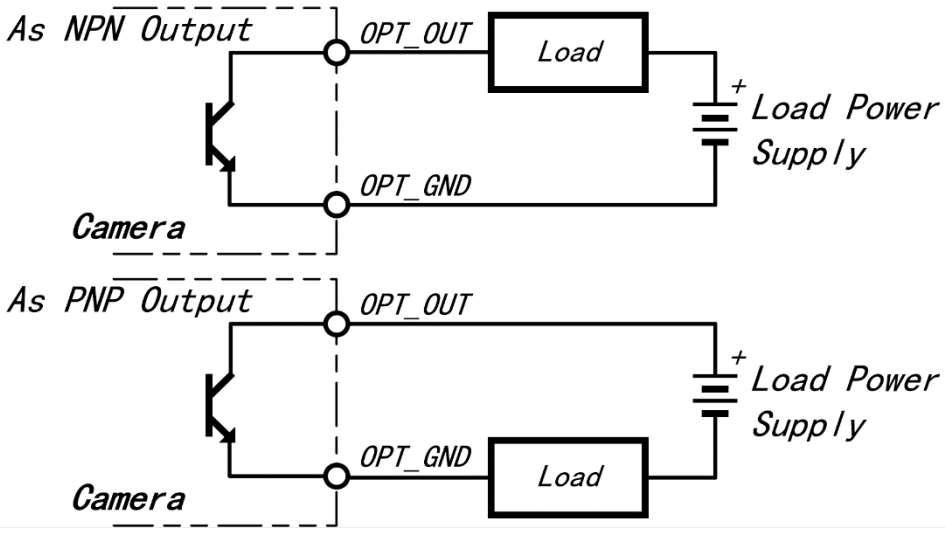
Figure 2-15 Wiring method of TTL/push-pull output structure



2.3.2 Opto-isolator Output

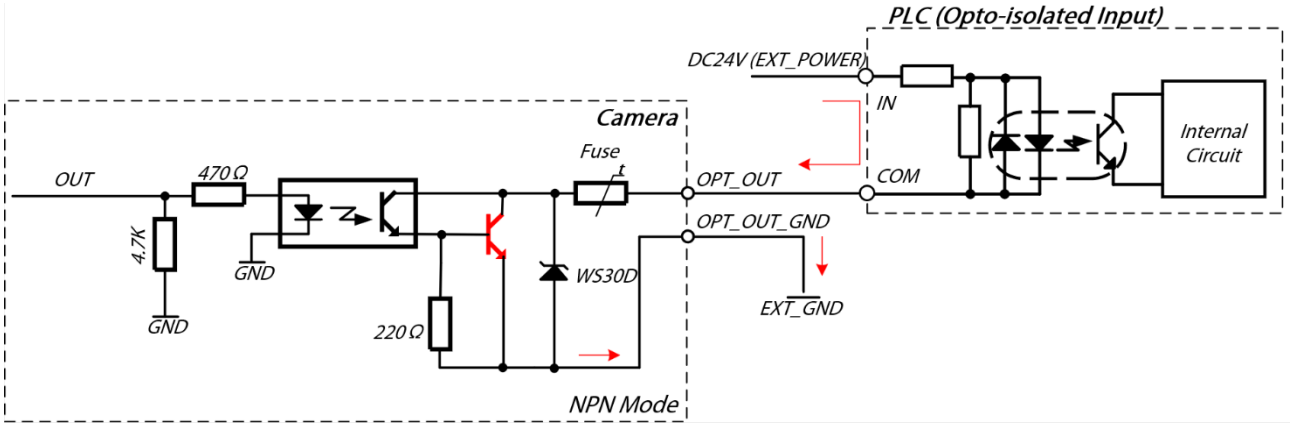
The transistor output of camera is separated from the internal loop by an opto-isolator. Therefore, the transistor output can be used as NPN output or PNP output.

Figure 2-16 Topology diagram of opto-isolated output structure



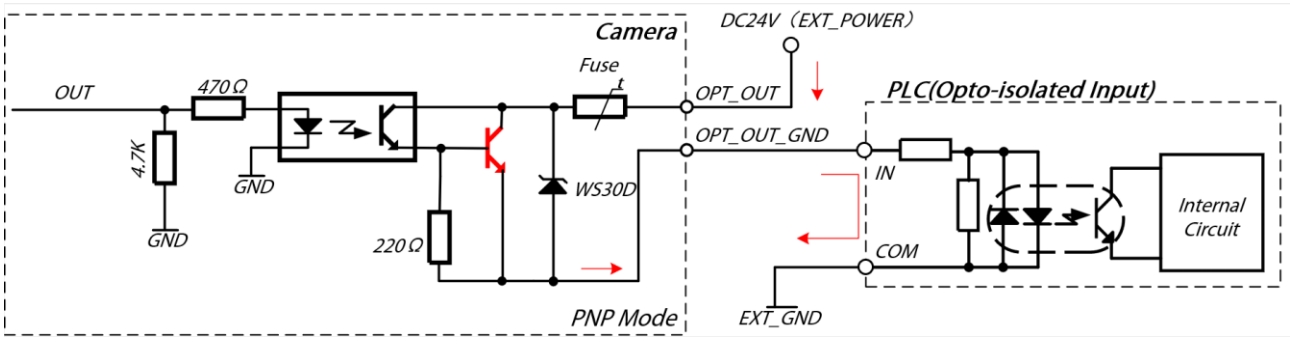
2.3.2.1 Code Reader as NPN Output

Figure 2-17 Wiring method of NPN output structure



2.3.2.2 Code Reader as PNP Output

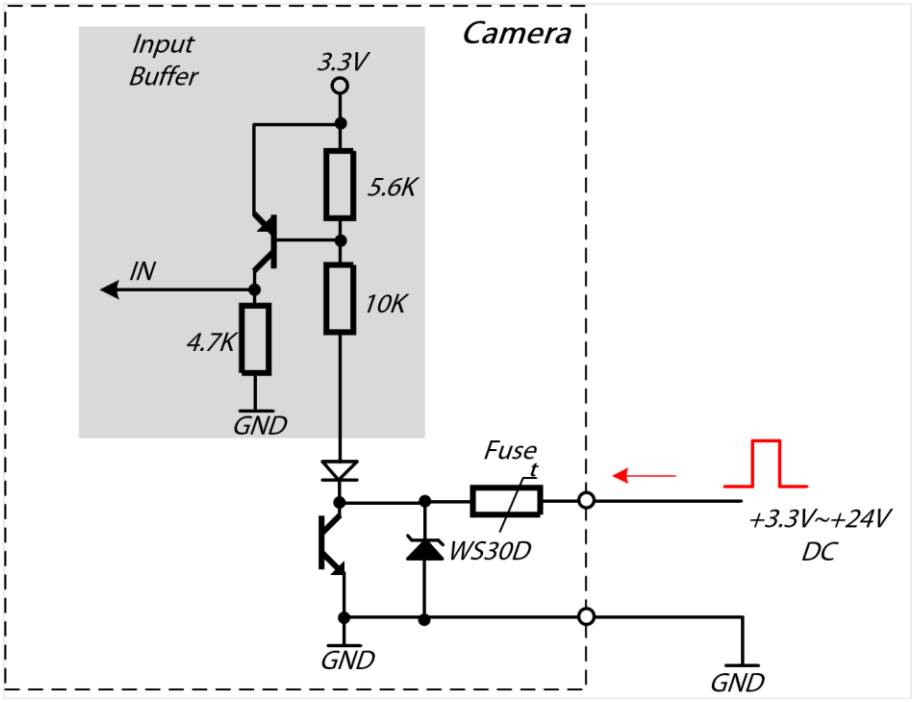
Figure 2-18 Wiring method of PNP output structure



2.3.3 GPIO

2.3.3.1 GPIO as Input Port

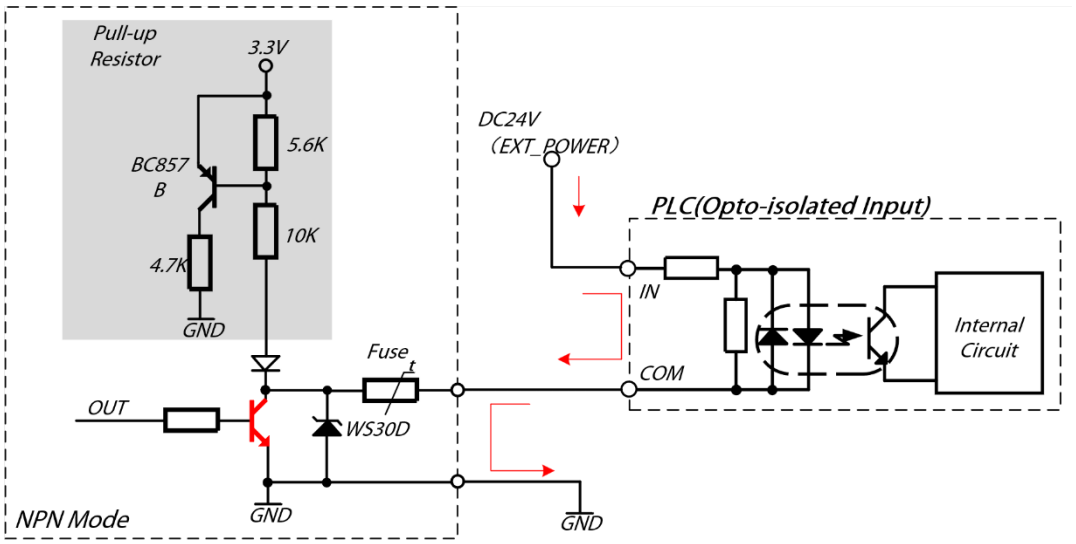
Figure 2-19 Wiring Method of GPIO Input Structure



2.3.3.2 GPIO as Output Port

The GPIO output is similar to the opto-isolated output, and the different between them is that the GPIO output should adopt the non-isolated wiring method, and the signal grounding port of GPIO and camera should connect to the common grounding port.

Figure 2-20 Wiring method of GPIO output structure



- Do not apply the voltage or connect load on the output terminals which exceeds the maximum value.

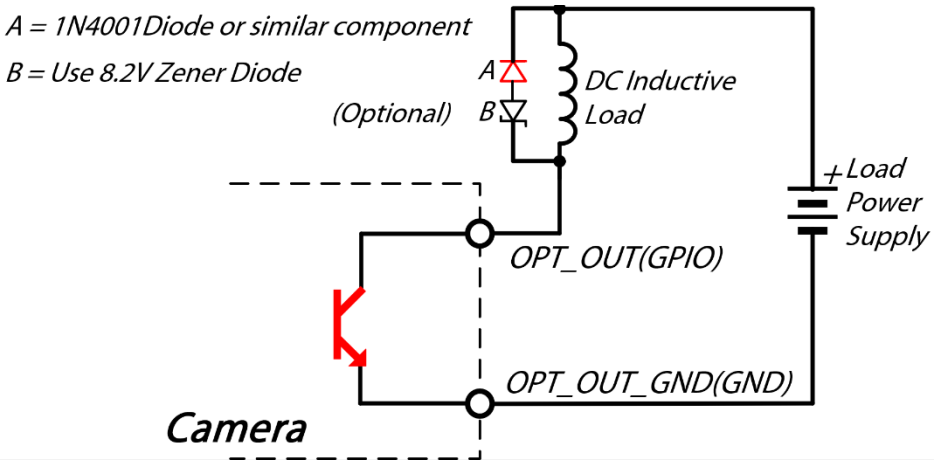
- Do not replace the fuse of the interface. If the fuse blows due to the overcurrent, such as short circuit, please contact our after-sales to provide the maintenance service.
- GPIO is the bidirectional port, and before connecting to the external power supply, please identify and set the correct the directions (output or input). Do not change the directions during the running of the camera after setting the directions. The wrong settings of directions will cause damages to the GPIO interface circuit.
- Please do not use the GPIO output solution in the situation with serious electrical interference, because the GPIO is the non-isolated design which means its anti-inference performance is not good enough. We recommend you use the opto-isolated input or output interface.
- If the external pull-up resistance is adopted, the voltage and pull-up resistance shall be 1kΩ at 3.3V, 1kΩ at 5V, 2.4kΩ at 12V, 4.7kΩ at 24V. If user needs to improve the current capacity, the pull-up resistor shall be less than 1kΩ, and the rated power of shall be more than 1W.

2.3.3.3 Wiring Method of Relay

To drive the inductive load using camera output signals, such as relay, please use relay with built-in flyback diodes, or use the external flyback diodes. Otherwise, the overvoltage will cause damages on the output interface.

The diagram below is an example of the suppression circuit of DC inductive load. In most solutions, one additional diode A is required. If you need the faster shutdown speed, we recommend you use the Zener diode B. Ensure that the Zener diode can meet the current requirements of the circuit.

Figure 2-21 Wiring method of inductive load



2.4 How to Avoid EMI and ESD

In the industry environment, there are some equipment generating EMI, and the code reader is apt to be influenced by ESD situation. Serious EMI and ESD can lead to false triggering or sudden stop of current sampling. EMI and ESD will also bring instability to image quality, and interfere the reliability of image 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:

- Use high quality shielded cables, which can play a good effect on shielding EMI and ESD. Use high

quality shielded cables, which can play a good effect on shielding EMI and ESD;

- Appropriate cable length is important. If the cable length is longer than expected, please fold the redundant part instead of looping it;
- Image data cable is suggested to be paralleled with power supply cable;
- Camera cable should not be close to or paralleled with other cables which are connected to high-power switch devices or high currents inside, such as stepper motor drive, solenoid valve;
- 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). Connect all the grounding (GND) wires to a single point. 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).
- Adopt a line filter for the main power supply of the camera, or a separate power supply for camera is recommended.
- Please keep camera and corresponding cable away from the device generating sparks, such as brushed motors, relays, etc. A metal shielding shell is recommended if necessary.
- The following measures can be taken to reduce the risk of ESD:
  - ◇ The mounting surface shall be adopted with conductive material.
  - ◇ The humidity in the installation environment shall be properly controlled. Dry air is easy to produce ESD.

3 Installation

3.1 Installation Precautions

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

3.1.1 Safety Protection Conditions

Although the interior of the device is designed to protect against lightning, surge, EMI and ESD, from the perspective of safety, it is necessary to take measures to avoid or reduce these effects.

The followings are the basic protection methods:

- Adopt shielded network cables in SSTP structure. When meeting the usage requirements, please do not overly coil the network cable.
- The network cable should not be too long. If the network cable is too long, do not coil the redundant portion in an O-shape; it should be arranged in an S-shape to minimize the effect of electromagnetic interference.
- Adopt power control cables with interference shielding function. It can be wired in parallel with the network cable, but should avoid winding each other.
- The power cable and network cable shall be far away from the equipment with large current, high voltage, frequent power on and off, start and stop, such as stepper motor. In particular, it shall not be wired in parallel with the cable of such equipment. This kind of equipment has strong electromagnetic radiation, which can be easily coupled to the transmission line of the equipment.
- The protective GND of all equipment shall be connected together, and then connected to the protective GND at a single point to avoid multi-point grounding. Multi-point grounding is easy to cause the voltage difference between each device, forming a loop, which is easy to couple electromagnetic interference.
- The AC power supply end of the switching power supply for the equipment and PC should come from the same AC socket, so that their protection GND can be connected together to avoid multi-point grounding. The high-power electromechanical equipment shall not connect to the same AC power.
- The magnetic ring can be adopted to the power control line of the equipment to absorb the electromagnetic interference signals.
- To reduce the ESD, the ESD wrist strap, anti-static clothing and shoes are recommended to wear, and the environment humidity shall be maintained in a proper range.

3.1.2 Heat Dissipation Requirements

The environmental requirements of code reader are as follows:

- Temperature and humidity
  - ◇ The ambient temperature cannot exceed 50 °C (122°F), and it is best to for the device to work

in an air-conditioned environment.

- ◇ Ambient Humidity: 20% to 80%, non-condensing.
- ◇ Storage Temperature: -30°C ~ +80°C (–22 °F~+176 °F).
- ◇ Storage Humidity: 20% to 80%, non-condensing.

- Do not coil the excessive cable into a loop, please bend it back and forth instead of coiling into a loop to ensure the performance of EMI.
- Do not bump the button during the transportation and assembly to prevent damage to the metal dome array.

3.2 Device 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 the table below for more details.

Table 3-1 Packing list

S./N.	Parameter	Quantity
1	Smart Code Reader	1
2	M3×6 Phillips-head screw	4

3.2.2 Installation

For the hardware installation, please prepare the items described in the list below.

Table 3-2 Matching List

No.	Item	Quantity	Description
1	Smart Code Reader	1	Device mentioned in this manual
2	Power Supply Cable and I/O Port Cable	1	Need to buy independently
3	Power Adapter	1	Select the appropriate power adapter or switching power supply according to specifications of power supply and power consumption of the device. Please refer to the corresponding technical specification manual for more details. The power adapter and switching power supply are needed to be purchased separately.
4	Install Bracket	1	For the details of the device fixing, please refer to the diagrams of installation 3-2~3-5.
5	Adapter Bracket	1	For fixing the device. Combing with the fixing bracket will provide the multi-angle adjustment of the fixing mode of the smart code reader.

Figure 3-1 Adapter Bracket

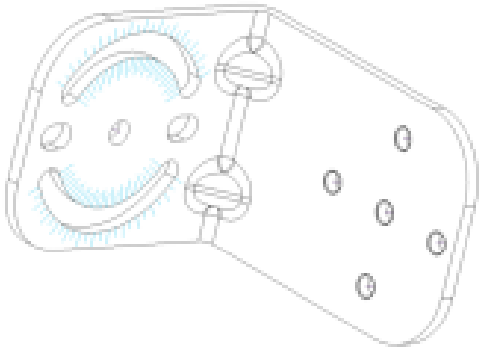


Figure 3-27 mm model rear mounting

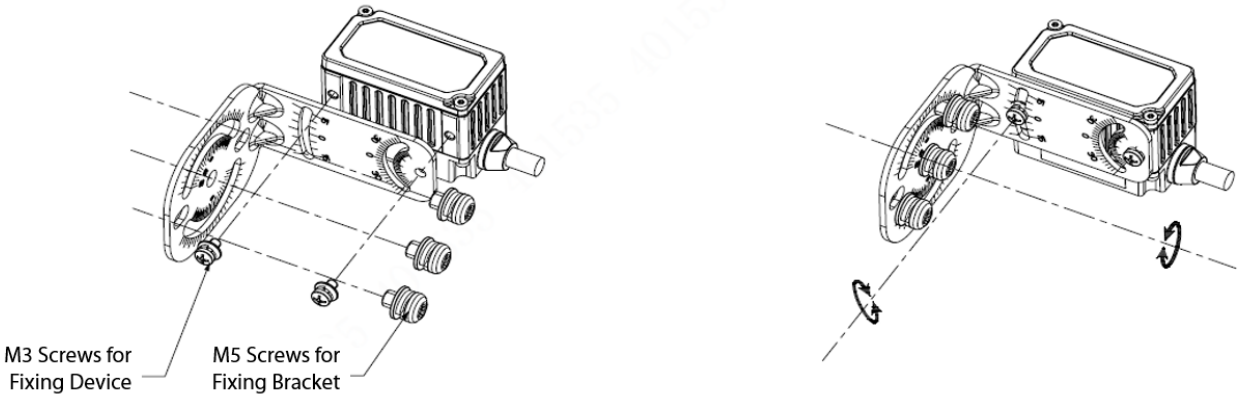


Figure 3-37 mm model side mounting

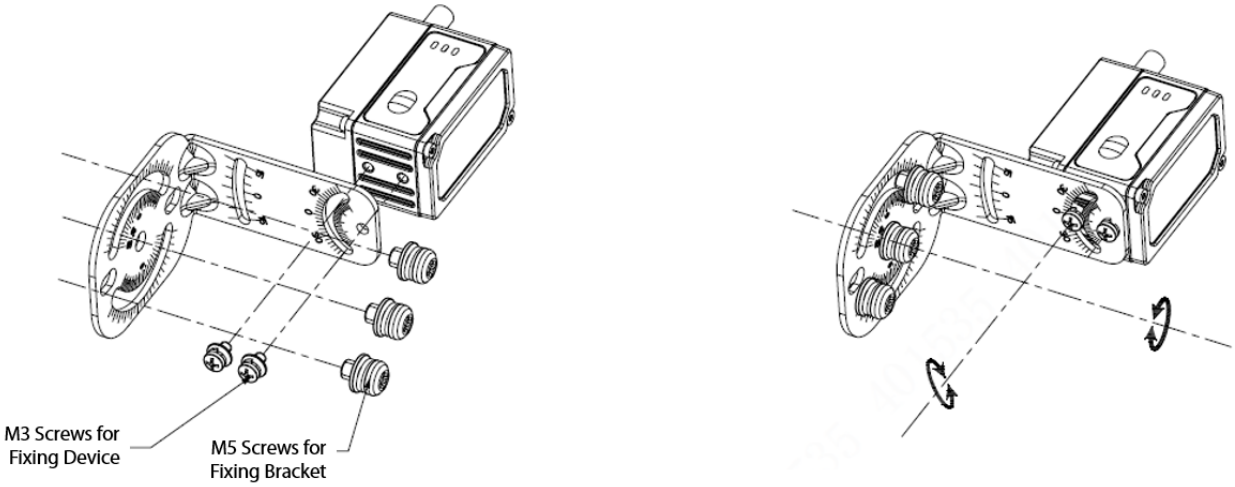


Figure 3-416mm model rear mounting

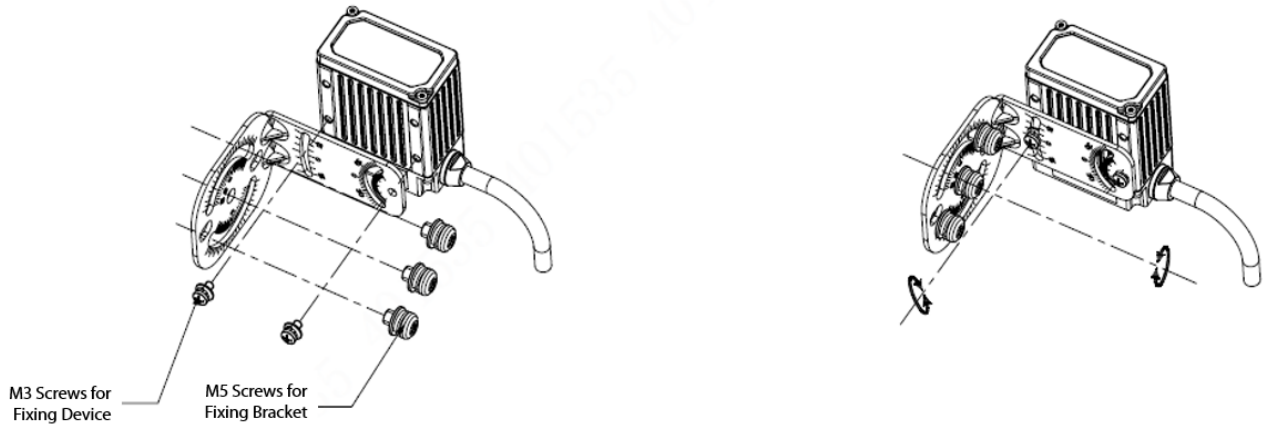
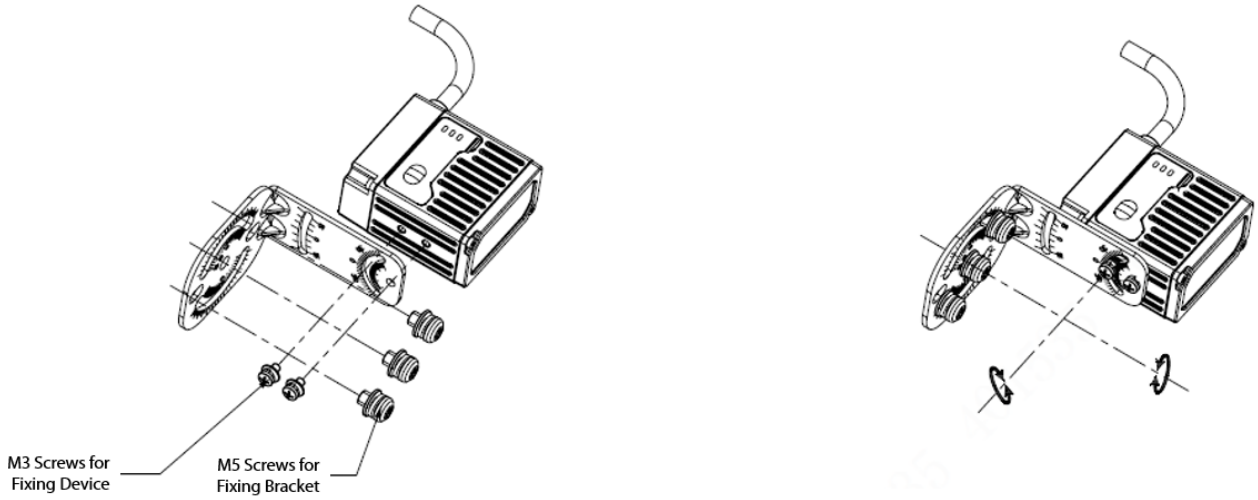


Figure 3-516mm model side mounting



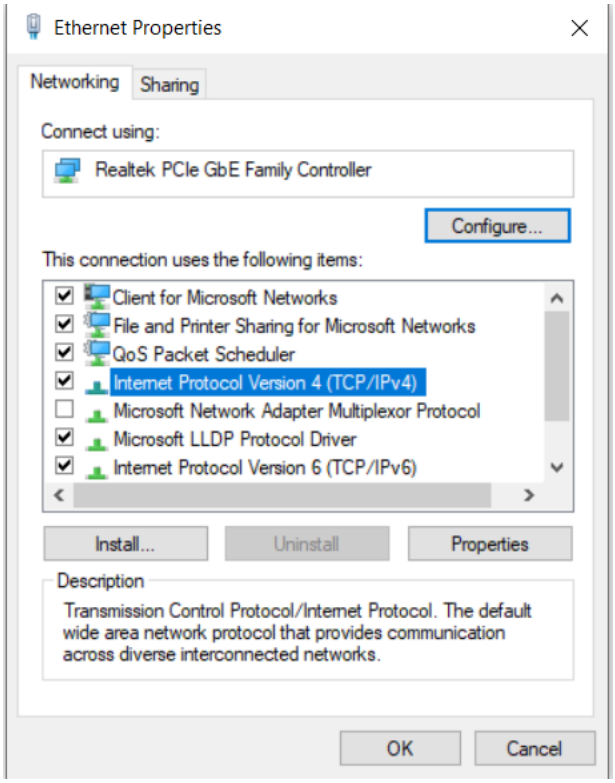
3.3 Network Settings

Procedure

Step 1 Select **Control Panel** > **Network and Internet** > **Network and Sharing Center** > **Change Adapter Configuration**.

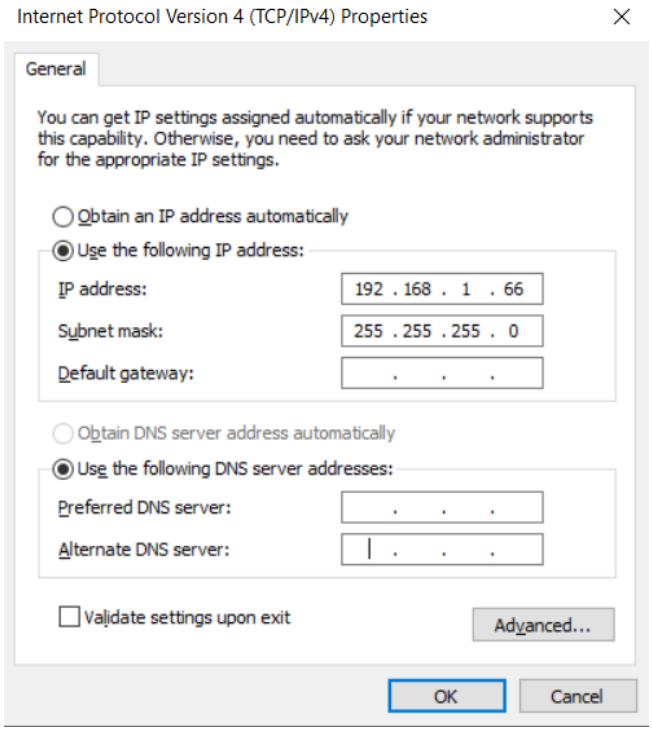
Step 2 Select the corresponding network port and right-click **Properties** from the shortcut menu. A dialog box is displayed.

Figure 3-6 Attribute settings of NIC



Step 3 Double-click **Internet Protocol Version4 (TCP/IPv4)** in the red box in the figure. The IP address setting interface 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.

Figure 3-7 Windows NIC configuration



3.4 Software Installation

You can perform image debugging and parameters configuration through EasyID client. EasyID client

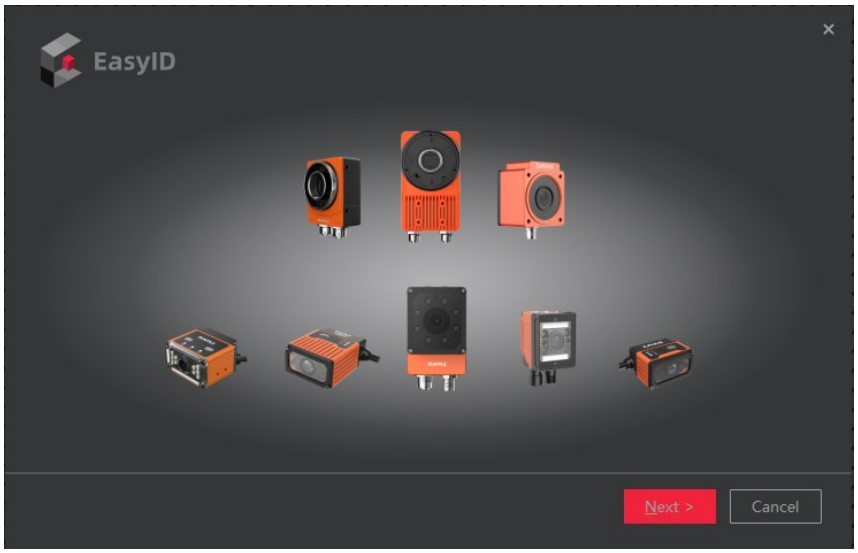
can be installed on 32-/64-bit Windows 7.

- Contact technical support personnel to obtain the client program.
- Download Path: Visit the official website, and click the **Support** > **Download Center** > **Machine Vision** > **Software**.

Procedure

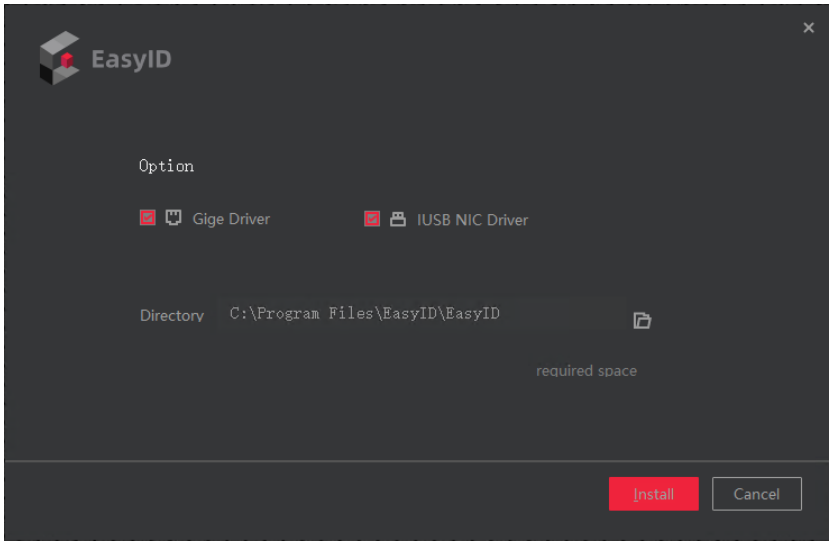
Step 1 Find the EasyID installation package on the desktop of Windows, double-click to run the program **EasyID_Vx.x.xx_xxxxxxxx.exe** or right-click it and click **Open**, the installation procedure will begin.

Figure 3-8 EasyID installation interface (1)



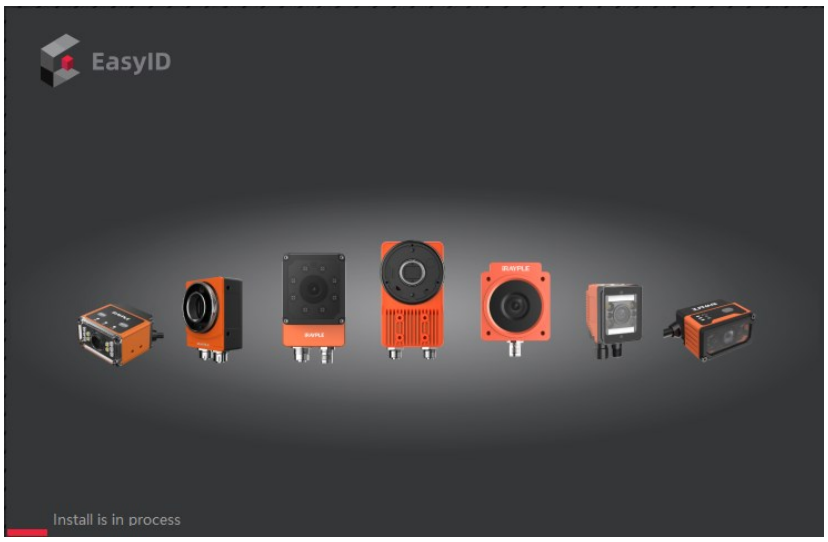
Step 2 Click **Next**, and then select the driver based on the device type. Click , and then select the installation path.

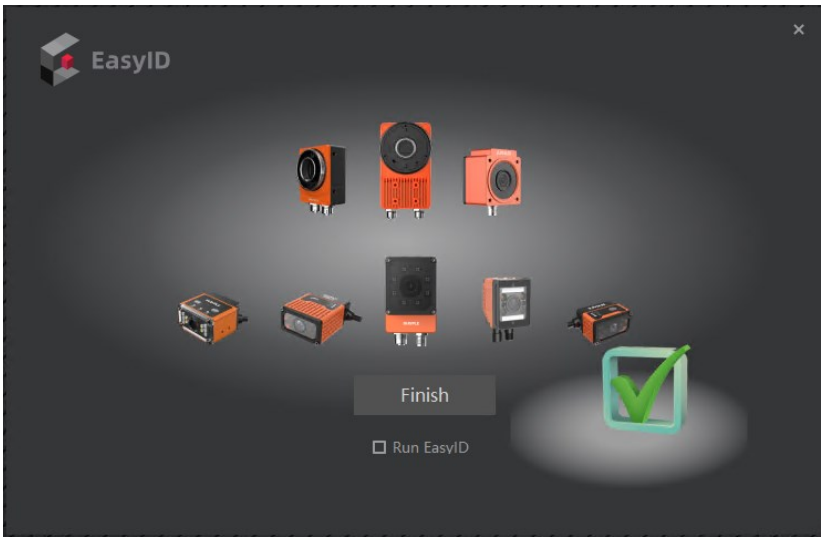
Figure 3-9 Drive and installation path selection



Step 3 Click **Install** to proceed automatic installation procedure, the automatic installation will take about one minute.

Figure 3-10 EasyID installation interface (2)





Step 4 After selecting **Run EasyID**, click **Finish**. After the installation finished, the software runs automatically.

Figure 3-11 EasyID Homepage

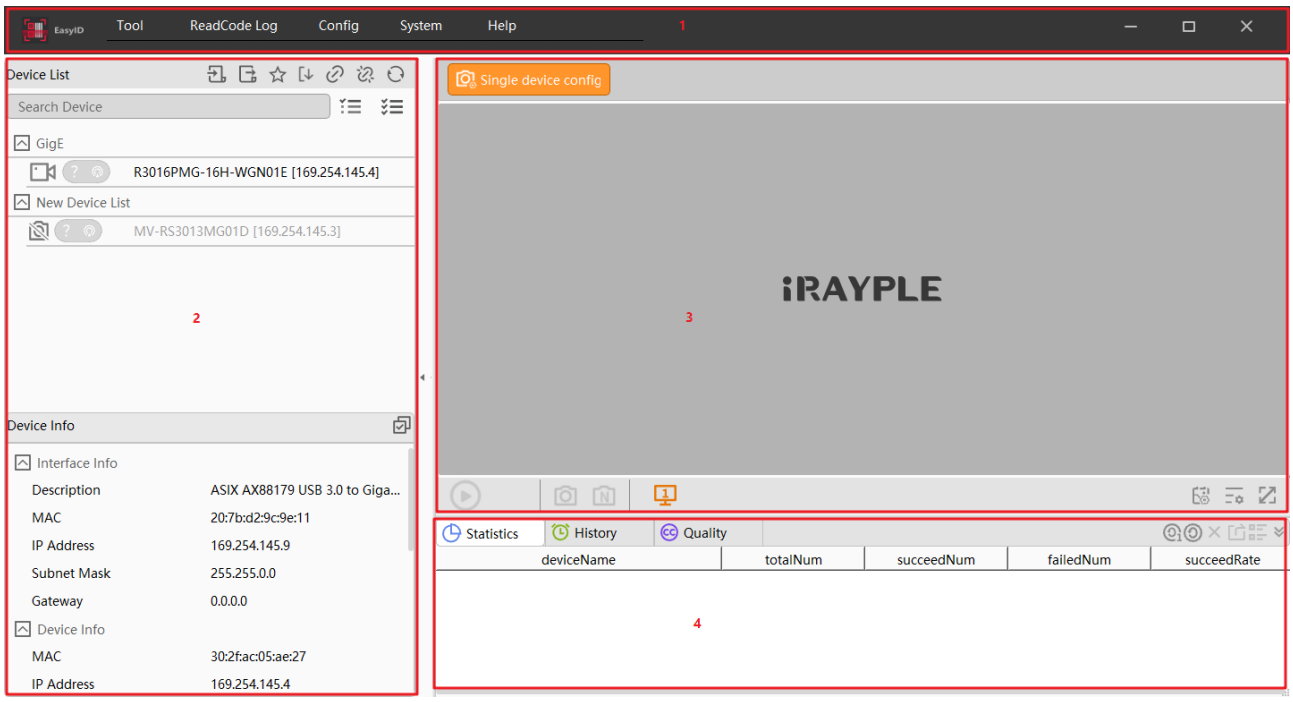


Table 3-3 IVSS Client Introduction

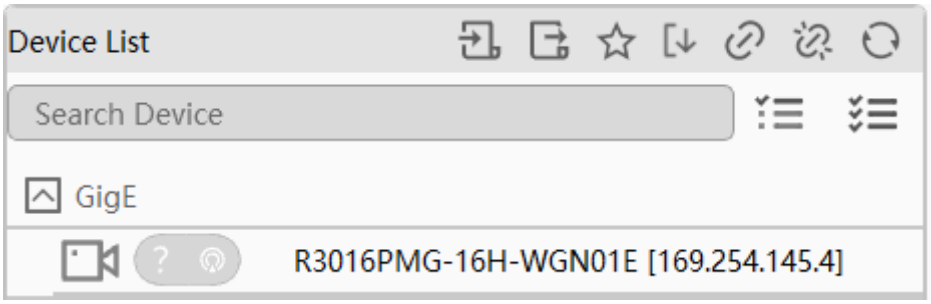
S./N.	Parameter	Description
1	Menu Bar	Common functions, including tools, logs, configuration, system and help.
2	Device List	The list of connected devices and device information.
3	Image Area	The image displaying area, which includes common-used configuration functions and image acquiring information, such as the received image quantity, network transmission speed, frame rate, image gray level, resolution, etc.
4	Result Area	Display the real-time information of decoding, statistics and code quality.

3.5 Connecting Camera

Procedure

Step 1 Connect the reader correctly, and ensure the powering and network of the device are normal; then, open the **EasyID**, and user can find the reader in the device list.

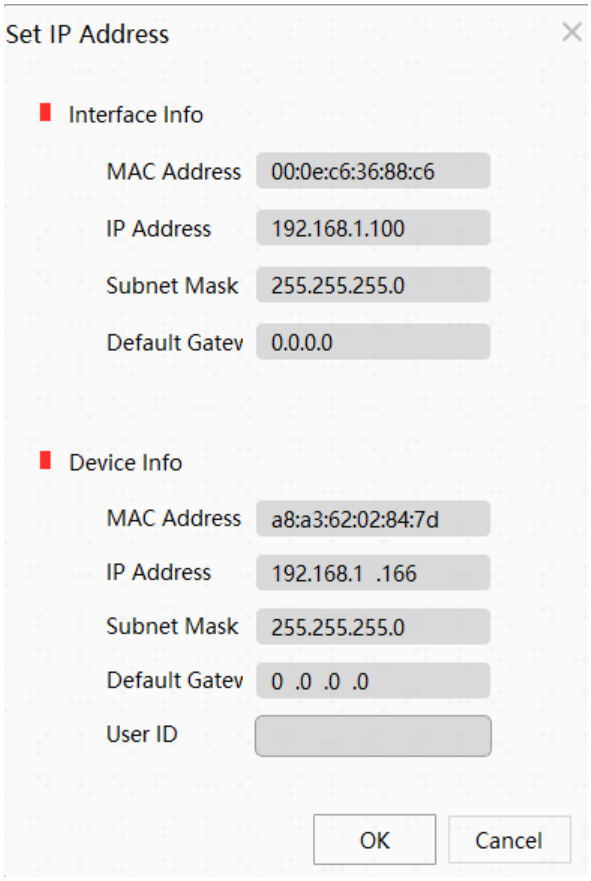
Figure 3-12 Device list



Camera devices in the same network segment with the PC. When new devices come online, click to refresh the list.

Step 2 Click to enter the IP configuration page. Make sure that the IP address of the device and the industrial computer are on the same network segment. Enter the IP address, and then click **OK**.

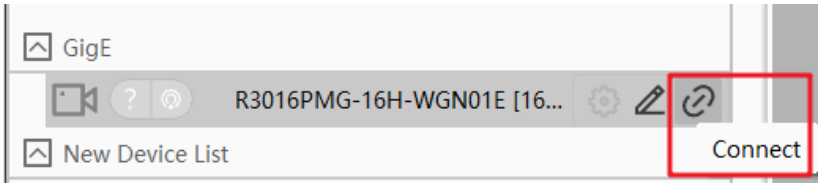
Figure 3-13 IP configuration of the Reader



You can modify the device name at the "User ID". The max character quantity can contain up to 16 bytes, and English, Chinese, and special characters are supported only.

Step 3 Click on the right of the device list, or double-click the device in the device list to connect devices. After successfully connected, the status is shown as below.

Figure 3-14 Code Reader connected successfully

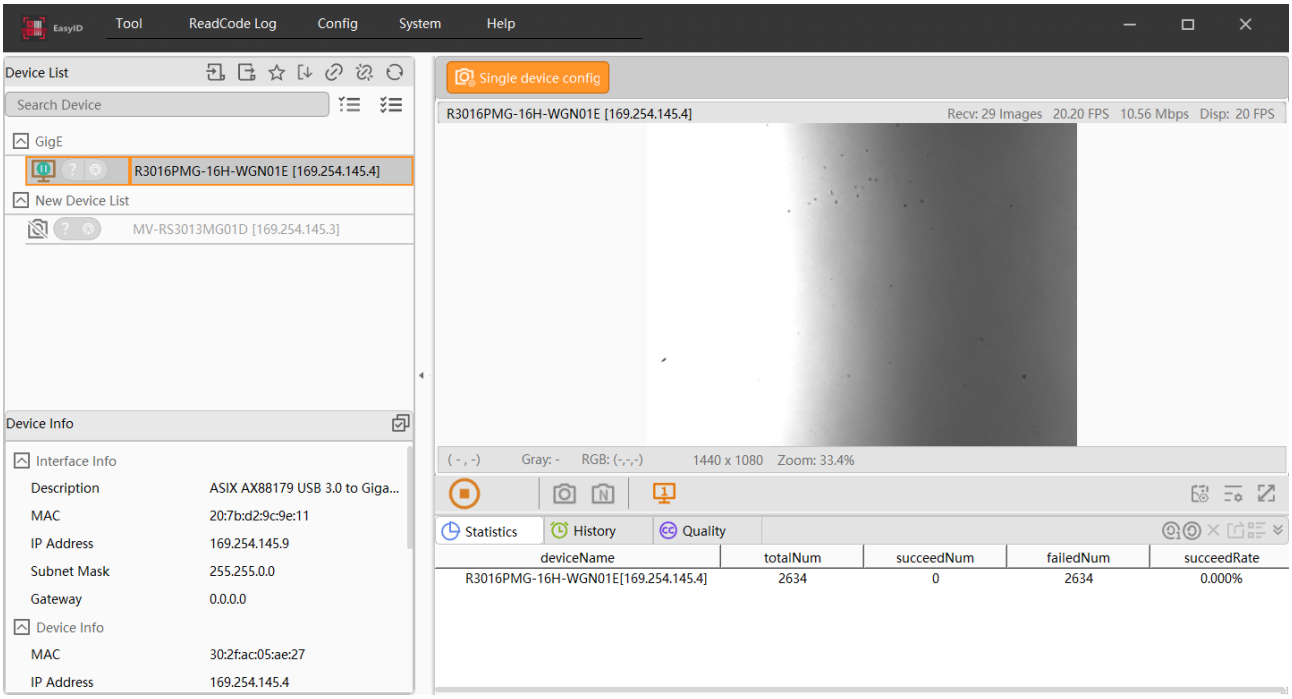


3.6 Client Operations

3.6.1 Basic Functions

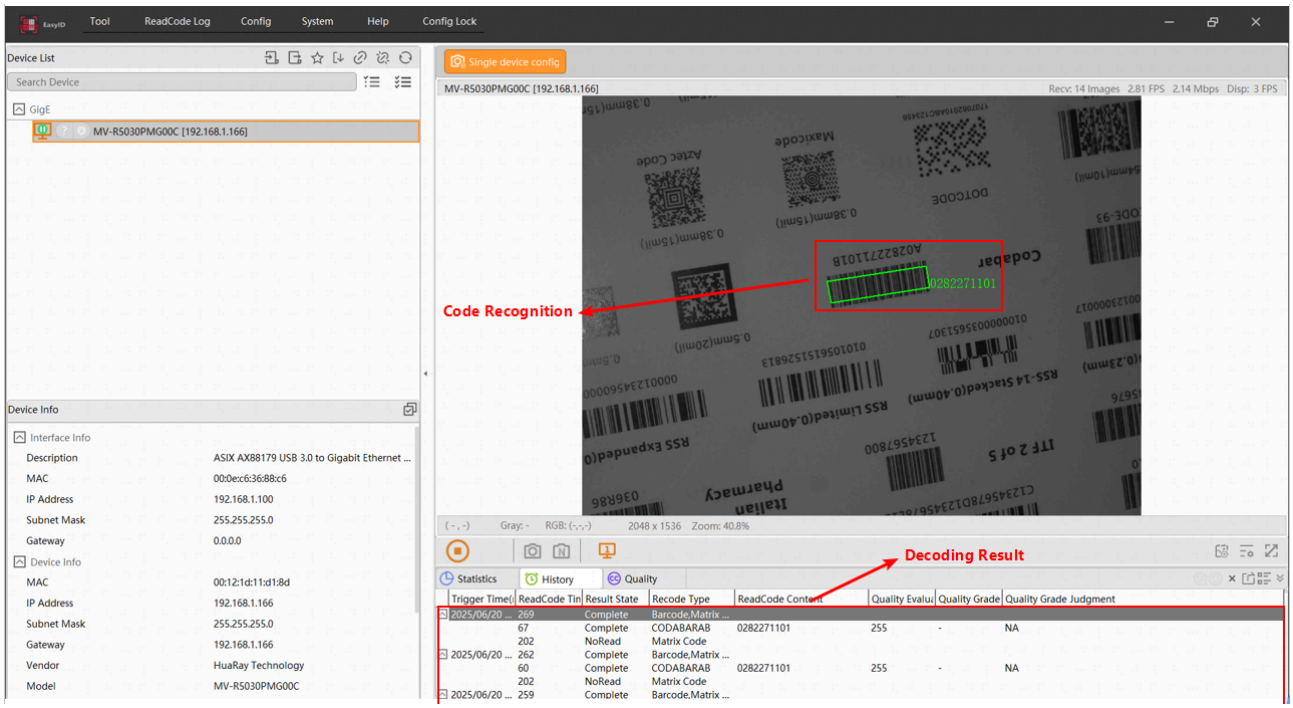
After the reader is connected, select the **FreeRun** mode and click to acquire the image.

Figure 3-15 Homepage



Place 1D/2D codes in appropriate places within the reader's field of vision to ensure that the image is not too blurry. The decoding function is enabled by default, so the device will automatically decode and display the results in real time on the client. Also, the decoding result will be updated in real time in the history information list, including Trigger Time (ms), ReadCode Time (ms), Recode Type, ReadCode Content, and more.

Figure 3-16 Real-time decoding



3.6.1.1 Image Displaying Area

Figure 3-17 Image Display Introduction

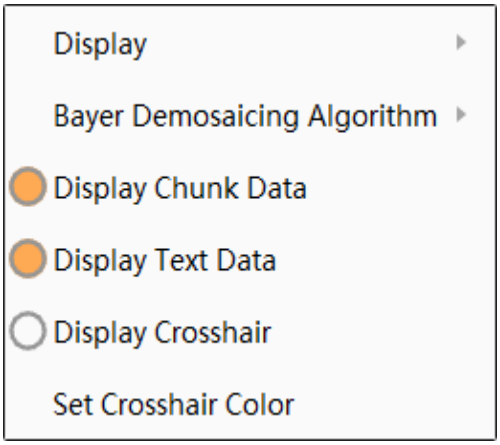
Click Area 5, the concealed default image tools will show up

Figure 3-18 Hidden tools

Table 3-4 Image displaying area description

No.	Parameter	Icon/Button	Description
1	Basic Information	-	Display the model and IP address of the connected reader.
2	Real-Time Information	-	Display the received image quantity, frame rate, bandwidth, more.
3	Image Display Area	-	Display the image acquired by the reader. If the

No.	Parameter	Icon/Button	Description
			code reading mode is enabled and the code is identified, the code identified will be marked with the green box and its value will be displayed. Move the mouse over any part of the image and scroll the mouse wheel to zoom in or out the image.
4	Image Information	-	Mouse coordination, gray level, RGB value, resolution, zoom ratio etc., will be displayed in real time.
5	Operation Button		Play button, click it to display the acquired image.
			Snapshot, click it to capture the image.
			Capture button, click it to enable the image capturing. The captured images will be saved to the defined path. Select **System** > **Image Saving** to configure the image saving path.
			Split screen button, the client can display the images from up to 16 devices in same time.
			Zoom-in button, click it to zoom in the image.
			Zoom-out button, click it to zoom out the image.
			Display scale button, click it to adjust the image displaying scale in 1:1.
			Display scale reset button, click it to reset the display scale.
			The central position of image displayed on the client will be restored after clicking it.
			Display setting button, the relevant display settings.

No.	Parameter	Icon/Button	Description
			
			Global display button, display the image in full screen.

3.6.2 Device Information

Select the device in the device list, the basic information can be viewed in the below, including IP address, model, manufacturer, and firmware version, serial number, etc.

Figure 3-19 Device Info

If an abnormal device needs to be checked by the vendor, please provide the device information, such as model, firmware version, and serial number to the sales or technical specialist.

4 Device Operation

4.1 Configuration List

4.1.1 Scan Settings

4.1.1.1 Common Configuration

Click the **Single Device Config** to the configuration interface, user can perform the exposure settings, ISP settings, fill light settings, etc.

Figure 4-1 Common configuration interface

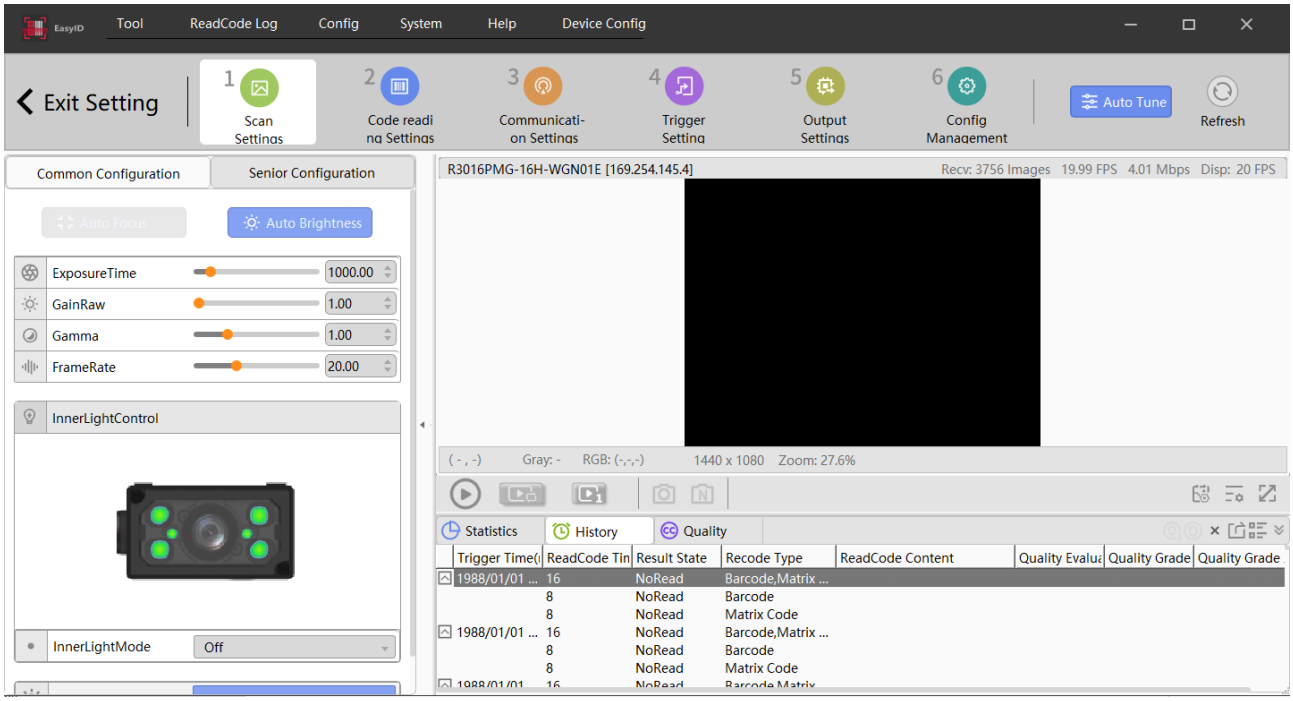


Table 4-1Parameter description

Item	Range/Option	Description
Auto Focus	-	The device will perform auto-focusing until the image is in focus.
Auto Brightness	-	The device will perform the brightness auto-adjustment until the brightness level of image reaches the target value.
Exposure Time	20μs~50000μs	Increasing the exposure time can enhance the brightness of the image, but it may also reduce the frame rate to some extent, and when capturing the moving objects, it is prone to motion blur.
Gains	1~23	Increasing the gain value can enhance the brightness of the image, but it may also increase the image noise to some extent.
Frame Rate	0.5~maximum value	The frame rate range might be different depending on the device models.
Inner Light Control	Diffuse light, polarized light, or non-polarized light.	Diffuse light, polarized light, or non-polarized light.
Inner Light Mode	Off /Strobe/High-speed strobe	-
Assign AutoLight ROI	-	To specify the area by drawing lines to define the ROI area for focusing. After clicking the Auto Brightness, the auto-brightness will be performed based on the defined ROI area to get the clearest images. This function can be used in the situations that the image has staggered heights in the camera's FoV.
Assign AutoFocus ROI	-	To specify the area by drawing lines to define the ROI area for focusing. After clicking the Auto Focus, the auto-focusing will be performed based on the defined ROI area to get the clearest images. This function can be used in the situations that the image has staggered heights in the camera's FoV.

Item	Range/Option	Description
Focus Position	0~MAX	When the device is not in the Auto Focus mode, user can drag the scroll bar, or enter the value to adjust the image definition.

- If the exposure value is too high, it will affect the frame rate. You can adjust the parameters of gain, gamma, fill light brightness to acquire a better-quality image.
- To ensure the power consumption of the reader is in a normal range, there is a correlation between the exposure value and brightness level of the inner fill lights. If the brightness of fill light is too high, the upper limit value of exposure value will be lowered. The specific values may vary depending on the device model.

4.1.1.2 Senior Configuration

This configuration functions in the Senior Configuration interface include image format control, ISP control, exposure control, focus control, and auto light control.

Figure 4-2 Senior configuration

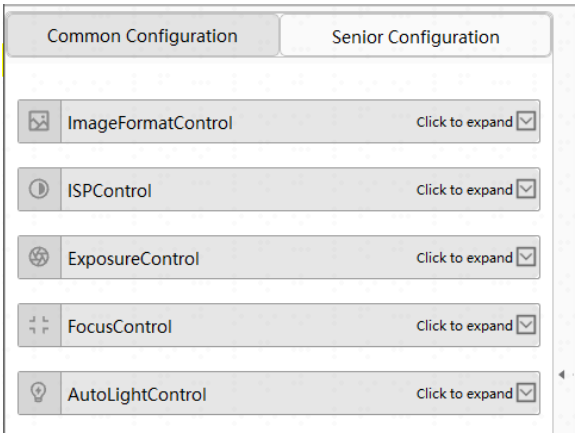


Image Format Control

Figure 4-3 Image Format Control

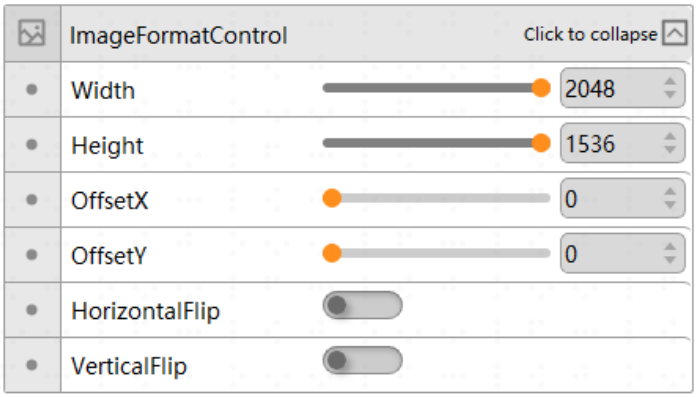


Table 4-2 Parameter description

Parameter	Range/Option	Description
Width	-	To manually modify the width parameter to crop the image.
Height	-	To manually modify the height parameter to crop the image.
OffsetX	-	To offset the cropped image horizontally.
OffsetY	-	To offset the cropped image vertically.
Horizontal Flip	Y/N	The image will be flipped on the Y-axis, which means the image is reversed from left to right.
Vertical Flip	Y/N	The image will be flipped on the X-axis, which means the image is reversed upside down.

ISP Configuration

Figure 4-4 ISP Control

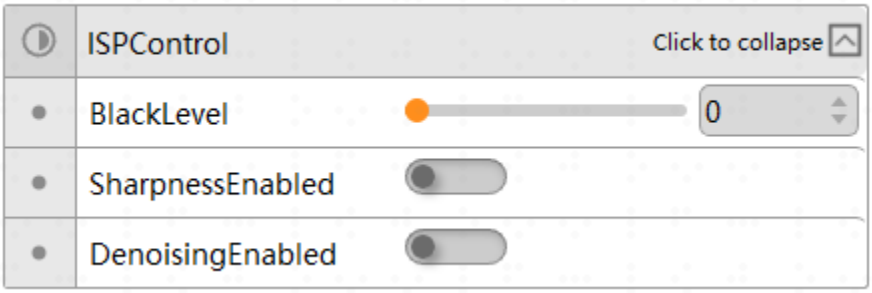


Table 4-3 Parameter description

Parameter	Range/Option	Description
Black Level	0~255	To adjust the brightness and contrast levels of the image. Increasing the value of the black level makes the image darker; decreasing the value of the black level makes the image brighter.
Sharpness Enabled	Y/N	To deblur the image, and the sides of the image will be sharped obviously.
Denoising Enabled	Y/N	To reduce the particles and discoloration in the image avoiding the image quality degradation to the greatest extent.

Exposure Control

Figure 4-5 Exposure Control

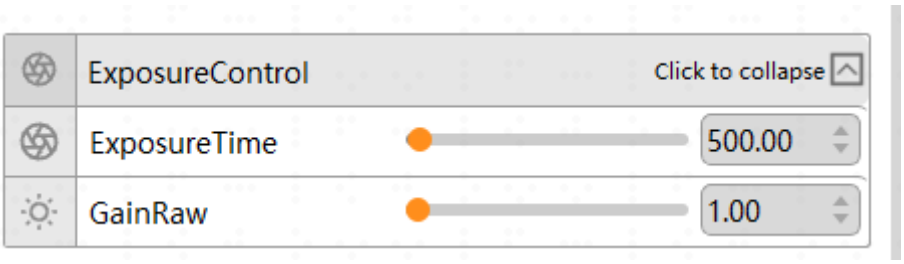


Table 4-4 Parameter description

Item	Range/Option	Description
Exposure Time	20μs~50000μs	Increasing the exposure time can enhance the brightness of the image, but it may also reduce the frame rate to some extent, and when capturing the moving objects, it is prone to motion blur.
Gains	1~23	Increasing the gain value can enhance the brightness of the image, but it may also increase the image noise to some extent.

Focus Control

Figure 4-6 Focus Control

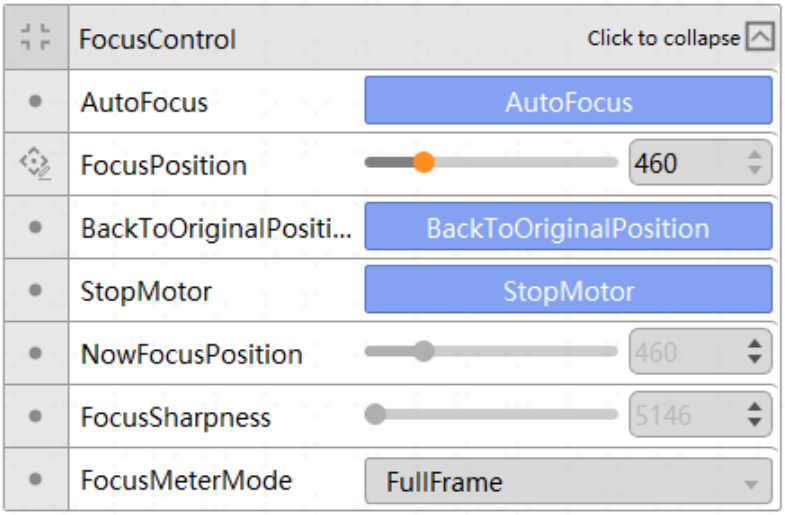


Table 4-5 Parameter description

Parameter	Range/Option	Description
Auto Focus	-	The device will perform auto-focusing until the image is in focus.

Parameter	Range/Option	Description
Focus Position	0~Max	When the device is not in the Auto Focus mode, user can drag the scroll bar, or enter the value to adjust the image definition.
Back to Original Position	-	The electric focusing lens will automatically move to the Zero after clicking the Back to Original Position.
Stop Motor	-	The electric focusing lens will stop the focusing process after clicking the Stop Motor.
Now Focus Position	-	The stop position of the motor.
Focus Sharpness	-	It displays the image definition value calculated by the algorithm when the device is in the **FreeRun** mode. The greater the value, the clearer the image.
Focus Meter Mode	Full Frame	The device will focus based on the entire field of view in the Full Frame mode after clicking the Auto focus.
	ROI	After selecting the ROI, select the focusing area in the list, and then click the Auto Focus. The device will perform the automatic focusing on the selected area to obtain the clearest image. This function can be used in the situations that the image has staggered heights in the camera's FoV.

Auto Light Control

Figure 4-7 Auto Light Control

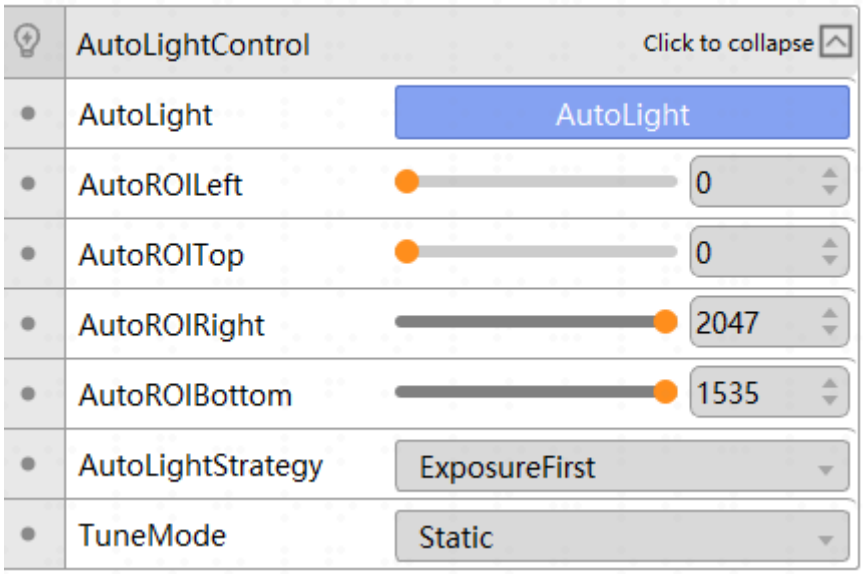


Table 4-6 Password description

Item	Range/Option	Description
Auto Light	-	The device will perform the automatic focusing until the image is clear after clicking the Auto Focus.
Auto ROI Left	Depends on the ROI range of the device.	Left boundary of the ROI. This function is only valid when the area, where needs to be performed auto-exposure, has been specified as the ROI.
Auto ROI Top	Depends on the ROI range of the device.	Upper boundary of the ROI. This function is only valid when the area, where needs to be performed auto-exposure, has been specified as the ROI.
Auto ROI Right	Depends on the ROI range of the device.	Right boundary of the ROI. This function is only valid when the area, where needs to be performed auto-exposure, has been specified as the ROI.
Auto ROI Bottom	Depends on the ROI range of the device.	Lower boundary of the ROI. This function is only valid when the area, where needs to be performed auto-exposure, has been specified as the ROI.
Auto Light Strategy	Exposure First/Gain First	User can set the exposure mode according to the actual condition. If it is set to the exposure first, the exposure value will be adjusted firstly in the process of the brightness training to meet the brightness requirement, and the gain value will be adjusted when the actual exposure value reaches the limit value.
Tune Mode	Static/Dynamic	To set the brightness training mode.

4.1.2 Code Reading Settings

User can configure the parameters of the code reading algorithm, including barcode process, matrix code process, image pre-process, quality evaluation, etc.

4.1.2.1 Common Configuration

See the following figure:

Figure 4-8 Code Reading Settings

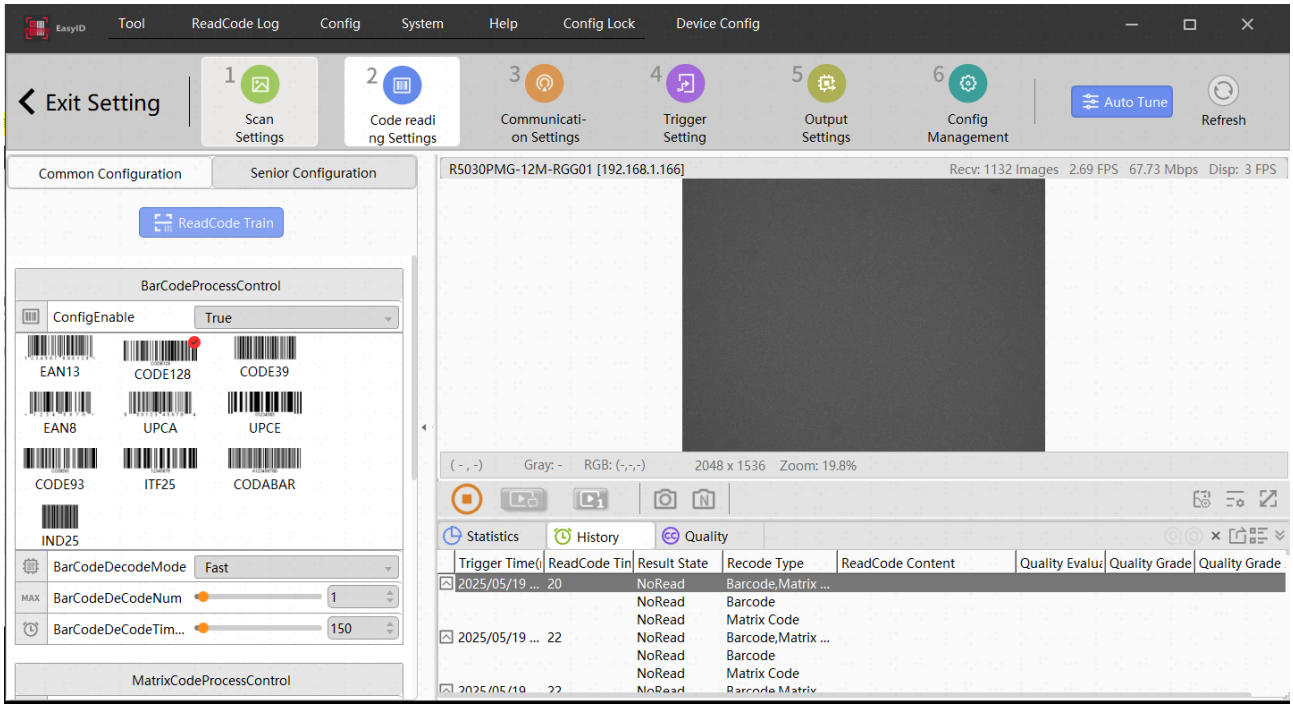


Table 4-7 Parameter description

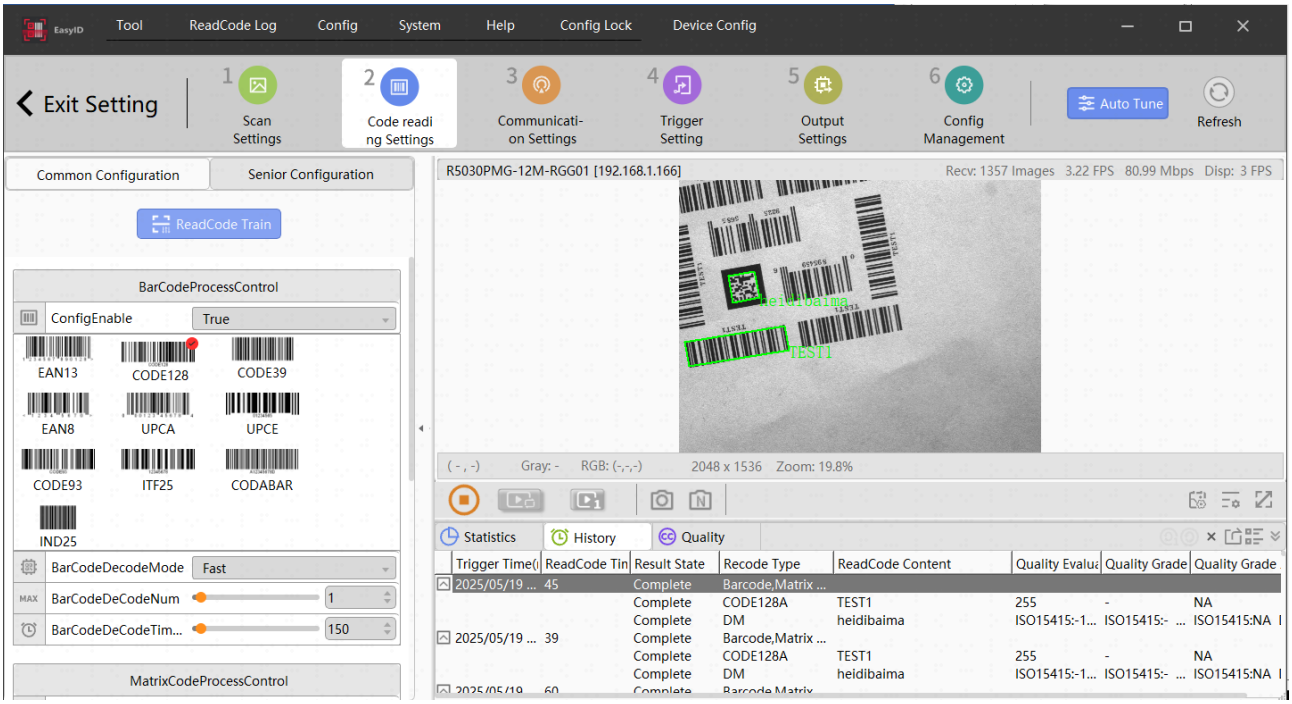
Item		Range/Option	Description
Barcode Process Control	ReadCode Train	-	Device will automatically adjust the algorithm configuration to achieve the best effect of decoding.
	Config Enable	Y/N	To enable the barcode recognition function.
	Barcode Type	-	To select the barcode types needs to be recognized. It supports the single selection, multiple selection. Type: EAN13, CODE128, CODE39, EAN8, UPCA, UPCAE, CODE93, ITF25, and CODABAR.
	Barcode Decode Mode	Fast/Standard/Enhanced	● Decoding Rate: Enhanced > Standard > Fast ● Decoding Time: Enhanced > Standard > Fast Different modes use different algorithms, not absolute inclusion relationships. As for the single image, the image may be decoded successfully in the standard mode, unsuccessfully in the enhanced mode.
	Barcode Decode Num	0~32	The maximum decoding quantity in one frame.

Item		Range/Option	Description
	Reading Timeout	0ms~5000ms	Default value is 150 ms. User can adjust the timeout value when code reading takes a long time due to the environment.
Matrix Code Process Control	Matrix Code Config Enable	Y/N	To enable the matrix code recognition function.
	Matrix Code Type	-	To select the matrix code types needs to be recognized. It supports the single selection, multiple selection. Type: QR, MQR, DM, etc.
	Decode Mode	Fast/Standard /Enhanced/Maximum	• Decoding Rate: Maximum > Enhanced > Standard > Fast • Decoding Time: Maximum > Enhanced > Standard > Fast Different modes use different algorithms, not absolute inclusion relationships. As for the single image, the image may be decoded successfully in the standard mode, unsuccessfully in the enhanced mode.
	Decode Num	0~16	The maximum decoding quantity in one frame.
	Decode Timeout	0ms~5000ms	Default value is 150 ms. User can adjust the timeout value when code reading takes a long time due to the environment.

- Barcode Type: Code 39, Code 93, Code128, CodaBar, EAN8, EAN13, UPCA, UPCE, ITF25, 2of5 (Industrial2of5), standard25, GS1-128.
- Matrix Code Type: QR, Data Matrix, Micro QR, GS1 DM, GS1 QR.
- If the other special types of barcodes and matrix code are needed to be displayed on EasyID, please contact our sales manager or technical specialist.

You can check the decoding results on the right side of the EasyID (the code will be marked with green box), and check the code information on history, including trigger time, read-code time, result state, code type, data, quality evaluation, etc.

Figure 4-9 Decoding successful



The acquired images could not meet the requirements of the code reading and inspection with high efficiency and stability due to the object material, object characteristics, light source, external environment, etc. For improving the code reading effect quickly and conveniently, user can perform the proper pre-processing on the raw images.

Figure 4-10 Image Pre-process Control

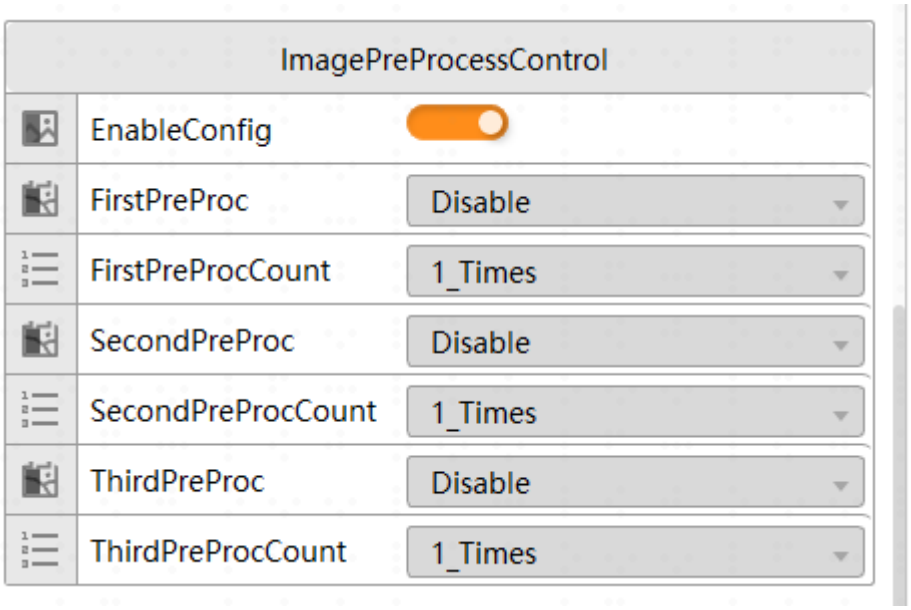
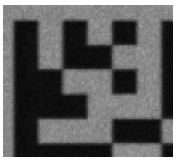
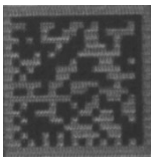
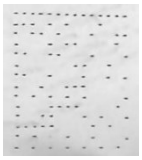
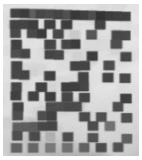
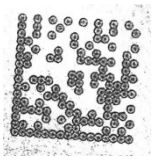
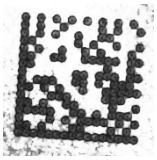


Table 4-8 Parameter description

Parameter		Range/Option	Description
Image Pre-processing	Enable Config	Y/N	Select **Single device config** > **Device Config** > **ImageOutputControl** > **EnableJPEGCompress** > **Disable**, then user can view the processing effect on the image displaying area in real time.
	First Pre-processing	-	For the codes in special environment, user can select the following pre-processing algorithm to achieve the better recognition effect, including Disable, Mean Filter, Median Filter, Erosion, Dilation, Opening, Closing, Sharpening, Inversion, Erosion 3x1, Dilation 3x1, Erosion 3x1, Dilation 3x1.
	First Pre-processing Count	1~6	The greater the value the more obvious the effect is achieved.

Table 4-9 Pre-processing effects description

Parameter	Description	Before Pre-processing	After Pre-processing
Median Filter	Noise suppression. Remove the black and white dot noise, and keep the sharpness of the module boundaries.		
Mean Filter	To blur the image. Remove the interferences in the code, and smooth the inner pixels of the module.		
Corrosion	Enlarge the black lumps.		
Expansion	Enlarge the white lumps.		
Opening Operation	Eliminate the white interferences in the module, and keep the size ratio of the white and black lumps.		

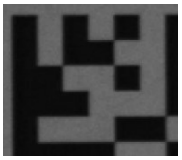
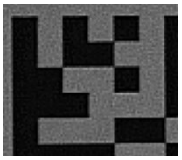
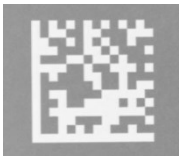
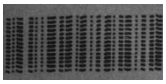
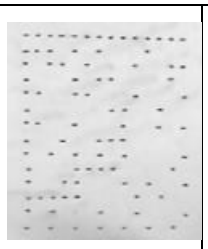
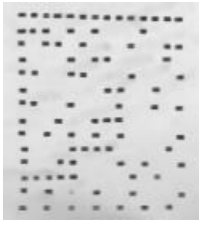
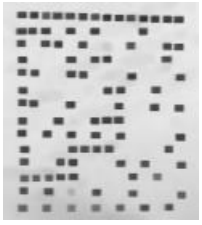
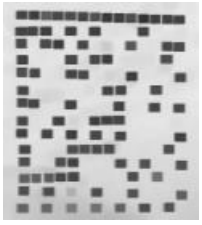
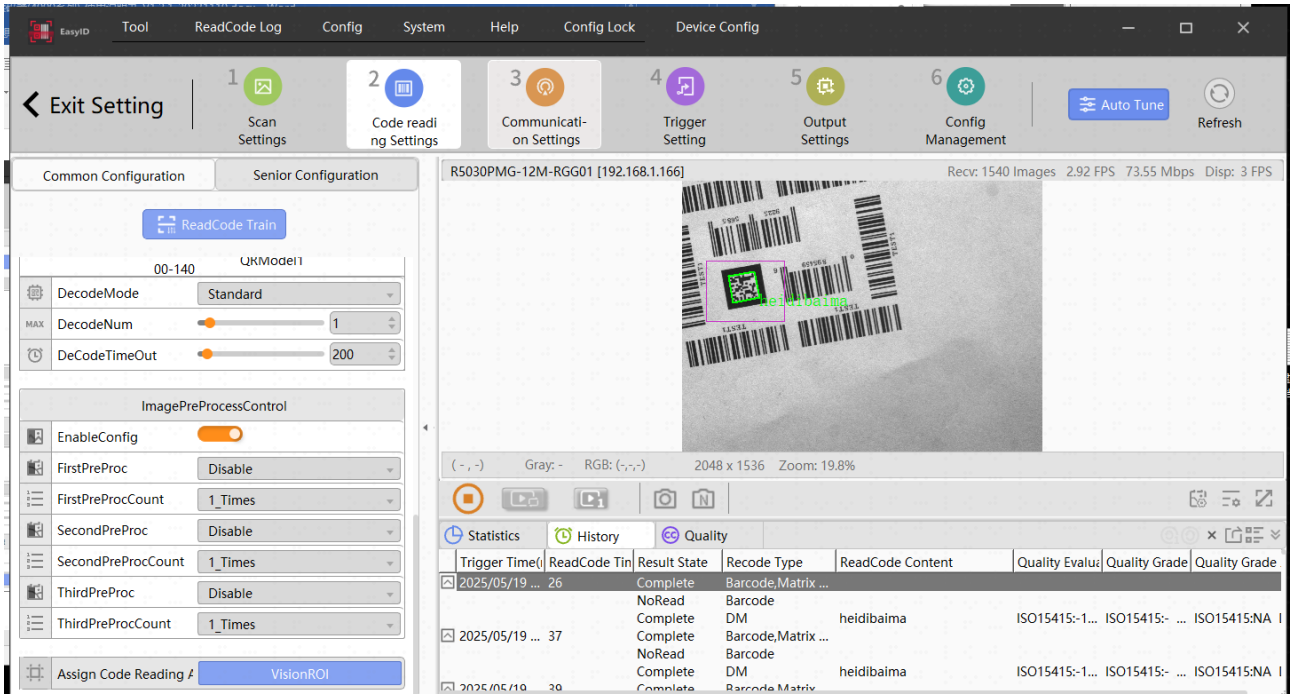
Parameter	Description	Before Pre-processing	After Pre-processing
Closing Operation	Eliminate the black interferences in the module, and keep the size ratio of the white and black lumps.		
Sharpening	De-blur the image. The boundaries of the module will be sharpened obviously.		
Inverse Color	Inverse the black color and white color in the image.		
Specific Direction Expansion Corrosion Horizontal*Vertical	Refer to the expansion and corrosion. It only acts at the single direction.		
Corrosion 3 Times				
	Original Image	1	2	3

Figure 4-11 ROI setting preview interface

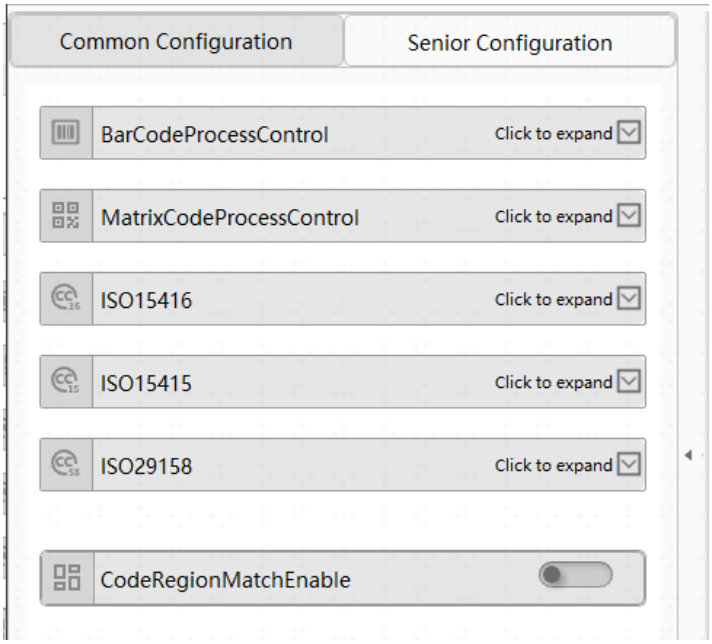
Figure 4-12 ROI code reading diagram



4.1.2.2 Senior Configuration

User can configure the parameters of the barcode, matrix code, quality evaluation, and enable the code region match function.

Figure 4-13 Advance Configuration



Barcode Process Control

Figure 4-14 Barcode Process Control

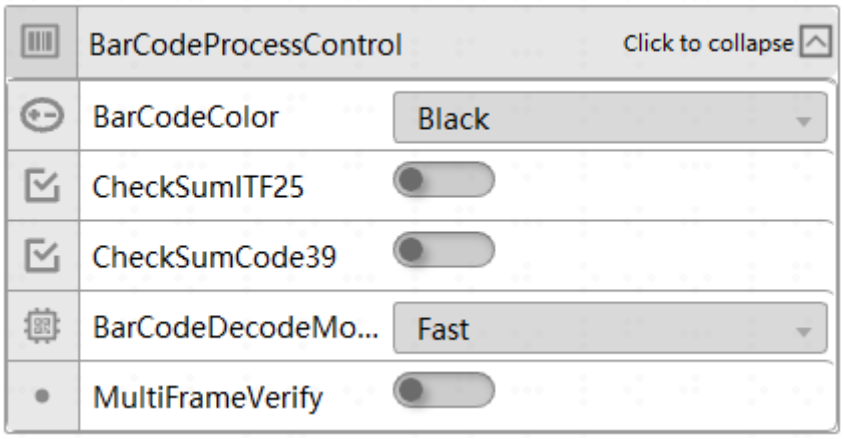


Table 4-10 Parameter description

Item	Range/Option	Description
Barcode Color	-	It includes the Black, White, and Any.

Item	Range/Option	Description
CheckSumITF25	Y/N	After enabling the CheckSumITF25 function, whether the CheckSumITF25 takes effect is depending on the code type. For example, for the ITF25 code with the verification function, the code can be decoded no matter the verification function is enabled or not, and the decoding content may have slightly differences (verification characters are not outputted); for the ITF25 code without the verification function, even if the CheckSumITF25 is enabled, the decoding content cannot pass the verification formula, and fail to decode.
CheckSumCODE39	Y/N	To enable the CheckSumCODE39 function. The function of CheckSumCODE39 is similar with the CheckSumITF25.
Decode Mode	Fast/Standard/ Enhanced	● Decoding Rate: Enhanced > Standard > Fast ● Decoding Time: Enhanced > Standard > Fast Different modes use different algorithms, not absolute inclusion relationships. As for the single image, the image may be decoded successfully in the standard mode, unsuccessfully in the enhanced mode.
Multi Frame Verify	Y/N	When the error code rate is high, user can enable this function, and ensure that the code needs to be read for multiple times.

Matrix Code Process Control

Figure 4-15 Matrix Code Process Control

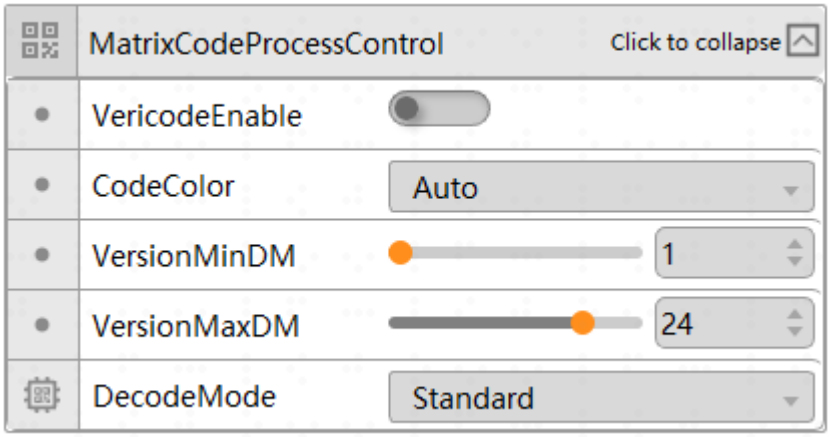


Table 4-11 Parameter description

Parameter		Range/Option	Description
Matrix Code Process Control	Vericode Enable	Y/N	The algorithm processing time can be reduced by narrowing the version range of the code. Code Type: Vericode Range: 1~20 Vercode Calculation Formula: VER = (modNum - 8) / 2 modNum refers to the module quantity at the row/column direction, for example, the modNum is 10 when the VER is 1, and the modNum is 48 when the VER is 20.
	Code Color	Auto/Black/ White	Auto is preferred. It supports both black code and white code.
	Image Mirror	Auto/No/Yes	It includes No (disable mirroring), Yes (enable mirroring), and Auto (auto-mirroring function). If user sets the Image Mirror to the Auto, it will traverse both possibilities to slightly increase the time consumption. Generally, we cannot tell whether the image is mirrored; therefore, we recommend you set the Image Mirror to the Auto, except for the scenes with strict requirement for the time consumption.

Parameter		Range/Option	Description
	Version Min DM	1~30	Minimum value of QR code version range.
	Version Max QR	1~30	Maximum value of the code version range.
	Decode Num	0~16	The maximum number of QR codes to be read. It might be different depending on device models.
	Decode Mode	Fast/Standard /Enhanced/Maximum	● Decoding Rate: Maximum > Enhanced> Standard > Fast ● Decoding Time: Maximum > Enhanced> Standard > Fast Different modes use different algorithms, not absolute inclusion relationships. As for the single image, the image may be decoded successfully in the standard mode, unsuccessfully in the enhanced mode.

Quality Evaluation (ISO15416)

Figure 4-16 Quality Evaluation

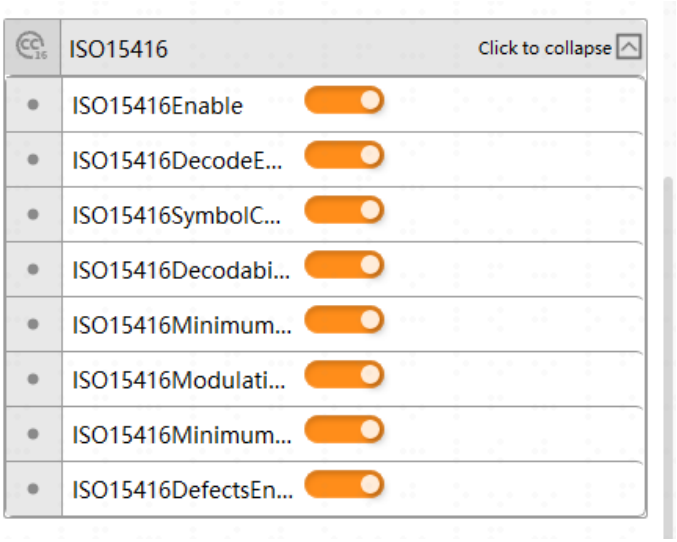


Figure 4-17 Quality String

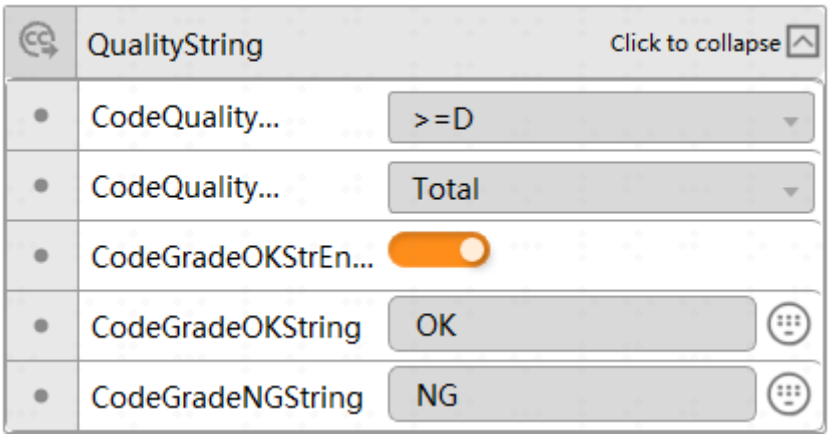


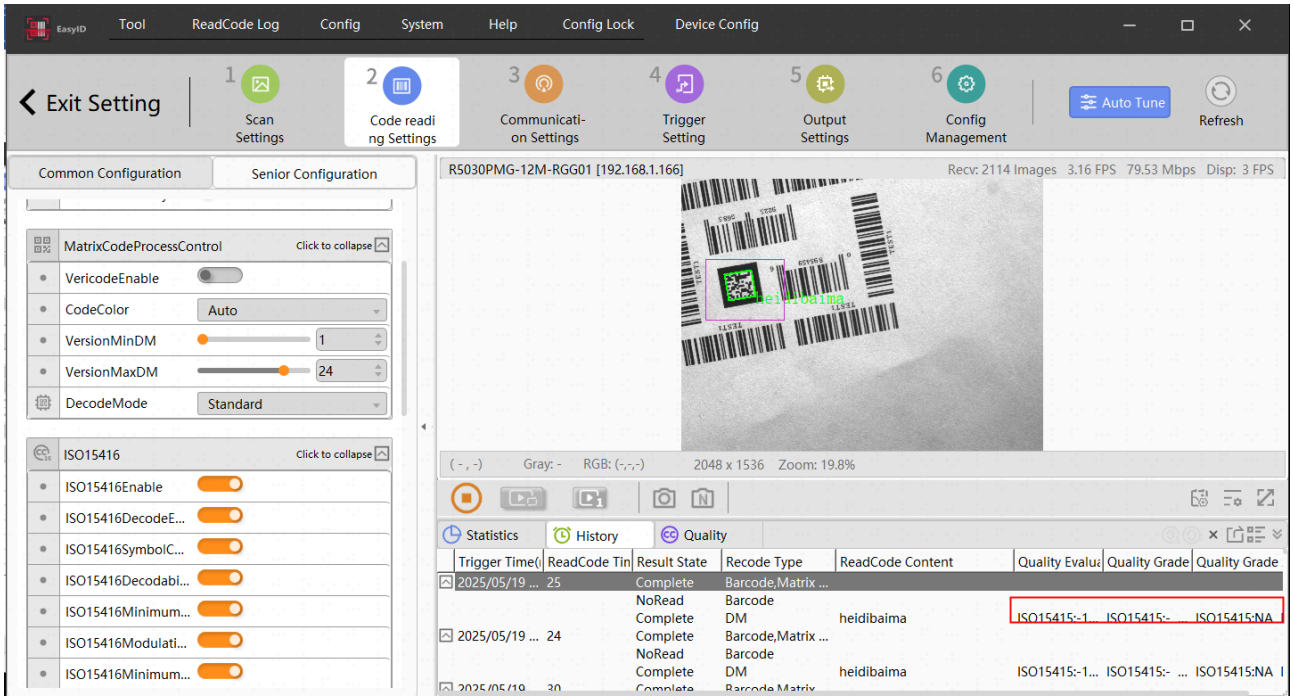
Table 4-12 Parameter description

Parameter		Option	Description
ISO15416	ISO15416 Enable	Y/N	Click the button to enable the function.
	ISO15416 Decode Enable	Y/N	
	ISO15416 Symbol Contrast Enable	Y/N	
	ISO15416 Decodability Enable	Y/N	
	ISO15416 Minimum Edge Contrast Enable	Y/N	
	ISO15416 Modulation Enable	Y/N	
	ISO15416 Minimum Reflectance Enable	Y/N	
	ISO15416 Defects Enable	Y/N	
ISO15415	ISO15415 Enable	Y/N	Click the enable button to configure the relevant parameters.
	ISO15415 SymbolContrastEnable	Y/N	
	ISO15415 Modulation Enable	Y/N	
	ISO15415 ReflectanceMarginEnable	Y/N	
	ISO15415 FixedPatternDamageEnable	Y/N	
	ISO15415 AxialNonuniformityEnable	Y/N	
	ISO15415 GradeNonuniformityEnable	Y/N	
	ISO15415 PrintGrowthHorizontalEnable	Y/N	
	ISO15415 PrintGrowthVerticalEnable	Y/N	
	ISO15415 UnusedErrorCorrectionEnable	Y/N	

Parameter		Option	Description
	ISO15415 DecodeEnable	Y/N	
	ISO15415 FormatInformationDamageEnable	Y/N	
	ISO15415 VersionInformationDamageEnable	Y/N	
ISO29158	ISO29158 Enable	Y/N	Click the button to enable the function.
	ISO29158 CellContrastEnable	Y/N	
	ISO29158 CellModulationEnable	Y/N	
	ISO29158 ReflectanceMarginEnable	Y/N	
	ISO29158 FixedPatternDamageEnable	Y/N	
	ISO29158 AxialNonuniformityEnable	Y/N	
	ISO29158 GridNonuniformityEnable	Y/N	
	ISO29158 PrintGrowthHorizontalEnable	Y/N	
	ISO29158 PrintGrowthVerticalEnable	Y/N	
	ISO29158 UnusedErrorCorrectionEnable	Y/N	
	ISO29158 DecodeEnable	Y/N	
	ISO29158 FormatInformationDamageEnable	Y/N	
	ISO29158 VersionInformationDamageEnable	Y/N	
Quality String	Code Quality OK Grade	-	Option: A/ ≥B/ ≥C/ ≥D
	Code Quality String Item	-	Option: Total/Selected/Total+Selected
	Code Grade OK Str Enable	Y/N	CodeGradeOKStrEnable
	Code Grade OK String	Customized	User can enter the up to 32 characters, and it supports the Chinese, English, and symbol.
	Code Grade NG String	Customized	

Take the ISO15415 as an example, enable the ISO15415, and set the standard of code quality judgment, as shown in the figure below.

Figure 4-18 ISO15416 enabling and setting



Code Region Match Enable

You can check the decoding results on the right side of the EasyID (the code will be marked with green box), and check the code information on history, including trigger time, read-code time, result state, code type, data, quality evaluation, etc.

Figure 4-19 Code Region Match Enable

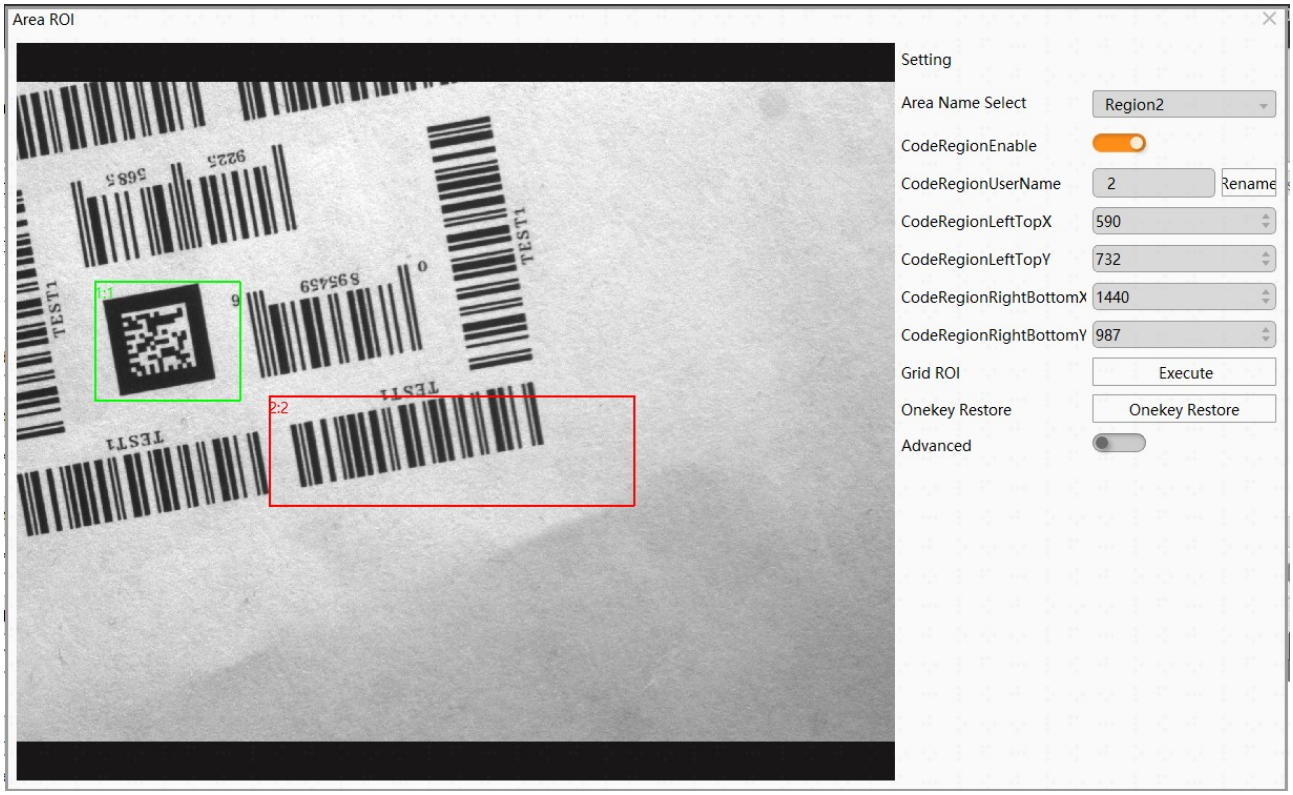


Figure 4-20 ROI code reading diagram

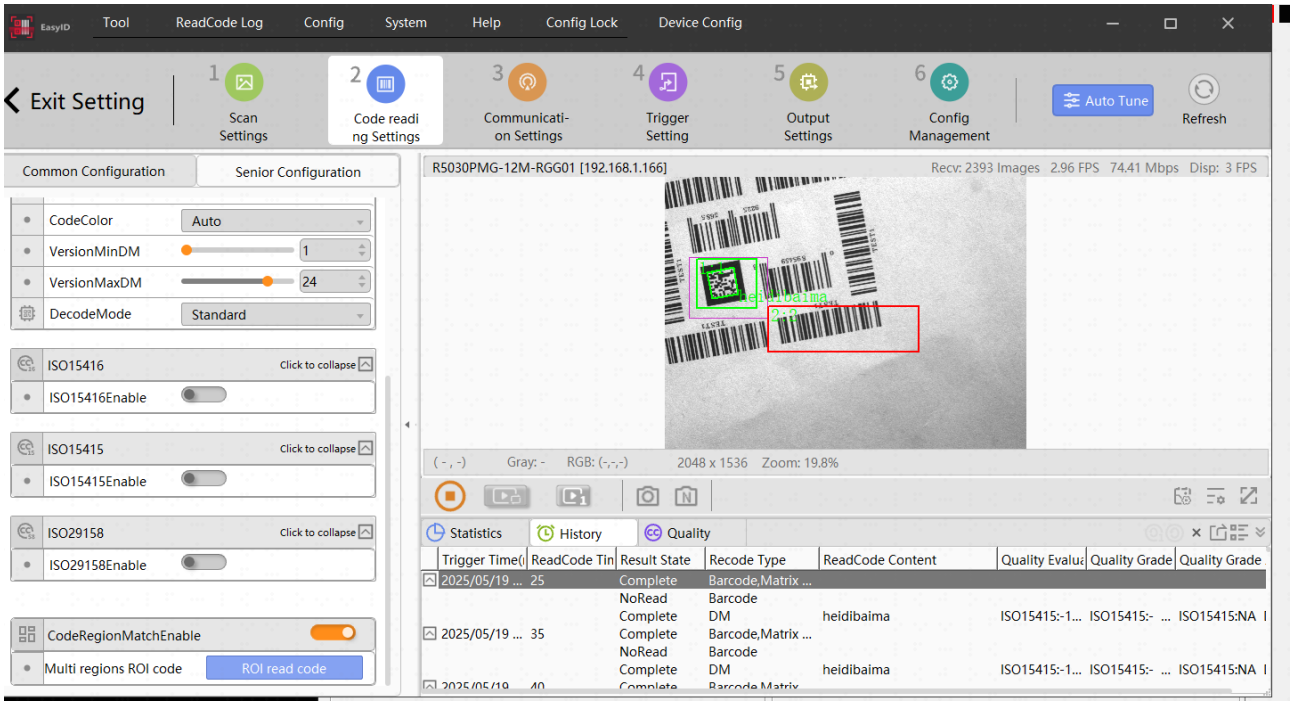


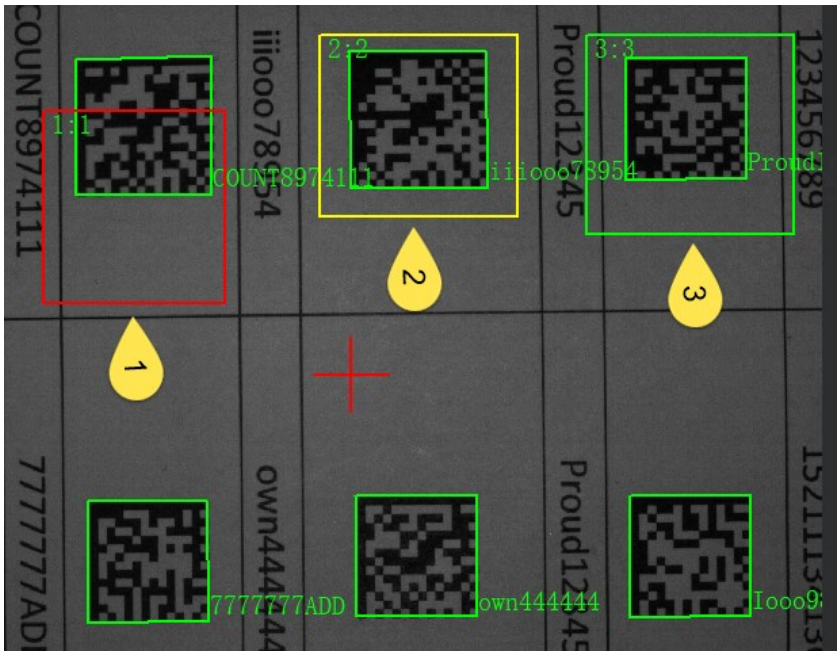
Table 4-13 Parameter description

Parameter		Range/Option	Description
Set up	Code Region Match Enable	Y/N	Enable or disable multi-region 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 Top X/Y Code Region Right Bottom X/Y	Related to the pixels of the sensor	The coordinates of the upper left and lower right corners can be configured by directly selecting numbers or drawing box on the page.
	Grid ROI	-	User can set the row number and column number. The maximum values may vary depending on the device model.
Senior	Advanced		

Parameter		Range/Option	Description
Configuration	Code Region Match Criterion	4/3/2 Points in Region	To set the standard of successful code reading by configuring the number of the corner points. If the number of the corner points in the FoV reaches the set value, it is successful. Take 3 points as an example, if all 3 points are in the image acquired by device, the code reading is successful.
	Code Region Username Output Enable	Y/N	Enable or disable region name output.
	Code Region Expected Code Num	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. User can customize it or keep it as default.
	Code Region Over Read String	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.

After completing the settings, close the ROI interface, the image preview area is as follows.

Figure 4-21



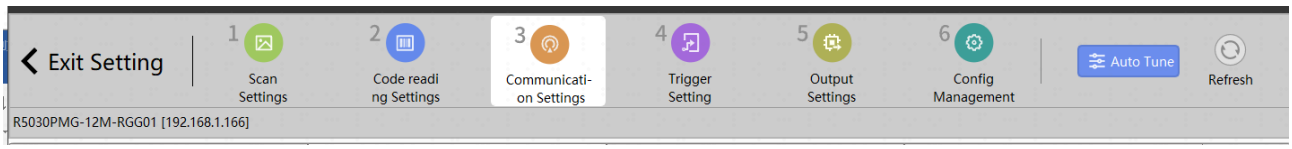
ROI recognition after settings

Red frame means that no code is recognized; yellow frame means that the partial code is recognized; green frame means that all codes are recognized. Codes can still be recognized in other areas of the device's FoV, but no processing is performed on their results.

4.1.3 Communication Settings

User can configure the parameters of the communication protocols, including Ethernet, serial port, and FTP.

Figure 4-22 Communication configuration interface



4.1.3.1 Ethernet Communication

Figure 4-23 Ethernet configuration interface

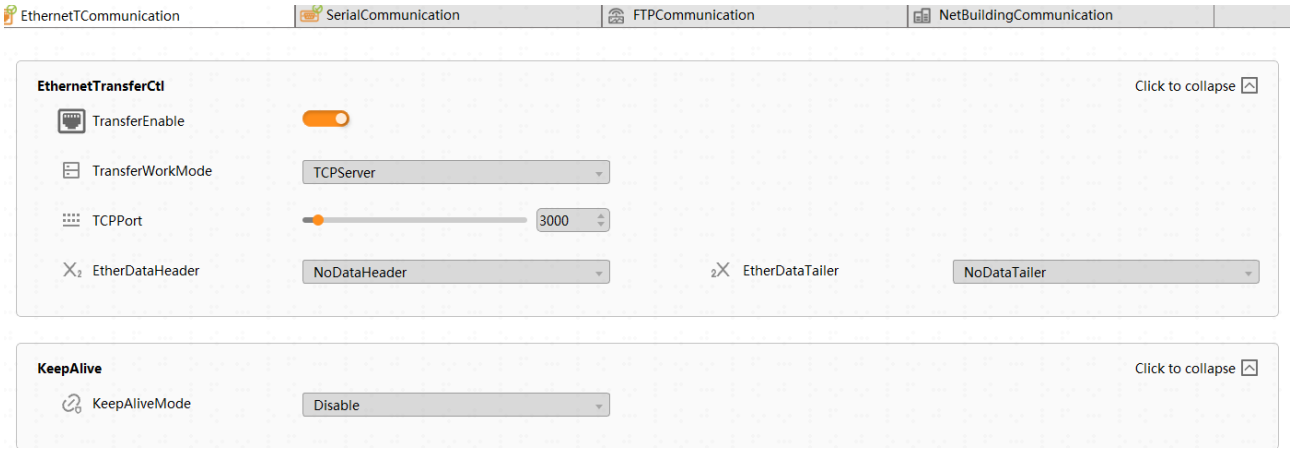


Table 4-14 Parameter description

Parameter		Range/Option	Description
EthernetTransferCtl	Transfer Enable	Y/N	Click the enable button to configure the relevant parameters.
	Network mode	TCP/Profinet/ModbusTcp/FINS/EthernetIP/MC	Select the transfer mode when outputting data. The transfer modes include TCP/Profinet/ModbusTcp/FINS/EthernetIP/MC, and each mode has different parameters that shall be configured.
	TCP Port	20~65535	When the transfer mode is selected with TCP server or TCP Client, user should configure the port number for the communication.
	Server IP	Customized	When the transfer mode is TCP Client, the server IP shall be configured.
	Ethernet Data Header	No Data Header/Data STX/IP Address/Device User ID/Device Serial Number	When the communication mode is TCP server, the data is filled in the packet header.

Parameter		Range/Option	Description
	Ethernet Data Tailer	No Data Tailer/Data Tailer CR/Data Tailer LF/ Data Tailer CR_LF/Data Tailer ETX	When communication mode is TCP server, the data is filled at the end of the packet.
Network Keep-alive	TCP Keep-alive	Disable/Default/ User Defined	When the transfer mode is TCP server or TCP Client, the Keep-alive will be enabled; After selecting the User Define, the keep Alive Time and Keep Alive Pkt Data can be configured.

4.1.3.2 Serial Communication

Figure 4-24 Serial communication interface

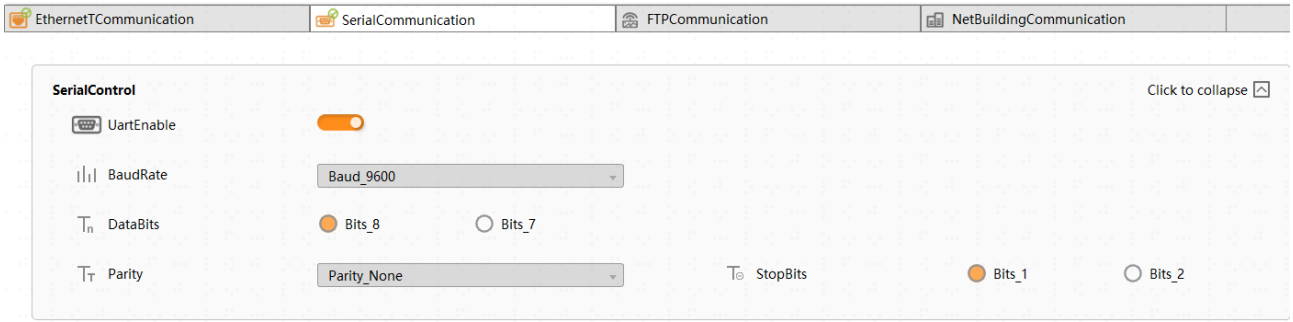


Table 4-15 Parameter description

Parameter		Range/Option	Description
Serial Control	UartEnable	Y/N	Enable or disable serial port transmission.
	Baud Rate	600/1200/2400/4800/9600/19200/38400/57600/115200	The number of code element has been transmitted per unit time.
	Data Bits	Bits 8/Bits 7	Number of data bits.
	Parity	None/Even/Odd	Parity method.
	Stop Bits	Bits 1/Bits 2	Number of stop bits.

4.1.3.3 FTP Communication

Figure 4-25 FTP configuration interface

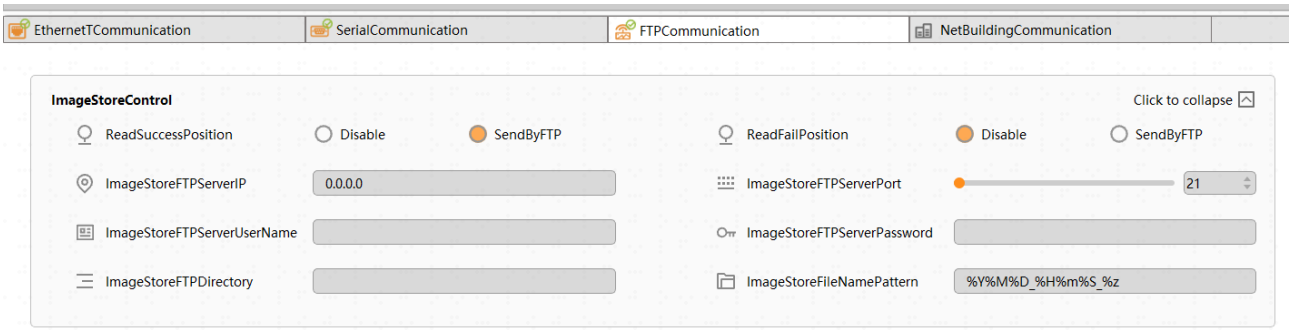


Table 4-16 Parameter description

Parameter		Range/Option	Description
Image Store Control	ReadSuccessPosition	Disable/Send by FTP	The image saving path of the OKRead.
	ReadFailPosition	Disable/Send by FTP	The image saving path of the NGRead.
	Image Store FTP Server IP	Customized	To set IP address.
	Image Store FTP Server Port	1~65535	The configurable port number range is 1~65535.
	Image Store FTP Server User Name	Customized	To set the username.
	Image Store FTP Server Password	Customized	To set the password.
	Image Store FTP Directory	Customized	To set the path for saving image.
	Image Store File Name Pattern	Customized	Naming rule setting

4.1.3.4 Net Building Communication

The master device and slave device settings are as follows.

Figure 4-26 Net Building Control

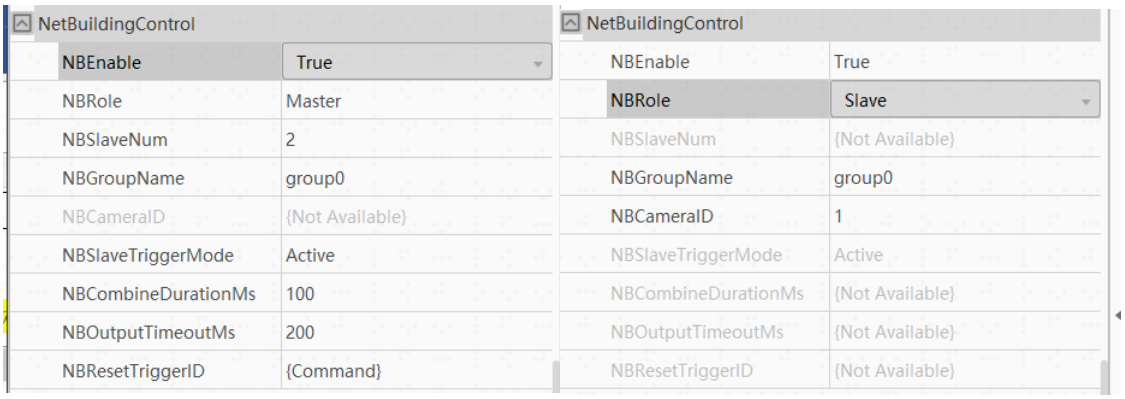


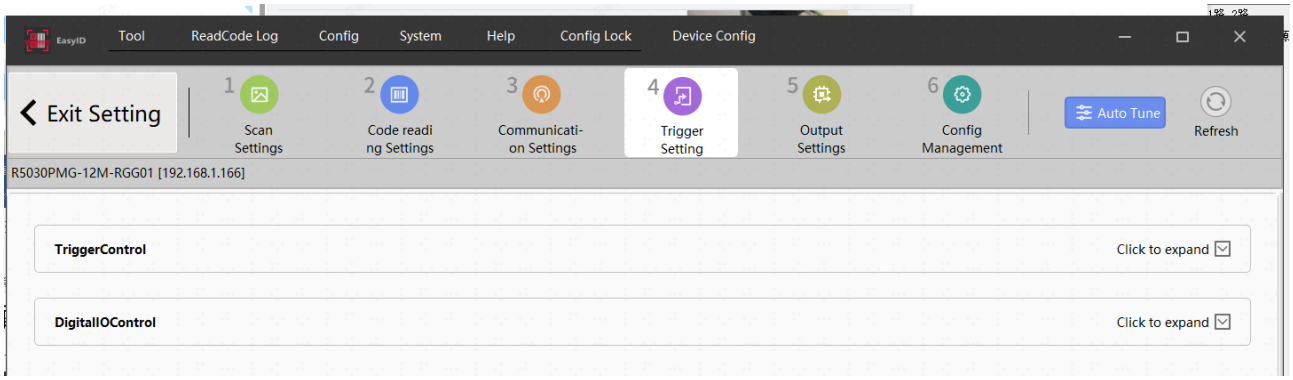
Table 4-17 Parameter description

Parameter		Range/Option	Description
Master Device	NBSlaveNum	1~16	Set the slave device quantity, which supports up to 16 slave devices.
	NBSlaveTriggerMode	Active/Passive	Optional
	NBCombineDurationMs	10~1000	Configurable. Range: 10~1000
	NBOutputTimeoutMs	50~5000	Configurable. Range: 50~1000
	NBResetTriggerID	-	User can use this function to reset the trigger ID when the net building is abnormal.
Slave Device	NBGroupName	Customized	Set the IP address of the master device.
	NBCameraID	1~16	Configure the device ID according to the number of the slave device in the net building.

4.1.4 Trigger Settings

User can configure the parameters of three modules, including trigger control, stop trigger control, and digital IO control.

Figure 4-27 Trigger setting interface



Trigger Control

Figure 4-28 Trigger Control

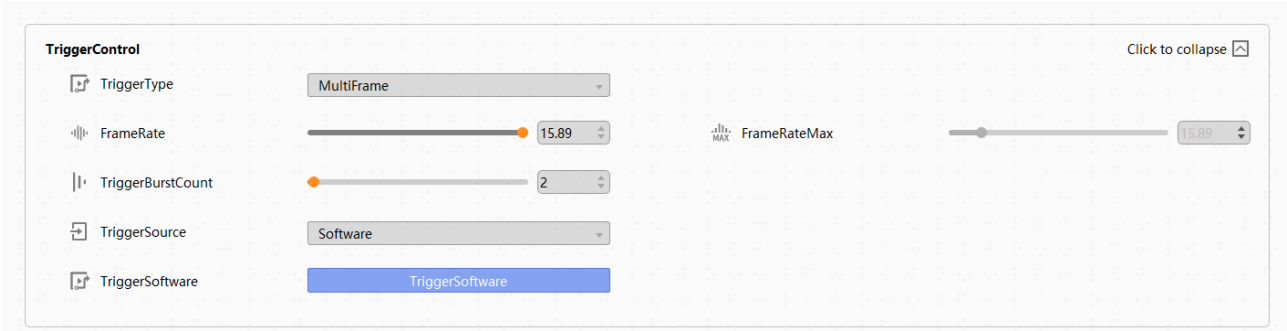


Table 4-18 Parameter description

Parameter	Range/Option	Description
TriggerType	FreeRun/SingleFrame/MultiFrame/PhaseMode/MotionDetect	● Free Run Mode: the device will continuously capture the image according to the set frame rate. ● Single Frame Mode: the device will capture one image after receiving the trigger signal. ● Multi-frame Mode: the device will capture the set frame number of images after receiving the trigger signal. ● Phase Mode: the device will continuously capture the image according to the set frame rate after receiving the phase signal, and stop capturing until the trigger signal ends ● Motion Detection Mode: the device only captures the image when a moving object is detected; otherwise, the device is in the dormant state.
FrameRate	0.5~60	The default value is 30.
FrameRateMax	-	The maximum frame rate of the device, which is related to the exposure time and working mode of fill light.
TriggerDelay	0μs to 1000000μs	Trigger delay time.
Trigger Burst Count	1~255	The maximum number of frames of the image captured by the device after receiving a trigger signal, which is valid only in multi-frame mode.

Parameter	Range/Option	Description
TriggerSource	Software/TCP/Serial/Line0	• Software: the device is triggered by receiving trigger signal sent from software. • TCP: the device is triggered by receiving the specific characters based on the TCP. • Serial: the device is triggered by receiving the specific characters sent from serial port. • Line0: Triggered by external level signal.
TriggerStartCmd	Customized	The device is triggered to start operating after receiving the set character, which is valid only in the TCP or Serial mode.
TriggerEndCmd	Customized	The device is triggered to stop operating after receiving the set character, which is valid only in the TCP or Serial mode.
MotionDetectMode	Weak/Medium/Strong	For adjusting the sensitivity of motion detection, which is valid only in the motion detection mode.
MotionDetectWorkTime	10~3000	For adjusting the capturing duration. When device detects the FoV movement, it will start to capture images, and stop capturing according to the set time. It is valid only in the motion detection mode.
MotionDetectGain	1~23	Configure the gain parameter when performing the detection.
MotionDetectExpTime	20~1000000	Configure the exposure parameter when performing the detection.
MotionDetectPreviewEnable	-	User can preview the images when performing the detection once this function is enabled.

Stop Trigger Control

The stop triggering function is available when in the multi-frame mode or level trigger mode.

Figure 4-29 Stop Trigger Control

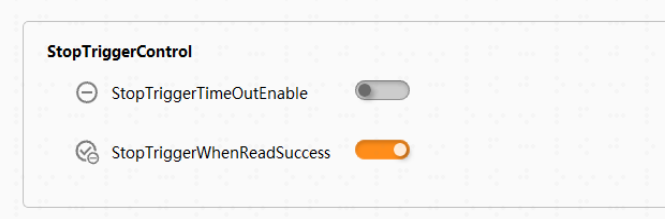


Table 4-19 Parameter description

Parameter		Range/Option	Description
StopTriggerControl	StopTriggerTimeOutEnable	Y/N	For enabling the stop trigger timeout function, which is valid only in the multi-frame or phase mode.
	StopTriggerTimeOutMax	0~60000	For adjusting the stop trigger timeout value, which is valid only when the stop trigger timeout is enabled.
	StopTriggerWhenGoodRead	-	If the code reading is successful, the triggering will be stopped.

Y: Enable this function; N: Disable this function.

Digital IO Control

Figure 4-30 Digital IO Control

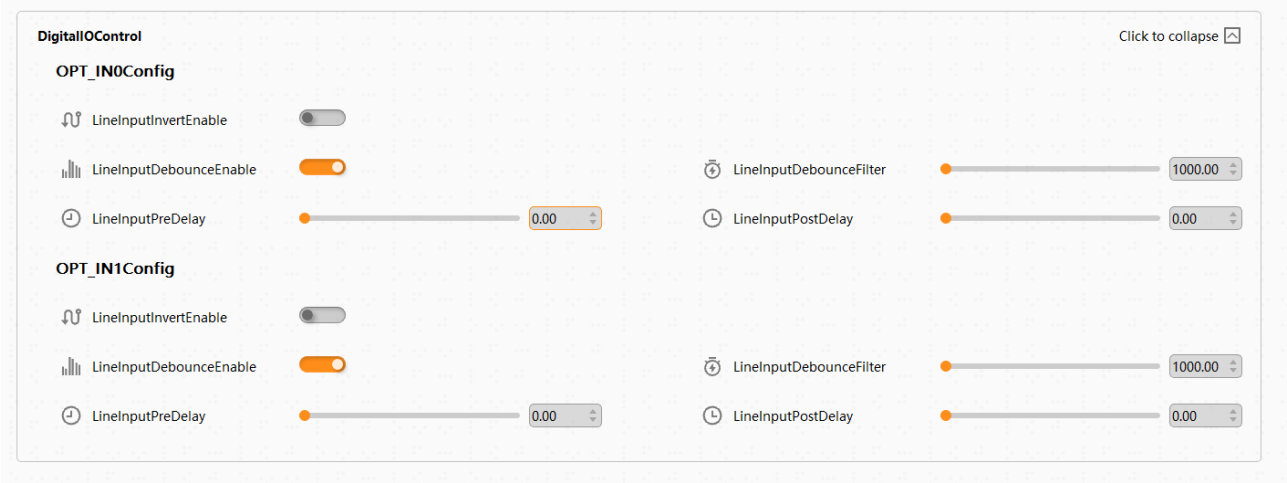


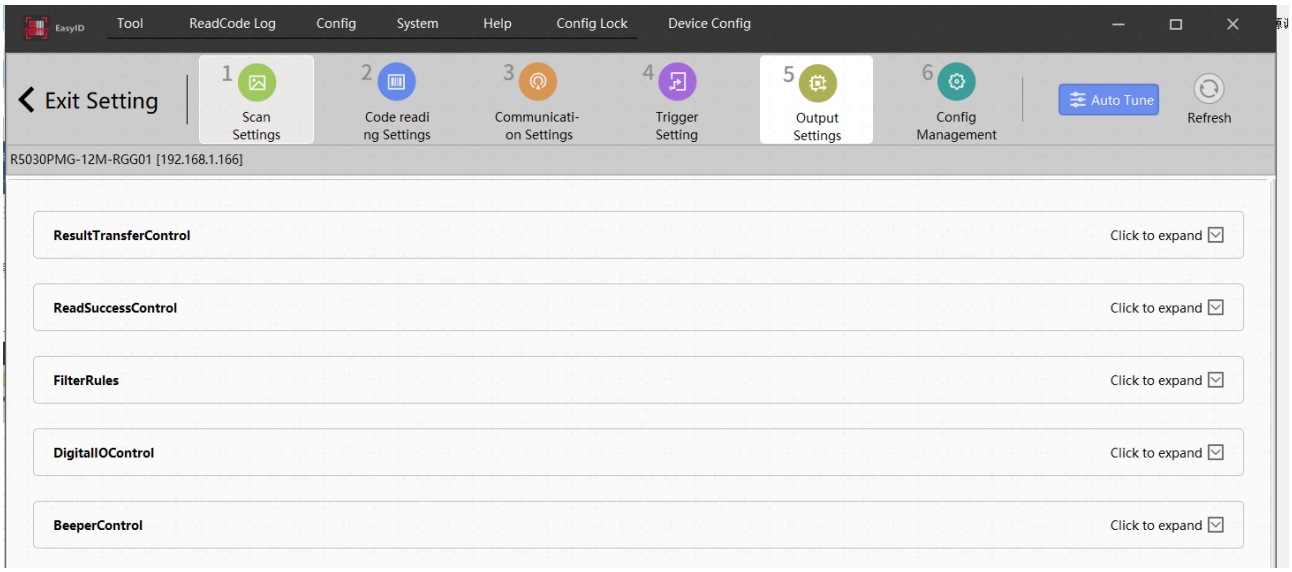
Table 4-20 Parameter description

Parameter		Range/Option	Description
IO Configuration	LineInputInvertEnable	Y/N	To invert the input signals, for example, if the input signal is high level, after inverting, the high level will be the low level.
	LineInputDebounceEnable	Y/N	To enable or disable the debounce function.
	LineInputPreDelay	0ms~1000ms	The delay arriving time of the input signal.
	LineInputDebounceFilter	1000μs~255000μs	Debounce time.

4.1.5 Output Settings

User can configure the parameters of the output modules in the Output Settings, including result transmission control, code reading success control, filter rules, digital IO control, and beeper control.

Figure 4-31 Output Settings



Result Transfer Control

Figure 4-32 Result Transfer Control

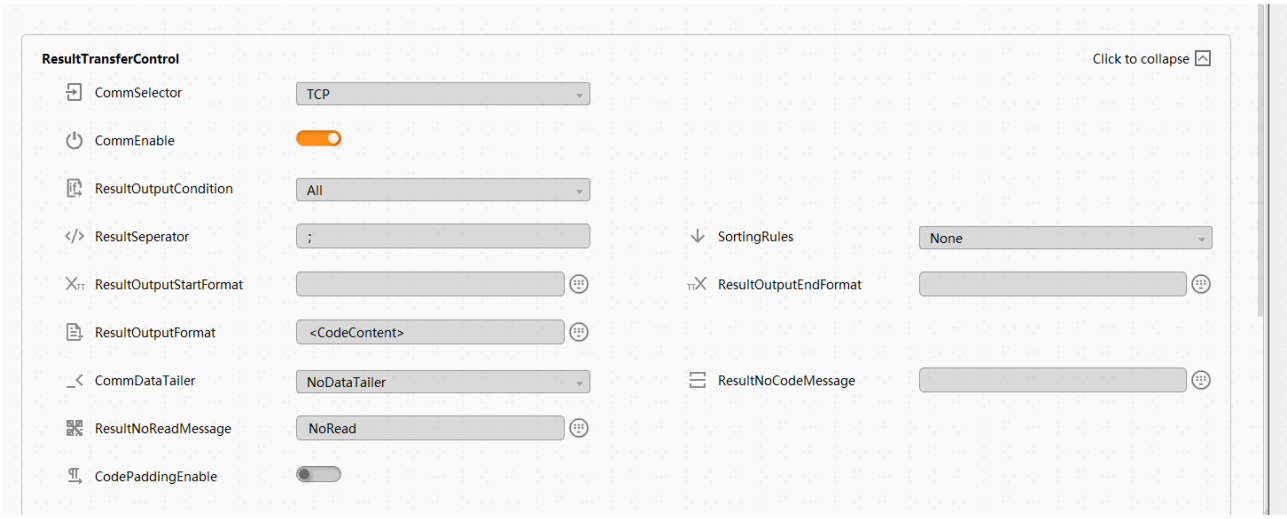


Table 4-21 Parameter description

Parameter		Range/Option	Description
ResultTransferControl	CommSelector	TCP/Profinet/ModbusTcp/FINS/EtherNetIP/MC/ Serial Port	Select the communication method when outputting data.
	CommEnable	Y/N	Enable or disable the currently selected communication method.
	ResultOutputCondition	Disable/All/ReadFail/ReadSuccess/Customize	Control the data output logic according to the code reading results. Disable: Do not output results. All: Output all results no matter the result is success or failure. ReadFail: Only output the results when the code reading is failure. ReadSuccess: Only output the results when the code reading is success. Customize: Output results according to the associated script.
	ResultSeperator	Customized	The settings between the data can be customized or selected from the keypad list.

Parameter		Range/Option	Description
	ResultOutputStartFormat	Customized	TimeStamp, GroupID, FrameID, CodeNum, ReadStatus, MacAddr, SN, UserID, IPAddr, STX, ETX, CR, LF, etc.
	ResultOutputFormat	Customized	CodeContent, CodeType, Coordinate, CenterXY, Angle, CodeQuality, STX, ETX, CR, LF.
	CommDataTailer	NoDataTailer/DataTailer_CR/DataTailer_LF/DataTailer_CR_LF	The tail data of the whole set of data.
	ResultNoReadMessage	Customized	STX, ETX, LF, CR.
	SortingRules	None/Coordinate_X_Ascending/Coordinate_X_Descending/Coordinate_Y_Ascending/Coordinate_Y_Descending	To sort the code reading results according to the selected rule.
	ResultOutputEndFormat	Customized	TimeStamp, GroupID, FrameID, CodeNum, ReadStatus, MacAddr, SN, UserID, IPAddr, STX, ETX, CR, LF.
	ResultNoCodeMessage	Customized	The output content when the image has no codes.
	CodePaddingEnable	Y/N	If the length of code reading result does not reach the set length, the characters padding will be performed.
	FixedLength	1~64	The length of the transmitted code value.
	CodePaddingChar	Customized	It can be customized or selected from the keypad list.

Read Success Control

Figure 4-33 Read Success Control

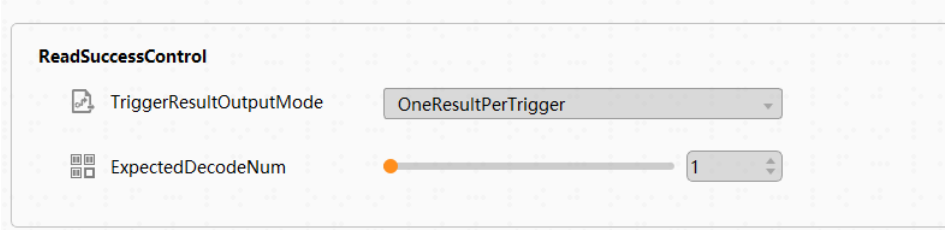


Table 4-22 Parameter description

Item		Range/Option	Description
GoodReadControl	TriggerResultOutputMode	EveryFrameResult/OneResultPerTrigger/Test/OneResultPerTriggerByScript	● EveryFrameResult: Output one result per frame of image. ● OneResultPerTrigger: Output one result after performing the merging and deduplication to every result of image. ● Test: Output one result per frame of image, and output a summary result. ● OneResultPerTriggerByScript: Output the customized result processed by script.
	ExpectedDecodeNum	1~48	Set the expected number of codes. When the read number is greater than or equal to the set value, the code reading is success; otherwise, it is failure.

Filter Rules

Figure 4-34 Filter Rules

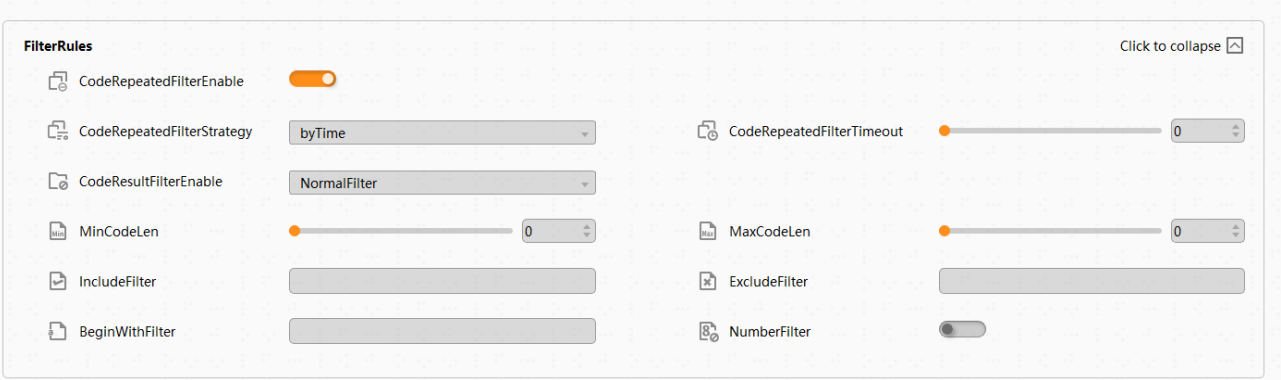


Table 4-23 Parameter description

Parameter	Range/Option	Description
CodeRepeatedFilterEnable	Y/N	-
CodeRepeatedFilterTimeout	0ms~20000ms	Configurable. Range: 0~20000
CodeResultFilterEnable	None/NormalFilter/RegularFilter	Normal Filter, which provides some simple filtering options. Regular Expression Filter, which specifies filtering rules through regular expressions.
MinCodeLen	0~Max Code Length	To limit the min length of code value (only valid in NormalFilter)
MaxCodeLen	Min Code Length~256	To limit the max length of code value (only valid in NormalFilter)
NumberFilter	Y/N	Keep the reading results of pure numbers (only valid in NormalFilter)
IncludeFilter	Customized	Keep the reading results which includes the specific characters (only valid in NormalFilter)
ExludeFilter	Customized	Keep the reading results which includes the specific characters (only valid in NormalFilter)

Digital IO Control

Figure 4-35 Digital IO Control

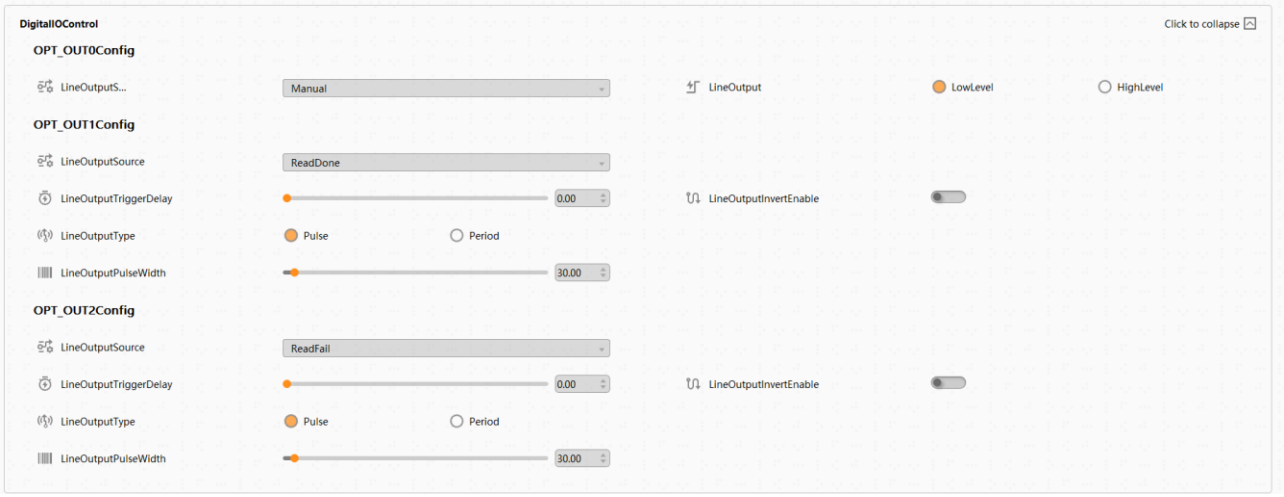


Table 4-24 Parameter description

Parameter	Range/Option	Description
LineOutputSource	Manual/ ReadDone/ ReadFail/ ReadSuccess	User can select the Manual mode, or output signals according to the code reading results.
LineOutput	LowLevel/ HighLevel	Select the level of the output signal.
LineOutputInvertEnable	Y/N	To invert the input signals, for example, if the input signal is high level, after inverting, the input signal will be low level.
LineOutputTriggerDelay	0ms~1000ms	Trigger Delay
LineOutputType	Pulse/ Period	Select the type of output IO signal.
LineOutputPulseWidth	1~1000	The width of output pulse. This function is only valid when outputting the pulse signals.
LineOutputDutyCycle	0~100	Control the duty ratio of the period signal. This function is only valid when outputting the period signals.
LineOutputPeriod	1~1000	Control the period of signals. This function is only valid when outputting the period signals.
LineOutputPeriodCount	1-7	To enable the counting function of the signal outputting period.

Beeper Control

Figure 4-36 Beeper Control

Table 4-25Parameter description

Parameter	Range/Option	Description
BeeperInputSource	Disable/ ReadDone/ ReadFail/ ReadSuccess	Control the beeper output logic according to the code reading results:
BeepTimes	1~7	The number of beeps.
BeepInterval	1~1000	Interval time.
BeeperTriggerDelay	0~1000	Delay time.
BeepDuration	1~1000	Duration time.

4.1.6 Config Management

After configuring the parameters, user can save or restore the configurations here as needed. In addition, you can perform the device restarting, default configuration restoring, and configuration files import and export.

Figure 4-37 Config Management

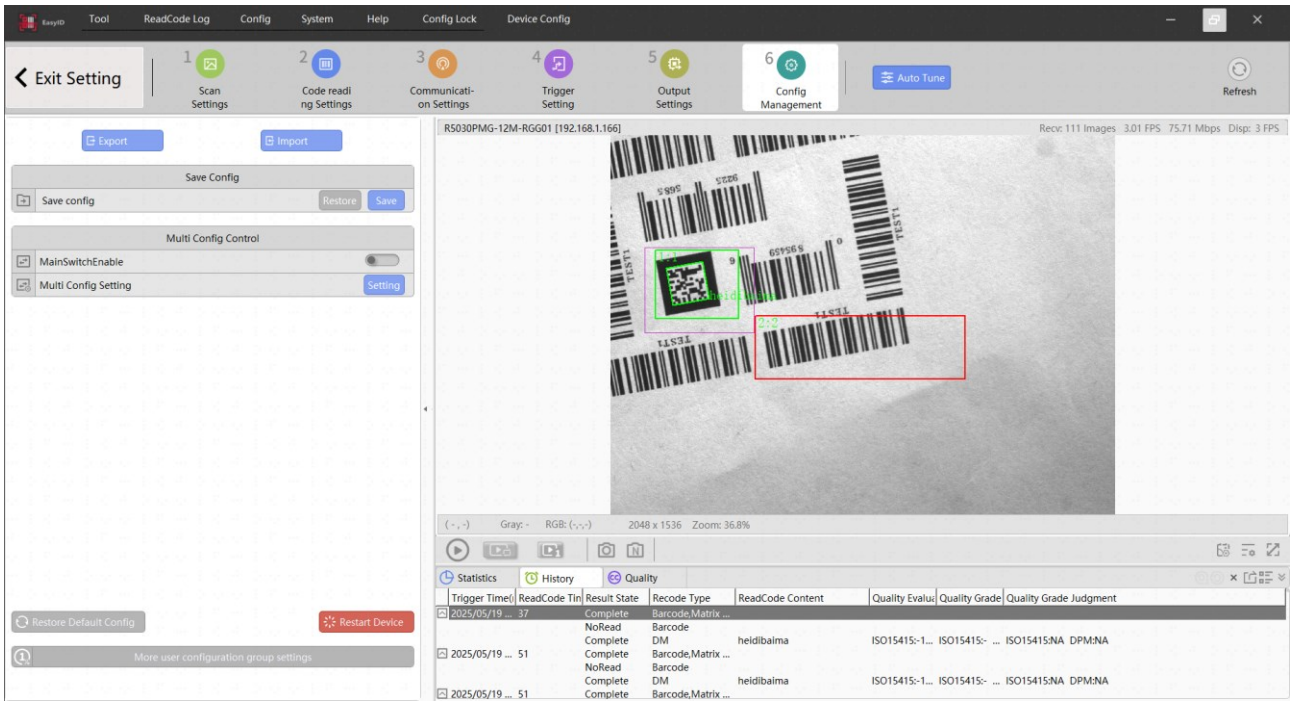


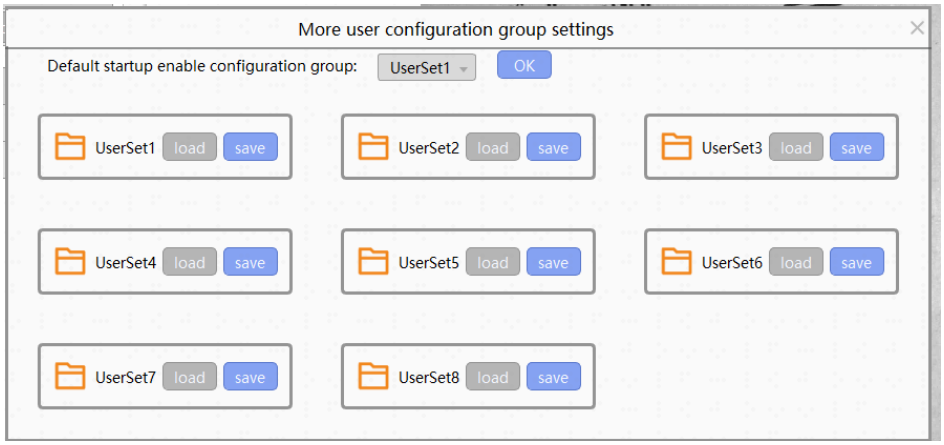
Table 4-26 Parameter description

Parameter	Description
Export	Click to export configuration files.
Import	Click to import configuration files.
Restore	Click to restore the last saved attribute configuration. User should disable the MainSwitchEnable function.
Save	Click to save the current attribute configuration. User should disable the MainSwitchEnable function.
MainSwitchEnable	To enable the MainSwitchEnable function, please refer to the **4.1.9 MainSwitchEnable**.
MultiConfig Setting	To adjust the each set of parameters in the MainSwitchEnable, please refer to the **4.1.9 MainSwitchEnable**.
Restore Default Config	Click **Reset** to restore the factory settings.
Restart Device	Click to restart the device.
More user configuration settings	Selectively load and save user configuration.

Procedure

Step 1 Click **More user configuration group settings.**

Figure 4-38 More User Configuration Group Setting



Step 2 Select any **UserSet** in **Default Startup Enable Configuration Group** and click **OK**. The configurations that user has configured will be saved to the selected UserSet.

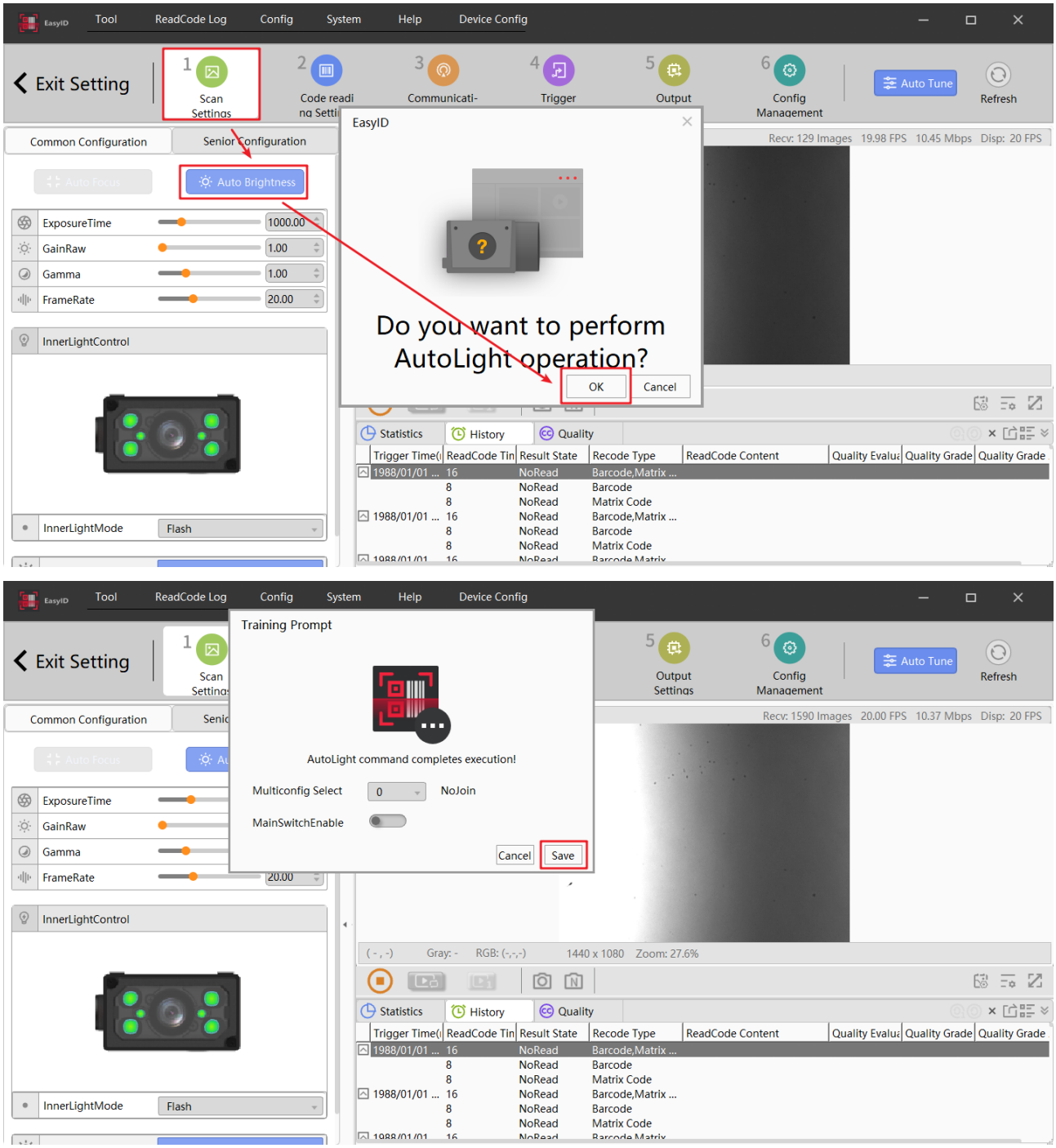
1. Save the configurations of the current device in UserSet1.
2. Load the selected UserSet2 as the current device configurations.
3. Select the default power-on configurations as the selected configuration which is the UserSet2 in this example.

Step 3 Click **Load** to load the corresponding configurations as the current UserSet. Click **Save** to save the all-current configurations into the corresponding UserSet.

4.1.7 Auto Brightness

Smart code reader can automatically adjust brightness level of image according to the image effect by adjusting the exposure and gain, as shown in the figure below.

Figure 4-39 After performing Auto-Brightness



4.1.8 MultiConfig Setting

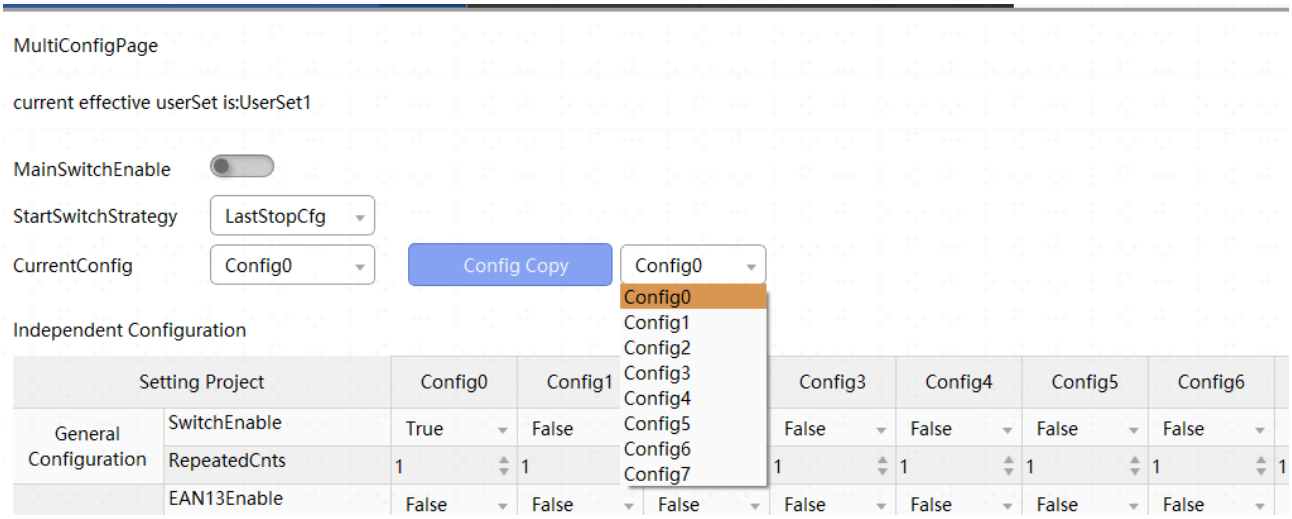
Click **Setting** on the right side of the **Multi Config Setting** to enter the **MultiConfigPage**.

Figure 4-40 MultiConfigPage

Table 4-27 Parameter description

Parameter	Range/Option	Description
MainSwitchEnable	ON/OFF	Only when it is on can configuration switching take effect. There are eight groups of parameters. User can configure the parameters of Config 0~Config 7. After enabling it, the parameters of Config 0~Config 7 will be locked.
StartSwitchStrategy	LastStopCfg/ LastStopCfg	Continue the polling when user stopped polling last time/Start polling from the first group.
ConfigEnable	ON/OFF	Enable or disable bar code.
MatrixCodeConfigEnable	ON/OFF	Enable or disable matrix code.
ConfigSelector	Config 0~Config 7	There are eight configuration groups, and it displays the configuration group which the device uses.
Independent Configuration	Config 0~Config 7	Configure the parameters in every groups according to the actual situation.

Figure 4-41 Multi Config Setting



Setting Project		Config0	Config1	Config2	Config3	Config4	Config5	Config6	Config7
General Configuration	SwitchEnable	True	False	False	False	False	False	False	False
	RepeatedCnts	1	1	1	1	1	1	1	1
BarCode	EAN13Enable	False	False	False	False	False	False	False	False
	CODE128Enable	True	True	True	True	True	True	True	True
	CODE39Enable	False	False	False	False	False	False	False	False
	EAN8Enable	False	False	False	False	False	False	False	False
	UPCAEnable	False	False	False	False	False	False	False	False
	UPCEEnable	False	False	False	False	False	False	False	False
	CODE93Enable	False	False	False	False	False	False	False	False
	ITF25Enable	False	False	False	False	False	False	False	False
	CODABAREnable	False	False	False	False	False	False	False	False
	IND25Enable	False	False	False	False	False	False	False	False
	BarCodeDeCodeNum	1	1	1	1	1	1	1	1
	BarCodeDeCodeTimeOut	1000	150	150	150	150	150	150	150
Focus	FocusPosition	470	460	460	460	460	460	460	460
ISP	ExposureTime	1367.75us	5000.00us	5000.00us	5000.00us	5000.00us	5000.00us	5000.00us	5000.00us
	HDRMODE	stabdard	stabdard	stabdard	stabdard	stabdard	stabdard	stabdard	stabdard
	GainRaw	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

ImagePreProc...	FirstPreProc	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable
	FirstPreProcCount	1_Times	1_Times	1_Times	1_Times	1_Times	1_Times	1_Times	1_Times
	SecondPreProc	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable
	SecondPreProcCount	1_Times	1_Times	1_Times	1_Times	1_Times	1_Times	1_Times	1_Times
	ThirdPreProc	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable
	ThirdPreProcCount	1_Times	1_Times	1_Times	1_Times	1_Times	1_Times	1_Times	1_Times
	FourthPreProc	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable
	FourthPreProcCount	1_Times	1_Times	1_Times	1_Times	1_Times	1_Times	1_Times	1_Times
InnerLight	DiffusedLight	On	On	On	On	On	On	On	On
	NonPolarizedLight_Up	Off	Off	Off	Off	Off	Off	Off	Off
	PolarizedLight_Down	Off	Off	Off	Off	Off	Off	Off	Off
	InnerLightMode	Flash	Flash	Flash	Flash	Flash	Flash	Flash	Flash

4.2 Menu Bar

This section introduces the functions on the menu bar.

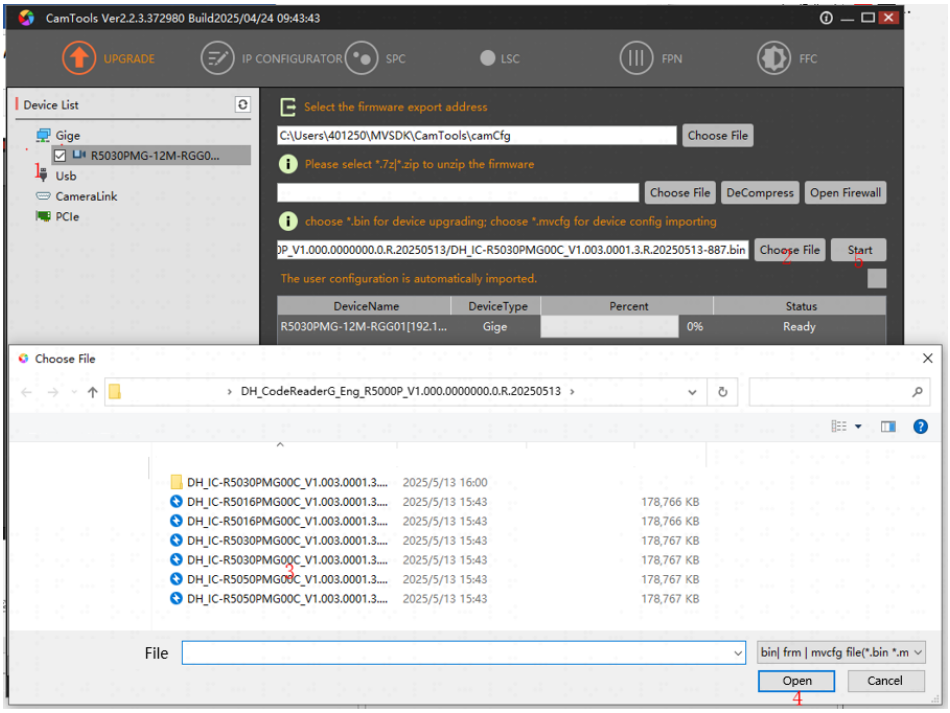
4.2.1 Tool

User can find the CamTools in the list of Tool. The CamTools is used for upgrading the firmware of the device.

Procedure

Step 1 Click **Tool** > **CamTools**. The CamTools window will pop up.

Figure 4-42 CamTools

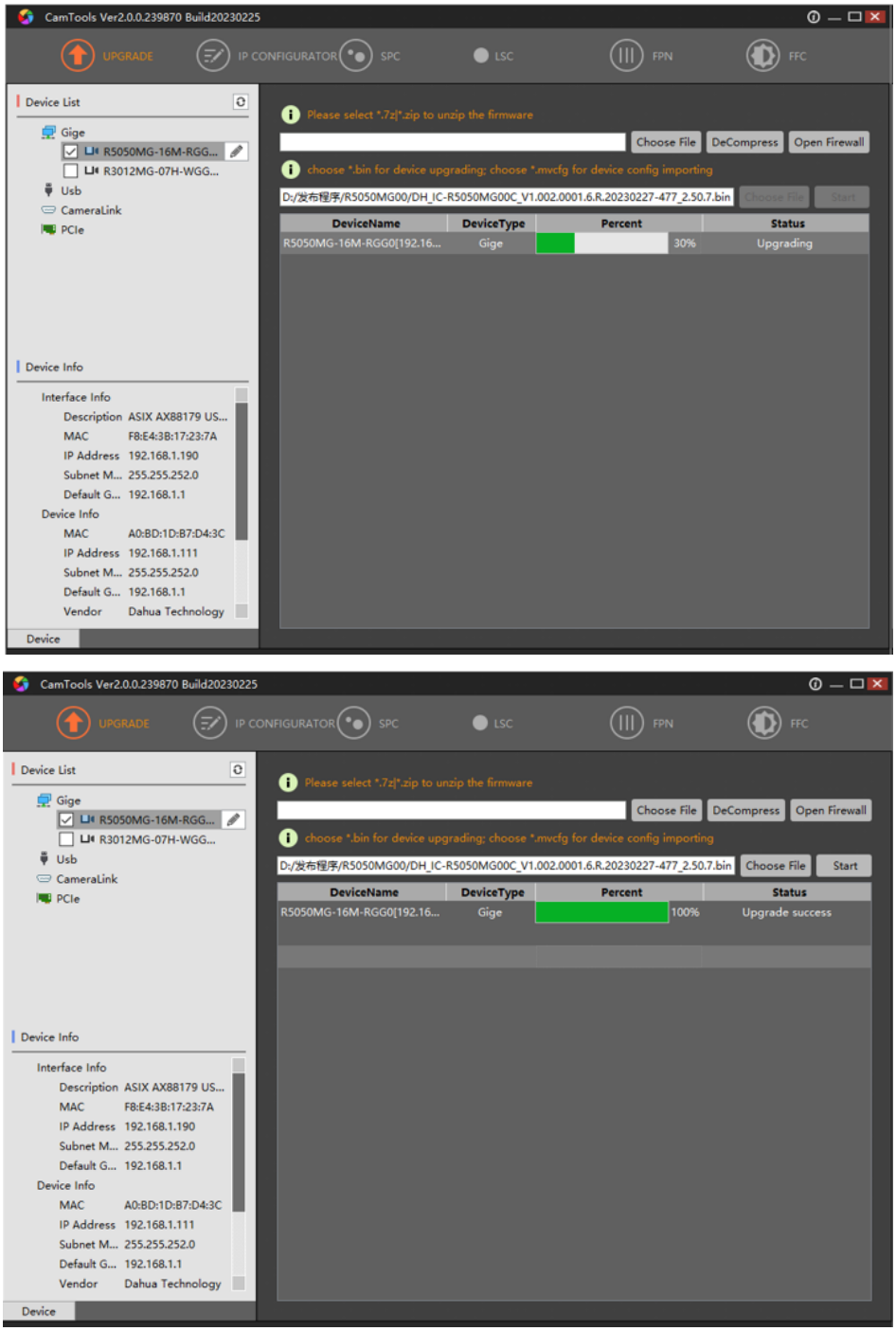


Step 2 Select the device to be upgraded in the device list on the left, and check the device IP address.

Step 3 Click **Choose File** on the right side of the configuration area, select the firmware file, and click **OK**.

Step 4 Click **Start** to start the firmware upgrading.

Figure 4-43 Device firmware upgrade



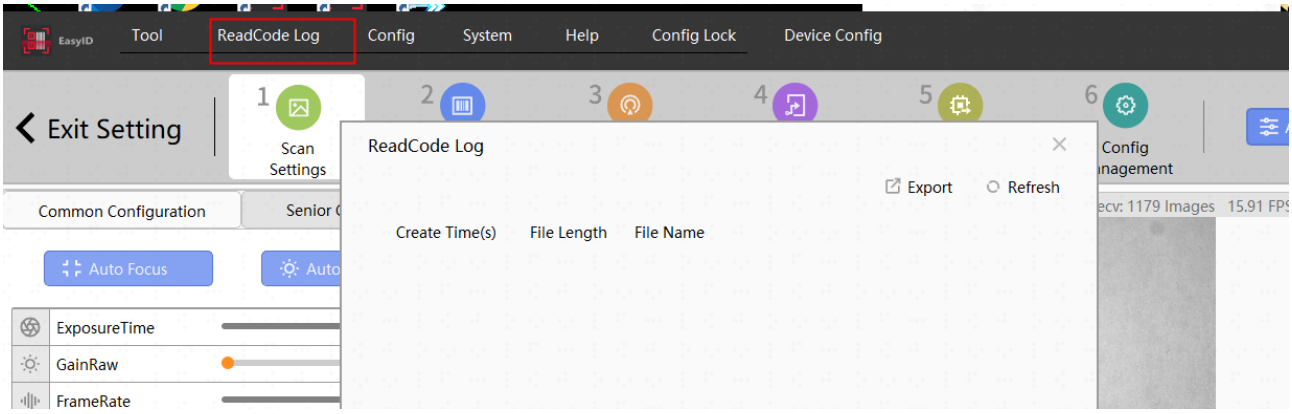
Step 5 After the firmware version is successfully upgraded, the device will automatically be powered off and restarted. You can check the firmware version on the homepage of EasyID.

Before upgrading the firmware, please disconnect the connection between the device and EasyID; otherwise, it will prompt the "Connection Failed".

4.2.2 ReadCode Log

This function records the operating logs of the device, if the device is abnormal, please provide related logs to the technical specialist for help.

Figure 4-44 Logs Export



4.2.3 Config

Figure 4-45 Functions in Config list

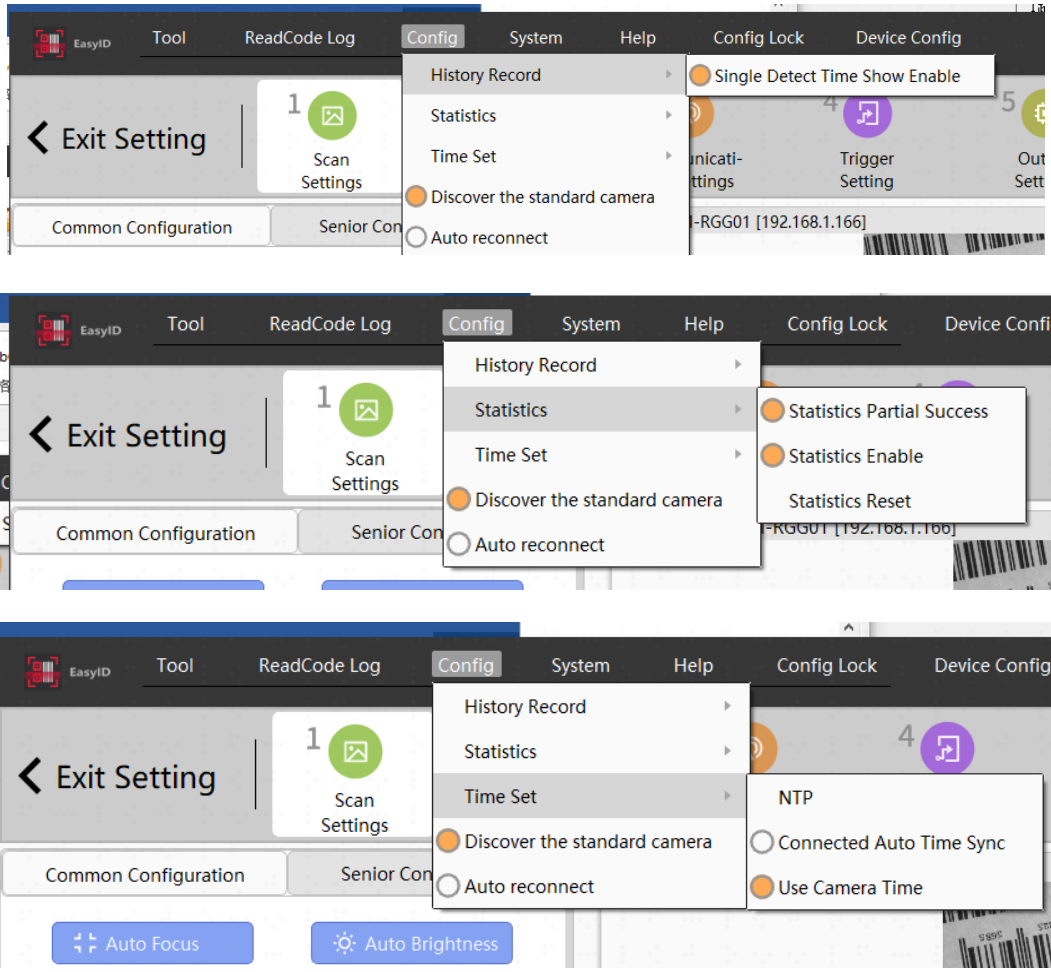


Table 4-28 Function description

Parameter	Description
History Record	Single Detect Time Show Enable
Statistics	• Statistics Partial Success: The partial codes are read successfully.

Parameter	Description
	After disabling this function, if user sets the code reading number to 10, but only 8 codes are read, the code reading result is failure. ● Statistics Enable ● Statistics Reset
Time Set	The options in the Time Set include NTP Mode, Get System Time, Connected Auto Time Sync, and Use Camera Time. The actual options shall prevail.
Discover the Standard Camera	Select it to find earlier version cameras.
Auto Reconnect	After enabling this function, the device can be automatically reconnected after disconnection.

4.2.4 System

Figure 4-46 Functions in System list

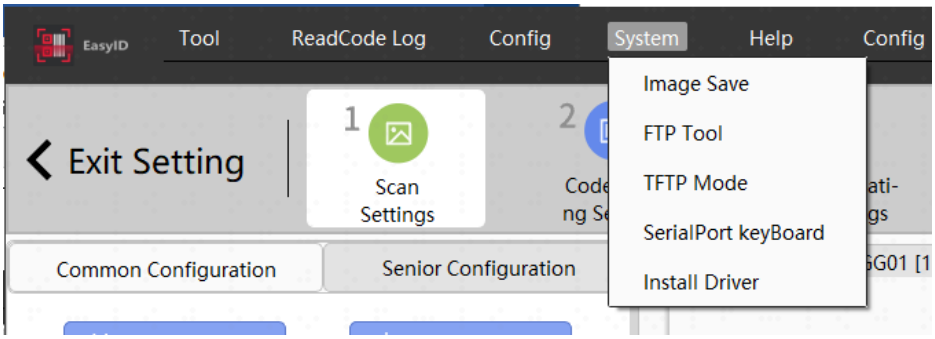


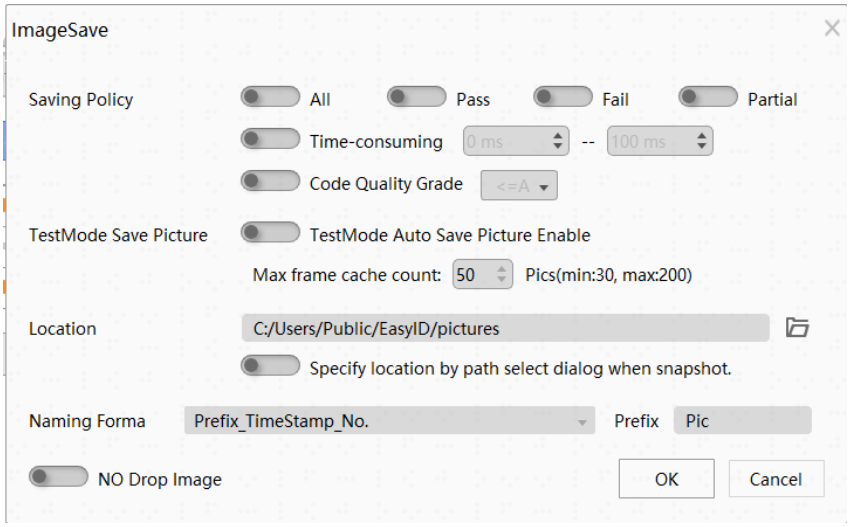
Table 4-29 Function description

Item	Description
Image Storage	You can save images according to the reading status, and select the storage path.
FTP Mode	Start the FTP server that comes with EasyID, which is generally used with the FTP image storage function of the device. FTP Image Saving: You can save images according to the code reading status, and customize the image name and saving path.
TFPT Mode	Start the TFTP server that comes with EasyID. The commissioning function is encrypted.
SerialPort Keyboard	Outputs focus information, or output to a certain position specified by mouse.
Install Driver	Used for installing drivers.

4.2.4.1 Image Save

Image 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.

Figure 4-47 Image Save interface



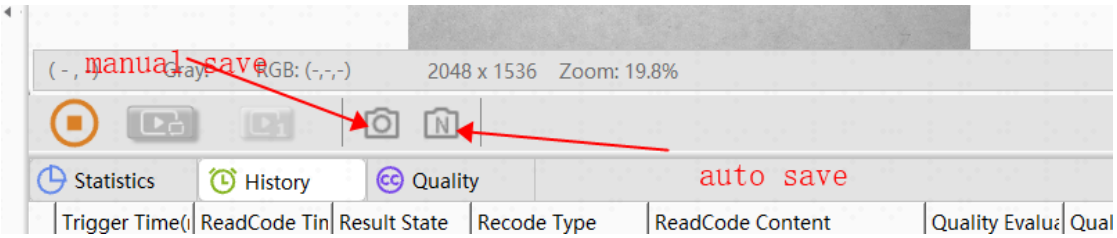
User can save the images in BMP or JPEG format.

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

Two methods of image saving:

- Click **Record** in the control bar of the image display page, and then every image received will be saved.
- Click **Snapshot** in the control bar of the image display page to save images manually.

Figure 4-48 Image saving buttons



4.2.4.2 SerialPort Keyboard

Virtual keyboard of the EasyID client can debug device quickly.

Figure 4-49 Virtual Keyboard

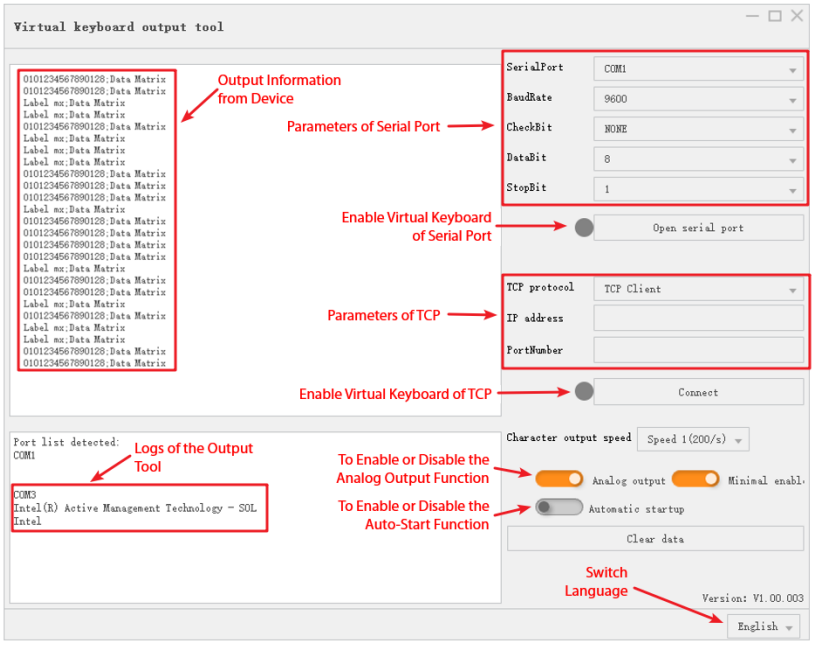


Table 4-30 Parameter description of virtual keyboard

Parameter	Description
Serial Port Virtual Keyboard	For details on serial port configuration, see "**4.1.3 Communication Settings**". User can click **Open serial port**, and then use virtual keyboard through serial port.
Virtual network port keyboard	For details on network port configuration, see "**4.1.3 Communication Settings**". User can click **Connect**, and then use virtual keyboard through network port.
Character Output Speed	5 Level: Speed 1 (200/s), Speed 2 (250/s), Speed 3 (330/s), Speed 4 (500/s), Speed 5 (1000/s). We recommend you select the low-speed transmission, because the low transmission rate is more stable and reliable.
Analog Output	Enable or disable output function of virtual keyboard.
Minimal Enable	Enable or disable the minimization function.
Automatic Startup	Enable or disable the function of Automatic Startup.
Clear data	Click it to clear the data.
Language	Switch the language between English and Chinese.
Display Column	The left white area is for displaying the information.

Serial Port Analog

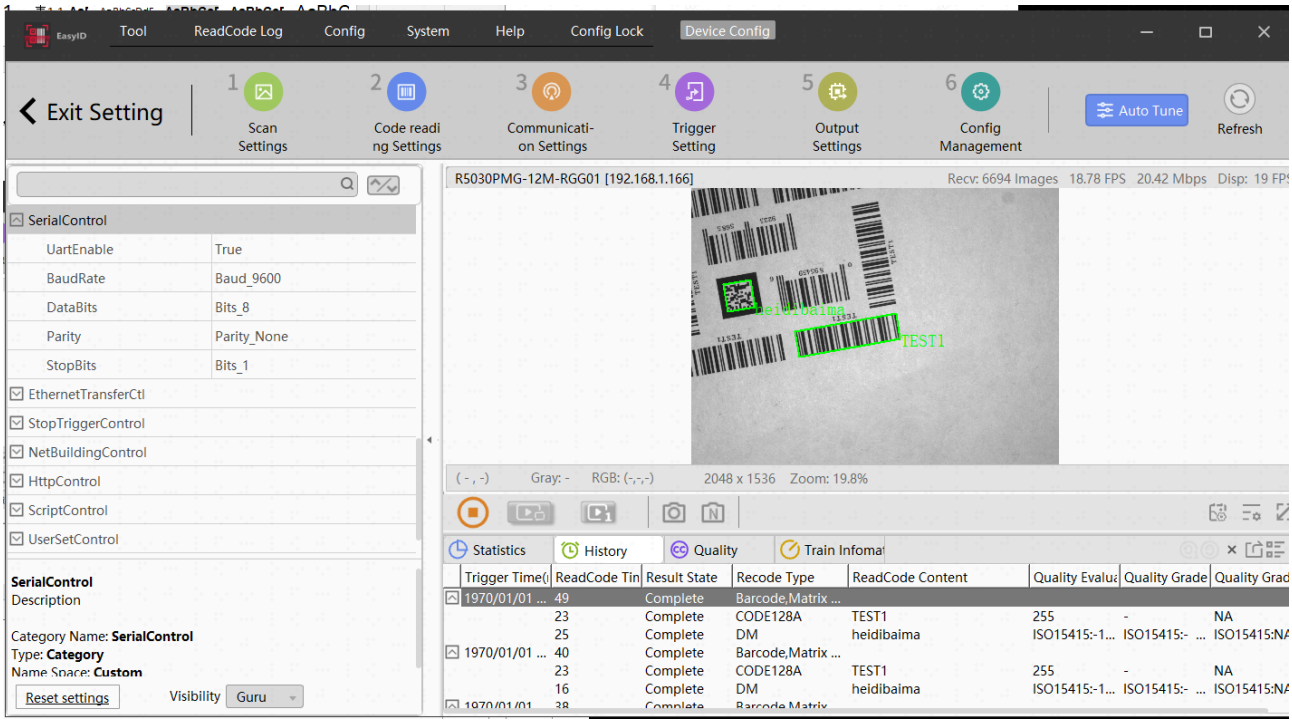
After connecting the cables, check the serial port number of the receiving end.

Procedure

Step 1 Click **Device Config** > **Serial Control**. Set the **UartEnable** to the **True**, and then user can configure the parameters of serial port.

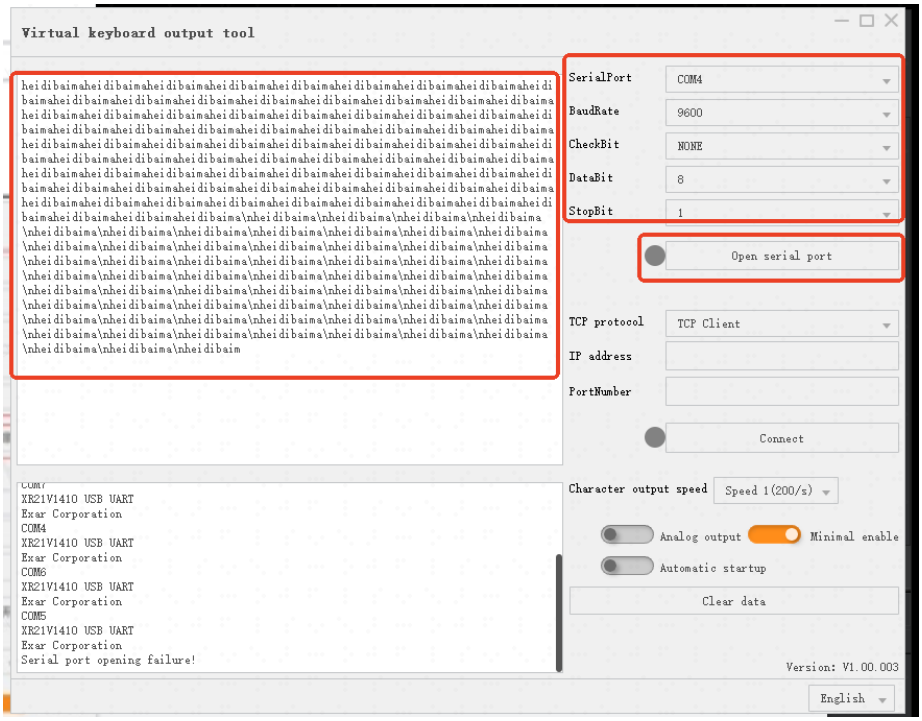
Step 2 Click **Device Config** > **Result Transfer Control**. Set the **Common Selector** to the **Serial** and set the **CommonEnable** to the **True**. After that, user can configure the parameters of result format.

Figure 4-50 Serial Control



Step 3 Click **System** > **Virtual Keyboard Output Tool**. After entering it, configure the **Serial Port** and check other parameters of serial port. Finally, click **Open Serial Port**. When the device recognizes the code, it will output data and display it on the left.

Figure 4-51 Serial port configuration



Please ensure that the configured parameters on EasyID and output tool are the same; otherwise, the serial port communication will be invalid, or the outputted result will be garbled.

TCP Analog

The reader can serve as either the TCP client or the TCP server.

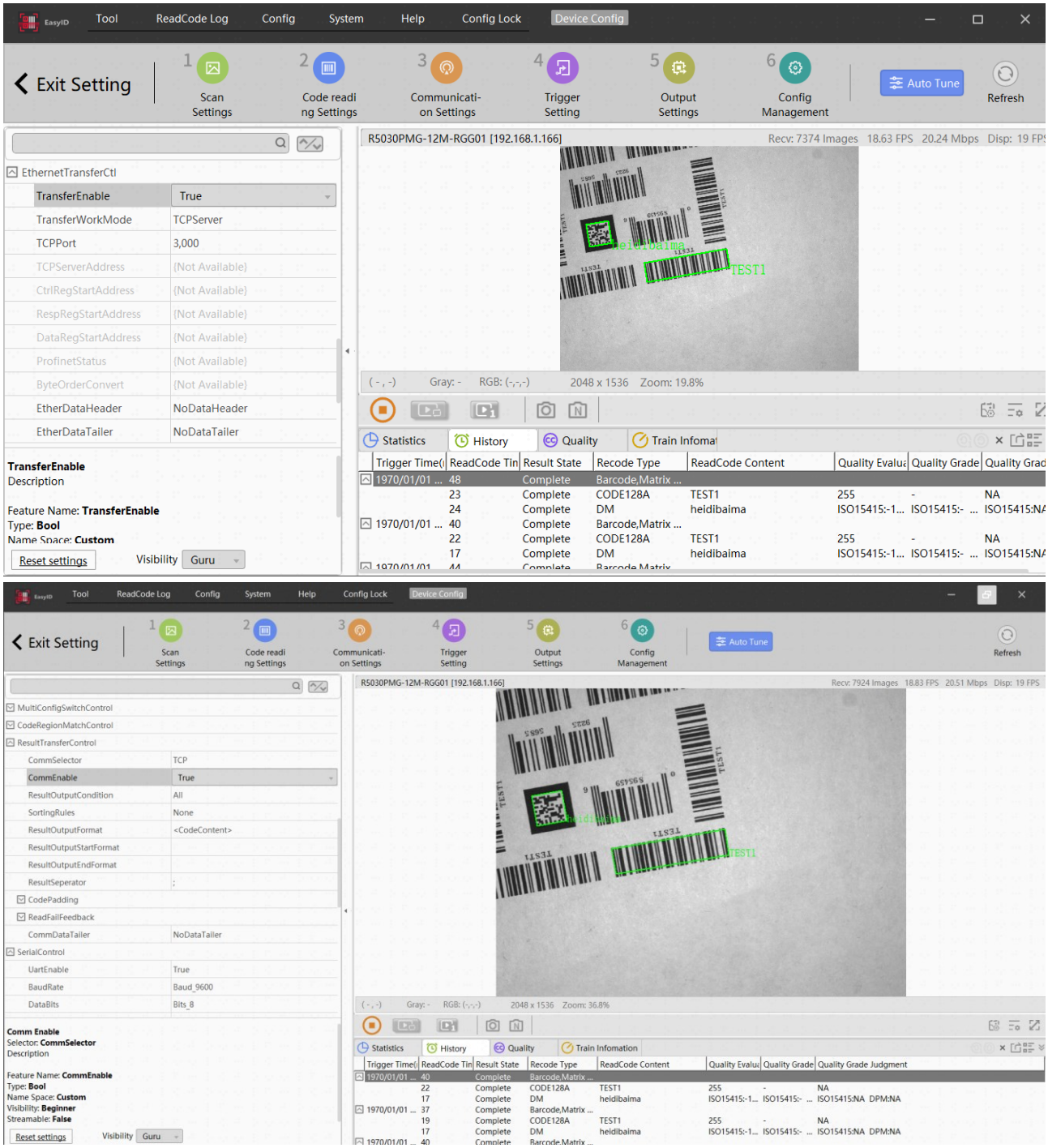
Take the reader as the TCP client as an example, the setting procedures are similar to serial port analog.

Procedure

Step 1 Click **Device Config** > **EthernetTransferCtl**. Set the **TransferEnable** to the **True** and **TransferWorkMode** to the **TCP Client**. Then, set the **TCP Port**, and configure the **TCPServerAddress**.

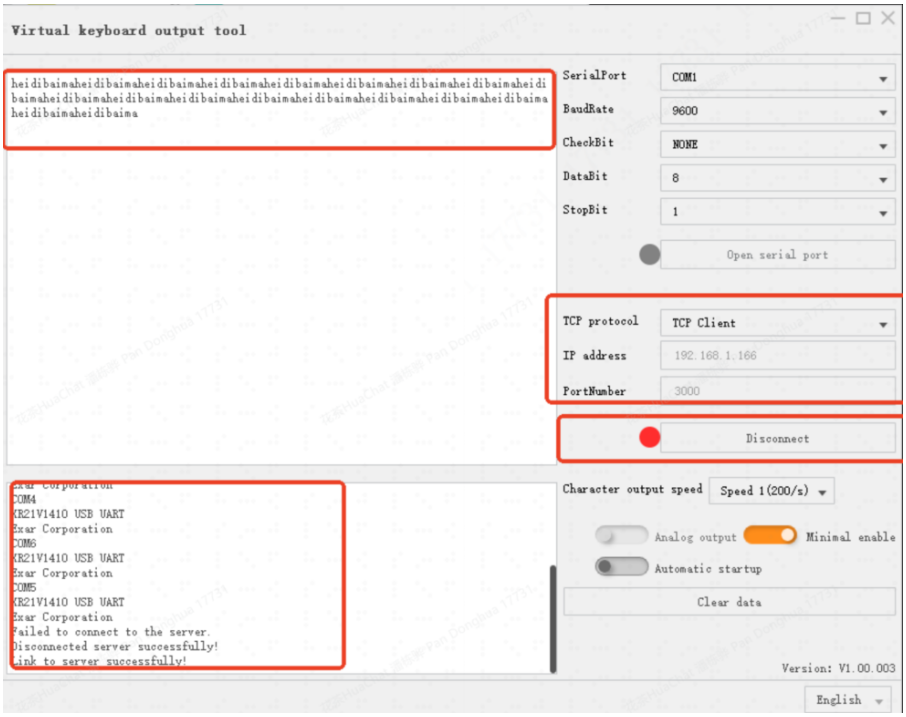
Step 2 Click **Device Config** > **ResultTransferControl**. Set **CommSelector** to the **TCP** and **CommEnable** to the **True**. Then, configure the parameters under the **CommEnable**.

Figure 4-52 TCP analog configurations



Step 4 Click **System** > **Virtual Keyboard Output Tool**. Set **TCP protocol** to the **TCP Client**, and enter the IP address and port number. After ensuring that configured parameters on the EasyID and output tool are the same, click **Connect**. When the device recognized the code, the data will be outputted on the display area, as shown in the figure below.

Figure 4-53 TCP transmission results



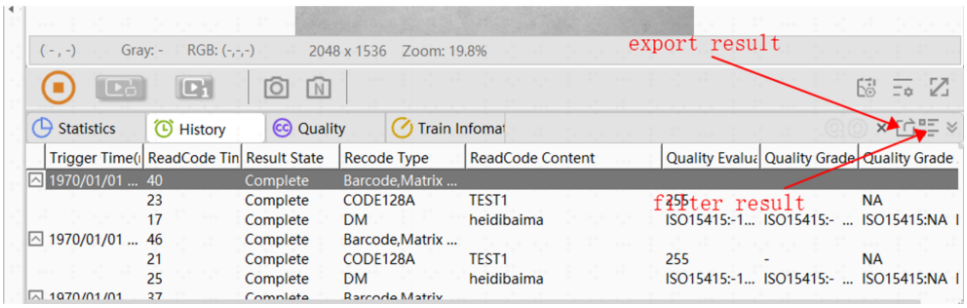
4.2.5 Help

Table 4-31 Function description

Parameter	Description
AutoRun	After selecting the Open, the client will be automatically started with the system starting.
Language	User can switch the languages between Chinese and English.
Context Help	To pop up the folder which stored the user manual and development manual.
About	To view the information of client version and company.

- Algorithm results can be displayed as a list on the results area.
- Click **Export** button to export the results in TXT format.
- Click **ResultFilt** to filter the results.

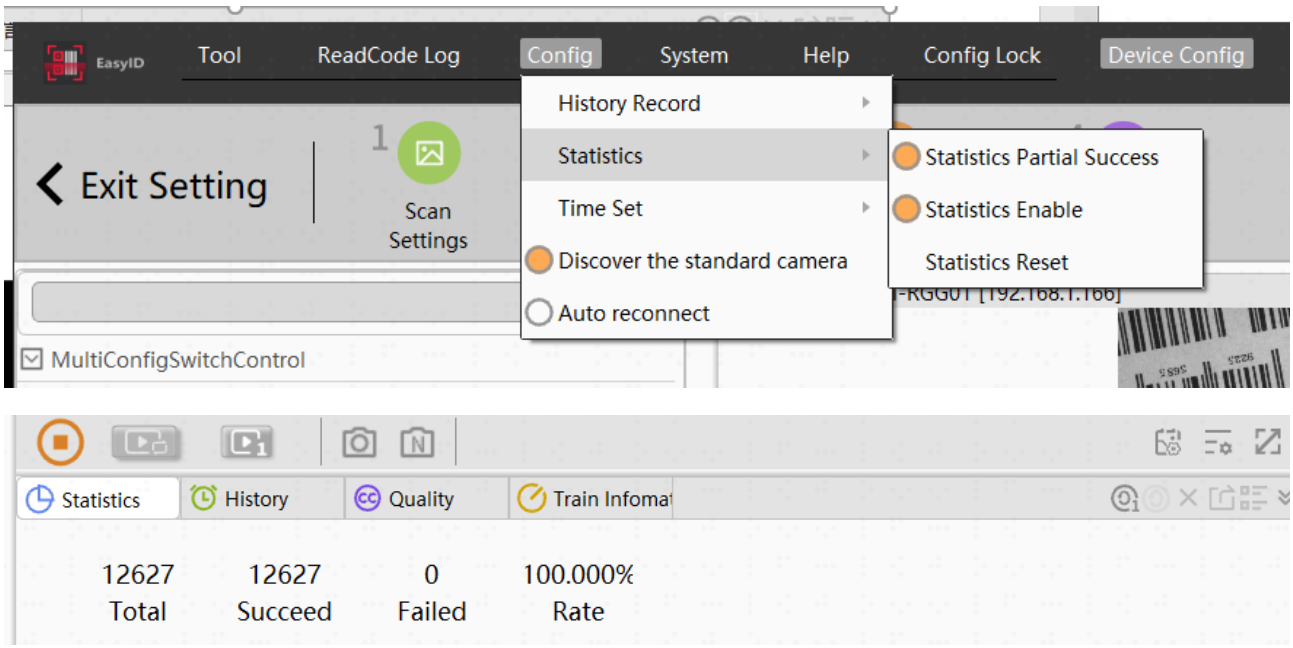
Figure 4-54 Algorithm result



When the device is reading the codes, user can click the statistics page to view the results in real time.

If user needs to clear the history records of the reading results, click **Config** > **Statistics** > **Statistics Reset** to reset the statistics.

Figure 4-55 Statistics Reset



5 FAQ (Frequently Asked Questions)

5.1 Client Cannot Find the Reader

Possible Reasons

- Reader is 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 device.

Solutions

- Check the power supply: Make sure that the power supply and cable are suitable.
- Check Network Connection: Check the indicator of the reader, and make sure the network is working normally, and the device and the client are on the same network segment.

5.2 Reader Found but Failed to Connect.

Possible Reasons

- Reader may not be started normally.
- The camera and the client are not under the same network segment.
- Reader 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 Reader Disconnection

Possible Reasons

- Hardware problems, such as poor contact of network card and network cable.
- Unmatched configurations of network card and reader.

Solutions

- Perform cross verification for hardware, if failure happens, replace the corresponding hardware.
- Check the NIC configuration.

5.4 Algorithm Processing Does Not Meet the Expectations

Possible Reasons

- The image FOV or illumination does not meet the requirements.

- Illogical parameter configuration or algorithm failed to start.
- The code has a defect.

Solutions

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

5.5 External Trigger is Abnormal

Possible Reasons

- Incorrect cable connection of external trigger.
- The trigger mode is not set to the 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 mono 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 stains left after cleaning.