Smart Code Reader (5000P Series)

User Manual

ZHEJIANG HUARAY TECHNOLOGY CO., LTD. V1.0.0

Foreword

Overview

This manual introduces the configuration and operations of 5000 Pro series 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

Table 1-1 Signal Description

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.
	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

Table 1-2 Revision History

Version No.	Content	Release Date
V1.0.0	First release.	Sep. 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. Ensure the housing temperature of the device remains below 60°C (+140°F)
- Keep the device away from dampness, dust or soot. Please cover the device with the lens cap to prevent the dust.
- Install the switch horizontally on a stable surface to prevent it from falling.
- Do not drip or splash liquid onto the device, and make sure that there is no object filled with liquid on the device to prevent liquid from flowing into it.
- Install the device in a well-ventilated place, and do not block the ventilation.
- Operate the device within the rated range of power input and output.
- Do not dissemble the device.
- Transport, use, and store the device under the allowed humidity and temperature conditions.
- Connect the device (type-I structure) to the power socket with protective earthing.

Power Requirement

- Use the power cords that are recommended for the region and conform to the rated power specification!
- 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 IEC62368-1. Please note that the power supply requirement is subject to the device label.
- Connect the device (type-I structure) to the power socket with protective earthing.

Table of Contents

1 Introduction

1.1 Overview

The 5000 Pro smart code reader is a highly reliable and cost-effective device for industrial use. The 5000 Pro smart code reader adopts the new optical design, which has the excellent imaging capability. Also, the 5000 Pro smart code reader has the advantage of higher accuracy of code reading and faster code reading speed. The supported code types and communication protocols can meet the most requirements of the industrial-grade application, which means it can work stablly in the complex industrial environment.

1.2 Features

- Supports integrated light source. Red and white light sources are available and can be controlled separately.
- Supports the electrical focusing function and multiple focal lengths.
- Adopts industrial-grade 100M interface, with the IP67 protection
- Supports multiple ports, such as IO port, Ethernet port, RS-232 port, and GPIO port, and multiple communication protocols.
- Supports multiple options of code types and code quality evaluation function.
- Built-in deep learning algorithm and multi-parameter polling are supported to ensure the higher recognition efficiency in the complex scenes.

1.3 Appearance and Interface

1.3.1 Dimension

The dimensions of the 5000P smart code reader are shown in the figures below

Figure 1-1 Dimensions in Non-twist Status

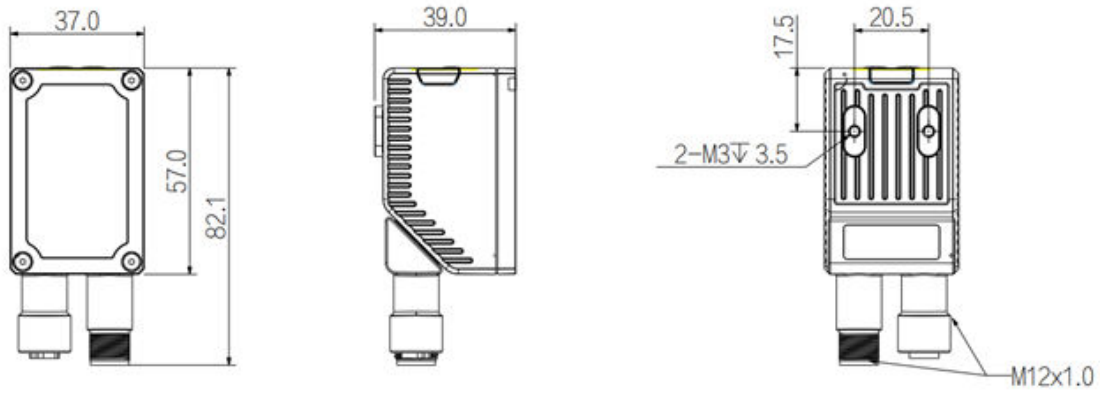
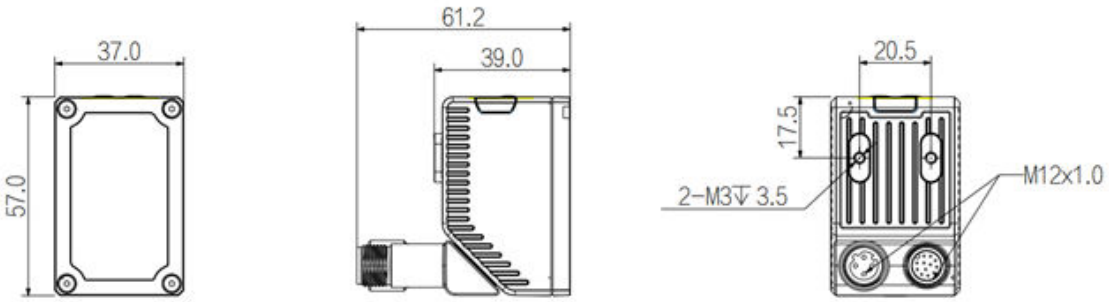


Figure 1-2 Dimensions in Twisted Status



1.3.2 Appearance

The appearance diagram of 5000P smart code reader is as follows.

Figure 1-3 Appearance Diagram

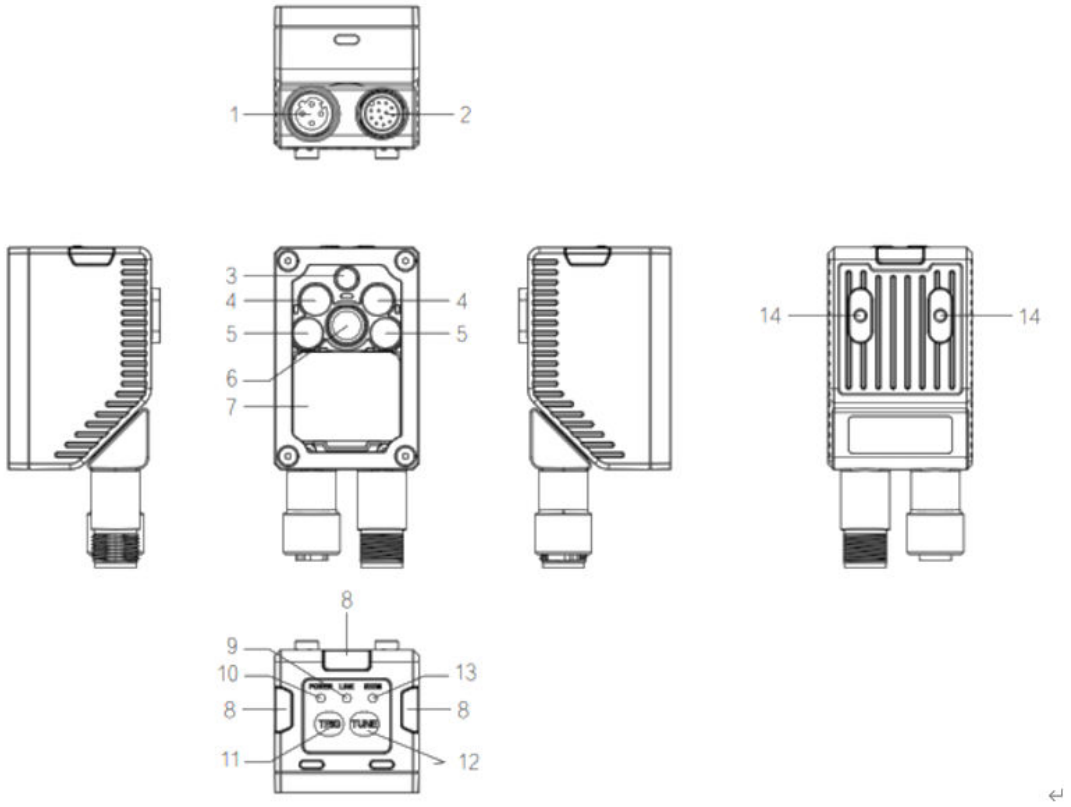


Table 1-1 Appearance Description

No.	Item	Description
1	Network Port	4-core 100M network port
2	Power Supply Port	12-core I/O ports, including the power supply, I/O port, RS-232, etc.

No.	Item	Description
3	Laser Aimer	For physical positioning.
4	Fill Light	You can enable or disable the lighting function according to the actual condition.
5	Polarized Fill Light	You can enable or disable the lighting function according to the actual condition.
6	Sensor	For acquiring images.
7	Diffused Fill Light	You can enable or disable the lighting function according to the actual condition.
8	Decoding Indicator Light	If the decoding is successful, it is solid green; if the decoding is failure, it is solid red.
9	LINK Indicator Light	It is solid green when the network connection is normal; it is flashing green when performing the data transmission.
10	POWER Indicator Light	It is solid green when the power supply is normal; it is off when the power supply is abnormal.
11	TRIG Button	You can press it to trigger the image acquisition once when the reader is in the trigger mode.
12	TUNE Button	Long press the button for 3 seconds and short press once after hearing the beep sound. The device will perform smart parameter adjustment.
13	STATUS Indicator Light	When the reader is streaming, it is solid; when the reader is not streaming, it is off.
14	Screw Hole	Use the M3 screws packed in the package to fix the device.

1.3.3 Interface

- 4-Core: M12 D-CODE female receptacle, including 100M network port.
- 12-Core: M12 A-CODE male connector, including power port, I/O trigger ports, and RS-232 serial port.

Figure 1-4 Port Diagram

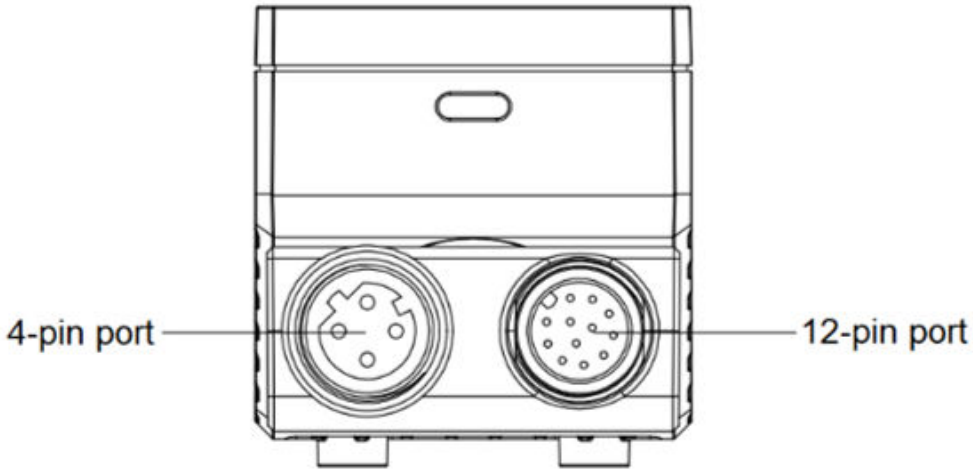
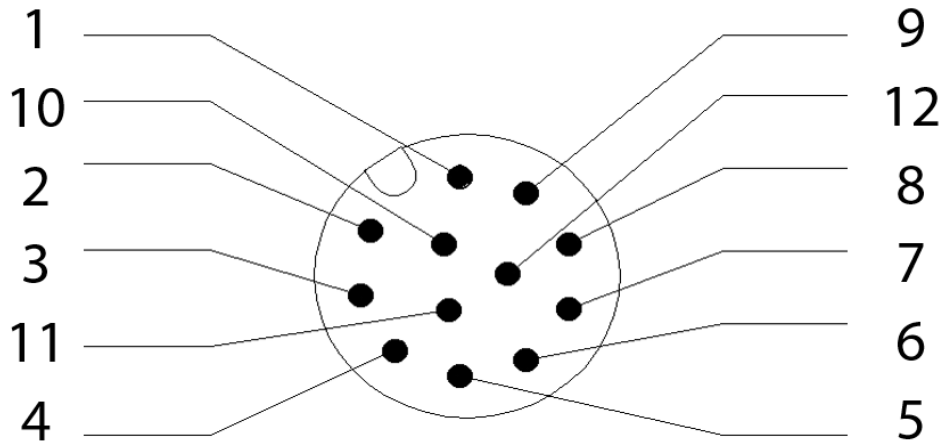


Figure 1-5 Pin Definition of 12-Core Port



The definitions of pins of the 12-core port are described as follows:

Table 1-2 Definitions Description

Pin	Signal	Function	Description	Color	
1	OPT_OUT2	Opto-isolated output 2	Brown-White scattered wire		Brown-White
2	RS232_TXD	RS-232 serial port for transmitting	DB9 female serial port		Grey
3	RS232_RXD	RS-232 serial port for receiving			Purple
4	SIGNAL_GND	RS-232 serial port GND			Black-White (casing)
5	OPT_IN1	Opto-isolated input 1	Yellow scattered wire		Yellow

Pin	Signal	Function	Description	Color	
6	OPT_IN_GND	Opto-isolated input GND	Purple-White scattered wire		Purple-White
7	POWER	Device Power	DC 5.5 female receptacle		Red
8	POWER_GND	Device Power Ground			Black
9	OPT_OUT_GND	Opto-isolated output GND	Green scattered wire		Green
10	OPT_IN0	Opto-isolated input 0	Orange scattered wire		Orange
11	OPT_OUT0	Opto-isolated output 0	Blue scattered wire		Blue
12	OPT_OUT1	Opto-isolated output 1	Brown scattered wire		Brown
—	—	Shielding GND	—		White (casing)

Figure 1-6 I/O Cable

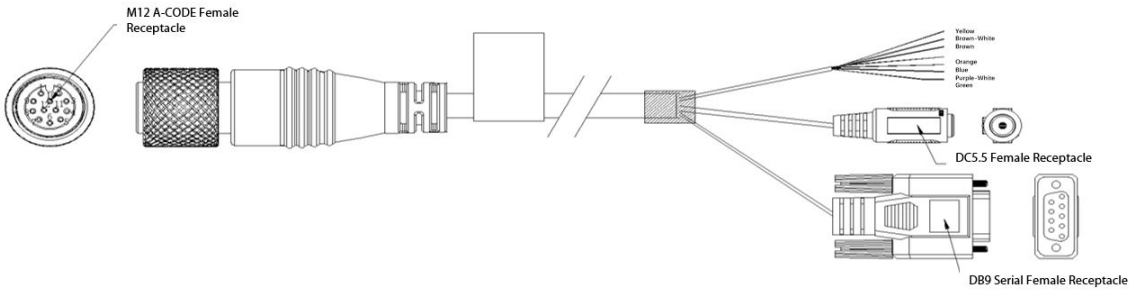


Figure 1-7 Serial Port Female Receptacle

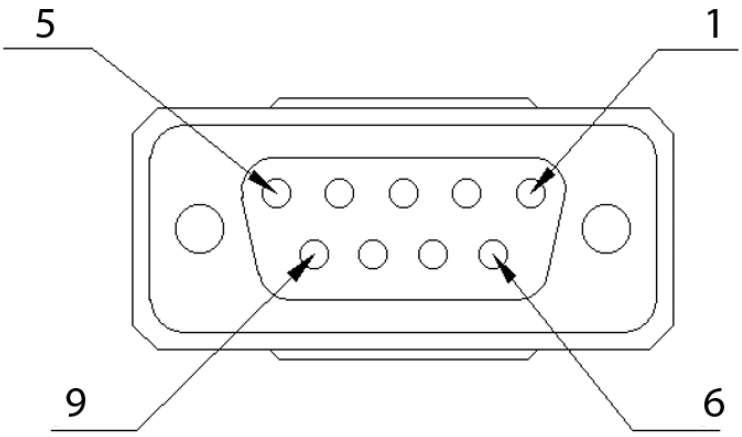


Table 1-3 Definition Description

Pin	Signal	Description	Color	
2	RS232_TXD	RS-232 serial port for transmitting		Grey
3	RS232_RXD	RS-232 serial port for receiving		Purple
5	SIGNAL_GND	RS-232 serial port GND		Black-White (casing)

- When using the device, it is recommended to use the cable as shown above.
- The ports of cable for supplying power connecting to pin 7 and pin 8 have been made into DC5.5 female receptacles; therefore no additional wiring is required.
- The pins of cable corresponding to the RS-232, such as Pin 2, Pin 3, and Pin 4, have been made into DB9 female receptacle; therefore, no additional wiring is required.
- Other pins of cable can be wired according to the actual demands.

2 Electrical Specifications

2.1 Power and Network Ports

Table 2-1 Specification Description of Power and Network Ports

Parameter	Description
Power Supply	DC +16V~+26V, <1% ripple, powered through 12-core M12 connector.
Data Output Ports	100M Ethernet
I/O Port	One RS-232 serial port (non-isolated) Two opto-isolated input ports (LINE0 and LINE1) Three opto-isolated output ports (LINE2~LINE4)
Certification	CE

2.2 I/O Ports

2.2.1 Opto-isolated Input

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

Figure 2-1 Opto-isolated Input Typical Circuit

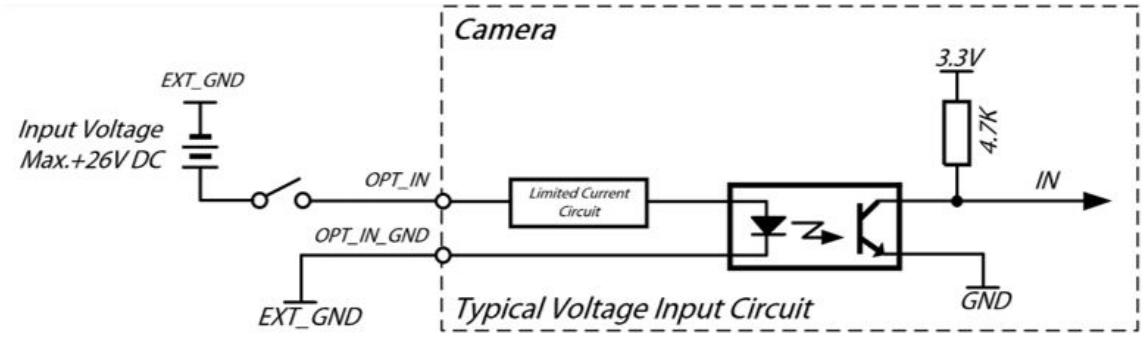


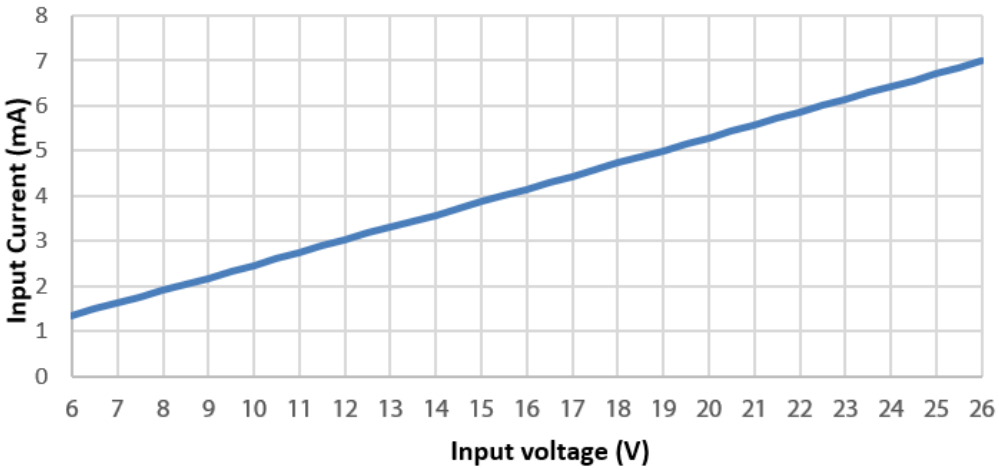
Table 2-2 Voltage Parameter Description

Input Voltage	Description
+26 VDC	Limit voltage. The input voltage cannot exceed the value; Otherwise, the device might be damaged.
+0 VDC ~ +24 VDC	Security working voltage range of I/O input
+0 VDC ~ +6 VDC	Logic 0

Input Voltage	Description
+6VDC~+9VDC	The input status changes, and the logic status is uncertain within this voltage range.
>+9 VDC	Logic 1

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

Figure 2-2 Opto-isolated Input Line Chart



- The maximum sink current of the opto-isolated input can be 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 device models in the different environments.

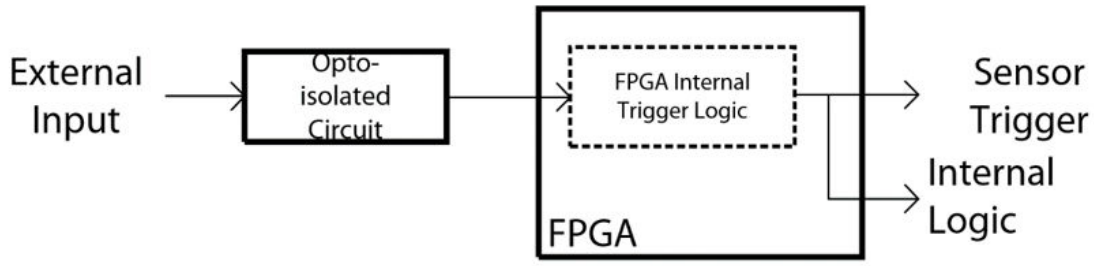
The relationship between the input signal amplitude and trigger delay is as follows.

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 the 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 Trigger Input Delay Logic Diagram



Minimum input pulse width of trigger input signal are 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-isolated Output

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

Figure 2-4 Opto-isolated Output Typical Circuit

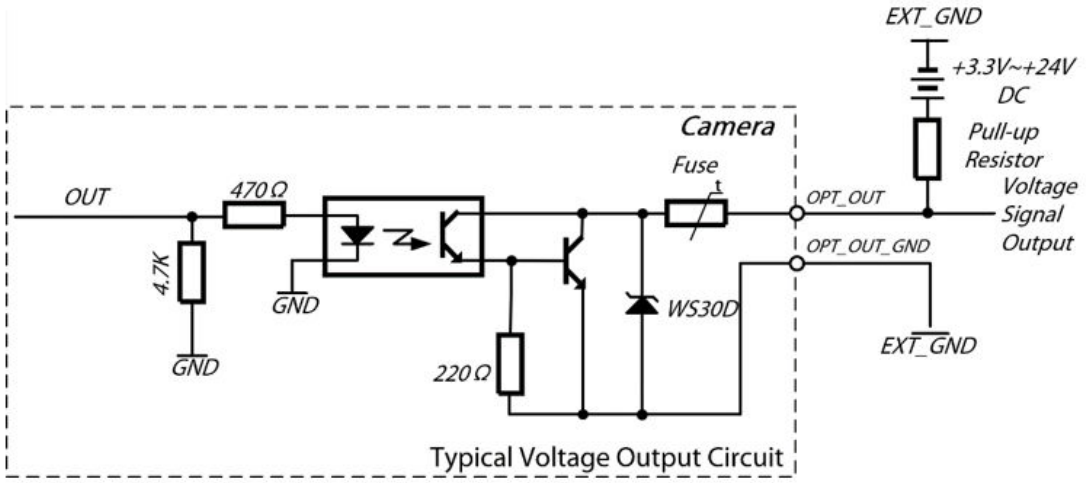


Table 2-5 Opto-isolated Output Parameter Description

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

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

Figure 2-5 Opto-isolated Output Signal Amplitude and Trigger Delay

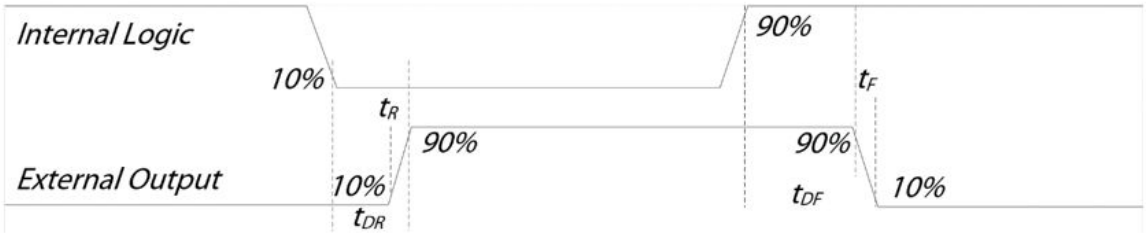


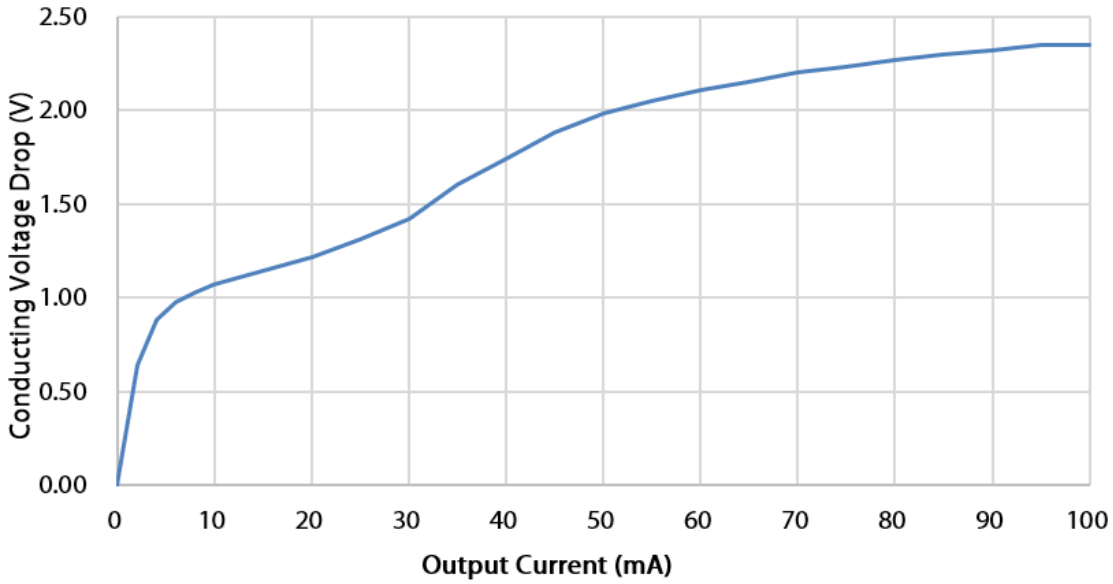
Table 2-6 Opto-isolated Output Signal Amplitude and Trigger Delay

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 curve diagram 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 curve diagram below.

Figure 2-6 Characteristic Curve of the Opto-isolated Output



- 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 curve diagram are obtained at an environmental temperature of 25 °C (+77 °F). Therefore, the actual values may vary among the different models of device in the different environments.

2.3 External I/O Wiring

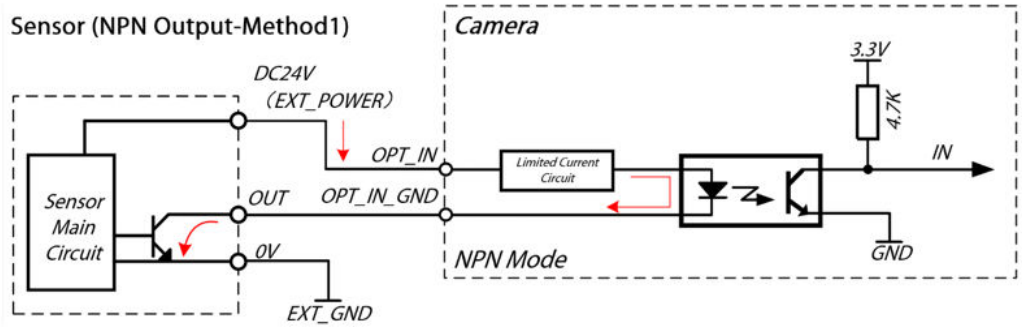
2.3.1 Opto-isolated Input

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

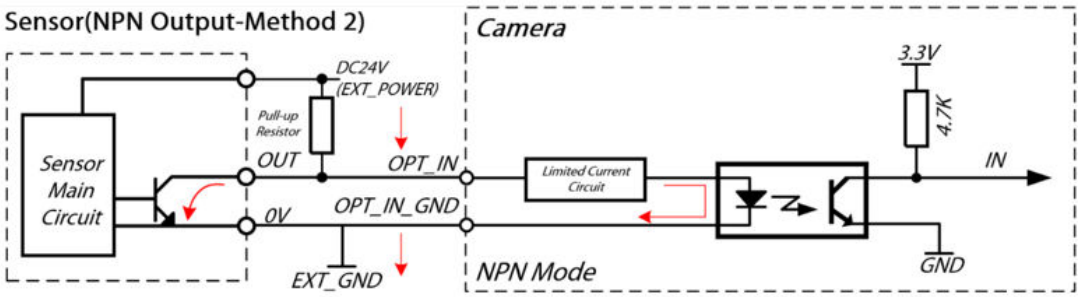
Method 1: No Pull-up Resistor (Recommend)

Figure 2-7 Wiring Method of NPN Output Structure (1)



Method 2: Add Pull-up Resistor

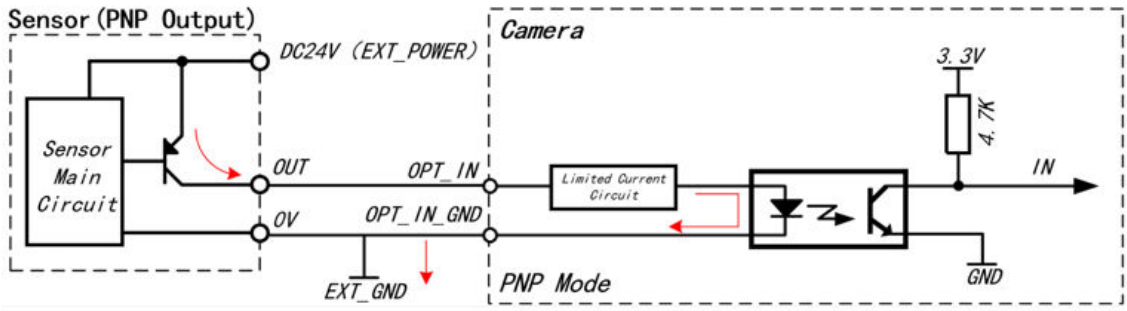
Figure 2-8 Wiring Method of NPN Output Structure (2)



- "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, and also can be 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".

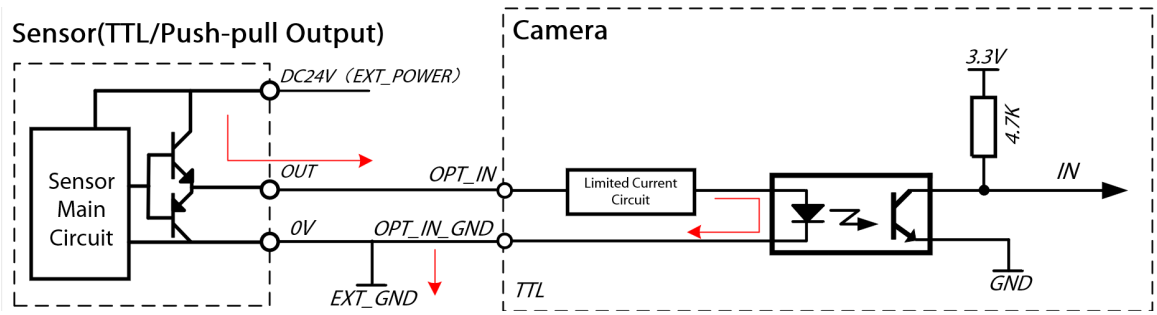
2.3.1.2 PNP Output Structure

Figure 2-9 Wiring Method of PNP Output Structure



2.3.1.3 TTL or Push-pull Output Structure

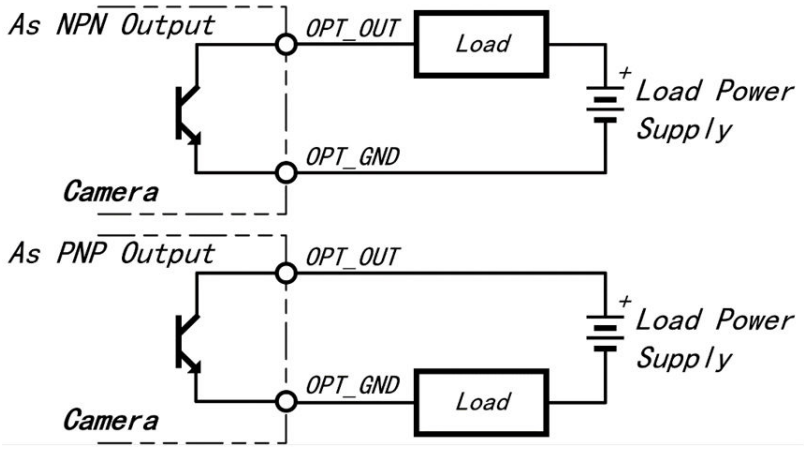
Figure 2-10 Wiring Method of TTL/Push-pull Output Structure



2.3.2 Opto-isolated Output

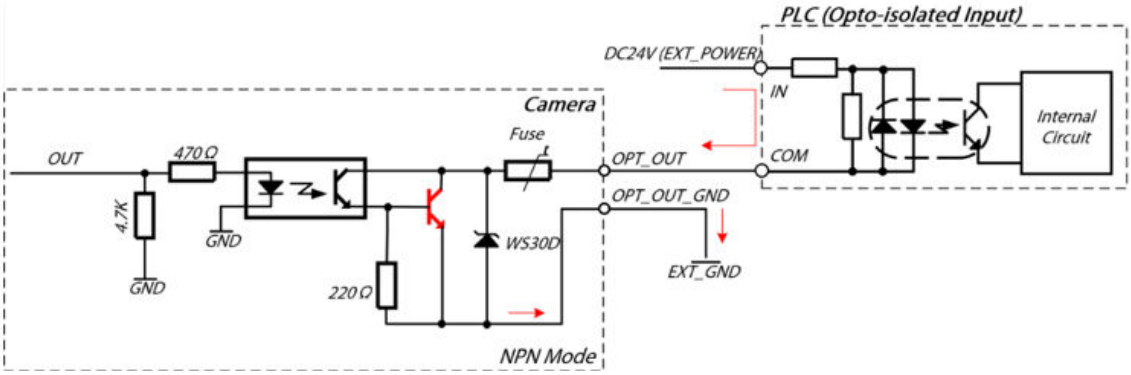
The transistor output port of device is separated from the internal loop by using an opto-isolator. Therefore, the transistor output port can be used as the NPN output or the PNP output.

Figure 2-11 Topology Diagram of Opto-isolated Output Structure



2.3.2.1 Code Reader as NPN Output

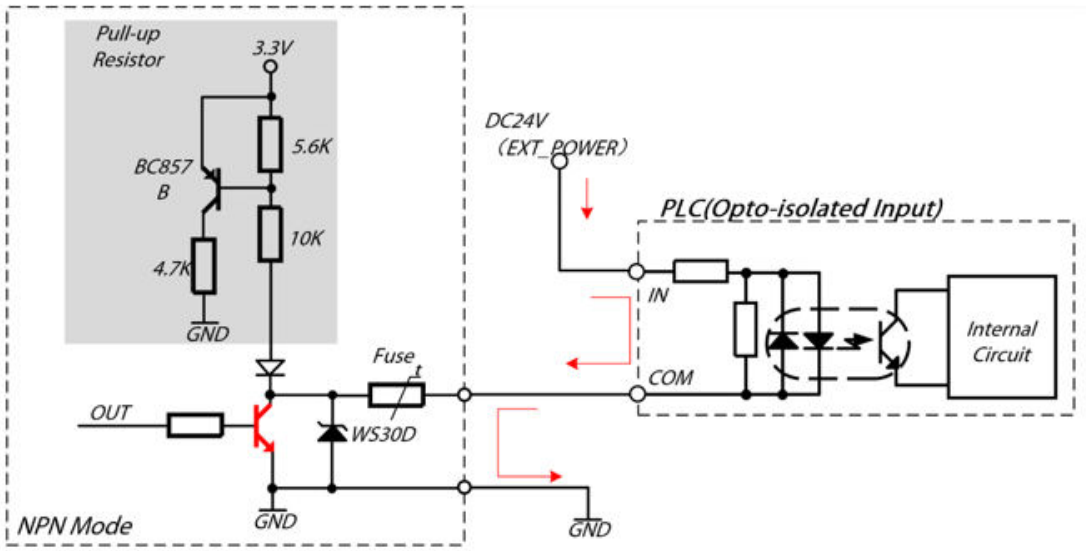
Figure 2-12 Wiring Method of NPN Output Structure (3)



2.3.2.2 GPIO as Output

When the GPIO is as the output port, it is similar to the opto-isolated output. The difference between them is that the GPIO output should adopt the non-isolated wiring method, and the signal grounding port of GPIO and device should connect to the common grounding port.

Figure 2-13 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 without the professional instructions. If the fuse blows due to the overcurrent, 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 direction (output or input). Do not change the directions when the device is running. The wrong settings of directions will cause damages to the circuit of the GPIO interface.
- 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-interference performance is not good enough for this. We recommend you use the opto-isolated input port or output port.
- 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 the user needs to improve the current output capacity, the resistance should be less than 1kΩ, and the rated power of it should be more than 1W.

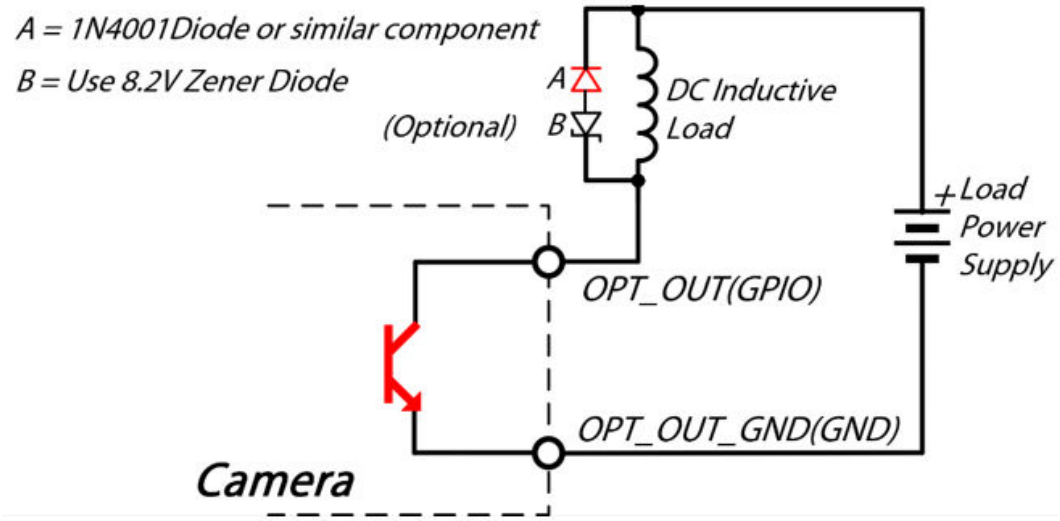
2.3.2.3 Wiring Method of Relay or Other Inductive Loads

To drive the inductive load by using device output signals, such as relay, please use relay with built-in free-wheeling diodes,or use the external free-wheeling 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 require the faster shutdown speed, we recommend you use the Zener diode B.

Please ensure that the Zener diode can meet the current requirements of the circuit.

Figure 2-14 Wiring Method of Inductive Load



2.4 How to Avoid EMI and ESD

In the industrial environment, there are some equipment generating EMI, and the reader is apt to be influenced by ESD. Serious EMI and ESD can lead to false triggering or sudden stop of streaming. EMI and ESD will also bring instability to the image quality, and interfere the reliability of image transmission between device and PC.

In order to avoid the problems mentioned above caused by EMI and ESD, we recommend you take the following measurements:

- 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 like number 8 instead of looping it like number 0.
- Data transmission cable is suggested to be paralleled with the power cable.
- The cables of the reader should not be closely paralleled with other cables which has heavy current or has situations of voltage switching, such as stepper motor drive, solenoid.
- 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. 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).
- Use a line filter for the main power supply of the device, or a separate power supply for device is recommended.
- Please keep device and cables away from the device generating sparks, such as brushed motors, relays, etc. A metal shielding shell is recommended if it is necessary.
- The following measurements 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 Requirements

We have adopted the protection designs on the device to against the lighting, surge, EMI, and ESD. However, the precautions below are still recommended to follow for device safety.

Please follow the protection measurements in below:

- Adopt SSTP network cables with shielding function. Please do not excessively bend 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 cables with interference shielding function. The power cable can be wired in parallel with the network cable, but should avoid winding each other.
- The power and network cables shall be far away from the equipment with large current, high voltage, frequent power on and off, start and stop, such as stepper motor. This kind of device has strong electromagnetic radiation, which can be easily coupled to the transmission cable of the equipment.
- The protective GND of all devices shall be connected together, and then connected to the protective GND at a single point to avoid multi-point grounding. The multi-point grounding is easy to cause the voltage difference between each device, which can form a loop and couple the electromagnetic interference.
- The AC power supply end of the switching power supply for the device and PC should come from the same AC socket, so that their protection GND can be connected together to avoid the multi-point grounding. The high-power electromechanical device should not connect to the same AC power.
- The magnetic ring can be adopted to the power control line of the device 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 smart code reader are as follows:

- Temperature and Humidity
  - ◇ The ambient temperature cannot exceed 50°C (+122°F), and it is best for the device to work in an air-conditioned environment.
  - ◇ Ambient Humidity: 20% to 95%, non-condensing.
  - ◇ Storage Temperature: -30°C to +70°C (–22 °F to +158 °F).
  - ◇ Storage Humidity: 20% to 95%, non-condensing.
- Please bend the cables 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 Hardware Installation

3.2.1 Packing List

After unpacking the box, check if there are obvious damages to the appearance of the device, and make sure the components are complete against the packing list below.

Table 3-1 Parts List

No.	Item	Quantity
1	Smart Code Reader	1
2	M3×6 Phillips-head Screw	4

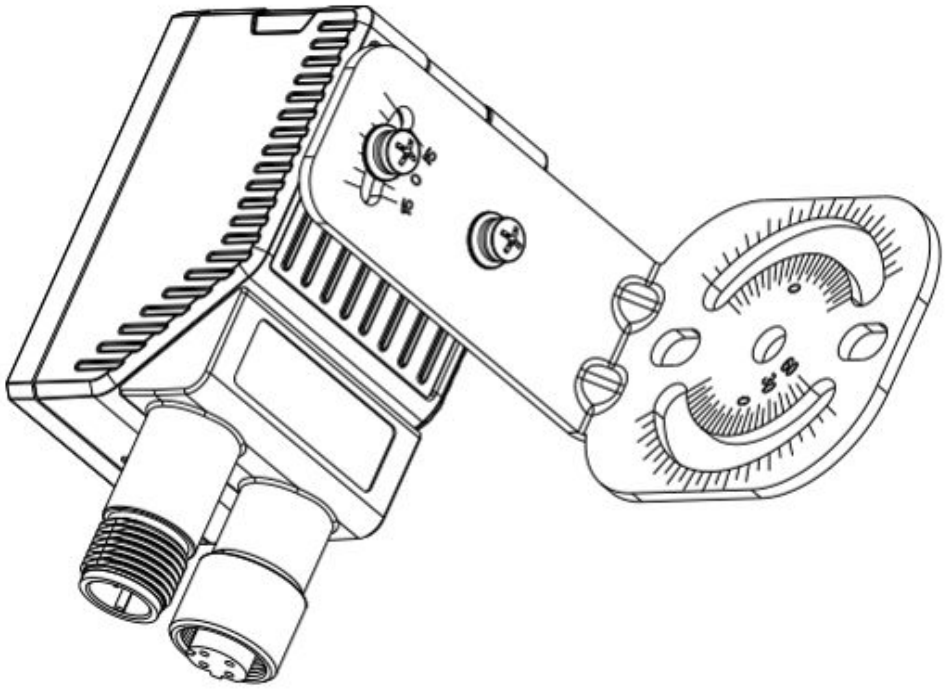
3.2.2 Accessories and Installation

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

Table 3-2 Accessory List

No.	Item	Quantity	Description
1	Smart Code Reader	1	Device described in this manual
2	Power Supply Cable and I/O Cable	1	This accessory should be purchased independently.
3	Ethernet Cable	1	This accessory should be purchased independently.
4	Switch-type Power or 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.
5	Fixing Bracket	1	For fixing the device. This accessory should be purchased independently. For more details of device installation, please refer to the Figure 3-1.

Figure 3-1 Installation Method

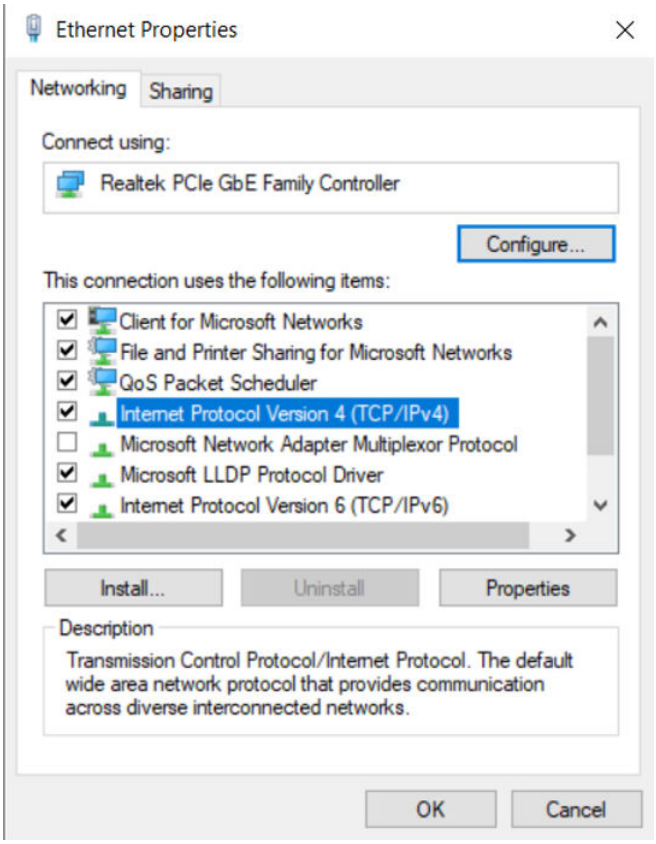


3.3 Network Settings

Procedure

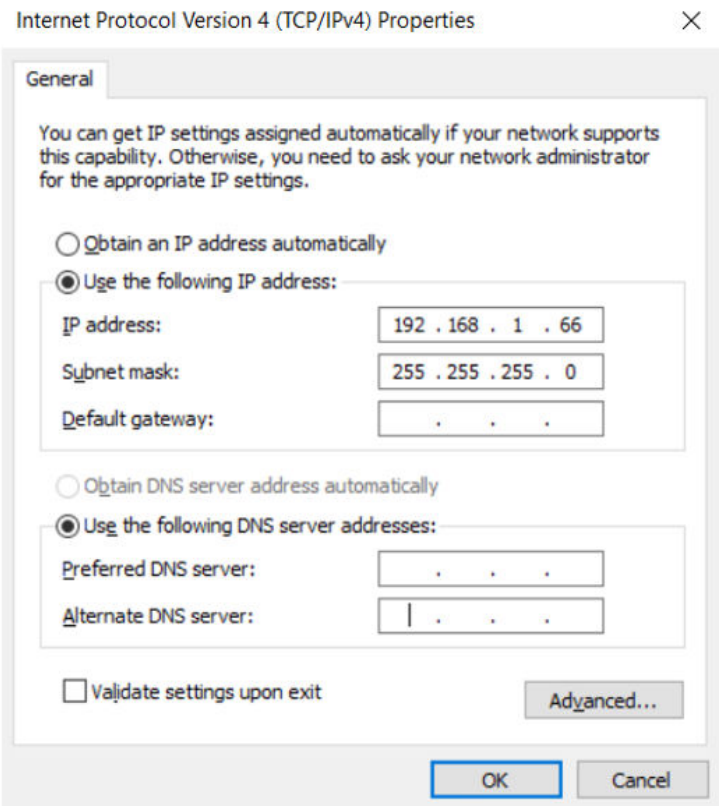
Step 1 Select **Control Panel** > **Network and Internet** > **Network and Sharing Center** > **Change Adapter Configuration**. Select the corresponding network port and right-click **Properties** from the shortcut menu. A dialog box pops up.

Figure 3-2 Attribute Settings of NIC



Step 2 Double-click the **Internet Protocol Version4 (TCP/IPv4)**. The IP address setting window pops up. Select the **Obtain an IP Automatically**, or select the **Use the following IP address** and configure the relevant parameters. Ensure that the PC and the device are on the same LAN.

Figure 3-3 Windows NIC Configuration



3.4 Software Installation

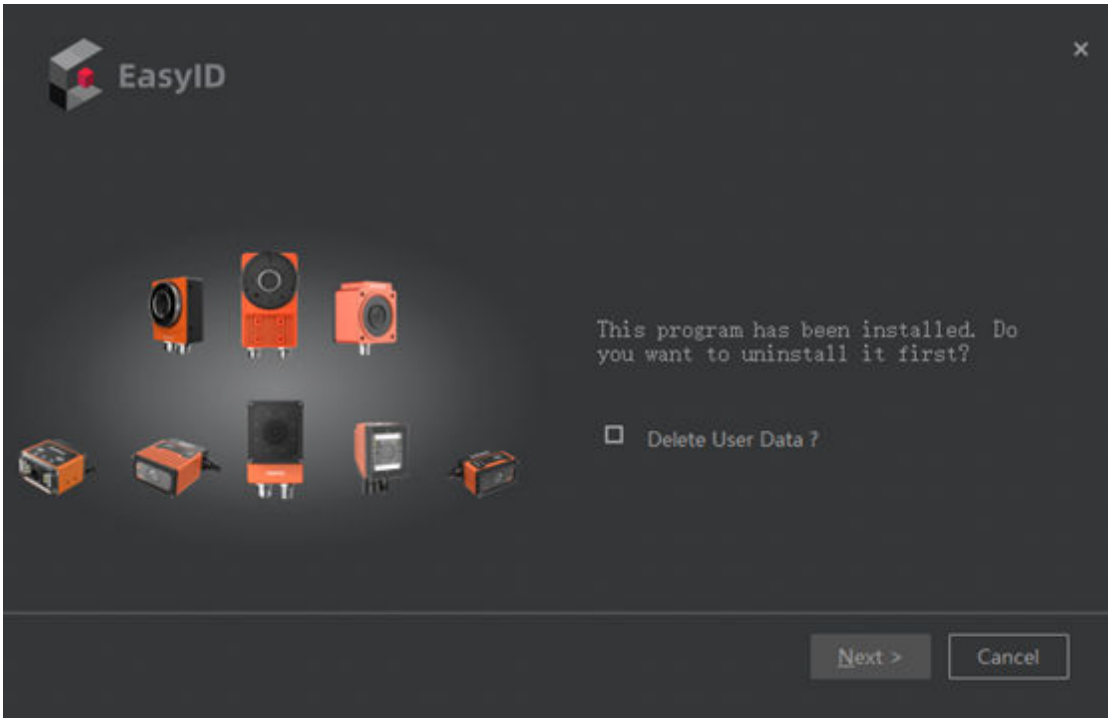
You can perform image commissioning and parameters configuration through the EasyID. EasyID can be installed on 32/64-bit Windows 7/ 10/ 11.

- Contact the technical specialist to obtain the latest client program, or login our official website to download the client software.
- Download Path: **Support** > **Download Center** > **Machine Vision** > **Software**.

Procedure

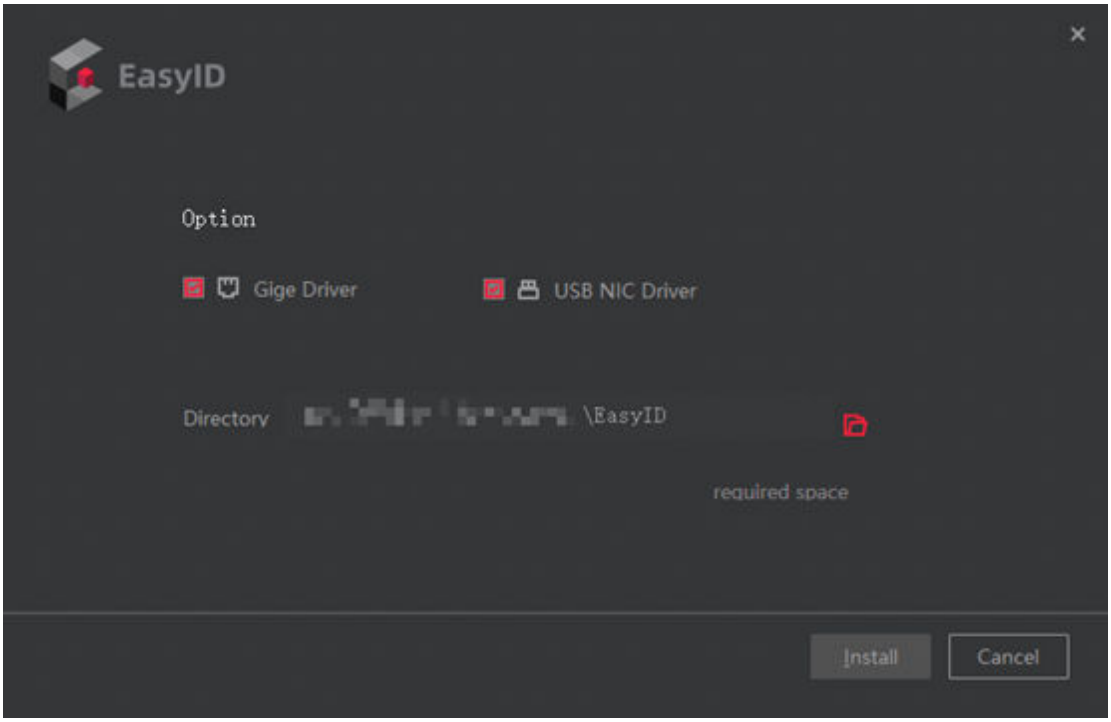
Step 1 Double-click to run the program **EasyID_Vx.x.xx_xxxxxxxx.exe** or right-click it and click **Open**, the installation procedure will begin.

Figure 3-4 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 3-5 Drive and Installation Path Selection



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

Figure 3-6 EasyID installation interface (2)

Figure 3-7 Installation Completed

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

Figure 3-8 EasyID Homepage

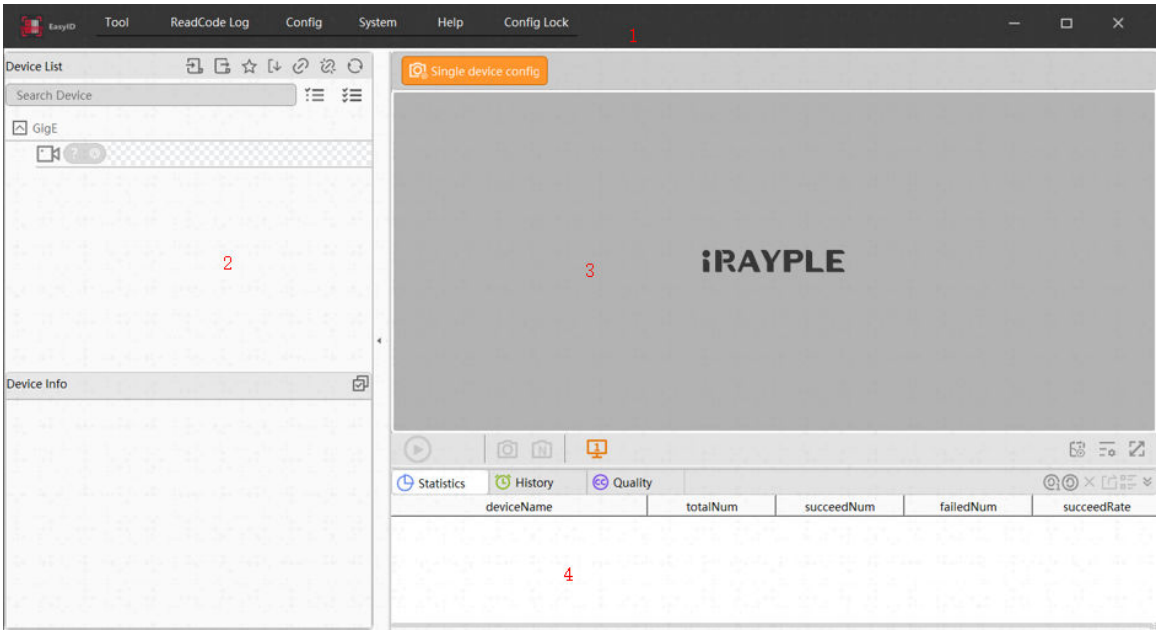


Table 3-3 Homepage Description

No.	Name	Description
1	Menu Bar	Common functions, including the Tool, ReadCode Log, Config, System, and Help.
2	Device List	It is the list of the found and connected devices.
3	Image Display Area	The image displaying area includes some settings and information of streaming, such as the received image quantity, network transmission speed, frame rate, gray level, resolution, etc.
4	Result Area	Display the real-time information of decoding, statistics and code quality.

3.5 Connect Device

Procedure

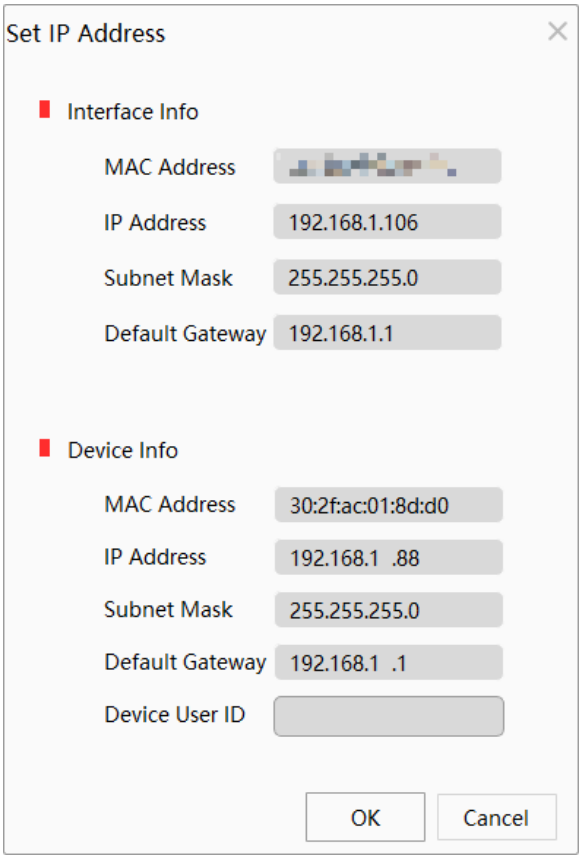
Step 1 Connect the device correctly, and ensure the powering and network of the device are normal; then, open the EasyID, and you can find the device in the device list.

Figure 3-9 Device List

The devices will be displayed in the device list when it is 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 interface. Enter the IP address, and then click **OK**.

Figure 3-10 IP configuration of the Reader



- Make sure that the IP address of the device and the industrial PC are in the same network segment.
- You can modify the device name in the **User ID**. The maximum number of characters can be up to 16. The English, Chinese, and some special characters are supported.

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

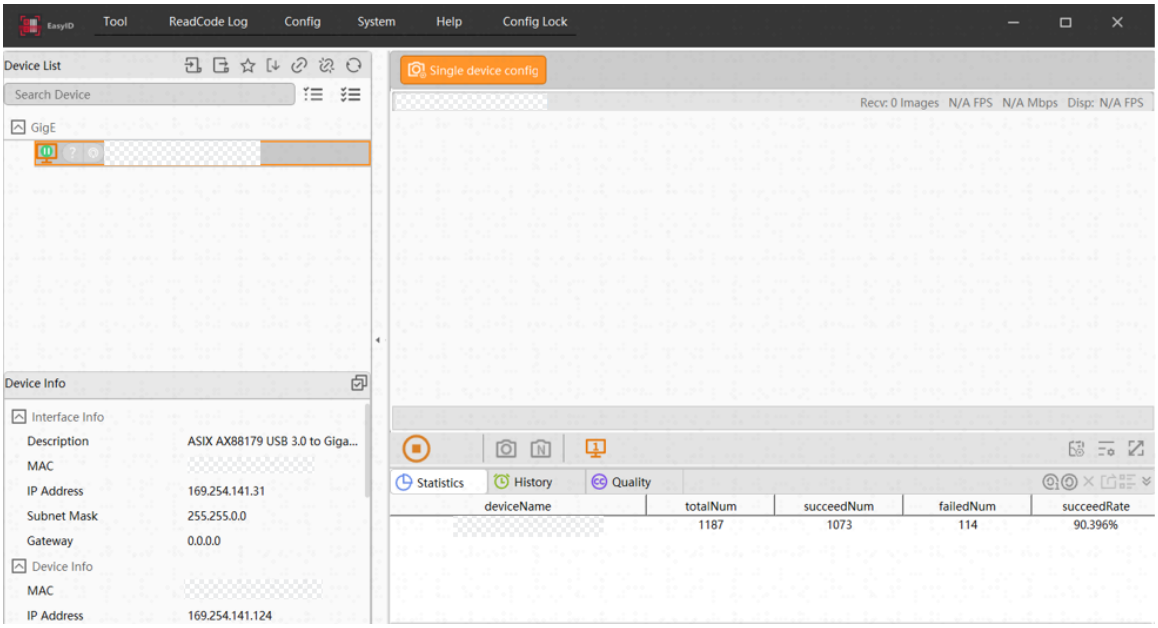
Figure 3-11 Connection Successful

3.6 Basic Operation

3.6.1 Basic Functions

After the device is connected to the client software, you can click to start streaming.

Figure 3-12 Homepage



Place the 1D or 2D code at the proper position within the reader's field of vision to ensure a better imaging effect. 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 the result area, including the Trigger Time (ms), ReadCode Time (ms), Recode Type, ReadCode Content, and more.

Figure 3-13 Real-time Decoding

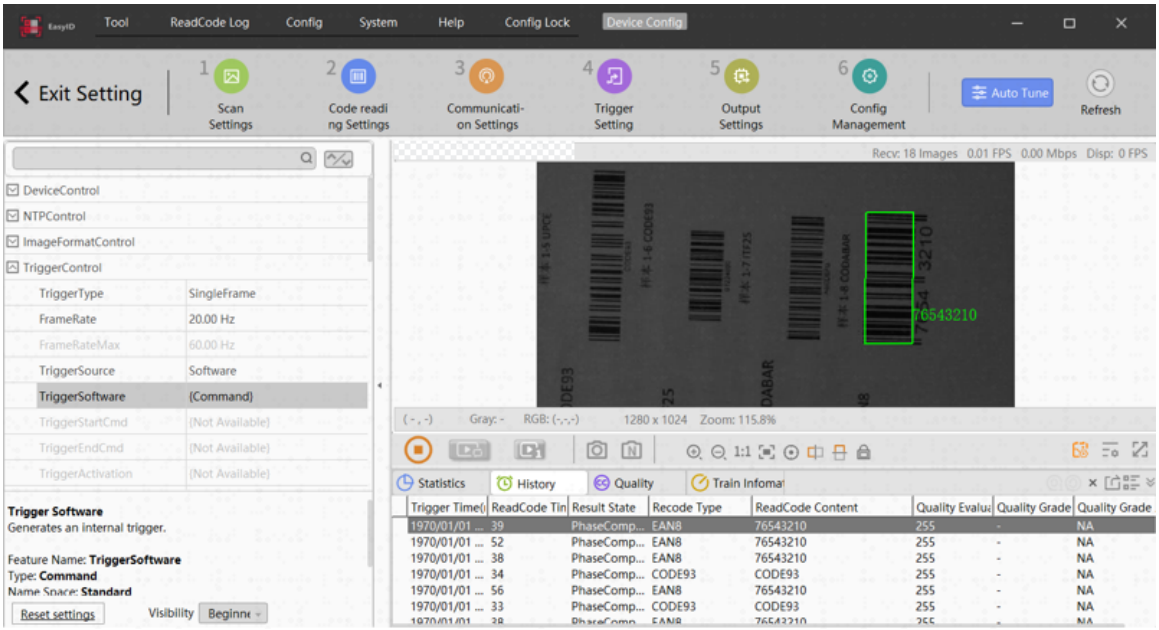


Image Display Area

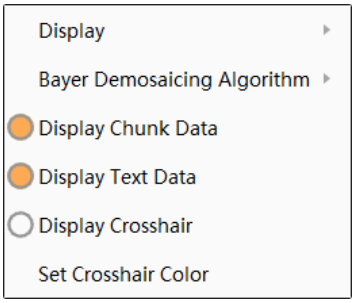
Figure 3-14 Image Display Area

Click the in Area 5, the concealed tools will show up.

Figure 3-15 Concealed Tools

Table 3-4 Function Description

No.	Name	Button	Description
1	Device Info	NA	Includes the model information and IP address of the device.
2	Real-Time Information		Includes the received image quantity, device frame rate, bandwidth, and streaming FPS.
3	Image Display Area		Displays the images acquired by the reader. If the code reading mode is enabled and the code is identified, the identified code will be marked with the green box and code value will be displayed on the image. Hover the mouse over any part of the image and scroll the mouse wheel to zoom in or out the image.
4	Image Information		Includes the mouse pointer coordination, gray level, RGB value, resolution, zoom ratio, etc.
5	Image Tool		Play button. You can click it to start streaming.
			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. You can click **System** > **Image Save** to configure the image saving path.
			Window Split button. You can perform the streaming operations on 16 devices at most in the same time.

No.	Name	Button	Description
			Zoom In button. It will zoom in the image window.
			Zoom Out button. It will zoom out the image window.
		1:1	Original Size button. It will adjust the image displaying scale into 1:1.
			Fit Screen button. It will adjust the display size according to the screen size.
			Center button. It will adjust the center of the FoV to the center of the image.
			Display Setup button. It includes the relevant parameters of the image displaying. 
			Full Screen button. It will adjust the image displaying window to the full-screen size.

3.6.2 Device Info

After selecting the device in the device list, the relevant information will be shown in the Device Info area, including IP address, model, manufacturer, and firmware version, serial number, etc.

Figure 3-16 Interface Info

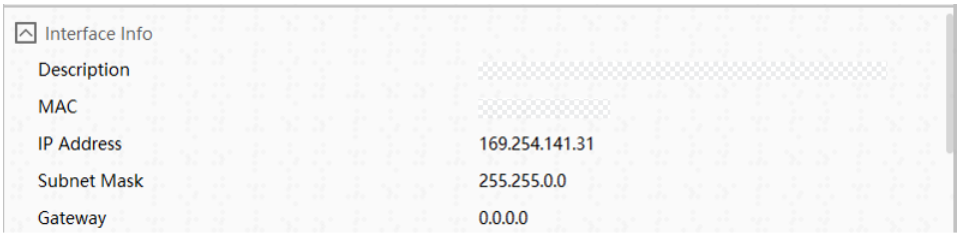


Figure 3-17 Device Info

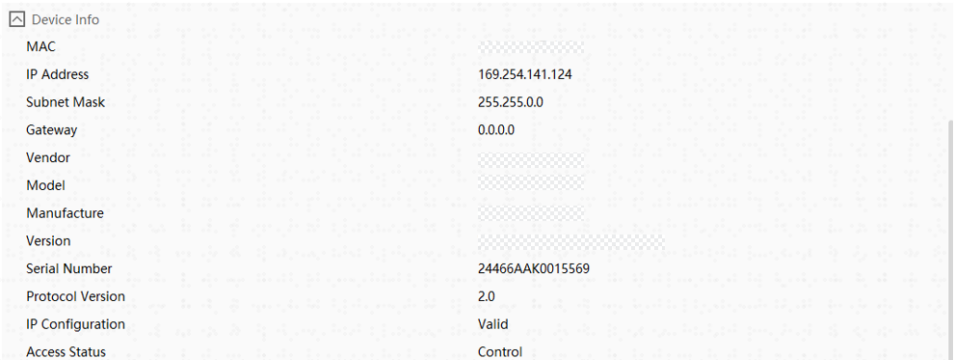


Table 3-5 Parameter Description

Info Type	Parameter	Description
Interface Info	Description	Describes the interface name and specifications of the network card.
	MAC	Describes the MAC address of the network card.
	IP Address	Describes the IP address of the network card.
	Subnet Mask	Describes the subnet mask of the network card.
	Gateway	Describes the gateway address of the network card.
Device Info	MAC	Describes the MAC address of the selected device.
	IP Address	Describes the IP address of the selected device.
	Subnet Mask	Describes the subnet mask of the selected device.
	Gateway	Describes the gateway address of the selected device.
	Vendor	Describes the supplier of the selected device.
	Model	Describes the device model of the selected device.
	Manufacture	Describes the manufacturer of the selected device.
	Version	Describes the firmware version of the selected device.
	Serial Number	Describes the serial number of the selected device.
	Protocol Version	Describes the protocol version of the selected device.
	IP Configuration	Describes the IP configuration status of the selected device.
	Access Status	Describes the access status of the selected device.

If your device has abnormalities needs to be checked by the vendor, please provide the model, firmware version, and serial number to the sales representative or technical specialist.

4 Client Software

4.1 Quick Access Toolbar

4.1.1 Scan Settings

4.1.1.1 Common Configuration

Click the **Single Device Config** to enter the configuration interface. The common configuration interface of the Scan Settings will be displayed by default, and you can configure the parameters of the exposure, ISP, fill light, etc.

Figure 4-1 Common Configuration Interface

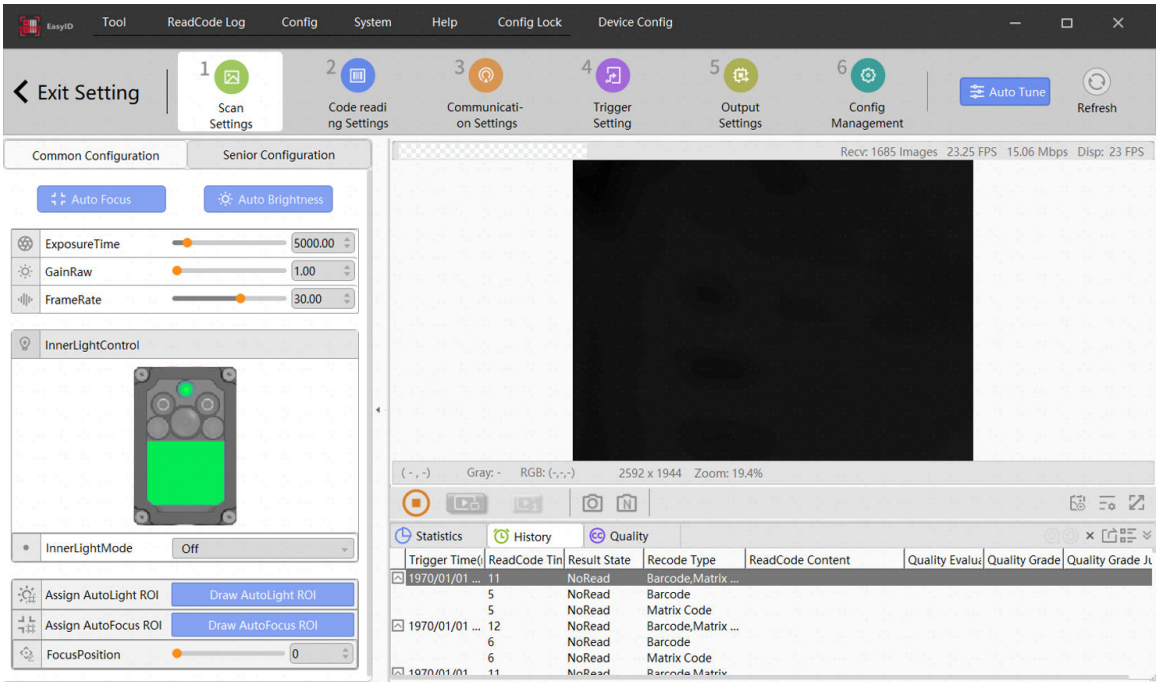


Table 4-1 Parameter Description

Parameter	Range/Option	Description
Auto Focus	NA	The device will perform the focus adjusting automatically until it gets the clearest image.
Auto Brightness		The device will optimize the exposure and gain automatically according to the environmental lighting until it gets the appropriate brightness.
Exposure Time[1]	20μs ~ 50000μs	It controls the brightness level of the image. The higher the value, the brighter the image.

Parameter	Range/Option	Description
Gain Raw	1 ~ 23	It controls the signal intensity of the image. The higher the value, the brighter the image. The brighter the image, the more noises there is.
Frame Rate	0.5 ~ Maximum Value	It controls the number of the received images per second. The maximum frame rate is limited by the exposure value and the mode of the fill light.
Inner Light Control[2]	NA	You can click the icons of the fill lights on the device diagram to enable or disable the fill light.
Inner Light Mode	Off/ Flash/ High Flash	• Off: Disable all the fill lights. • Flash: The fill lights flash at a lower frequency when streaming. • High Flash: The fill lights flash at a higher frequency when streaming.
Assign AutoLight ROI	NA	You can click the **Draw AutoLight ROI** to draw the ROI on the image, and then click **OK**. The device will automatically optimize the exposure value and gain of the specified area based on the brightness characteristics of the area, so that its image reaches the best brightness level.
Assign AutoFocus ROI		You can click the **Draw AutoFocus ROI** to draw the ROI on the image, and then click **OK**. The device will automatically optimize the focal length of the specified area based on the definition characteristics of the area, so that its image reaches the best definition.
Focus Position	0 ~ MAX	You can drag the scroll bar, or enter the value to adjust the image definition. If the device is performing the auto-focusing adjustment, the value adjusting function is not valid.

- The high exposure value will affect the frame rate, and it also will bring the motion blur effect when shooting the moving objects. We recommend you adjust the parameters of gain, gamma, and fill light brightness properly to acquire a better quality image.
- To maintain the acceptable power consumption, we tie exposure value to the brightness of the internal fill lights. If the brightness of fill light is too high, the upper limit of exposure value will be lowered. The specific values may vary depending on the device model.

4.1.1.2 Senior Configuration

This Senior Configuration interface includes the parameters of the image format control, ISP control, exposure control, focus control, and auto light control.

Figure 4-2 Senior Configuration Interface

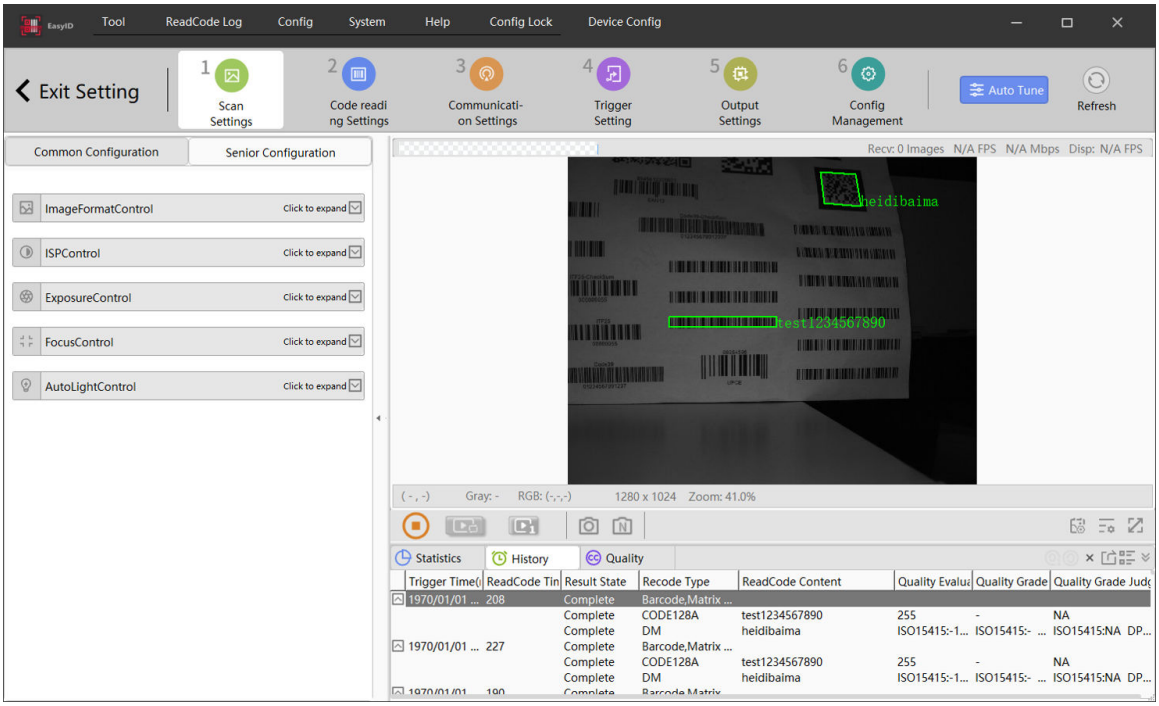


Image Format Control

Figure 4-3 Image Format Control

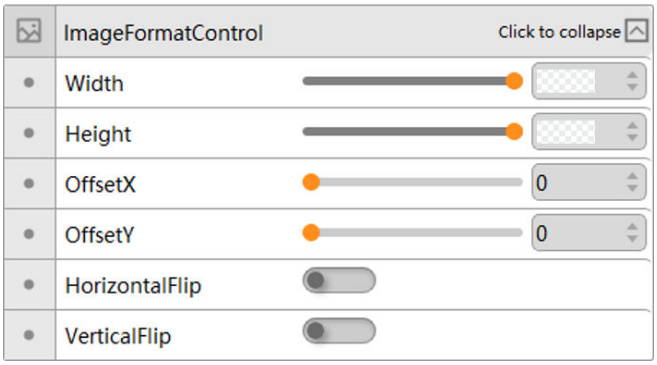


Table 4-2 Parameter Description

Parameter	Range/Option	Description
Width	NA	Range of the pixel quantity in the horizontal direction of the effective image area. Step size: 32
Height		Range of the pixel quantity in the vertical direction of the effective image area. Step size: 8
OffsetX	Depends on the value of Width	Adjusts the pixel offset of the image in the horizontal direction. Step size: 32

Parameter	Range/Option	Description
OffsetY	Depends on the value of Height	Adjusts the pixel offset of the image in the vertical direction. Step size: 8
Horizontal Flip	Y/N	Flips the image along the vertical central axis.
Vertical Flip		Flips the image along the horizontal central axis.

ISP Control

Figure 4-4 ISP Control Interface

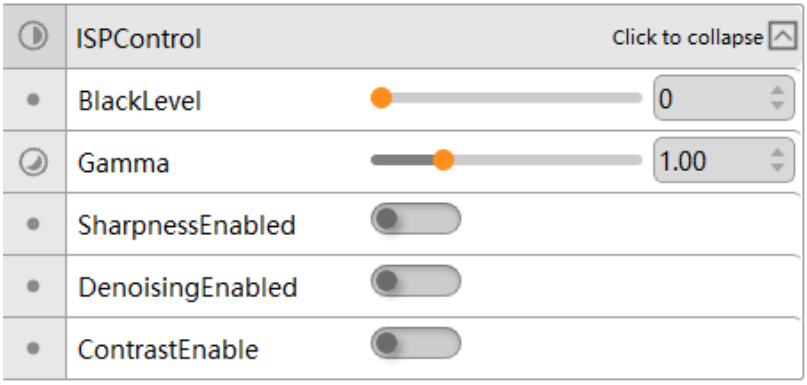


Table 4-3 Parameter Description

Parameter	Range/Option	Description
Black Level	0 ~ 255	It calibrates the standard of the lowest brightness of the image signals to ensure no chromatic aberration in dark areas, such as pure black areas, so that the shadow details can be accurately restored, and the overall contrast can be improved.
Sharpness Enabled	Y/N	It improves the definition of the image edge and enhances the performance of the detail expression of the image. This parameter is suitable for improving blurred or softened images.

Configuring Exposure

Figure 4-5 Exposure Control

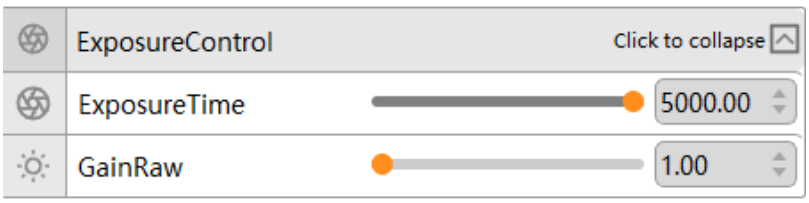


Table 4-4 Parameter Description

Parameter	Range/Option	Description
Exposure Time	20 μs ~ 50000 μs	It controls the brightness level of the image. The higher the value, the brighter the image.
Gains	1 ~ 23	It controls the signal intensity of the image. The higher the value, the brighter the image.

The brighter the image, the more noises there are.

Focus Control

Figure 4-6 Focus Control

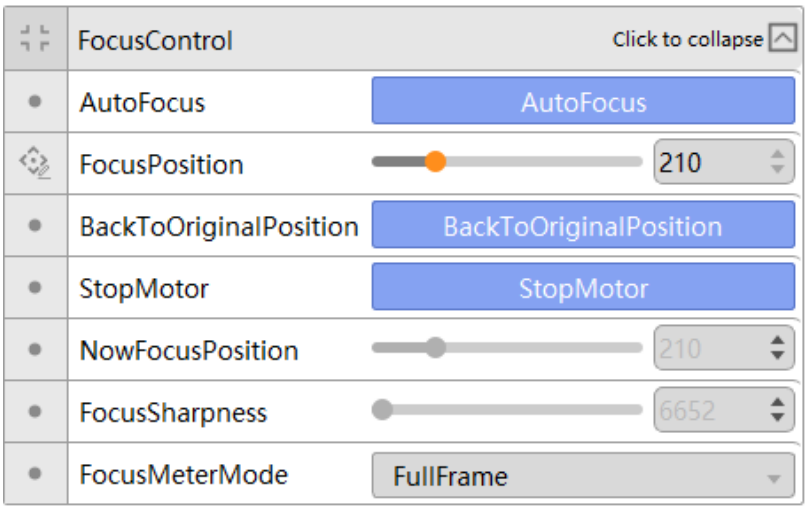


Table 4-5 Parameter Description

Parameter	Range/Option	Description
Auto Focus	NA	The device will perform the focus adjusting automatically until it gets the clearest image.
Focus Position	0 ~ Max[1]	You can drag the scroll bar, or enter the value to adjust the image definition. If the device is performing the auto-focusing adjustment, the value adjusting function is not valid.
Back to Original Position	NA	The electric focusing lens moves back to the initial position.
Stop Motor		It can stop the focusing process.
Now Focus Position		It shows the focal length.

Parameter	Range/Option	Description
Focus Sharpness		It displays the image definition value calculated by the algorithm when the device is streaming. The greater the value, the clearer the image.
Focus Meter Mode	Full Frame	The device performs the focusing based on the entire field of view after clicking the **Auto Focus**.
	ROI	When setting it to the ROI, the parameters of ROI will be available. You can configure these four parameters to draw a ROI. After that, click the **Auto Focus**. The device performs the focusing based on the ROI area to obtain the clearest image. We recommend you use this function when there is a height difference in the device's FoV.

The maximum focal length is vary depending on the device model.

Auto Light Control

Figure 4-7 Auto Light Control Interface

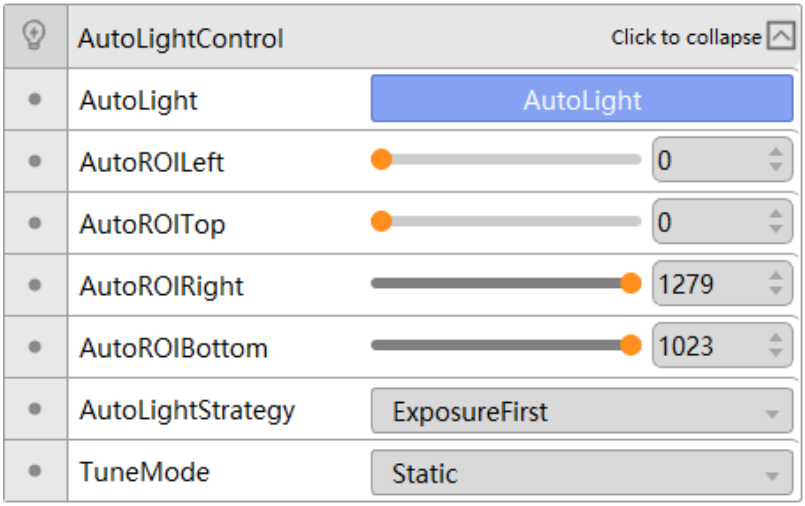


Table 4-6 Parameter Description

Parameter	Range/Option	Description
Auto Light	NA	It has the same function as the **Auto Brightness**. The device optimizes the exposure and gain automatically according to the environmental lighting until it gets the appropriate brightness.

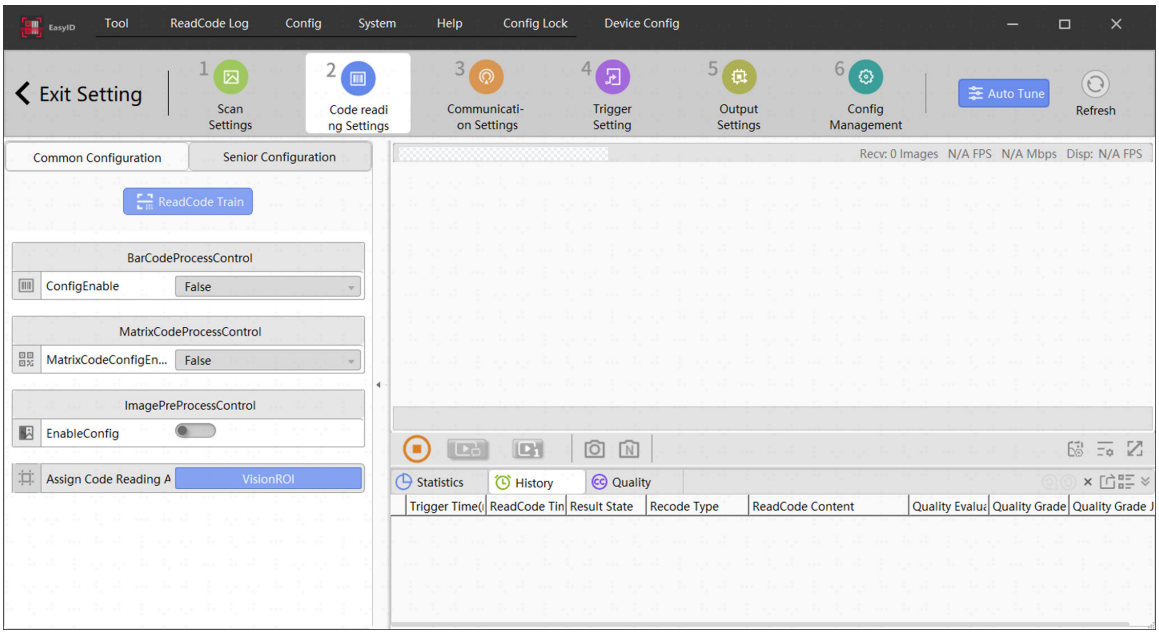
Parameter	Range/Option	Description
Auto ROI Left/ Top/ Right/ Bottom	The upper limits of these four parameters depends on the resolution of the device.	These are for drawing the four borders of the ROI. This ROI is only valid when performing the automatic brightness adjustment.
Auto Light Strategy	Exposure First/ Gain First	It adjusts the selected parameter preferentially until it reaches the limit when performing the automatic brightness adjustment. Exposure First: It adjusts the exposure value preferentially in the limited range. Gain First: It adjusts the gain value preferentially.
Tune Mode	Static/ Dynamic	It controls the mode of the automatic brightness adjustment.

4.1.2 Code Reading Settings

4.1.2.1 Common Configuration

The Common Configuration interface includes the parameters of the barcode process, matrix code process, image pre-process, quality evaluation, etc.

Figure 4-8 Code Reading Settings



ReadCode Train

You can train the code reading to perform the automatic parameter adjustment for the complex industrial scenarios. This function can only adjust the relevant parameters of the code reading.

Figure 4-9 ReadCode Train

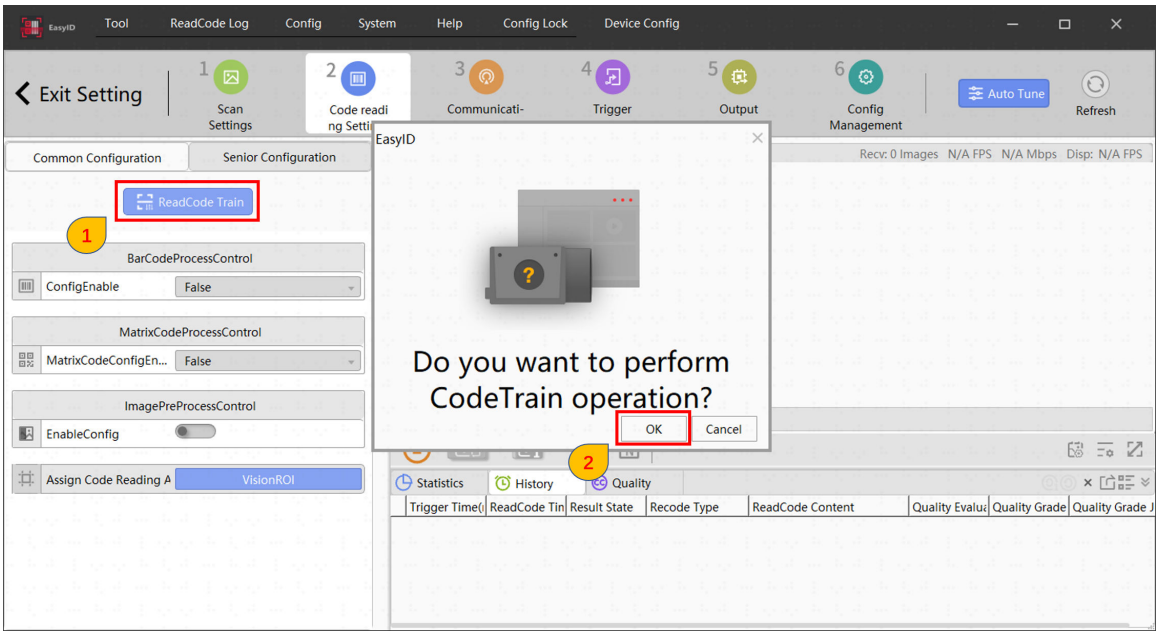


Table 4-7 Parameter Configuration

Parameter	Range/Option	Description
ReadCode Train	NA	It automatically adjusts the relevant parameters of the code reading to achieve the best decoding effect.

Barcode Process Control

Figure 4-10 Barcode Process Control Interface

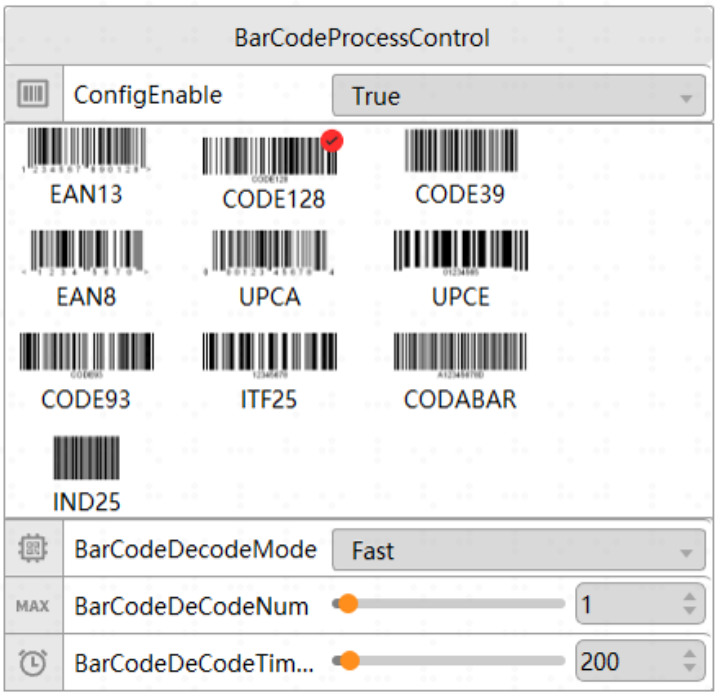


Table 4-8 Parameter Description

Parameter	Range/Option	Description
Config Enable	Y/N	It sets the 1D code reading function whether it takes effect.
Barcode Type	NA	It supports the single type selection and multiple types selection. Code Type: EAN13, CODE128, CODE39, EAN8, UPCA, UPCAE, CODE93, ITF25, CODABAR, IND25.
Barcode Decode Mode [1]	Fast/ Standard/ Enhanced	The effects of the difference modes are as follows: ● Decoding Rate: Enhanced > Standard > Fast ● Decoding Time: Enhanced > Standard > Fast
Barcode Decode Num	0 ~ 32	The maximum number of the 1D codes that can be decoded in one frame.
Decode Timeout	0 ms ~ 5000 ms	The upper limit value is the maximum decoding time, which means if the decoding time exceeds the set value, the device will consider it to have failed.

The different decoding modes adopt different algorithms; therefore, it may successfully decode the code in the Fast mode, but may fail in the Enhance mode.

Matrix Code Process Control

Figure 4-11 Matrix Code Process Control Interface

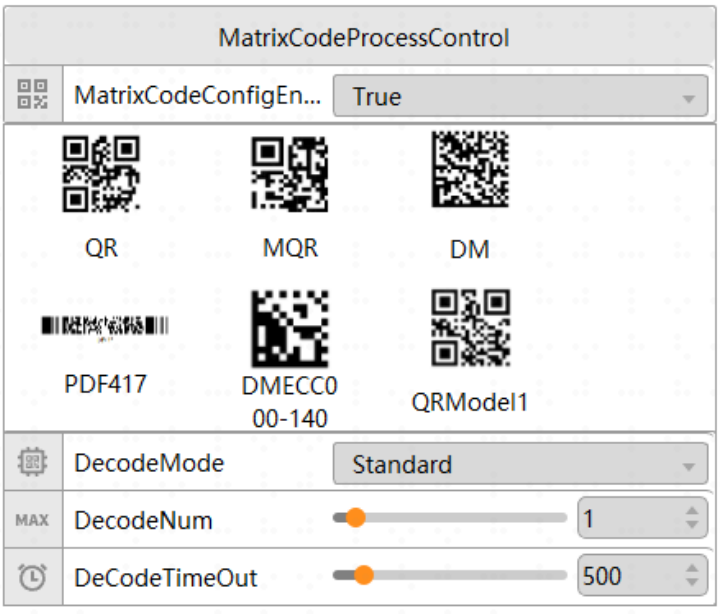


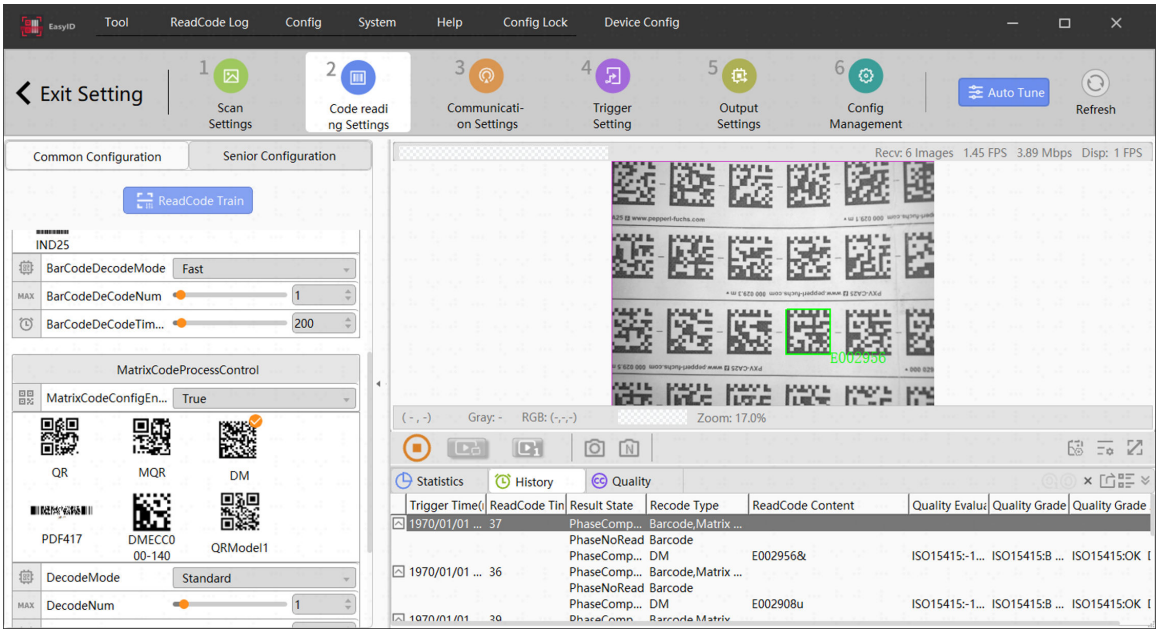
Table 4-9 Parameter Description

Parameter	Range/Option	Description
Matrix Code Config Enable	Y/N	It sets the 2D code decoding function whether it takes effect.
2D Code Type	NA	It supports the single type selection and multiple types selection. Code Type: QR/ MQR/ PDF417/ DMECC000-140/ QRModel1/ DM
Decode Mode [1]	Fast/ Standard / Enhanced/ Maximum	The effects of the difference modes are as follows: ● Decoding Rate: Maximum > Enhance > Standard > Fast ● Decoding Time: Maximum > Enhance > Standard > Fast
Decode Num	0 ~ 16	The maximum number of the 2D codes that can be decoded in one frame.
Decode Timeout	0 ms ~ 5000 ms	The upper limit value is the maximum decoding time, which means if the decoding time exceeds the set value, the device will consider it to have failed.

The different decoding modes adopt different algorithms; therefore, it may successfully decode the code in the Fast mode, but may fail in the Enhance mode.

You can check the decoding results on the image display area (the code will be marked with a green box) and check the code information in the result area, including trigger time, read-code time, result state, code type, data, quality evaluation, etc.

Figure 4-12 Decoding Successfully



If the other special types of 1D code and 2D code are needed to be shown on client software, please contact the sales representative or technical specialist.

Image Pre-process Control

Due to the factors, such as object material, object characteristics, light source, and environmental conditions, the acquired images may not meet the requirements for efficient and reliable code reading and inspection. For improving the code reading effect quickly and conveniently, user can perform the proper pre-procession on the raw images. The parameters of the pre-process are described in the table below.

Figure 4-13 Image Pre-process Control Interface

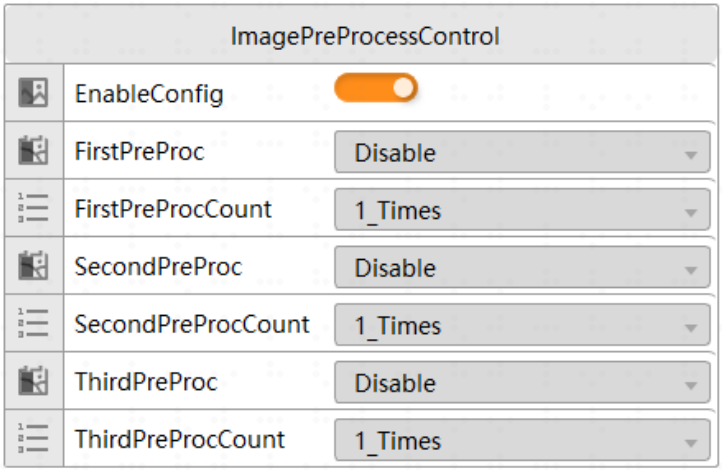
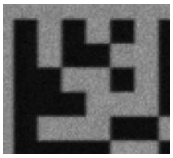
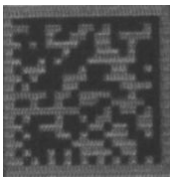
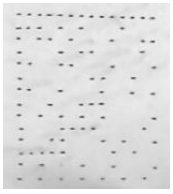
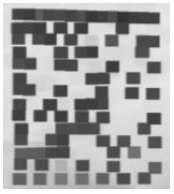
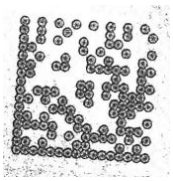
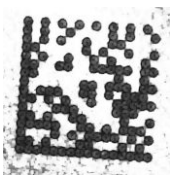
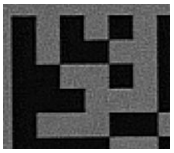
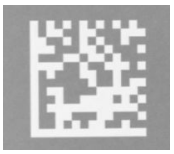
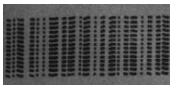


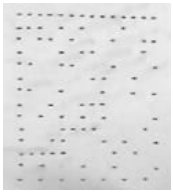
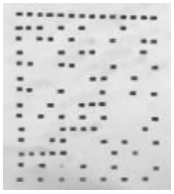
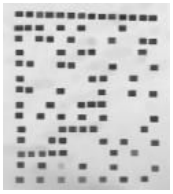
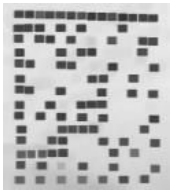
Table 4-10 Parameter Description

Parameter	Range/Option	Description
Enable Config	Y/N	Before performing the pre-process on the image, you need to disable the JPEG Compression function; otherwise, the pre-process effect will not take effect. Please follow the instructions below: Select **Device Config** > **ImageOutputControl** > **EnableJPEGCompress** > **Disable**
First Pre-procession	NA	For the codes in special environment, you can select the following pre-procession algorithms to achieve the higher recognition efficiency, including the Disable, Mean Filter, Median Filter, Erosion, Dilation, Opening, Closing, Sharpening, Inversion, Erosion 3x1, Dilation 3x1, Erosion 1x3, Dilation 1x3.
First Pre-procession Count	1 ~ 6	The greater the value, the more obvious the effect is achieved.

The pre-procession effects are described in the table below.

Table 4-11 Parameter Description

Type	Description	Before Pre-procession	After Pre-procession
Median Filter	Noise reduction. Remove the black-dot and white-dot noises, and keep the sharpness of the module boundaries.		
Mean Filter	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	Eliminate the white interferences in the module, and keep the size ratio of the white and black lumps.		
Closing	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.		
Inversion	Inverse the black and white pixels in the image.		
Expansion and Corrosion in Specific Direction	Refer to the expansion and corrosion. It only takes effect at the single direction.		

Type	Description		Before Pre-procession	After Pre-procession
Corrosion x3				
	Original Image	1 Time	2 Times	3 Times

Assign Code Reading Area

You can draw a ROI to specify the certain area to read codes. This function can accurately lock the target area to ensure the stable and efficient automatic code decoding in the complex environmental conditions, such as industrial automation, logistics sorting, medical equipment, commodity settlement, etc.

Please follow the steps below to draw a ROI: Click **Vision ROI** > Draw ROI box > Click **OK**.

Figure 4-14 Vision ROI Interface

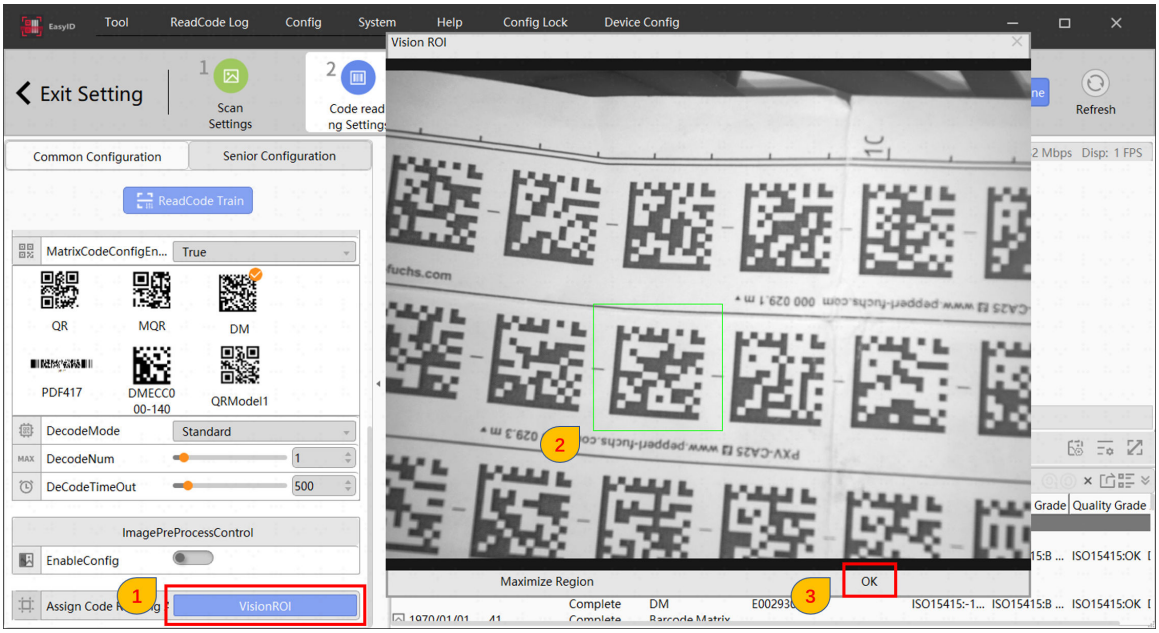
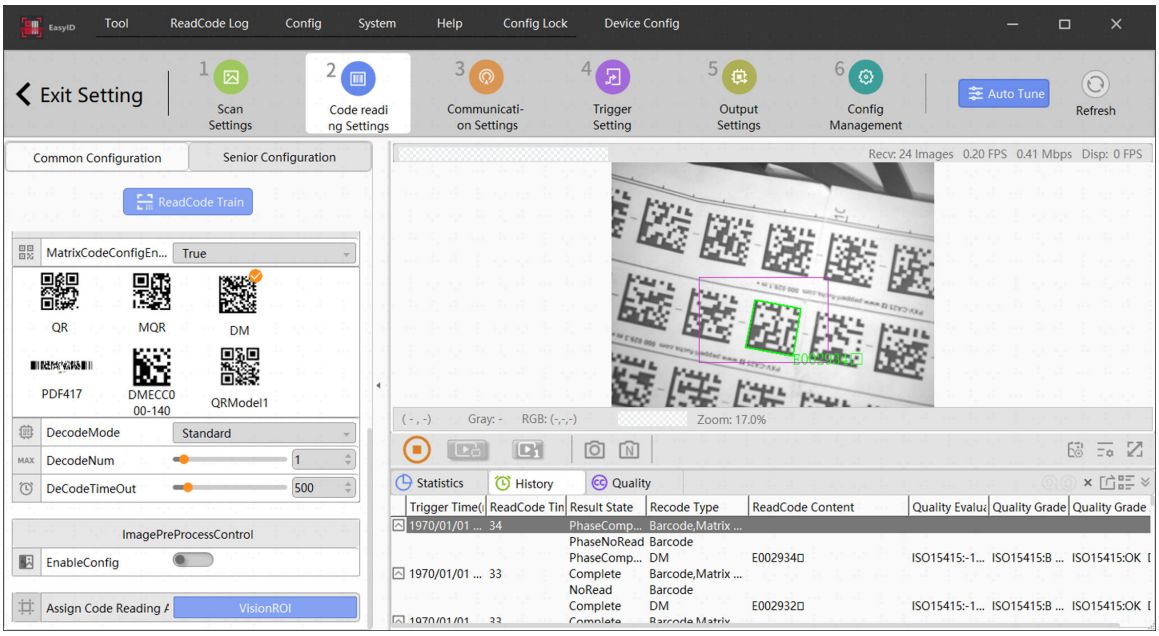


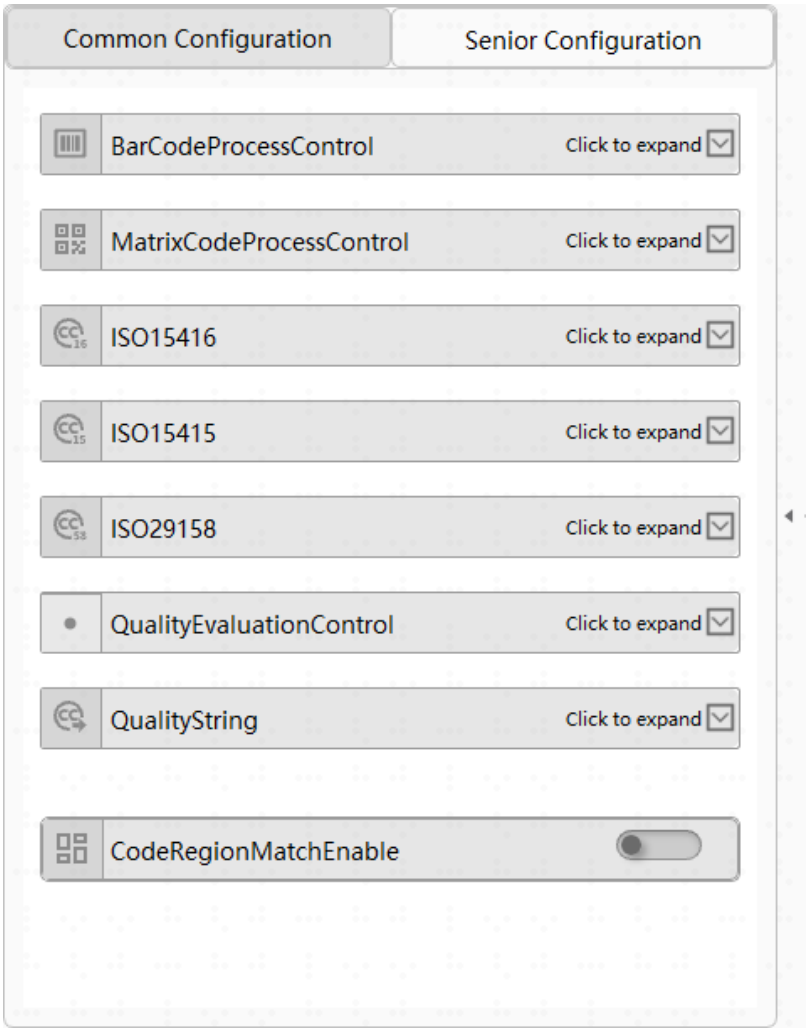
Figure 4-15 Read Code in ROI



4.1.2.2 Senior Configuration

You can configure the parameters of the barcode, matrix code, quality evaluation, and enable the code region match function in the Senior Configuration interface of the Code Reading Settings.

Figure 4-16 Senior Configuration



Barcode Process Control

Figure 4-17 Barcode Process Control Interface

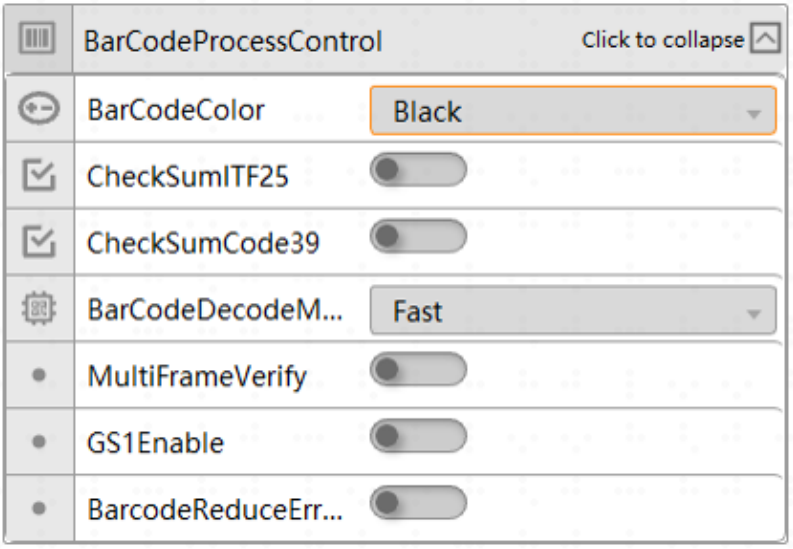


Table 4-12 Parameter Description

Parameter	Range/Option	Description
Barcode Color	NA	The contrast relationship of the light module and shade module in the 1D codes. It includes the options of the Auto, Black, and White.
CheckSumITF25[1]	Y/N	It sets the verification function of the ITF25 codes whether it takes effect.
CheckSumCODE39[2]		It sets the check function of the CODE39 codes whether it takes effect.
Barcode Decode Mode	Fast/ Standard/ Enhanced	The effects of the difference modes are as follows: ● Decoding Rate: Enhanced > Standard > Fast ● Decoding Time: Enhanced > Standard > Fast
Multi Frame Verify	Y/N	It sets the verification function of the multiple frames whether it takes effect. The system performs the verification on the multiple frames to ensure the decoding results are correct.

- CheckSumITF25: Whether the verification function takes effect depends on the 1D code type; the ITF25 codes with the verification feature can be compatible with two modes, but the decoding results will be different; when enabling the verification function for the ITF25 codes without the verification feature, the decoding result will be a failure.
- CheckSumCODE39: Whether the verification function takes effect depends on the 1D code type; the CODE39 codes with the verification feature can be compatible with two modes, but the decoding results will be different; when enabling the verification function for the CODE39 codes without the verification feature, the decoding result will be a failure.

Matrix Code Process Control

Figure 4-18 Matrix Code Process Control Interface

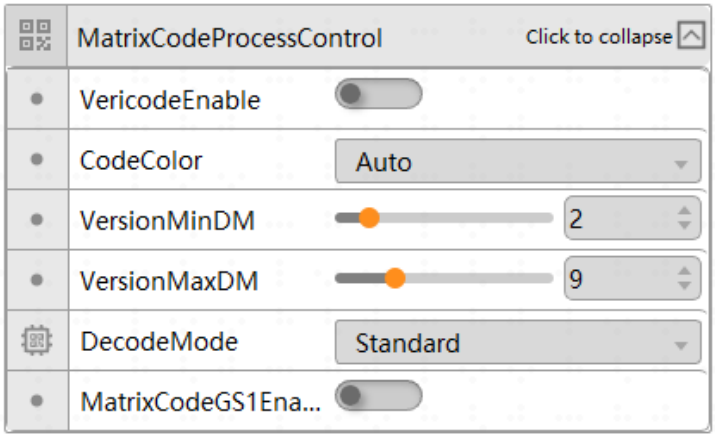


Table 4-13 Parameter Description

Parameter	Range/Option	Description
Barcode Color	Auto/ Black/ White	Auto is suggested. It supports both black code and white code.
Decode Mode [1]	Fast/ Standard/ Enhance/ Maximum	The effects of the difference modes are as follows: ● Decoding Rate: Maximum > Enhance > Standard > Fast ● Decoding Time: Maximum > Enhance > Standard > Fast

The different decoding modes adopt different algorithms; therefore, it may successfully decode the code in the Fast mode, but may fail in the Enhance mode.

Quality Evaluation

Figure 4-19 ISO15416

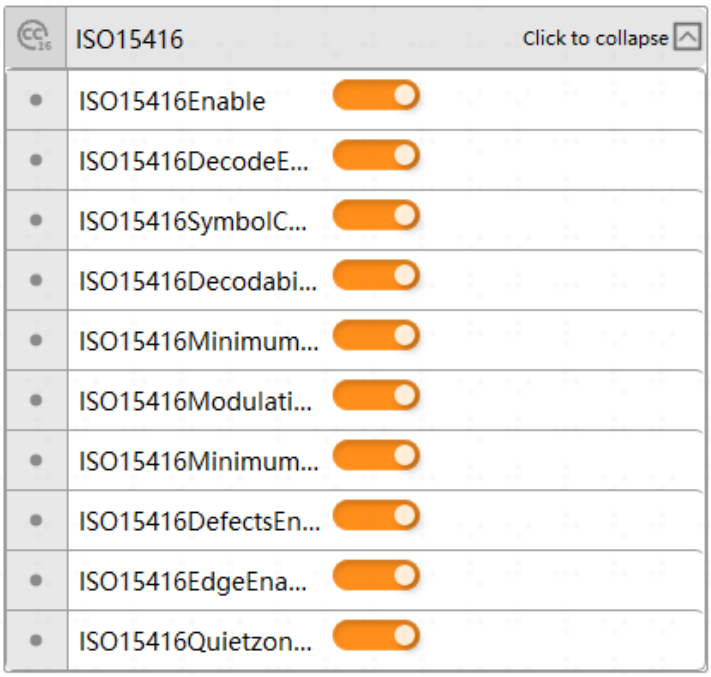


Table 4-14 Parameter Description

Parameter	Option	Description
ISO15416 Enable	Y/N	It sets the ISO15416 quality evaluation function whether it takes effects.
ISO15416 Decode Enable		It sets the 1D code recognition function whether it takes effect.

Parameter	Option	Description
ISO15416 Symbol Contrast Enable		It evaluates the difference between the maximum reflectance and the minimum reflectance value on the profile of the scanning line.
ISO15416 Decodability Enable		The decodability is determined for each code type. It evaluates the error value between the ideal line width pattern and the actual line width pattern.
ISO15416 Minimum Edge Contrast Enable		It evaluates whether the minimum difference in reflectance between a space (including the quiet zone) and its neighboring bars is 15% or less.
ISO15415 Modulation Enable		It evaluates the ratio of the minimum edge contrast and symbol contrast.
ISO15416 Minimum Reflectance Enable		It evaluates whether the minimum brightness in the scan data is less than the 50% of the maximum brightness.
ISO15416 Defects Enable		The defect refers to the non-uniformity within a single unit or blank area. It evaluates the code based on non-uniformity of the unit reflectance.

Figure 4-20 ISO15415

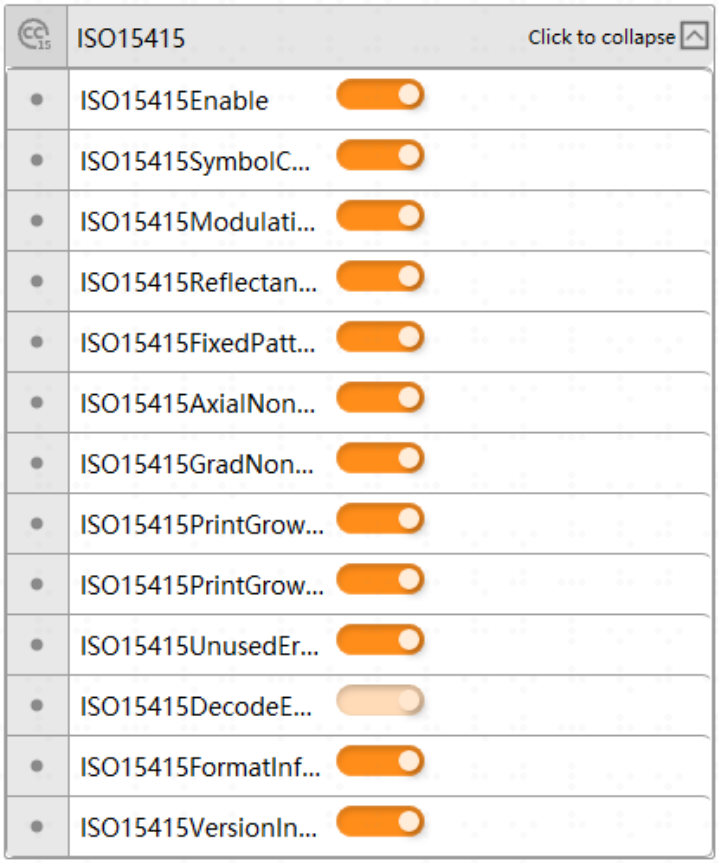


Table 4-15 Parameter Description

Parameter	Option	Description
ISO15415 Enable	Y/N	It sets the ISO15415 quality evaluation function whether it takes effects.
ISO15415 SymbolContrastEnable		It evaluates the difference between the maximum gray value and minimum gray value in all modules of the code.
ISO15415 Modulation Enable		It evaluates the level of gray change in the unit.
ISO15415 ReflectanceMarginEnable		It evaluates how accurately each module distinguishes between black and white relative to the global threshold.
ISO15415 FixedPatternDamageEnable		It evaluates the damage extent of the location symbol in the code.
ISO15415 AxialNonuniformityEnable		It evaluates the size distortion degree in the horizontal and vertical direction of the code.

Parameter	Option	Description
ISO15415 GradeNonuniformityEnable		It evaluates the location offset of every unit in the code.
ISO15415 PrintGrowthHorizontalEnable		It evaluates the extension degree of the horizontal engraving unit in the code.
ISO15415 PrintGrowthVerticalEnable		It evaluates the extension degree of the vertical engraving unit in the code.
ISO29158 UnusedErrorCorrectionEnable		It evaluates the unused error correction rate when decoding the codes.
ISO29158 FormatInformationDamageEnable		It evaluates the damage extent of the format information of the QR code.
ISO29158 VersionInformationDamageEnable		It evaluates the damage extent of the version information of the QR code.

Figure 4-21 ISO29158

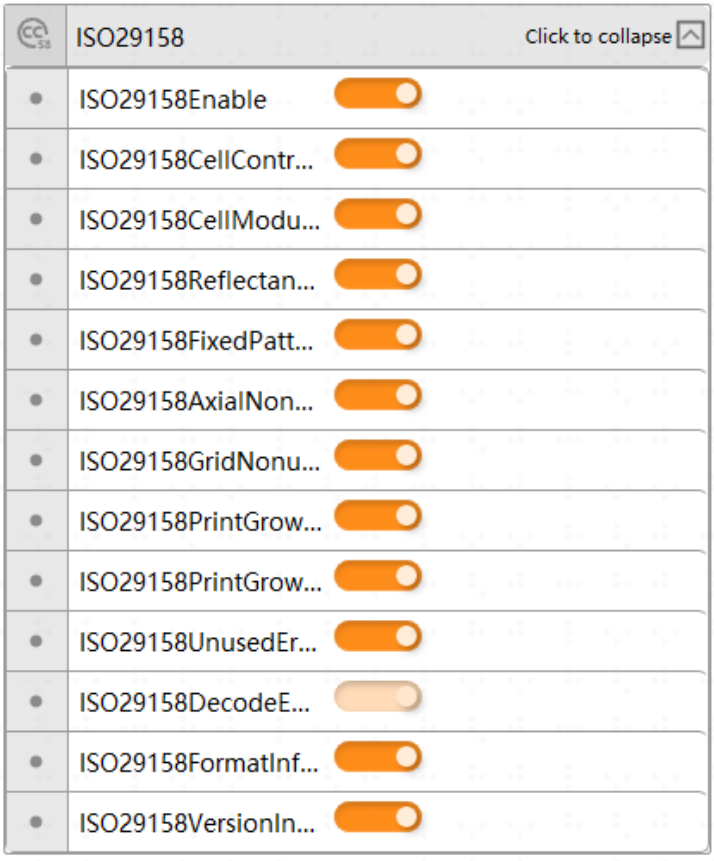


Table 4-16 Parameter Description

Parameter	Option	Description
ISO29158 Enable	Y/N	It sets the ISO29158 quality evaluation function whether it takes effects.
ISO29158 CellContrastEnable		It evaluates the contrast between the black module and white module.
ISO29158 CellModulationEnable		It evaluates the uniformity of the black and white modules.
ISO29158 ReflectanceMarginEnable		It evaluates how accurately each module distinguishes between black and white relative to the global threshold.
ISO29158 FixedPatternDamageEnable		It evaluates the damage extent of the location symbol in the code.
ISO29158 AxialNonuniformityEnable		It evaluates the size distortion degree in the horizontal and vertical direction of the code.
ISO29158 GridNonuniformityEnable		It evaluates the location offset of every unit in the code.
ISO29158 PrintGrowthHorizontalEnable		It evaluates the extension degree of the horizontal engraving unit in the code.
ISO29158 PrintGrowthVerticalEnable		It evaluates the extension degree of the vertical engraving unit in the code.
ISO29158 UnusedErrorCorrectionEnable		It evaluates the unused error correction rate when decoding the codes.
ISO29158 FormatInformationDamageEnable		It evaluates the damage extent of the format information of the QR code.
ISO29158 VersionInformationDamageEnable		It evaluates the damage extent of the version information of the QR code.

Figure 4-22 Quality String

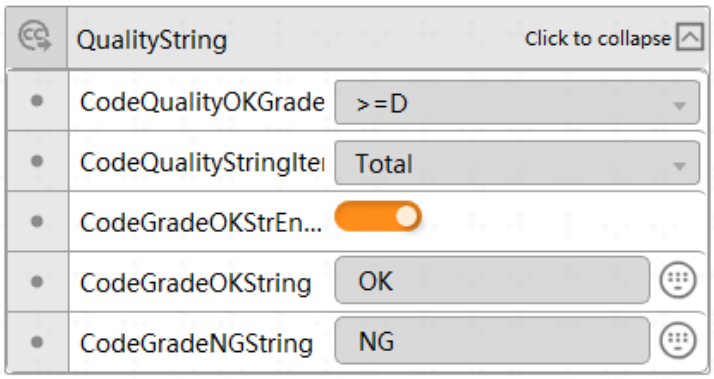
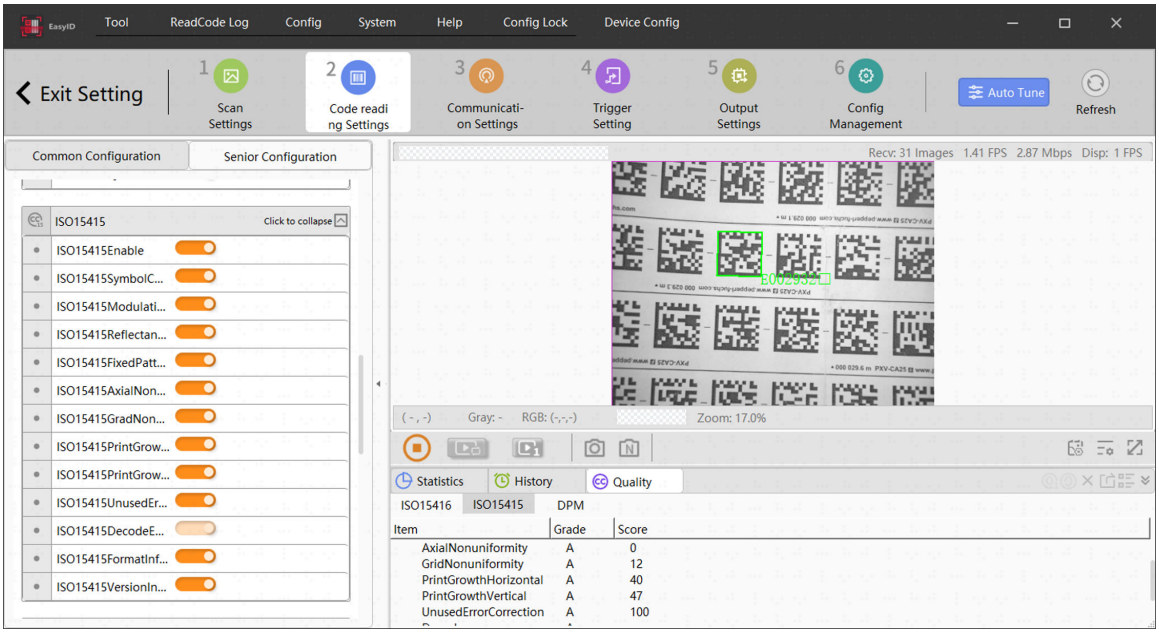


Table 4-17 Parameter Description

Parameter	Option	Description
CodeQualityOKGrade	NA	It controls the standard of the OK code. It includes the A, ≥B, ≥C, and ≥D.
CodeQualityStringItem		It controls the result format of the quality evaluation. It includes the Total, Selected, and Total+Selected.
CodeGradeOKStrEnable	Y/N	It sets whether the evaluation result includes the 'OK'.
CodeGradeOKString	User Defined	It controls the result content of the decoding result of OK and NG.

Enable the corresponding quality evaluation function, and select the evaluation standards. After that, you can check the evaluation results in the result area, as shown in the figure below.

Figure 4-23 ISO15415 Quality Evaluation



CodeRegionMatchEnable

Figure 4-24 CodeRegionMatchEnable Interface

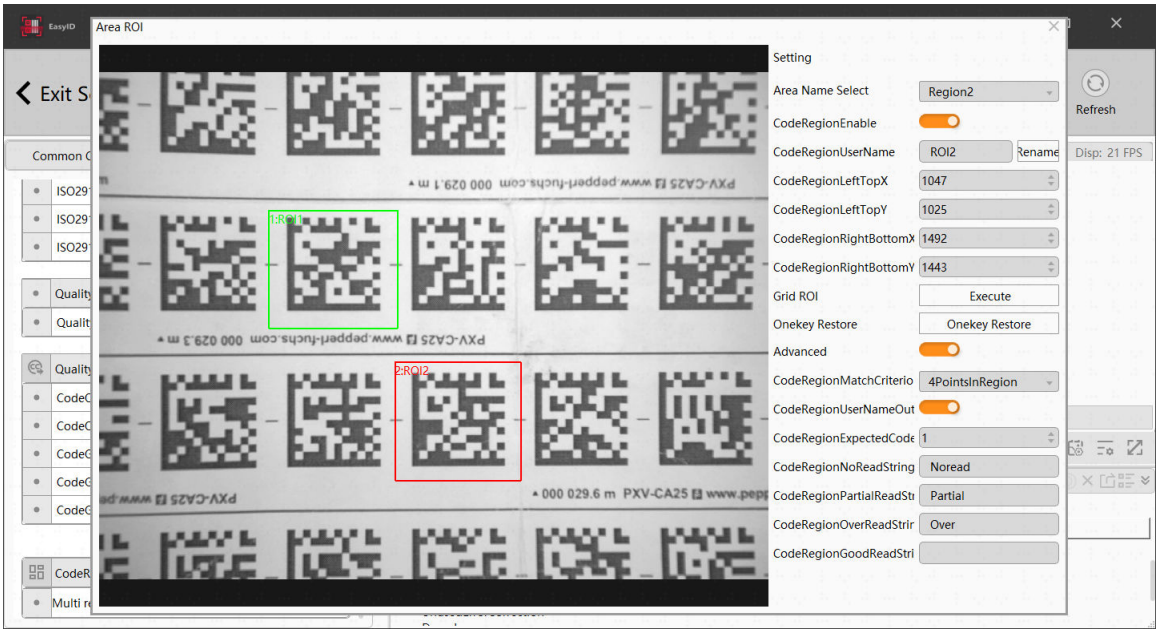


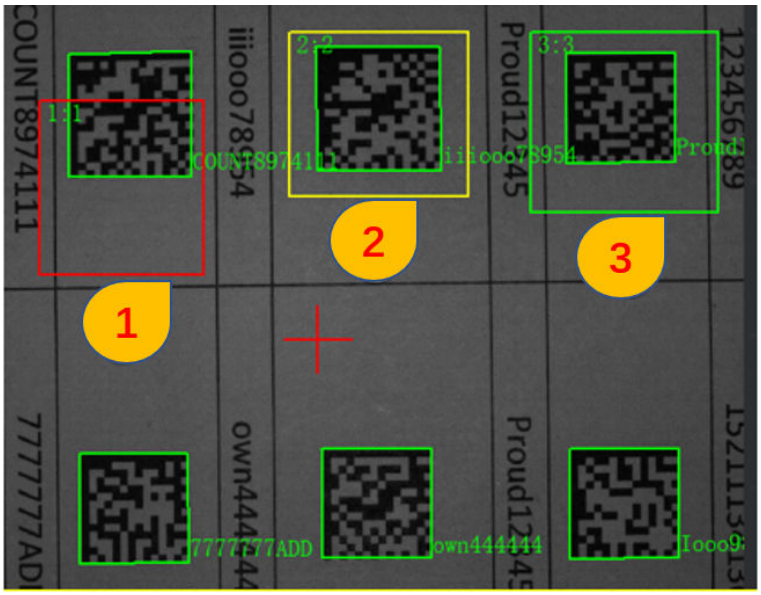
Table 4-18 Parameter Description

Parameter		Range/Option	Description
Setting	CodeRegionMatchEnable	Y/N	It sets the multi-ROI function whether it takes effect.
	CodeRegionUserName	Region1 ~ Region16	It controls which ROI region is available to be operated.
	CodeRegionEnable	Y/N	It sets the ROI region whether it takes effect.
	Area Name Select	User Defined	It specifies the name of the ROI region, which can be displayed on the image display area.
	CodeRegionLeftTopX/Y CodeRegionRightBottomX/Y	Depends on the resolution of the device model.	It controls the coordinates of top left and bottom right of the ROI.
	Grid ROI	NA	You can set the values of the row number and column number. The maximum values may vary depending on the device model.
Senior Configuration	Advanced	NA	Null

Parameter		Range/Option	Description
	CodeRegionMatchCriterion	4/ 3/ 2 PointsInRegion	It specifies the number of the corner points required to judge the successful code reading. For example, if it is set to 3PointsInRegion, it will be considered as the successful code reading when all three corner points of the decoding box are in the ROI region.
	CodeRegionUserNameOutputEnable	Y/N	It sets whether the output result includes the region name.
	CodeRegionExpectedNum	The maximum number of the codes that needs to be read depends on the device model.	It controls the number of the code that needs to be read for one single ROI region.
	CodeRegionNoReadString	User Defined	It specifies the content of the output result when no code can be read.
	CodeRegionPartialReadString		It specifies the content of the output result when the number of the codes that have been read is less than the set value of the CodeRegionExpectedNum.
	CodeRegionOverReadString		It specifies the content of the output result when the number of the codes that have been read is greater than the set value of the CodeRegionExpectedNum.
	CodeRegionGoodReadString		It specifies the content of the output result when the number of the codes that have been read meets the set value of the CodeRegionExpectedNum.

After completing the settings, close the Area ROI interface; the effect will be like in the figure below.

Figure 4-25 Effect of the Area ROI

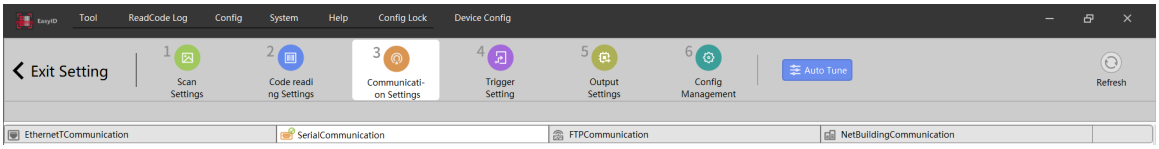


Red ROI means that no code is recognized; yellow ROI means that the partial codes are recognized; green ROI means that all codes are recognized. The rest of the codes which are not covered by any ROI, can only be recognized but not output their values.

4.1.3 Communication Settings

You can configure the parameters of the communication protocols, including Ethernet, serial port, FTP, and Net Building.

Figure 4-26 Communication Settings



4.1.3.1 Ethernet Communication

Figure 4-27 Ethernet Configuration Interface

Table 4-19 Parameter Description

Parameter		Range/Option	Description
EthernetTransferCtl	Transfer Enable	Y/N	It sets the communication protocol whether it takes effects.
	TransferWorkMode[1]	TCP/ Profinet/ ModbusTcp/ FINS/ EthernetIP/ MC	It specifies the communication protocol of the device. Different modes have different parameters need to be configured.
	TCP Port	20 ~ 65535	It controls the port number of the Ethernet communication. This parameter is only valid for the Ethernet mode.
	Server IP	User Defined	It controls the IP address of the server. This parameter is only valid when the device serves as the client.
	EthernetDataHeader	NoDataHeader Data_STX IP_Address Device_UserId Device_SerialNum	It specifies the padding content of the header of the data packet. This parameter is only valid for the TCP mode.
	EtherDataTailer	NoDataTailer DataTailer_CR DataTailer_LF DataTailer_CR_LF DataTailer_ETX	It specifies the padding content of the tailer of the data packet. This parameter is only valid for the TCP mode.
	Profinet Status	NA	This is a read only element which indicates the communication status of the Profinet.
	ByteOrderConvert	Y/N	It sets the data conversion function between the big endian and little endian whether it takes effect. This parameter is only valid for the ModBusTCP mode.
	CtrlRegStartAddress	0 ~ 92	It controls the initial address for transmitting the commands and parameters. This parameter is only valid for the FINS and MC modes.

Parameter		Range/Option	Description
	RespRegStartAddress	0 ~ 100	It controls the initial address for returning the status and error data. This parameter is only valid for the FINS and MC modes.
	DataRegStartAddress	18 ~ 32000	It controls the initial address for storing data. This parameter is only valid for the FINS and MC modes.
KeepAlive	KeepAliveMode	Disable/ Default/ User Define	It automatically detects whether the communication connection is valid by transmitting the probe packet.
	KeepAliveTime	0 ms ~ 6000 ms	It controls the interval time between each probe packet.
	KeepAlivePktData	User Defined	It specifies the content of the probe packet.

TransferWorkMode: You can only activate one communication protocol. When switching the communication mode, the original communication connection will be disconnected.

4.1.3.2 Serial Communication

Figure 4-28 Serial Communication Interface

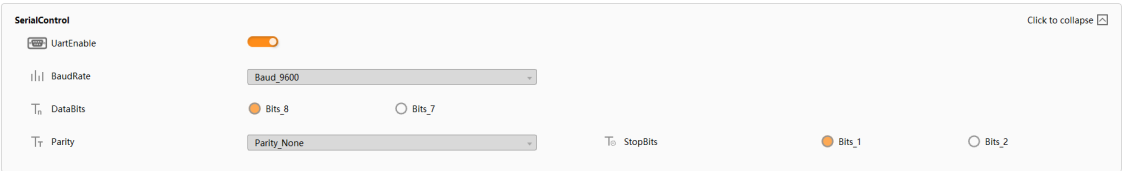


Table 4-20 Parameter Description

Parameter		Range/Option	Description
Serial Control	UartEnable	Y/N	It sets whether the serial communication function takes effect.
	Baud Rate	600/ 1200 /2400 / 4800 /9600 / 19200 /38400 / 57600 /115200	It specifies the number of the Symbol transmitted in unit time.
	Data Bits	Bits 8/ Bits 7	It specifies the number of the bits occupied by the data bit.
	Parity	None/ Even/ Odd	It specifies the parity method.

Parameter		Range/Option	Description
	Stop Bits	Bits 1/ Bits 2	It specifies the number of the bits occupied by the data bit.

4.1.3.3 FTP Communication

FTP Communication Interface

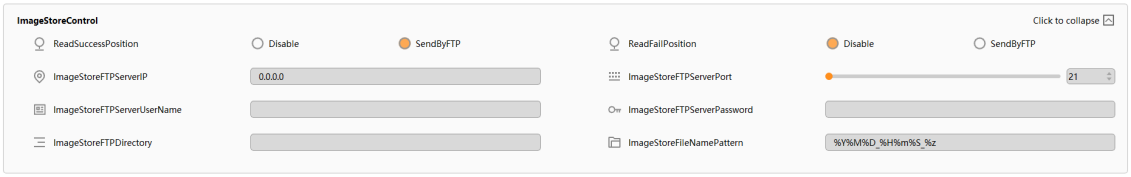


Table 4-21 Parameter Description

Parameter		Range/Option	Description
ImageStoreControl	ReadSuccessPosition	Disable/ Send by FTP	It specifies the directory for saving the OK images.
	ReadFailPosition		It specifies the directory for saving the NG images.
	ImageStoreFTPServerIP	User Defined	It specifies the IP address of the FTP server.
	ImageStoreFTPServerPort	1 ~ 65535	It controls the port number of the FTP server.
	ImageStoreFTPServerUserName	User Defined	It specifies the user ID of the FTP server.
	ImageStoreFTPServerPassword		It specifies the password of the FTP server.
	ImageStoreFTPDirectory		It specifies the directory for saving the images.
	ImageStoreFileNamePattern		It specifies the naming rule for the images.

4.1.3.4 Net Building Communication

The parameters of the Net Building communication are separated into two categories, which include master device and slave device.

Figure 4-29 Net Building Control

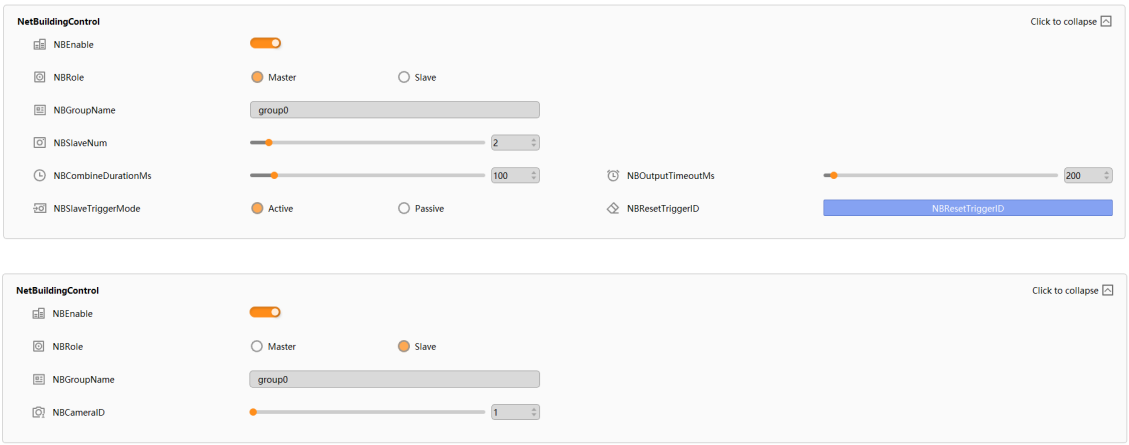


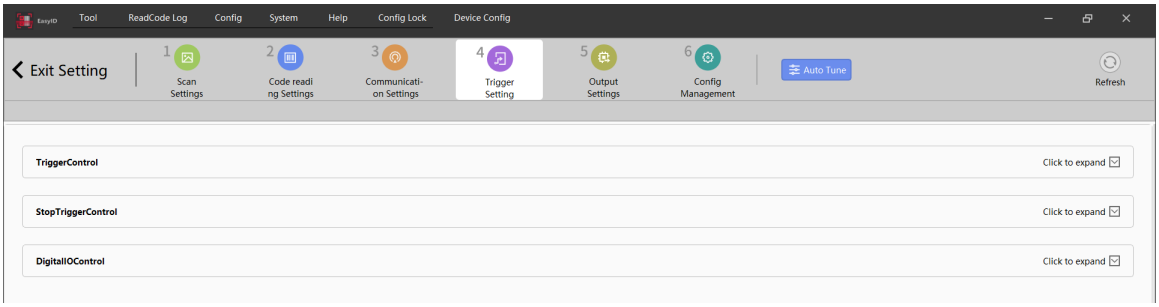
Table 4-22 Parameter Description

Parameter		Range/Option	Description
Master Device	NBSlaveNum	1~16	It controls the number of the slave devices. It supports up to 16 devices to serve as the slave devices.
	NBSlaveTriggerMode	Active/ Passive	It specifies the trigger mode of the slave device.
	NBCombineDurationMs	10 ~ 1000	It controls the time of the output and binding.
	NBOutputTimeoutMs	50 ~ 5000	It controls the timeout of the device.
	NBResetTriggerID	NA	You can use this function to reset the trigger ID when the net building is abnormal.
Slave Device	NBGroupName	User Defined	It controls the IP address of the master device.
	NBCameraID	1~16	It controls the number of the slave devices which are connected to the master device.

4.1.4 Trigger Settings

You can configure the parameters of three modules, including the TriggerControl, StopTriggerControl, and DigitalIOControl.

Figure 4-30 Trigger Settings Interface



TriggerControl

Figure 4-31 TriggerControl

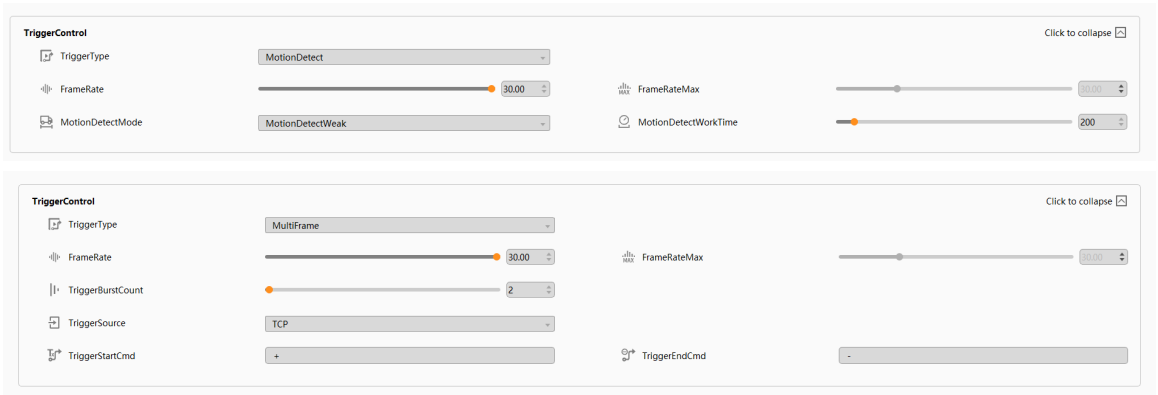


Table 4-23 Parameter Description

Item	Range/Option	Description
TriggerType	FreeRun/ SingleFrame MultiFrame/ PhaseMode/ MotionDetection	• FreeRun: the device performs streaming according to the set frame rate. • SingleFrame: the device captures one image after receiving one trigger signal. • MultiFrame: the device captures the set frame number of images after receiving the trigger signal. • PhaseMode: the device continuously captures the image according to the set frame rate after receiving the phase signal, and stop capturing until the trigger signal end. • MotionDetection: the device only captures the image when a moving object is detected; otherwise, the device is in the dormant state.
FrameRate	0.5 ~ Max	It controls the number of the images which the device can shoot per second.

Item	Range/Option	Description
FrameRateMax	NA	This is a read only element which indicates the maximum frame rate that the device can support. The maximum frame rate of the device is related to the exposure time and fill light mode.
TriggerDelay	0 us ~ 1000000us	It controls the delay time of the device triggering after receiving the trigger signal. This function is only valid when the **TriggerType** is the **SingleFrame** or the **MultiFrame** and the **TriggerSource** is the **OPT_IN0** or the **OPT_IN1**.
TriggerBurstCount	1 ~ 255	It controls the frame number of the images that the device acquires at once. This function is only valid when the TriggerType is the MultiFrame.
TriggerSource	Software/ OPT_IN0/ OPT_IN1/ TCP/ Serial	• Software: the device is triggered by trigger signal sent from the software. • OPT_IN0/ OPT_IN1: the device is triggered by the external level signal. • TCP: the device is triggered by the specific characters sent through the TCP protocol. • Serial: the device is triggered by the specific characters sent through the serial protocol.
TriggerStartCmd	User Defined	It specifies the content of the trigger command. After the device receives the trigger command, it will start streaming. This function is only valid when the **TriggerSource** is the **TCP** or the **Serial**.
TriggerEndCmd		It specifies the content of the trigger command. After the device receives the trigger command, it will start streaming. This function is only valid when the **TriggerSource** is the **TCP** or the **Serial**.
MotionDetectMode	Weak/ Medium/ Strong	It specifies the sensitivity of the motion detection. This function is only valid for the motion detection.
MotionDetectWorkTime	10 ~ 3000	It controls the duration of the streaming. This function is only valid for the motion detection.

StopTriggerControl

This function is only valid when the **TriggerType** is the **MultiFrame** or the **PhaseMode**.

Figure 4-32 StopTriggerControl Interface

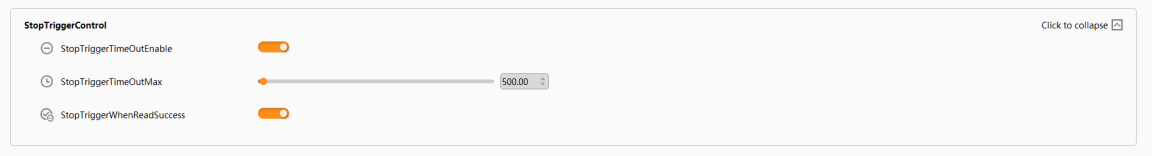


Table 4-24 Parameter Description

Item		Range/Option	Description
StopTriggerControl	StopTriggerTimeOutEnable	Y/N	It sets whether the timeout stopping function takes effect. This function is only valid when the **TriggerType** is the **MultiFrame** or the **PhaseMode**.
	StopTriggerTimeOutMax	0 ~ 60000	It controls the timeout value for trigger stopping. This function will be only valid after the StopTriggerTimeOut is enabled.
	StopTriggerWhenReadSuccess	Y/N	It sets whether the code reading stopping function when the reading meets the success standard takes effect.

DigitalIOControl

Figure 4-33 DigitalIOControl Interface

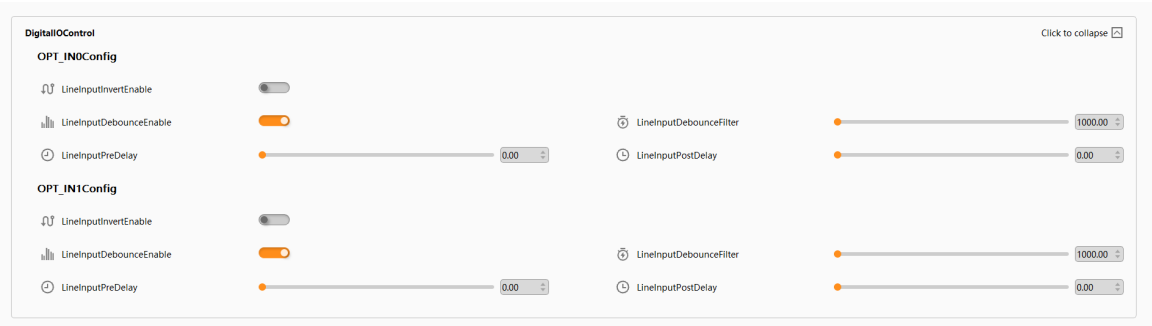


Table 4-25 Parameter Description

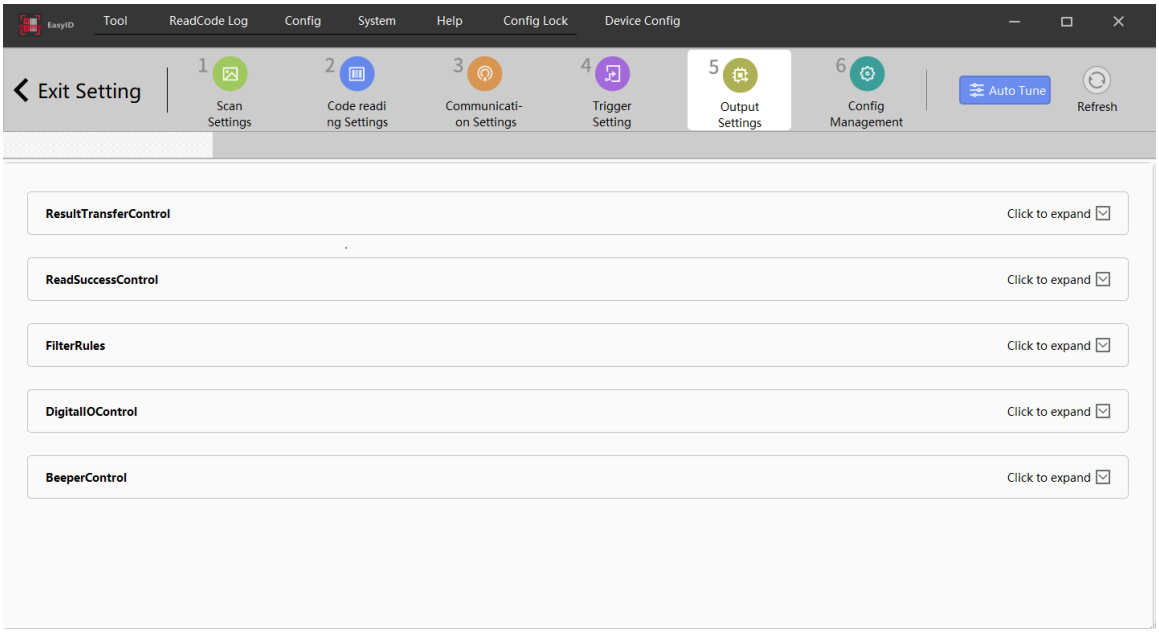
Item	Range/Option	Description
LineInputInvertEnable	Y/N	It sets whether the level status inversion function takes effect.
LineInputDebounceEnable		It sets whether the debounce function takes effect.
LineInputDebounceFilter	1000 us ~ 255000 us	It controls the duration of the signal debouncing.

Item	Range/Option	Description
LineInputPreDelay	0 ms ~ 2000 ms	It controls the delay arriving time of the input signal.
LineInputPostDelay		It controls the delay stopping time of the input signal.

4.1.5 Output Settings

You can configure the parameters of the five modules in the Output Settings, including the ResultTransferControl, ReadSuccessControl, FilterRules, DigitalIOControl, and BeeperControl.

Figure 4-34 Output Settings



4.1.5.1 ResultTransferControl

Figure 4-35 ResultTransferControl Interface

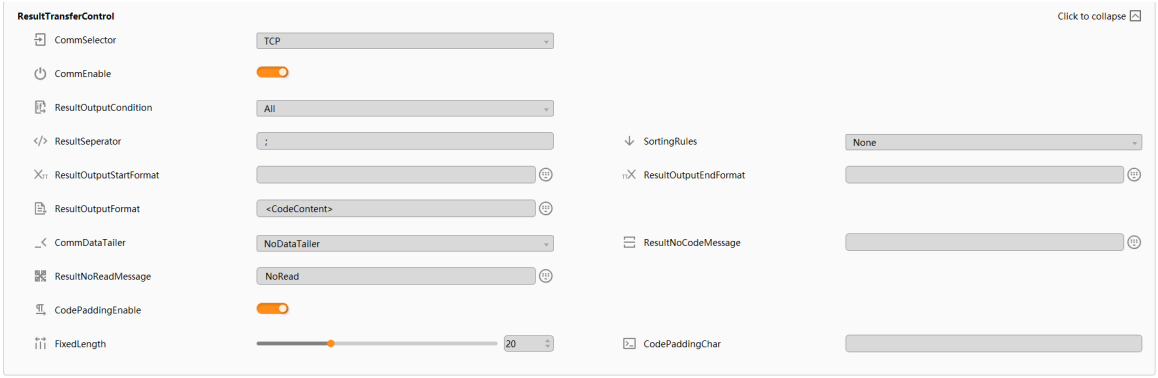


Table 4-26 Parameter Description

Item	Range/Option	Description
CommSelector[1]	TCP/ Serial/ Profinet/ ModbusTCP/ FINS/ EthernetIP/ MC	It specifies the communication protocol of the result transmission.
CommEnable	Y/N	It sets whether the selected communication protocol of the result transmission takes effect.
ResultOutputCondition	Disable/ All/ ReadFail/ ReadSuccess/ Customize	It specifies the data output logic which performs based on the code reading results. ● Disable: the device does not output any results. ● All: the device outputs all reading results by default. ● ReadFail: the device outputs results when the code reading is failed. ● ReadSuccess: the device outputs results when the code reading is successful. ● Customize: the device outputs the user defined content based on the associated script.
ResultSeperator	User Defined	It specifies the separator between the reading results.
ResultOutputStartFormat	User Defined/ Keypad List	It specifies the content format of the starter of the whole data. You can specify the content format by selecting the supported metadata in the keypad list.
ResultOutputFormat	User Defined/ Keypad List	It specifies the content format of the output result. You can specify the content format by selecting the supported metadata in the keypad list.
CommDataTailer	NoDataTailer/ DataTailer_CR/ DataTailer_LF/ DataTailer_CR_LF	It specifies the content format of the ender of the whole data.
ResultNoReadMessage	User Defined/ Keypad List	It specifies the content of the output result when no code is read. You can specify the content format by selecting the supported metadata in the keypad list.

Item	Range/Option	Description
SortingRules	None/ Coordinate_X_Ascending/ Coordinate_X_Descending/ Coordinate_Y_Ascending/ Coordinate_Y_Descending	It specifies the sorting rules to the reading results.
ResultOutputEndFormat	User Defined/ Keypad List	It specifies the content format at the end part of the code reading result. You can specify the content format by selecting the supported metadata in the keypad list.
ResultNoCodeMessage	User Defined/ Keypad List	It specifies the content of the output result when there are no codes in the image. You can specify the content format by selecting the supported metadata in the keypad list.
CodePaddingEnable	Y/N	It sets whether the result content padding function takes effect when the length of the result content does not reach the set value.
FixedLength	1~64	It controls the length of the transmitted code value.
CodePaddingChar	User Defined	It specifies the characters for padding the code value.

CommSelector: you can switch and enable other communication protocols to specify the content format of the output result.

4.1.5.2 GoodReadControl

Figure 4-36 ReadSuccessControl

Table 4-27 Parameter Description

Item		Range/Option	Description
ReadSuccess Control	TriggerResultOutputMode	EveryFrameResult / OneResultPerTrigger/ Test/ OneResultPerTriggerByScript	• EveryFrameResult: it outputs one result per frame of image. • OneResultPerTrigger: it outputs one result after performing the merging and deduplication on every result of the image. • Test: it outputs one result per frame of image, and outputs a summary result. • OneResultPerTriggerByScript: it outputs the customized result processed by the script.
	ExpectedDecodeNum	1 ~ Max	It controls the expected number of codes that needs to be read. When the number is greater than or equal to the set value, the code reading is successful; otherwise, it is failed.

4.1.5.3 FilterRules

Figure 4-37 FilterRules Interface

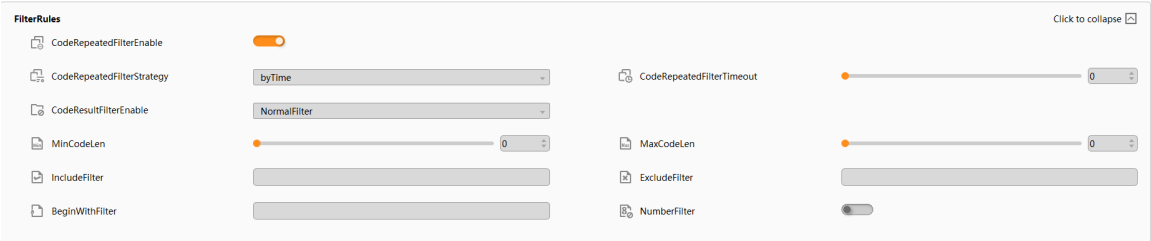


Table 4-28 Parameter Description

Item	Range/Option	Description
CodeRepeatedFilterEnable	Y/N	It sets whether the repeated codes filtering function takes effect.
CodeRepeatedFilterStrategy	byTime/ byFrame/ byResult	It specifies the filtering strategy for the repeated codes. • byResult: it compares to the last filtered result. • byTime: it filters the repeated codes out in a period of time. • byFrame: it filters out the repeated codes that occur in the two previous and current frames of images.

Item	Range/Option	Description
CodeRepeatedFilterTimeout	0 ms ~ 20000ms	It controls the timeout value of the filtering function for the repeated codes. This function is only valid when the CodeRepeatedFilterStrategy is the byTime.
CodeResultFilterEnable	None/ NormalFilter/ RegularFilter	• NormalFilter: it provides some simple filtering options. • RegularFilter: it specifies the filtering rules by the entered regular expression.
MinCodeLen	0 ~ Max Code Length	It controls the minimum length of the code value. This function is only valid when the CodeResultFilterEnable is the NormalFilter.
MaxCodeLen	Min Code Length ~ 256	It controls the maximum length of the code value. This function is only valid when the CodeResultFilterEnable is the NormalFilter.
NumberFilter	Y/N	It keeps the code reading results of the numbers. This function is only valid when the CodeResultFilterEnable is the NormalFilter.
IncludeFilter	User Defined	It keeps the code reading results containing the specific characters. This function is only valid when the CodeResultFilterEnable is the NormalFilter.
ExludeFilter		It does not keep the reading results containing the specific characters. This function is only valid when the CodeResultFilterEnable is the NormalFilter.
BeginWithFilter		It keeps the code reading results which start with the specific characters. This function is only valid when the CodeResultFilterEnable is the NormalFilter.
RegularExpression		It keeps the code results which meet the requirements of the regular expression. This function is only valid when the CodeResultFilterEnable is the RegularFilter.

4.1.5.4 DigitalIOControl

Figure 4-38 DigitalIOControl Interface

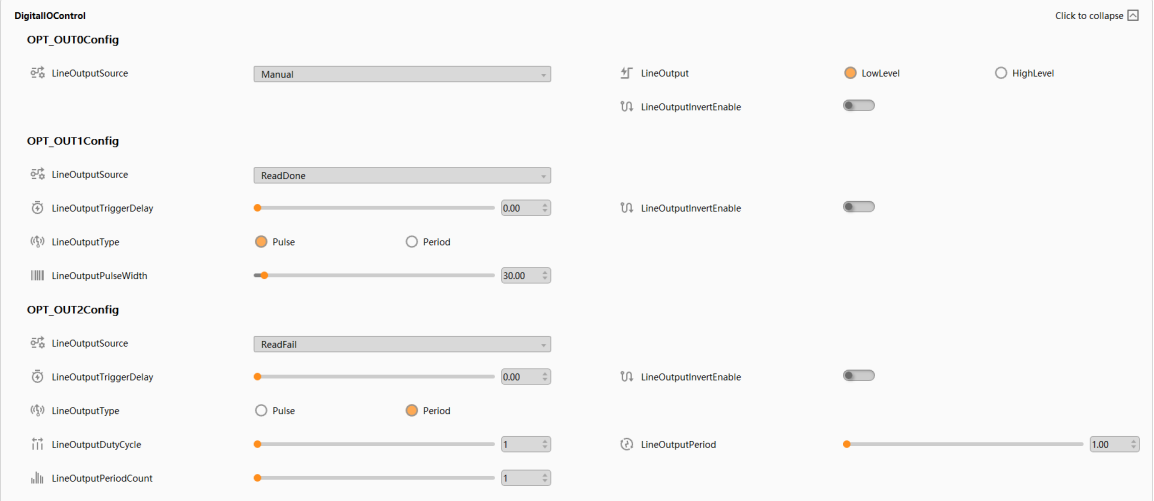


Table 4-29 Parameter Description

Item	Range/Option	Description
LineOutputSource	Manual/ ReadDone/ ReadFail/ ReadSuccess	It specifies the output type of the code reading results.
LineOutput	LowLevel/ HighLevel	It specifies the level type of the output signal.
LineOutputInvertEnable	Y/N	It sets whether the level inversion function takes effect. For example, if the input signal is the high level, after inverting, the input signal will be low level.
LineOutputTriggerDelay	0 ms ~ 1000 ms	It controls the delay time of the output signal.
LineOutputType	Pulse/ Period	It specifies the type of the output I/O signals.
LineOutputPulseWidth	1 ms ~ 1000 ms	It controls the width of the output pulse signals. This function is only valid when the **LineOutputType** is the **Pulse**.
LineOutputDutyCycle	0 ~ 100	It controls the duty ratio of the period signal. This function is only valid when the **LineOutputType** is the **Period**.
LineOutputPeriod	1 ms ~ 1000 ms	It controls the period of periodic signals. This function is only valid when the **LineOutputType** is the **Period**.
LineOutputPeriodCount	1 ~ 7	It controls the number of the output periodic signals.

4.1.5.5 BeeperControl

Figure 4-39 BeeperControl Interface

Table 4-30 Parameter Description

Item	Range/Option	Description
BeeperInputSource	Disable/ ReadDone/ ReadFail/ ReadSuccess	It specifies the working mode of the beeper based on the code reading results.
BeepTimes	1 ~ 7	It controls the number of the beeps each time.
BeepInterval	1 ~ 1000	It controls the interval time between two beeps.
BeeperTriggerDelay	0 ~ 1000	It controls the delay time of the beeper triggering.
BeepDuration	1 ~ 1000	It controls the duration of beep.

4.1.6 Config Management

4.1.6.1 Parameter Configuration

After configuring the parameters, you 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 4-40 Config Management Interface

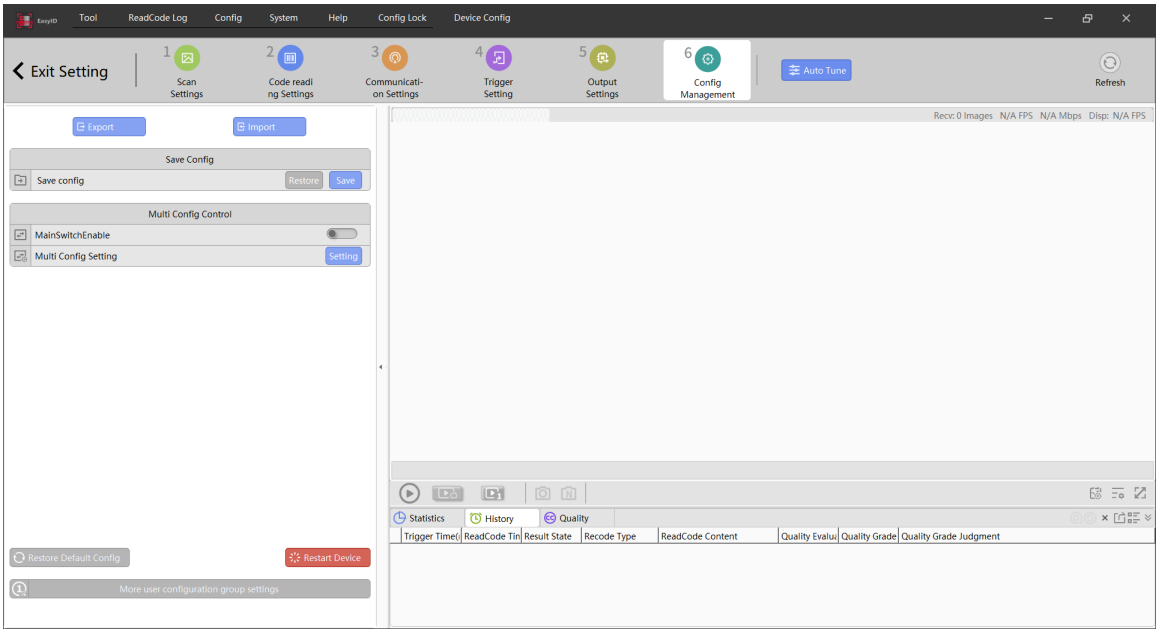
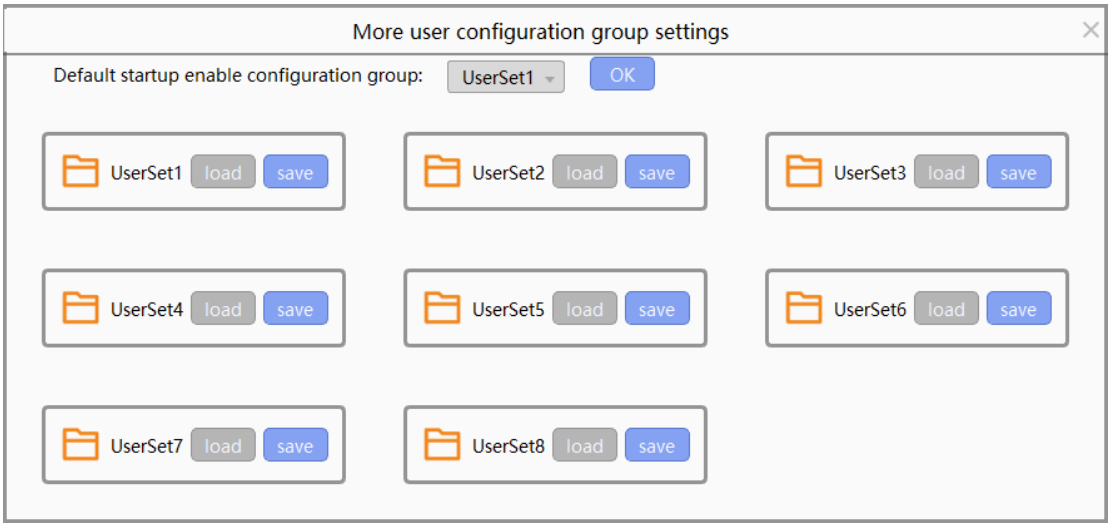


Table 4-31 Parameter Description

Item	Description
Export	It exports the configuration file of the loaded or configured parameters in current.
Import	It imports the configuration file from the local source.
Restore	It restores to the configuration saved in the last time.
Save	It saves the current configured parameters.
MainSwitchEnable	It sets whether multiple configuration switch function takes effect.
Multi Config Setting	You can configure the relevant parameters of seven sets in the MultiConfigPage.
Restore Default Config	It restores the device to the factory configuration.
Restart Device	It restarts the device.
More User Configuration Group Setting	It loads the saved configuration or saves the current configured parameters.

After clicking the **More User Configuration Group Setting**, the configuration window will pop up.

Figure 4-41 More User Configuration Group Setting



Select any **UserSet** in **Default Startup Enable Configuration Group** and click **OK**. The parameters that you have configured will be saved into the selected UserSet.

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

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

4.1.6.2 MultiConfig Setting

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

Figure 4-42 MultiConfigPage

Table 4-32 Parameter Description

Item	Range/Option	Description
MainSwitchEnable	ON/OFF	It sets whether the multiple configurations switching function takes effect. There are eight groups of parameters. You can configure the parameters of Config 0 to Config 7. After enabling it, the parameters of Config 0 to Config 7 will be locked.
StartSwitchStrategy	LastStopCfg/ FirstEnableCfg	• LastStopCfg: it continues the polling from when you stopped polling last time. • FirstEnableCfg: it starts polling from the first group.
CurrentConfig	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 4-43 Multi Config Setting

Independent Configuration

Setting Project		Config0	Config1	Config2	Config3	Config4	Config5	Config6	Config7
General Configuration	SwitchEnable	False	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	150	150	150	150	150	150	150	150
Focus	FocusEnable	False	False	False	False	False	False	False	False
	FocusPosition	0	0	0	0	0	0	0	0
ISP	ExposureTime	5000.00us	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
MatrixCode	QREnable	False	False	False	False	False	False	False	False
	MQREnable	False	False	False	False	False	False	False	False
	DMEnable	True	True	True	True	True	True	True	True
	DecodeNum	1	1	1	1	1	1	1	1
	DeCodeTimeOut	200	200	200	200	200	200	200	200
	DecodeMode	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
	VersionMinQR	1	1	1	1	1	1	1	1
	VersionMaxQR	10	10	10	10	10	10	10	10
	VersionMinDM	2	2	2	2	2	2	2	2
	VersionMaxDM	9	9	9	9	9	9	9	9
	CodeColor	Auto	Auto	Auto	Auto	Auto	Auto	Auto	Auto
OuterLight	OuterLight0Mode	Off	Off	Off	Off	Off	Off	Off	Off
	OuterLight1Mode	Off	Off	Off	Off	Off	Off	Off	Off
	OuterLight2Mode	Off	Off	Off	Off	Off	Off	Off	Off

4.1.7 Auto Tune

The **Auto Tune** can automatically adjust the parameters of the device to meet the requirements of the 1D codes and 2D codes reading in various scenarios, which can optimize the efficiency and accuracy of the code reading.

Click **Auto Tune** on the **Quick Access Toolbar** to enter its configuration interface. The device automatically adjusts the many parameters, such as focal length, exposure, gain, fill light, code reading, etc., to achieve a better effect of the code reading.

Figure 4-44 Auto Tune Interface

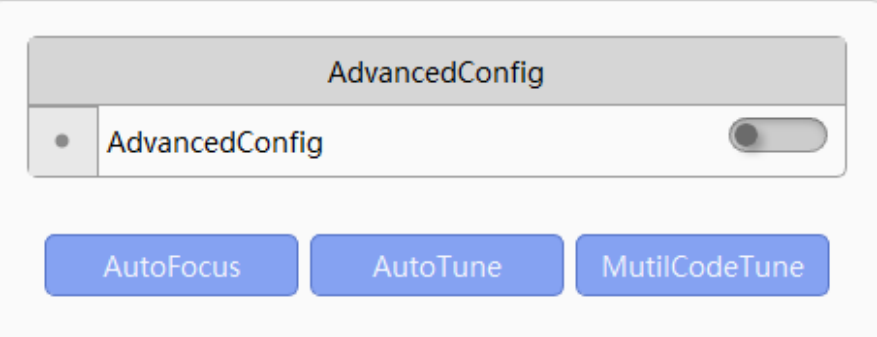


Table 4-33 Parameter Description

Parameter	Range/Option	Description
AutoFocus	NA	It performs the focus automatic adjustment. If the device is without the auto-focus function, the button will be grayed out.
AutoTune		It is suitable for training one single code in the image.
MultiCodeTune		It is suitable for training the codes in the specific areas, which can train multiple codes. You should draw multiple ROI boxes on the image.

After completing the training, the adjusted parameters will be automatically synchronized in to the current configuration set. You also can save the trained parameters into the specified configuration set of the multi-configuration switching function in the Training Completes prompt window.

Figure 4-45 Training Completes

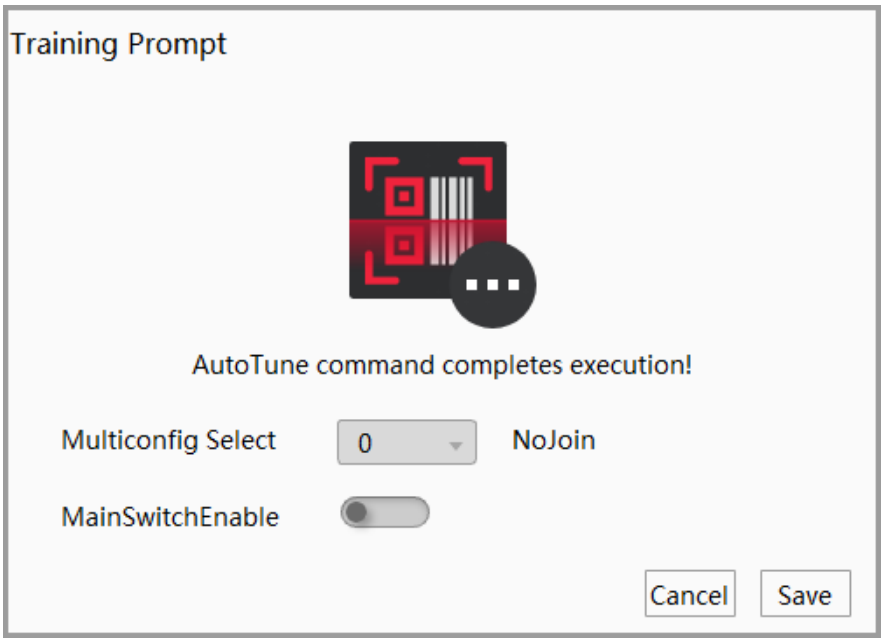


Table 4-34 Parameter Description

Parameter	Range/Option	Description
Multiconfig Select	NA	You can select the specific configuration set and save the trained parameters into it.
MainSwitchEnable		It sets whether the multi-configuration switch function takes effect.
Cancel		Abandon the trained parameters.
Save		Save trained parameters and finish the training.

You can enable the AdvancedConfig to set the parameters of the Auto Tune.

Figure 4-46 AdvancedConfig Interface

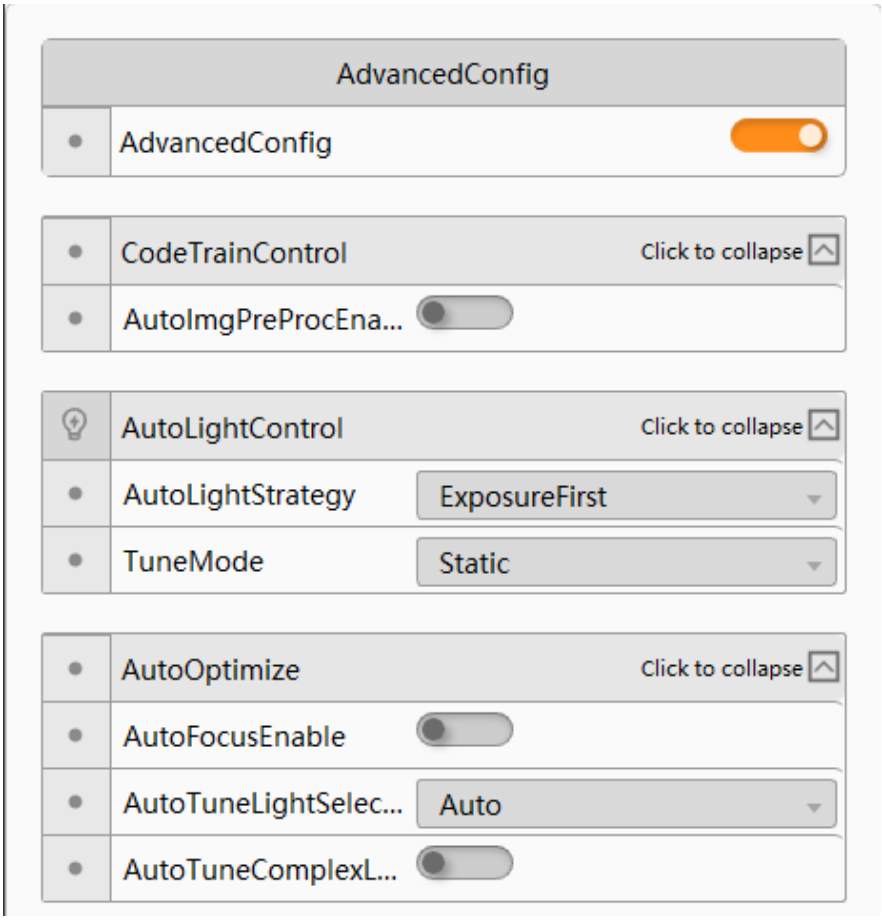


Table 4-35 Code Train Control

Parameter	Range/Option	Description
AutoImgPreproc Enable	ON/ OFF	It sets whether the pre-procession parameters training function takes effect.

Table 4-36 Auto Light Control

Parameter	Range/Option	Description
AutoLightStrategy	Exposure First/ Gain First	It adjusts the selected parameter preferentially until it reaches the limit when performing the automatic brightness adjustment. • Exposure First: it adjusts the exposure value preferentially in the limited range. • Gain First: it adjusts the gain value preferentially.
TuneMode	Static/ Dynamic/ Customize	It specifies the brightness training mode.

Table 4-37 Auto Optimize

Parameter	Range/Option	Description
AutoFocusEnable	ON/OFF	It sets whether the focus adjustment trains in the automatic training.
AutoTuneLight Selector	NA	It specifies the range of the light source training. This function is only valid for the model with the focus adjustment.
AutoTuneComplex LightEnable	ON/OFF	It sets whether the parameters of the complex light source are being trained in the automatic training.

4.2 Menu Bar

This section introduces the functions in the menu bar.

4.2.1 Tool

The instruction of the CamTools are as follows.

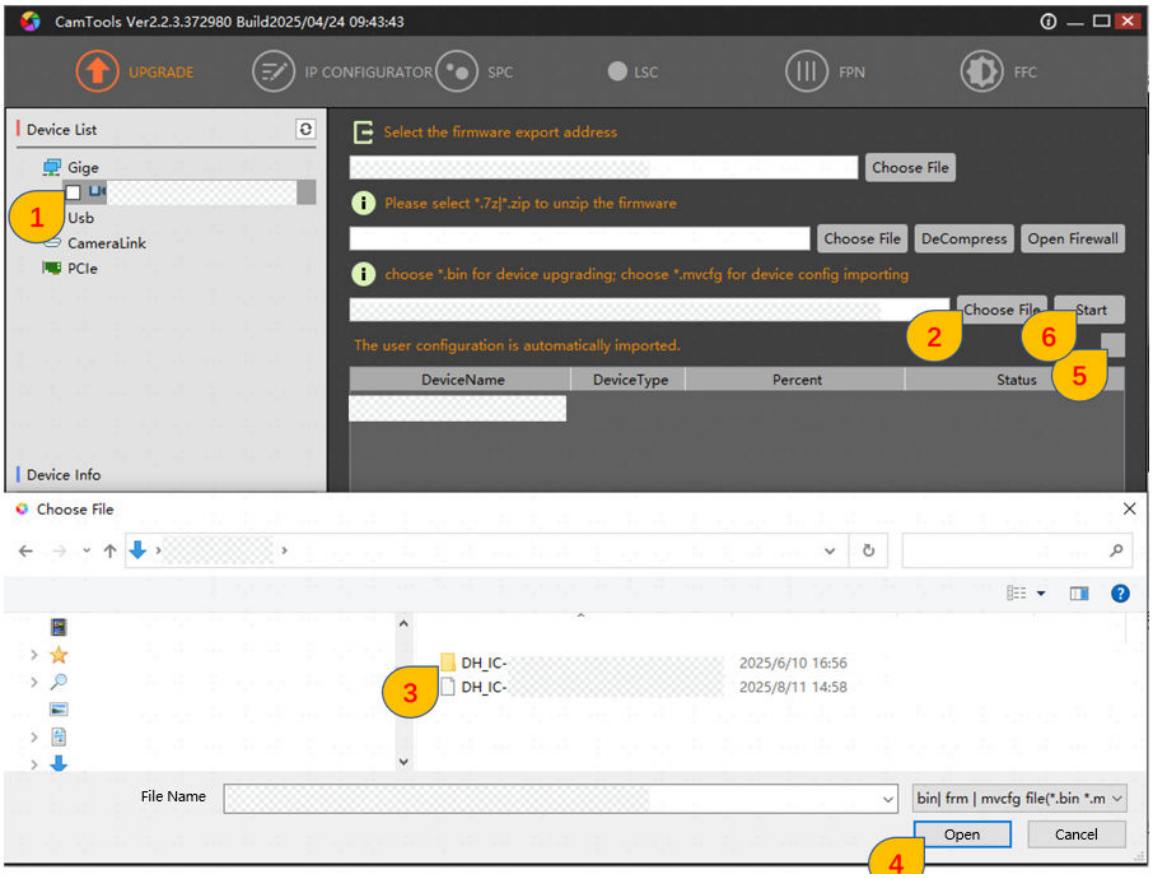
Procedure

Step 1 Click **Tool** > **CamTools**. The CamTools will be started.

Step 2 Select the device to be upgraded in the device list, and check the IP address of the device. Click **Choose File** on the configuration area, select the firmware file, and click **OK**.

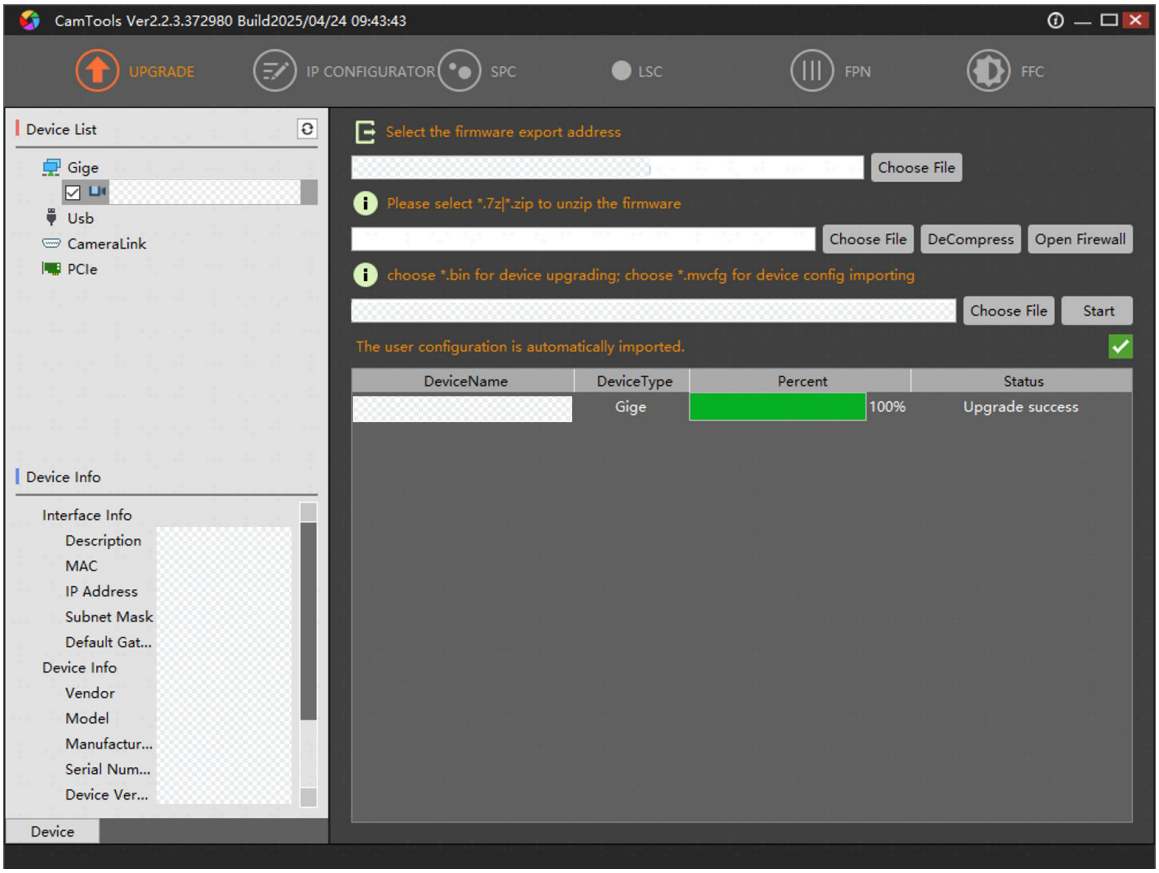
Step 3 Click **Start** to start the firmware upgrading. We recommend you select the Import User Configuration. It will import the user configuration into the device, as shown in the figure below.

Figure 4-47 CamTools



Step 4 After the firmware is successfully upgraded, the device will be automatically powered off and restarted. You can check the firmware version on the homepage of EasyID.

Figure 4-48 Firmware upgrade

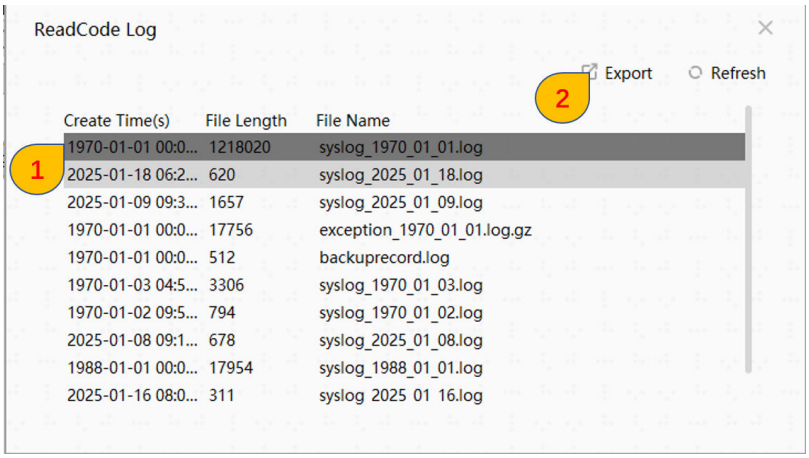


Before upgrading the firmware, please disconnect the connection between the device and EasyID; otherwise, it will prompt the **Connection Failed**.

4.2.2 ReadCode Log

This ReadCode Log window is a list of the code reading logs. You can select the log file and click the Export to save the log file into the PC. If you need to get our technical specialist's assistance, please provide the log files and device information.

Figure 4-49 Logs Export



4.2.3 Config

Figure 4-50 Functions in Config List

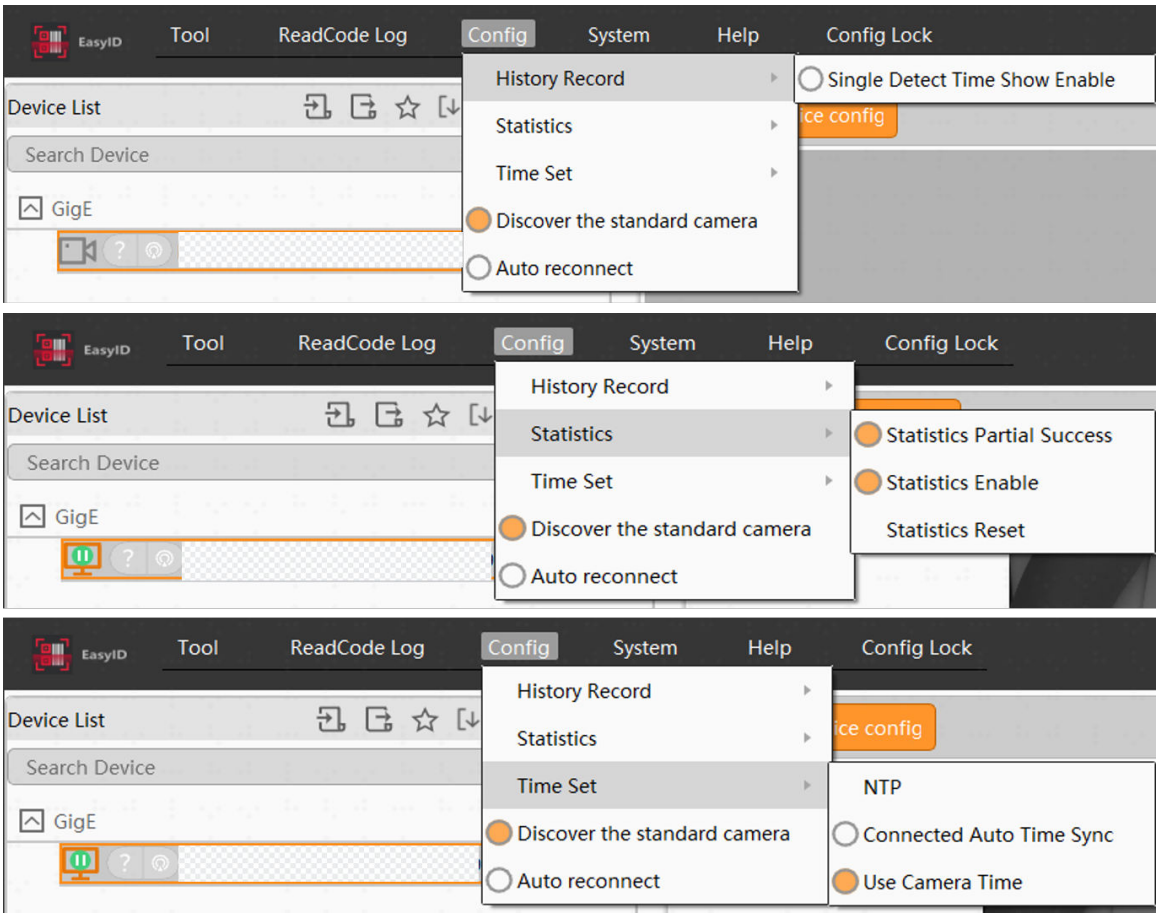


Table 4-38 Function Description

Item	Description
History Records	Single Detect Time Show Enable
Statistics	It includes the Statistics Partial Success, Statistics Enable, and Statistics Reset. If you set the ExpectedDecodeNum to 10, but only 8 codes are read, the code reading result is failed when the Statistics Partial Success is disabled.
Time Set	The options in the Time Set include NTP Mode, Connected Auto Time Sync, and Use Camera Time. The actual options shall prevail.
Discover the Standard Camera	Select it to find earlier version of the deivces.
Auto Reconnect	After enabling this function, the device can be automatically reconnected after disconnection.

4.2.4 System

Figure 4-51 Functions in System List

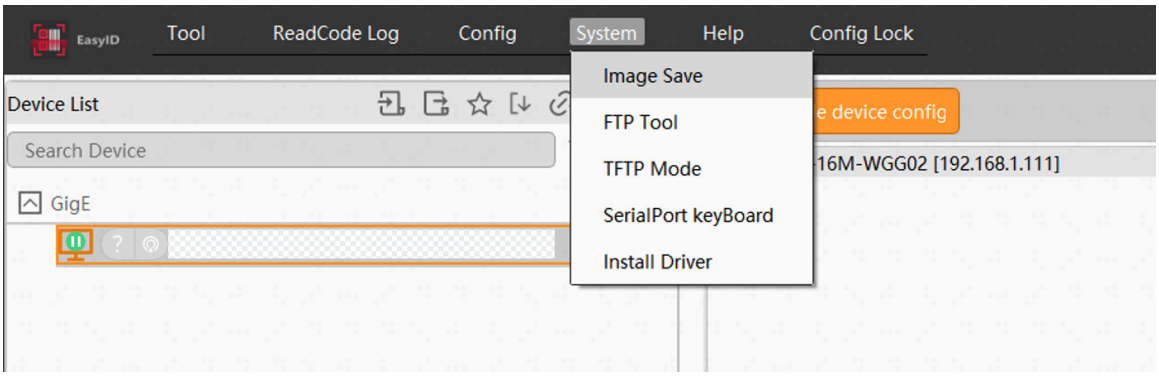


Figure 4-52 FTP Tool

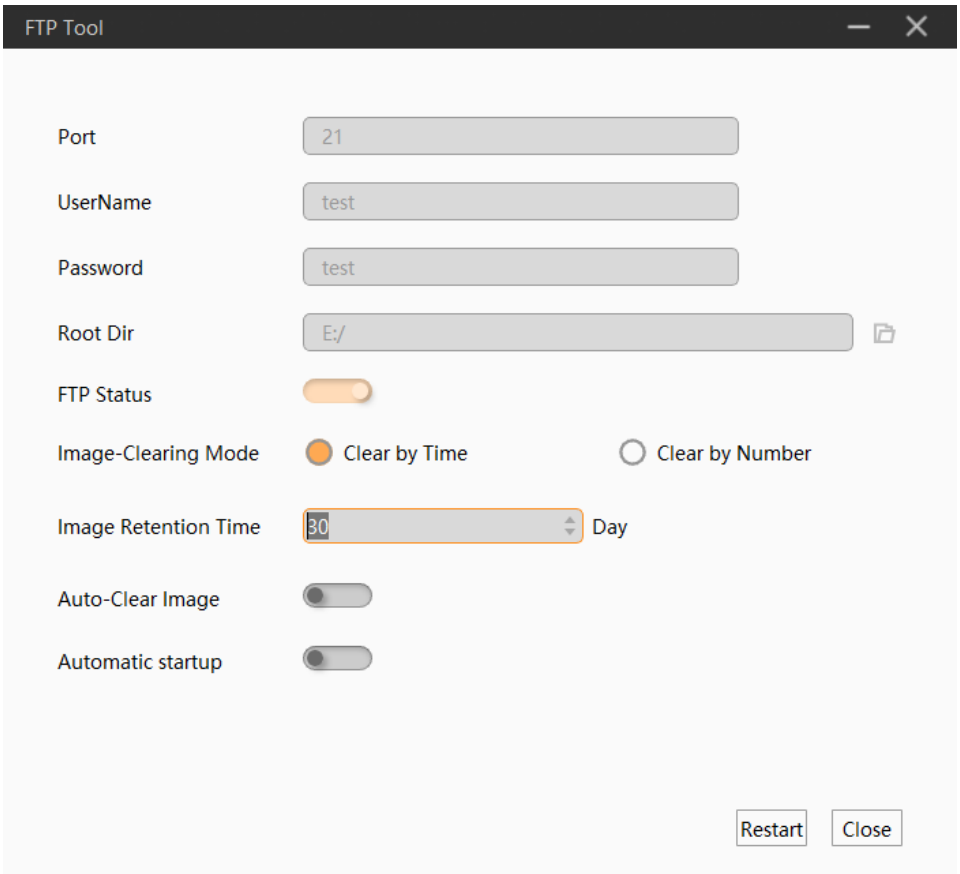


Figure 4-53 TFTP Mode

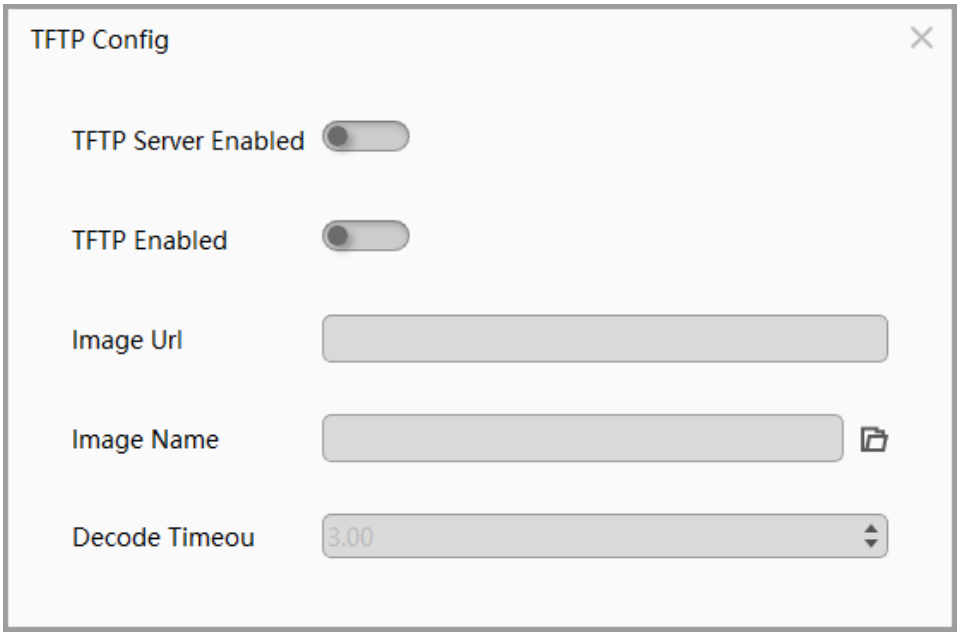


Table 4-39 Function Description

Item	Description
Image Save	You can save images based on the set saving policy, and customize the saving path.
FTP Tool	Start the FTP server that comes with EasyID, which is generally used with the FTP image storage function of the device. The FTP Image Saving function can save images based on the code reading status, and you can customize the image naming rules and saving path.
TFPT Mode	The commissioning function of the TFTP server is encrypted.
SerialPort Keyboard	It outputs the focus information, or outputs it to a certain position specified by the mouse.
Install Driver	For installing the drivers.

4.2.4.1 Image Save

Image Save is one of the most commonly used functions, which can save all decoded images according to the usage scenario for traceability. Besides, if the codes in the image are unable to decode, please provide the image to the sales representative or technical specialist for the parameter adjustment or algorithm optimization.

Figure 4-54 Image Save

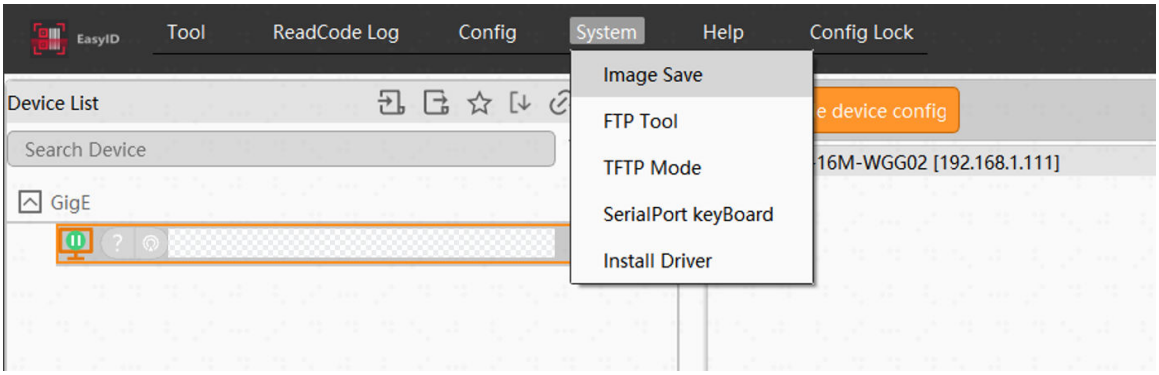
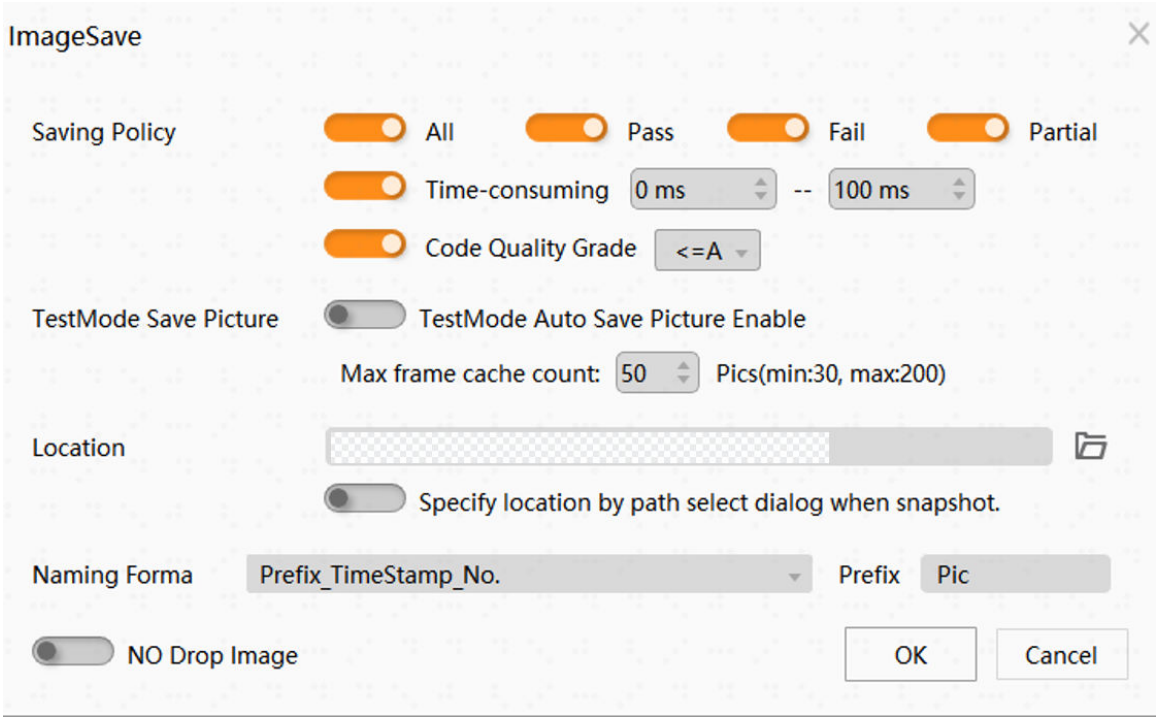


Figure 4-55 Image Save Interface



You can save the images in BMP or JPEG format. You can select storage strategies, including all pictures, decoding, decoding failure, partially decoded. There are two methods to save images:

Figure 4-56 Image Saving Buttons

Table 4-40 Function Description

No.	Name	Description
1	Snapshot	**Record** button is in the control bar under the image display area, it can save every received image until it is disabled.
2	Record	**Snapshot** button is in the control bar under the image display area, and it can save one image when it is pressed.

4.2.4.2 SerialPort Keyboard

You can use this function to debug the device.

Figure 4-57 Virtual Keyboard

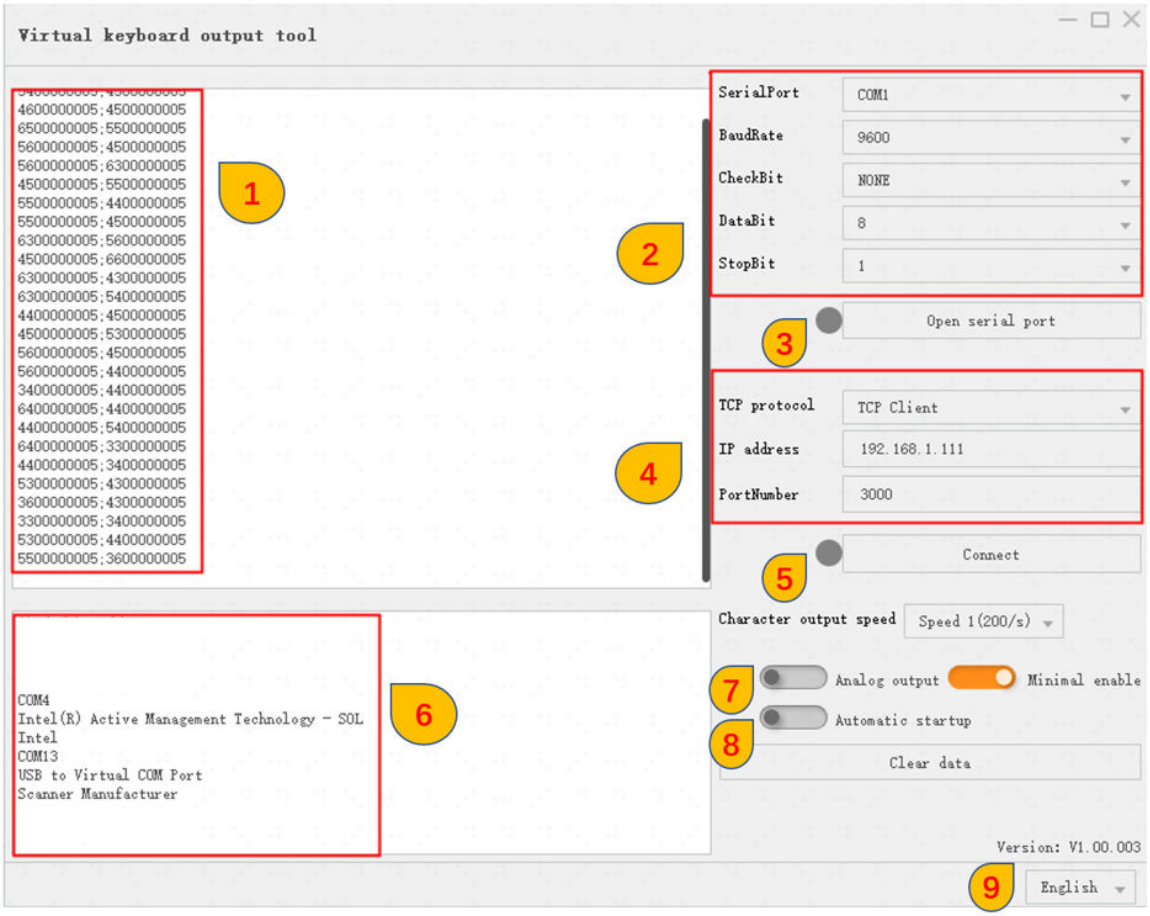


Table 4-41 Function Description

No.	Description
1	It displays the data outputted by the device.
2	The relevant parameters of the serial port.
3	It sets whether the serial port protocol takes effect.
4	The relevant parameters of the TCP.
5	It sets whether the TCP protocol function takes effect.
6	It displays the data of the log outputted by this keyboard.
7	It sets whether the analogue output function takes effect.
8	It sets whether the automatic startup function takes effect.
9	It specifies the interface language. The options include the English and Chinese.

Table 4-42 Parameter Description

Item	Description
Serial Port Virtual Keyboard	You can click **Open serial port** to enable the serial port function. For more details about the serial port configuration, see the "4.1.3 Communication Settings".
TCP Virtual Keyboard	You can click to enable the TCP virtual keyboard function. For more details about TCP configuration, see the "4.1.3 Communication Settings".
Character Output Speed	The options include the **Speed 1 (200/s)**, **Speed 2 (250/s)**, **Speed 3 (330/s)**, **Speed 4 (500/s)**, and **Speed 5 (1000/s)**. The low-speed transmission options are recommended, because the low transmission rate is more stable and reliable.
Analog Output	It sets whether the output function of virtual keyboard takes effect.
Minimal Enable	It sets whether the minimization function takes effect.
Automatic Startup	It sets whether the automatic startup function takes effect.
Clear Data	It clears the data information on the information area.
Language	It switches the interface language between English and Chinese.
Information Area	It displays the output data from the device.

Serial Port Analogue

Before performing the serial port analog, please ensure the wiring is normal, and check the serial port number of the receiving end.

Procedure

1. Click **Device Config** > **Serial Control**. Set the **UartEnable** to the **True**, and then you can configure the relevant parameters of serial port.
2. Click **Device Config** > **Result Transfer Control**. Set the **CommonSelector** to the **Serial** and set the **CommonEnable** to the **True**. After that, you can configure the relevant parameters of the result format.

Figure 4-58 SerialControl Feature

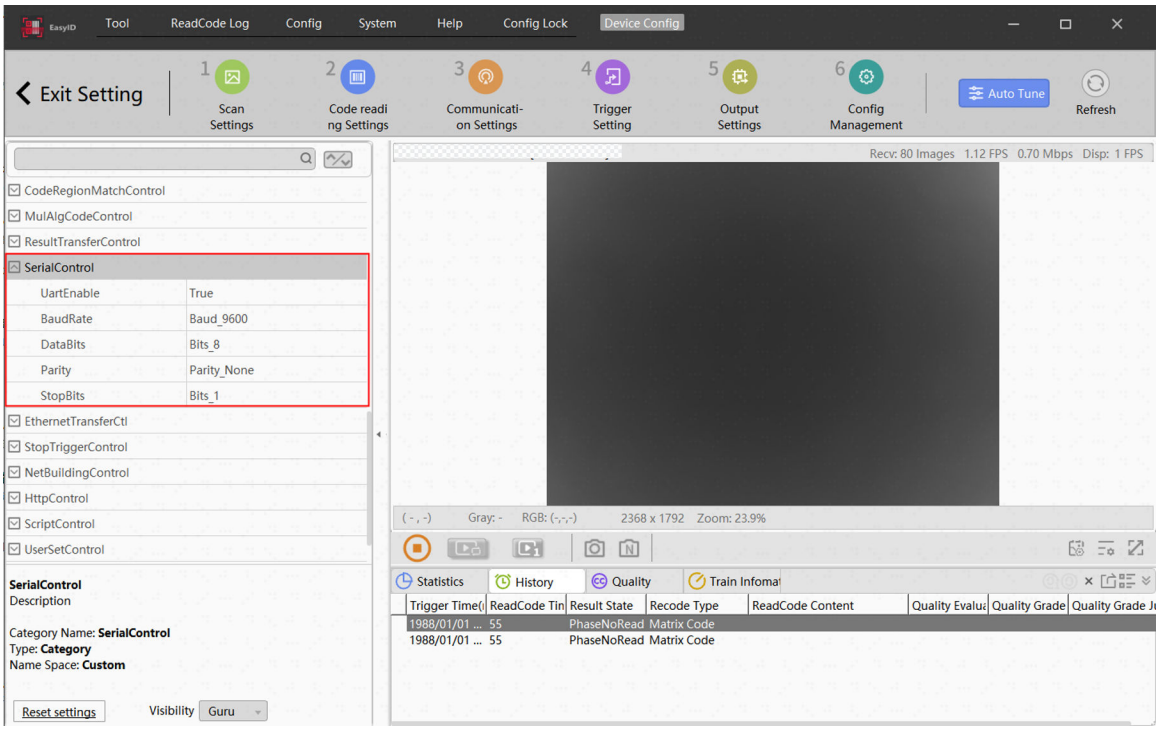
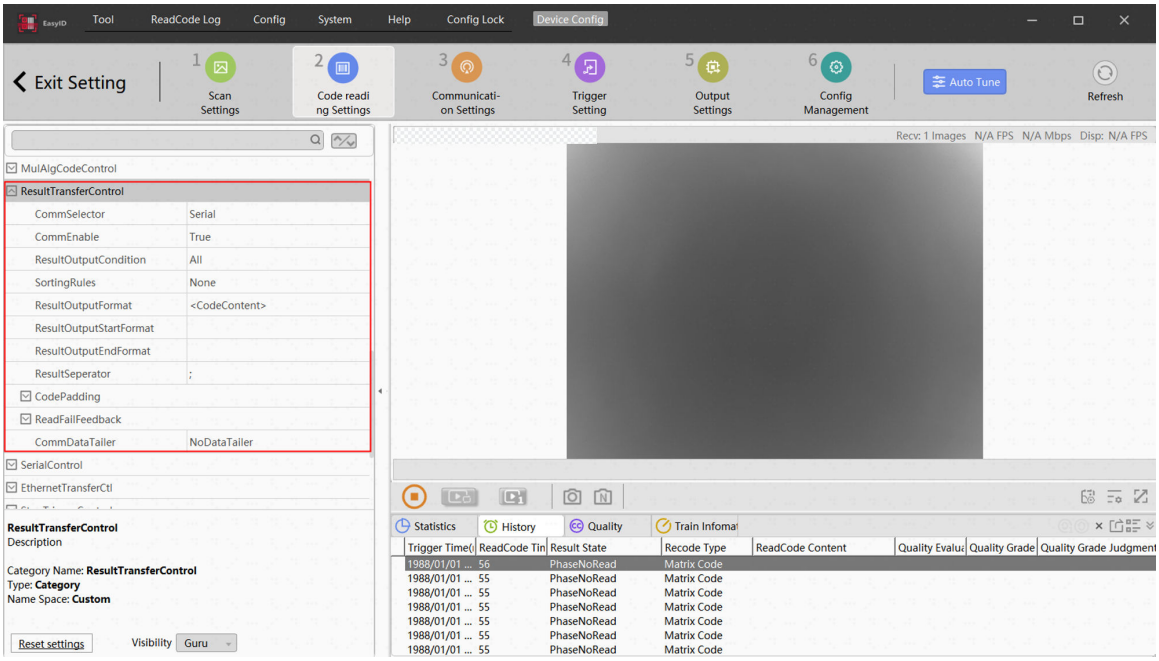
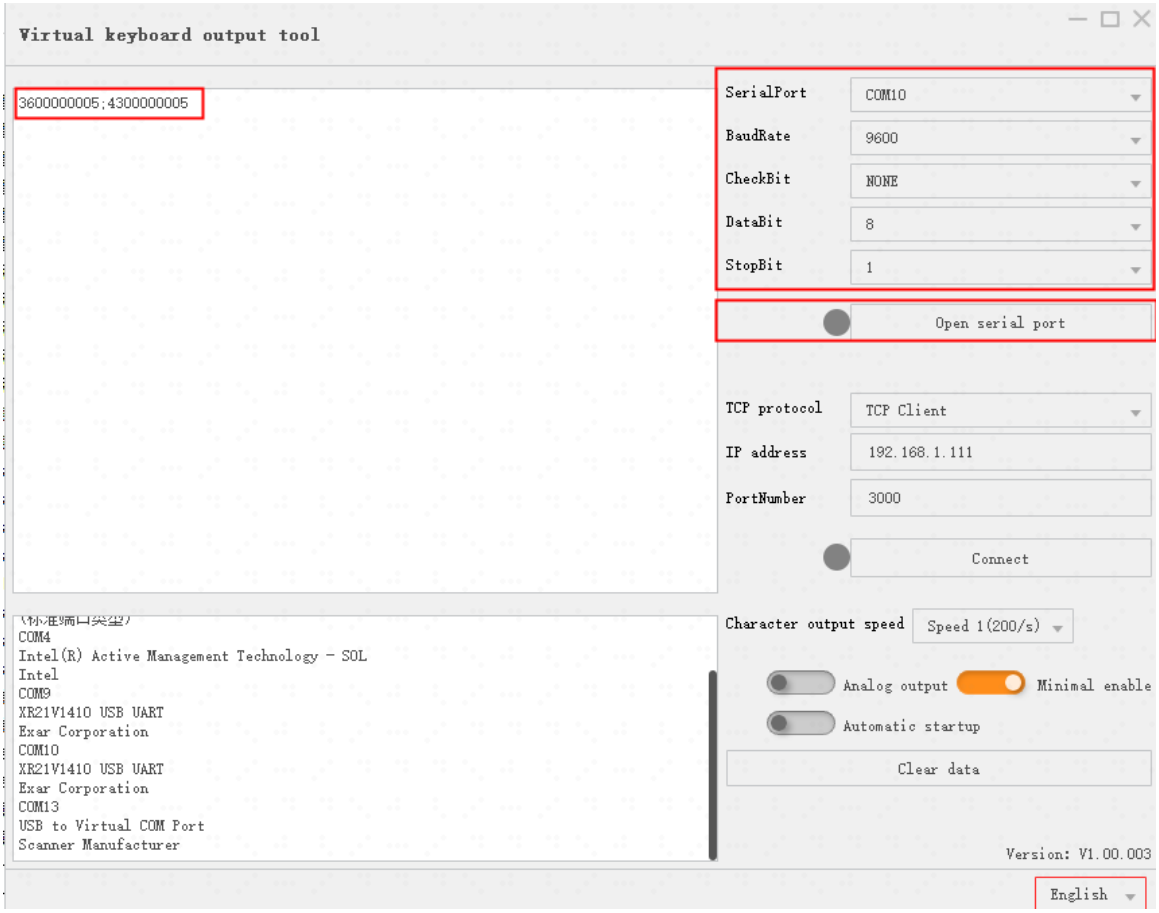


Figure 4-59 ResultTransferControl Feature



3. Click **System** > **Virtual Keyboard Output Tool**, and configure the **Serial Number** 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 at the information area.

Figure 4-60 Transmission result



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

TCP Service

The device can serve as either the TCP client or the TCP server. Take the device as the TCP client as an example, the setting procedures are similar to the serial port analog.

Procedure

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

Figure 4-61 EthernetTransferCtl Feature

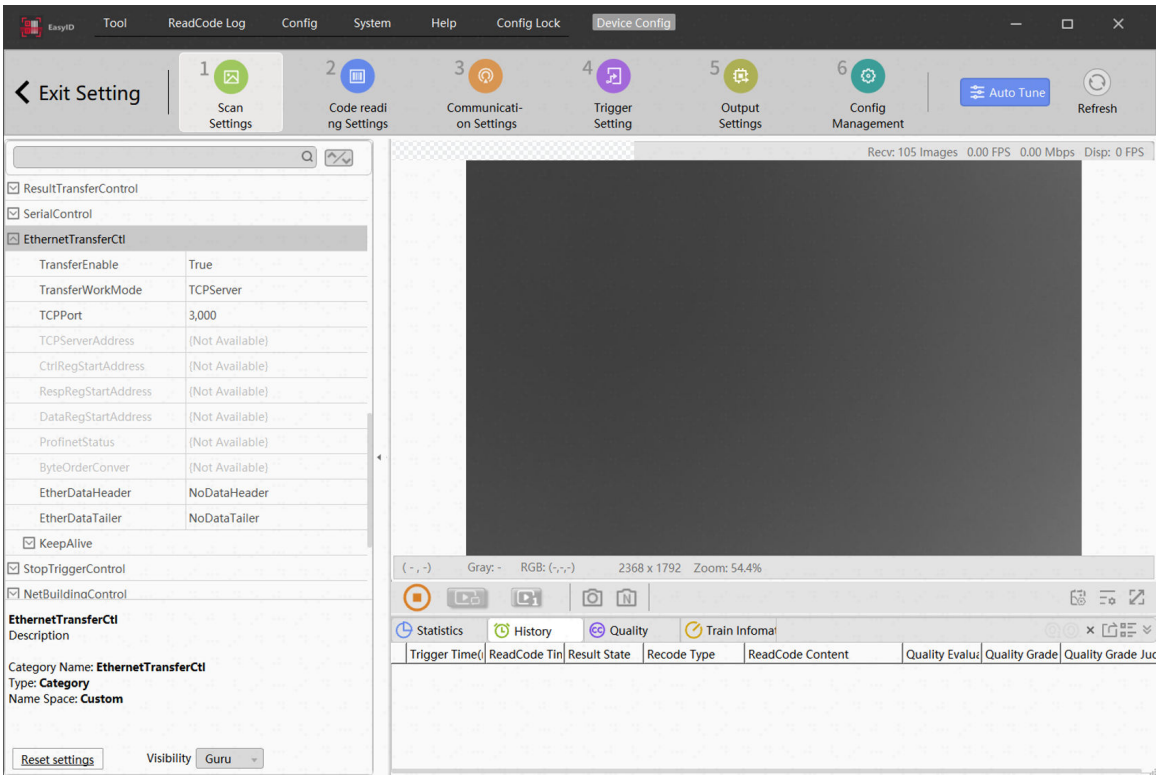
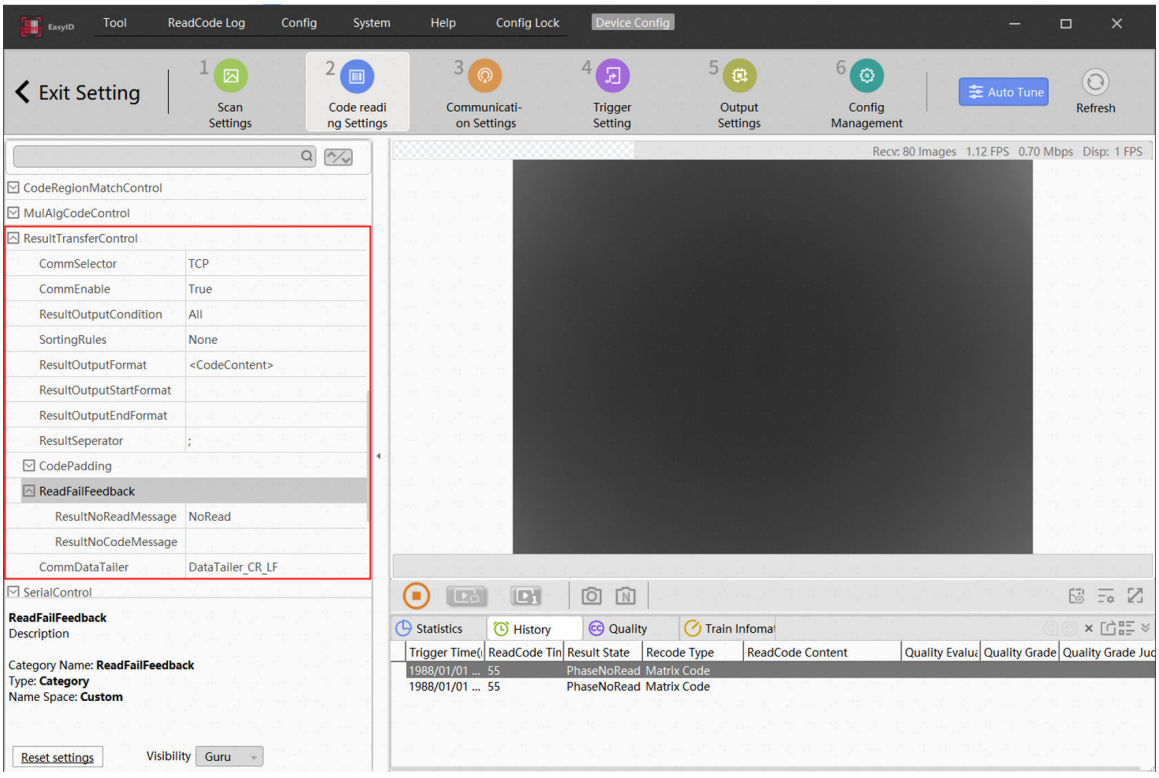
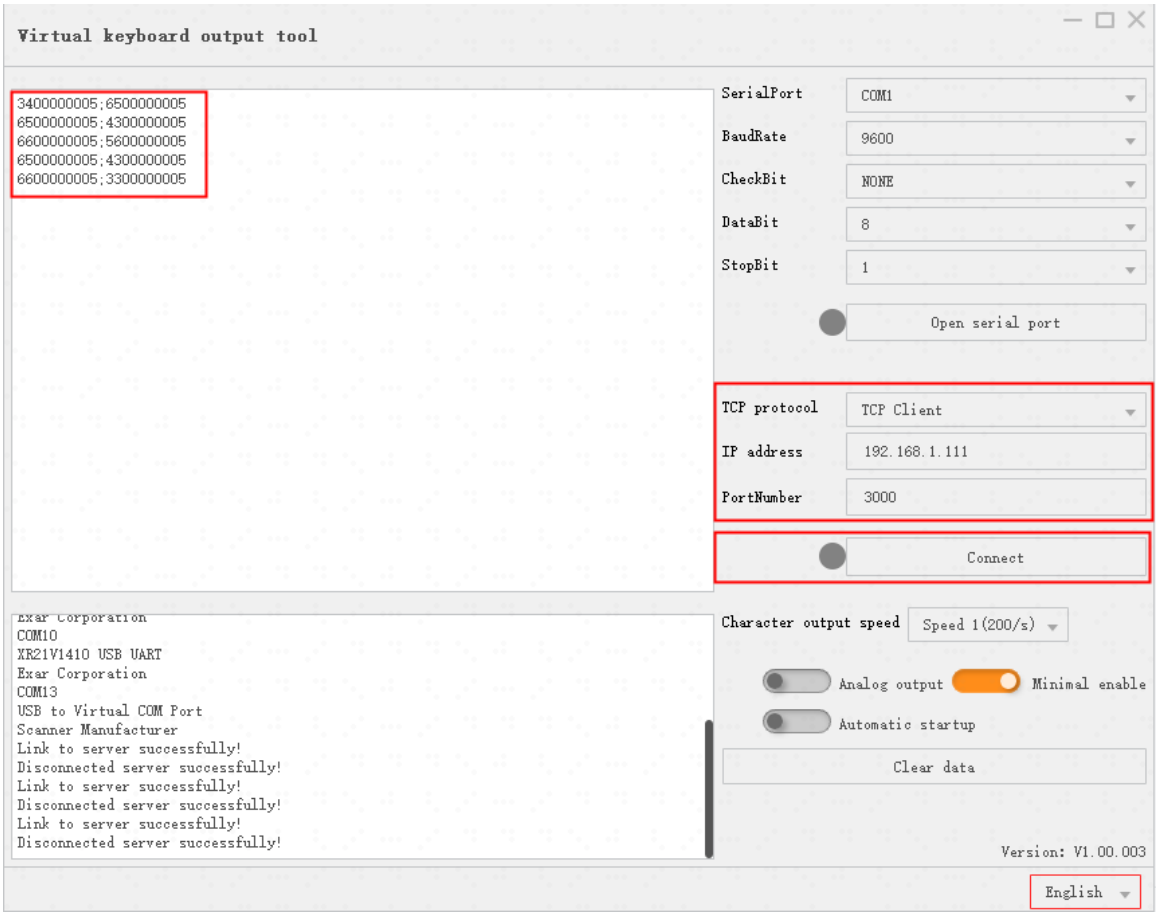


Figure 4-62 ResultTransferControl Feature



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

Figure 4-63 TCP Result Transmission



4.2.5 Help

Table 4-43 Function Description

Item	Description
AutoRun	After selecting the **Open**, the client will be automatically started with the system starting.
Language	You can switch the languages between Chinese and English.
Context Help	You can find the user manual and development manual in the popped-up folder.
About	It includes the information of client version and company.

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

Figure 4-64 Algorithm Result Area

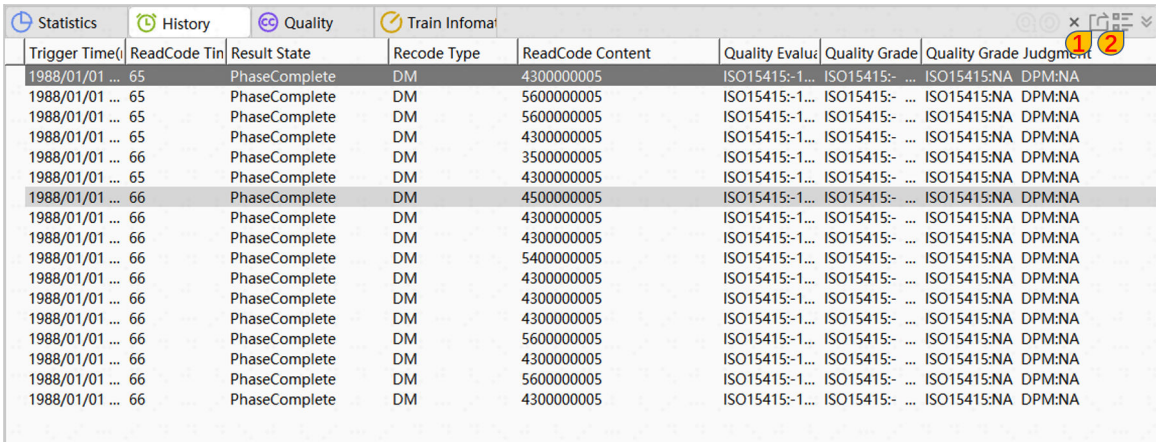


Table 4-44 Parameter Description

No.	Description
1	Export Result
2	Result Filter

When the device is reading the codes, you can click the statistics page to view the results in real time. If you need to clear the history records of the reading results, click **Config** > **Statistics** > **Statistics Reset** to reset the statistics.

Figure 4-65 Statistics Reset

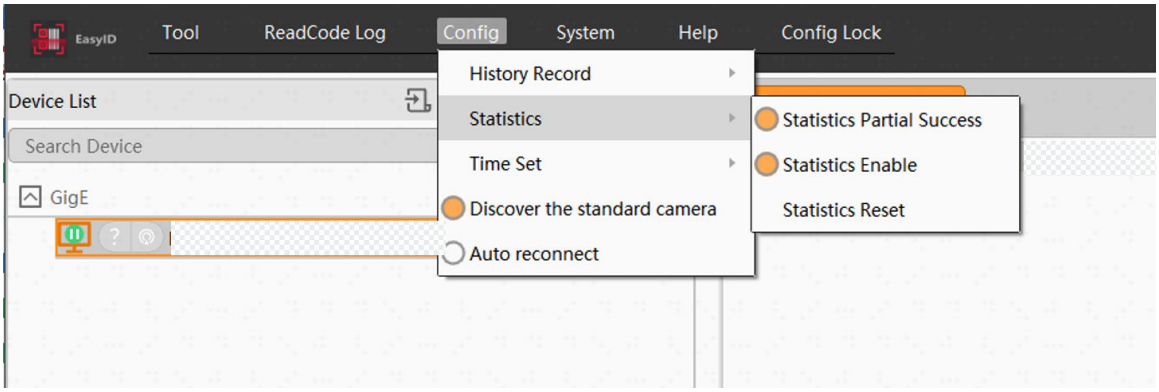
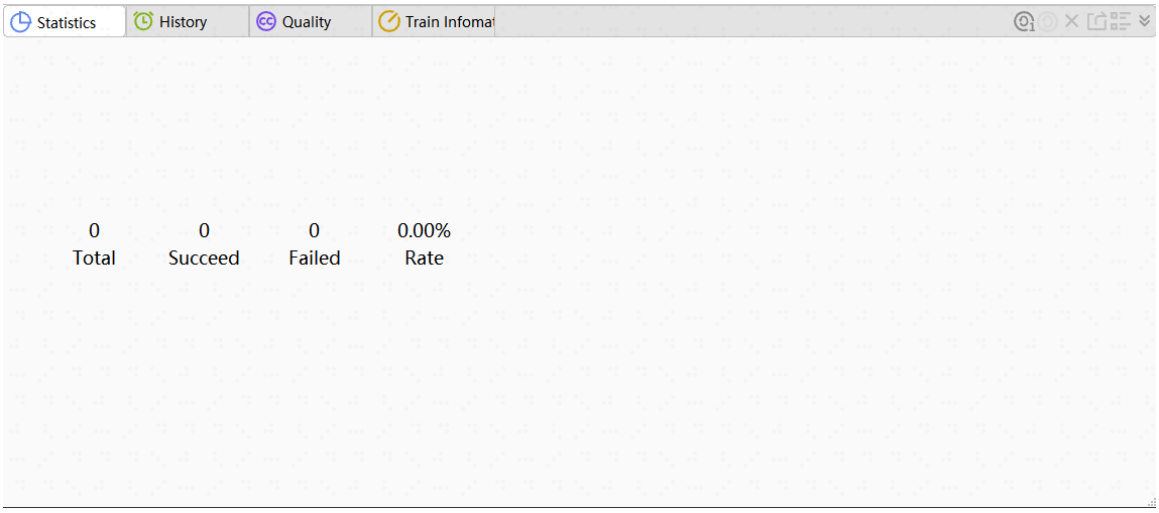


Figure 4-66 Statistical Information Area



5 FAQ (Frequently Asked Question)

5.1 Client Software Cannot Find Device

Possible Reasons

- Device are not started normally, and the power supply cannot meet the requirements.
- Abnormal network cable connection.
- The device and the client software are not on the same network segment.
- Firewall forbids the network access.

Solutions

- Power Supply: Ensure that the power supply and other cables are suitable.
- Network Connection: Check the indicator of the device, and make sure the network connection is normal. Also, make sure the device and client software are on the same network segment.
- Disable the firewall, or add the client software into the allow-list.

5.2 Device Disconnection

Possible Reasons

- Hardware: poor contact with the network card or with the network cable.
- Software: illegal configurations of the network adapter and the device.

Solutions

- Perform cross verification on hardwares, if failure happens, replace the corresponding hardware.
- Check the settings of the network card.
- Check the settings of the IP address.

5.3 Image Effect Does Not Meet Expectations

Possible Reasons

- Parameter Problem: the value of the **JpegQuality** is relatively low.

Solutions

- Check the **JpegQuality** under the **ImageOutputControl** feature in the **Device Config**.

5.4 1D Code Recognition Does Not Meet Expectations

Possible Reasons

- Image FOV or illumination does not meet the demands.
- Improper parameter configurations.

Solutions

- Check the parameters of image FoV and the illumination. Review the device parameters, such as the trigger mode, trigger delay, exposure and gain, illumination, etc.
- Check whether the algorithm is enabled. Review the algorithm parameters, such as the code type, scale, timeout, number, filter and error code rate.

5.5 Industrial PC Cannot Receive the Result Through TCP

Possible Reasons

- The network connection between the device and the PC is abnormal.
- The firewall protection mechanism of the PC leads to.
- The TCP protocol of the device is not enabled.
- The TCP result transmission of the device is not enabled.

Solutions

- Performs a ping operation in the command line of the industrial PC to ensure the connection between the device and the PC is normal.
- Check the settings of the firewall.
- Enable the communication protocol of the TCP client and the TCP server.
- Enable the result transmission of the TCP protocol of the device.

5.6 External Trigger Cannot be Enabled

Possible Reasons

- Incorrect cable connection of the 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.