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infoscan FV10X series

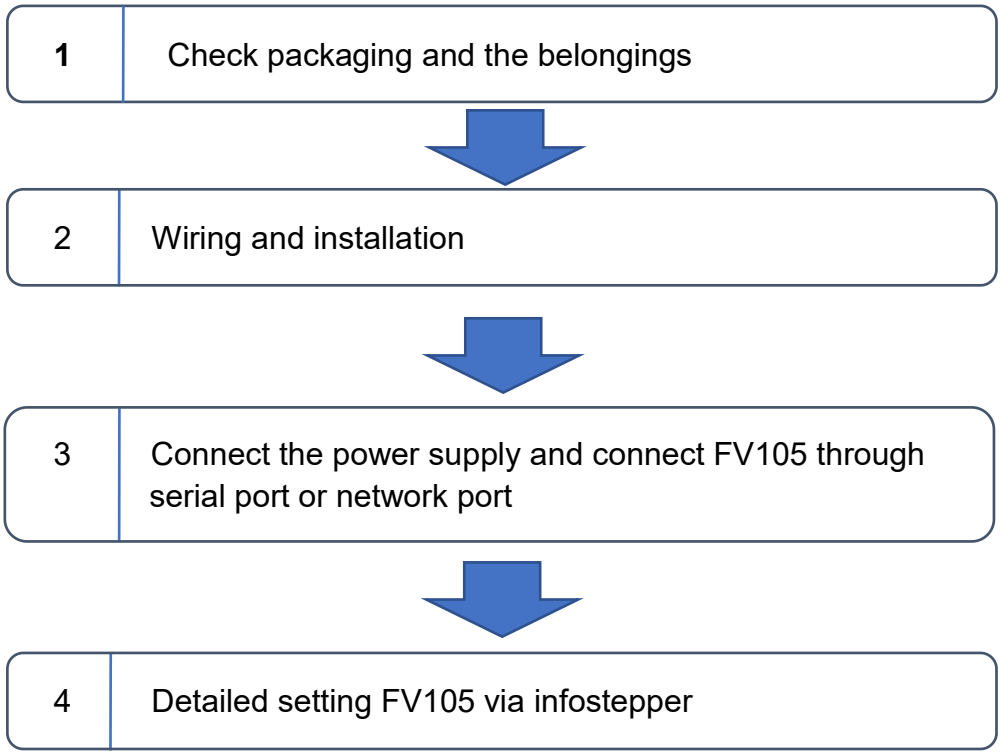
Operating Manual

NANJING BILIN INTELLIGENT IDENTIFICATION TECHNOLOGY COLTD

Ver:20220428

Catalogue

Set-up Process



FV104 is a manual-focusing barcode reader, and FV105 is an auto-focusing barcode reader.

In this manual, the FV105 model is used as an example, and the differences between the FV104 and FV105 are described and explained in remarks.

1 Unwrapped the Package

1.1 Scanner and its belonging

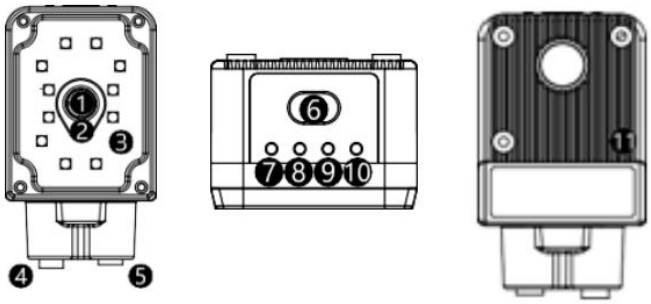
Model	Name	Package content	Quantity	Picture
FV10X	Industrial scanner	Scanner	1	
		Quick use guide	1	
		Fixed piece	1	
		Insulating gasket	1	
		Screw	5	

1.2 Cables and power supply

Please refer to the customer's actual order for product accessories

Name	Package content	Model	Quantity	Picture
Cable	Serial communication cable	H12S-2M-D9PF14-V1	1	
	Ethernet communication cable	H8S-2M-RJ-V1	1	
Power	Power adapter	WT48-2402000-T	1	

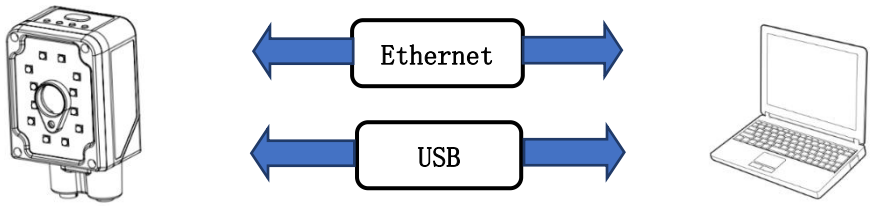
1.3 Scanner photographs



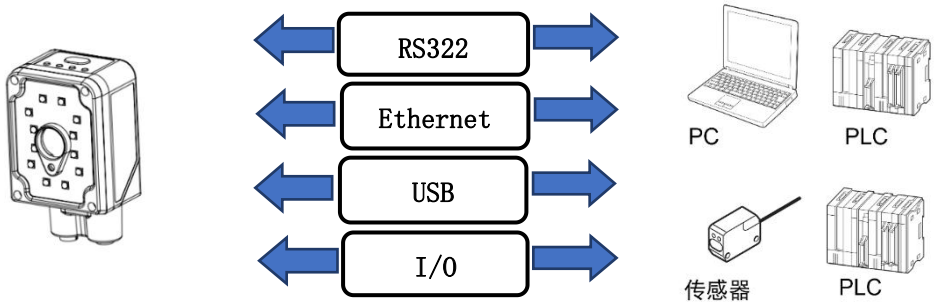
1	Camers lens
2	Laser aimer
3	Array LED light source
4	12PIN aviation jack (serial communication, power supply, I/O)
5	8PIN aviation jack (Ethernet communication)
6	Trigger button
7	PWR (power indicator red)
8	GOOD (read success indicator blue)
9	FAIL (read failure indicator red)
10	CIL (autofocus and parameter adjustment indicator red)
11	M5 fixed mounting holes

1.4 Configuration

Connection diagram：



Data communication：

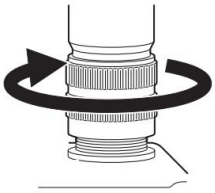


2 Connecting Diagram

2.1 Cable Connection Diagram

1. Connect the aviation plug (male) of the cable to the aviation plug (female) of the code reader. FV10X provides two interfaces, 12 core and 8 core. Be sure to connect accurately。

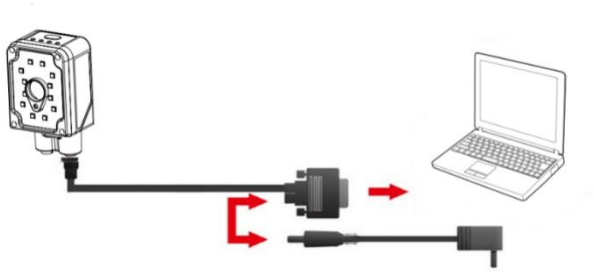
2.Rotate the aviation plug (male) screw clockwise to fix it。



After the aviation cable plug (male) is firmly connected with the equipment, the serial communication cable DB9 (female) is connected to the PC serial port, then the Ethernet communication cable RJ45 is connected to the PC Ethernet port (see computer wiring for details)。

2.2 Connecting to Computer

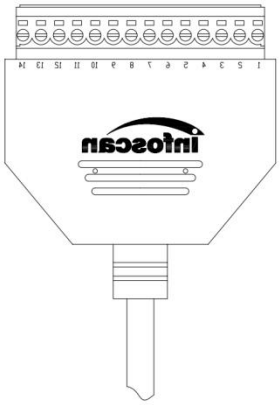
Connect with computer via serial port：



Connect with computer via Ethernet：

2.3 I / O Terminal Wiring Diagram

The I / O terminal is located on the serial communication cable. If the equipment is connected to external signals or to drive external equipment, it is necessary to use this terminal to connect with external equipment. The drawing of the terminal is shown as below, and the serial number and definition of the terminal are shown in the table。



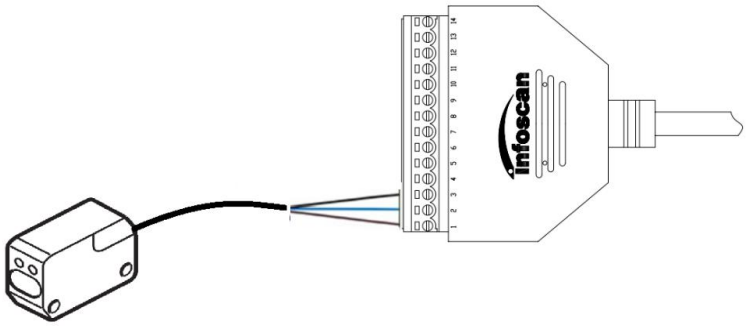
Terminal serial number	Terminal name	specific description	Remark
1	24V	Power input (output)	Power output: can provide power supply for external equipment (Note ①) Power input: can be connected to 20-30V for power supply
2	GND	GND	GND
3	IN1	input signal 1	Logic level (default low level takes effect)
4	IN2	input signal 2	Logic level (default low level takes effect)
5	GND	GND	GND
6	COM- (+)	Voltage output terminal (+)	It forms a voltage feedback with OUT1-OUT4, 5V\24V\ external voltage (not more than 36VDC)
7	OUT1	Transistor output 1	Internal pull-up is optional, active level is optional (Note)
8	OUT2	Transistor output 2	Internal pull-up is optional, active level is optional (Note)
9	OUT3	Transistor output 3	Internal pull-up is optional, active level is optional (Note)
10	OUT4	Transistor output 4	Internal pull-up is optional, active level is optional (Note)
11	PWMOUT	External light source control signal	3.3V level output duty cycle can be controlled
12	GND	GND	GND
13	GND	GND	GND
14	24V	Power input (output)	Power output: can provide power for external devices Power input: can be connected to 20-30V for power supply

Note① : It depends on the voltage of the power supply connected to the serial port cable.

Note② : The valid level value can be set, and the default is 24VDC.

2.4 Input Terminal (IN) Wiring Diagram

1.NPN photoelectric sensor wiring;



The equipment defaults to the initial logic. The photoelectric sensor shall be NPN type, and the photoelectric sensor shall be connected to signal terminals 1, 2 and 3. The corresponding line sequence is shown in the table:

Photoelectric Sensors	Signal terminal
+(L+)	1 (DC24V)
-(M)	2 (GND)
¬ Q	3 (IN1)

Note: The high level range of the input terminal is 5V-24V , other levels consult technical support

2.Switch connection;

The switch connection equipment defaults to the initial logic. Take the push-button switch as an example, connect the switch to signal terminals 2 and 3. When the switch is pressed, the trigger takes effect. The line sequence is shown in the table below:

push button switch	Signal terminal
SW1	2 (GND)
SW2	3 (IN1)

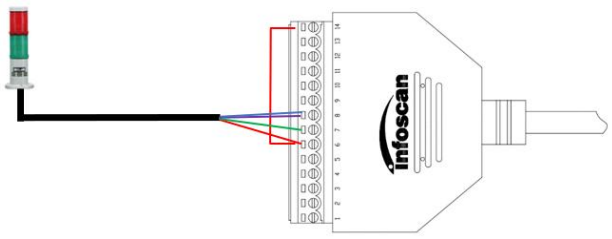
Relay trigger wiring diagram

The equipment defaults to the initial logic and connects the relay to signal terminals 2 and 3. When the rated voltage is applied, the trigger takes effect. The corresponding line sequence is shown in the table below:

relay	Signal terminal
Normally open 1	2 (GND)
Normally open 2	3 (IN1)

2.5 Output Terminal (OUT) Wiring Diagram

1.Alarm lamp wiring;



The device defaults to the initial logic and connects pin 14 (24V) of the 14pin terminal to the com-in terminal. Meanwhile, the positive pole of the load (taking the NPN alarm lamp as an example) is connected to the com-in terminal and the negative pole is connected to the out of signal terminal. When reading is successful, the green light is on, and when reading fails, the red light is on and the alarm sounds. The corresponding table of line sequence is as follows:

External load (alarm light for example)	Signal terminal
+ (power input cable)	6 (COM-IN)
- (Green light control wire)	7 (OUT1)
- (Red light control line & buzzer control line)	8 (OUT2)

Note: The maximum working current of the output load is 400mA . Consult technical support for other currents.

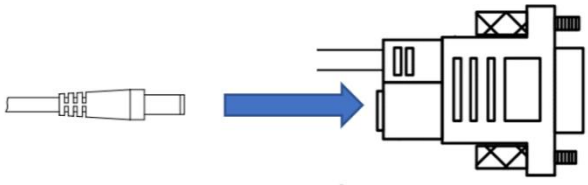
2.External load relay feedback wiring;

The device defaults to the initial logic and connects the pin 14 (24V) of the 14pin terminal to the com-in terminal. At the same time, the relay coil terminal 1 is connected to the com-in terminal and the coil terminal 2 is connected to the out 2 output terminal. When reading fails, the relay is .:

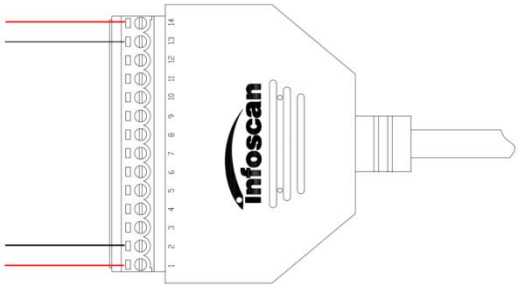
relay	Signal terminal
Coil end 1	6 (COM-IN)
Coil end 2	8 (OUT2)

2.6 Power Input Wiring Diagram

1.Adapter power supply wiring;
The power supply interface is located on the serial communication cable DB9 (female). Connect the adapter output end to the power supply interface of cable DB9.



2.Terminal power supply wiring;
The serial port communication cable has a 14-pin terminal strip. In the terminals, No. 1 and 2 or No. 14 and 13 can be used as power supply interface. See 2-3 IO terminal wiring for terminal No. and definition.



3 Installation and Angle Adjustment

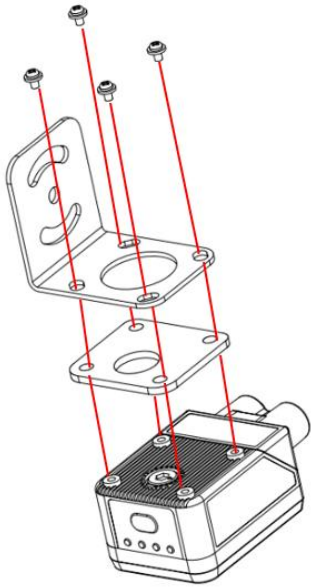
3.1 Before installation

Before installation, please pay attention to the following items and check the installation conditions:

1. No influence of ambient light;
Please avoid sunlight, other lighting, photoelectric sensors and other ambient light entering the FV10X light receiving area, otherwise it may cause reading instability or reading error.

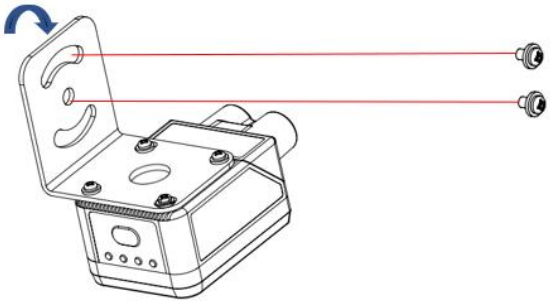
2. Check whether the light source of the code reader is blocked;
If the light source is blocked, the barcode may not be detected. If there are other devices emitting strong light (direct light and reflected light) on site, please set up a shading plate to avoid that such strong light may damage the code reader or cause code reading failure.

3.2 Plate installation



Use the mounting bracket to obtain the most suitable reading position. The most common mounting configuration is shown in the figure. The mounting position of the L -shaped metal fixing plate can be adjusted according to the actual needs (the picture is FV104) .

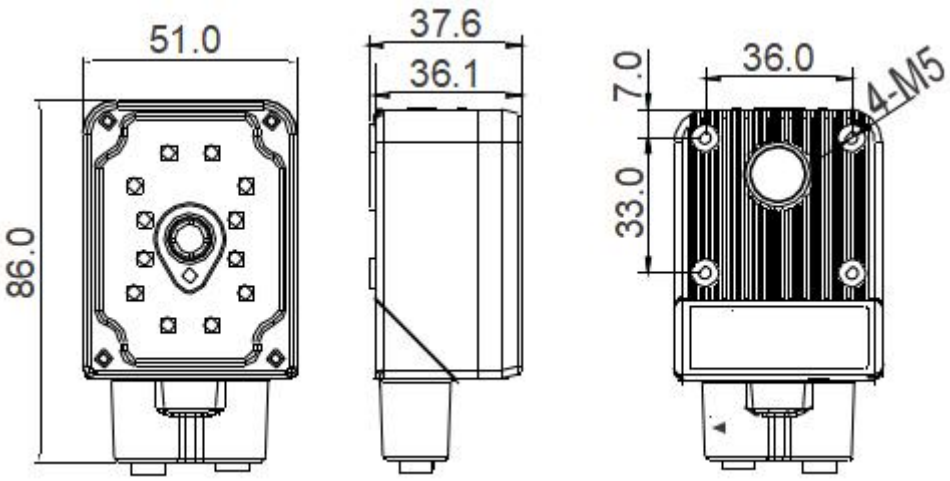
3.3 Angle adjustment



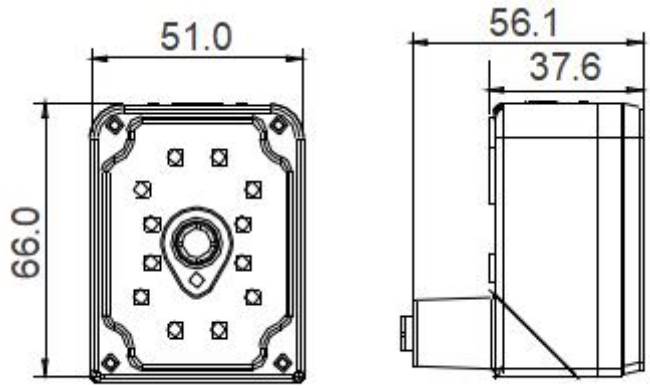
As shown in the figure, adjust the angle of the device to a suitable angle position, and fix the L-shaped firmly with screws.

3.4 Product Dimensions

FV105:



Rotate 90°



Note: FV104 size is the same as FV105 size.

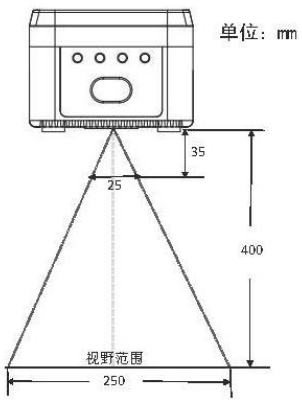
Unit: mm

3.5 Reading Performance Chart

FV104

Unit: mm

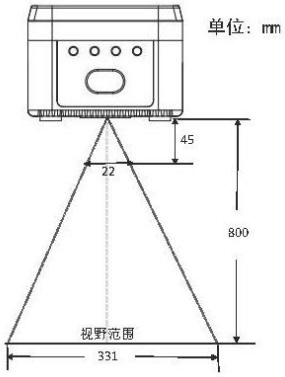
Barcode Specifications	FV104 series (lens 7.5mm)	
	Recent reading distance	farthest reading distance
3mil Code 128 10bit	25	260
5mil Code 128 10bit	25	330
6.67mil Code 128 10bit	25	350
10mil Code 128 10bit	40	350
15mil Code 128 10bit	65	380
5mil DataMatrix 10bit	25	100
6.67mil DataMatrix 10bit	25	100
10mil DataMatrix 10bit	25	120
15mil DataMatrix 10bit	35	160
reading distance	FV104 series	
	X-axis field of view	Y-axis field of view
35	25	18
45	31	twenty three
50	33	twenty four
100	65	48
150	95	70
200	130	95
300	189	108
400	250	187



FV105

Unit: mm

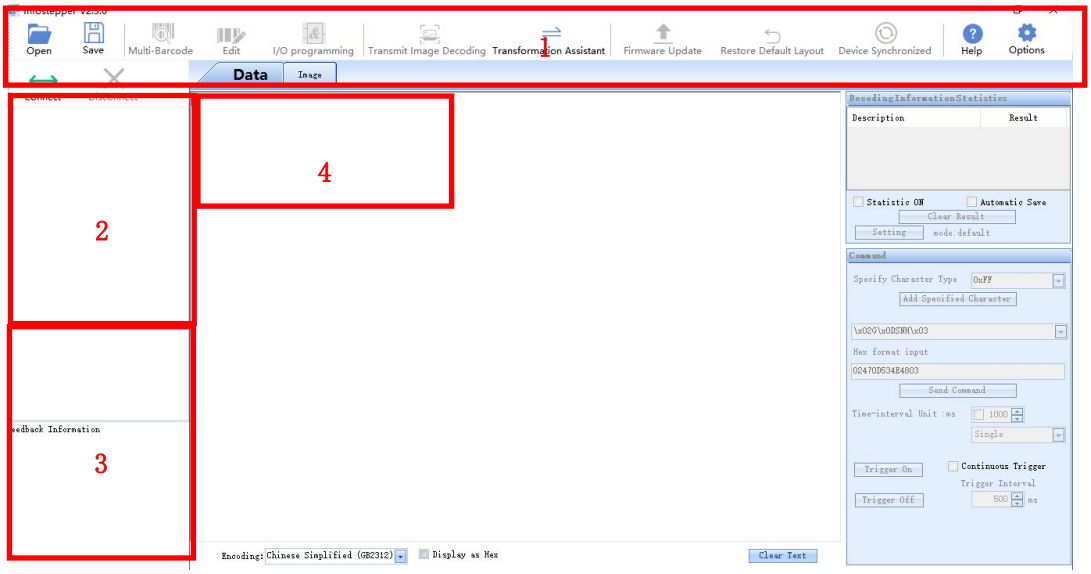
Barcode Specifications	FV105 series (lens 10-12mm)	
	Recent reading distance	farthest reading distance
3mil Code 128 10bit	45	340
5mil Code 128 10bit	45	585
6.67mil Code 128 10bit	45	720
10mil Code 128 10bit	52	>1090
15mil Code 128 10bit	90	>1090
5mil DataMatrix 10bit	45	125
6.67mil DataMatrix 10bit	45	175
10mil DataMatrix 10bit	45	240
15mil DataMatrix 10bit	45	420
reading distance	FV105 series	
	X-axis field of view	Y-axis field of view
45	twenty two	16
50	twenty four	17
100	44	32
150	61	46
200	85	63
300	118	89
400	168	126
800	331	249
900	375	280



4 Online Parameters-setting by infostepper

infostepper downloading address: http://www.infoscan.com.cn
Unzip the compressed package and run "infostepper.exe ".

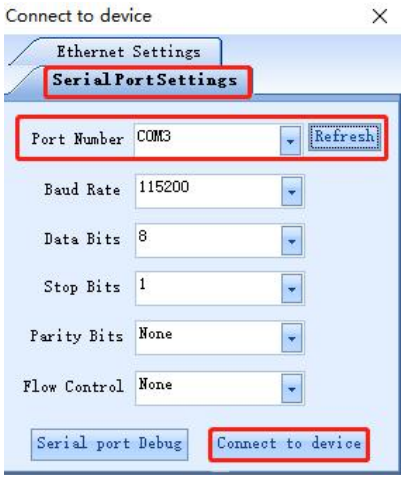
4.1 Introduction to infostepper module



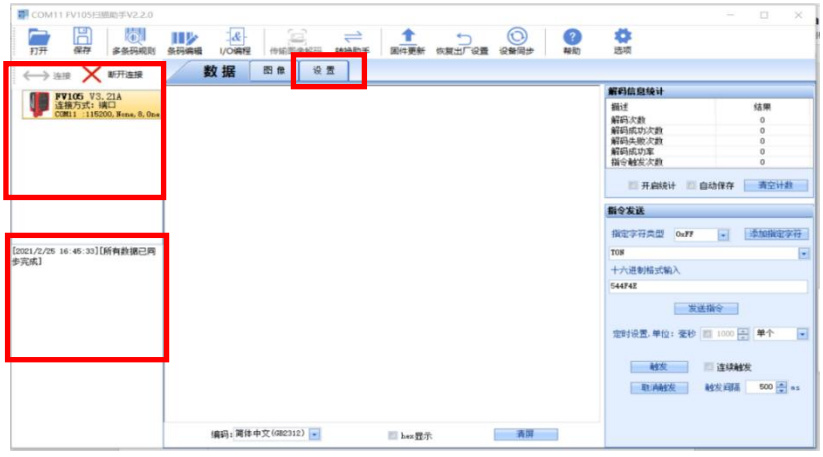
serial number	illustrate
1	Common Toolbar
2	Connection method and connection information display
3	Online feedback information display
4	Set the class after the connection is successful (see section 6 for details)

4.2 infostepper Online Operation

1.RS232 serial connection mode;
After the device is directly connected to the computer serial port, check "Device Manager→""Port", confirm the port number, click "Connect" when connecting to the software, then the "Connect to device" window will pop up, select "Serial PortSettings", then click "Port Number" Select the corresponding COM number below. If the COM number is not displayed, you can click the "Refresh" button to search; the baud rate, data bit, stop bit, etc. are consistent with the device; as shown in the figure:



Click "Connect to device" after the connection is successful, the device will have a buzzer prompt, as shown in the figure:

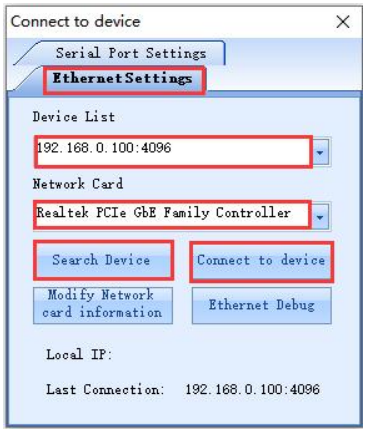


Note: Displays information such as the model name and version information and connection method of the online device, the series port number of the device, baud rate and other information; the feedback information part displays the date, time and other related information of the connection; after the connection is successful, the interaction is successful, you can click "image" or "Settings" to set the relevant details of the code reader. (In the image, the "continuous shooting function" cannot be used due to the limitation of the serial port transmission rate)

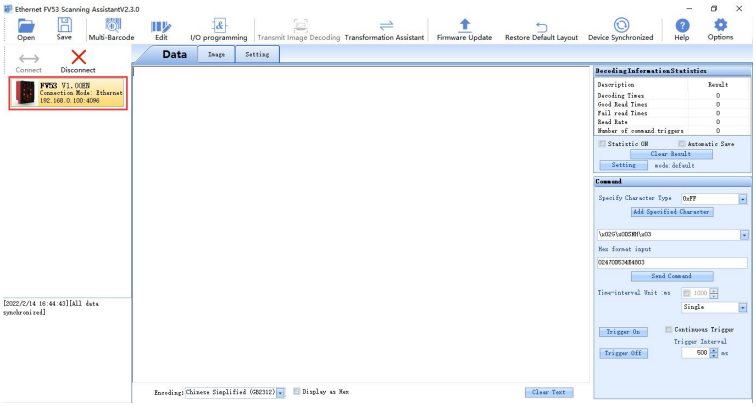
2.Ethernet (TCP/IP) connection mode ;

After the device is directly connected to the computer, go to "Control Panel" → "Network and Internet" → "Network Connections" → "Ethernet Properties" → "TCPIPv4 Properties" → "Use the following IP address" to modify the computer's IP address parameters, so that the IP of the computer and the device (default 192.168.0.100) are in the same network segment.

Click "Connect" to pop up "Connect to device", select "EthernetSettings", select the computer network card, and click "Search Device", as shown in the figure:



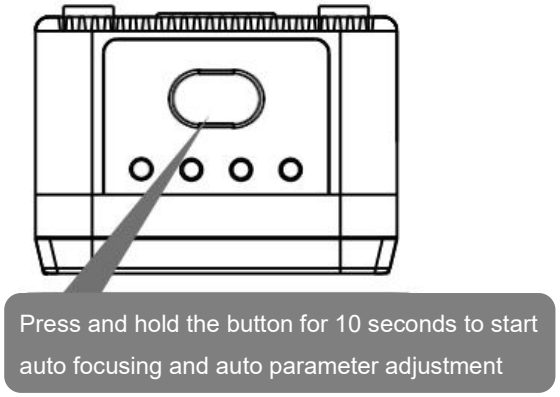
Click "Connect to device" after the connection is successful, the device will have a buzzer prompt, as shown in the figure:



Note: Display online device model and version information and connection method, device IP address and port number information; the feedback information part displays the date and time of the connection and other related information; after the connection is successful, the interaction is successful, you can click "Image" or "Setting" ”Make relevant detailed settings for the barcode reader.

5 Quick Setup FV105 without infostepper

FV105 is an autofocus type device that offers quick settings . As shown in the figure below, place the sample to be read within the field of view, and press and hold the button for 10 seconds to execute auto focus first . seconds later, only auto-tuning is performed) . The success or failure of auto-focus and auto-tuning are indicated by a buzzer and an indicator light. The success of automatic parameter adjustment is closely related to the quality of the barcode of the sample read. Under the condition of good quality of barcode assignment, the success rate of automatic parameter adjustment is high and the process is faster.



Note: In the image interface of the setting software infostepper , autofocus and automatic parameter adjustment can also be completed , see Chapter 6.

6 How to Set up FV10X with infostepper

6.1 Focusing-on Adjustment

1.Click on “Image”;

2. Method 1, click“Image snap”;

3.In the main interface of "Image", you can view the captured images;

The sample captured image is blurry, which affects decoding, then the focus parameters of the code reader need to be adjusted.
Display scale can be adjusted according to need.

4. Method 2, click "Continuous Shooting" to view the captured images in real time (this method is recommended).

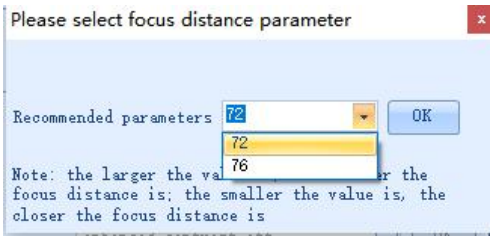
Note: the "continuous shooting function” is only valid in Ethernet communication

6.2 Getting a Clear Image

1. Method 1 Select the monitor and click "Auto Focus" ;

2. Enter the auto focus prompt dialog box;

3. After the auto focus is successful, a dialog box will pop up, click OK, and the code reader will select the recommended parameters; there may be multiple recommended parameters, you can click the drop-down to select;



4. After the auto focus is successful, enter the continuous viewing mode directly. In the example shown in the figure, the barcode area of the image is blurred before auto-focusing. After successful auto-focusing, the barcode area of the image is clear and the barcode area of the image is displayed in a green frame. , indicating that the image barcode can be decoded normally;

Before focusing

After focusing

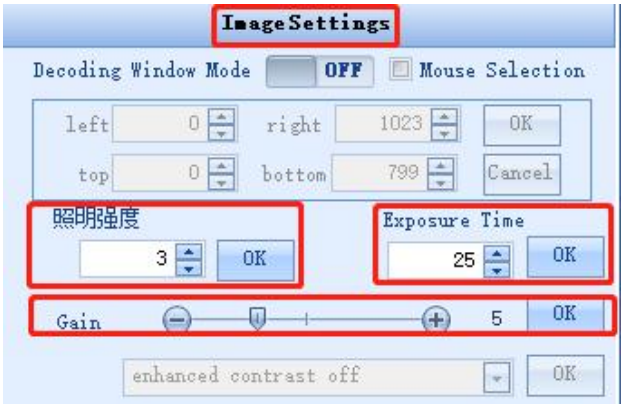
5. Method 2, you can select "Continuous Shooting", in "Image Parameter Setting", by adjusting "Focus Distance", you can check the image sharpness in real time, and you can adjust the sharpness flexibly.

Note: The above operations can complete the setting of the barcode reader to focus on the image clearly.

FV104 is a manual focus type code reader. You can use the Allen key to rotate the knob on the back of the main unit to adjust the focal length, and determine whether the focal length is well adjusted through the imaging of the host computer.

6.3 Image Parameters Setting

1. Select "Continuous shooting", check "Image Setting".



2.Adjust "照明强度", "Exposure Time" and "Gain" to view the image changes in real time, as shown in the example. When the illumination intensity is set to 0, the image is dark, When the illumination intensity is set to 2, the image is obviously brighter and the sample barcode is displayed in a green frame, which can be successfully decoded;

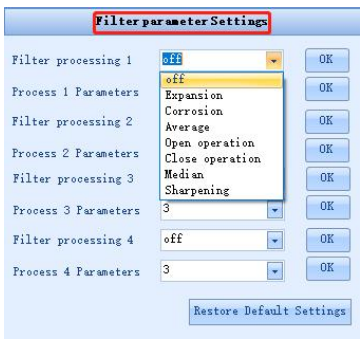
Lighting intensity is set to 0

Lighting intensity is set to 2

3. Adjust the "exposure time" to view the image changes in real time, the image brightness will also change significantly, the image contrast will change significantly. For static barcode reading applications, the "exposure time" has little effect on the reading success rate; if the mobile reading application "exposure time" has a greater impact on the reading success rate, the exposure time parameters can be calculated according to the barcode size and other parameters;

4. Adjust the "Gain", check the image changes in real time, the image brightness will also change significantly and the image contrast will change significantly;

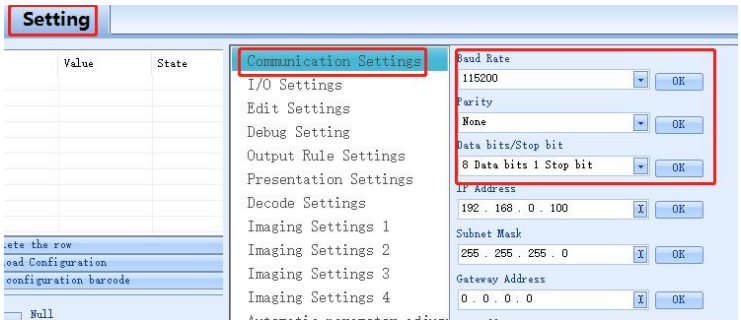
5. For special barcode reading applications, the filtering algorithm needs to be adjusted.



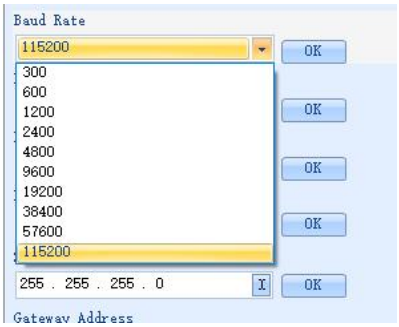
6.4 RS232 Connection Parameters Setting

FV105 readers only support standard RS232 .

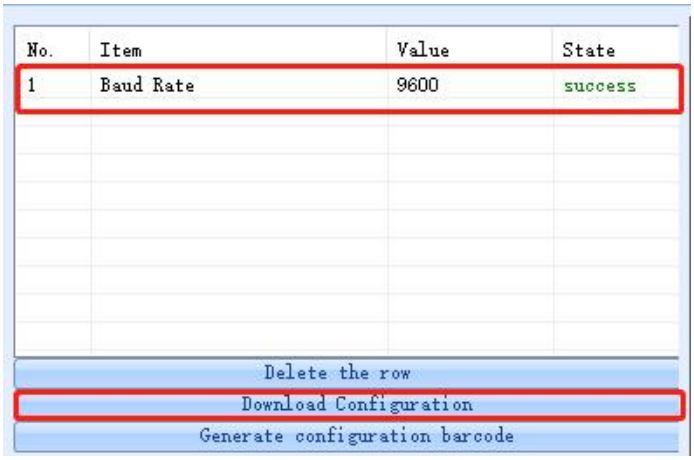
1..Click "Setting", then click "Communication Settings".



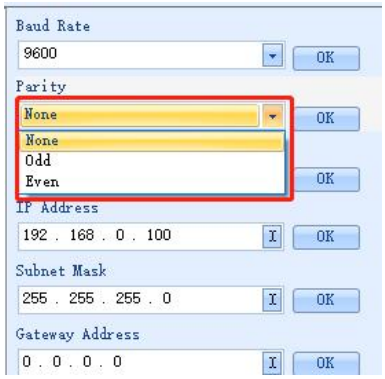
2. "Baud Rate", "Parity" and "Data bits/Stop bits" can all be set according to requirements. Take the baud rate setting as an example, set the baud rate to 9600, select "9600" and click the OK button.



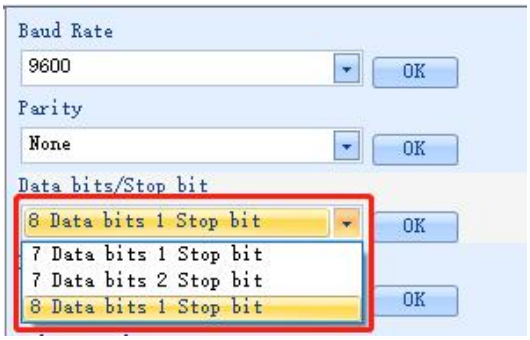
3.Click "Download Configuration", if the setting is successful, the barcode reader buzzer will give feedback, then the setting status in the list will display "Success", indicating that the baud rate setting is successful.



4. Likewise, select "Parity" according to your needs, then click the "OK" button. The selected "Parity" setting appears in the setting list, just click "Download Configuration".

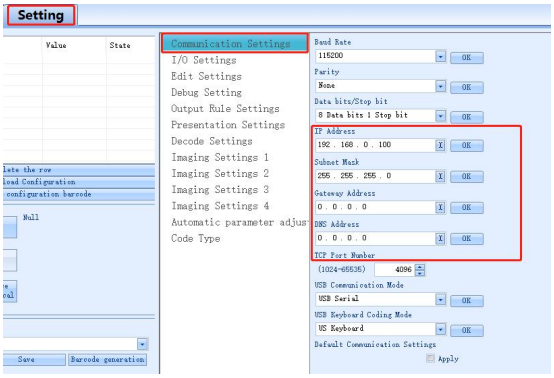


5. select "Data bits/Stop bits" according to your needs, then click the "OK" button. The selected "Data bits/Stop bits" type setting appears in the setting list, just click "Download Configuration".

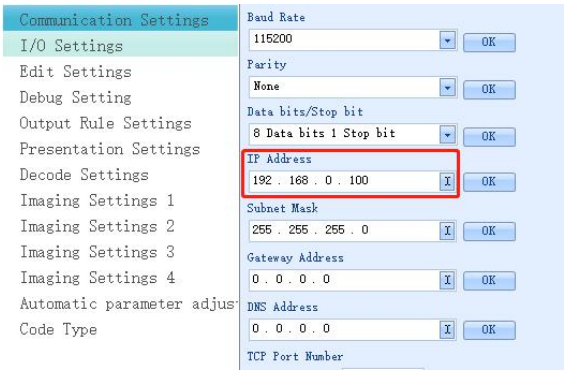


6.5 Ethernet Connection Parameters Setting

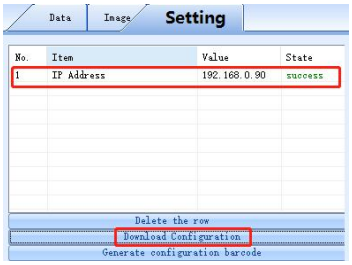
1.Click "Setting", then click "Communication Settings";



2."IP address", "subnet mask", "gateway address", "DNS address" and "TCP port number" can be set according to requirements. Take the IP address as an example, the IP address can be directly entered by keyboard according to requirements;



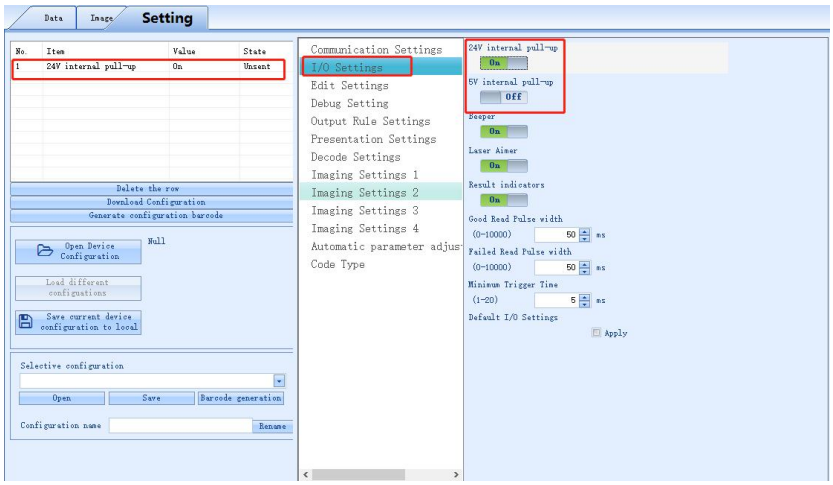
3. After the IP address input is completed, click the "Confirm" button, the set IP address will be displayed in the list, click the "Set Download" button, the buzzer of the code reader will prompt that the setting is successful, and the setting status is displayed successfully, that is, the setting is successful;



4. "Subnet mask", "Gateway address", "DNS address" and "TCP port number" can be set according to the IP address setting method.

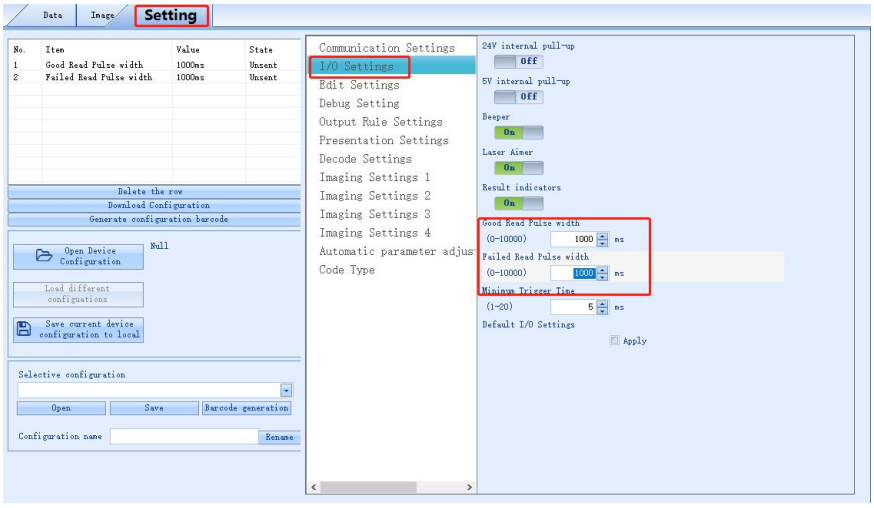
6.6 Output Signal Level and Continuous Pulse Width

1. The FV105 code reader provides two specifications of output level signal settings. If "24V pull-up" is set to on, the output signal level is 24V。



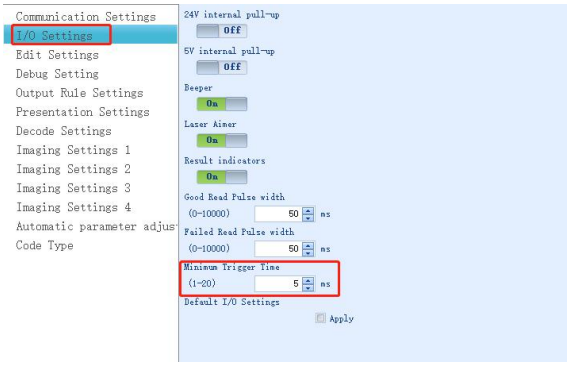
2.IO output logic, OUT1-OUT2 output level signals are all 24V.

3. The default IO output logic, OUT1 is read success, OUT2 is read failure, the output level signal pulse width of read success and read failure are both 50ms, the signal pulse width can be set according to needs, the maximum can be set to 10000ms, After setting, click "Download Configuration" as needed.



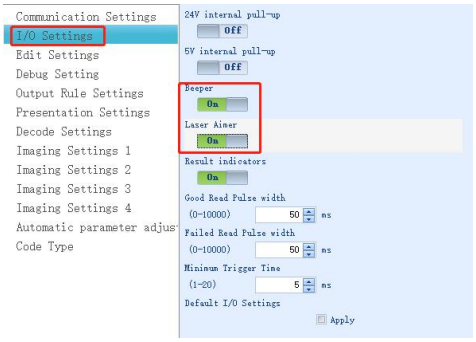
6.7 The Minimum Valid Trigger Time Setting

1. The validity of the external trigger signal of the FV105 code reader can be set as required, and the default "minimum effective trigger time" is 5ms;

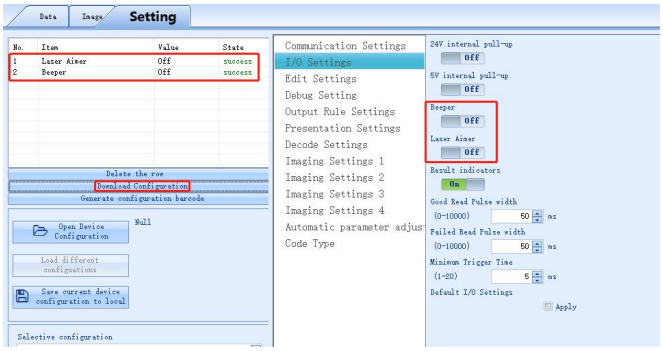


Click "Download Configuration" to complete the setting.

6.8 The Buzzer and Laser Aiming Function Setting for Success or Failure of Barcode reading

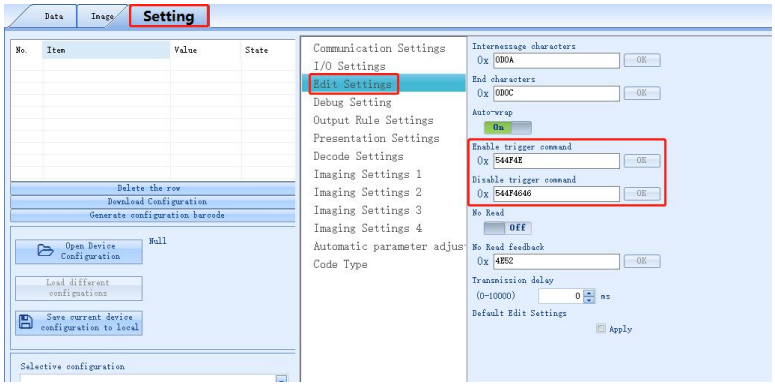


1. When the FV105 code reader succeeds in reading the code or fails in the code reading, the buzzer and the laser aiming function are open by default;
2. The FV10X code reader has a buzzer for successful or failed code reading, and the laser aiming function can be set to off according to requirements. Click "Download Configuration" to complete the setting.



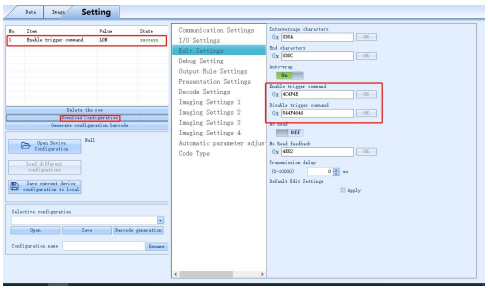
6.9 Trigger Command Generating and Cancelling

1. The FV10X code reader can respond to the command to control the device to read the code. The default trigger command (hex) of the code reader is "544F4E", and the trigger cancellation command (hex) is "544F4646"



2. Set the trigger command, for example, set "LON" as the trigger command, select "Transformation Assistant", and input "LON" to convert "LON" to the corresponding hexadecimal;

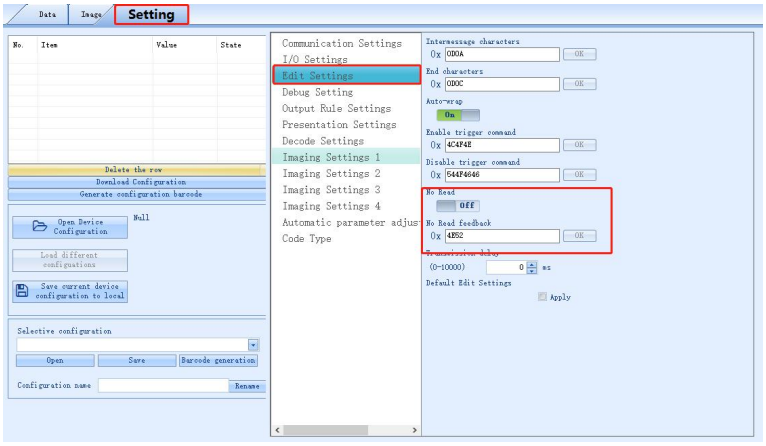
3.Copy the Hex content converted by "LON", paste it into "Enable trigger command", click "OK", you can view it in the setting list, click "Download Configuration" to complete the setting;



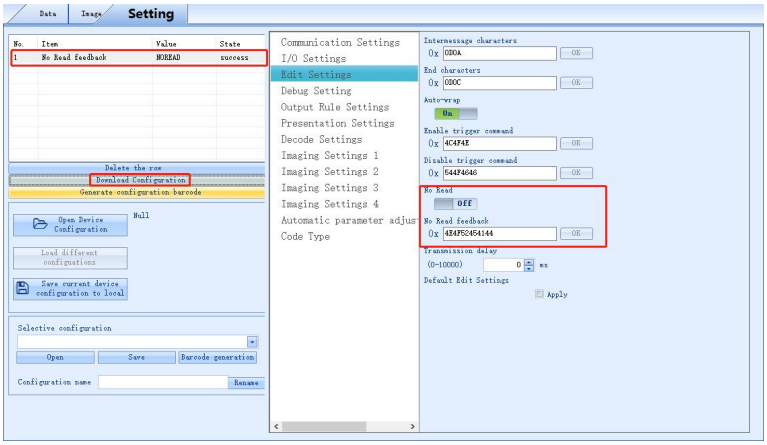
The custom trigger cancellation command is set as above.

6.10 Generating the Failure Feedback Command

1. The FV10X code reader can output reading failure characters, the default output character content (hex) is "4E52", and the reading failure feedback is closed by default.

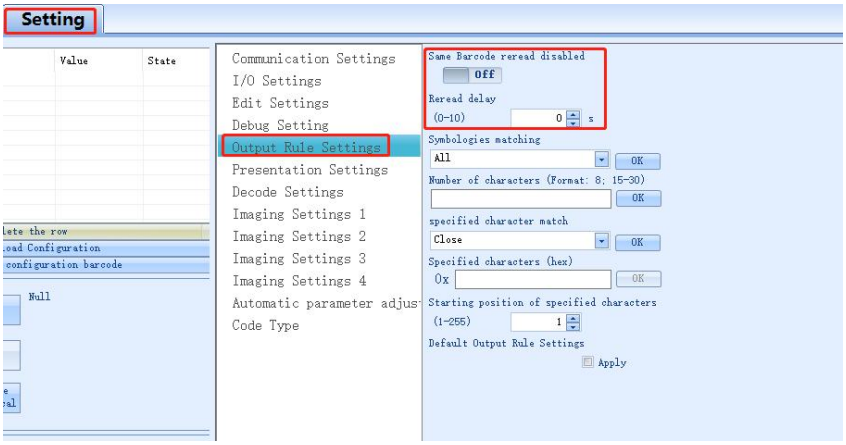


2.The read failure feedback switch is set to on, and the read failure character feedback character (hex) is set to "NoRead". Use the conversion assistant to convert "NoRead" to hexadecimal, paste the hexadecimal content into the read failure character feedback character, click "OK", view the list, click "Download Configuration" to complete the setting.

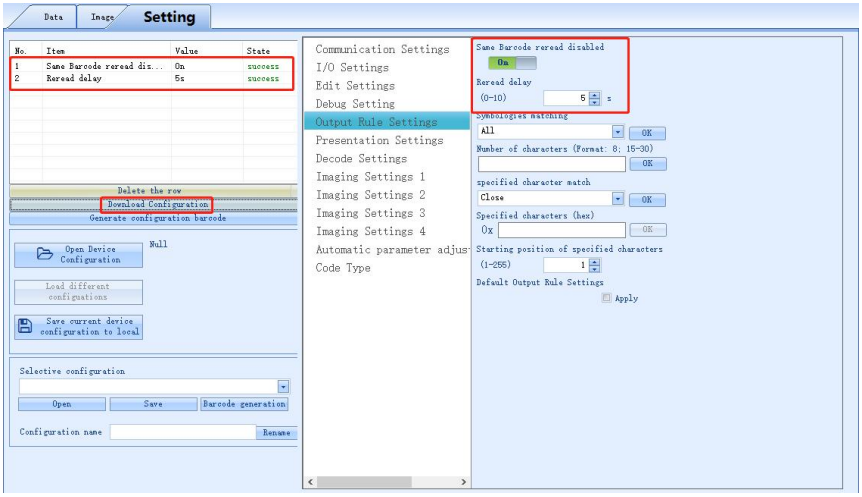


6.11 Rereading the Same Barcode

1. FV10X barcode reader repeat barcode shielding function is off by default, and repeat shielding time is 0 S by default.



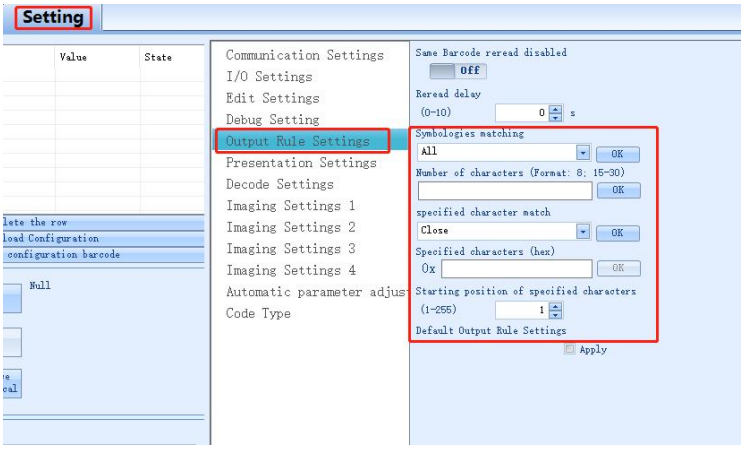
2. Repeat barcode shielding is set to open, repeat shielding time is set to "5".



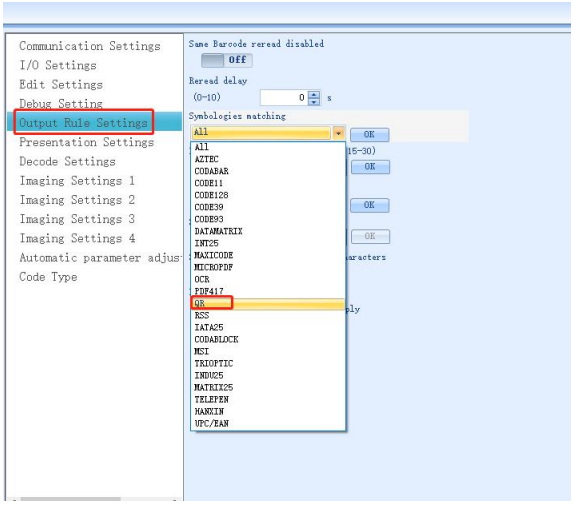
3. The repetition masking time is set to 5s, and the repetition bar code masking function is kept for 5s.

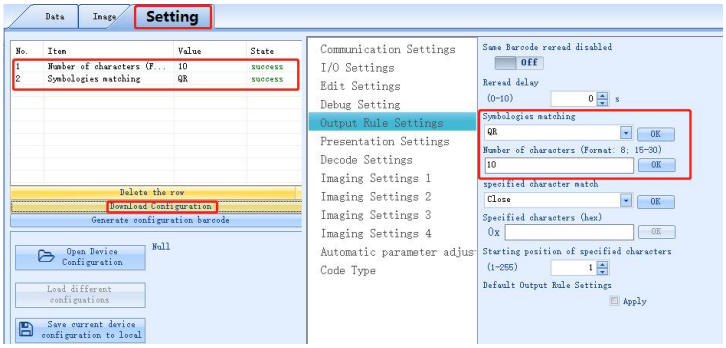
6.12 Setting the Barcode Filter Parameters

1.If the output barcode needs to be Filtered, FV105 provides the barcode filtering function, which can be set according to the code system, the number of characters, special characters, etc. to achieve this function;



2. For example, if the output code symbology is QR barcode, the number of characters is 10, and the settings are as follows

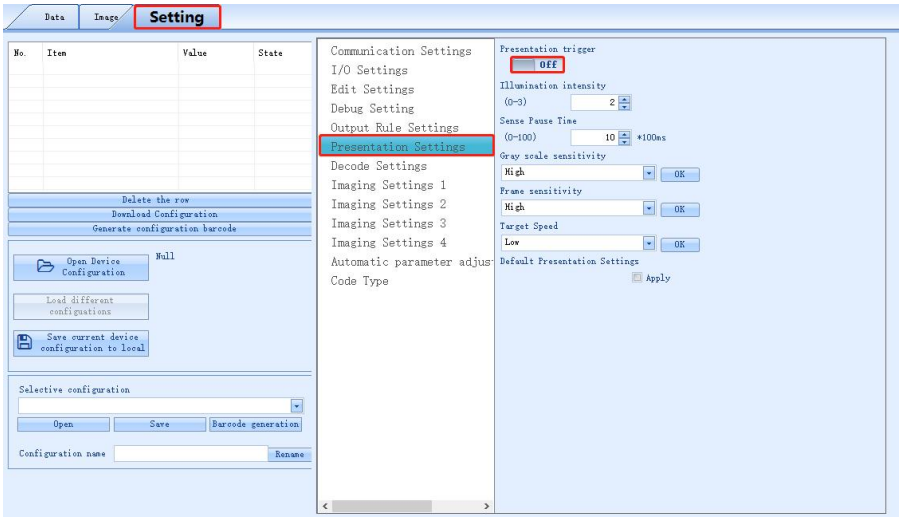




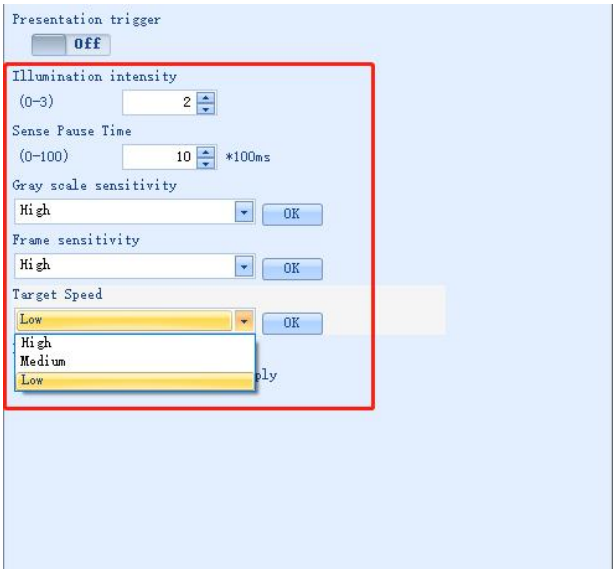
3. Special character matching can be set to filter.

6.13 Auto-induced Reading Mode

1. FV10X can be set to inductive reading mode , the inductive reading mode is off by default.



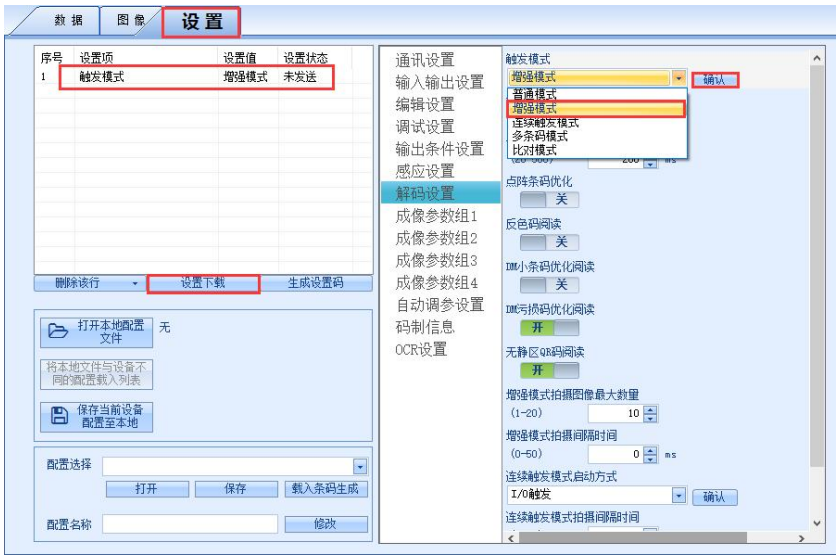
2. If the induction trigger is set to open, you can set the induction trigger lighting intensity, induction pause time, grayscale, frame, moving speed, etc.



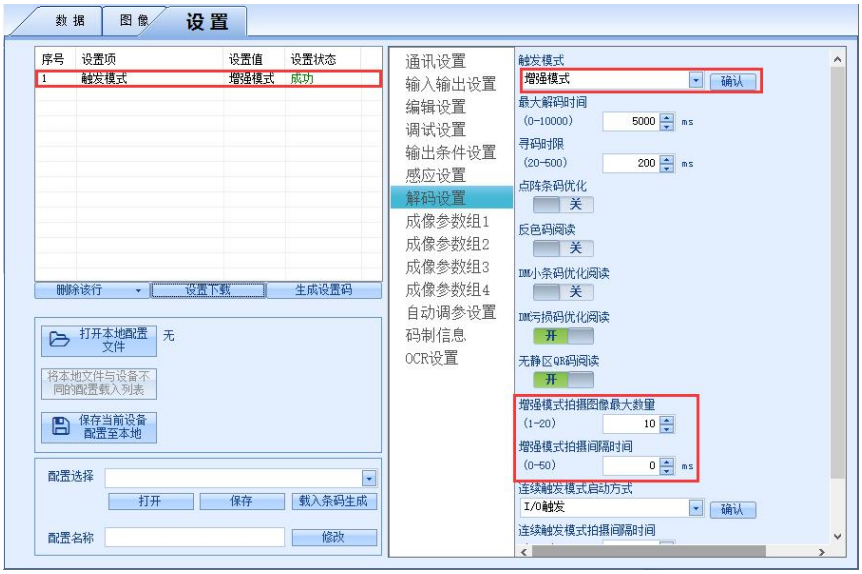
3. The induction reading mode of the FV10X barcode reader is suitable for a specific environment.

6.14 Parameters Setting for Enhanced Reading Mode

1. The decoding trigger mode of FV10X barcode reader is in normal mode by default, which can meet most reading applications in the market. For high-speed and high-frequency motion reading applications, the enhanced mode can be the best choice.

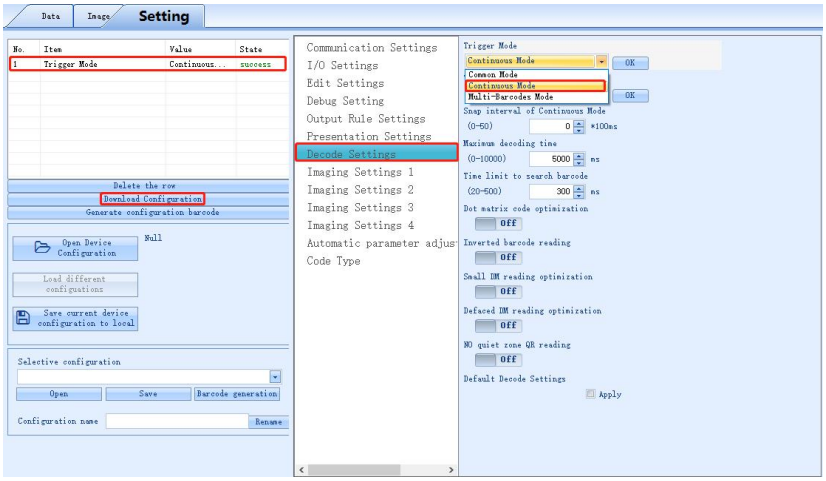


2. The default value of the maximum number of images captured in enhanced mode is 10, and the value is 1-20, which can be adjusted according to actual application needs;
3. The default value of the shooting interval in enhanced mode is 0, and the value is 0-50, which can be adjusted according to actual application needs.

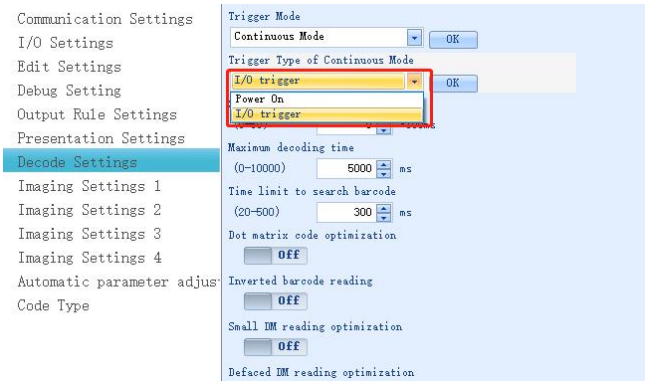


6.15 Continuous Trigger Mode Filter

1. In the trigger mode, the continuous trigger mode can be selected;

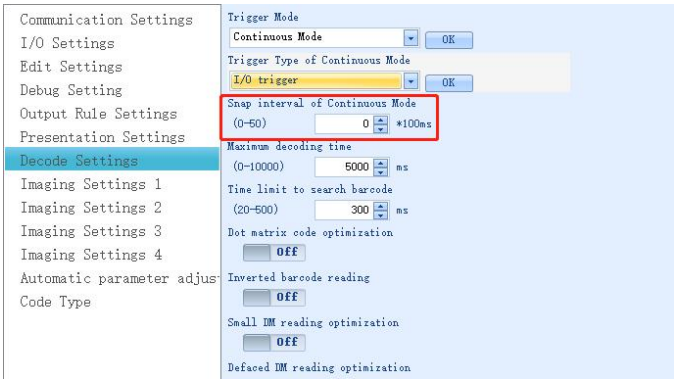


2. The startup mode of continuous trigger mode is divided into boot startup and I/O trigger, the default is I/O trigger;



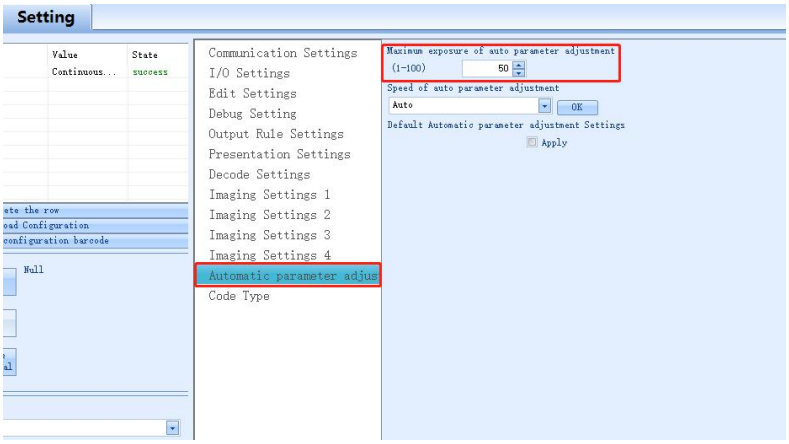
3. Continuous trigger mode shooting interval time.

The default value is 0*100ms, optional 0-50, which can be set according to actual application requirements.

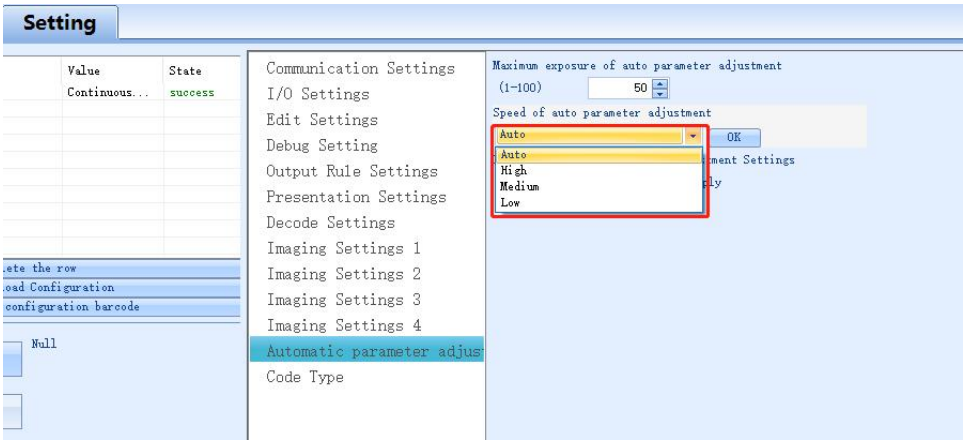


6.16 Auto-tuning Function

1. Automatically adjust the maximum exposure time: control the maximum amount of light entering.The default value is 50, and the value range is 0-100, which can be adjusted according to actual application requirements.

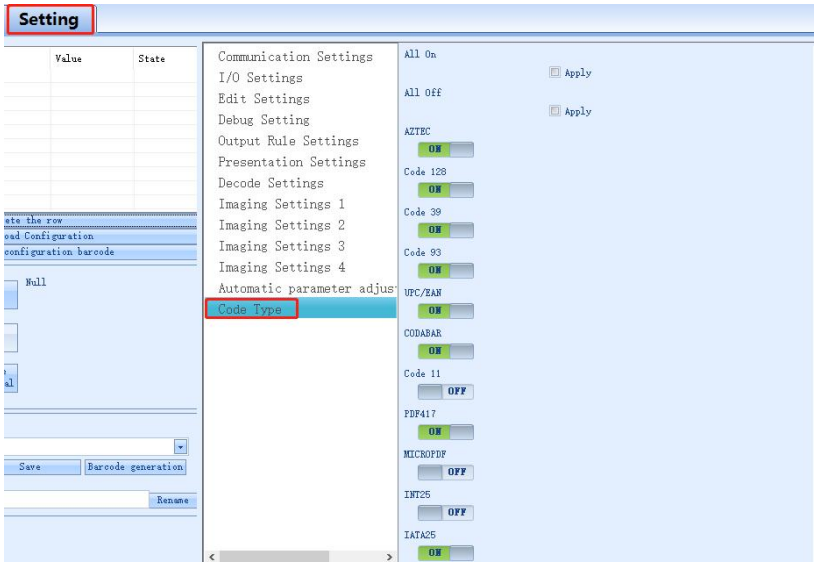


2. Automatic parameter adjustment speed: The default is automatic (self-adaptive), and automatic, high-speed, medium-speed, and low-speed can be selected.



6.17 Selecting the Readable Symbologies

1. The setting window ___ Code type information can be set.



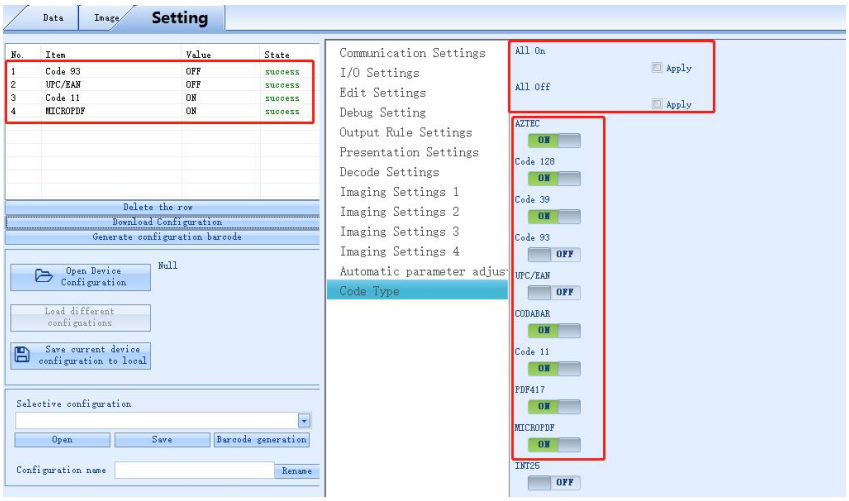
2. Symbology setting.

Full code system on: After checking, set the download, you can open all code.

Full code system off: After checking, set the download, you can turn off all code.

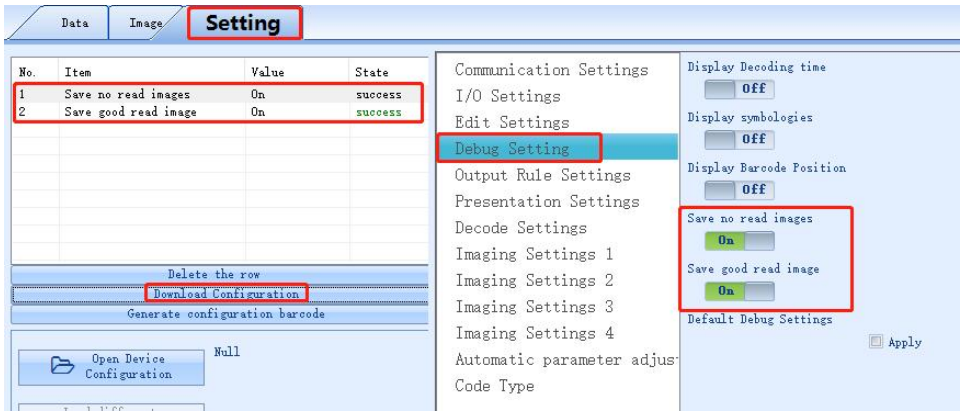
A code system can be turned on or off seperately, and each code has a corresponding switch button.

In applications, unnecessary code can be turned off, which can improve decoding efficiency.



6.18 How to Get the Pictures of Barcode

1. Setting window - save decoding success images and save decoding failure sets in “Debug Setting”.

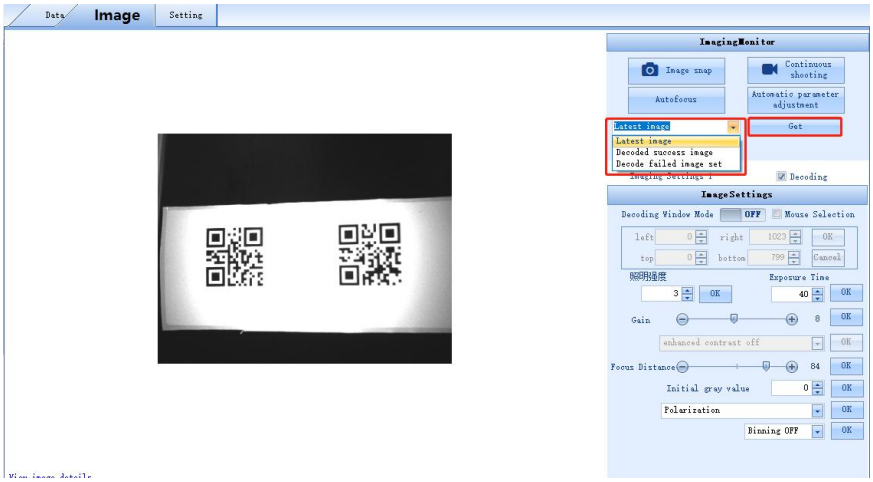


2. Image window—obtain, you can view the latest image, successful decoding image and failed decoding image set.

Last Image: The last image taken by the reader (success/failure).

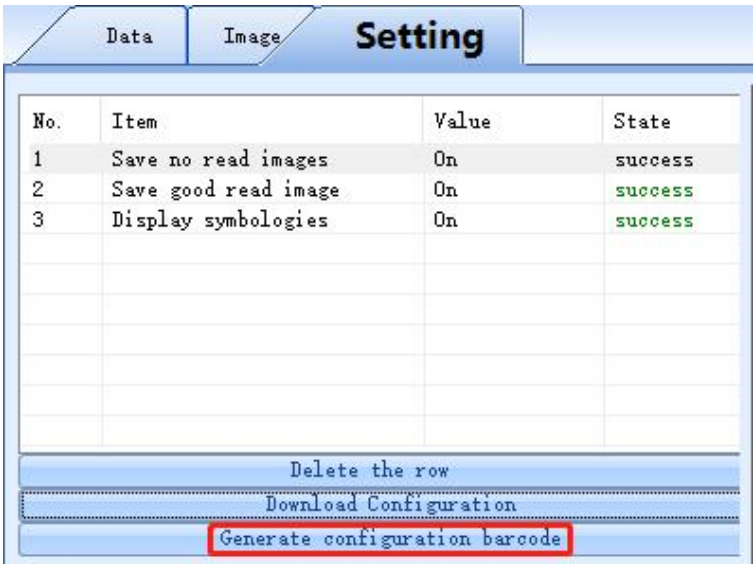
Decoding success image: the image the barcode reader last time successfully decoded the barcode.

Decoding Failed Image Set: The image set that the barcode reader failed to decode last time.



6.19 How to Generate Setting-parameters Barcode

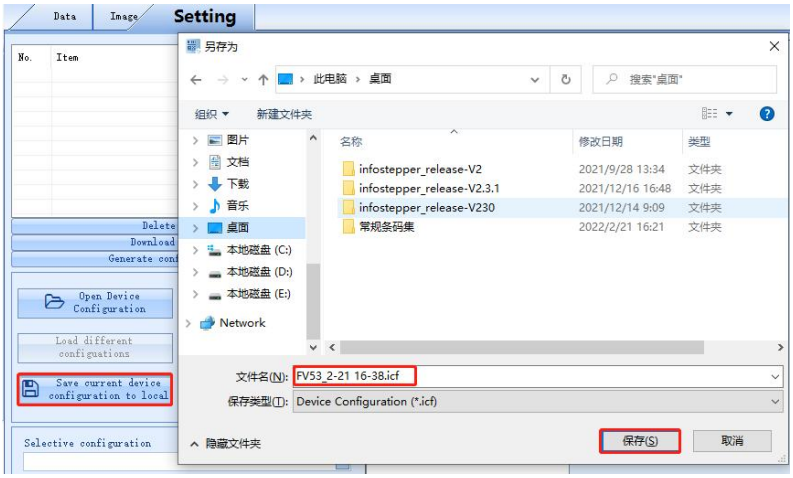
1. After selecting some download items with successful settings, click “Generate configuration barcode”.



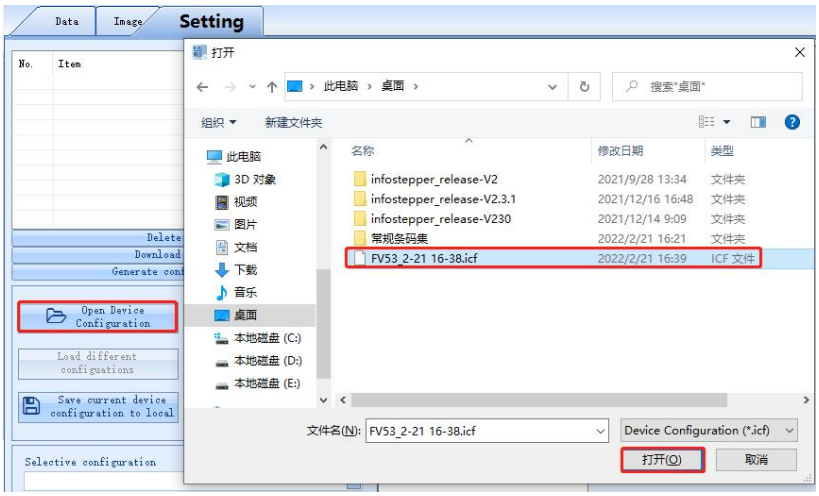
2. According to the prompt, it can be pasted into the word file or viewed in the image window (the picture is viewed in the image interface), and the current parameter settings can be set by reading the setting code with the code reader.

6.20 Save and Open the Configuration File

1. In the setting window, click to save the current device configuration to the local storage.



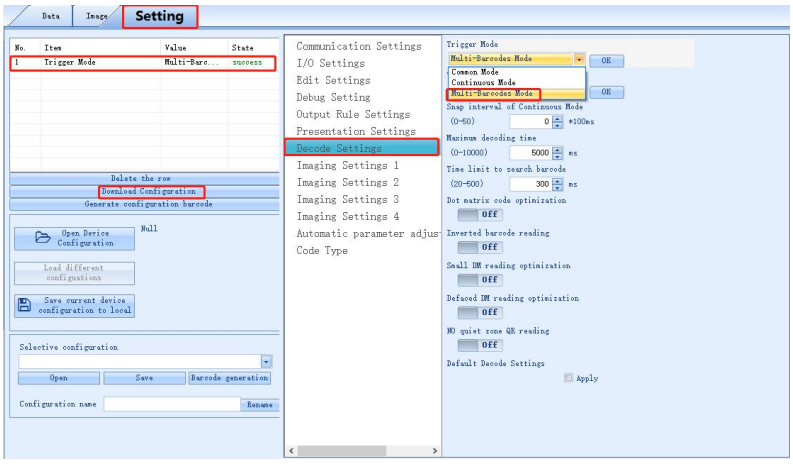
2. Click “Open Device Configuration”, select the corresponding configuration file, then the parameters of the saved configuration file will be imported into the device.



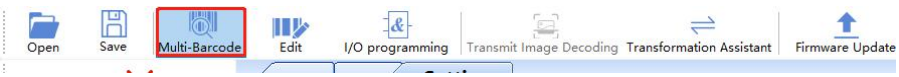
7 Special Application Settings

7.1 How to Read Multiple Barcodes after Trigger ON

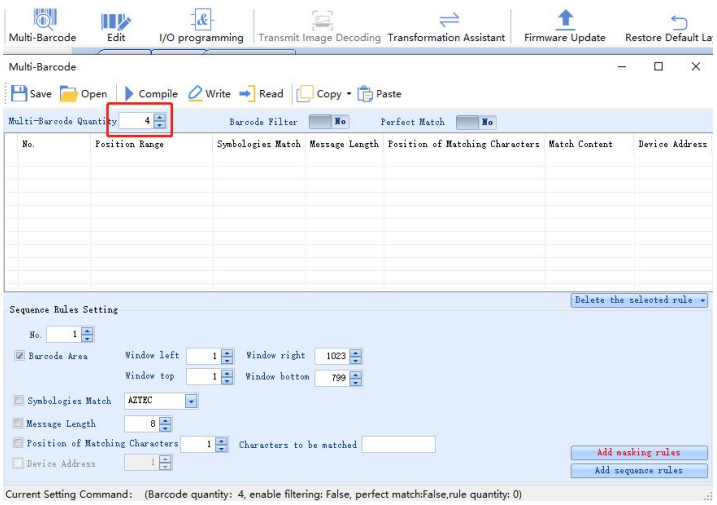
1. The multi-barcodes mode of FV10X needs to be set in Settings-Decoding Settings-Trigger Mode.



2. Open “Multi-Barcode” rules, you can set multiple barcode rules.

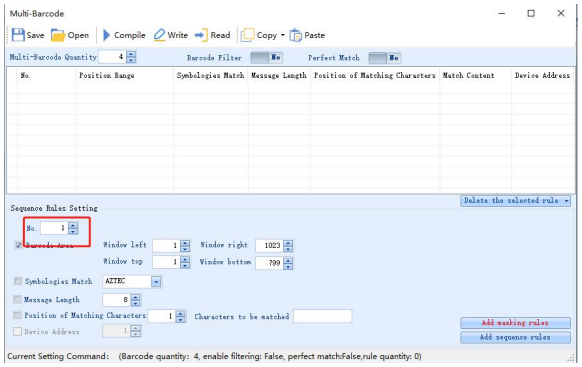


Number of barcodes read: The number of read barcodes can be set according to specific application requirements.
When the quantity is set to 0, all barcodes recognized by the reader will be decoded and output.
The number is set to non-0, and the set number of decoded information is output. If set to 3, 3 barcode information will be output.

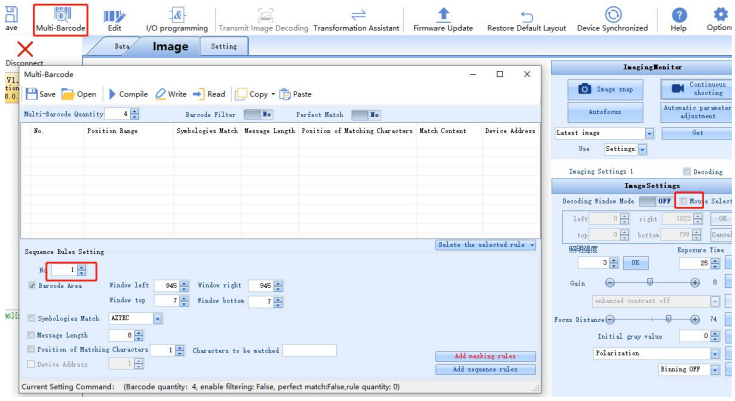


7.2 How to Position and Sort Barcode

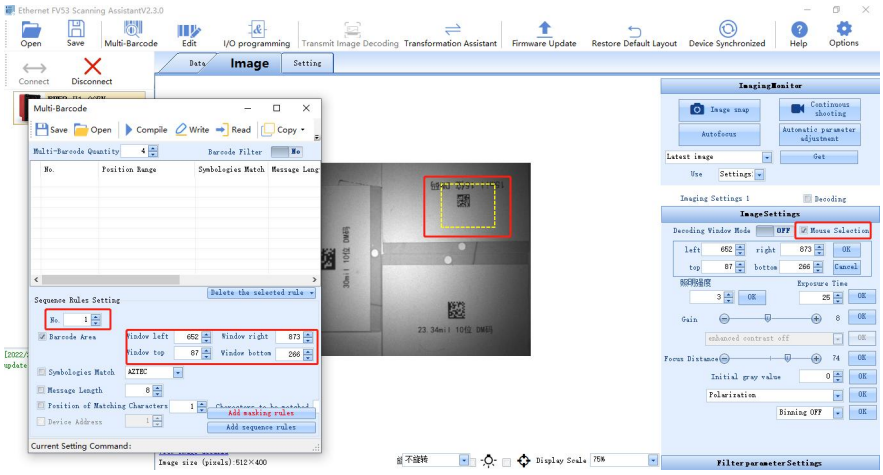
When multiple barcode rules are enabled, you can set the number of output barcodes currently in the output sequence.



Pull the multi-barcode rule window to one side, and check the mouse box in Image Decoding.



After selecting the box with the mouse selection function, the current address information will be automatically updated to the multiple barcode rules, as shown in the figure:



To set the second barcode, set the output sequence to 2, and re-select the box to select a new address.

And so on, set the third output barcode, set the output sequence to 3.....

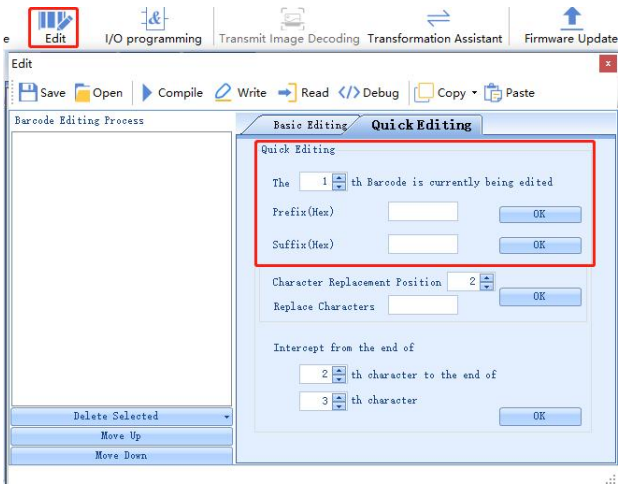
The above settings are completed, compiled, and written. You can set the output barcode sorting function in the frame selection area.

The sorting can also be set by the following rules:
Code symbology matching: you can choose different symbologies (one of the barcode rules);
Barcode length: According to application requirements, you can choose different lengths of barcodes (one of the barcode rules);
match characters
Position: Select the position of a barcode, such as barcode ABC23, if you need to find the position of C, the position is 3.
Characters to be matched: Select the characters to be used as barcode rules.

Note: There are new rules that need to be added to the rule table, compiled and written, then the matching rules will take effect.

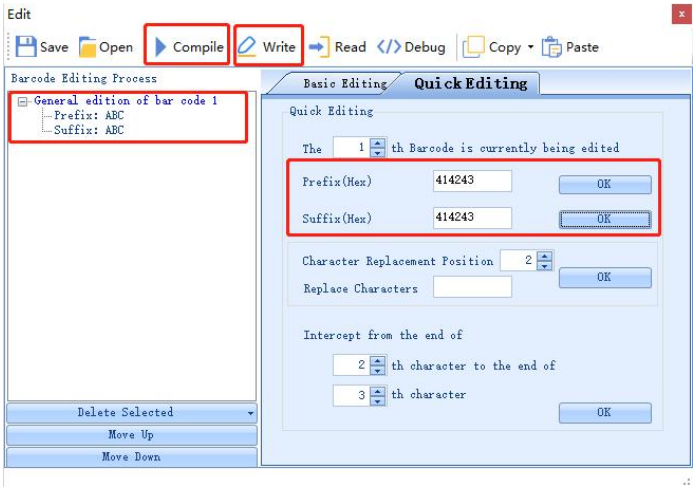
7.3 Defining the Prefix or Suffix

Open Edit

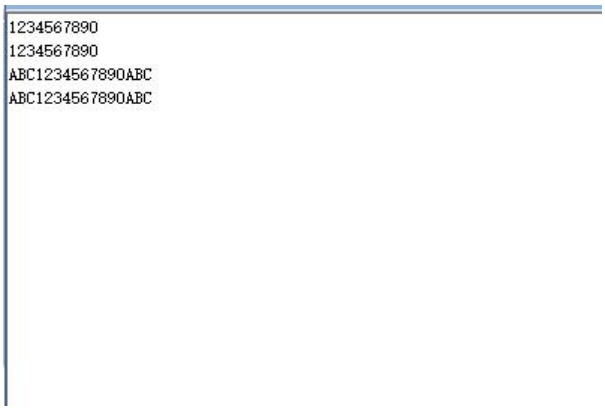


You can enter the required characters in the text boxes after the prefix and suffix. The input text is in hexadecimal, which can be converted by the conversion assistant.
If you want to add "ABC" characters before and after the barcode, open the conversion assistant, enter "ABC", it will be automatically converted to hexadecimal, click to copy the hexadecimal text.

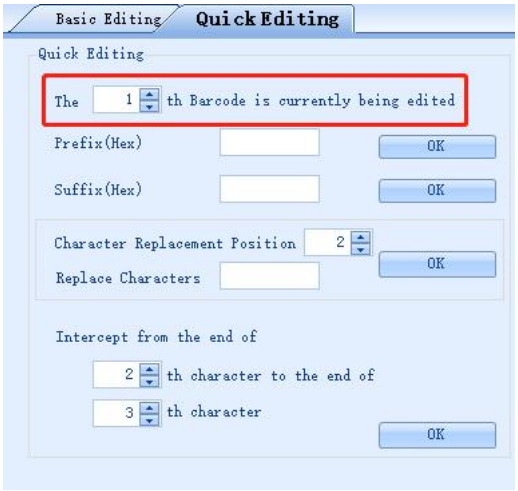
Paste the copied hexadecimal text into the corresponding prefix character input box in the barcode editor. Confirm, compile, write.



As shown in the figure, the barcode information prefix and suffix are "ABC".

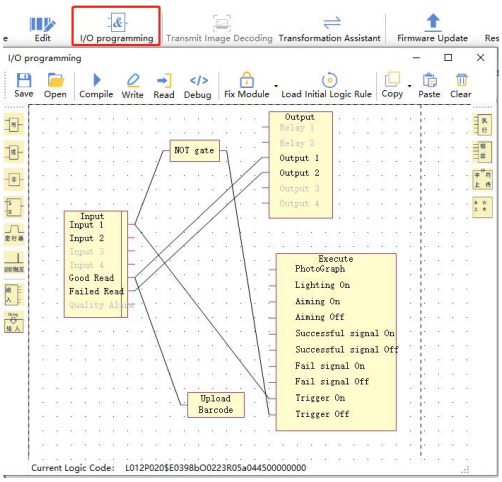


In the multi-barcode mode, suffixes can also be added to multiple different barcodes. On the barcode editing page, you can select the number of barcodes currently being edited.



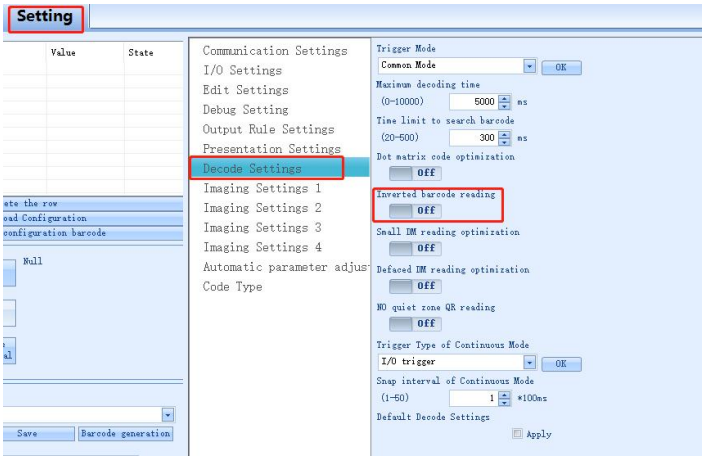
7.4 The Logic Diagram of I/O Output

Open I/O programming window
Save：save the current I/O logic.
Open：Open I/O logic.
Compile, Write：The modified I/O logic needs to be clicked to compile, then it will take effect after writing.
Load Initial Logic Rule：Restore Factory.



7.5 How to Read a Color-inverted Barcode

In the settings window, find Decoding settings, turn on the Inverted barcode reading and set the download.

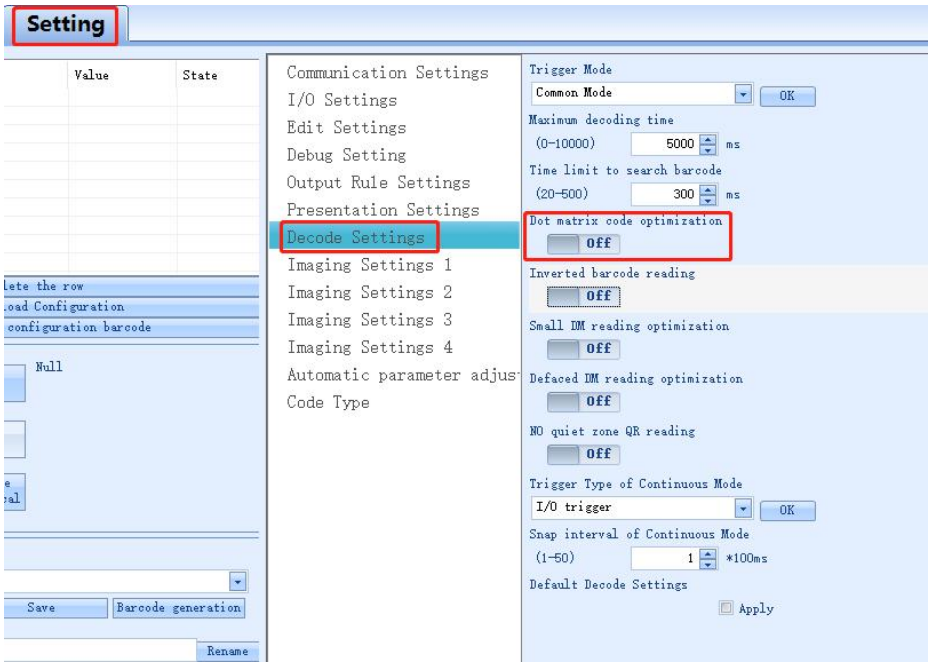


Inverted barcode reading close

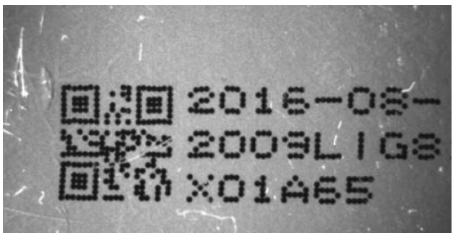
Inverted barcode reading open

7.6 How to Read the Dot-matrix Barcode

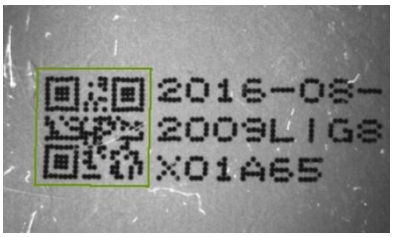
In the settings window and find Decoding settings, turn on the Dot matirx code optimization and set the download.



Dot matirx code optimization close



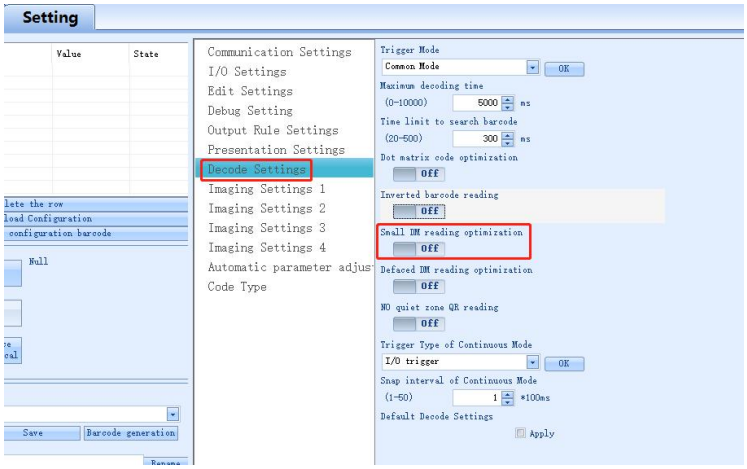
Dot matirx code optimization open



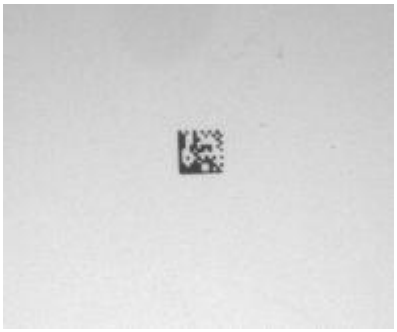
7.7 How to Read Small-sized DM Barcode and the Defaced Barcode

Small DM reading optimization

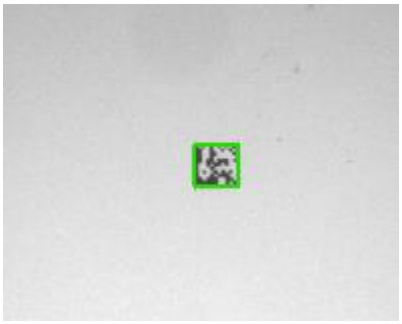
In the settings window find Decoding settings, turn on the Small DM reading optimization and set the download.



Small DM reading optimization close

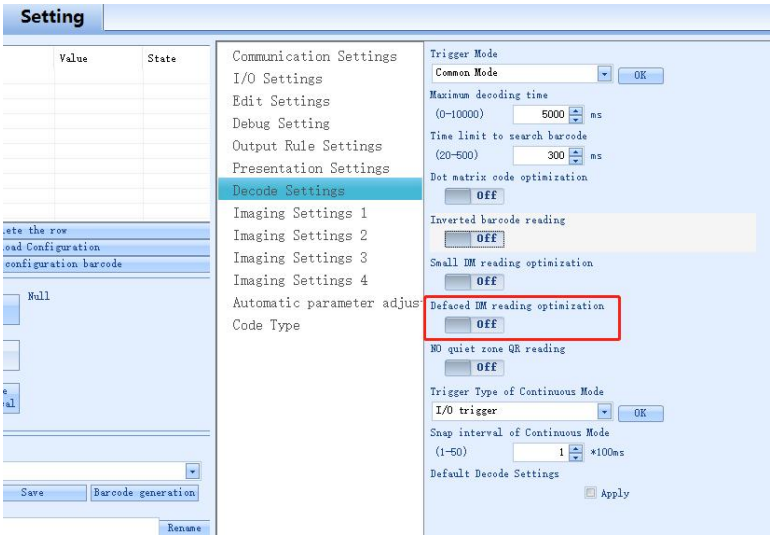


Small DM reading optimization open

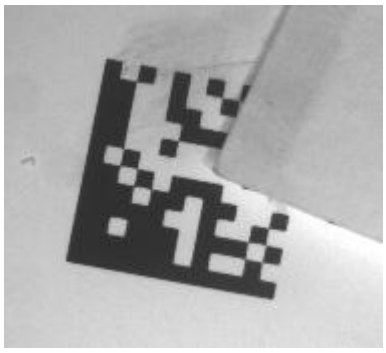


Defaced DM reading optimization

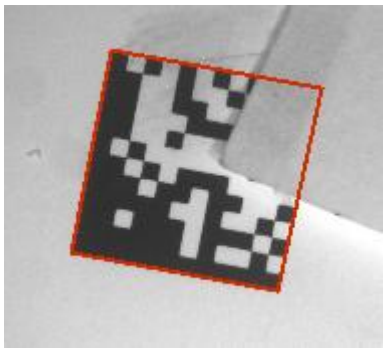
In the settings window and find Decoding settings, turn on the Defaced DM reading optimization and set the download.



Defaced DM reading optimization close



Defaced DM reading optimization open



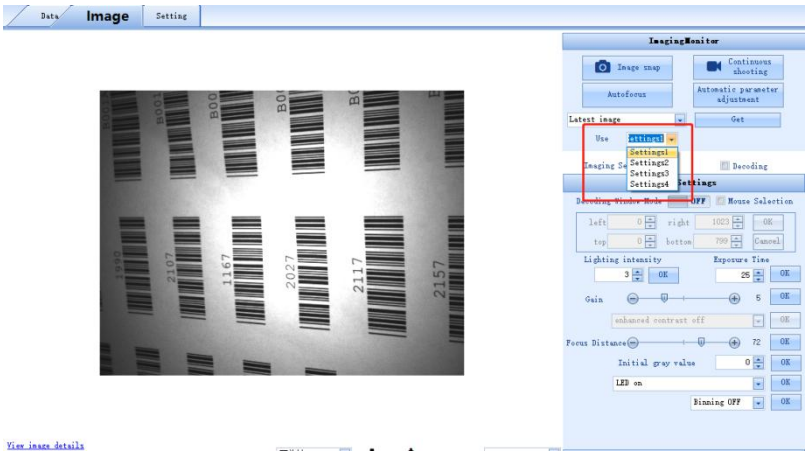
7.8 How to Use the Polling Algorithm for Complicated Reading Applications

Multiple sets of parameter settings are mainly used in the case of different code symbologies, coding media, barcode quality, positions, etc., polling and decoding through different setting parameters.

It can be set through the image window and setting window.

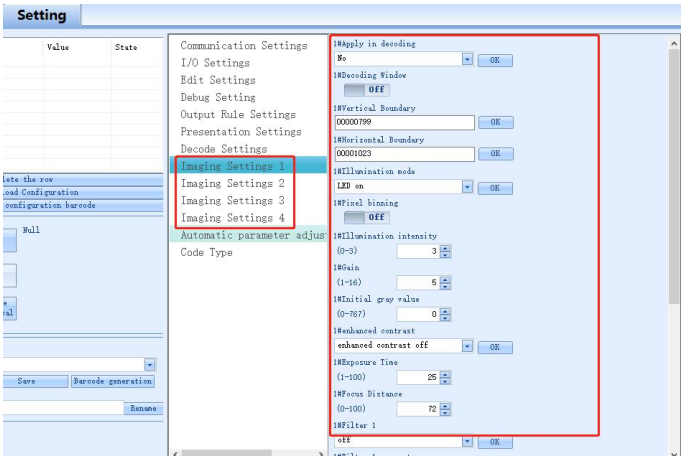
Image window

4 sets of parameters can be set. When setting, you need to confirm the setting of the corresponding imaging parameter group. The parameter group is 1-4. The default is a set of parameter groups, that is, the parameters currently being used. After the setting is completed, you need to tick before " Decoding".



Setting window

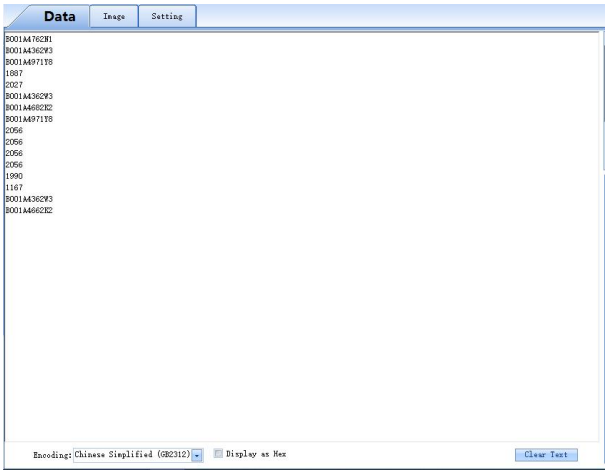
Set the parameters required by the application in the corresponding imaging parameter group. After setting, if you want to participate in decoding, select Participate in decoding and set download under whether to participate in decoding.



8 Other Operations

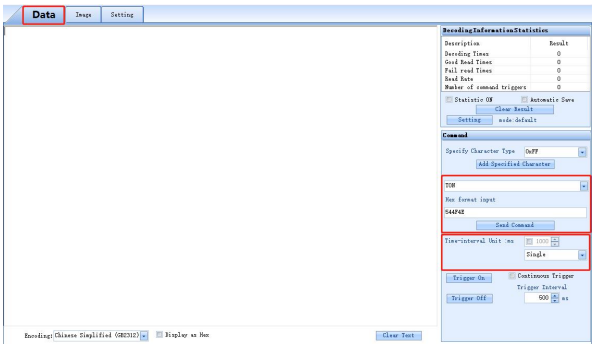
8.1 To View Decoded Data after Online Setting-up

In the data window, after the device is triggered, if the decoding is successful, the barcode information will be displayed. As shown in the figure:

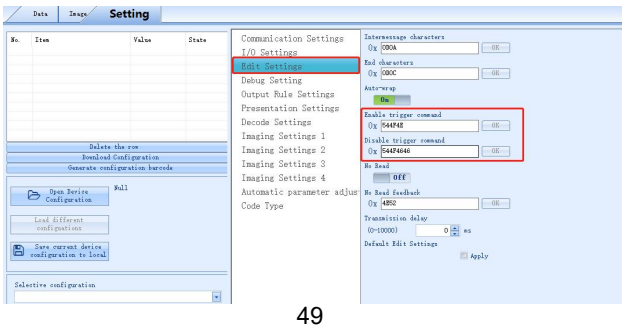


8.2 How to Trigger FV10X with Commands

In the data window, select the corresponding command, and click Send Command to trigger the device. The device trigger command is "TON" by default, and the cancel trigger command is "TOFF". The command trigger interval can be set, and the timing setting needs to be checked. The default is 1000ms/time.



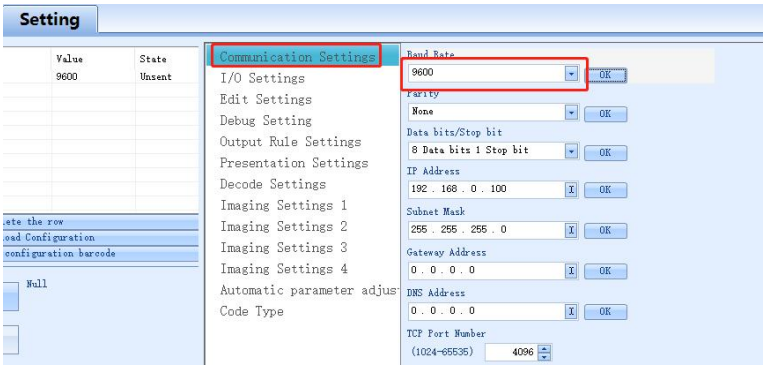
If you want to change the trigger or cancel the trigger, you can change it in Settings - Edit Settings.



8.3 How to Simulate Keyboard-wedge Input

Method: through the QHQ line
Connect the DB9 (male) end of the QHQ cable to DB9 (female) of the serial communication cable, and the USB end to the PC end.

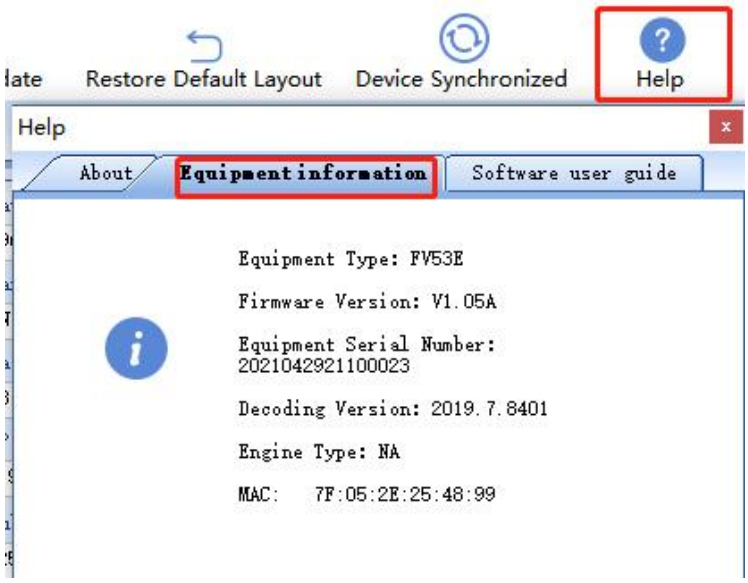
In the communication settings, the baud rate is set to 9600, and the download can be set. Data output is keyboard input, and data can be viewed in a text file (English mode).



Note: QHQ line is optional, if necessary, please consult with our sales or technical person to purchase.

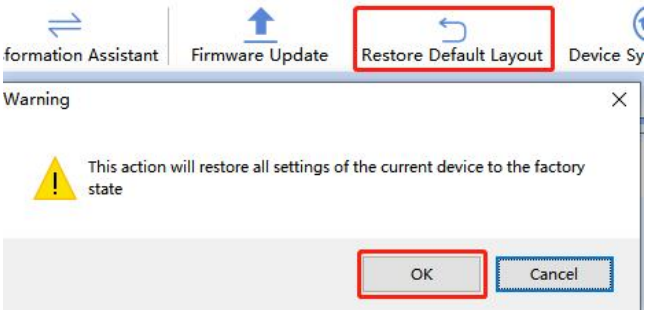
8.4 How to Check the Firmware Version Information of the Reader

Click the Help button and click E
equipment Information to view the current device model, firmware version number, etc.

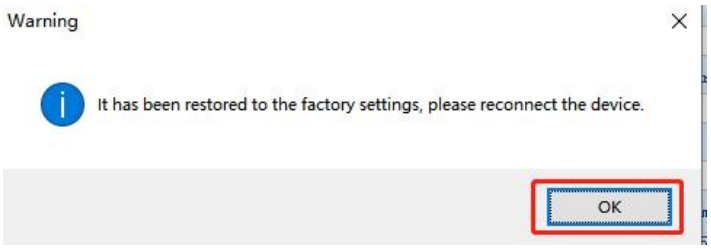


8.5 How to Reset FV10X to Factory-default Settings

Click the Restore Default Layout button，click the OK。

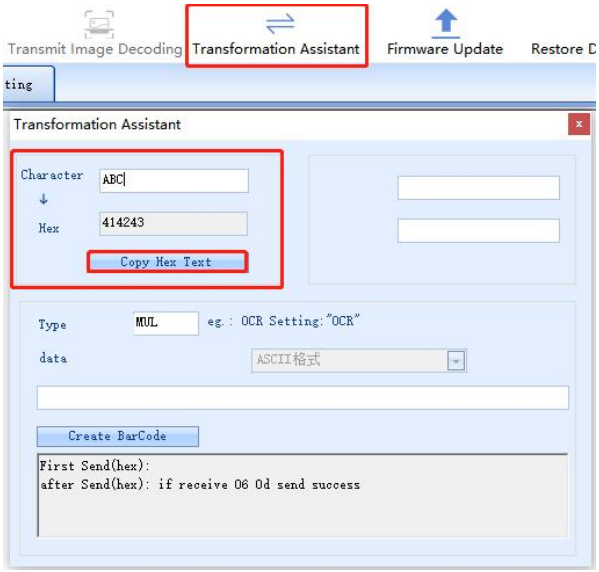


After hearing the device beep and seeing the success message, the device has been restored to the factory state successfully.



8.6 How to Convert Characters to Hex Code

Click the Transformation assistant, enter the required characters, it will be automatically converted to hexadecimal, copy the content, and paste it.



9 Factory Settings

9.1 Description of factory settings

Factory setting description	
Serial communication method	Baud Rate: 115200; Check Type: None Data bits: 8; Stop bits: 1
TCP port number	4096
USB communication mode	Emulated serial port
Default IP address	192.168.0.100
Default subnet mask	255.255.255.0
Pull-up within 24V/5V by default	closure
Default trigger command	TON (544F4E)
The trigger command is canceled by default	TOFF (544F4646)
Default reading failure character feedback	Closed (NR, 4E52)
Default transmission delay	0 S
Decoding time, symbology information, barcode position	closure
Default duplicate barcode mask	closure
trigger mode	normal mode
Default maximum decoding time/code-seeking time limit	5000ms/300ms
Dot matrix barcode optimization/inverse color code reading/DM small barcode optimization	closure
DM defaced code optimized reading / QR code reading without quiet zone	Open
Default enabled symbology	128, 39, 93, UPC/EAN, CODABAR, PDF417, AZTEC, DM, QR
Lighting intensity/exposure time/gain	2/8/1

10 Programming Guide (C# Code Examples)

In order to lower the threshold for code access, the device does not use a proprietary protocol for decoding data transmission, and is familiar with using the serial port/TCP debugging assistant to control device triggering. After receiving the device decoding data, the code can be written quickly.
The sample code here is in C# language, other languages can be used after familiarizing with the device operation. Refer to the relevant data sending and receiving code of the serial port/TCP debugging assistant to write.

10.1 RS232 Communication

1. Open serial port

For parameters such as port number and baud rate, please refer to the connection parameters of the host computer or serial debugging assistant.

System.IO.Ports. SerialPort SerialPort1;
serialPort1.PortName = "COM1";
serialPort1.BaudRate = 115200;
serialPort1.DtrEnable = false;
serialPort1.Open();

In actual development, error handling can be added as needed, as shown below

```
System.IO.Ports.SerialPort serialPort1;
/// <summary>
/// 串口连接
/// </summary>
/// <param name="sender"></param>
/// <param name="e"></param>
1 个引用|0 项更改|0 名作者，0 项更改
private void Btn_COMConnet_Click(object sender, EventArgs e)
{
    if (!_isConnected)
    {
        try
        {
            System.Diagnostics.Trace.WriteLine(DateTime.Now + ":连接中....");
            serialPort1.PortName = "COM1";
            serialPort1.BaudRate = 115200;
            serialPort1.DtrEnable = false;
            serialPort1.Open();
        }
        catch (Exception ex)
        {
            System.Diagnostics.Trace.WriteLine(DateTime.Now + ":串口打开异常" + ex.Message);

            return;
        }
```

2.Send trigger command

The trigger command defaults to TON
Sending trigger commands only requires
serialPort1.Write("TON");

Support custom trigger command, see 6.9
In addition to instruction triggering, other triggering methods are also supported, see 2.4

3.Accept barcode data

Add barcode data acceptance method
serialPort1.DataReceived += serialPort1_DataReceived;
Barcode data can be received in serialPort1_DataReceived
byte[] buffer = new byte[serialPort1.BytesToRead];
int len=serialPort1.Read(buffer, 0, buffer.Length);
Console.WriteLine(Encoding.ASCII.GetString(buffer, 0, len));

By default, the barcode data is uploaded as it is, and a carriage return and line feed will be added at the end of the barcode to distinguish it. If necessary, refer to 7.2 to modify barcode data prefix/suffix.
It is convenient for the code to accurately determine the acceptance of the complete barcode.
It also supports setting the data uploaded after reading failure, which is used by the program to determine whether the decoding is successful or not, see 6.10

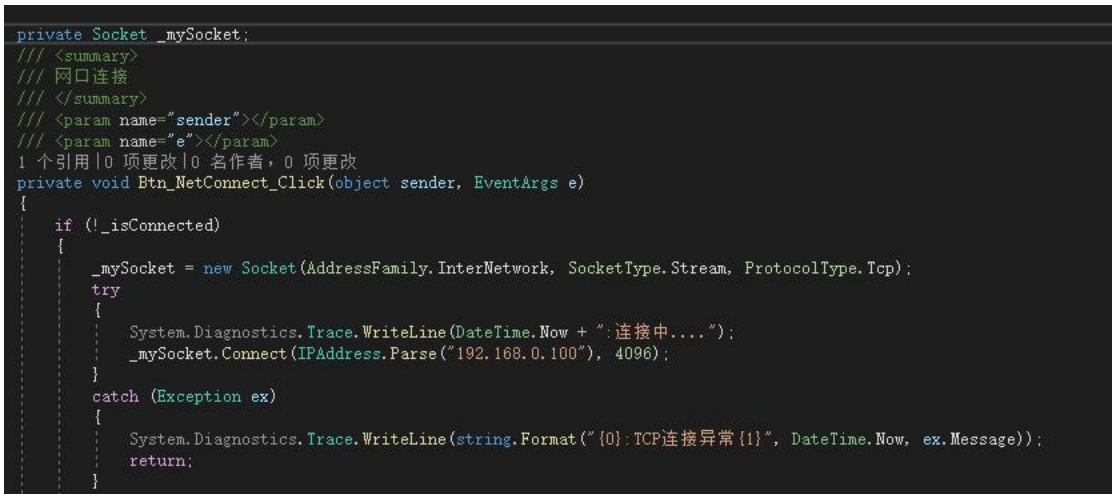
```
1 个引用|0 项更改|0 名作者，0 项更改
private void serialPort1_DataReceived(object sender, System.IO.Ports.SerialDataReceivedEventArgs e)
{


    byte[] buffer = new byte[serialPort1.BytesToRead];
    int len=serialPort1.Read(buffer, 0, buffer.Length);
    //获取的数据默认为条码原数据，编码方式根据条码内容自选
    //一般英文码为ASCII编码，中文码为UTF8编码
    Console.WriteLine(Encoding.ASCII.GetString(buffer, 0, len));


}
```

10.2 TCP/IP Communication

1. Establish a TCP connection

Device IP address and port number settings can refer to 6.5

private Socket _mySocket;
_mySocket = new Socket(AddressFamily.InterNetwork, SocketType.Stream, ProtocolType.Tcp); _mySocket.Connect(IPAddress.Parse("192.168.0.100"), 4096);



```
private Socket _mySocket;
/// <summary>
/// 网口连接
/// </summary>
/// <param name="sender"></param>
/// <param name="e"></param>
1 个引用 | 0 项更改 | 0 名作者，0 项更改
private void Btn_NetConnect_Click(object sender, EventArgs e)
{
    if (!_isConnected)
    {
        _mySocket = new Socket(AddressFamily.InterNetwork, SocketType.Stream, ProtocolType.Tcp);
        try
        {
            System.Diagnostics.Trace.WriteLine(DateTime.Now + ":连接中....");
            _mySocket.Connect(IPAddress.Parse("192.168.0.100"), 4096);
        }
        catch (Exception ex)
        {
            System.Diagnostics.Trace.WriteLine(string.Format("{0}:TCP连接异常{1}", DateTime.Now, ex.Message));
            return;
        }
```

2.Send trigger command

The trigger command defaults to TON
Sending trigger commands only requires
_mySocket.Send(Encoding.ASCII.GetBytes("TON"));
Support custom trigger command, see 6.9
In addition to instruction triggering, other triggering methods are also supported, see 2.4

3.accept data

There are many ways for sockets to receive data, and you need to choose according to the actual scenario application. Here is one of them.
For more usage methods, please refer to the official tutorial
create a new thread

```
Thread TRec = new Thread(RecvMsg) { IsBackground = true };
TRec.Start();
```

A loop is opened in the thread to continuously detect whether there is data that needs to be read

```
if(_mySocket.Available<=0)
{
Continue;
}
```

If there is, read the data and process it

```
byte[] buffer = new byte[_mySocket.Available];
int length = _mySocket.Receive(buffer);
Console.WriteLine(Encoding.ASCII.GetString(buffer, 0, length));
```

The device supports setting to read the uploaded data that fails to be used for the program to determine whether the decoding is successful or not, see 6.10