Hikrobot IDMVS Client Software

User Manual

Contents

Chapter 1 Disclaimer

The manual guides you to establish and configure the Software. To ensure the properness of usage and stability of the Software, refer to the contents below and read the manual carefully before installation and operation.

1.1 Symbol Conventions

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

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

Chapter 2 Overview

IDMVS client software (hereafter simplified as "the Software") is designed for controlling and managing code readers. Integrated with multiple functions, such as live view, device configuration, and virtual code reader, the Software allows you to determine the optimal settings for barcode reading.

2.1 Key Features

- Easy to Install: Install the software easily without installing driver separately.
- Wide Compatibility: Supports multiple operation systems including Windows XP (32-bit), Windows 7/10 (32/64-bit).
- Interface for Better User Experience: Provides clear and simple user interfaces.
- Multiple-Camera Live View: Supports setting window division and viewing the live view of multiple cameras simultaneously.
- Integrated with Multiple Tools: Integrated with multiple tools for conveniently configuring and managing code readers.

2.2 Revision History

The following table shows the revision history of the Software.

Version	Date	Changes
4.1.0	15th Jan. 2024	● Optimizes the page of Param Save. ● Adds the TCP upgrade mode of firmware. ● Adds functions including locking the focus, bar code separator, bar code prefix and suffix. ● Adds the function of assigning roles to users.
4.0.1	22th Sept. 2023	● Changes the position of the trigger button. See *Main Window Introduction*. ● Optimizes the function of correcting time, and adds the mode of manual timing. See *Other Functions*. ● Adds the function of saving smart tune results to the polling library. See *Smart Tune Control*. ● The communication settings supports bluetooth protocol settings and 2.4G. See *Communication Settings*. ● In the History, adds the button for customizing

Version	Date	Changes
		displayed columns, and the trigger time is displayed by default. See *View Reading History*. ● In the General Settings, adds the auto-rotation, report, and code reading sound. See *General Settings*. ● In *Code Draw*, adds the function of configuring code length. ● Adds the icon indicating an unlocked status of the Software. See *Permission Management*. ● Adds the *FTP Server*.
4.0.0	15th June 2023	● Optimizes the function of logging in by password and adds the function of locking the Software. See *Permission Management*. ● Adds *Log Collection Tool*. ● Adds the function of auto-clearing images in *FTP Server*. ● Changes Log Viewer to SDK Log Viewer and optimizes the function. See *SDK Log Viewer Tool*. ● Optimizes *Running Mode* and deletes the raw mode. ● In the live view window, adds the function of thumbnail and showing/hiding ROIs. See *Acquisition and Live View in 1-Window Mode*. ● In *Acquisition Status*, deletes the Temperature. ● Adds OCR display in *View Reading History*. ● Optimizes the control tool bar. See *Quick Operations*. ● Optimizes the *Feature Tree*. ● Adds the function of sorting and searching for devices in the enumerated device list. See *Connect Enumerated Local Device*. ● The *Algorithm Settings* supports unfolding all codes, selecting/deselecting all codes, and displaying code numbers.
3.2.0	6th Jan. 2023	● Added the function of smart tune. See *Smart Tune Control*. ● Added the settings of password. See *Permission Management*. ● In File Access, added the function of importing files in a batch. See *Import Feature*.

Version	Date	Changes
		● Added the function of automatically cleaning images. See ***Capture and Recording Settings***. ● Supports selecting virtual cameras and adding them to the Software, and collecting data by the cameras. See ***Virtual Camera***. ● In the **Input** and **Stop Trigger** part of I/O Control Settings module, TCP/UDP protocol supports opening the ASCII Cross Reference Table and click a table cell to add the corresponding content to the text box. ● ***Help*** supports viewing the communication matrix. ● Added the shortcut for focus control on the Menu Bar. ● The ***General Settings*** page supports setting the update interval of device list. ● Optimized the format of saved images. ● Optimized the live view page. ● Optimized the sequence of modules on the navigation bar. ● Optimized the function of continuous acquisition.
3.1.0	6th Jan. 2023	● In ***General Settings***, added the description of Device Enumeration Protocols. ● Added new features in the Feature Tree. ● When exporting camera features, supports downloading the License Notice to the PC. See ***Export Feature***. ● When multiple NICs are connected to the same network segment, the Software will enumerate the devices for all the NICs respectively. ● Added the Lighting Enable function in the Light. ● Added Line Graph of Read Rate in ***Statistics***.
3.0.0	22nd Mar. 2022	● The General page supports enabling enumerating cameras automatically. See ***General Settings***. ● Support selecting the type of saved images. See ***Capture and Recording Settings***. ● Support outputting code reading data to an editable document. See***Code Draw***. ● Support saving code reading history continuously. See ***History Export Settings*** and ***View Reading History***.

Version	Date	Changes
		● Added ASCII table and development SDK in ***Help***. ● Added ***FTP Server*** used for storing data. ● Support grouping cameras. See ***Group Cameras***. ● The ***Feature Tree*** supports switching languages between Chinese and English. ● Updated regular expression filter rule. See ***Add Regular Expression Filter Rule***. ● The ***IP Configurator*** supports rebooting cameras in a batch.
2.3.1	3rd Nov. 2021	● Supports evaluating the code quality of a 1D code. See ***Set Code Quality Evaluation***. ● On the login page, added the IP address of the PC where the Software connects the selected camera. ● Optimized the tips on the window of batch drawing ROIs. ● The Software can read up to 4,096 characters from a code and up to 300 codes from a picture. ● Edited some nodes in the communication protocol. ● Updated MvCodeReaderSDK to support cameras with newer firmware.
2.3.0	15th Apr. 2021	● Added environment configuring guidance for USB devices. For details see ***Environment Configuration***. ● Added the description of font size configuration. For details, see ***Code Draw***. ● Added the description for importing and exporting features. For details. ● Added virtual camera function. For details, see ***Virtual Camera***. ● Supports enabling code quality function. For details, see ***2D Code Algorithm***. ● Added new 1D codes, 2D codes, and stack code. For details, see ***Add Barcode***. ● Supports drawing multiple Algorithm ROIs in a batch and drawing chessboard ROI. For details, see ***Algorithm ROI***. ● Supports configuring various data processing parameters when you select different communication protocols. For details, see ***Data***

Version	Date	Changes
		Processing Settings. ● Supports enabling Network Time Protocol (NTP) timing. For details. ● Supports USB trigger. For details, see *Input*.
2.2.0	20th Jul. 2020	● Updated the screenshot of main window interface and descriptions of related module. For details see *Main Window Introduction*. ● Supports setting saving path and format for the barcode reading history. For details, see *History Export Settings*. ● Updated the screenshot of the Virtual Code Reader and related descriptions. For details, see *Virtual Code Reader*. ● Supports exporting EMMC storage. For details, see *Other Functions*. ● Supports setting multiple algorithm ROIs. For details, see *Algorithm ROI*. ● Supports setting regular expression filter rules. For details, see *Filter Rule*. ● Supports Profinet, MELSEC, Ethernet/IP, and ModBus protocols. For details, see *Communication Settings*. ● Supports multi-channel live view and controlling trigger mode in 1-window mode. For details, see . ● Supports showing overall grade of DM code and the grade of each quality parameter. For details, see *View Reading History*. ● Supports image cache. For details, see *Image Cache*.
2.1.1	15th Apr. 2020	Supports displaying the overall grades (and grades based on each quality parameter) of DM codes in real-time on the History panel. For details, see *View Reading History*.
2.1.0	13th Mar. 2020	● Supports virtual code reader, which allows you to upload local images to simulate code reading environments and test code reading results. For details, see *Reading Training Tool*. ● Supports viewing SDK logs and configuring corresponding settings. ● Supports setting rendering engine mode (D3D or

Version	Date	Changes
		GDI). For details, see ***View***. ● Supports setting light channels for certain models (ID3000 and ID5000 series) of code readers. For details, see ***Light Features***. ● Supports setting auto focus parameters for certain model (ID5000 series) code readers. For details, see ***Auto Focus***. ● Supports the waybill cutout functionality, which can be used to recognize the waybill in the image and save the cutted-out waybill image. For details, see ***Enable Waybill Cutout***. ● Supports setting the displayed information of IP Configurator and Firmware Updater. For details, see ***IP Configurator*** and ***Firmware Updater***. ● Supports exporting reading history to the local PC as CSV file or xlsx file. For details, see ***View Reading History***. ● Supports viewing the total read barcodes in Statistics. For details, see ***Statistics***.
2.0.0	19th Jun. 2019	● Compatible with multiple series of code readers. ● Supports upgrading, and downgrading the version of the client software. ● Supports modifying and repairing the installation settings via the installation package. ● Provides wizard for configuring the code reader. For details, see ***Device Configuration***. ● Supports window division during acquisition and live view. For details, see ***Window Division***. ● Supports statistics for the barcode-read rate. For details, see ***Statistics***. ● Supports viewing the barcode-reading history. For details, see ***View Reading History***. ● Supports configuring IP address of the code reader. For details, see ***IP Configurator***. ● Support upgrading the firmware of the code reader. For details, see ***Firmware Updater***.

Chapter 3 Environment Configuration

Before performing further operations on the Software, you should make sure you have properly configured the PC and the devices, or some functions may be unavailable.

3.1 System Requirements

Make sure the PC on which you install the Software meets the minimum requirements at least.

Note

- This Software has integrated all the required drivers. As a result, you can install the Software easily without installing driver separately.
- We recommend adding the Software to the allowlist of the anti-virus software, in case of being recognized as virus.
- The Software interface requires the display resolution of at least 1366 × 768 or above for a complete display on the PC.
- Virtual Code Reader is only available when the MVID-M dongle is plugged in to the PC on which the Software runs.

Table 3-1 System Requirements

Item	Minimum	Recommended
Operating System	Microsoft Windows 7/10 (32/64-bit) or Microsoft Windows XP (32-bit)	Microsoft Windows 7/10 (32/64-bit) or Microsoft Windows XP (32-bit)
CPU	Intel Pentium IV 2.0 GHz	Intel Pentium IV 3.0 GHz and above
Memory	1 GB	4 GB and above
Network Adapter	Intel Pro1000, I210, I350 series	Intel Pro1000, I210, I350 series
Display Resolution	1366 × 768 or above	1920 × 1080 or above

3.2 Configure NIC

Before performing further operations on the Software, you should make sure that the IP addresses of the PC and the code readers are on the same network segment, and that the Jumbo Frame of the PC system is enabled, or connecting device to the Software will fail, and packet losses and frame losses will occur during acquisition of some devices.

1. Open the NIC configurator. You can choose from one of the following ways to open it.
   - Go to **Start** → **All Programs** → **IDMVS** → **Tools** → **NIC Configurator**.
   - Go to **Applications** → **NIC Configurator** in the installation folder of the Software.
   - Right-click a network interface on the device list and then click **NIC Settings**.

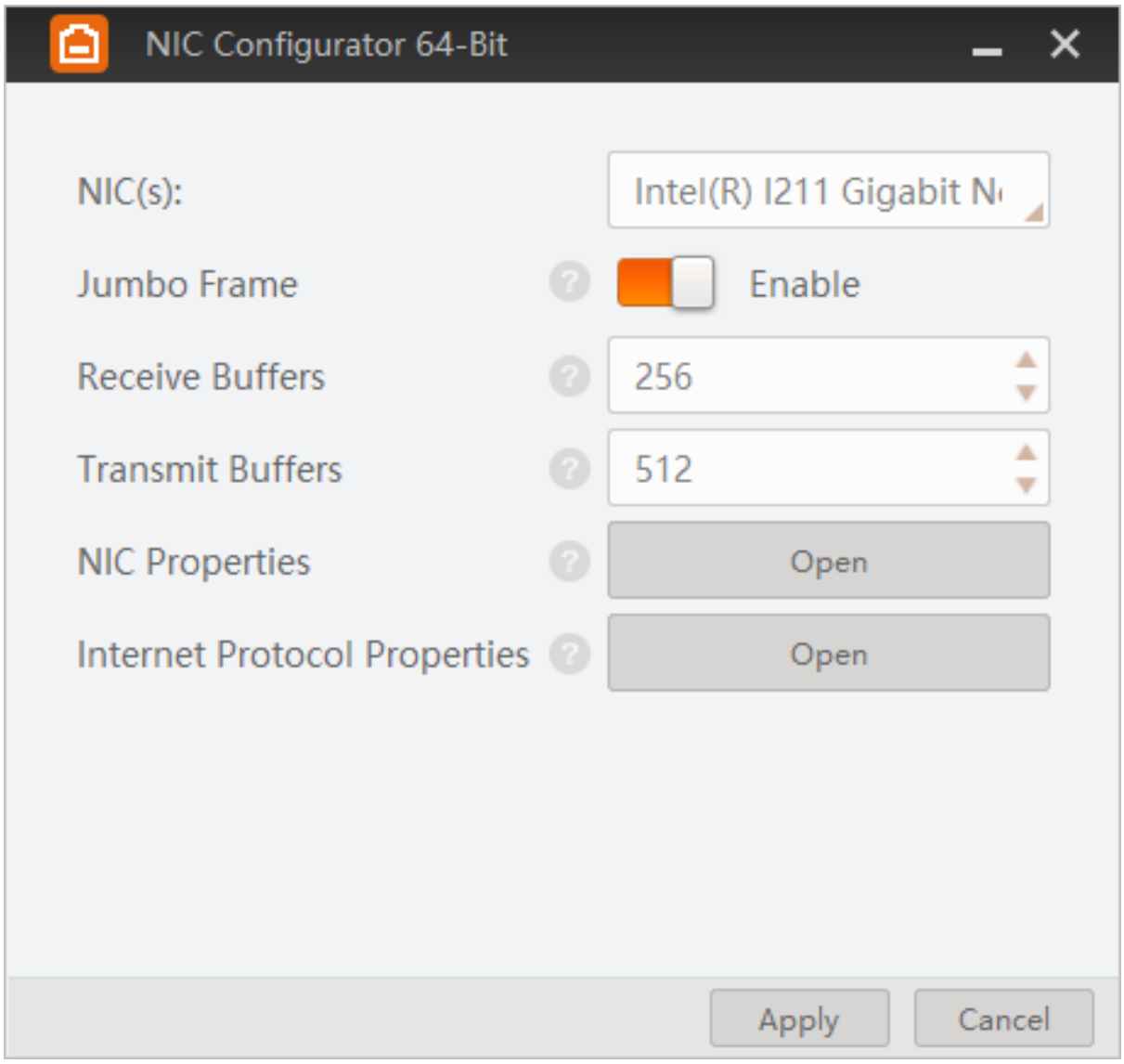

Figure 3-1 Open the NIC Configurator

2. Set parameters for the network interface card.
   - **Jumbo Frame:** The Jumbo Frame function can reduce the CPU usage and improve the

data transmission efficiency. After enabling the Jumbo Frame function, the Jumbo Frame value will be set to 9 KB or 9014 Bytes automatically.

Note

If you only need to connect AGV code readers to the Software, enabling Jumbo Frame is not required, for the data transfer interface of the device is of 100M level. For other types of code readers, you should enable Jumbo Frame.

- **Receive Buffers:** Set the size of Receive Buffers. Increasing the Receive Buffer size improves receiving performance while costs more system memory.
- **Transmit Buffers:** Set the size of Transmit Buffers. Increasing the Transmit Buffer size improves data transmission performance while costs more system memory.
- **NIC Properties:** Click **Open** to open the properties page of the selected network interface card. You can view and edit the properties if needed.

Note

If enabling Jumbo Frame via NIC configurator fails, click **Advanced** on the properties page to check if Jumbo Frame is supported by the network interface card. If supported, set the Jumbo Frame value to 9014 Bytes or larger. If not, try updating the NIC driver or using other network interface card(s).

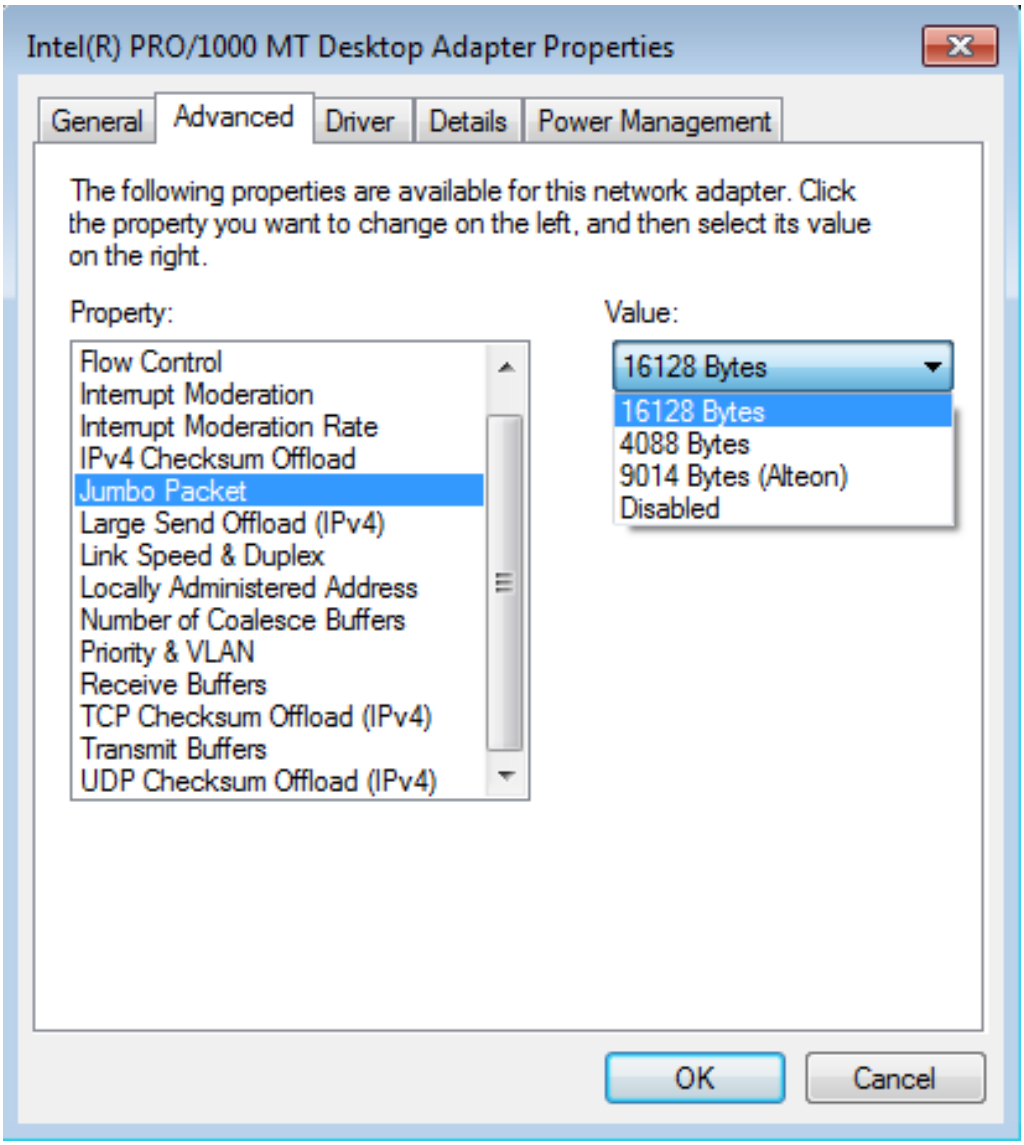

Figure 3-2 NIC Advanced Properties

- **Internet Protocol Properties:** Click **Open** to open the properties page of the internet protocol, and then select**Obtain an IP address automatically** or use the IP address of which the IP segment is same with that of the devices.

Note

The properties page of the internet protocol varies with different series of network interface card. The following picture takes Intel® Ethernet Connection I217-V for an example.

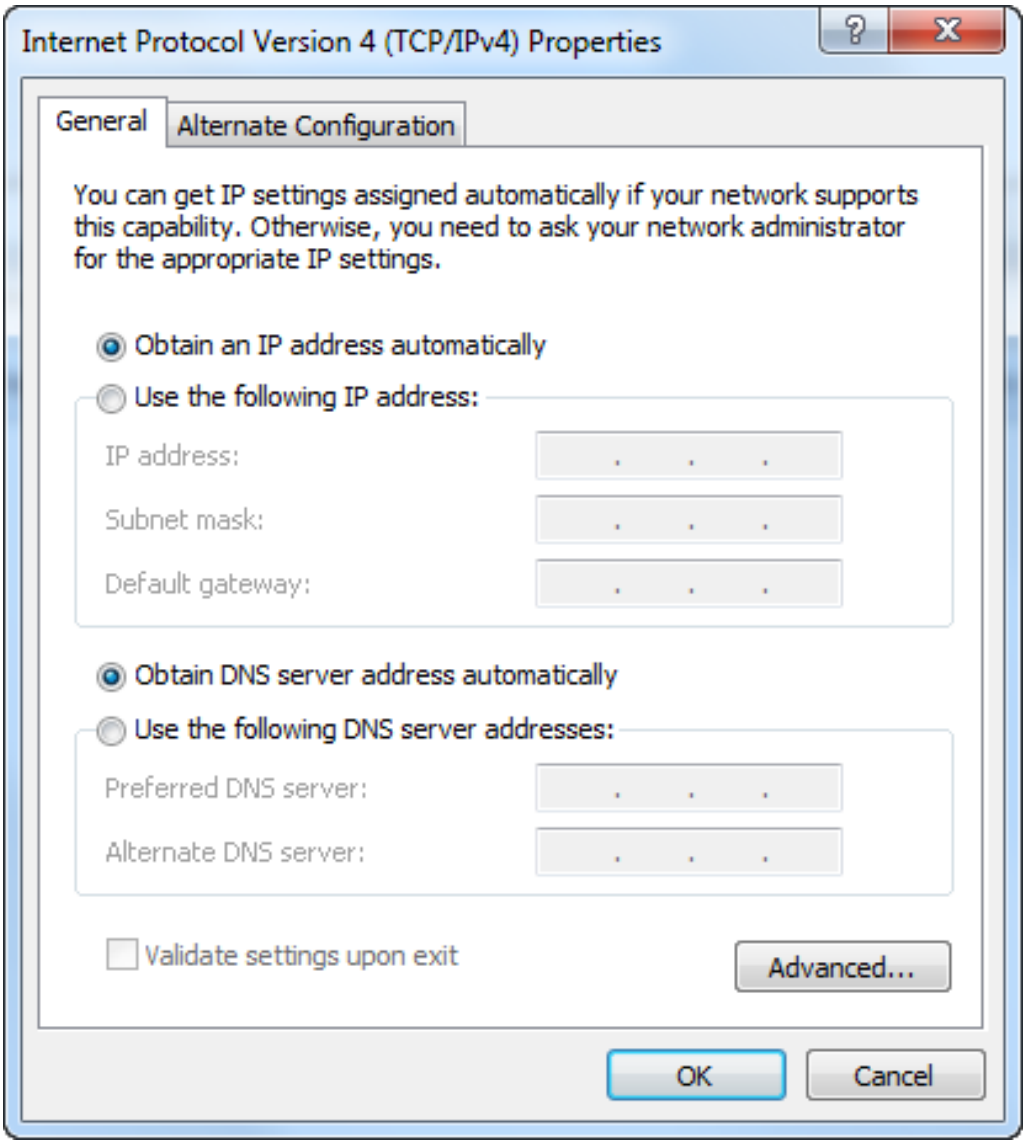

Figure 3-3 Set PC IP address

3.3 USB Device

Make sure you have properly installed the USB driver, or connecting device to the Software will fail.

When you connect a USB device to the PC, the Windows system will automatically install a USB driver after discovering the device. You can check whether the USB driver is installed properly via the device manager of the Control Panel.

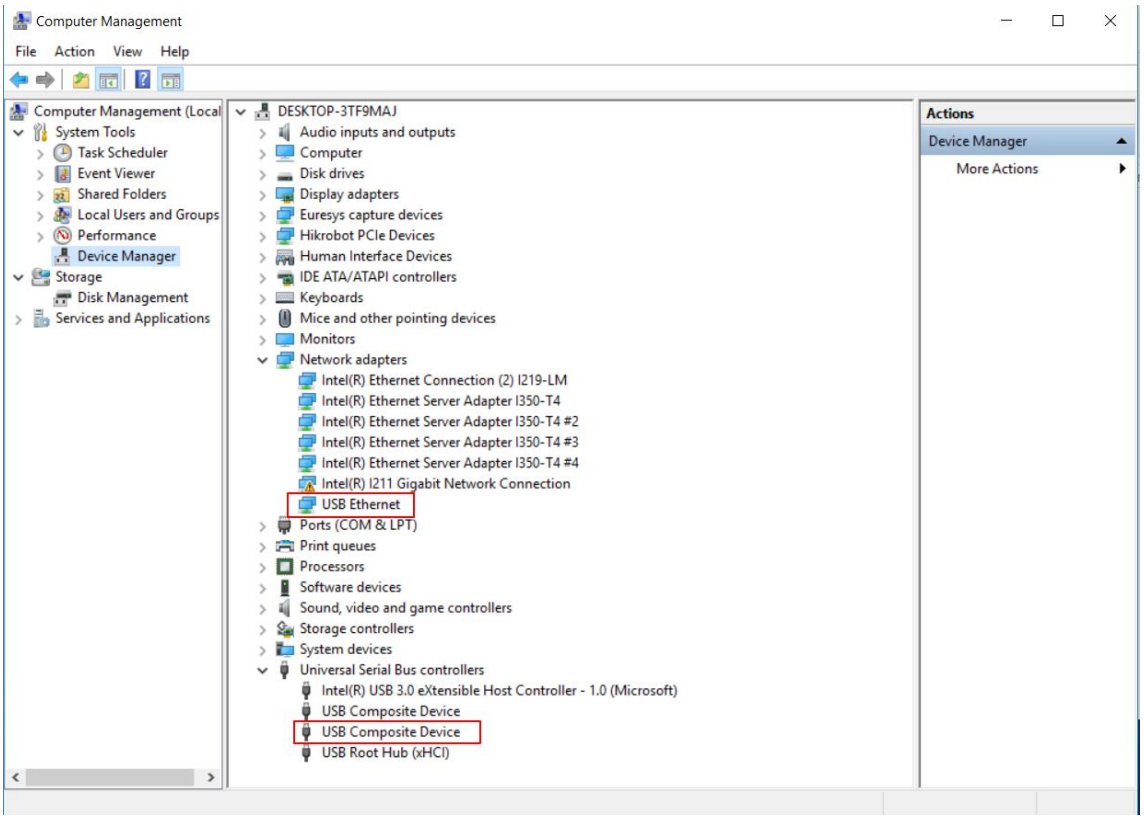

Figure 3-4 Installed USB Driver

If the USB driver is not installed properly, you can install it again.

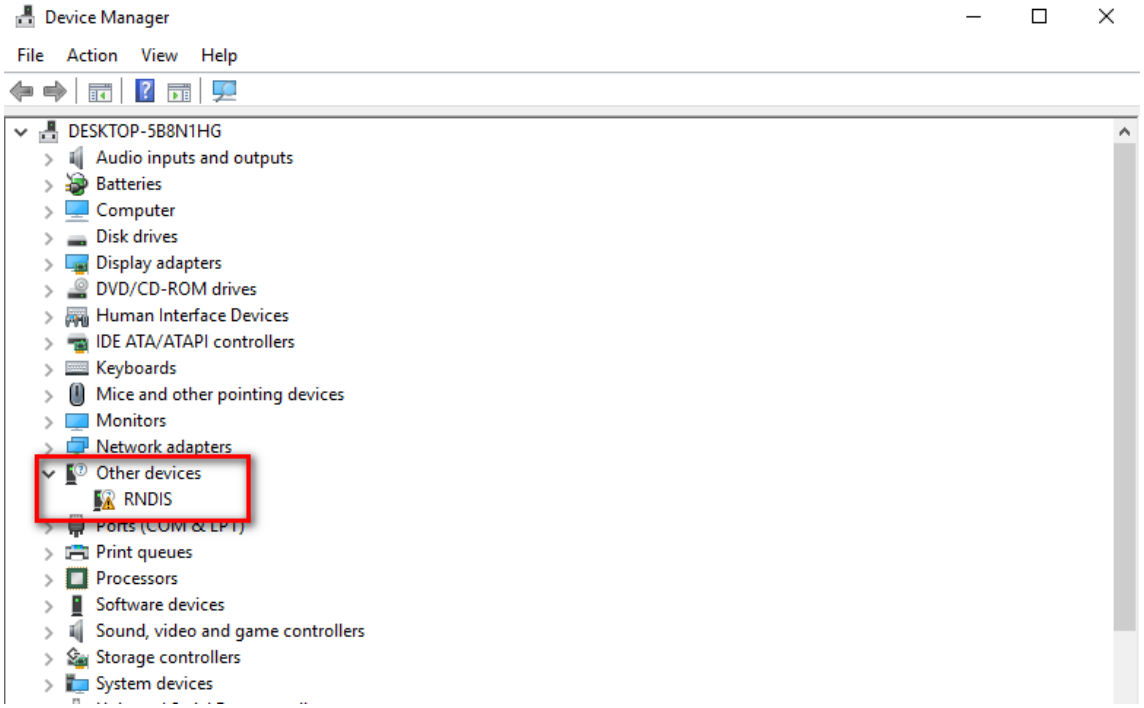

Figure 3-5 Uninstalled RNDIS

Chapter 4 Main Window Introduction

After installation, double-click the Software icon on the desktop to run the Software. The main window of the Software will show once the software is launched.

Note

- If you have set a password for the Software before, the main window will show only after you enter the correct user name and password for login.
- The Software will be displayed in full screen by default.

Refer to the image and table below for the description of each component of the main interface.

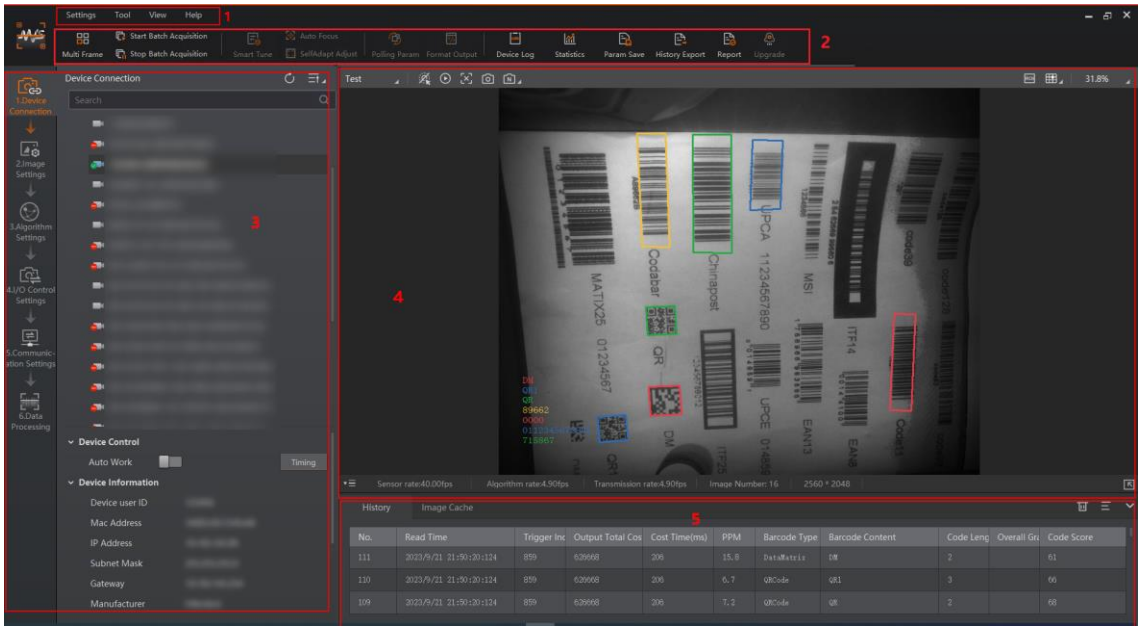

Figure 4-1 Main Interface

No.	Area Name	Description
1	Menu Bar	Provides access to function modules including Settings, Tool, View, and Help. Refer to ***Menu Bar*** for more details.
2	Control Toolbar	Provides access to functions such as starting/ending batch acquisition, switching the window division mode, viewing real-time statistics during acquisition, and viewing device logs, and quick access to tools such as Smart Tune, Auto Focus, and SelfAdapt Adjust.

No.	Area Name	Description
3	Device Configuration Wizard Panel	The wizard for device configurations. In the Device Information field, you can view information about a device and its corresponding network interface. You can connect device(s) to the Software, manage devices by groups, and configure parameters related to image settings, algorithm settings, I/O control settings, communication settings, data processing, and configuration management. Refer to ***Device Configuration*** for more details.
4	Live View Window	Displays the live video of the selected device(s). Refer to ***Acquisition and Live View*** for more details.
5	History Panel	Displays the code reading history of device(s). You can also view the real-time reading results during acquisition. Refer to ***View Reading History*** for more details.

Chapter 5 Quick Operations

This chapter helps you quickly start using the Software.

Before You Start

Make sure the device is connected.

Steps

1. Click **Device Connection** on the navigation bar, and double-click a device, or hover the cursor over a device and then click .

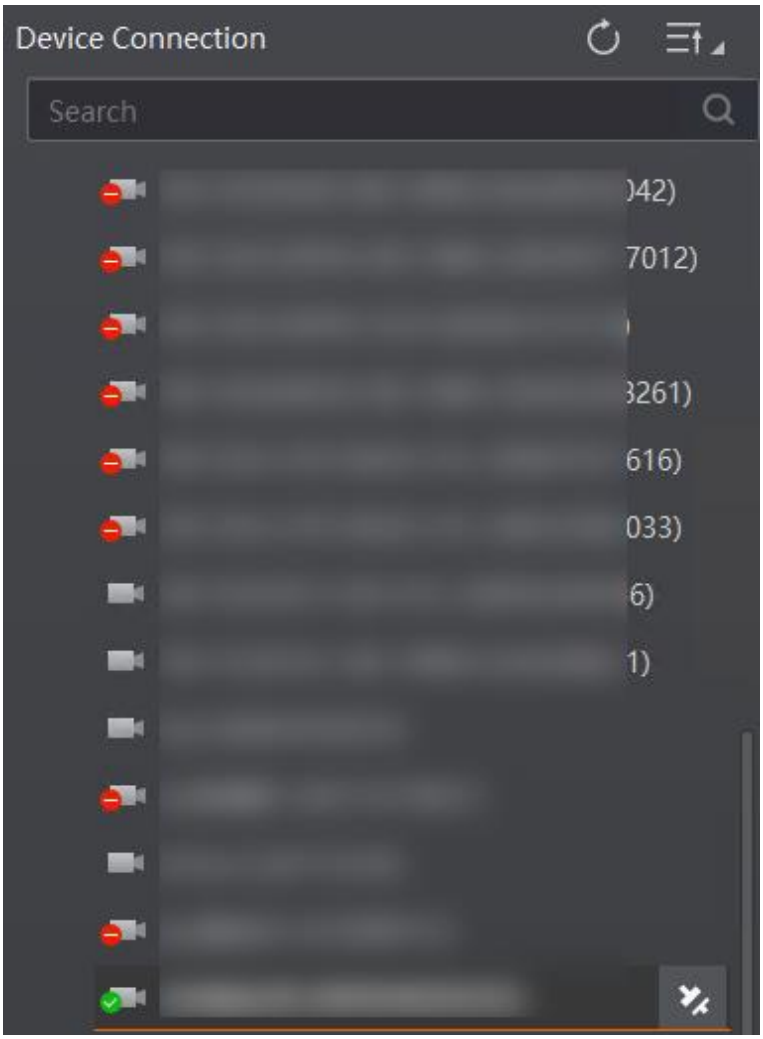

Figure 5-1 Device Connection

2. Select a running mode from drop-down list on the top left of the live view window. See *Running Mode*.

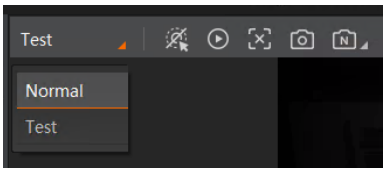

Figure 5-2 Running Mode

3. Click ▶ on the top left of the live view window to start acquisition.
4. Adjust image parameters via the buttons on the top control toolbar according to the live view image, such as **Smart Tune** and **Polling Param**. See ***Smart Tune Control*** and ***Multiple Mode***.
5. Click **Algorithm Settings** on the navigation bar, and add barcodes to be read.

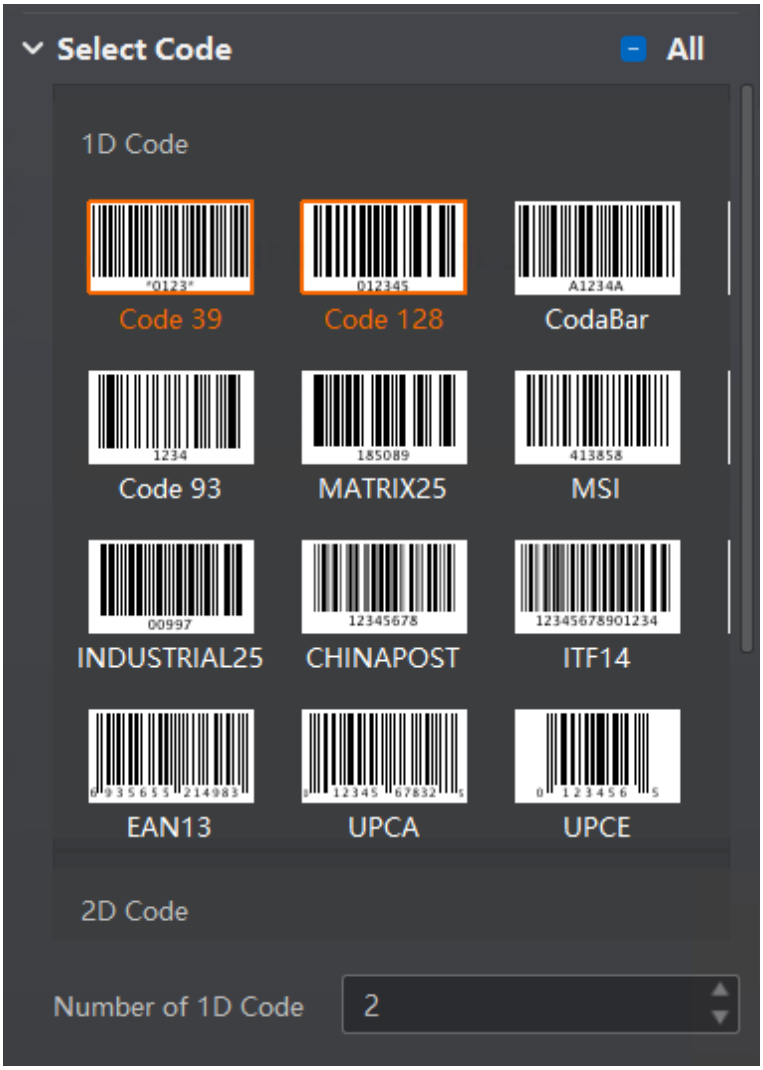

Figure 5-3 Add Barcode

6. Click **I/O Control Settings** on the navigation bar to configure input and output parameters.
7. Click **Communication Settings** to select a communication protocol for data transmission and configure related parameters.

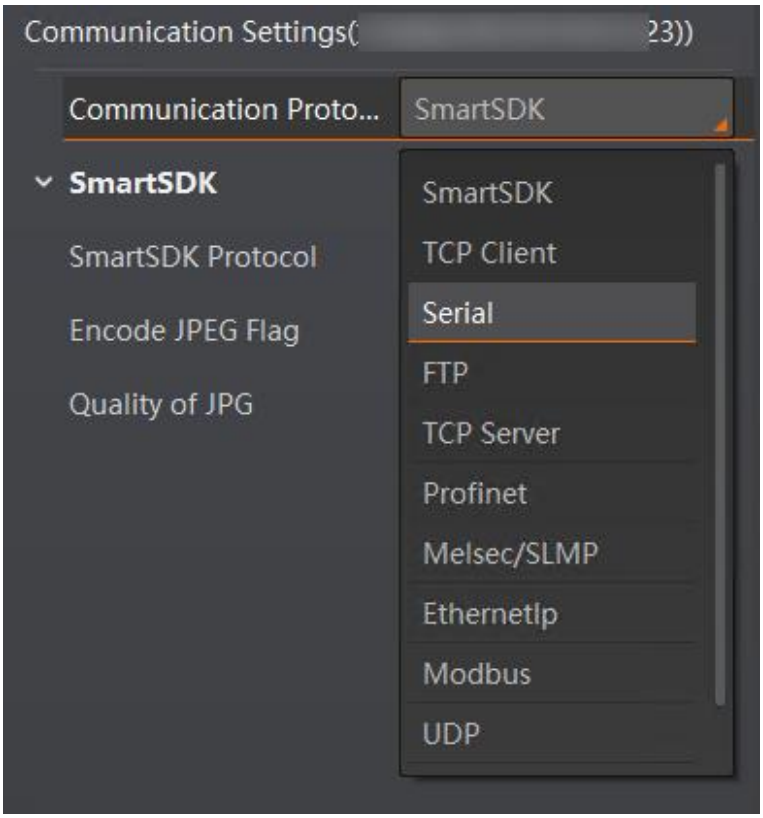

Figure 5-4 Configure Communication

8. Click **Format Output** on the control toolbar to configure the format of output data. See *Data Processing Settings*.
9. Click **Param Save** on the control toolbar to save the parameters you configured.
   - **Save**: Select a user set, and then click **Save** to save the parameters you set by the above steps to the selected user set.
   - **Load**: Load and apply the parameters in the selected user set to the currently connected device. If you select **Default** user set, the device will be restored to factory settings.
   - ＋: Add a customized user set. No more than 8 customized user sets are allowed.
10. Optional: Perform the following operations.

Export History	Click **History Export** on the control toolbar to export the data of code reading to the PC.
View Device Logs	Click **Device Log** on the control toolbar to view logs stored in the device.
Configure Window Division	If multiple devices are connected, click **Multi Frame** on the control toolbar to select the window numbers in the live view area.
Start/Stop Batch Acquisition	If multiple devices are connected, click **Start/Stop Batch Acquisition** on the control toolbar to start or stop acquisition of

multiple devices in a batch.

Chapter 6 Device Configuration

After connecting devices to the Software, you can configure the device parameters to determine the optimal settings for barcode reading.

Note

It is recommended that you start live view before configuring device parameters. For details about live view, see *Acquisition and Live View*.

6.1 Device Connection and Management

You should connect devices to the Software for further configuration. In the device list, you can performoperations after adding devices, such as configuring device IP address, renaming device user ID, and resetting device. In the Device Control area, you can set the device to work automatically and synchronize time. In the Device Information area, you can view the basic information of the selected device.

6.1.1 Connect Device

You can connect devices to the Software in two ways, i.e., connecting auto-enumerated local devices, or adding remote devices.

Connect Enumerated Local Device

All the devices on the same local subnet with the PC running the Software will be automatically enumerated on the device list.
Click **Settings** → **General**, and switch on **Device List Auto-Enumeration** to enumerate all local devices.

Note

When multiple NICs are connected to the same network segment, the Software will enumerate the devices for all the NICs respectively.

Figure 6-1 Enumerate Devices for Two NICs in the Same Network Segment

For auto-enumerated devices, you can perform the following operations.

- Click **Device Connection** to display the device list, select a device, and click to connect it to the Software.

  Note

  The icon beside the device name shows the device status.

- Click to refresh the devices on the same local subnet, or enable auto-refreshing. For details about auto-refreshing local devices, see *General Settings*.
- Add devices to groups for further management. For details, see *Group Cameras*.
- Enter the device name, model name, serial number, and/or IP address, and click to search for devices.
- Click → **Device Name / Model Name / Serial Number / IP Address** to sort the devices.
- Click **Settings** → **General**, and switch on **Filter Camera Model** and set the filtering tag of a device model for not displaying that device model in the device list.

  Note

  This function will take effect after you restart the Software.

- You can set the device enumeration protocol(s) to standard protocol, private protocol, or standard and private protocol. See details in ***General Settings***.

Connect a Camera by CMD

You can launch the Software and connect devices by CMD command.

Steps

1. Open the CMD window in the PC system.
2. Enter *cd* and the file path of IDMVS.exe, then press **Enter**.

   Example

   If the path of IDMVS.exe is *C:\Program Files (x86)\IDMVS\Applications\Win64*, then you should enter *cd C:\Program Files (x86)\IDMVS\Applications\Win64*, as shown in the picture below.

Figure 6-2 Connect to the Software via CMD Command

3. Connect to a device with CMD command in one of the following ways.
   1) Connect via device IP address. Enter *IDMVS.exe/IP xx.xx.xx.xx*, then press **Enter**.

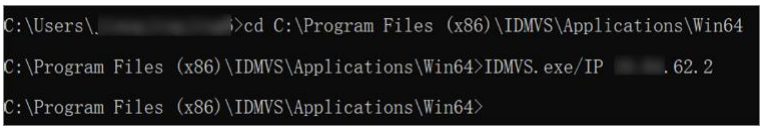

Figure 6-3 Connect a Device via IP Address

   2) Connect via device MAC address. Enter *IDMVS.exe/Mac xx.xx.xx.xx.xx.xx*, then press **Enter**.
   3) Connect via device serial No. Enter *IDMVS.exe/SN xxxxxxxx*, then press **Enter**.

Result

With all the steps above, you can open the Software and connect a device.

Add Remote Camera

You can add GigE Vision camera NOT in the same local subnet with the client software to the device list.

Steps

1. Right-click the network interface card (for example, **Local Area Connection** in the following picture) to open the right-click menu.

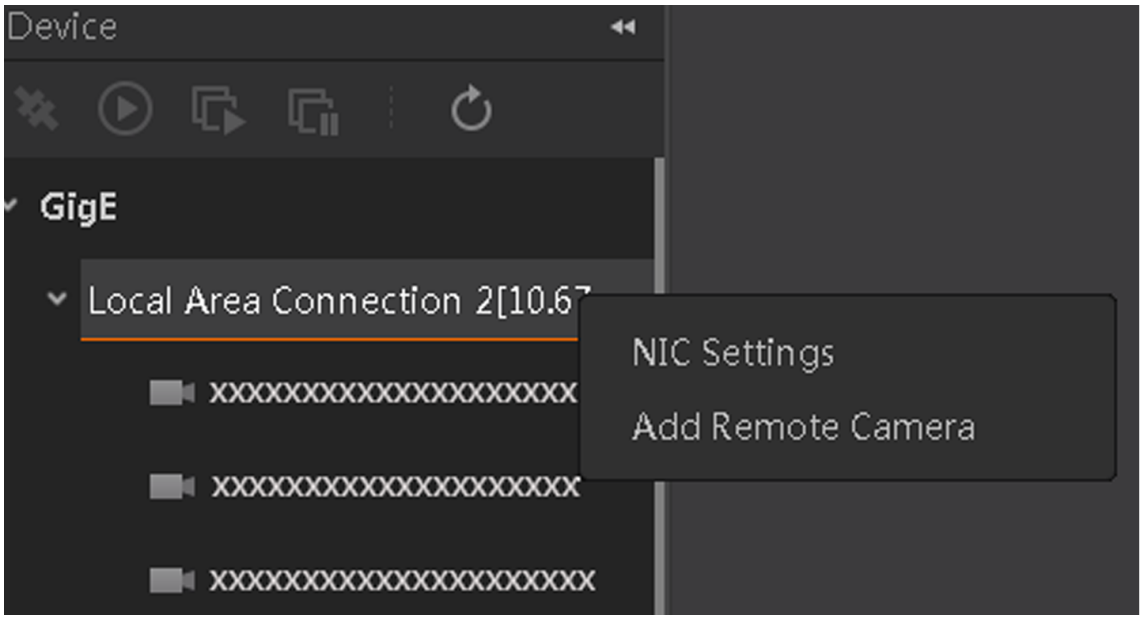

Figure 6-4 Right-click Menu

2. Click **Add Remote Camera** to open the Add Remote Camera window.

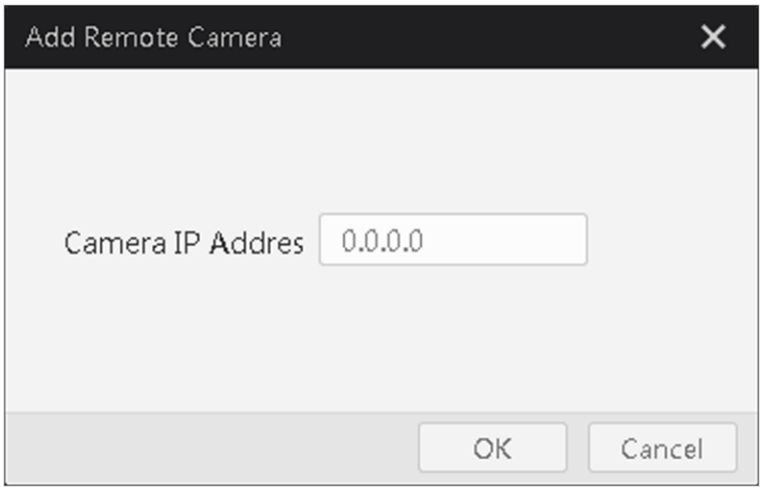

Figure 6-5 Add Remote Camera

3. Enter the camera IP address and then click **OK** to add the camera.

6.1.2 Device Status

The Software provides multiple icons to indicate the device status. You can do further management according to the device status. For example, if the device status is "Connected", you can start acquiring streams or viewing the live video of the device.
The following table shows the descriptions of the status of the GigE Vision camera on the device list.

Camera Status	Description

Camera Status	Description
	Available and disconnected. **Note** You can double-click the camera or select it and click  on the control toolbar to connect it with the software. Once connected, changes to  .
	Not available. Another software or process is accessing the camera.
	The camera is in the same subnet with the PC running the software; however it is not in the same network segment. You should configure its IP address to the same network segment before you can connect and use the camera. **Note** You can double-click the camera or click **Tool** → **IP Configurator** to configure the camera's IP address. See ***IP Configurator*** for details about how to configure camera IP address.
	Connected.
	The camera is acquiring streams. **Note** See ***Acquisition and Live View*** for details about how to start acquisition.

6.1.3 Edit IP Address of a Single Camera

You can modify the IP address of a single camera if the camera status is Free or Unreachable.

Steps

1. Select a network interface.
2. Double-click any place in the camera row to open the Modify IP Address window.

3. Select the **Static IP**, **DHCP**, or **LLA** as the IP type.

Note

You can change the IP type only when the camera status is Free. And if you change the IP type, the camera will be reset to its power up state.

Static IP

For setting the IP type as Static IP, you can modify the IP address, subnet mask, and default gateway.

DHCP

The camera is set to automatically obtain an IP address. This means that the IP address will dynamically change (within a range) every time the camera or computer is restarted.

Note

- If the IP addresses of your PC and camera are both static but they are not in the same IP segment, you need to change the camera IP address to a dynamic IP address.
- If you enter restricted IP types including D type (from 224 to 239), E type (from 240 to 254), the IP addresses starting with 127 or 255, or IP addresses with incorrect IP address formats, you will not be able to access the devices.

LLA

The camera uses a default IP address from the link-local address block. Link-local addresses for IPv4 are defined in the address block 169.254.0.0/16 in CIDR notation. In IPv6, they are assigned the address block fe80::/10.

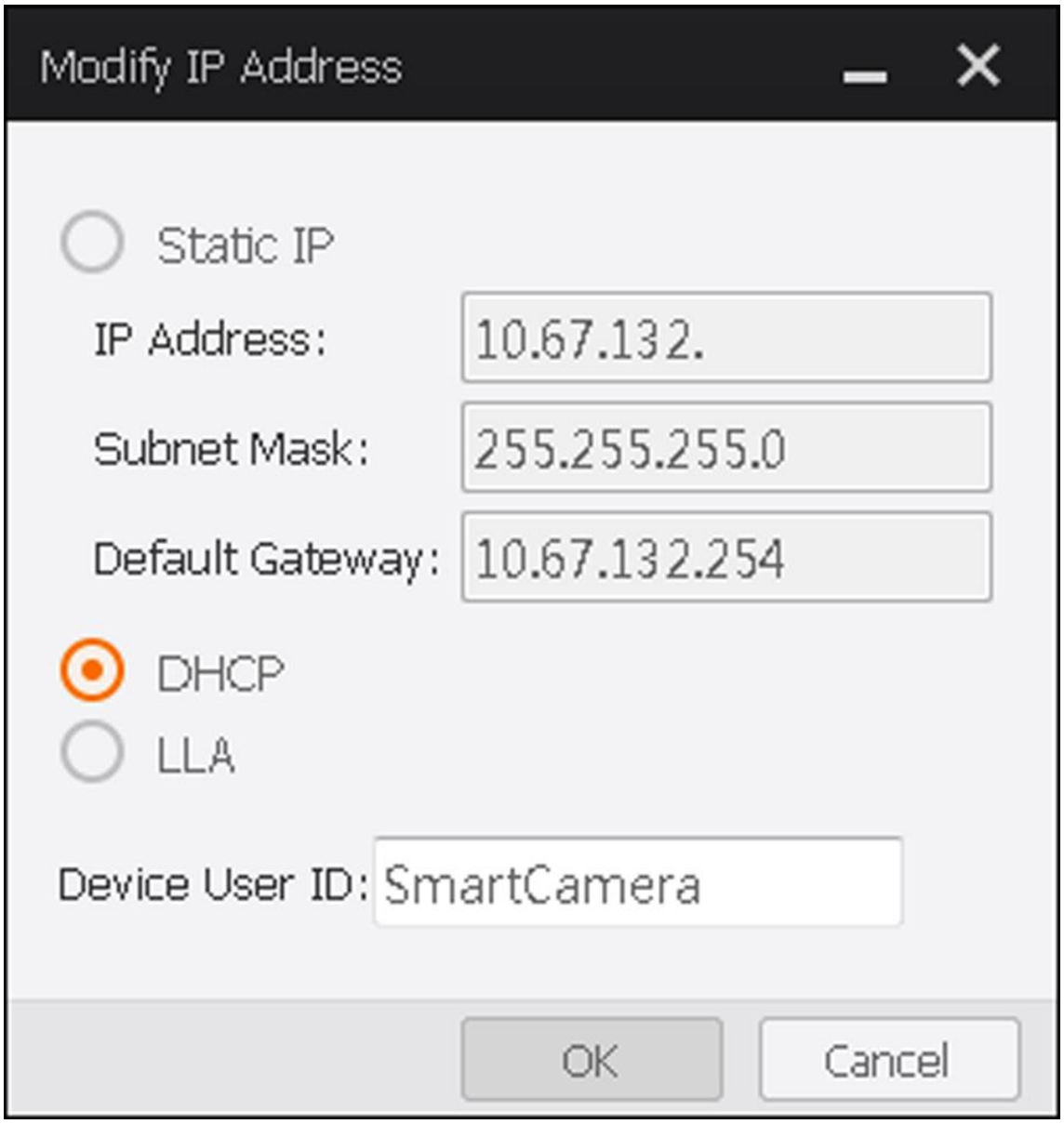

Figure 6-6 Modify IP Address

4. Optional: Edit the camera name in Device User ID field.
5. Click **OK** to save the settings.

Note

If the modified IP address conflicts with another device's IP address in the same local subnet, a prompt will pop up to remind you that IP conflict occurs. Change the IP address in this situation.

6.1.4 Group Cameras

You can custom camera group(s) on Device Configuration Wizard Panel.

Steps

1. Right-click the GigE list, and click **Add Group** to add a new group to the device list.
2. Optional: You can perform the following operations.

Rename	You can rename the new group if needed.
Delete Group	You can delete the new group if needed.

3. Right-click the camera, and click **Move to Group** to open the Switch Group page.
4. Select a group name to add the camera, and click **OK**.

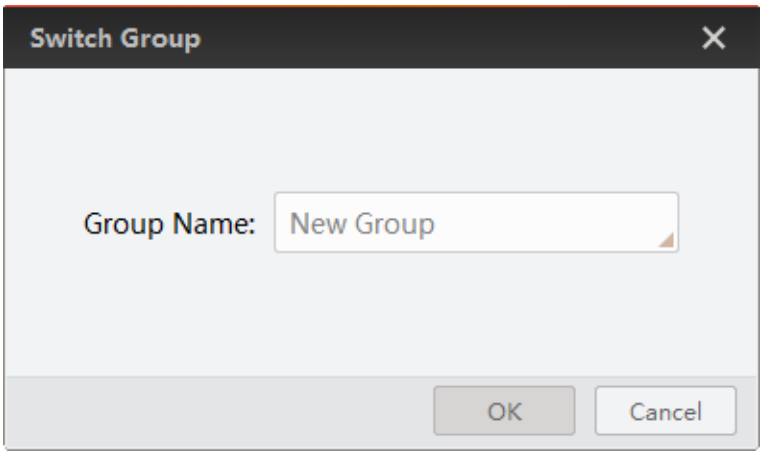

Figure 6-7 Switch Group

You can view camera information in the new group.

5. Optional: Right-click the camera on the list, and click **Remove from Group** to remove the camera from the group.
   The camera will be on the original place of the device list.

6.1.5 Feature Tree

When a device is connected, all of the camera's features will be displayed on the feature tree.

Right-click a connected device and then click **Feature Tree** to display the feature tree.

- Click to switch between Chinese and English.
- Click to unfold or fold all parameters in the feature tree.
- Click / to import parameters to the feature tree, or export parameters in the feature tree to the PC as an MFS file.
- Click to import or export device features. See *File Access*.
- Click to refresh parameters in the feature tree.

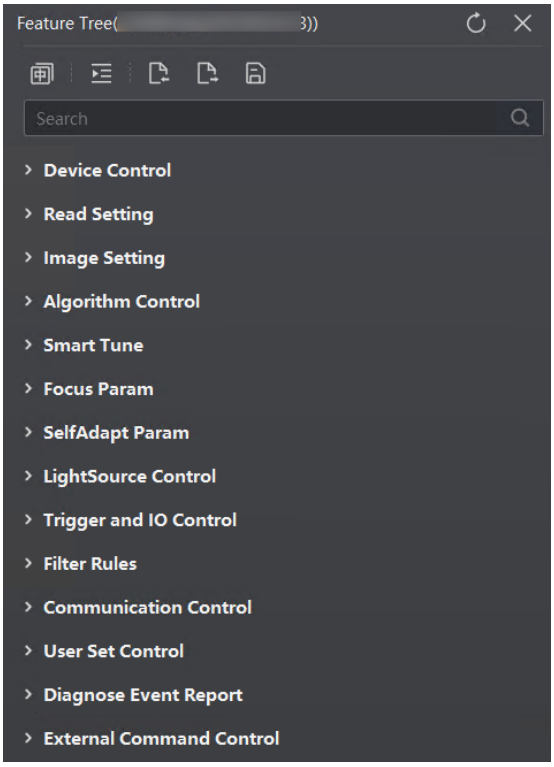

Figure 6-8 Feature Tree

Note

The features displayed vary with the camera model, firmware version, and running mode (Normal, Test).

6.1.6 File Access

You can export the feature configuration of a connected device to the local PC as a binary file, or import a binary file containing the feature configuration information from the local PC to a connected device.

Note

- This function should be supported by the device.
- This function is not available if you start acquisition.

Import Feature

Perform the following task to import feature configuration information to a connected device.

Steps

1. Click **Device Connection** to display the device list, and then select a device and click to connect it to the Software.
2. Right-click a device, and then click **File Access** to display the File Access window.
3. Click **Import** and select the corresponding MFA file to import the features saved in the file to the device.

Note

The Software only supports importing between cameras of the same model.

4. Optional: You can also batch import a feature configuration file to multiple devices of the same model using the File Access tool if needed.
   1) On the top menu bar, select **Tool** → **File Access** to open the File Access Tool window.
   2) Select devices (whose status are "Free") accordingly and select the corresponding MFA file from a local folder.
   3) Click **Import** on the top right to import the features saved in the file to the selected devices.

Note

You can check the import progress and result of each device in the Import Status column.

5. Reboot the camera for the configurations of the imported file to take effect.

Export Feature

Perform the following task to export feature configuration information of a connected device to the local PC.

Steps

1. Click **Device Connection** to display the device list, and then select a device and click to connect it to the Software.
2. Right-click a device, and then click **File Access** to display the File Access window.
3. From the drop-down list, select a device feature to be exported.

Note

You may also select **License Notice** from the drop-down list to export the license notice to the local PC as an MFA file. A TXT file for the license notice can then be generated based on the MFA file exported.

4. Click **Export**.

Note

- The exported file is in MFA format by default.
- The name of the exported file is "Device Model + Device Serial Number + Feature Name" by default.

Example

MV-ID5060M-08S-WBN_00F45884701_UserSet1.mfa

5. Optional: Click **View** on the prompt message to open the folder in which the exported file is saved.

6.1.7 Firmware Updater

You can update device firmware via the device list.

Steps

1. Select an available device in the device list, and select TCP upgrade mode or UDP upgrade mode according to your need.

Note

TCP upgrade mode should be supported by the device.

– **TCP Upgrade Mode**: After connecting to a camera, right-click the camera, and select **Firmware Update**. Enter the **Update Port** and click to select the DAV file of firmware program according to the device model.

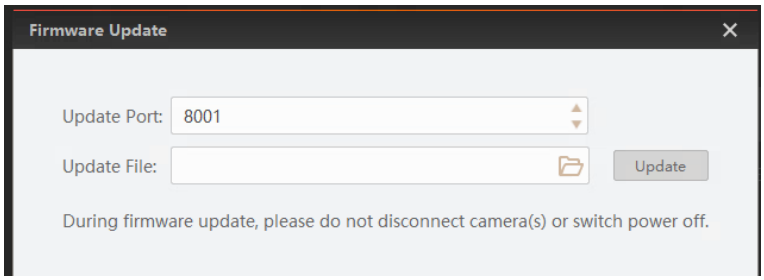

Figure 6-9 Firmware Upgrade-TCP

Note

The firmware upgrader does not support upgrading in TCP mode.

– **UDP Upgrade Mode**: right-click an available camera and select **Firmware Update**. Click to select the DAV file of firmware program according to the device model. Click **Update** and you can view the progress of firmware update.

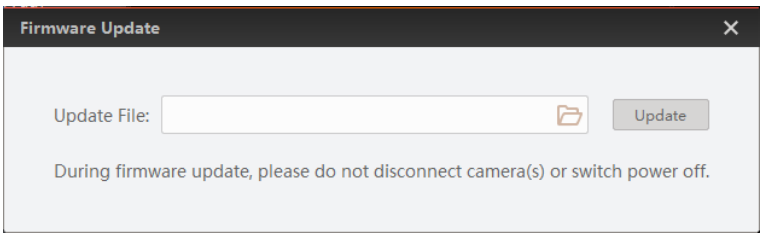

Figure 6-10 Firmware Update

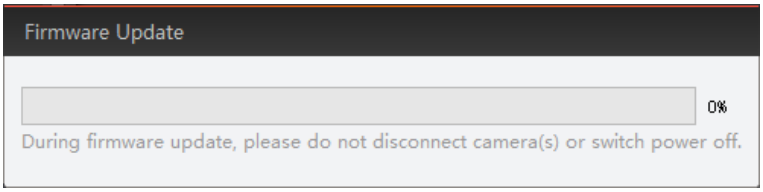

Figure 6-11 Firmware Update Progress

2. When the update finishes, a pop-up window will prompt the update success, and the device will reboot automatically.

6.1.8 Other Functions

The device list provides other functions such as saving GenICam XML and renaming device user ID.

- Right-click the network interface and then click **NIC Settings** to configure the properties of network interface card.
- Right-click a connected device and then click **Rename User ID** to edit the device user ID.
- Right-click a connected device and then click **Save GenICam XML** to save the camera information as XML file for secondary development.
- Right-click a connected device and then click **Export EMMC Storage** to export file stored on the device to the local PC.

Note

The function should be supported by the device.

- Right-click a connected device and then click **Device Reset** to reset the device to its power up state.
- Right-click a connected device and then click **Auto Work** to enable the device to enter working mode automatically when powered on.
- In Device Control, click **Timing**on the right of **Auto Work** to open the Time Calibration

window, and select **Manual Timing** or **NTP Timing**.

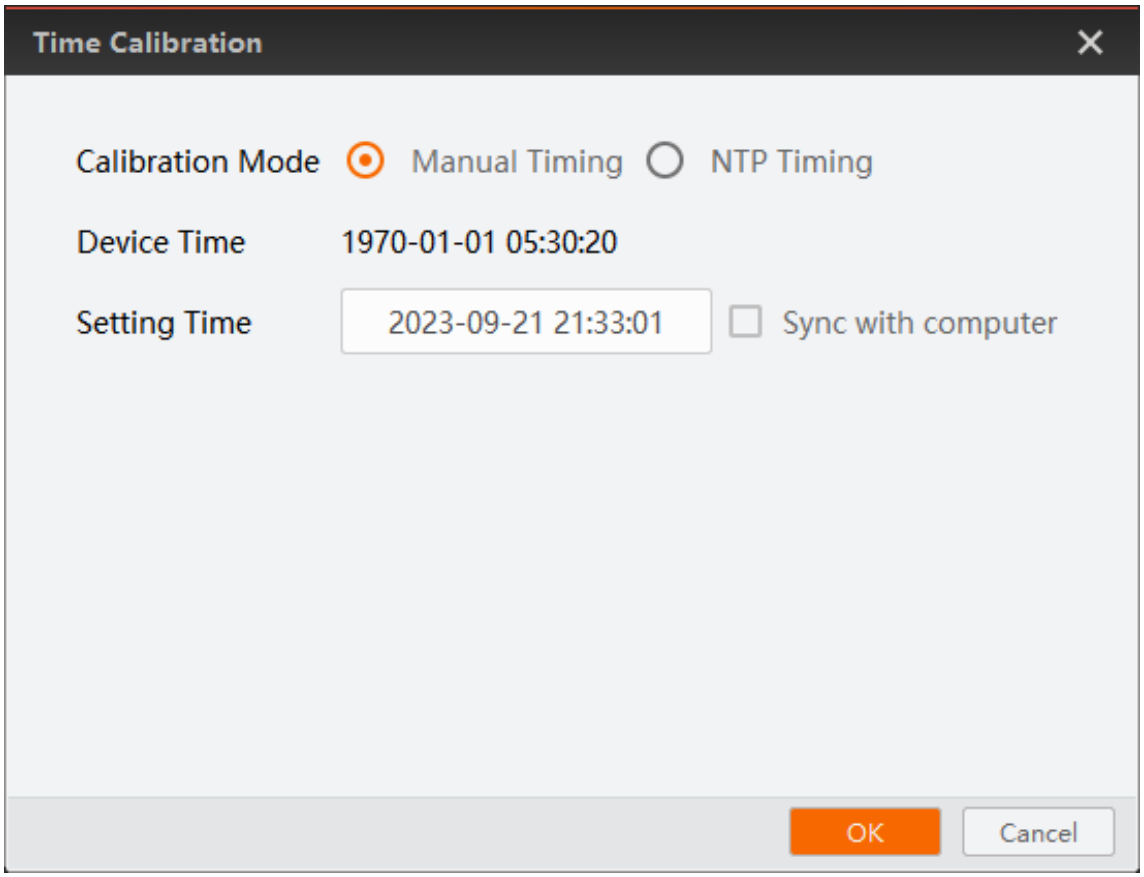

Figure 6-12 Manual Timing

Manual Timing

Device Time

The current time of the camera.

Setting Time

The time you configured. If you check **Sync with computer**, the PC time will be synchronized to the camera.

NTP Timing

The camera time will be regularly corrected as the configured interval.

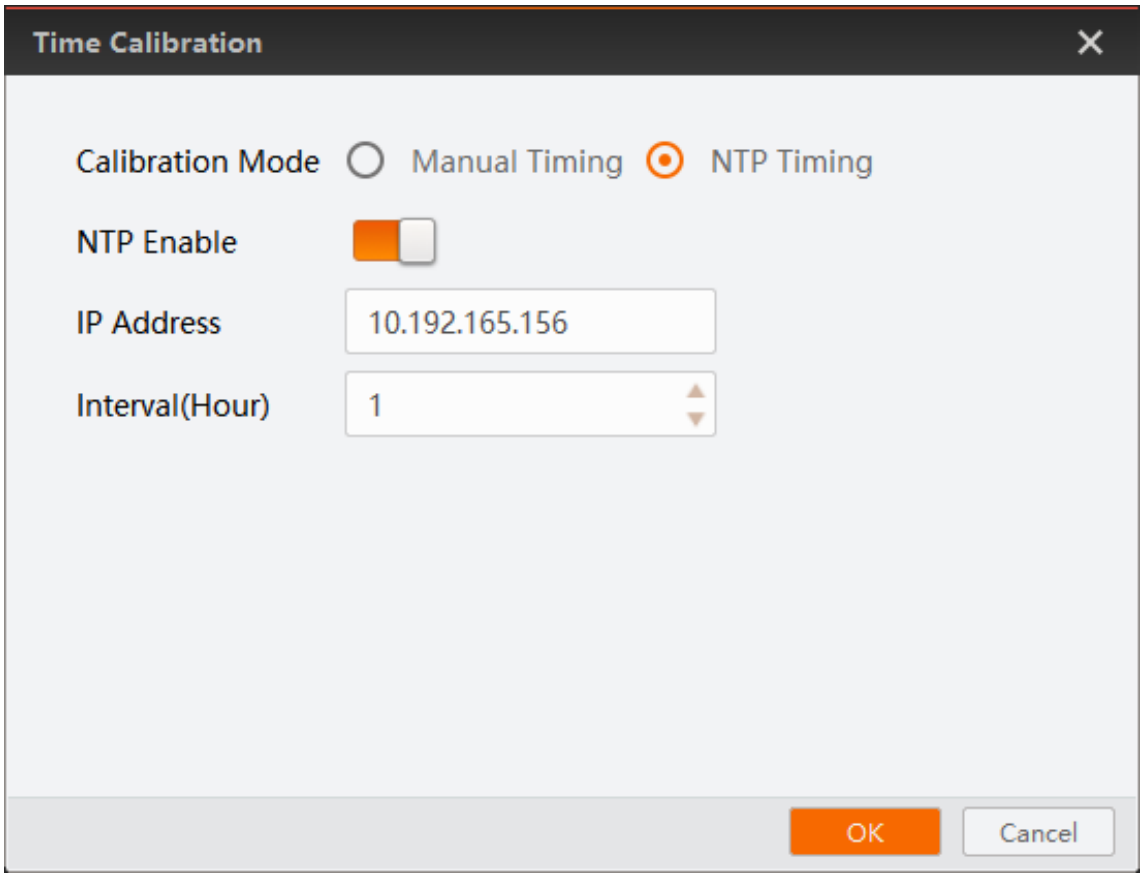

Figure 6-13 NTP Timing

NTP Enable

When this parameter is enabled, the camera time will be corrected according to the parameters you configure.

IP Address

The IP address of the NTP server.

Interval

The interval for correcting camera time.

Note

By default, the port number of the NTP server is 123 and it cannot be changed.

- Right-click a base used for matching a handhold code reader, and select **BLE Pair Code** to open the BLE Pair Code window, use the handhold code reader to scan the code to finish the match.

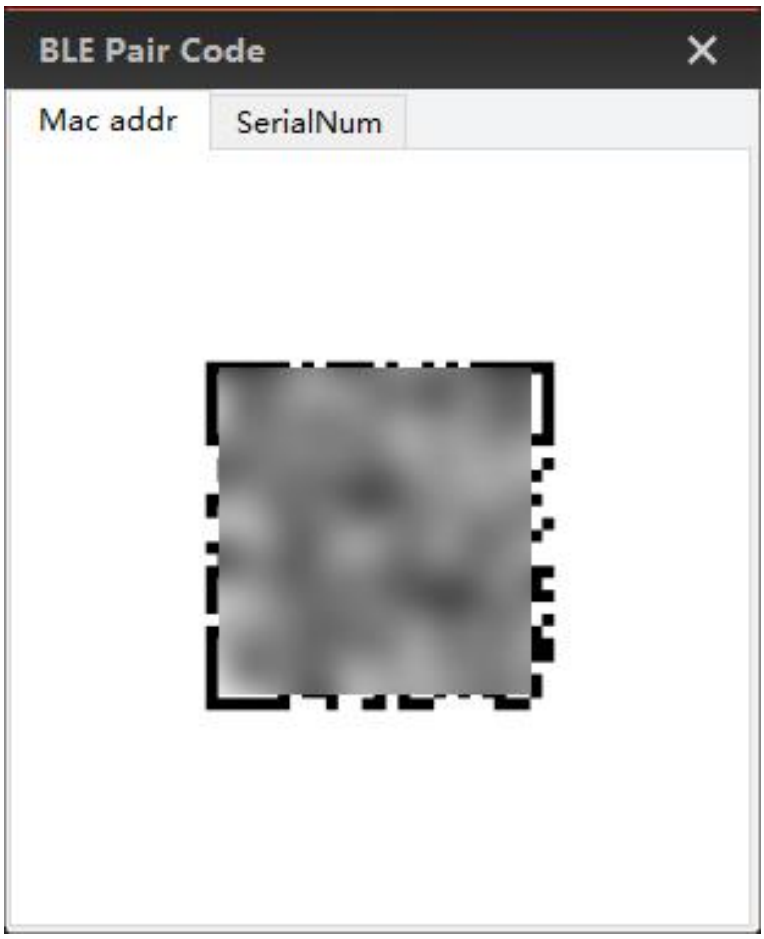

Figure 6-14 BLE Pair Code

Mac Address

A base can be matched with a 3 series handhold code reader via scanning the Mac address pair code.

SerialNom

A base can be matched with a 2 series handhold code reader via scanning the serial number.

Note

Only handheld code readers can match bases via BLE pair code.

6.2 Running Mode

The Software allows you to select different running modes for the code reader in different situations based on your requirements. For example, if you need to configure the code reader, you can set the running mode to test mode.
You can set the running mode on the upper-left of the live view window.

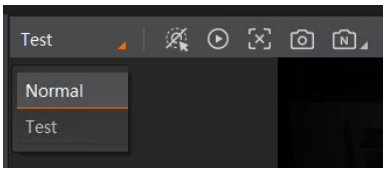

Figure 6-15 Running Mode

The following table shows the description of each running mode.

Running Mode	Description
Test	Supports JPG/BMP/RAW images. The device outputs the acquired image data in real time, and the barcode information will be displayed. See ***Capture and Recording Settings*** for generating RAW images. The mode is usually used when you configure device and adjust image quality.
Normal	Supports JPG/BMP/RAW images. The device outputs the image data and the barcode information after it recognizes the barcodes. The mode is usually used in barcode reading applications after you complete device configuration and image quality adjustment.

Note

The running mode may vary with the camera model and firmware version.

6.3 Code Reading Mode Settings

The device supports different code reading modes, including common mode, accurate mode, continuous mode, and batch mode.

Right click the device in Device Connection, and click **Feature Tree**. Go to **Trigger and IO Control** → **Read Code Method**, and select it according to actual demands.

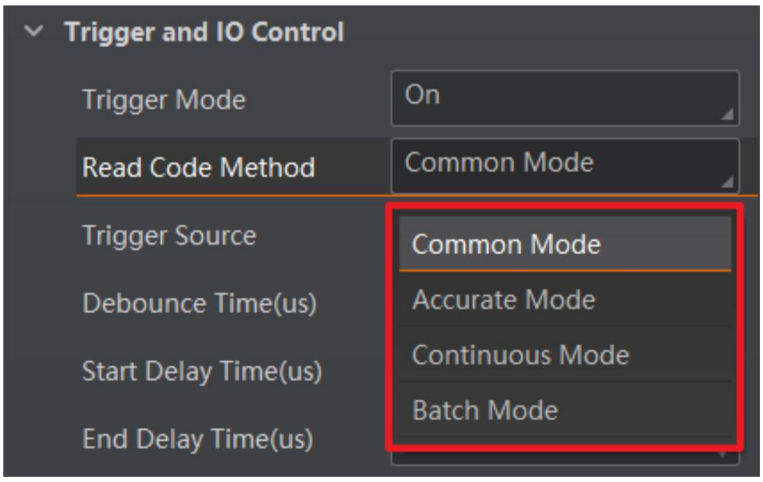

Figure 6-16 Code Reading Mode Settings

Code Reading Mode	Description
Common Mode	It reads codes that are closest to the cross laser center only. The code reading process ends if codes are read successfully or the trigger switch is released.
Accurate Mode	It reads codes containing the cross laser center in the code area only. The code reading process ends if codes are read successfully or the trigger switch is released.
Continuous Mode	It reads codes containing the cross laser center in the code area only. The device reads codes continuously when the trigger switch is pressed and ends reading when the switch is switched.
Batch Mode	It can read multiple codes when the trigger switch is pressed. After code reading is finished, the result will be packaged and outputted. The code reading process ends if expected code quantity is reached or exceeded, code reading timed out, valid frame quantity is reached, or the trigger switch is released.

Note

These parameters are only supported by handheld code readers.

6.4 Device Control Settings

Go to Device Control, you can view battery value, temperature, and other information of the

device and smart base.
This topic includes the following:

Note

- Only wireless handheld code readers support configuring smart base parameters.
- The specific parameters may differ by device models and firmware versions.

6.4.1 Device Parameters

Device Parameters	Description
IDH Battery State	It displays the battery state of the device, including Charge and Discharge.
IDH Battery Value	It displays the battery value of the device, ranging from 0% to 100%.
IDH Battery Temperature	It displays the battery temperature of the device.
IDH Battery KeepAlive Timeout	It sets after how much time without operation that the device enters a low consumption mode.
IDH Power Off Timeout (min)	It sets after how much time that the device shuts off from a low consumption mode, and the default time is 30 min. Apart from low consumption MCU, all other power supplies will be closed when the device shuts off.
Battery Manager Version	It displays the battery version of the device.
IDH Ble SoftVersion	It displays the Bluetooth version of the device.
IDH Ble Sig Strength	It sets the Bluetooth signal intensity of the smart base. ● Strong Signal: Bluetooth signal intensity is higher than -40 dBm. ● Medium Signal: Bluetooth signal intensity is between -70 dBm to -40 dBm. ● Low Signal: Bluetooth signal intensity is lower than -40 dBm. ● No Signal: No Bluetooth connection.

Device Parameters	Description
2.4G Software Version	It displays the 2.4G peripheral module version. Only type IV device supports this parameter.
2.4G Connection State	It displays the connection state of the 2.4G peripheral module. Only type IV device supports this parameter.

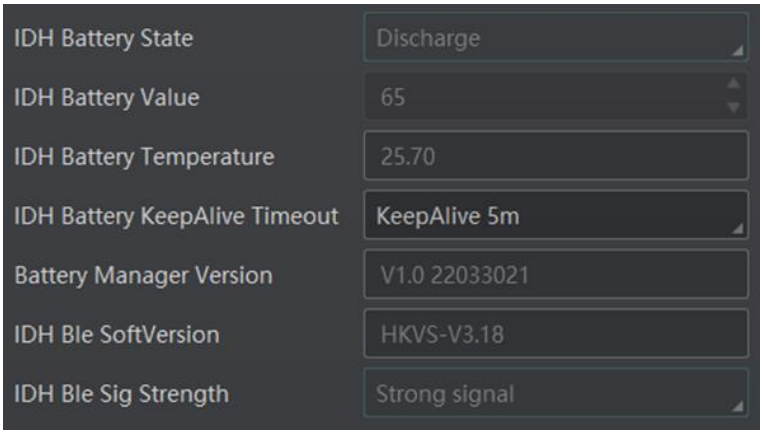

Figure 6-17 Device Parameters

6.4.2 Smart Base Parameters

Smart Base Parameters	Description
Connect Status	It displays the connection status between the smart base and the device.
IDA Battery State	It displays the charging status of the smart base, including Leave, Charge, Discharge, Not Discharge and Not Charge.
IDA Ble SoftVersion	It displays the Bluetooth version of the smart base.
IDA Ble Sig Strength	It sets the Bluetooth signal intensity of the smart base.

Strong Signal: Bluetooth signal intensity is higher than -40 dBm.Medium Signal: Bluetooth signal intensity is between -70 dBm to -40 dBm.Low Signal: Bluetooth signal intensity is lower than -40 dBm.No Signal: No Bluetooth connection.

IDA Ble Sig Strength Value	It displays the Bluetooth signal intensity.
Connected IDH Number	It displays how many devices that the smart base has connected.

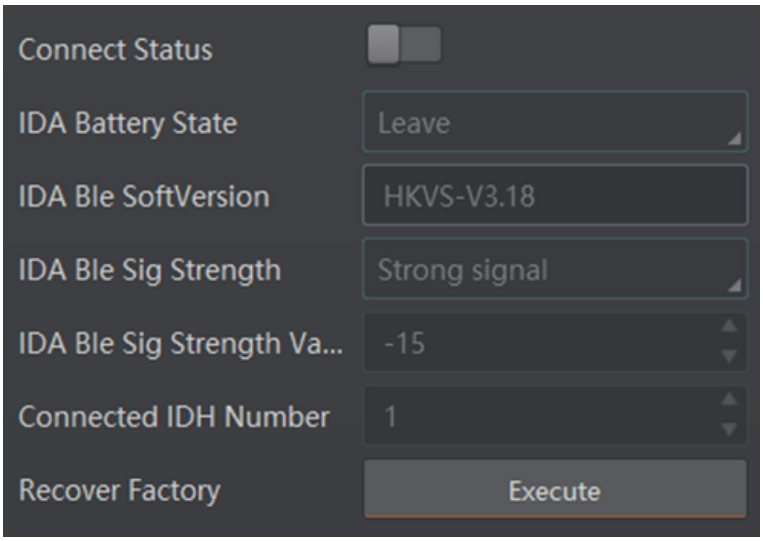

Figure 6-18 Smart Base Parameters

6.5 Image Settings

The Image Settings module allows you to configure image related features for the device. The basic features in the Image Settings module include features of the Image category and the Light category, which allow you to configure parameters such as exposure time, gain, gamma, and those related to the device light source. Besides the basic features, you may also configure features related to auto focus and self adapt, or both of them with the smart tune feature depending on the device support, as well as other features such as image flipping and the test pattern.You can also set ROIs if needed for image acquisition and auto focus respectively.

Click **Image Settings** to open the Image Settings panel.

Note

The actual features displayed vary with the device model.

6.5.1 Image Features

You can configureparameters including exposure time, gain, gamma, acquisition frame rate, and acquisition burst frame count in the Image feature based on your needs.

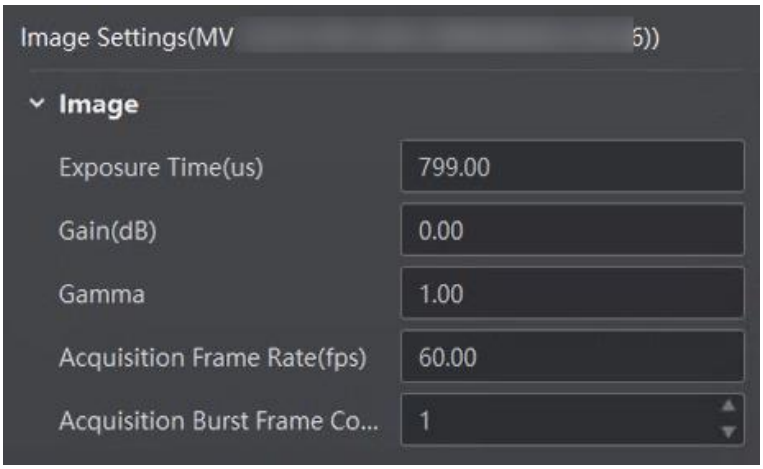

Figure 6-19 Image Settings

Note

The image features vary with different models of code readers.

Exposure Time

Increasing the exposure time will enhance the image brightness at the expense of lowering acquisition frame rate, and smear may occur when acquiring images of moving object.

Gain

Increasing Gain will enhance the image brightness at the expense of increasing noise.

Gamma

Decreasing Gamma will enhance the image contrast, which benefits code reading.

Acquisition Frame Rate

Determine the image number acquired by the device per second.

Acquisition Burst Frame Count

Determine the image number outputted by the device when triggered.

Note

For details about the valid range of the exposure time and Gain, and the maximum acquisition frame rate, see the device specification.

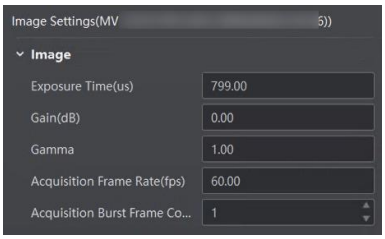

Figure 6-20 Image Features

6.5.2 Set Polling

The polling function allows the camera to acquire images based on the parameters you set, including exposure time, gain, Gamma, light source, focus position, etc. Currently, 2 types of polling modes are available, including single mode and multiple mode.

Single Mode

The single mode allows the camera to acquire images based on one set of parameters you select.

Before You Start

- Make sure you have set the running mode to Normal mode. See ***Running Mode*** for details.
- Stopping the real-time acquisition is required before setting the polling function.

Steps

Note

- After polling is enabled, the device acquires images with its max. frame rate. Once the polling disabled, the frame rate you set in Acquisition Frame Rate takes effect.
- The polling function and specific parameters may differ by device model.

1. Go to **Image Settings** → **Image**, and set **Polling Enable** to **Single**.
2. Select one set of parameters (e.g., **Param1**) from **Polling Param**.

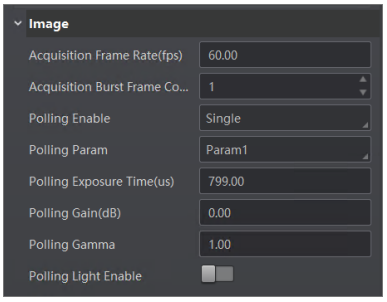

Figure 6-21 Set Polling Parameters (Single Mode)

3. Set **Polling Exposure Time**, **Polling Gain**, and **Polling Gamma** according to actual demands.
4. Optional: Enable **Polling Light Enable** according to actual demands.
5. Optional: Enable **Polling Focus Enable**, and set **Polling Focus Pos** and **Polling Focus Temp** according to actual demands.

   Polling Focus Pos

   It sets the focus position of the polling.

   Polling Focus Temp

   It displays the device's temporary position while setting the focus position.
6. Optional: Repeat the above steps to set polling parameters for other sets. You can also click **Polling Param** on the control toolbar to set polling parameters for every set at once in a pop-up window.

Multiple Mode

The multiple mode allows the camera to acquire images based on multiple sets of parameters you select.

Before You Start

Stopping the real-time acquisition is required before setting the polling function.

Steps

Note

- In multiple mode, the camera supports trigger parameters like software trigger, external trigger, TCP, etc., but does not support stopping polling via the external trigger.
- The parameter of Best Polling Group Idx is used to display the polling parameter number when the camera recognizes codes after enabling polling. If the polling is disabled or polling parameters are edited, it displays 1 by default.
- The rule for multiple-mode polling is that the polling is started from the polling parameter with Best Polling Group Idx, and then execute other polling parameters you selected in turn. For example, if the Param3 is the Best Polling Group Idx and Param1,

Param2, Param4 and Param5 are enabled, the polling order is Param3 > Param4 > Param5 > Param1 > Param2.

1. Go to **Image Settings** → **Polling Enable**, and select **Multiple** at the Polling Enable field.
2. Set **Polling Time** and **Polling Period** according to actual demands.
3. Select 2 to 8 sets of parameters (e.g. **Param1** and **Param2**) from **Polling Param**, and enable **Polling Param Enable** to let them take effect.
4. Set **Polling Exposure Time**, **Polling Gain**, and **Polling Gamma** according to actual demands.
5. Optional: Enable **Polling Lighting Enable** according to actual demands.
6. Optional: Enable **Polling Focus Enable**, and set **Polling Focus Pos** and **Polling Focus Temp** according to actual demands.

Polling Focus Pos

It sets the focus position of the polling.

Polling Focus Temp

It displays the device's temporary position while setting the focus position.

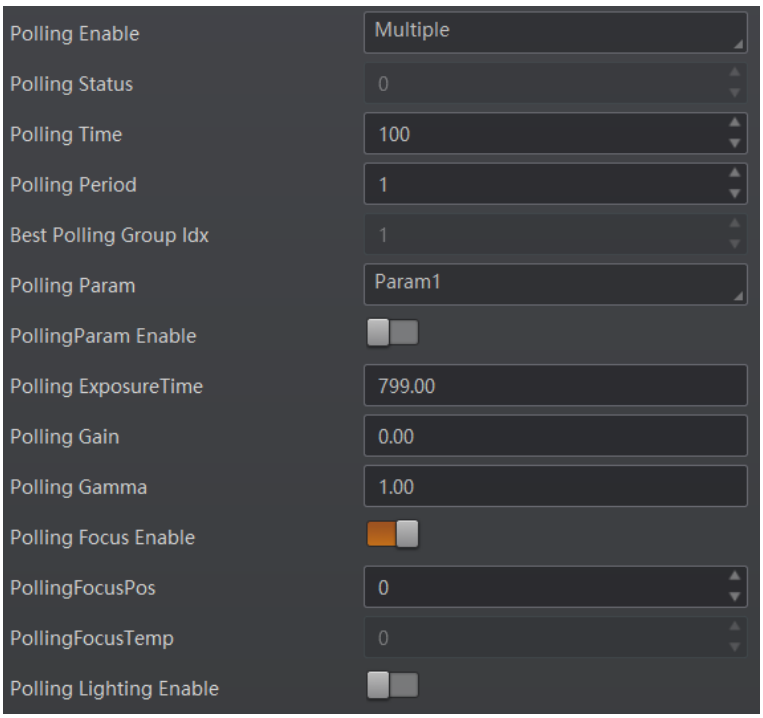

Figure 6-22 Multiple Mode

6.5.3 Light Features

You can set various parameters for the light used for acquiring code information to meet different needs, such as light type, light mode, lighting duration, etc.
Click **Image Settings** → **Light** to set the following parameters.

Light Type

Own Lighting

Use the device's embedded light source to light during code reading.

External Lighting

The device control the external light source by triggering output during code reading.

Non Lighting

The device turns off light source during code reading.

If you select **Own Lighting**, you can set the following features.

AmingLight Enable

If you enable it, you can put the to-be-read part of an object in the covering area of the aminglight, so that you can quickly specify the to-be-read region for the device. It should be supported by the device.

Lighting Enable

Switch it on to turn on the light of the device during code reading.

Note

This feature is only supported by devices with only one light source. For devices with more than one light, use **Lighting Selector** to control the status of their lights.

Lighting Selector

Select the LED light to light during code reading on the light panel, or click **All On** to light all lights.

Note

- This function should be supported by devices.
- The number of lights depends on device types.

Lighting Mode

- **Flash Strobe**: The light flashes at a specific interval.
- **Strobe Long**: The light is solid.

Lighting Duration

Set the duration (unit: μs) of each flash if you select **Flash Strobe** as the lighting mode.

Lighting Delay Time

The feature is available If you set Flash Long as the lighting mode. The feature determines the delay time (unit: μs) for lighting after exposure.

Lighting Ahead Time

The feature determines how earlier (unit: μs) the light source start lighting before exposure.

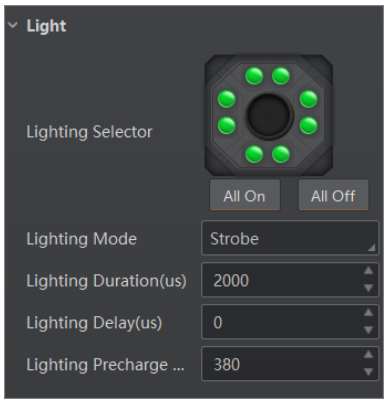

Figure 6-23 Own Lighting

If you select **External Lighting**, you can configure the following features.

Line Out Duration

The lighting duration of the external light source.

Line Out Delay Time

Set the delay time (unit: μs) for lighting after the device outputting event source information.

Line Out Ahead Time

Set how earlier (unit: μs) the external light start lighting ahead of the device outputting event source information.

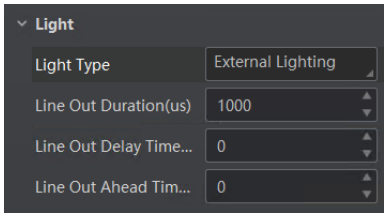

Figure 6-24 External Lighting

6.5.4 Image ROI

Image ROI defines the Region of Interest (ROI) for image acquisition. After setting the image ROI, the Software only acquires the image data within the ROI.

Before You Start

Start or stop acquisition to make sure that live view image is displayed. For details about acquisition and live view, see *Acquisition and Live View* for details.

Steps

Note

Image ROI should be supported by the device.

1. Click **Image Settings** → **Image ROI** to show the related parameters.
2. Draw ROI.
   – Click **Draw**, and then drag the cursor on the image to draw ROI (displayed as a blue rectangle).
   – Click **Edit**, and then the ROI (displayed as a blue rectangle) will cover the whole image.

Note

You can move the cursor to the edge of the rectangle, and then drag the appearing two-way arrow to adjust the ROI size.

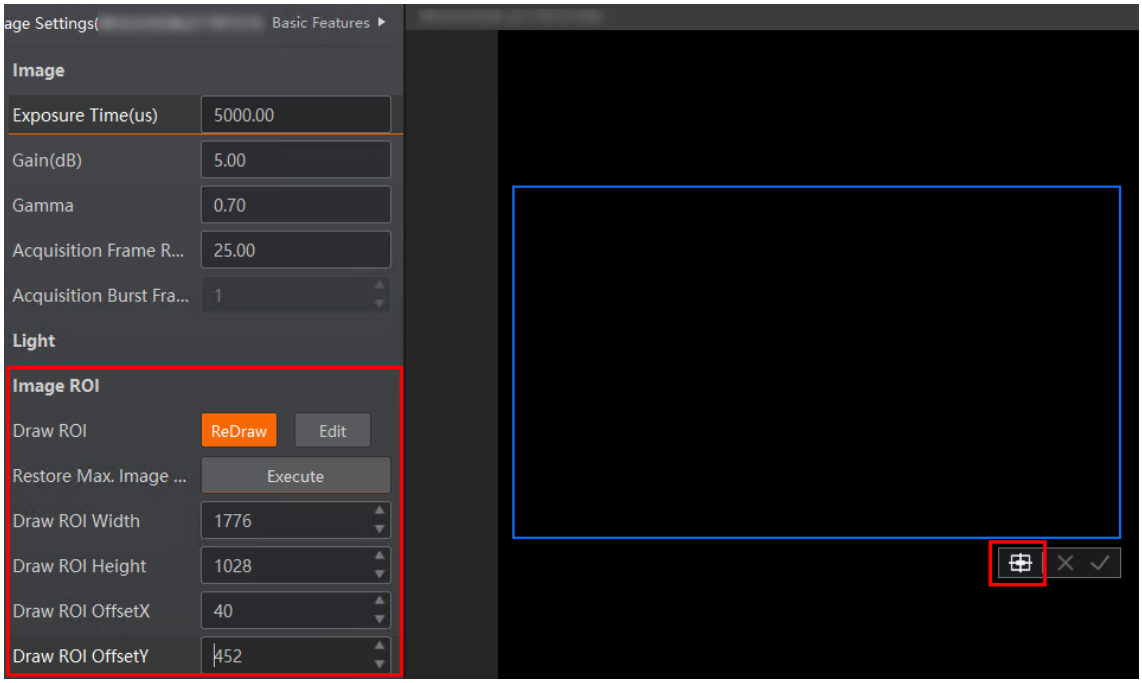

Figure 6-25 Image ROI

3. Optional: Adjust the position of the ROI.
   – Click to move the ROI to the center of the Live View window.
   – Hover the cursor onto the ROI and then drag the ROI to adjust its position.
   – Set ROI Width, ROI Height, ROI Offset X, ROI Offset Y to adjust the size or position of the ROI.

ROI Width

The pixel number on the horizontal direction.

ROI Height

The pixel number on the vertical direction.

ROI Offset X

Horizontal offset from the origin to the region of interest (in pixels).

ROI Offset Y

Vertical offset from the origin to the region of interest (in pixels).

4. Click ✓ or right-click the image and then click **Finish**.
   Only the image data within the selected ROI will be displayed.

Note

The image resolution will be lower after setting ROI.

5. Optional: Click **Execute** in the **Restore Max. ROI** field to restore the image to the origin.
   The image resolution will also be restored to the origin.

6.5.5 Smart Tune Control

With smart tune control, you can configure device parameters to read codes with better reading quality conveniently by starting auto focus and/or self adapt with one click. When the process is completed, the code reading result will show up in the History panel.

Note

- Make sure you have set the device running mode to Test mode. For details about running modes, see *Running Mode*.
- The smart tune feature requires device support and the parameters displayed vary with the device model. The actual interface shall prevail.

On the Image Settings panel, click **SmartTuneControl** to show the related parameters. Refer to the sections below respectively for how to configure device parameters via the device and the Software.

Configure Device Parameters via Device

If supported by the device, you can switch on **Button Tune** to enable configuring device parameters with buttons on the device. For details, refer to the user manual of the corresponding device.

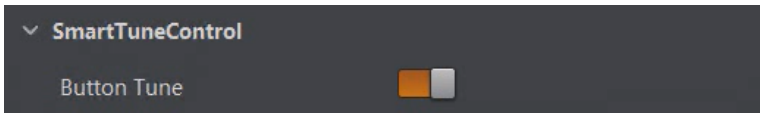

Figure 6-26 Enable Button Tune

Configure Device Parameters via the Software

You can also configure device parameters via the Software.

SmartTune Start

Click **Execute** in this field to start the smart tuning process, i.e., start auto focus and/or self adapt depending on the device support. A window will pop up showing the current progress and the result when completed.

Note

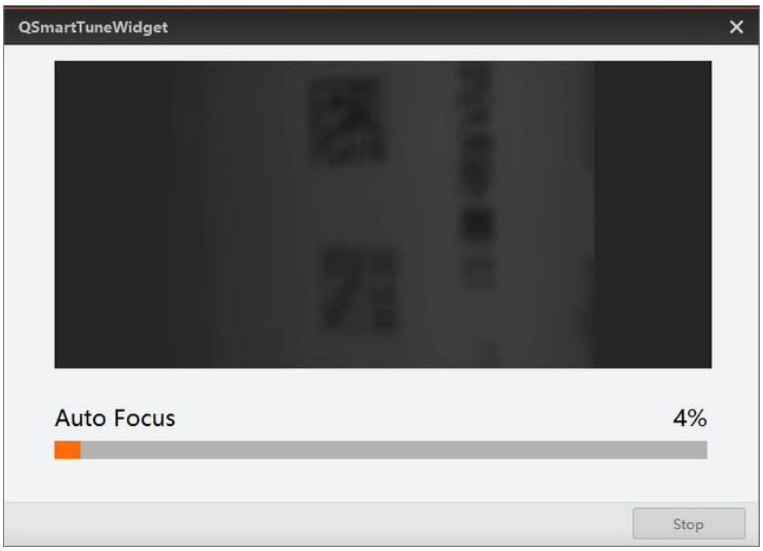

Figure 6-27 Smart Tune in Progress

- You can also click on the toolbar at the top of the interface to start smart tuning.
- In the mid of the smart tuning process, you can click **Stop** on the bottom right of the window to end the process at any time.
- Click **Save to polling library** on the lower right of the Smart Tune window, select a polling library, and click **Save** to save the current parameter settings to the selected polling library.
- Some devices supports displaying the real-time smart tune image upon during the first time smart tune. Press the button again to close the image.

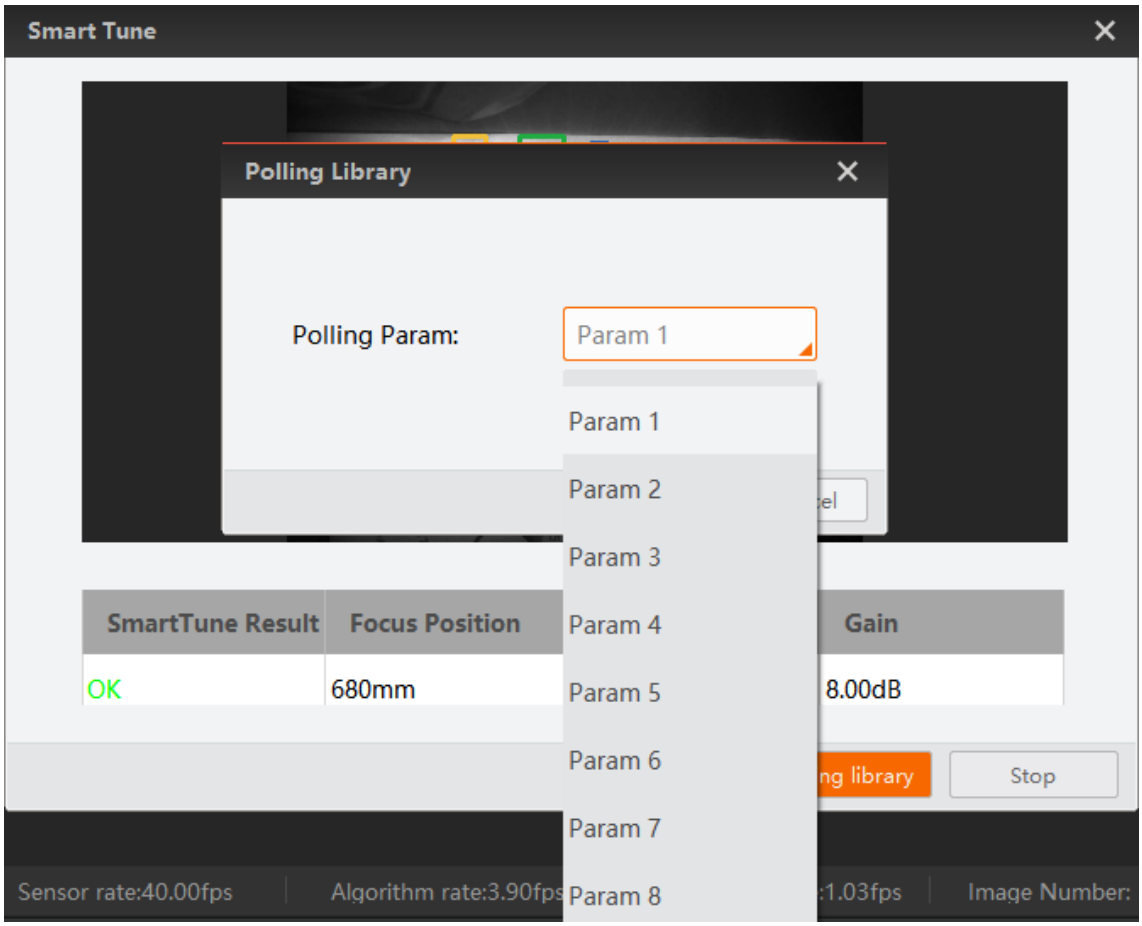

Figure 6-28 Smart Tune Completed

Stop Tune

If an individual auto focus or self adapt process is in progress at the moment, you can click **Execute** in this field to end them immediately.

Figure 6-29 Smart Tune Features

Tune Timeout

Set the maximum time (unit: second) for tuning. It will stop once the time spent for tuning exceeds the set value.

Tune Status

Displays the current tuning progress. The number matches with the percentage displayed on the Smart Tune Widget window, and 100 indicates that tuning is completed.

Focus Param

If needed, you can set the focus related parameters and start auto focus independently.

Note

- You can also click on the toolbar at the top of the interface to start auto focus.
- The parameter configurations under **Focus Param** are similar to those for setting Auto Focus. Refer to ***Auto Focus*** for details about how to set the related parameters.

SelfAdapt Param

If needed, you can set the self-adapt related parameters and start self adapt independently.

Note

- You can also click on the toolbar at the top of the interface to start self adapt.
- The parameter configurations under **SelfAdapt Param** are similar to those for setting SelfAdapt Adjust. Refer to ***SelfAdapt Adjust*** for details about how to set the related parameters.

6.5.6 Auto Focus

You can set the focus of the code reader to match your code reading requirements. The Software supports focus on the whole image or on the ROI.

Note

- The function requires device support.
- Set the running mode to Test mode before setting focus and switch to Normal mode after auto focus is completed. For details about running modes, see ***Running Mode***.

On the Image Settings panel, click **Focus Param** to show the related parameters.

Focus Mode

Click **Execute** to start auto focus based on the mode you select in **Focus Mode Selector**. If **Whole Area Focus** is selected, focus will be adjusted based on the whole image; if **Roi Area Focus** is selected, focus will be adjusted based on the set ROI.

Note

To start auto focus, you can also click **Auto Focus** on the control toolbar.

Focus Step

Set the focus step, which defines the distance for each focus increase or decrease.

Current Step

Displays the current focus position.

FocusPositive / FocusNegative Execute

Click **Execute** to increase/decrease the focus distance by the value set for **Focus Step**.

OriginalFocus Execute

Click **Execute** to return to the original focus (the **Current Step** will return to 0).

Focus Position

Select **Position 1**, **Position 2**, **Position 3**... or **Position n** for saving the current focus settings.

Focus Position Save

Click **Execute** to save the current focus settings to the position selected in **Focus Position** (e.g., **Position 2**).

Focus Position Load

Click **Execute** to load the position specified in **Focus Position** if you have saved focus settings to this position before.

Area Focus

If **Roi Area Focus** is selected as the focus mode, focus can be adjusted based on the ROIs drawn. You can click **Draw** in the **Draw Focus ROI** field to draw an ROI on the image. You can also set an ROI by editing the following parameters.

AFXROI

The x-coordinate of the upper-left point of the ROI.

AFYROI

The y-coordinate of the upper-left point of the ROI.

AFWidthROI

Width of the ROI.

AFHeightROI

Height of the ROI.

6.5.7 SelfAdapt Adjust

By setting selfadapt parameters such as the adjust mode and the gain/exposure value, you can get a better code reading quality.

Before You Start

Make sure you have connected the device to the Software and have stopped acquisition.

Steps

Note

- The function requires device support.
- Set the running mode to Test mode and switch to Normal mode after selfadapt adjusting is completed. For details about running modes, see *Running Mode*.

1. On the Image Settings panel, click **SelfAdapt Param**.
2. Select an adjust mode.

   High Quality

   If you select this mode, exposure will be adjusted in priority. The acquired picture will have a smaller gain and noise, which makes a higher picture quality. It is suitable for objects with a slow moving speed.

   High Speed

   If you select this mode, gain will be adjusted in priority. There may be more noise on the picture. It is suitable for objects with a fast moving speed.
3. Select a parameter source.

   Default Param

   The device will adjust the default parameters predefined in the device.

   Polling Param

   The device will adjust the selected polling parameter.
4. Optional: Set the value for **Gain Max** and/or **Exposure Max** depending on the adjust mode you selected.
5. Select a code type mode from **Code SelfAdapt**, **1D Code**, **2D Code**, and **Stack Code**.

   Code SelfAdapt

   The device adaptively adds all code types within the field of view.

   1D/ 2D/Stack Code

   The device adaptively adds all 1D/2D/stack codes within the field of view.
6. Optional: Select a lighting mode from **Light Adapt**, **All Light Enable**, and **All Light Disable**.

   Light Adapt

   When the adjustment starts, all light combinations will be traversed, from which the most optimal group will be selected for light control.
7. Set the value for **Adjust Timeout**. When the time costed for selfadapt adjust exceeds the set value, selfadapt adjust will stop.

Note

This function should be supported by device.

8. Click **Execute** next to **Adjust Start** to apply the set parameters and start the selfadapt adjust.

Note

You can also click **Self-Adapt Adjust** on the control toolbar.

The result will be displayed in a pop-up window when the adjustment is completed.

6.5.8 Other Features

You can set other image related features, such as Reverse X (image flipping).
On the Image Settings panel, click **All Features** on the upper-right to display all image related features (including Other Features).

Mirror X

Flip horizontally the image sent by the device. The feature is enabled by default.

Test Pattern

Select the pattern for image quality test. If image exception exists during acquisition, you can check if similar exception exists in the test to determine the reason of the exception.

Off

Image is coming from the sensor.

mono bar

Image is filled with stripes of white and black.

checkboard

Image is filled with checkboard.

oblique mono bar

Image is filled with oblique stripes of white and black.

Multiple Exposure Gain Polling Enable

Configure exposure and (or) gain for 4 consecutive images. After enabled, you can configure exposure time and gain time for the acquisition of each one of the 4 images. You can use this feature to enhance the brightness of the acquired images.

Note

The features vary with different devices.

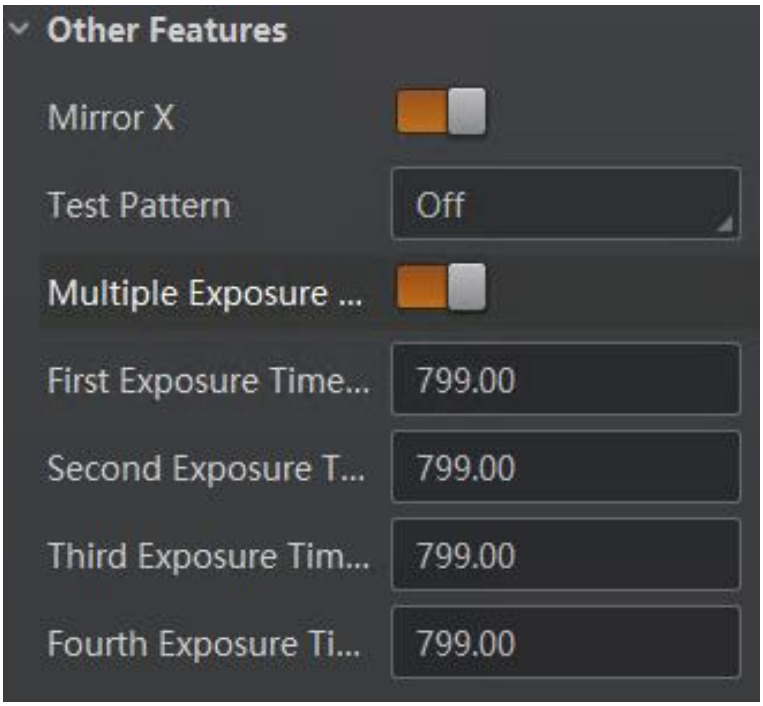

Figure 6-30 Other Features

6.6 Algorithm Settings

Algorithm Settings module allows you to define the types of the to-be-read barcodes, the region of interest for recognizing barcodes, the 1D code algorithm, the 2D code algorithm, and other barcode reading algorithm.
Click **Algorithm Settings** to enter the Algorithm Settings module.

Note
The features vary with different devices.

6.6.1 Add Barcode

You can set the types and the maximum number of barcodes required to be read out. Three categories of barcodes are available, i.e., one-dimensional (1D) barcode, two-dimensional (2D) barcode, and stack code. 1D code (such as Code128, Code 39, or EAN) refers to the barcode representing data in the widths (lines) and the spacings of parallel lines. 2D code (such as QR code or DM code) refers to the barcode representing data in the small and individual dots contained in squares or rectangles. Stack code refers to the stacked linear barcode which combines the structure of 1D barcode with the data capacity of 2D barcode.

Steps

1. Click **Algorithm Settings** and expand **Select Code** if it is collapsed.

Figure 6-31 Select Code

2. Select one or multiple barcode types or click **All** in the upper-right corner.
   The frames of the selected barcode types turn to orange. Corresponding code types with numbers are displayed at the bottom.

Note

- The supported barcode types may vary with different devices.
- The more types you select, the more time will be consumed to recognize the codes in the image.

3. Set the maximum number of barcodes to be recognized in **Number of 1D Code**, **Number of 2D Code**, and **Number of Stack Code** respectively.

Note

The higher you set, the more time will be consumed to recognize the codes in the image.

6.6.2 Algorithm ROI

Algorithm ROI defines the Region of Interest (ROI) for recognizing codes on the basis of algorithm. After setting algorithm ROI, the device only recognizes codes within the ROI, which helps improve code reading efficiency.

Before You Start

Start acquisition and then stop it to make sure an image is displayed. For details about acquisition and live view, see *Acquisition and Live View*.

Note

- The device should support algorithm ROI settings.
- The configurable parameters vary with different device models.

Steps

1. On the Algorithm Settings panel, click ❯ next to **Algorithm ROI** to show parameters related to setting the algorithm ROI.
2. Select a channel from **Channel Selector** if the device has multiple channels.

Note

- Skip this step if the device has only one channel.
- For some devices with initial rotating angle, the Software supports drawing the ROI after rotating the device.

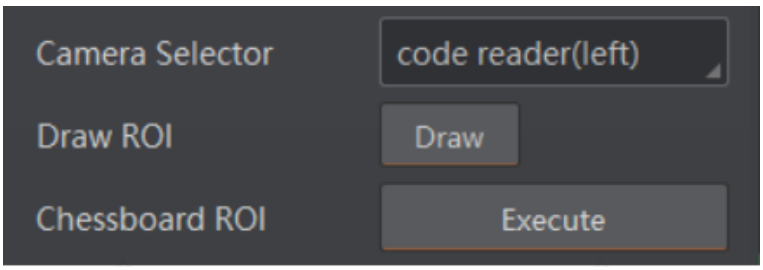

Figure 6-32 Channel Selector

3. Draw algorithm ROI.
   - Click **Draw**, and then drag the cursor on the image to draw a new ROI (displayed as a green rectangle marked with sequence number).

Note

The supported number of ROI varies for different device types.

Figure 6-33 Multiple Algorithm ROI

- Click **Batch**, and then set the parameters on the Batch Create ROI window.

Area

Area refers to the region in the image inside which you draw multiple algorithm ROIs.

Area Offset

The offset of the area's top left vertex from the top left vertex of the image.

Area Size

Area refers to the region in the image inside which you draw multiple algorithm ROIs.

ROI Number

The width and height of the area.

Row Spacing

The distance between each row of ROI.

Column Spacing

The distance between each column of ROI.

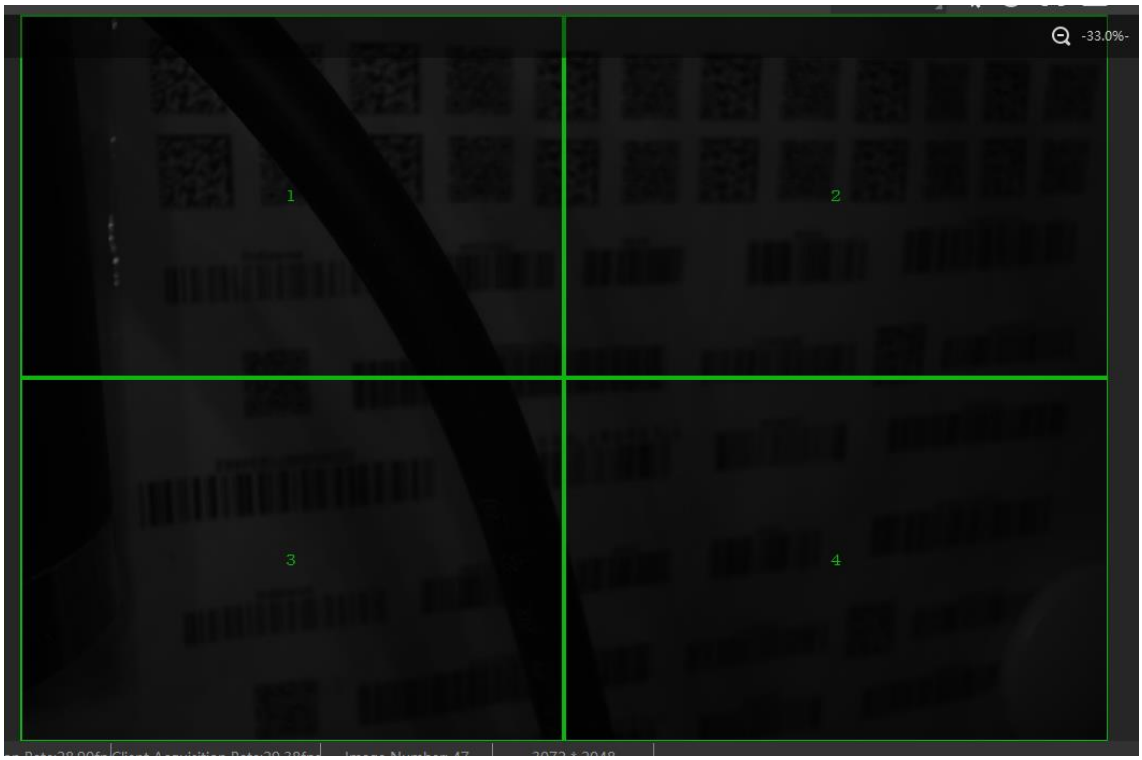

Figure 6-34 Algorithm ROIs Drawn In a Batch

The device only parses and recognizes codes within the ROIs.

4. Optional: Edit ROI.

Operations	Description
Adjust ROI Position	Click an ROI to select it, or select an ROI from **ROI Selector**, and then drag the cursor (displayed as) to adjust the position of the ROI.
Adjust ROI Size	Click an ROI to select it, or select an ROI from **ROI Selector**, and then move the cursor (displayed as) to the edge of the ROI until it turns into or , and finally drag or to adjust the size of the ROI.
Draw Chessboard ROI	Draw multiple ROIs which are like a Chessboard as a whole.
Clear All ROIs	Click **Clear All ROIs** to clear all ROIs you drawn.
Restore Max. ROI	Click **Execute** beside **Restore Max. Algorithm ROI** to restore the algorithm ROI to its maximum size, which covers the whole original image. After that, the device will recognize and parse codes in the whole image.
Adjust ROI Position	Select an ROI from **ROI Selector**, and then set values for **ROI**

and Size Precisely	**Width**, **ROI Height**, **ROI Offset X**, and **ROI Offset Y** to adjust the position and size of the ROI precisely.
Enable/Disable ROI	Select an ROI from **ROI Selector**, and then turn on or off **ROI Enable** to enable or disable the ROI respectively.

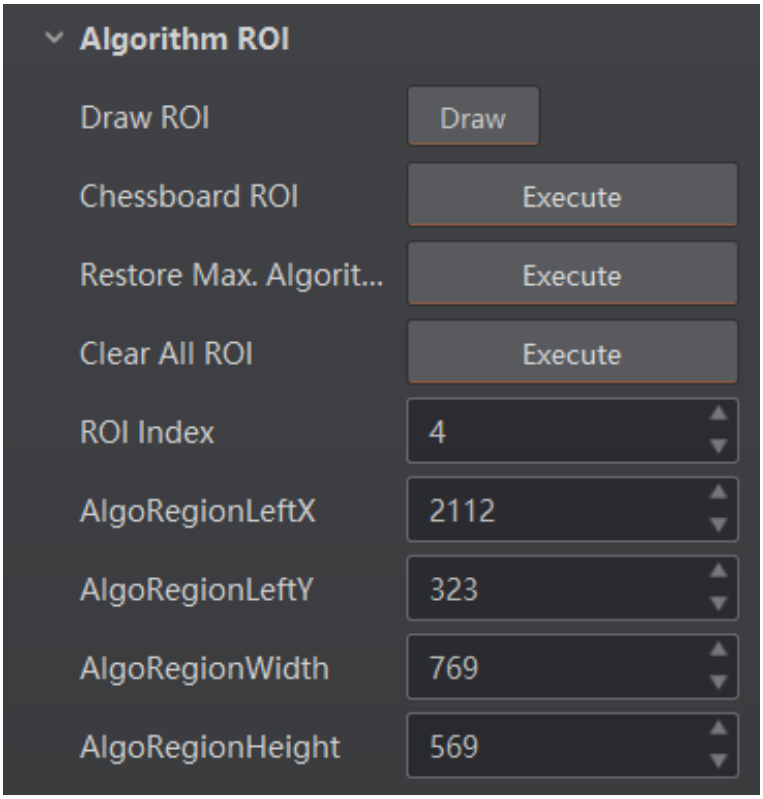

Figure 6-35 Algorithm ROI Settings

6.6.3 Set Algorithm Parameters

You can select at least one type of 1D code or 2D code to set parameters related to recognition algorithm for the 1D code or 2D code.

1D Code Algorithm

You can set the parameters related to the recognition algorithm for 1D codes.

Note

- Make sure you have selected at least one type of 1D code. For details about selecting code type, see ***Add Barcode***.
- The parameters displayed vary with the device modeland firmware version.
- Some parameters should be configured in the feature tree. See ***Feature Tree***.

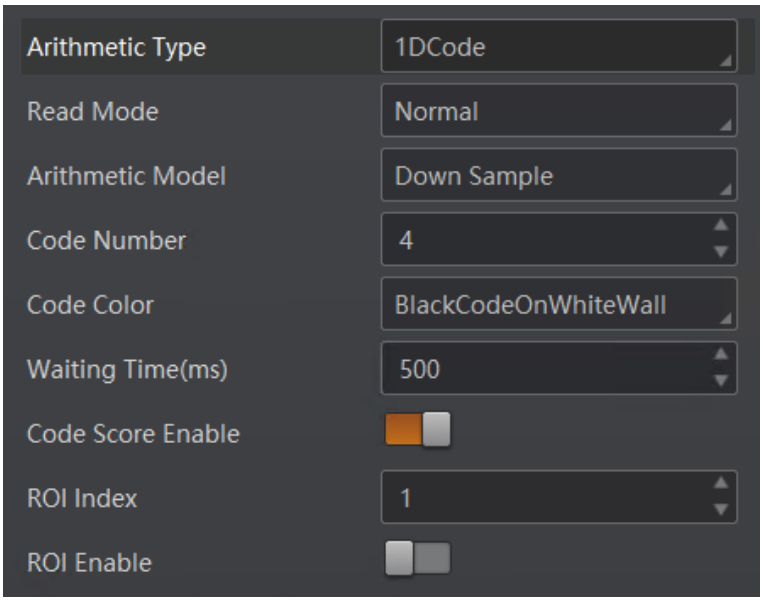

Figure 6-36 Features of the 1D Code

On the Algorithm Settings panel, click ❯ next to **Algorithm Parameter** to show the algorithm related parameters. Select **1DCode** from the drop-down list of **Arithmetic Type**. The following list introduces features related to 1D code algorithm.

Read Mode

Compared with **Normal**, **Power** is mainly used for reading codes with low quality. So the code reading in Power mode may cost more time. It is recommended to use the default value.

Code Number

The maximum number of codes that can be read.

Timeout Value (Waiting Time)

The maximum running time (unit: ms) of an algorithm. The code reader will stop parsing images and return results if the running time exceeds the configured value.

Code Color

Select the code color type that can be recognized by the device.

BlackCodeOnWhiteWall

If the code is black bars on a white background, it can be recognized by the device.

WhiteCodeOnBlackWall

If the code is white bars on a black background, it can be recognized by the device.

Adaptive

The device can recognize both types of codes mentioned above. However, the reading time will be longer compared with the above two modes.

Code39 Check

Enable this to verify code 39.

ITF25 Check

Enable this to verify code ITF25.

1D Code Quality Enable

If you enable this, code quality rating will work during the acquisition, and the overall grade will be displayed in the History pane. See ***Set Code Quality Evaluation***.

Code Score Enable

If you enable this, the Software can give the scores of the codes it has read.

ROI Index

Display the No. of current ROI.

ROI Enable

If you enable this, you can adjust the position and size of the ROI.

2D Code Algorithm

You can set the parameters related to the recognition algorithm for 2D codes.

Note

- Make sure you have selected at least one type of 2D code. For details about selecting code type, see ***Add Barcode***.
- The parameters displayed vary with the device model and firmware version.
- Some parameters should be configured in the feature tree. See ***Feature Tree***.

On the Algorithm Settings panel, click › next to **Algorithm Parameter** to show the algorithm related parameters. Select **2DCode** from the drop-down list of **Arithmetic Type**. The following list introduces features related to 2D code algorithm.

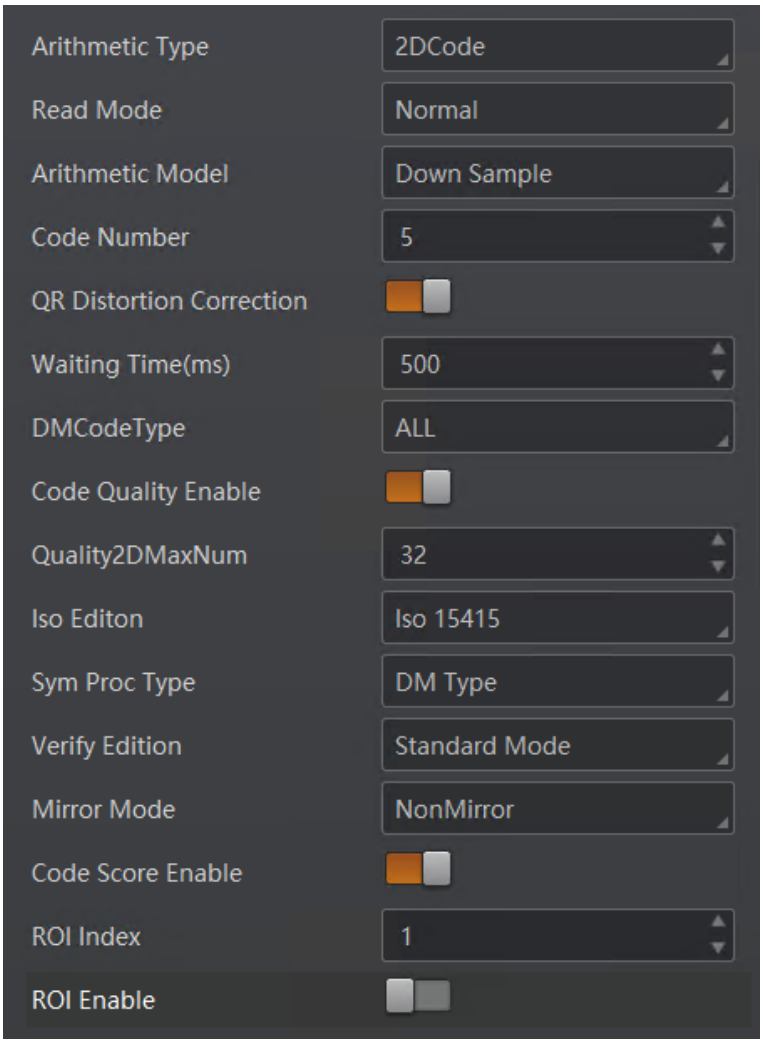

Figure 6-37 Features of the 2D Code

Read Mode

Compared with **Normal**, **Power** is mainly used for reading codes with low quality. So the code reading in Power mode may cost more time. It is recommended to use the default value.

Code Number

The maximum number of codes that can be read.

QR Distortion Correction

Enable this if the QR code is printed on a bottle or the QR code is creased.

Timeout Value (Waiting Time)

The maximum running time (unit: ms) of an algorithm. The code reader will stop parsing images and return results if the running time exceeds the configured value.

DM Code Type

Select the version of DM codes that can be recognized by the device from **ALL**, **ECC140**,

and **ECC200**.

Code Quality Enable

Enable code quality rating. After you enable this function, you can see the overall grade (DM code only) and code score in reading history.

Note

When the device is in Test mode, code quality rating is enabled by default and cannot be disabled. You can configure code quality rating when the device is in Normal mode.

ISO Edition

ISO 15415 is suitable for continuous code; ISO 29158 is suitable for dot code.

Mirror Mode

Turn on the mode only when the acquired images is mirror images (mirroring in X coordinate).

After configuring the above parameters, you can start acquisition and see the overall grade and code score in reading history. For details about reading history, see *View Reading History*.

Code Score Enable

After you enable this function, you can see the code score in reading history.

ROI Index

Display the No. of current ROI.

ROI Enable

If you enable this, you can adjust the position and size of the ROI.

Stack Code Algorithm

You can set algorithm parameters for stack codes according to actual needs.

Note

- Make sure you have selected type PDF417 in **Add Barcode**. For details, refer to *Add Barcode*.
- For different models and firmware versions of the device, the specific parameters may differ, and the actual parameters displayed shall prevail.
- Some parameters should be configured in the feature tree. See *Feature Tree*.

On the Algorithm Settings panel, click ▸ next to **Algorithm Parameter** to show the algorithm related parameters. Select **StackCode** from the drop-down list of **Arithmetic Type**.

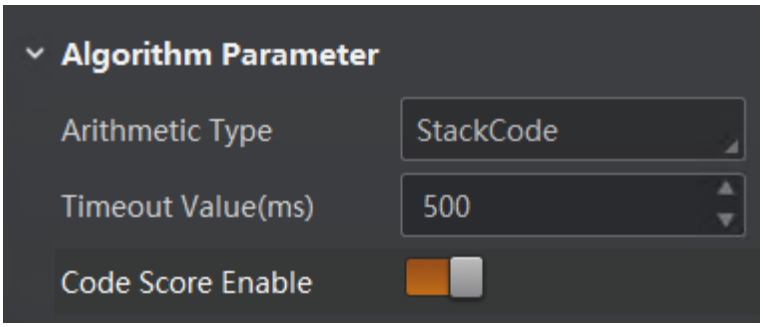

Figure 6-38 Features of the Stack Code

Read Mode

Compared with **Normal**, **Power** is mainly used for reading codes with low quality. So the code reading in Power mode may cost more time. It is recommended to use the default value.

Code Number

The maximum number of codes that can be read.

Timeout Value (Waiting Time)

The maximum running time (unit: ms) of an algorithm. The code reader will stop parsing images and return results if the running time exceeds the configured value.

Code Score Enable

If you enable this, the Software can give the scores of the codes it has read.

ROI Index

Display the No. of current ROI.

ROI Enable

If you enable this, you can adjust the position and size of the ROI.

6.6.4 Set Code Quality Evaluation

You can set parameters for evaluating the quality of 1D and 2D codes.

Steps

Note

When the device is in Test mode, code quality rating is enabled by default and cannot be disabled. You can configure code quality rating when the device is in Normal mode.

1. On the Algorithm Settings panel, click ❯ next to **Algorithm Parameter** to show the algorithm related parameters.

2. Enable **1D Code Quality Enable** or **2D Code Quality Enable** for 1D and 2D code algorithms respectively.
3. Set the corresponding parameters for code quality rating.

   – If **1DCode** is selected for **Arithmetic Type**, you can set specific values for different code quality levels of parameters such as decodability, symbol contrast, modulation, minimum reflectance, minimum edge contrast, defects, and aperture, and decide whether to include edge determination, decode, and quiet zone for code quality rating.
   – If **2DCode** is selected for **Arithmetic Type**, you can set the following parameters:

   - **ISO Edition:** Select the rating standard from ISO 15415 and ISO 29158. ISO 15415 is suitable for continuous code; ISO 29158 is suitable for dot code.
   - **Verify Edition:** Select the rating mode from Standard Mode and HIK ModeNEU Mode.

What to do next

After configuring the above parameters, you can start acquisition and view the overall grade in the History panel. For details about viewing reading history, see *View Reading History*.

6.6.5 Set Code Score

You can enable the Code Score function so that the Software can give the scores of the codes it has read.

Steps

Note

- This function may differ by device models.
- In Test mode, this function is enabled by default. In Normal mode, you need to enable it manually.
- The score of a code is determined by two factors which are the image quality and print quality of codes. A score is between 0 and 100, and the higher the score, the easier the code can be read.

1. Right click the device in **Device Connection** panel, and click **Feature Tree**.
2. Go to **Algorithm Control**, and switch on **Code Score Enable**.

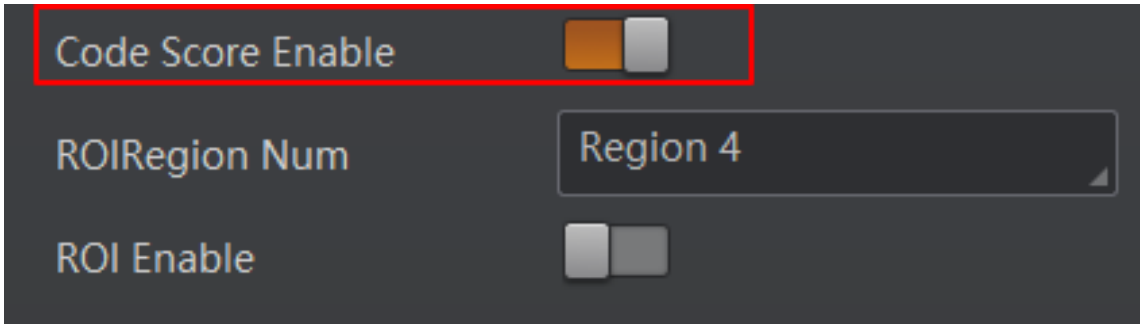

Figure 6-39 Enable Code Score

3. Click to start acquisition, and the Software will display specific code score in the history area.

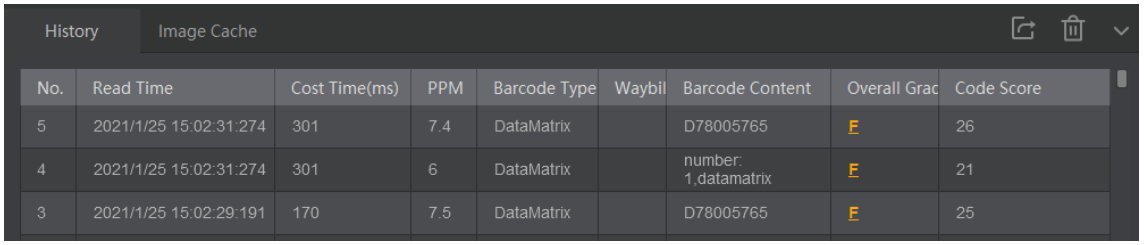

Figure 6-40 Code Score

4. Optional: Go to **Image Settings**, and adjust parameters such as the exposure time, gain, Gamma, and light source if the code score is low.

Note

The code may have poor printing quality if its score is still low after parameter adjustment.

6.6.6 Enable Waybill Cutout

The Software provides the Waybill Cutout functionality, which can automatically cut out the waybill image from the waybill area recognized by the code reader, and save the cut-out waybill image.

Before You Start

- Make sure you have set the running mode of the code reader to Normal. For details about setting running mode, see ***Running Mode***.
- For ID6000 series code readers, you should also have set the value of Billinfo parameter to True in the feature tree to enable the device to recognize the waybill area from the acquired images. For details about feature tree, see ***Feature Tree***.

Steps

Note

- The device should support the functionality.

- You can set the saving path and naming rule for the cut-out waybill picture. For details, see *Capture and Recording Settings*.

1. On the Algorithm Settings panel, click **All Features** on the upper-right to display all algorithm related features (including waybill cutout).

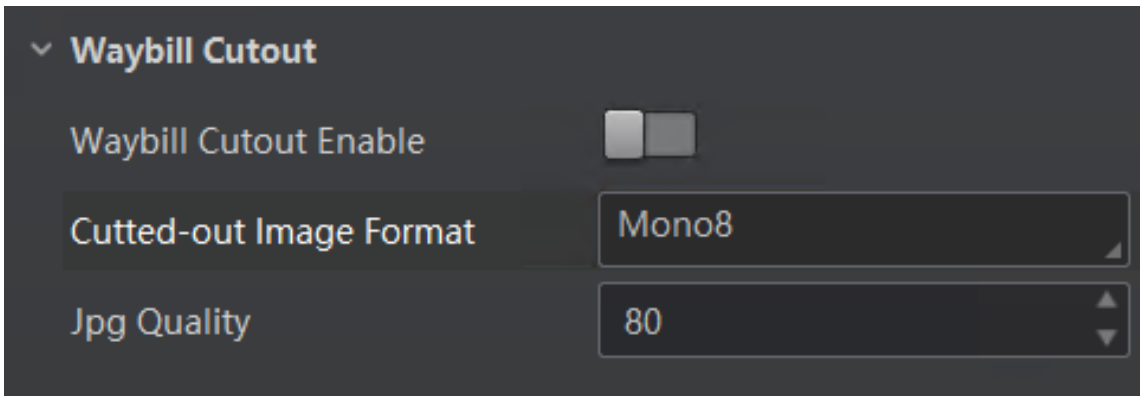

Figure 6-41 Waybill Cutout Settings

2. Set the parameters.

Waybill Cutout Enable

If turned on, the waybill image will be cut out from the acquired images and be saved to the saving path you defined.

Cutted-out Image Format

Set the format (Mono8, JPG, or BMP) of the cut-out waybill image.

JPG Quality

Set the quality of the cut-out waybill image if you select JPG as its format. The larger the value, the better the image quality.

The waybill area will be recognized in the images during code reading (see the picture below) and the waybill image will be saved to the saving path you set.

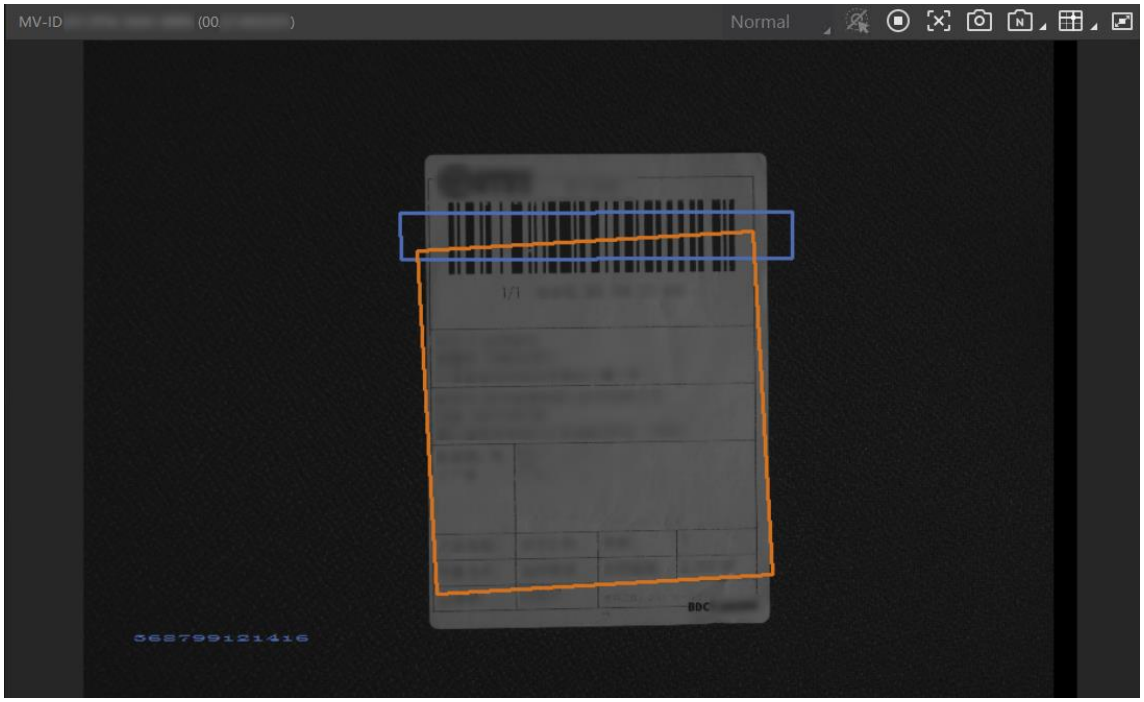

Figure 6-42 Waybill Live View

6.7 I/O Control Settings

The IO Control Settings section allows you to set the features related to the control of the input and output signals of devices.

6.7.1 Input

In the Input section, you can switch the trigger mode to on and set the related parameters so that the device will only acquire image data when the specified trigger source is activated.

Before You Start

Connect a device to the Software.

Steps

> **Note**
> The parameters displayed vary with the device model.

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

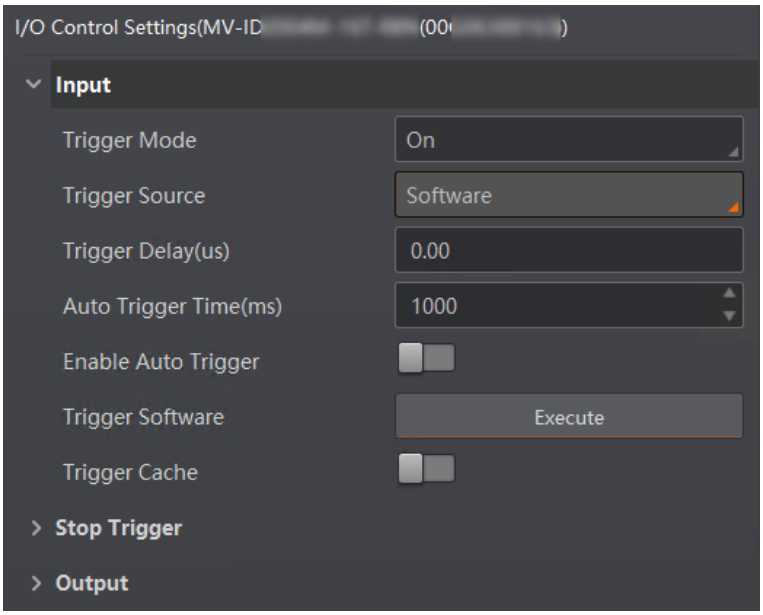

Figure 6-43 I/O Control Settings

2. Set the **Trigger Mode** to **On**.

Note

You should stop acquisition before you can set the trigger mode. For details about acquisition, see *Acquisition and Live View*.

3. In the **Trigger Delay** field, specify the delay in microseconds (us) to be applied after the trigger reception before activating it.
4. Select a source type from the drop-down list of **Trigger Source** as the trigger source, and then set the corresponding features.
   - **Software**: Specify that the trigger source will be generated by the Software using the Trigger Software command.
     - **Auto Trigger Time**: Specify the interval in milliseconds (ms) to activate the trigger automatically.
     - **Enable Auto Trigger**: If enabled, the Software will generate trigger source automatically according to the configured auto trigger time.
     - **Trigger Software**: Click **Execute** to manually generate a trigger source.

     Note

     The feature is available only when **Enable Auto Trigger** is disabled or that the configured auto trigger is already generated.

   - **LineIn 0/1/2**: Specify which physical line (or pin) and associated input control block to be used as the external source for the trigger signal.
     - **Debounce Time:** Specify the time in microseconds (us) to ignore any change of state of a signal after the signal's initial rising edge. In other words, if the duration of a signal is shorter than the specified debounce time, the signal will be regarded as

invalid. You can set debounce time to avoid false triggers due to environmental disturbance (e.g., electromagnetic interference) or device exceptions.
  - **Trigger Activation**: Specify the activation mode of the trigger.
    - **Rising Edge**: Specify that the trigger is considered valid on the rising edge of the source signal.
    - **Falling Edge**: Specify that the trigger is considered valid on the falling edge of the source signal.
    - **Level High**: Specify that the trigger is considered valid if the level of the source signal is high.
    - **Level Low**: Specify that the trigger is considered valid if the level of the source signal is low.
- **Counter 0:** Specify the counter as the internal source for the trigger signal.
  - **Count Number:** Specify that the trigger source will be generated after the set number of valid signals appear. For example, if you set the Count Number to 3, the trigger source will be generated after 3 signals appear.

Note

For descriptions about other features after selecting Counter 0 as the trigger source, see the preceding text.

- **TCP/UDP Start**: Specify the TCP/UDP server as the source for the trigger signal. When the server receives the specified trigger text, the trigger signal will be outputted.

Note

  - For some device models, you can select the text format from the drop-down list of **TCP/UDP Trigger Text Format**.
    - If **Str** is selected, enter the text in string format in the box next to **TCP/UDP Start Trigger Text**.
    - If **Hex** is selected, enter the text in hexadecimal format in the box below **TCP/UDP Trigger Start String**. If needed, you can click + to open the ASCII Cross Reference Table and click a table cell to add the corresponding content to the text box.
  - You may also configure the corresponding string text for sending a TCP/UDP handshake request and receiving a TCP/UDP handshake response via Trigger and IO Control on the feature tree.

- **Serial Start**: Specify the serial port as the source for the trigger signal. When the serial port receives the specified trigger text, the trigger signal will be outputted.

Note

For some device models, you can select the text format from the drop-down list of **Serial Trigger Text Format**.

- If **Str** is selected, enter the text in string format in the box next to **Serial Start Trigger Text**.
- If **Hex** is selected, enter the text in hexadecimal format in the box below **Serial Trigger Start String**. If needed, you can click + to open the ASCII Cross Reference Table and click a table cell to add the corresponding content to the text box.

- **Self Trigger**: Specify the trigger period (i.e., interval) in milliseconds (ms) and the total trigger count. The device will generate trigger signals itself accordingly during acquisition.
- **USB Start**: Specify the USB port as the source for the trigger signal.
- **Response Trigger**: When the brightness of the field of view changes, code reading and barcode output are automatically triggered. The device monitors the change of image brightness value in real time and starts code reading when the change exceeds the configured sensitivity threshold.

Note

Only handheld code readers support **Self Trigger** and **Response Trigger**.

5. Optional: Configure the source and condition to stop a trigger.

Note

Refer to *Stop Trigger* for details.

6.7.2 Stop Trigger

The device supports stopping trigger via TCP, UDP, I/O, serial port, and USB. You can also set code reading timeout duration or max. code amount to be read to stop trigger. After a trigger is stopped, the device will not respond to the trigger again.

Note

- The USB device supports stopping trigger via USB only, and the network device supports all trigger stopping methods apart from USB method.
- For specific trigger stopping methods, refer to the actual device you got.

To configure the trigger stopping methods, click **Stop Trigger** on the I/O Control Settings panel.

Stop Trigger via TCP

When the TCP server receives the specified string text, the trigger will be stopped. Switch on **TCP Stop Trigger Enable**, and set **TCP Trigger Port** and the text for stopping the trigger according to actual demands.

Note

For some device models, you can select the text format from the drop-down list of **TCP End Trigger Format**.

- If **Str** is selected, enter the text in string format in the box next to **TCP Stop Trigger Text**.
- If **Hex** is selected, enter the text in hexadecimal format in the box below **TCP Trigger End String**. If needed, you can click ⊞ to open the ASCII Cross Reference Table and click a table cell to add the corresponding content to the text box.

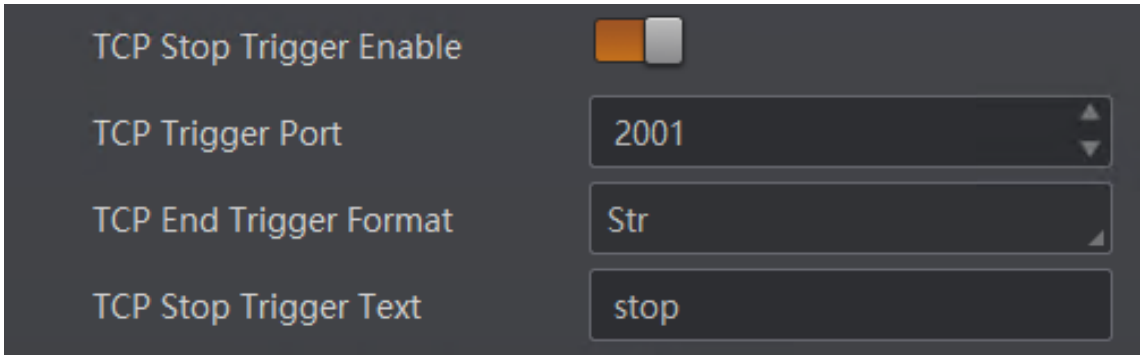

Figure 6-44 Stop Trigger via TCP

Stop Trigger via UDP

When the UDP server receives the specified string text, the trigger will be stopped. Switch on **UDP Stop Trigger Enable**, and set **UDP Trigger Port** and the text for stopping the trigger according to actual demands.

Note

The text format selection and the corresponding settings are similar to those for trigger stopping via TCP. For details about how to set text in string or hexadecimal format, refer to the note in the Stop Trigger via TCP section above.

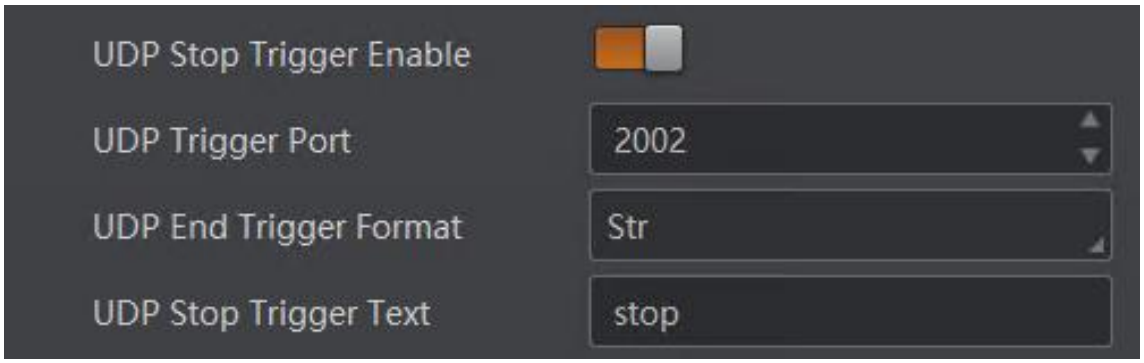

Figure 6-45 Stop Trigger via UDP

Stop Trigger via I/O

Switch on **IO Stop Trigger Enable**, select a specific source from the drop-down list of **IO Stop Trigger Selector**, and then set the trigger polarity as the condition to stop trigger.

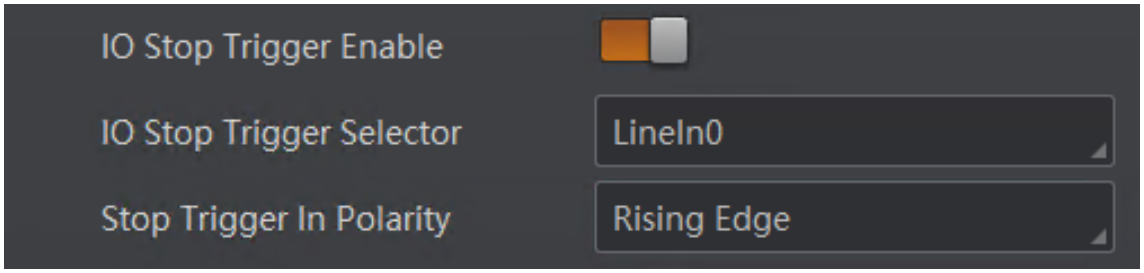

Figure 6-46 Stop Trigger via IO

When selecting **SoftwareTriggerEnd** as **IO Stop Trigger Selector**, you can click **Execute** in **Software Stop Trigger** to stop current trigger.

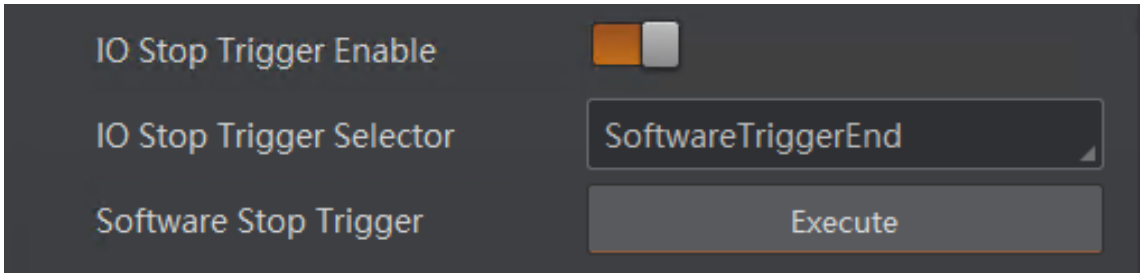

Figure 6-47 Software Trigger End

Stop Trigger via Serial Port

When the specified serial port receives the specified text, the trigger will be stopped. Switch on **Serial Stop Trigger Enable**, set **Serial Stop Trigger Text**, **Serial Baudrate**, **Serial Data Bits**, **Serial Parity**, and **Serial Stop Bits** according to actual demands.

Note

The text format selection and the corresponding settings are similar to those for trigger stopping via TCP. For details about how to set text in string or hexadecimal format, refer to the note in the Stop Trigger via TCP section above.

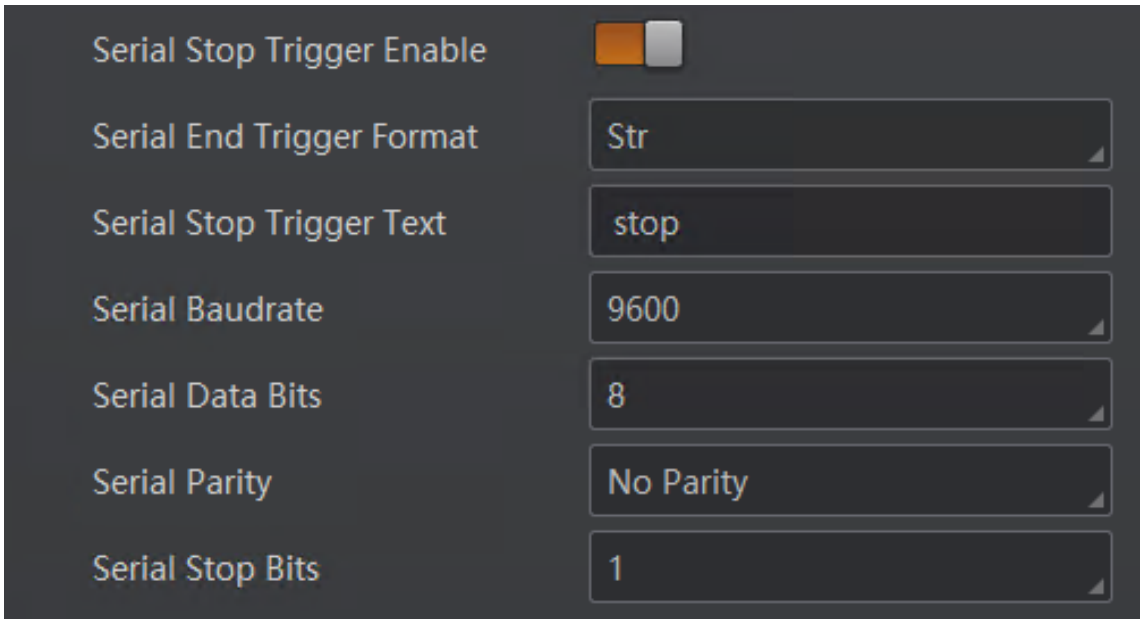

Figure 6-48 Stop Trigger via Serial Port

Stop Trigger via USB

The USB stop trigger function means that the device receives USB commands from the external device to stop image acquisition. At this time, the device acts as a USB server to receive commands, and the external device communicating with it acts as a USB client to send commands.

On the device feature tree, find **Stop Trigger Control**, switch on **USB Stop Trigger Enable**, set **USB Stop Trigger Text**, **USB Baudrate**, **USB Data Bits**, **USB Parity**, and **USB Stop Bits** according to actual demands.

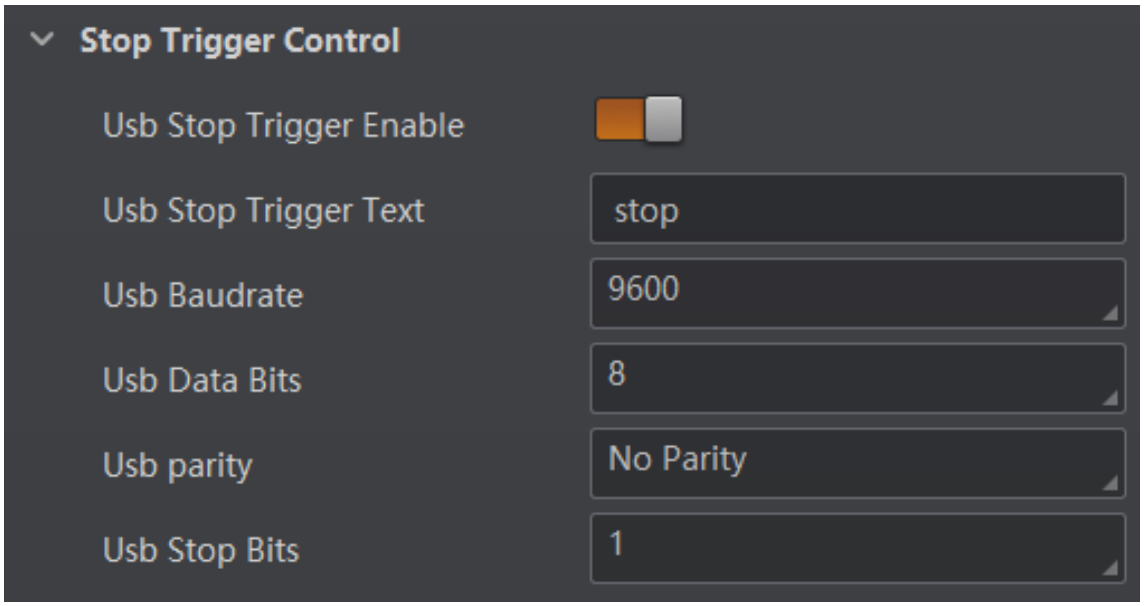

Figure 6-49 Stop Trigger via USB

Stop Trigger via Timeout Duration

Note

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

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

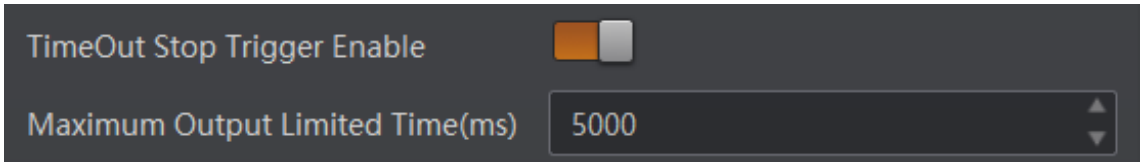

Figure 6-50 Stop Trigger via Timeout Duration

Stop Trigger via Code Number

Note

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

This function means that the code quantity outputted by the device is restricted to the settings you configured here. You can switch on **CodeNum Stop Trigger Enable**, and set **CodeNum Stop Trigger Min** and **CodeNum Stop Trigger Max** according to actual demands.

- If the number of outputted codes is less than the value configured for **CodeNum Stop**

Trigger Min, the device will output codes continuously.

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

Figure 6-51 Stop Trigger via Code Number

6.7.3 Output

You can configure the condition and other related features to trigger the output signal.

Before You Start

Connect a device to the Software.

Steps

> **Note**
> The features vary with the device model.

1. Click **I/O Control Settings** to enter the I/O Control Settings panel, and click next to **Output** to show the related features.

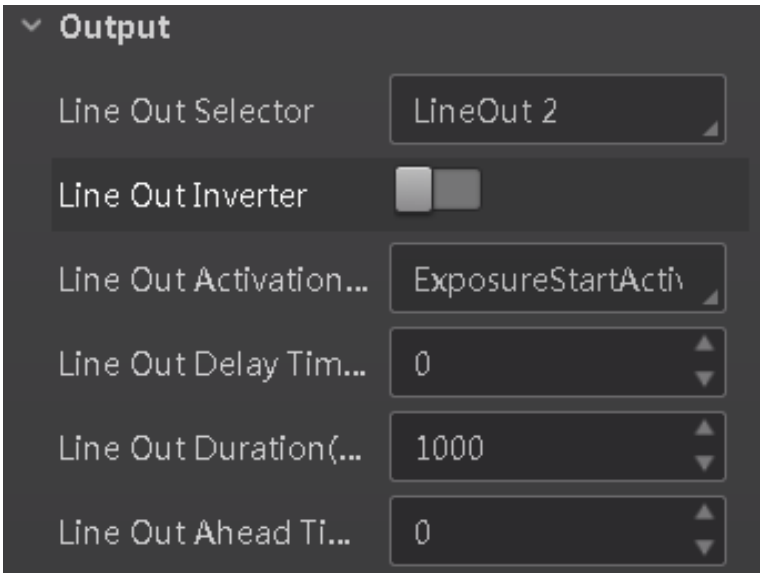

Figure 6-52 Output Features

2. Select a physical line (or pin) from the drop-down list of **Line Out Selector** as the output port.
3. Select an event from the drop-down list of **Line Out Activation Event** as the source event to trigger the output signal.
   - **AcquisitionStartActive**: If acquisition starts, the output signal will be triggered.
   - **AcquisitionStopActive**: If acquisition stops, the output signal will be triggered.
   - **FrameBurstStartActive**: If the burst of a frame starts, the output signal will be triggered.
   - **FrameBurstStopActive**: If the burst of a frame stops, the output signal will be triggered.
   - **ExposureStartActive**: If the exposure starts, the output signal will be triggered.
   - **ExposureStopActive**: If the exposure stops, the output signal will be triggered.
   - **CounterActive** Trigger the output signal by the counter.
   - **TimerActive**: Trigger the output signal by the timer.
   - **HardTriggerActive**: Trigger the output signal through the device.
   - **SoftTriggerActive**: Trigger the output signal through the Software.
   - **NoCodeRead**: If no code is read by the device, the output signal will be triggered.
   - **ReadSucces**: If the code is read by the device, the output signal will be triggered.
   - **LightStrobeLong**: If the source light is set to strobe mode, the output signal will be triggered.
   - **LightContinued**: If the source light is set to always-on, the output signal will be triggered.
   - **ContrastSuccess**: If the code comparison succeeded, the output signal will be triggered.
   - **ContrastFail**: If the code comparison failed, the output signal will be triggered.
4. Optional: Set the time related parameters.
   - **Line Out Delay Time**: Set the delay time for triggering the output signal if the selected event occurs.

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

5. Optional: Enable **Line Out Inverter** to make the device output the opposite signal.

6.7.4 Buzzer

You can configure the condition to activate the buzzer, the buzzer frequency, and the buzzing duration.

Note

Configuring buzzer is only supported by the SI series and IM series code readers.

Configure Buzzer for SI Series Code Reader

For SI series code readers, you can configure device features to make the buzzer buzz in one of the following two occasions: the occasion when no code is read by the device, or the occasion when a code is read by the device.

1. Click **IO Control** to enter the IO Control Settings panel.
2. Set the buzzer related features.
   - **Buzzer Mode:** Turn off the buzzer or set the condition for the buzzer to start buzzing.
     - **Off:** Turn off the buzzer.
     - **No Code Read:** If no code read, the buzzer will start buzzing.
     - **Read Success:** If any code is read by the device, the buzzer will start buzzing.
   - **Buzzer Frequency:** Set the buzzer frequency (unit: Hz).
   - **Buzzing Duration:** Set the duration for each buzzing (unit: ms).

Configure Buzzer for IM Series Code Reader

For IM series code readers, you can configure device features to make the buzzer buzz when a code is read by the device.

1. Click **IO Control** to enter the IO Control Settings panel.
2. Enable the buzzer.
3. Set the duration for each buzzing (unit: ms).

6.7.5 LED

You can select event as the trigger source for making the two LED indicators on the device flash.

Note

The functionality should be supported by the device.

The following list briefly introduces the selectable events.

- **Off:** Turn off the indicator.
- **Read Success:** The indicator flash for one time if a code is read by the device.
- **Who am I:** The indicator on the device which is under operation will flash for one time. You can select this event to find the device which is under operation.

- **System Running:** If the device is running normally, the indicator will flash.
- **Be Triggered:** If the device receives the trigger signal, the indicator will flash for one time.
- **Line 0/1/2 Out:** If signals are outputted through line 0, line 1, or line 2 of the device, the indicator will flash for one time.
- **Line 3/4 Out (External Light):** If an external light is connected to the device, the indicator on the device will flash for one time.

6.7.6 Vibrator

Go to **Tigger and IO Control**, you can set vibrator parameters of the device after reading codes successfully.

Vibrator Enable

If it is enabled, you can set vibrator parameters of the device after reading codes successfully.

Bcr Vibrator Duration (ms)

It sets the output duration of the vibrator, and unit is ms.

6.7.7 Set Button of Smart Base

Go to **Device Control**, and you set button of smart base.

Smart Base of Type II Device

Left Key Enable

It sets the left button of the smart base. After it is enabled, press it for 3 sec to disconnect the connection between the device and the smart base. The smart base is in standby status.

Right Key Enable

It sets the right button of the smart base. After it is enabled, press it for 3 sec, and the smart base sends **Find Me** command to the device. After receiving the commands, the device will have indicator and buzzer prompts. Press it for 3 sec again, and the smart base stops sending **Find Me** command.

Smart Base of Type III Device

Ida H30 Key Enable: After it is enabled, the smart base can find the device, and connect or disconnect the device via the Bluetooth.

- Shortly press button on the smart base for less than 3 sec, and the smart base sends Find Me command to the connected device. After receiving the commands, the device will have indicator and buzzer prompts. Shortly press it for less than 3 sec again, and the smart base disconnects connection with the device, and enters standby status.
- Press button on the smart base for more than 3 sec, disconnect the connected device from the smart base via Bluetooth.

6.8 Communication Settings

The communication protocol determines how the device output the barcode data. The communication protocols available for configuration vary with the running mode (Test mode and Normal mode) of the device. Under the Test mode, the device only supports SmartSDK protocol and no configuration effort is required; while under the Normal mode, you can select from different communication protocols and configure the related parameters.

Note

- You can configure the running mode of the device on the live view window. For details, see *Running Mode*.
- If needed for reference, you can open the Communication Commands document by clicking **Help** → **Communication Matrix** on the top menu bar.
- The parameters displayed vary with the device model.

SmartSDK

It is applicable for all device models. If you select **SmartSDK** as the communication protocol, you can configure the following parameters:

Parameter	Description
SmartSDK Protocol	If enabled, the device will output data via SmarkSDK.
Output Result Buffer	If enabled, when the SmartSDK server is abnormal, the device will cache the images. When the SmartSDK returns to normal, the device will send the cached images to the SmartSDK server. You can configure **Output Result Buffer Number** to determine the number of the images that the device will cache.
Encode JPEG Flag	If enabled, the device will compress the image data. You can enter a number (unit: %, range: 50 to 99) in the Quality of JPEG field to define the compression quality.

TCP Client

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

Parameter	Description
Output Result Buffer	If enabled, when the TCP server is abnormal, the device will cache the images. When the server returns to normal, the device will send the cached images to the server. You can configure **Output Result Buffer Number**

Parameter	Description
	to determine the number of the images that the device will cache.
TCP Protocol	If enabled, the device will output data via the TCP server.
TCP Dst Addr	Enter the IP address of the server that receives data outputted by the code reader.
TCP Dst Port	Enter the port No. of the server that receives data outputted by the code reader.

Serial

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

Parameter	Description
Output Result Buffer	If enabled, when the serial port is abnormal, the device will cache the images. When the serial port returns to normal, the device will send the cached images to the serial port. You can configure **Output Result Buffer Number** to determine the number of the images that the device will cache.
Serial Protocols	If enabled, the code reader will output data via serial port.
Serial Baudrate	The baud rate of the serial port of the PC that receives data.
Serial Data Bits	Data bits of the serial port of the PC that receives data.
Serial Parity	Parity bits of the serial port of the PC that receives data.
Serial Stop Bits	Stop bits of the serial port of the PC that receives data.

FTP

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

Parameter	Description
Output Result Buffer	If enabled, when the FTP server is abnormal, the device will cache the images. When the FTP server returns to normal, the device will send the cached images to the server. You can configure **Output Result Buffer Number** to determine the number of the images that the device

Parameter	Description
	will cache.
FTP Protocol	If enabled, the code reader will output data via FTP server.
FTP Host Addr	IP address of the FTP host.
FTP Host Port	Port No. of the FTP host.
FTP User Name	User name of the FTP.
FTP User PWD	Password of the FTP.

HTTP

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

Output Result Buffer	Description
Output Result Buffer	If enabled, when the HTTP server is abnormal, the device will cache the images. When the HTTP server returns to normal, the device will send the cached images to the server. You can configure **Output Result Buffer Number** to determine the number of the images that the device will cache.
HTTP Server	If enabled, the code reader will output data via HTTP server.
HTTP Server Port	Port No. of the HTTP server.
WebRefresh Cycle	The frequency to refresh web.

TCP Server

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

Parameter	Description
Output Result Buffer	If enabled, when the TCP server is abnormal, the device will cache the images. When the server returns to normal, the device will send the cached images to the server. You can configure **Output Result Buffer Number** to determine the number of the images that the device will cache.
TCP Server Enable	If enabled, the code reader will output data via TCP server.

Parameter	Description
TCP Server Port	The port No. of the TCP server that receives data outputted by code reader.

Profinet

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

Parameter	Description
Profinet Enable	If enabled, the device will output data via Profinet protocol.
Profinet Device Name	Enter the name of the code reader, which is used for code reader recognition in Profinet protocol communication.
Profinet Result Module Size	Select from the drop-down list the result module size.
Profinet Result Timeout	Set the maximum waiting time for the result (unit: s).

MELSEC

If you select **Melsec/SLMP** as the communication protocol, you can configure the following parameters:

Parameter	Description
MELSEC Protocol Enable	If enabled, the code reader will output data via MELSEC protocol.
MELSEC Destination IP Address	IP address of the Programmable Logic Controller (PLC) connected to the code reader.
MELSEC Destination Port	Port No. of the MELSEC protocol channel on the PLC.
MELSEC Data Base Address	The address of the data base of the PLC for receiving the data outputted by the code reader. The default value is 0.
MELSEC State Base Address	The address of the state base of the PLC, which is used for sending trigger signal to the code reader and receiving trigger result and code reading results from the code reader. The default value is 0.
MELSEC Network Number	MELSEC protocol network No. to communicate with.

Parameter	Description
MELSEC PLC Number	No. of the PLC to be connected to the code reader.
MELSEC Module I/O Number	No. of the target module.
MELSEC Module Station Number	No. of the target module station.
MELSEC Timeout	Maximum waiting time for PLC response.

Ethernet/IP

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

Parameter	Description
Ethernet/IP Enable	If enabled, the code reader will output data via Ethernet/IP protocol.

ModBus

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

ModBus	Description
ModBus Enable	If enabled, the code reader will output data via ModBus protocol.
ModBus Mode	Select a mode from **Server** and **Client**.
ModBus Control Space	The value is "holding_register" by default and not editable.
ModBus Control Offset	Offset of the control address. The default value is 0.
ModBus Control Data Number	The value is 2 by default.
ModBus PLC Input Address Space	The value is "input_register" by default and not editable.
ModBus PLC Input Address Offset	Offset of the input address of the PLC. The default value is 2000.

UDP

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

Parameter	Description

Parameter	Description
UDP Protocol Enable	If enabled, the code reader will output data via User Datagram Protocol (UDP).
UDP Dst IP	The IP address of the PC receiving the output data.
UDP Dst Port	The port of the PC receiving the output data.

FINS

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

Parameter	Description
Fins Enable	If enabled, the code reader will output data via TCP/UDP FIN.
Fins Communication Mode	Select UDP or TCP as the communication mode.
Fins Local Port	The local port of Fins. Default is 9600.
Fins Dst IP Address	IP address of the target device.
Fins Dst Port	Port number of the target device.
Fins Data Format	Select 16 bit or 32 bit as the data format.
Fins Scan Rate (ms)	The polling rate of the code reader reading the control register of the server.
Fins Control Area	The space of control address. Default is DM Area.
Fins Control Addr	The offset of control address. Default is 0. Make sure each area does not overlap.
Fins State Area	The space of state address. Default is DM Area.
Fins State Addr	The offset of state address. Default is 2. Make sure each area does not overlap.
Fins Result Area	The space of result address. Default is DM Area.
Fins Result Addr	The offset of result address. Default is 4. Make sure each area does not overlap.

SLMP

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

Parameter	Description

Parameter	Description
SLMP Enable	If enabled, the code reader will output data via Seamless Message Protocol (SLMP).
SLMP Dst Addr	IP address of the Programmable Logic Controller (PLC) to be connected.
SLMP Dst Port	Port number of the Programmable Logic Controller (PLC) to be connected.
SLMP Data BaseAddr	The base address of the data field.
SLMP State BaseAddr	The base address of the state field.
SLMP Network Num	Network number of access station.
SLMP PLC Num	PLC number.
SLMP Module I/O Num	Target module I/O number.
SLMP Module Station Num	Target station number.
SLMP Timeout	The wait time for PLC to respond.

USB

Parameter	Description
USB Enable	If enabled, the code reader will output data via USB.
USB Output	Select CDC or HID as the USB output method.
USB Baudrate	Baud rate of the receiving end.
USB Data Bits	Data bits of the receiving end.
USB Parity	Check bit of the receiving end.
USB Stop Bit	Stop bit of the receiving end.

Bluetooth

If you select **Bluetooth** as the communication protocol, you can configure the data output mode of the device via the **BLE Output**.

IDA

The device performs data transmission by connecting to the smart base via bluetooth.

HID

The device performs data transmission by connecting to devices such as a smart phone or PC via bluetooth.

Note

- After configuring these parameters, reboot the device to take effect.
- This function should be supported by the device.

2.4G

If you select the communication protocol as **2.4G** and enable **2.4G Enable**, the device can output data via 2.4G.

6.9 Data Processing Settings

In the Data Processing panel, you can set filter rules for reading barcodes and other data processing related parameters.

Note

The parameters vary with different devices.

6.9.1 Filter Rule

You can set rules to filter the unwanted barcodes to improve the reading efficiency.

Note

The parameters vary with different device models.

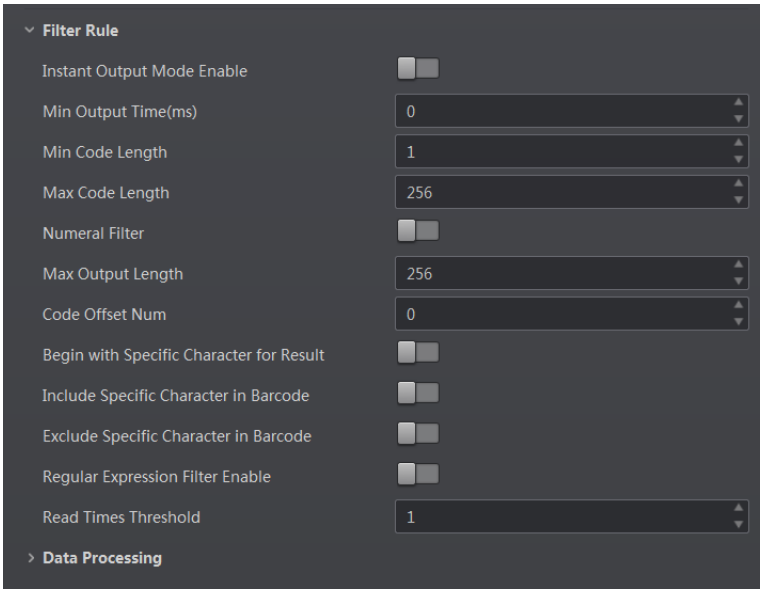

Figure 6-53 Filter Rule

The following list briefly introduces the features for setting filter rules.

- **Instant Output Mode Enable:** If enabled, the device will output barcode data immediately

once a code is read. If not enabled, the barcode data will be outputted after the device trigger process ends.

Note

The parameter is only available when the running mode is set to Normal mode and the trigger mode is enabled.

- **Min. Output Time(ms) :** Define the minimum time duration (unit: ms) for data output. The duration starts from trigger time. Note: The parameter is only available when the running mode is set to Normal mode and the trigger mode is enabled.

Note

The parameter is only available when the running mode is set to Normal mode and the trigger mode is enabled.

- **Min. Code Length:** If the length of a barcode is shorter (in terms of the number of characters) than the configured value, the device will NOT parse the barcode.
  For example, if you set the value to 6, the device will not parse the barcodes which contain fewer than 6 characters.

Note

The valid value of the parameter is from 1 to 256.

- **Max. Code Length:** If the length of a barcode is longer (in terms of the number of characters) than the configured value, the device will NOT parse the barcode.
  For example, if you set the value to 9, the device will not parse the barcodes which contain more than 9 characters.

Note

The valid value of the parameter is from 1 to 256.

- **Numeral Filter:** If enabled, the device will only parse and read the numeral contents of the barcodes, and the non-numeral contents will be filtered out.
- **Max. Output Length:** Define the maximum length of the outputted barcode data.
  For example, if you set the value to 8, when the parsed barcode data is longer than 8 characters, only the first 8 characters of the barcode data will be outputted. When the parsed barcode data is shorter than 8 characters, the whole parsed data will be outputted.

Note

The parameter is only available when the running mode is set to Normal mode and the trigger mode is enabled.

- **Code Offset Num:** Define the offset for the start character of the barcode data.
  For example, if you set the value to 3, the code reader will output data starting from the third character of the barcode data. The first and second characters will NOT be

outputted.

Note

The parameter is only available when the running mode is set to Normal mode and the trigger mode is enabled.

- **Begin with Specific Character for Result:** enabled, the device will only read the barcodes which begin with a specific character string.

  Begins with

  Enter the character string.
- **Include Specific Character in Barcode:** If enabled, the device will only read the barcodes which include a specific character string.

  Character

  Enter the character string.
- **Exclude Specific Character in Barcode:** If enabled, the device will only read the barcodes without a specific character string.

  Character

  Enter the character string.
- **Regular Expression Filter Enable:** If enabled, the device will only read the barcodes which contain the configured character string(s).

  Regular Expression Filter Rules

  Click **Set** to set the filter rules. You can add rules and import/export rules. For details, see *Add Regular Expression Filter Rule* and *Import/Export Regular Expression Filter Rules*.
- **Read Times Threshold:** If the reading results of a barcode is same for the configured times, the barcode will be regarded as valid and its data will be outputted. Or the barcode will be regarded as invalid and its data will not be outputted.

Add Regular Expression Filter Rule

You can add regular expression filter rules to define how the barcodes will be regarded as valid.

Steps

Note

Up to 10 rules can be added.

1. On the Data Processing panel, select **Regular Expression** from the drop-down list of **Filter Mode**.
2. Click **Set** beside **Regular Expression Filter** to open the Regular Expression Filter Settings window.

Note

If the regular expression filter rules have already been set for the device, these rules will be displayed on the window.

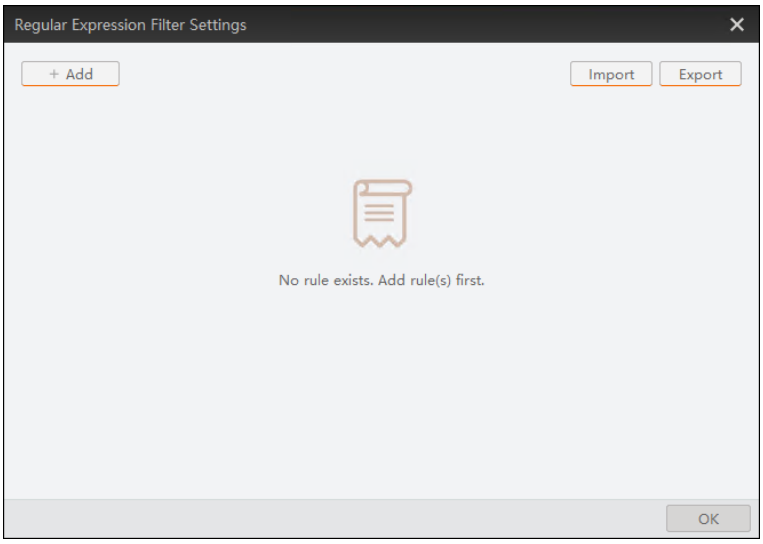

Figure 6-54 Regular Expression Filter Settings Window

3. Click **Add** to open the Regular Expression Filter Rules window.

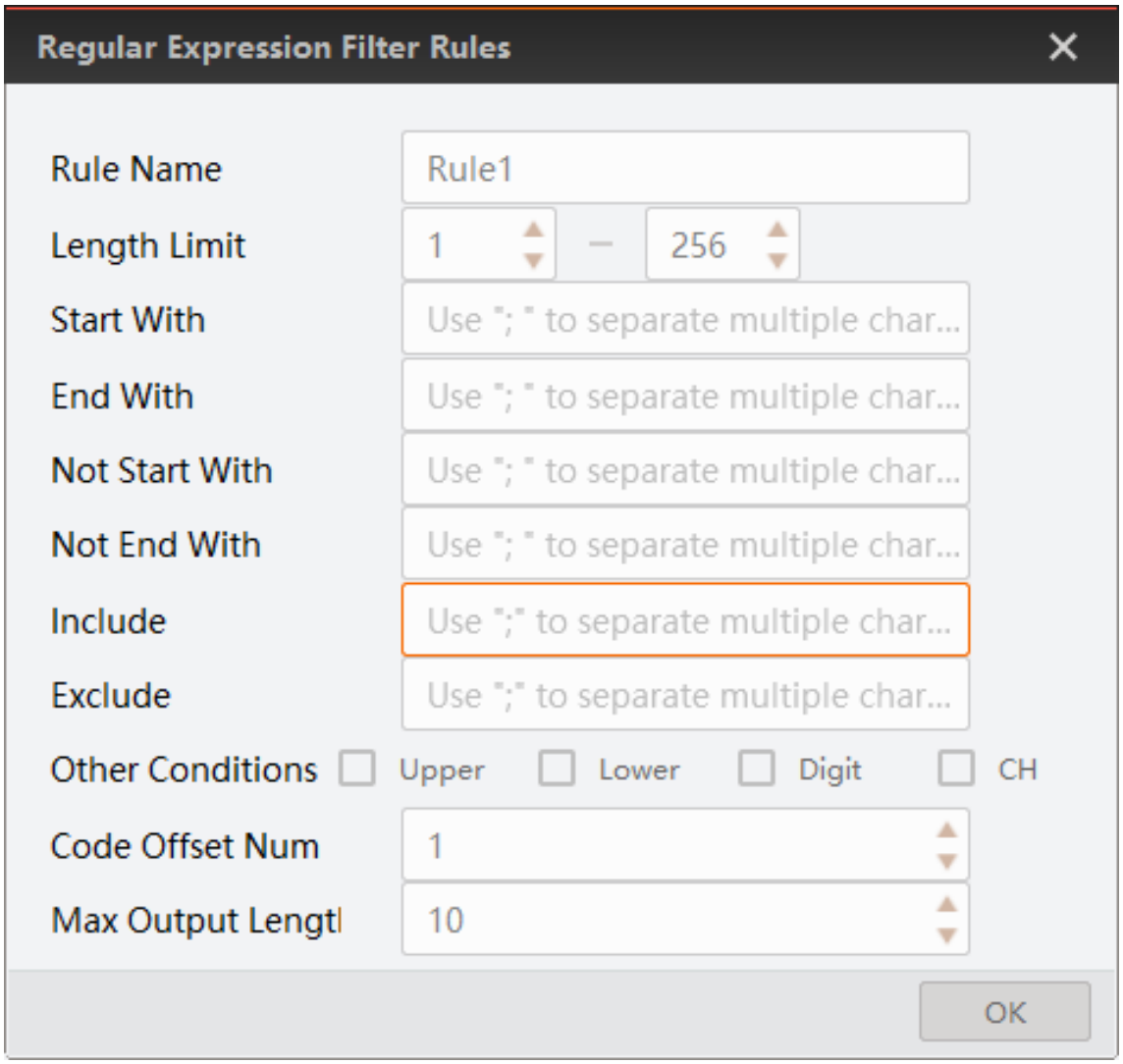

Figure 6-55 Add Regular Expression Filter Rule

4. Set the parameters, including rule name and filter conditions such as length limit, start character, and end character.

Rule Name

The rule name is created by default and NOT editable.

Length Limit

Set the length limit (unit: character) of the barcode. The barcode can contain up to 256 characters. If a barcode is longer or shorter than the length range you set, it will be regarded as invalid and be filtered out.

Start With

Set the start character(s) of the barcode. If the start character of a barcode is NOTone of the characters you set, the barcode will be regarded as invalid and be filtered out. You can use ";" to separate multiple characters.

End With

Set the end character(s) of the barcode. If the end character of a barcode is NOTone of the characters you set, the barcode will be regarded as invalid and be filtered out. You can use ";" to separate multiple characters.

Not Start With

Set the start character(s) that the barcode should not contain. If the start character of a barcode is one of the characters you set, the barcode will be regarded as invalid and be filtered out. You can use ";" to separate multiple characters.

Not End With

Set the end character(s) that the barcode should not contain. If the end character of a barcode is one of the characters you set, the barcode will be regarded as invalid and be filtered out. You can use ";" to separate multiple characters.

Include

Define the character string(s) that the barcode must contain. The barcode should contain at least one of these character string(s) to be regarded as valid.

Note

You can use ";" to separate multiple character strings. ";" represents "OR" here. For example, if you enter "AA;123;BB", the barcode should contain "AA", "123", or "BB" to be valid.

Exclude

Define the character(s) that the barcode should NOT contain. The barcodes that contain any one of these characters(s) will be regarded as invalid and be filtered out.

Note

You can use ";" to separate multiple character strings. ";" represents "AND" here. For example, if you enter "BB;123", the barcode should NOT contain "BB" and "123" to be valid.

Other Conditions

The code should contain ONLY characters of the corresponding type(s) selected to be valid. If a code contains characters other than the type(s) selected, it will be regarded as invalid and will be filtered out.

Note

Upper indicates uppercase letters, **Lower** indicates lowercase letter, **Digit** indicates digits, and **CH** indicates Chinese characters.

Code Offset Num

Set the number of characters to be cut out from the start for code output (i.e., not to be displayed on the Software).

Note

For example, if it is set to 1, the code "12345678" will be output as "2345678".

Max Output Length

Set the maximum output length for a code.

Note

For example, if it is set to 10, the code "1234567890ABC" will be output as "1234567890".

5. Click **OK** to complete adding the rule.
   The following page will be displayed.

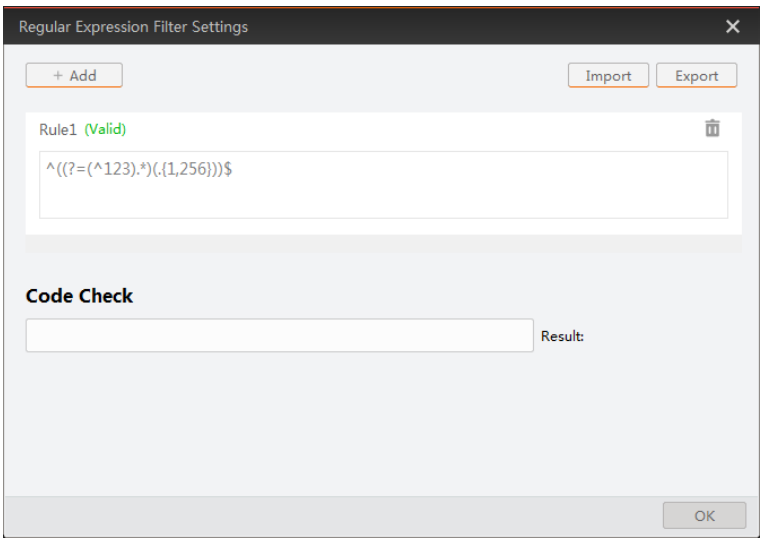

Figure 6-56 Code Check Window

6. Optional: Perform the following operations if needed.

Note

The barcode will be regarded as valid as long as it matches one of the added rules.

Edit Rule	Edit the rule in the rule field.
Delete Rule	Click to delete the rule.
Check Code	Enter a barcode in the box below **Code Check**to check if it is valid. The result will be displayed after **Result**.

7. Click **OK**.

Import/Export Regular Expression Filter Rules

You can batch import regular expression filter rules from the local PC, or export rules to the local PC.

Note

Make sure the Filter Mode is selected as **Regular Expression**on the Data Processing panel.

Click **Set** beside Regular Expression Filter to open the Regular Expression Filter Settings window.
Import or export regular expression filter rules.

- **Export Rules**: Click **Export** in the upper-right corner to export the added rules to the local PC as an XML file.
- **Import Rules**: Click **Import** in the upper-right corner to import an XML file from the local PC to batch import rules.

6.9.2 Data Processing Settings

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

Note

The actual parameters displayed may vary with different communication protocols. For details about communication settings, refer to *Communication Settings*.

SmartSDK

- **NoRead Image Index**: Specify the index of the output image if no barcode is read. For example, if you set it to 5, the fifth image will be outputted if there are more than 5 images, or the last image will be outputted if there are less than 5 images.
- **Sorting Rules**: Specify the sorting rules of output images. Multiple sorting rules are supported.

FTP Protocol

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

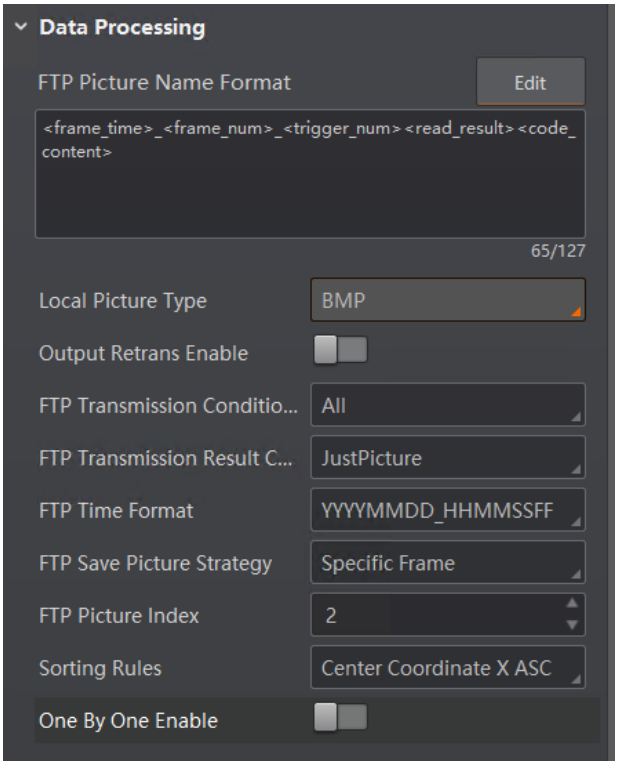

Figure 6-57 Data Processing (FTP)

- **NoRead Image Index**: Specify the index of the output image if no barcode is read. For example, if you set it to 5, the fifth image will be outputted if there are more than 5 images, or the last image will be outputted if there are less than 5 images.
- **Sorting Rules**: Specify the sorting rules of output images. Multiple sorting rules are supported.
- **Local Picture Type**: Specify the type of pictures saved locally. You can select **JPEG** or **BMP**.
- **Output Retrans Enable**: Enable to allow data re-transmission. Specify the limit of re-transmission attempts in Output Retrans Number.
- **FTP Picture Name Format**: Click **Edit** to select one or multiple items to be contained in the picture name and click **Save**. The selected items will be displayed in the frame below. You can also enter more contents directly in the frame.

Note

Click **Format Output** on the control toolbar to open the Format Output window to set the FTP picture name format quickly.

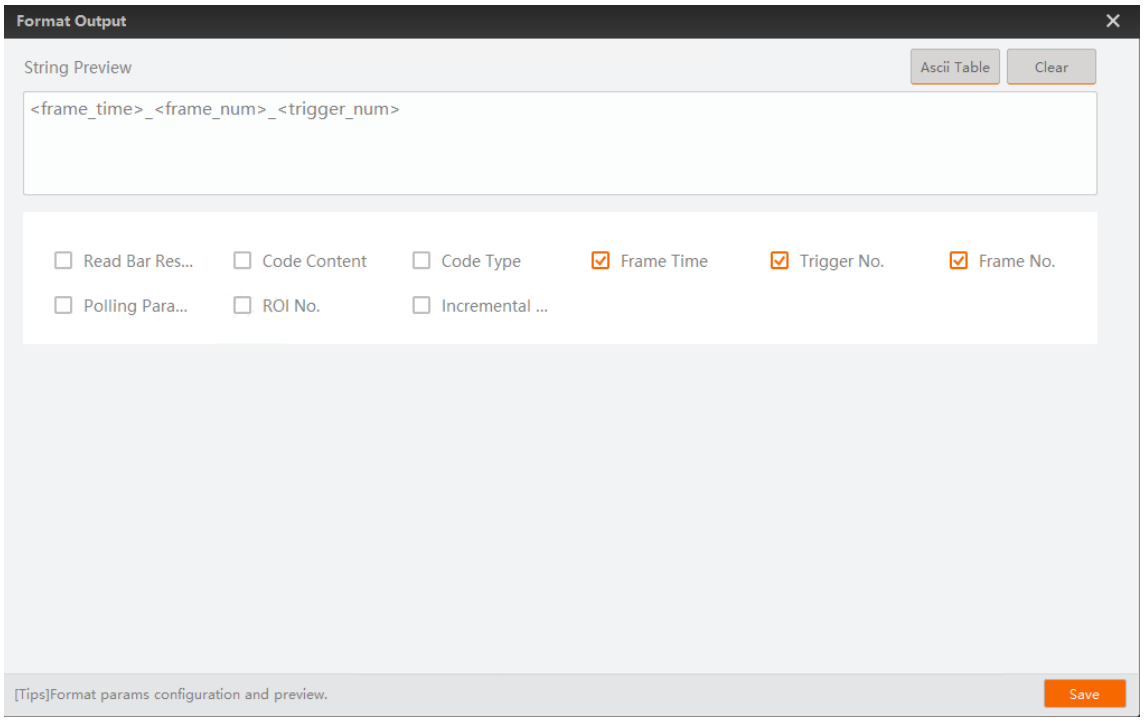

Figure 6-58 Format Output

- **FTP Transmission Conditions**: Set the condition to upload the data outputted by the device to FTP server.
  - **All**: Always upload the data.
  - **ReadBarcode**: Upload the data only when the barcode is read by the device.
  - **NoReadBarcode**: Upload the data only when no barcode is read by the device.
- **FTP Transmission Result Contain**: Select contents to upload to the FTP server.
  - **JustResult**: Only upload the content of the barcode.
  - **JustPicture**: Only upload the barcode image.
  - **ResultAndPicture**: Upload both the content of the barcode and the barcode image.
- **FTP Time Format**: Select a format type from the drop-down list for the time stamp contained in the file name.

Note

Take YYYYMMDD_HHMMSSFFF as an example, (from the left to the right) YYYY represents year, MM month, DD date, HH hour, MM minute, SS second, FFF millisecond.

- **FTP Save Picture Strategy**: Select from the drop-down list the picture saving strategy from **Recent Frame**, **All Frames**, **Range Frames**, and **Specific Frame** accordingly. If **Specific Frame** is selected, you can specify the frame by entering its index in the box of FTP Picture Index.

TCP Client / Serial / TCP Server / Profinet / Melsec/SLMP / EthernetIp / Modbus / UDP / FINS / USB

When the communication protocol is TCP Client / Serial / TCP Server / Profinet / Melsec/SLMP / EthernetIp / Modbus / UDP / FINS / USB, set the following parameters of data processing.

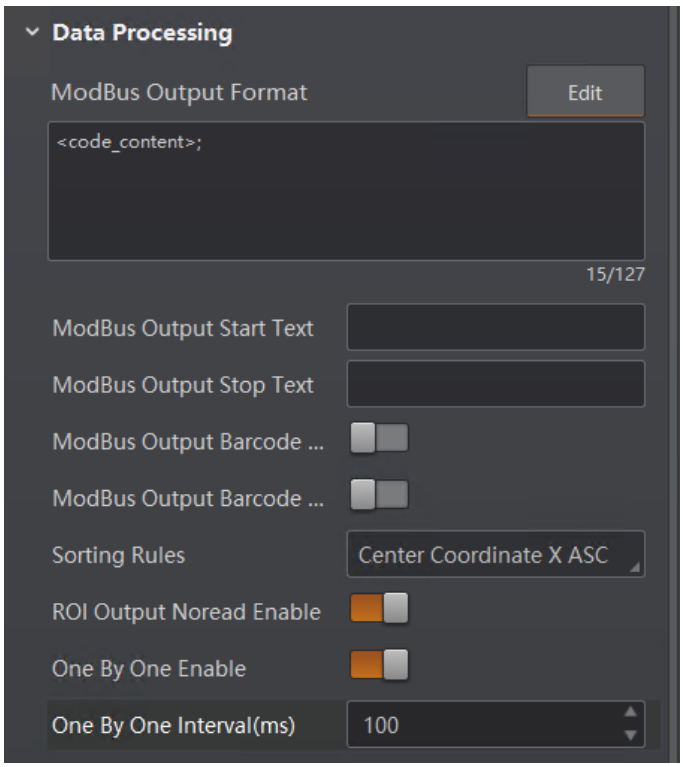

Figure 6-59 Data Processing (ModBus)

- **NoRead Image Index**: Specify the index of the output image if no barcode is read. For example, if you set it to 5, the fifth image will be outputted if there are more than 5 images, or the last image will be outputted if there are less than 5 images.
- **Output Format**: Edit the output format.

Note

- This feature requires device support.
- Click **Edit** to add one or multiple parameter items. You can also enter items in the frame directly.
- Click **Format Output** on the control toolbar to open the Format Output window to set the FTP picture name format quickly.

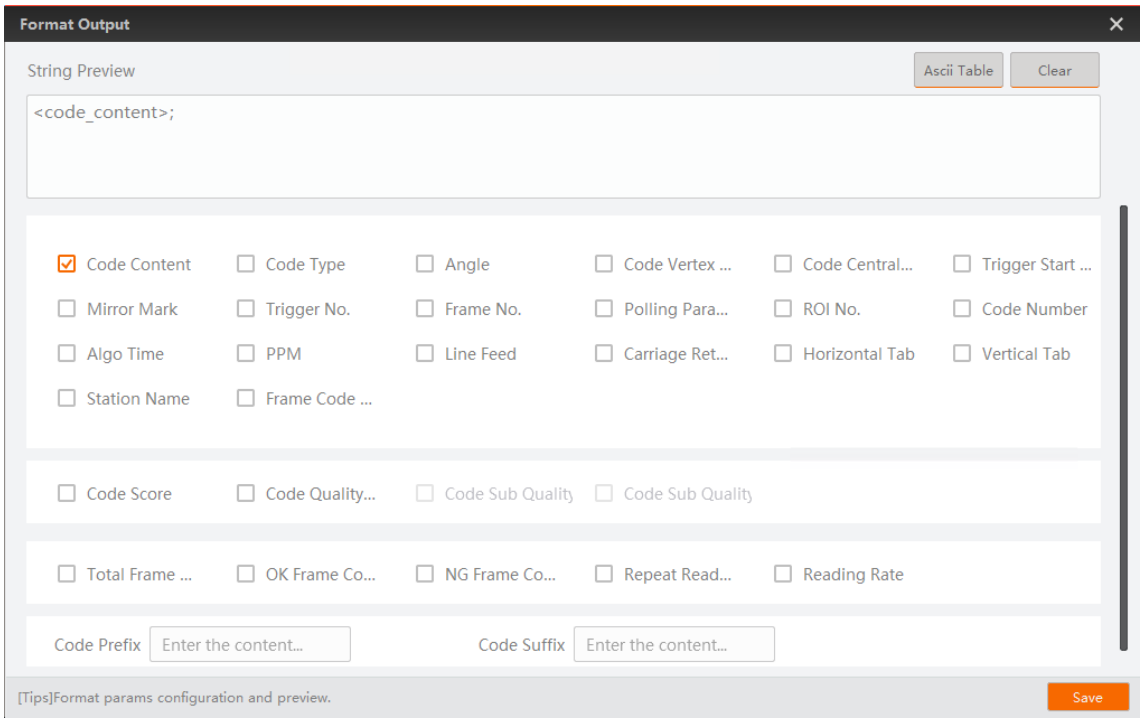

Figure 6-60 Format Output

- **Output Start Text**: The contents of the start part of the data outputted. You can set the contents as desired.
- **Output Stop Text**: The contents of the end part of the data outputted. You can set the contents as desired.
- **Output Barcode Enter Character Enable**: Whether to show input character in the data.
- **Output Barcode Newline Character Enable**: Whether to show new-line character in the data.
- **Sorting Rules**: Specify the sorting rules of output images. Multiple sorting rules are supported.
- **ROI Output Noread Enable**: Enable this to set the default output content if no barcode is read during transmission. Edit the output text in Output NoRead Text..

Chapter 7 Acquisition and Live View

You can start image data acquisition and view the live video of a single machine vision camera or the live video of multiple machine vision cameras simultaneously. And during the live view, you can determine the optimal image quality and perform operations such as recording video, capturing pictures, and zooming in or out.
Acquisition and live view are two different concepts:

Acquisition

The process in which the camera acquires image data.

Live View (or Live Video)

The display of live images by rendering the image data acquired by the camera.

7.1 Acquisition and Live View in 1-Window Mode

If the live view window is under 1-window mode, perform the following steps to start and stop live view.

Steps

Note

For details about how to set the window division mode, see ***Window Division*** for details.

1. Connect camera(s) to the Software.
2. Select **Normal** or **Test** in the upper-left corner as the camera's running mode.

Note

For details about running mode, see ***Running Mode***.

3. Optional: Click / to control the trigger mode of the camera.

Note

You can set trigger source and other related parameters in Input settings. For details, see ***Input***.

4. Click on the control toolbar to start acquiring image data from the camera.

Note

The image may vary with devices with different firmware versions.

5. Optional: Click to stop live view if you only need to acquire streams from the camera. Click to resume live view

Note

After the live view is stopped, the acquisition still goes on.

6. Optional: Click in the lower-right corner of the image to display the thumbnail and click the button again to hide it.
7. Stop acquisition.
   - Click to stop acquiring image data from the currently selected camera.
   - Right-click the camera on the camera list and click **Stop Acquisition** to stop acquiring streams.

Figure 7-1 1-Window Mode

Note

The live view of IDX series code reader will be displayed in multi-channel mode by default. And you can click to switch to 1-channel mode.

7.2 Multiple-Camera Acquisition (and Live View)

You can start and stop the live view of multiple devices in batch. In this mode, you can

view the live videos of multiple cameras simultaneously.

Steps

1. Connect camera(s) to the Software.
2. Click , and then select a multiple-division mode.

Note

For details about how to set the window division mode, see *Window Division* for details.

3. Drag the connected camera(s) from the device list to the display window(s) to view the camera's live video.
4. Click to start acquiring image data from the connected cameras simultaneously.
5. Optional: Drag the tile bar of a display window to adjust the sequence of the windows.
6. Optional: Move the cursor to the lower part of the live video image, and then click on the appeared toolbar to stop live view of the selected camera.

Note

After live view being stopped, acquisition still goes on.

7. Click to batch stop acquisition.

7.3 View Live View in Full Screen

You can view live view in full screen in both 1-window mode or multiple-window mode.
In multi-window mode, you can right-click the image and then click **Full Screen** to enter the full screen mode. Right-click the image and then click **Exit Full Screen** to exit full screen mode. You can also enter the full-screen mode via the keyboard shortcut (**F4** by default).
In 1-window mode, double-click the image to enter or exit the full-screen mode, or enter the full-screen mode via the keyboard shortcut (**F4** by default), or click **View** → **Full Screen** to enter the full screen mode.
For both multi-window mode and 1-window mode, you can press **Esc** on the keyboard to exit the full screen mode.

7.4 Output Data to a Document

If the focus print is enabled, the Software can output code reading results to a document.
Go to **Settings** → **Code Draw**, and then enable **Focus Print**.
Start acquisition, and then open an editable document. The code reading results will be written in the document automatically.
You can go to the Code Draw page to enable the **Focus Print Enter** or **Focus Print Line Feed** to output return symbols or line feeds in the document. See *Code Draw*.

7.5 View Reading History

During live view or acquisition in 1-window mode, you can view the barcode reading history of the device in real time, including the barcode output time, barcode recognized time, barcode type, the barcode content, and the detailed image of the waybill (if supported). For a DM code, you can also view its quality grade, including overall grade and grade based on each quality parameter.

Steps

1. Connect a device to the Software.
2. Optional: You can choose to enable **Auto Path**, which will automatically save the reading history to the default saving path, or enable **Continuous Saving**, which will continuously save the reading history. See details in ***History Export Settings***.
3. Start live view or acquisition in 1-window mode to parse the barcodes.

Note

For details, see ***Acquisition and Live View in 1-Window Mode*** and ***Multiple-Camera Acquisition (and Live View)***.

4. Click on the lower-right to display the History panel.
   You can view the barcode reading history of the device on the History panel, including the No., read time, trigger index, trigger time, output total cost time, cost time, PPM, barcode type, waybill cutout, barcode content, code length, overall grade, code score, and lost packets.

Note

You can right-click on the column item to customize the items to be displayed.

Output Total Cost Time

The total time cost to acquire images and output barcode information (unit: ms).

Cost Time

The time cost to read and get information of a barcode (unit: ms).

Note

The parameter should be supported by the device.

PPM

Pixels per module. It equates to how many pixels can be laid across each barcode module.

Note

The parameter should be supported by the device.

Barcode Type

The OCR reading information is displayed in this column.

Code Score

The score of 2D code quality rating. See ***2D Code Algorithm*** for instructions on enabling code quality rating.

Note

Right-click the column name of the History or click ☰ on the top right of the History to configure columns to display.

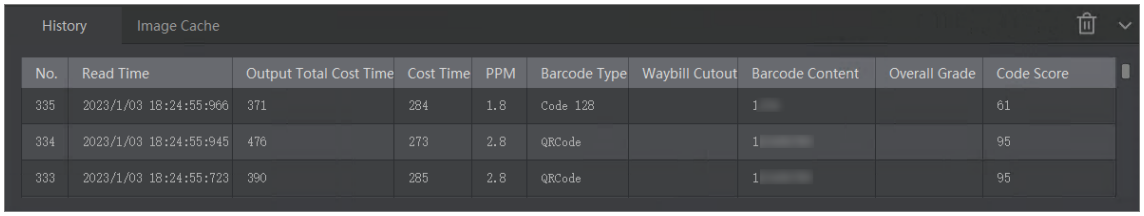

Figure 7-2 History Panel

5. Perform the following operations if required.
   - **View Cutted-out Waybill Image**: Click View in the Waybill Cutout column to view cutted-out waybill image when Waybill Cutout is enabled.

     Note

     - The function should be supported by the device.
     - For details about enabling Waybill Cutout, see ***Enable Waybill Cutout***.

   - **Export Reading History**: Stop live view or acquisition, and then click **History Export** on the top to save the history in the local PC.

     Note

     - The default saving path is *C:/Users/The Current System Account/IDMVS/Data/History*.
     - The default name of the exported file is "Device Model (serial No.)"; And the default file format is CSV.
     - You can set the saving path and format for the exported file. For details, see ***History Export Settings***.
     - You can enable **Continue Save** in the History Export setting panel. For details, see ***History Export Settings***. After it is enabled, the reading history will be continuously saved to the same file after you click once.

   - **Clear Reading History**: Click to clear all reading history.
   - **View Quality Grade of DM Code**: Click the overall grade, which is graded based on

ISO/IEC 15415 or ISO/IEC TR 29158, in the Overall Grade column, to view the grade of each quality parameter.

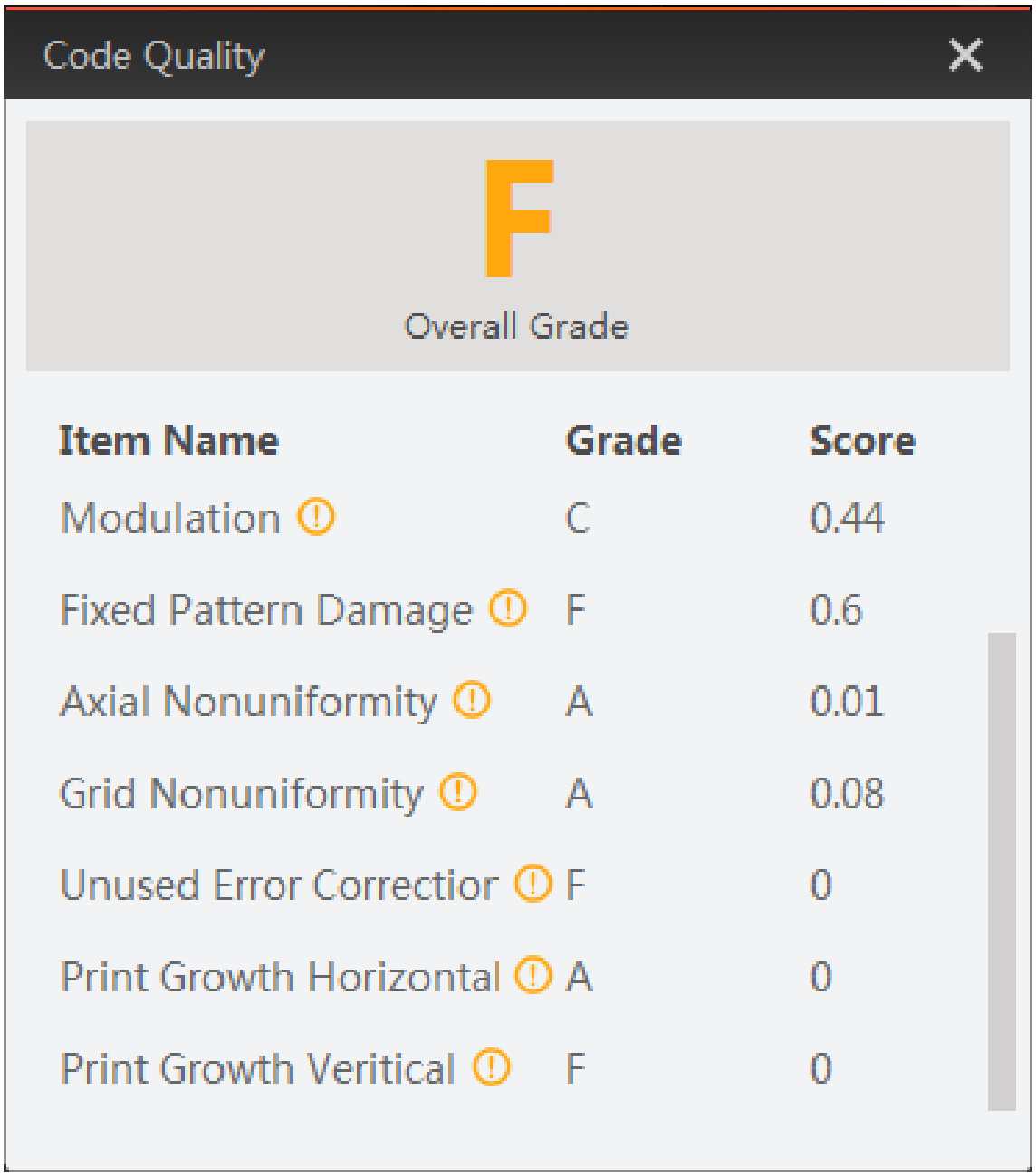

Figure 7-3 Code Quality

Note

- The function should be supported by the device.
- For details about changing ISO standards on code quality rating, see *2D Code Algorithm*.
- The overall grade is determined by the lowest grade of the quality parameters (excluding Print Growth Horizontal and Print Growth Vertical) in the table below.

Quality ParameterDescriptionDecodeEvaluate whether decoding is possible or not for the DM code. The greater the possibility, the higher the grade will be. Symbol ContrastEvaluate the difference between the maximum brightness value and maximum darkness value in the DM code. The bigger the difference, the higher the grade will be. ModulationEvaluate the variation degree in cell brightness. The parameter is usually used to evaluate if there're stains on the DM code. If there're stains, the variation degree will be low, which results in low grade. Fixed Pattern DamageEvaluate the intactness of the finder bar (i.e., the L sides of the DM code), or clock pattern (the dotted sides). The more intact the finder bar or clock pattern, the higher the grade will be.Axial Non-uniformityEvaluate the distortion degree in vertical and horizontal size of the DM code. The lower the distortion degree, the higher the grade will be. Grid Non-uniformityEvaluate the biggest deviation from the grid. The bigger the deviation, the lower the grade will be.Unused Err. CorrectionEvaluate the amount of available Error Correction at the time of decoding. The more available Error Correction, the higher the grade will be.Print Growth HorizontalEvaluate the print deviation (Overprint or Underprint) of the DM code in the horizontal direction. The less the deviation, the higher the grade will be.

NoteThe grade based on this parameter is not included in the overall grade.

Print Growth VerticalEvaluate the print deviation (Overprint or Underprint) of the DM code in the vertical direction. The less the deviation, the higher the grade will be.

NoteThe grade based on this parameter is not included in the overall grade.

7.6 Image Cache

During live view, you can view the images temporarily saved in the cache list.
You can click **Image Cache** to view these images under different polling parameters. For setting polling parameters, see details in ***Set Polling***.
You can also set **Cache Capacity** to determine the maximum number (up to 10) of images saved in the cache list. When the image number reaches the upper limit, the earliest saved image will be overwritten, and the newly saved image will be displayed as the first image.
After you stop live view, you can click an image to view the image and related code reading information in the live view window.

Note

If you switch camera or channel, the image saved in the cache list will be cleared.

Figure 7-4 Image Cache

7.7 Statistics

During acquisition or live view, you can view the reading status of the device, such as the barcode-read rate.

Steps

1. Connect device(s) to the Software.
2. Start acquisition and live view.
3. Click **Statistics** on the Control Toolbar to open the Statistics window.

Read Code

The number of the images on which the barcodes are read by the device.

NoRead Code

The number of the images on which the barcodes are NOT read by the device.

Total Code

The total number of the code images.

Read Rate

The barcode-read rate. Formula: Read Rate = Read Code Images / Total Code Images.

Line Graph of Read Rate

The line graph that shows the barcorde-read rate.

Note

Scroll up the mouse on the line to magnify it.

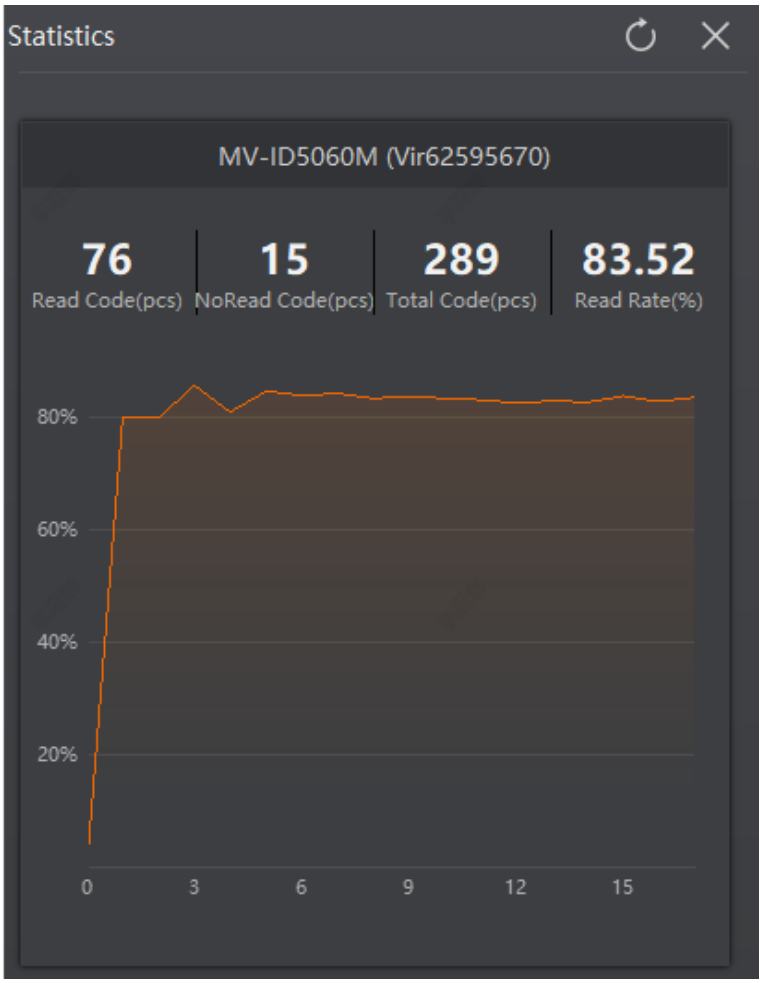

Figure 7-5 Code Reading Statistics

4. Optional: Click to clear the history statistics and restart the statistics.

7.8 Window Division

Three default window division modes are provided in Custom Division module, i.e., 2 X 2 (4-Window), 3 X 3 (9-Window), and 4 X 4 (16-Window). You can add the three modes to the Window Division panel, or merge (or split) windows based on the three modes.

Steps

1. Click to display the window division panel.

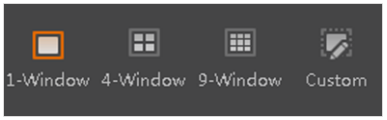

Figure 7-6 Window Division

2. Click **Custom** to open the Custom Division window.

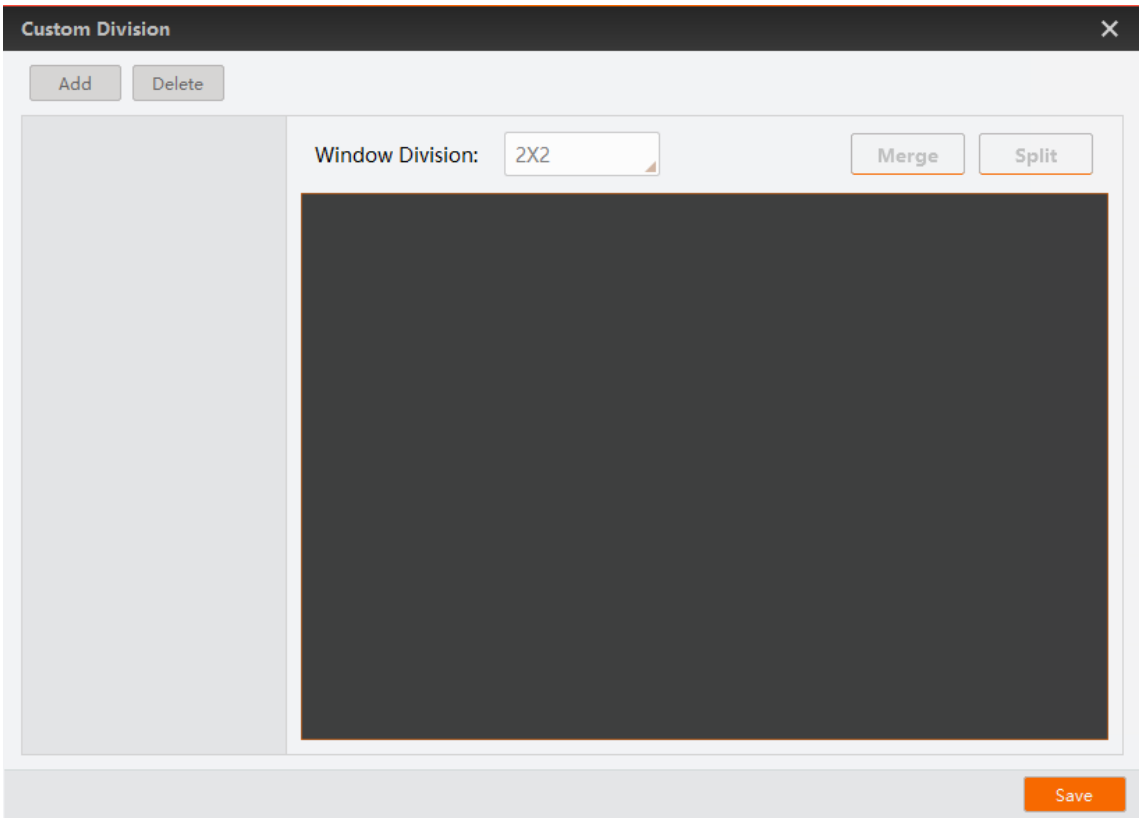

Figure 7-7 Custom Division

3. Click **Add** to open the following window.

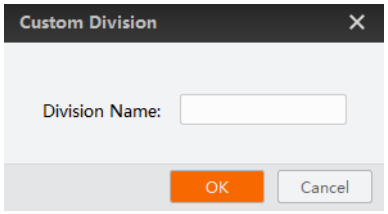

Figure 7-8 Division Name

4. Create a name for the window division mode and then click **OK**.
5. Select a window division mode in the Window Division drop-down list.
6. Optional: Merge or split windows.
   1) Select windows.

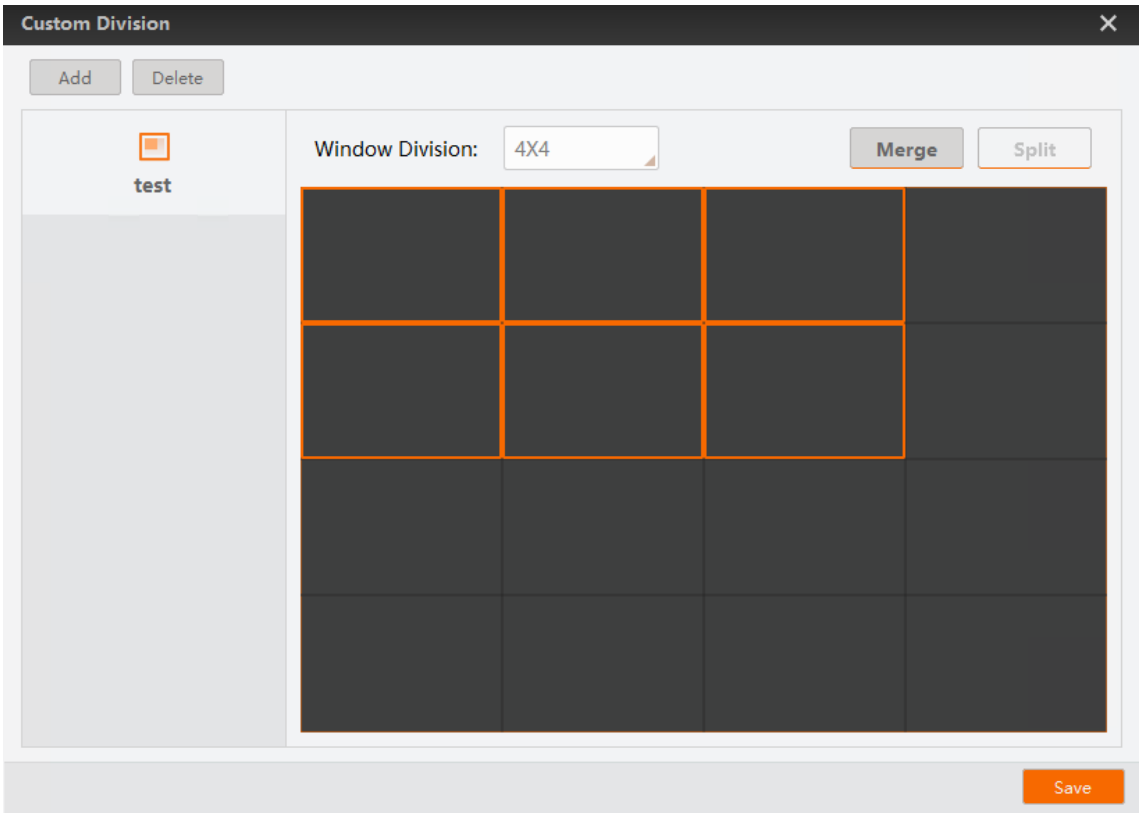

Figure 7-9 Select Windows

2) Click **Merge** to merge the selected windows into a larger one.

Note

You can merge the selected windows only when the combination of the selected windows is in rectangle shape.

3) Optional: Select the merged window and then click **Split** to split it into the original number of windows.

7. Click **Save**.

The customized window division mode will be displayed on the window division panel.

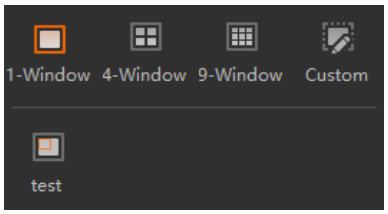

Figure 7-10 Custom Division Added

7.9 Capture and Recording

During live view, you can capture a picture and continuously capture pictures (or record video files).

Steps

1. Start live view.
2. Perform the following operations.

Click to capture a picture and save the picture to the local PC.Click to continuously capture pictures of the live view, and click the icon again to stop capturing.

Note

During capturing, the number of the captured pictures will be displayed in real time, and you can click at the upper-right side of the display window to view the buffer usage, number of frame processed and frame dropped.

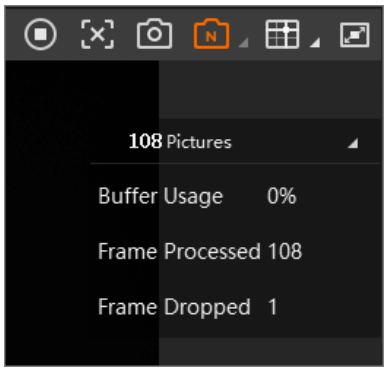

Figure 7-11 Continuous Capture Status

Click (beside) and then click to start recording. Click the icon again to stop recording.

Note

During recording, the recording time will be displayed, and you can click at the upper-right of the display window to view the buffer usage, number of frame processed and frame dropped.

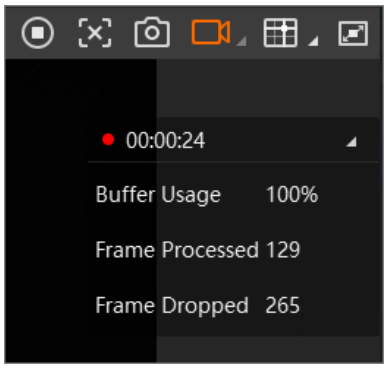

Figure 7-12 Recording Status

A prompt will pop up once you finish capturing picture(s) or recording.

3. Optional: Click **View** on the prompt to view the picture(s) or video file(s) in the saving path.

Note

You can set the saving path of the captured picture(s) and recorded video file(s). You can also set other parameters for recording or continuous capture. See ***Capture and Recording Settings*** for details.

7.10 Set Cross Line

During live view, you can display a cross line on the live view image to adjust the position of the object in the view.

Steps

The function is only available during the live view of a single camera under 1-window mode.

1. Select a camera and start the live view.

Note

See ***Acquisition and Live View in 1-Window Mode*** for details about how to start the live view.

2. Click to display the cross line on the live view window.
3. Click (next to) to open the settings window.

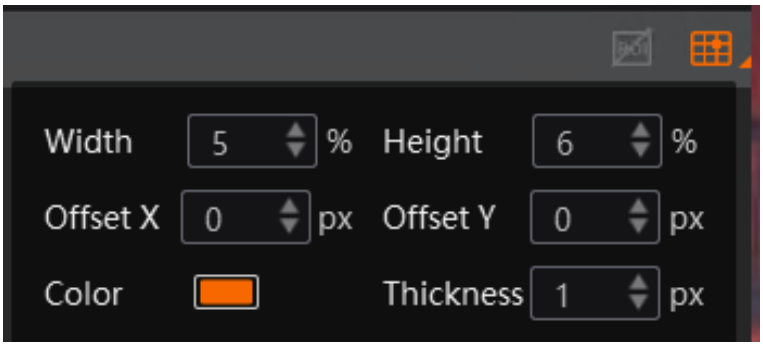

Figure 7-13 Cross Line Settings

4. Set the cross line parameters, including width, height, offset X, offset Y, color, and thickness. The cross line will change simultaneously as you change the parameters.

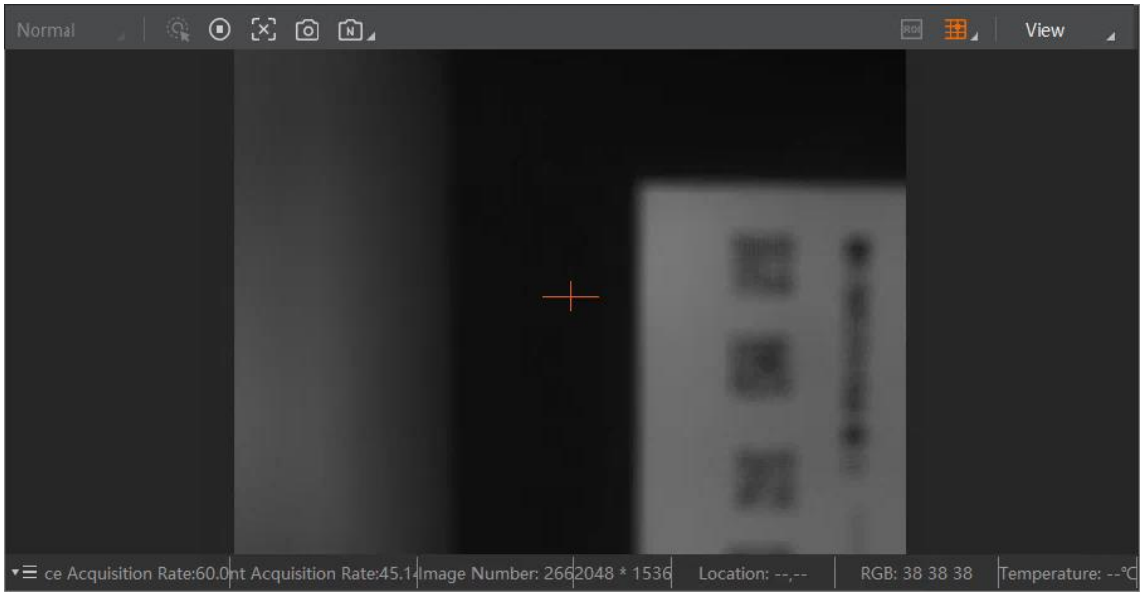

Figure 7-14 Cross Line

7.11 Acquisition Status

During acquisition or live view in 1-window mode, you can view the acquisition status of the device(s) in real time at the bottom of the live view window, including the acquisition rate, image number, resolution, location, and RGB.

Steps:

1. Start live view of a device.

Note

See *Acquisition and Live View in 1-Window Mode* or *Multiple-Camera Acquisition (and Live View)* for details about how to start the live view.

2. Click in the lower-right corner of the live view window to open the parameter panel.

3. Check the checkbox(es) to select the parameter(s) to be displayed on the status bar.

Algorithm rate

The code reading frame rate of the algorithm embedded in the camera.

Transmission rate

The frame rate of outputting code reading results via protocols.

Image Number

The number of collected images.

Resolution

The resolution of the current image.

Location

Move the cursor on the image to show the location of the cursor (unit: pixel). You can use the function to view the locations of the barcodes.

RGB

Move the cursor on the image to show the RGB value of the spot where the cursor locates. You can use the function to view the color of the barcodes.

Figure 7-15 Acquisition Status

7.12 More Functions

During live view, you can perform other operations such as digital zoom and rotating image. You can perform more functions by selecting the function from the drop-down list in the upper right corner.

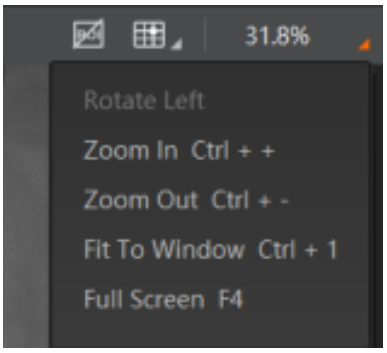

Figure 7-16 More Functions in Live View

- **Digital Zoom**: Right-click the image and then click **Zoom in** / **Zoom out**, or select **Zoom in** / **Zoom out** from the drop-down list in the upper-right corner to zoom in or zoom out the image.
- **Adjust Image Window Size**: Right-click the image and then click **Fit to Window** to fit the size of the image window to that of the display window or click **Actual Size** to set the size of the image window to its actual size. You can also select **Fit to Window/Actual Size** from the drop-down list in the upper-right corner or press shortcut keys to adjust the image window size.
- **Rotate Image**: Right-click the image and then click **Rotate Left/Rotate Right** to rotate the image to the left/right. You can also select **Rotate Left** / **Rotate Right** from the drop-down list in the upper-right corner to rotate the image to the left/right.
- **Display ROI/Close ROI**: Click / on the upper right to display or close the algorithm ROI in live view.

Note

You can draw algorithm ROI in the Algorithm Settings. For details, refer to *Algorithm ROI*.

Chapter 8 Menu Bar

The menu bar provides functionality such as software settings, view settings, tools (IP configurator and firmware updater), and Help.

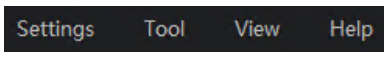

Figure 8-1 Menu Bar

8.1 Settings

You can configure the Software settings, including general parameters, capturing/recording parameters, network parameters, buffer, history export, code draw, shortcut parameters, and permission.

8.1.1 General Settings

Click **Settings** → **General** to enter the following page.

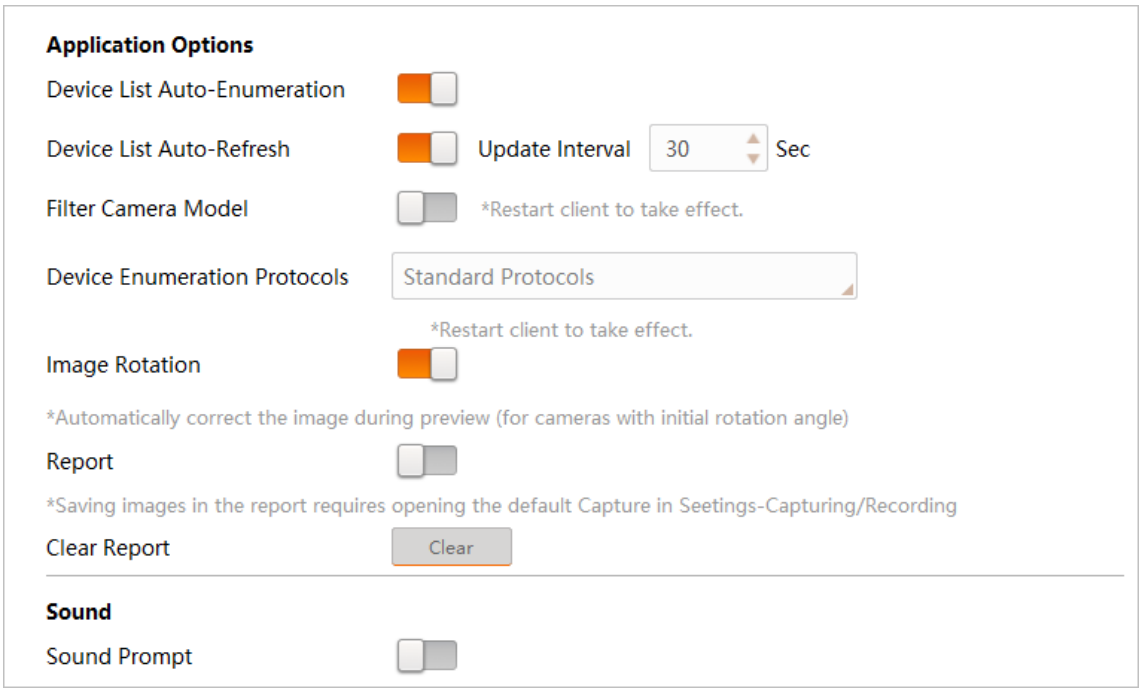

Figure 8-2 General Settings

Application Options

Device List Auto-Enumaration

If enabled, the Software will enumerate the camera list (device list) automatically.

Device List Auto-Refresh

If enabled, the Software will refresh the camera list (device list) automatically. You can set the update interval (unit: second, range: 1 to 120). The default value is 15.

Note

Camera Link camera does not support device list auto-refreshing.

Filter Camera Model

If enabled, only specific camera models will be displayed. You can set the **Device Type Filtering Tag** to filter devices with certain name format.

Note

You need to restart the Software to take the settings into effect.

Device Enumeration Protocols

Select protocols to enumerate the devices.

- **Standard Protocols**: Enumerate devices via GVCP (GigE Vision Control Protocol).
- **Private Protocols**: Enumerate devices via private protocols.
- **Standard and Private Protocols**: Enumerate devices using standard protocols and private protocols.

Note

You need to restart the Software to take the settings into effect.

Image Rotation

If this function is enabled, when a code shows obliquely, the Software will adjust the image of the code displayed in the live view window.

Note

This function should be supported by the device.

Report

If this function is enabled, the codes read by the device will be automatically stored in the database. Click **Clear** to clear the database. On the control toolbar, click to open the report of code reading. Click **Select A Database** and select a file (By default, the path is "..\Web\QualityReport\client") to view the report.

Note

The display experience may vary by different browsers. You can try other browsers if you failed to open the report.

Sound

Enable this function, and select the sounds to be displayed when a code is read successfully or when a code failed to be read.

Note

You should upload a file in .wav format.

Click **OK** to finish setting.

8.1.2 Capture and Recording Settings

You can set the recording parameters and capture parameters, including the saving path of the captured pictures and recorded videos, picture format, video format, etc. You can also set saving path and file name prefix for the cutted-out waybill image.

Steps

For more details about recording, see *Capture and Recording*.

1. Click **Settings** → **Capturing/Recording**.
2. Edit the parameters.

Select Directory

Saving Path

Click to select the saving path for the recorded video files and captured pictures.

Auto Save

Automatically save the recorded the video files or the captured pictures to the selected saving path during live view.

Note

- See *Acquisition and Live View* for details about live view.
- See *Capture and Recording* for details about recording and capture during live view.

Figure 8-3 Select Directory

Capturing

Run Mode

You can select **Test**, **Normal**, and **Raw**. For details about the three modes, see *Running Mode*.

Note

- If you select **Test** or **Normal**, the picture format can be JPG, BMP, or RAW. But the picture formats vary by different firmware versions. For some firmware versions, the picture format will be JPG by default and cannot be changed.
- If you select **Raw**, the default picture format will be BMP, and you can change it to JPG or RAW.

Picture Format

Select the format of the captured pictures from BMP, RAW, and JPG.

Note

You can configure picture quality only when you select JPG.

Save Type

Set the type of saved pictures.

Default

Save the original pictures.

Render

Save the rendered pictures. The rendered pictures contain the recognized content of the barcode in code reading frames.

Default + Render

Save the original pictures and the rendered pictures.

Saving Strategy

Set the picture saving strategy.

All

Save all the captured pictures.

OK

Save the captured pictures with the barcode reading results. The pictures will be saved in the OK folder under the saving path you set.

NG

Save the captured pictures without the barcode reading results. The picture will be saved in the NG folder under the saving path you set.

Picture Quality

Select the picture quality from Normal, Better, and Best. You can also drag the slider to customize the compression ratio.

Note

For the picture quality, the larger the compression ratio is, the better the picture quality will be. The compression ratio of Normal level ranges from 1 to 40, the Better level ranges from 41 to 70; and the Best level ranges from 71 to 100.

File Naming Rule

Custom the naming rule of the captured pictures.

Continuous Capture

Set parameters for continuous capture.

Capture by Frame

Set the interval (in frame) for capture and the threshold to stop capturing. For example, you can enable the Software to capture at an interval of 2 frames and stop capturing after 1000 frames.

Capture by Time

Set the interval (in minute) to capture and the threshold to stop capturing. For example, you can enable the Software to capture at an interval of 1minute and stop capturing after 5 minutes.

Default Capture

If enabled, the images in continuous capture will be saved by default; if disabled, you need to manually save the images.

Auto Clean Image

Set whether to auto clean the images. If enabled, you need to set the maximum saving time (unit: day, range: 1~30). The images will be deleted after the saving time.

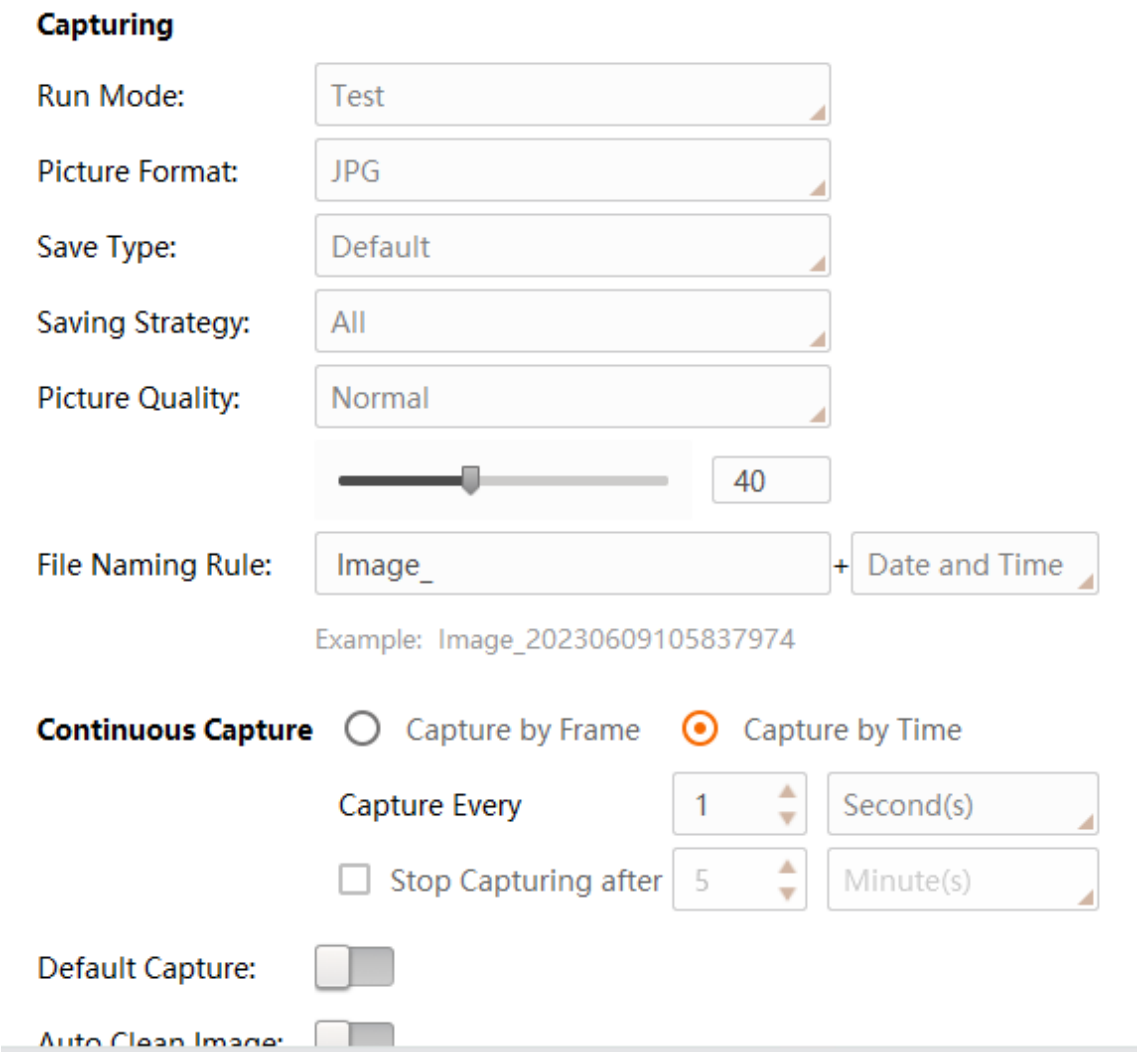

Figure 8-4 Capturing Settings

Recording

Video Format

Set the video format of the recorded video files.

Note

If you select AVI as the video format, you can configure the following two parameters.

Video Quality

Set the video quality to Normal, Better, or Best. The better the video quality, the more image details can be displayed. You can drag the slider to customize the compression ratio.

Playback Speed

Set the playback speed to original frame rate or set a custom speed.

Video Naming Rule

Customize a naming rule for the video files.

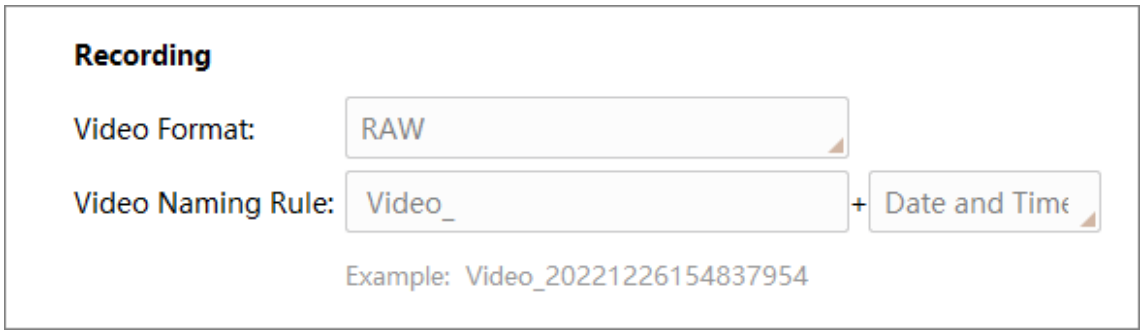

Figure 8-5 Recording Settings

Waybill Cutout

Saving Path

Click to select the saving path for the cutted-out waybill images.

File Name Prefix

Set the prefix for the name of the cutted-out waybill image.

Note

Make sure you have enabled waybill cutout. For details, see ***Waybill Cutout Settings***.

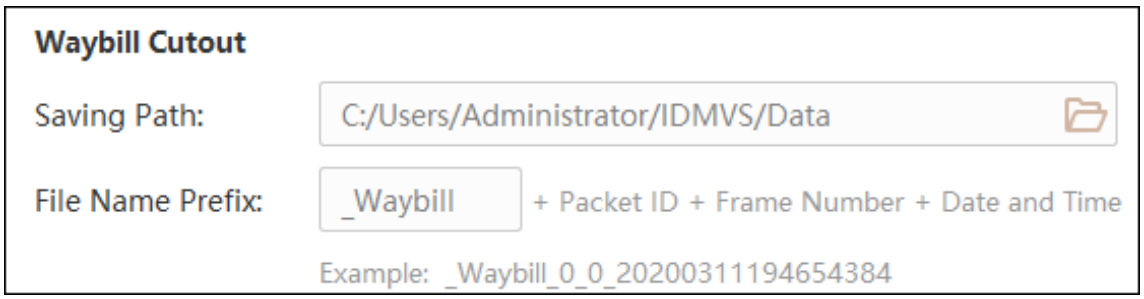

Figure 8-6 Waybill Cutout

3. Click **OK**.

8.1.3 Network Settings

You can enable automatic network detection to ensure the fluency of image acquisition. Click **Settings** → **Network** to enter the following page.

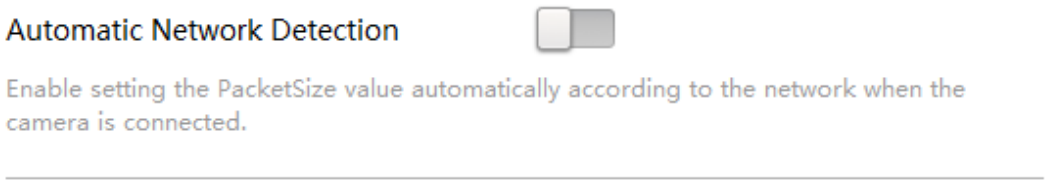

Figure 8-7 Network Settings

Enable or disable automatic network detection, and click **OK** to save the settings.

Note

Automatic network detection is disabled by default.

8.1.4 Buffer Settings

You can set the buffers for capture and recording to avoid frame dropping and get as many images as possible during capture and recording.
Click **Settings** → **Buffer** to enter the following page.

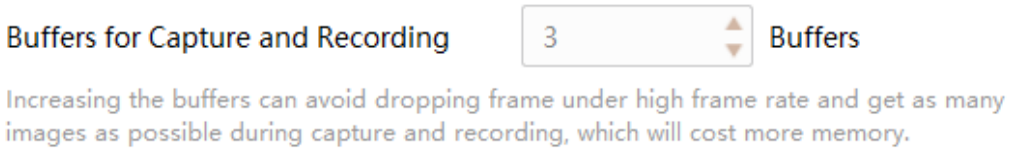

Figure 8-8 Buffer Settings

Set the buffer quantity used for capturing and recording according to the actual needs to avoid dropping frame, and click **OK** to save the settings.

8.1.5 History Export Settings

You can set the saving path and saving number of the barcode reading history, and set the format of the barcode reading history file. You can also enable the Software to continuously save the barcode reading history.

1. Click **Settings** → **History Export** to enter the following page.

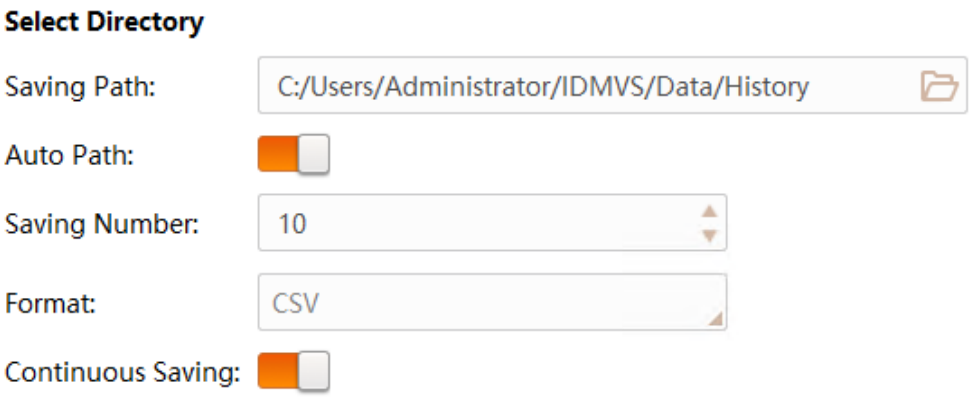

Figure 8-9 History Export Settings

Set the parameters.

- **Saving Path**: Click to select the saving path for the barcode reading history.
- **Auto Path**: Automatically save the barcode reading history to the default saving path.
- **Saving Number**: You can set the maximum saving number of the history record file for the saving path. For example, if the saving number is 10, and there are already 10 files of barcode reading history saved in the saving path, the latest 10 files of reading history records will replace the previous 10 files.

  Note

  The saving number can be no more than 100, 000.

- **Format**: Set the format (CSV or XLSX) of the history file.

  Note

  Continuous saving is supported only when the file format is CSV.

- **Continuous Saving**: If enabled, once a new record of reading history is generated, the software will automatically save the file of barcode reading history to the selected saving path. Otherwise, you can only manually save one file of barcode reading history at one time. For details about reading history, see *View Reading History*.

2. Click **OK** to save the settings.

8.1.6 Code Draw

You can enable the Software to display a rectangle on the recognized bar code and the content of the bar code on live video image. You can also enable the Software to display the content of the bar code on an editable file.

Code Draw

Note

For details about live view, see *Acquisition and Live View*.

Click **Settings** → **Code Draw** to enter the following page.

- **Draw Code Rect**: If enabled, a rectangle will show on a barcode in the image.
- **Draw Code**: If enabled, the content of the barcode will appear in the lower-left of the image.
- **Font Size**: Set the font size for the content of the bar code.
- **Draw Color**: Set color for the rectangle and the content of the bar code. You can click ⊞ to add more colors.

  Note

  You can hover the cursor onto a color and then click the appeared ⊗ to delete the added color.

-
- **Code Len**: Select a maximum code length according to the length supported by the device.

  Note

  If the value is smaller than the length supported by the camera, the code will be displayed according to the value you select.

After enabling Draw Code Rect and Draw Code, the live video image will be displayed as follows:

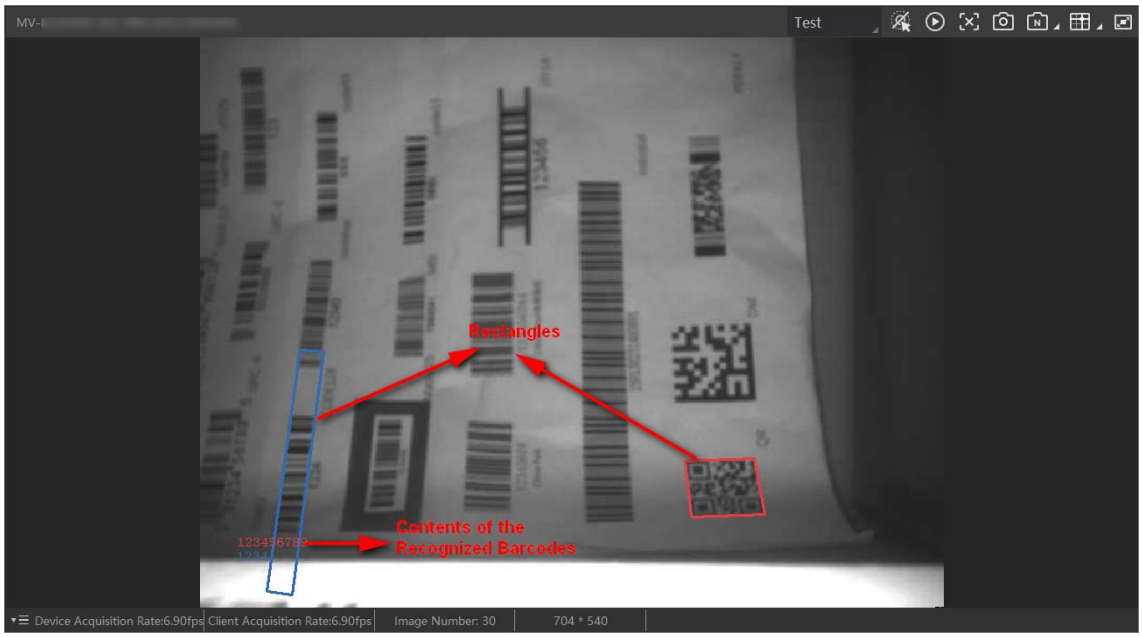

Figure 8-10 Code Draw Image

Focus Print

Focus Lock

If you enable this, the cursor will not move when moving the mouse.

Focus Print

If enabled, the content of the bar code will appear on an editable file.

Code Seperation

Customizing the separator between two bar codes or the prefix/suffix of bar codes.

No Read String

Customize the text that will be output when no code is read.

Focus Print Enter

Add an Enter at the end of the content of the bar code.

Focus Print Line Feed

Add a Line Feed at the end of the content of the bar code.

8.1.7 Keyboard Shortcut Settings

You can configure keyboard shortcuts for some frequently-used functions, such as connecting/disconnecting camera and starting and stopping acquisition.
Click **Settings** → **Shortcut** to enter the shortcut settings page. Select an operation, and then press two or more keys at the same time to set shortcut for the operation.

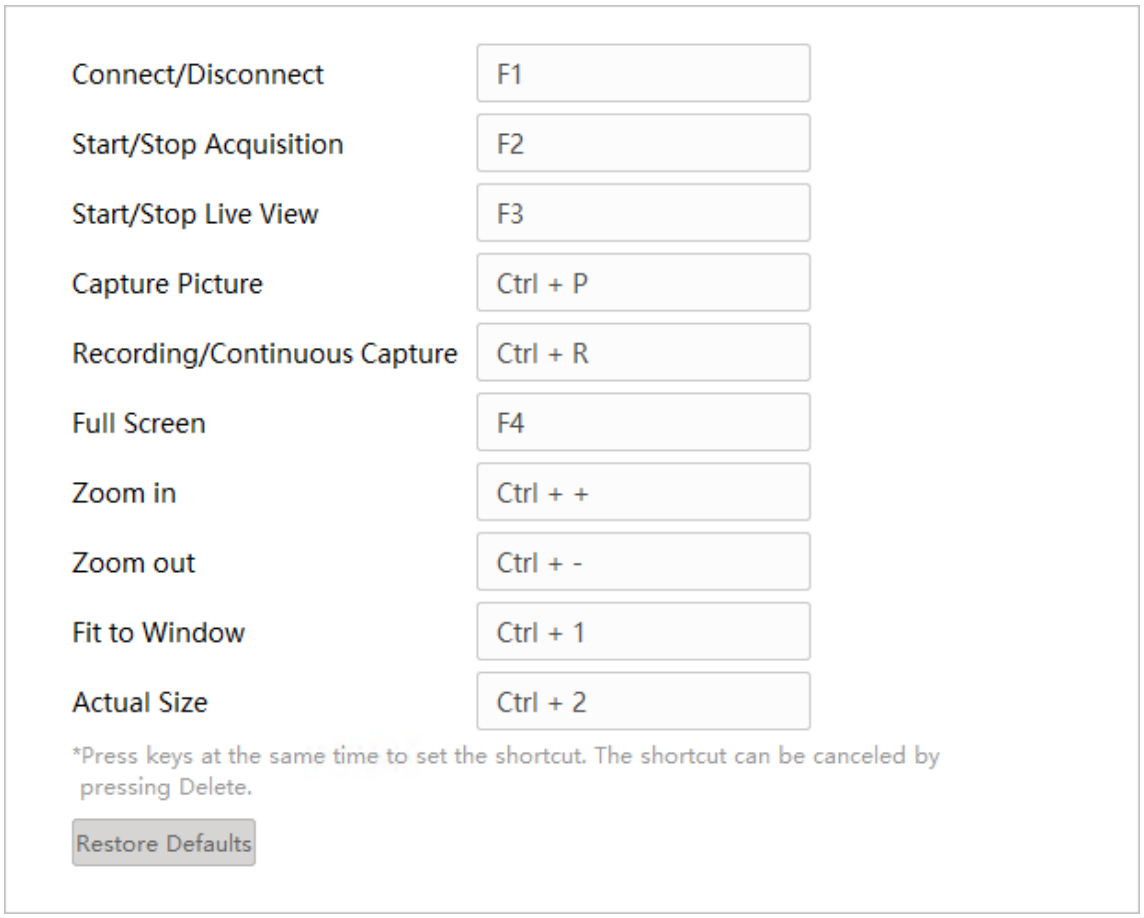

Figure 8-11 Keyboard Shortcut Settings

(Optional) Click **Restore Defaults** to restore the shortcut settings to default.
Click **OK**, and the shortcuts will be displayed on the right-click menu and hover tips of the configured functions.

8.1.8 Permission Management

After setting a password and relaunching the Software, you will be asked to enter the password before entering the main interface.

Steps

1. Click **Settings** → **Permission** to enter the following page.
2. If you want to set a password to log in to the Software, switch on **Enable** to show the window for setting a password.

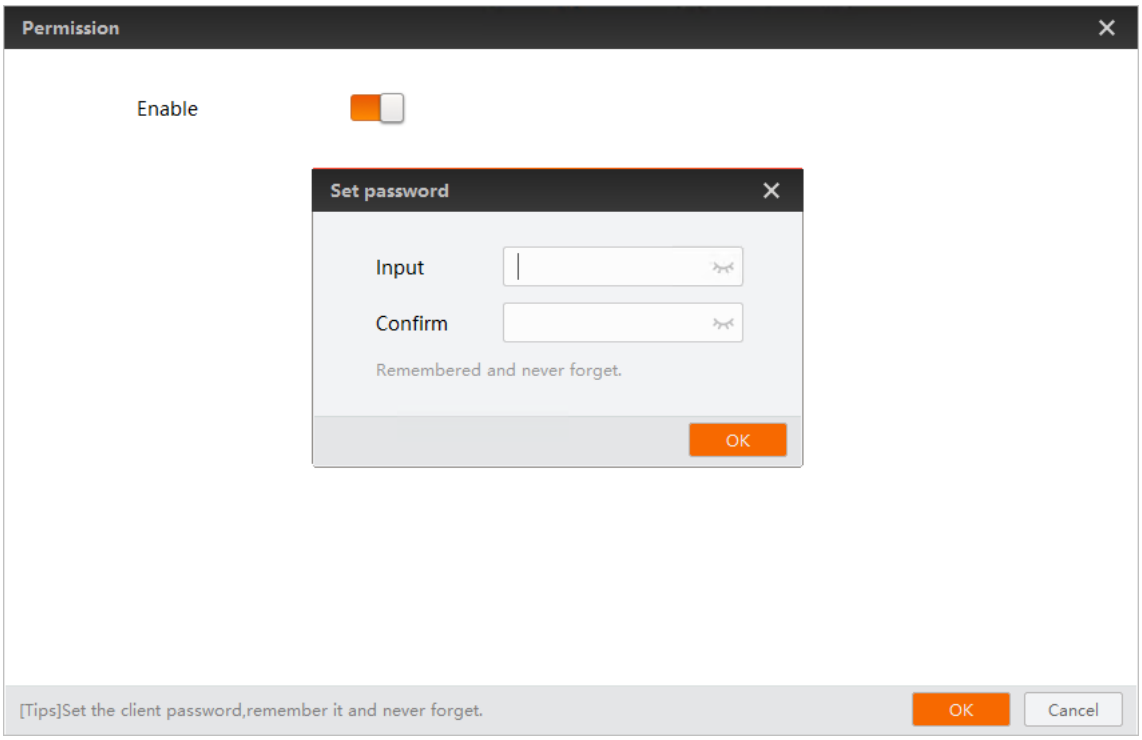

Figure 8-12 Enable Permission Settings

3. Enter the password, and confirm the password.

Note

The password should contain 1 to 8 characters. Only English letters, digits, and special characters !@#$_ are allowed.

After setting the password, each time when you launch the Software, you need to enter the password to log in.

4. Optional: Click **Modify**, and enter the old password, new password, and confirm password to change the login password.

Note

When modifying the password, ensure that the account has been registered and the user name is correct.

5. Click **Assignment** on the right of the **Role**.
   1) Enable the **Operator**.
   2) Click **Permission Settings**, and then check permissions for the operator.

Table 8-1 Permission Introduction

Role	Permission
Manager	All permissions of the Software, and configuring permissions of the operator.

Role	Permission
Operator	Cannot configure the permission.

3) After selecting and saving the permission, enter the password in the **Setting Password** text bar.
4) Click **OK**.

6. Enable **Lock client** and select a timeout duration.

Example

If you select 15 min, the Software will be locked if there are no operations on the Software for 15 minutes.

Note

On the main interface, click on the top right, and then the window for locking the Software will pop up, and you can lock the Software. Then the will turn to .

7. Switch off **Enable** and enter the password to disable the function of permission verification, so that you will not be required to enter the password each time you launch the client, and the Software will not by locked. Meanwhile, all the account information will be cleared.

Note

Only the administrator has the permission to cancel logging in with a password.
If you uninstall the Software, you can choose to save the user data, and the next time when you install and launch the Software, you can log in with the previous account(s).

8.2 Tool

The Software provides multiple tools for camera configuration and management, such as IP configurator, firmware updater, code reader, FTP server, and SDK log viewer.
The following table shows the brief description of these tools.

Table 8-2 Tool Description

Tool	Description
IP Configurator	Configure the IP address of a code reader. See *IP Configurator* for details.
Firmware Updater	Update the firmware of code readers. See *Firmware Updater* for details.
File Access	Batch import feature configuration file from the local PC to multiple devices. See *File Access* for details.

Tool	Description
Import/Export Features	Import device features to the Software or export features of devices added to the Software to the PC. See *Import/Export Features* for details.
SDK Log Viewer	View SDK logs. See *SDK Log Viewer Tool* for details.
FTP Server	Used for transmitting files between devices and the server. See *FTP Server*.
ID Camera Log Collection	Used for collecting logs generated by devices. See *Log Collection Tool*.
Reading Training Tool	Simulate the code reading environment with local images, which helps test reading results thereby determining the optimal algorithm settings for your code reading applications. See *Reading Training Tool* for details.
Virtual Camera	Used for testing developed Software when users have no real device. See *Virtual Camera* for details.
Driver Installation Tool	Used for managing the drivers needed by the Software.
NIC Configurator	Used for configuring properties for the network interface cards.

8.3 View

You can adjust the image quality of the live video by setting the display mode and rendering engine.

Note

The settings will be effective for all cameras on the Software.

Display Mode

You can click **View** → **Display Mode** and then select **30 fps** or **60 fps** to set the display mode to 30 frames per second or 60 frames per second. The latter provides better image quality.

Rendering Engine

You can click **View** → **Rendering Engine** to set the rendering engine mode to D3D or GDI.

Note

- By default, the rendering engine mode is set to GDI, which is applicable to all PCs for it does not have requirements for the performance of the graphics card.
- The image quality of D3D mode is better than that of GDI mode, but D3D mode is only

applicable to the PC which has been installed with graphics driver (and the available memory of the graphics card should be more than 1 GB).

8.4 Help

You can change language settings, view user manual, and view version information about the Software.

Click **Help** → **Language** to change the Software language.
Click **Help** → **User Manual** to view the user manual of the Software.
Click **Help** → **Communication Matrix** to view the communication matrix of the Software.
Click **Help** → **ASCII Table** to view the ASCII table.
Click **Help** → **Development** to access the SDK documents of the Software.
Click **Help** → **About** to view the version information of the Software.

Chapter 9 Tool Application

The Software provides multiples tools for the management, configuration, and maintenance of cameras, such as IP Configurator (for editing camera IP addresses), Log Collection Tool (for collecting camera logs), Virtual Camera (for testing reading results), etc.

9.1 IP Configurator

The online GigE Vision cameras in the same local subnet with the PC on which the Software runs will be enumerated in the device list. You can configure the IP addresses and other network parameters of these cameras.

Note

You can move the cursor to **GigE** and then click to manually refresh the cameras.

You can view the camera status on the Status column of the device list. If the camera status is free or unreachable, you can edit its network parameters including IP address.

Free

The camera is available and you can edit its IP address.

In Use

The Software or other processes are accessing the camera. You need to stop the live view and disconnect the camera, or terminate other processes to access the camera.

Unreachable

The camera is unreachable due to one of the following two reasons:

- The network of the camera is abnormal. Check the camera network settings.
- The camera is on the same subnet with the PC on which the Software runs, but NOT in the same network segment. You should modify its IP address to the same network segment with the PC to make the camera available for connection and use.

You can also click to select camera information (model name, device user ID, status, etc.). The selected item will be displayed on the camera list.

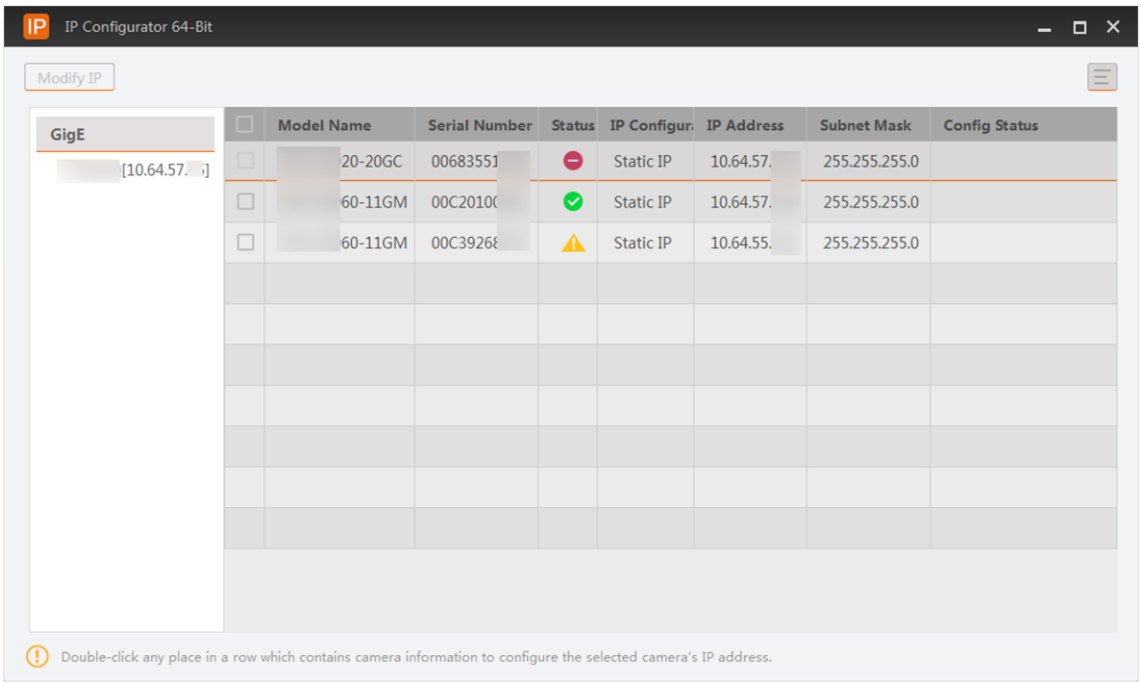

Figure 9-1 IP Configurator

9.1.1 Edit IP Address of a Single Camera

You can modify the IP address of a single camera if the camera status is Free or Unreachable.

Steps

1. Select a network interface.
2. Double-click any place in the camera row to open the Modify IP Address window.
3. Select the **Static IP**, **DHCP**, or **LLA** as the IP type.

Note

You can change the IP type only when the camera status is Free. And if you change the IP type, the camera will be reset to its power up state.

Static IP

For setting the IP type as Static IP, you can modify the IP address, subnet mask, and default gateway.

DHCP

The camera is set to automatically obtain an IP address. This means that the IP address will dynamically change (within a range) every time the camera or computer is restarted.

Note

- If the IP addresses of your PC and camera are both static but they are not in the same IP segment, you need to change the camera IP address to a dynamic IP address.
- If you enter restricted IP types including D type (from 224 to 239), E type (from 240 to 254), the IP addresses starting with 127 or 255, or IP addresses with incorrect IP address formats, you will not be able to access the devices.

LLA

The camera uses a default IP address from the link-local address block. Link-local addresses for IPv4 are defined in the address block 169.254.0.0/16 in CIDR notation. In IPv6, they are assigned the address block fe80::/10.

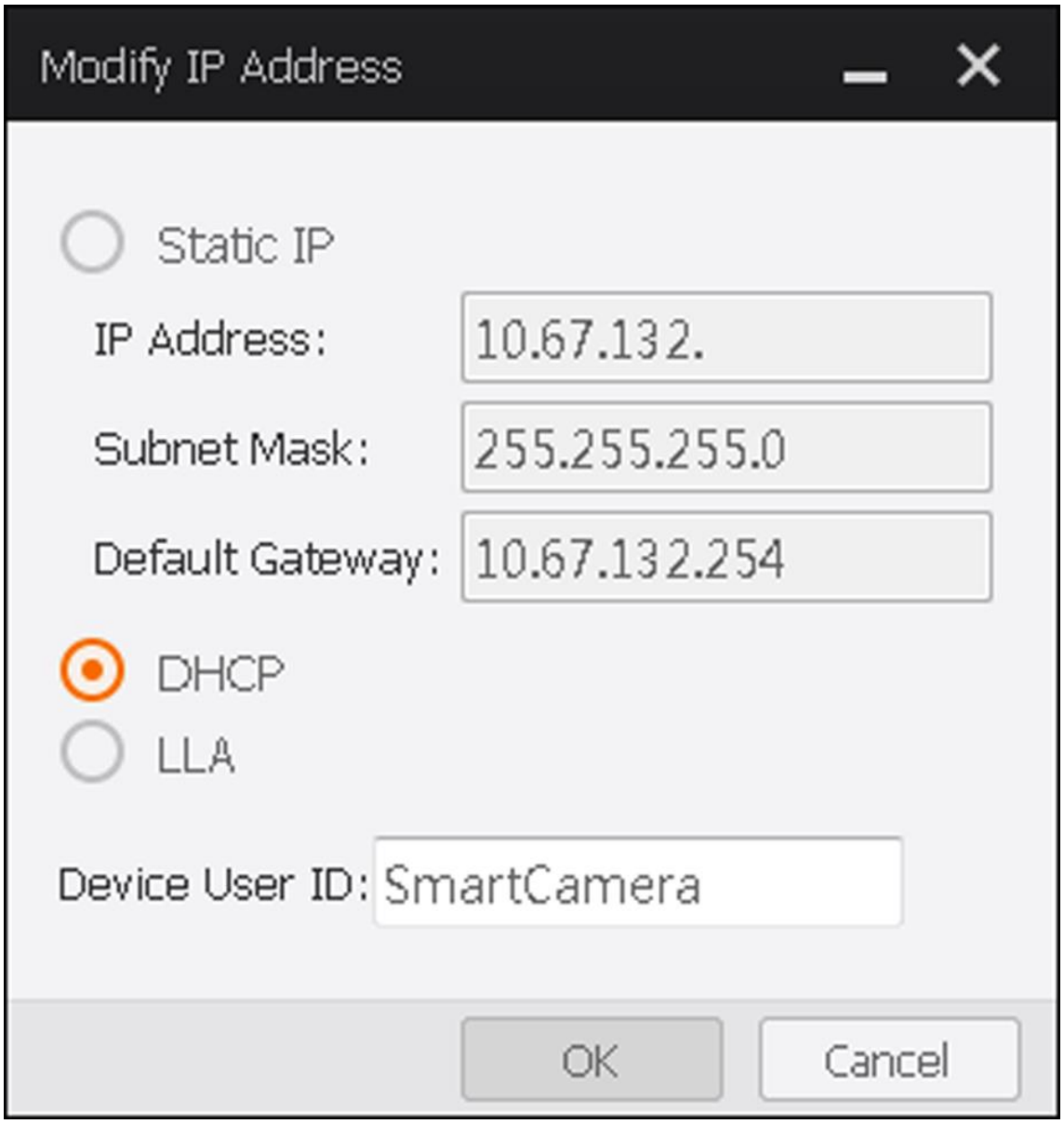

Figure 9-2 Modify IP Address

4. Optional: Edit the camera name in Device User ID field.
5. Click **OK** to save the settings.

Note

If the modified IP address conflicts with another device's IP address in the same local subnet, a prompt will pop up to remind you that IP conflict occurs. Change the IP address in this situation.

9.1.2 Edit IP Addresses of Multiple Cameras

You can batch modify the IP addresses of multiple cameras under the same interface.

Steps

1. Select a network interface.
2. Select the cameras to be modified.

Note

You can select up to 20 cameras.

3. Click **Modify IP** to open the Batch Modify IP window.

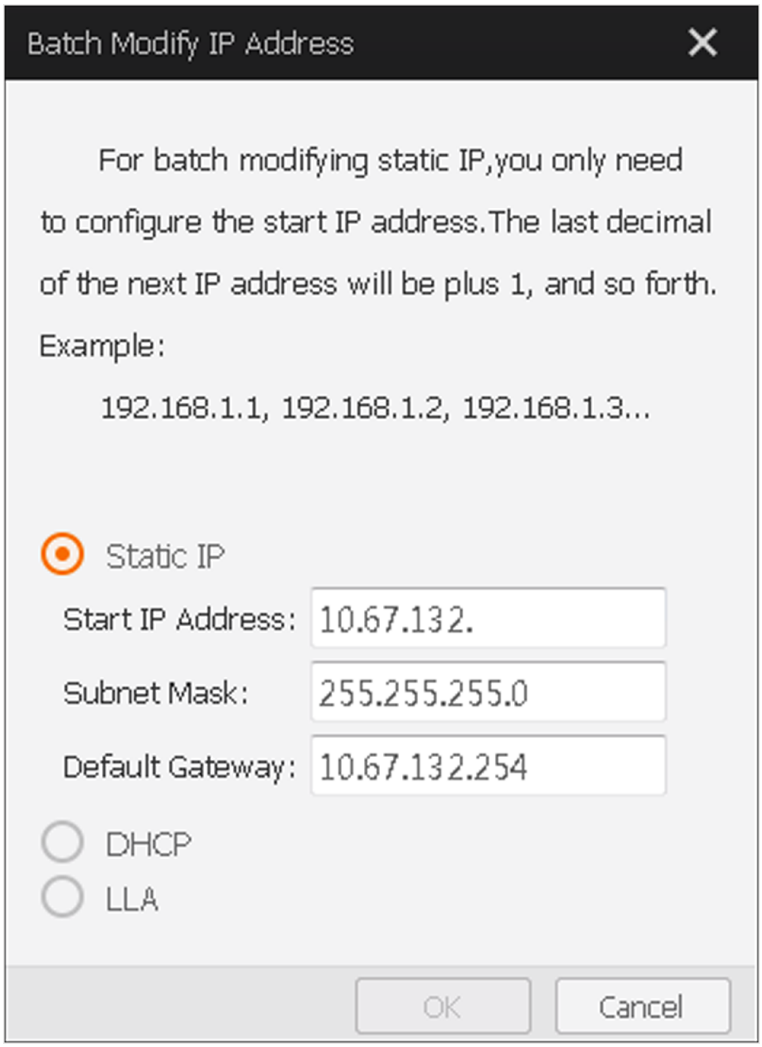

Figure 9-3 Batch Modify IP Addresses

4. Select **Static IP**, **DHCP**, or **LLA** as the IP type.

Note

- For setting the IP type as Static IP, you can set the start IP address, subnet mask, and default gateway.
- For batch modifying static IP, you only need to configure the start IP address. The last decimal of the next IP address will be plus 1, and so forth (example: 192.168.1.1, 192.168.1.2, 192.168.1.3...).

5. Click **OK** to save the settings.

Note

If the modified IP address conflicts with another device's IP address in the same local subnet, a prompt will pop up to remind you that IP conflict occurs. Change the IP address in this situation.

9.2 File Access

You can batch import a feature configuration file from the local PC to multiple devices. The File Access tool supports importing an mfa file containing the feature configuration information from the local PC to multiple devices in a batch. See details in ***Import Feature***.

9.3 Firmware Updater

You can update the firmwares of the cameras or frame grabbers via the Firmware Updater tool.

Steps

Note

- Cameras of different types of interfaces cannot be updated at the same time.
- The firmware update file should match the camera model.

1. Open the Firmware Updater window.
   – Click **Tool** → **Firmware Updater** on the main page.Open **Firmware_Updater** in the installation folder.

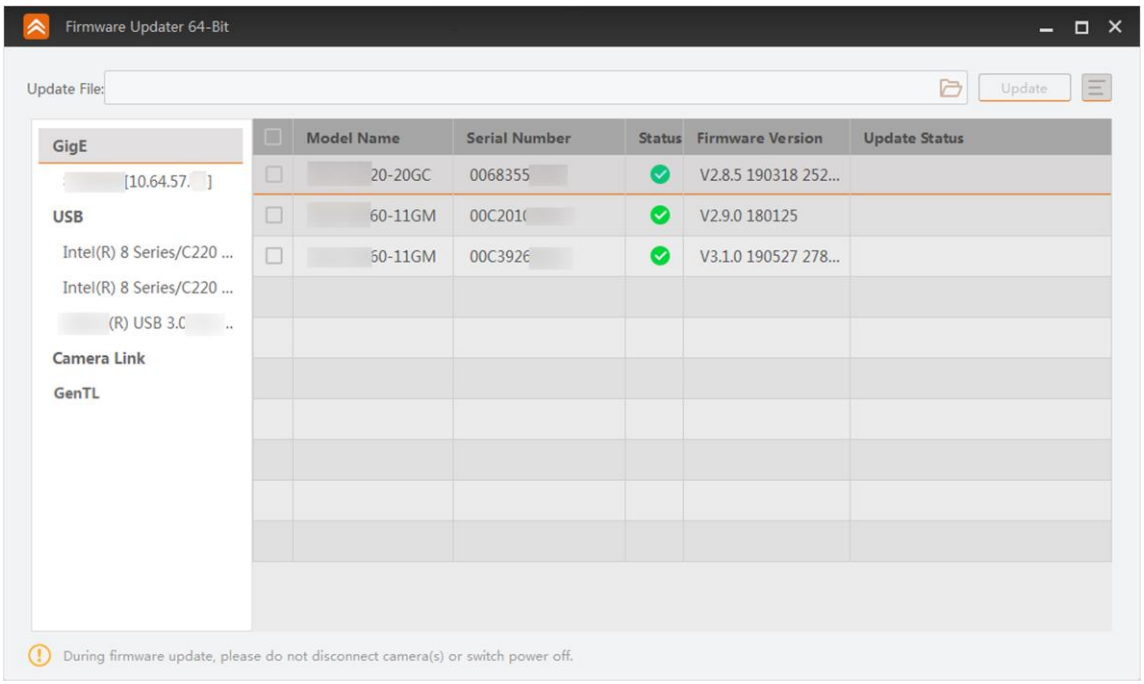

Figure 9-4 Firmware Updater

2. Optional: The device information will be displayed on the window. You can conduct the following operations as needed.

GigE and USB Interfaces

- Select **GigE** or **USB**, and the devices connected to it will be displayed on the right.
- Select an interface under **GigE** or **USB**, and the cameras connected to the interface will be displayed on the right.
- The tool will auto refresh the cameras by default. You can also click on the right of **GigE** and **USB** to manually enumerate the cameras.

Camera Link Interfaces

- Select **Camera Link**, and the devices connected to the camera link will be displayed on the right.
- Select an interface under **Camera Link**, and the cameras connected to the camera link will be displayed on the right.
- The tool will not auto refresh the devices connected to camera link by default. You need to click on the right of **Camera Link** to manually enumerate the cameras.

GenTL Interfaces

Right-click **GenTL** and click **Select CTI File**. Select and open a CTI file, and the tool will enumerate the frame grabbers and cameras in the CTI file.

- Select **GentTL**, and all the frame grabbers in the CTI file will be displayed on the right.
- Select a frame grabber under **GentTL**, and the cameras connected to the frame grabber will be displayed on the right.
- Select a camera under **GentTL**, and the cameras connected to all the frame

grabbers will be displayed on the right.
- The tool will not auto refresh the frame grabbers and cameras connected by the GenTL by default. You need to click on the right of **GenTL** to manually enumerate the cameras.

3. Optional: Click to select the to-be-displayed device information (model name, MAC address, firmware version, etc.).
4. Select cameras or frame grabbers to be updated.

Note

No more than 20 cameras or frame grabbers can be selected.

5. Click to select an update file (DAV format) in the local PC.
   The matched cameras will be selected automatically.
6. Click **Update**.

Note

- During the update, do not break the connection between the devices and the PC, and ensure that the devices are working.
- The devices will restart automatically upon finishing the update.
- The update of frame grabbers will take effect after restarting the PC.

9.4 Import/Export Features

On the Import/Export Features window, all GigE Vision cameras on the same local subnet with the PC on which the Software runs will be displayed automatically. You can select camera(s) and then export their feature configurations to the local PC as MFS files or import MFS files to batch load the feature configurations to the camera(s). For example, if you need to import a single feature of user set 1 to multiple devices, you will need to use the tool.

Steps

1. Open the Import/Export Features window in one of the following two ways.
   - Click **Tool** → **Import/Export Features**.
   - Double-click **Import_Export_Features** in the installation directory of the Software.

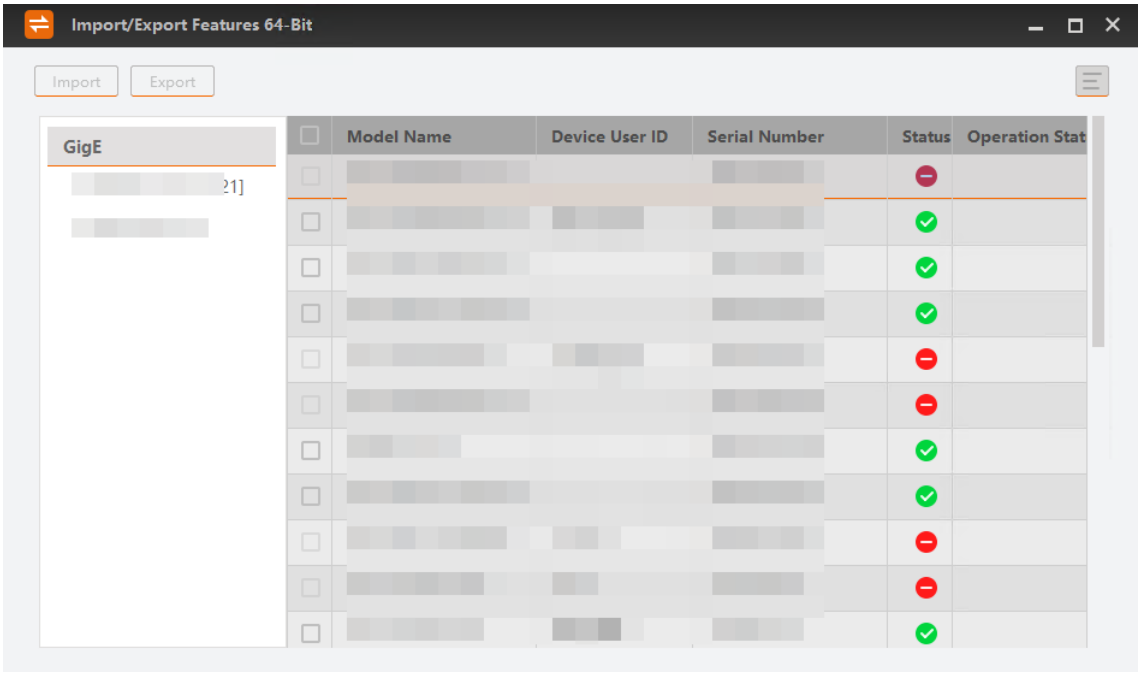

Figure 9-5 Import/Export Feature Window

2. Click to select the to-be-displayed information (model name, device user ID, MAC address, etc.).

Note

- Up to 20 devices can be selected.
- You can only select the devices in Free status.

3. Export or import the features of the selected devices.
   - Click **Export** to export the features of the selected devices as an MFS file.

     Note

     The exported MFS file is named as "device model_serial number" by default. Example: MV-ID5060M-08S-WBN_00F45884701.mfs.

   - Click **Import** to select an MFS file so as to import the features saved in the file to the selected cameras.

Note

- The progress and results of the operation are displayed on the Operation Status column.
- You can view the exception information and error code if importing features to a specific camera fails.

9.5 FTP Server

You can configure server parameters for transmitting data between devices and the server via FTP protocol.

Note

- Make sure the service port is not occupied, you have the permission for operating the target path, and there is enough space in the target path.
- Make sure you have the permission to operate the saving path and the saving path has enough storage.

Go to **Settings** → **FTP Service**. The Software will read the service port, user name, and password automatically.
Click 🗁 and set the saving path. Click **OK** to save the settings.

Note

Only if you enable the service can the Software store data to the saving path.

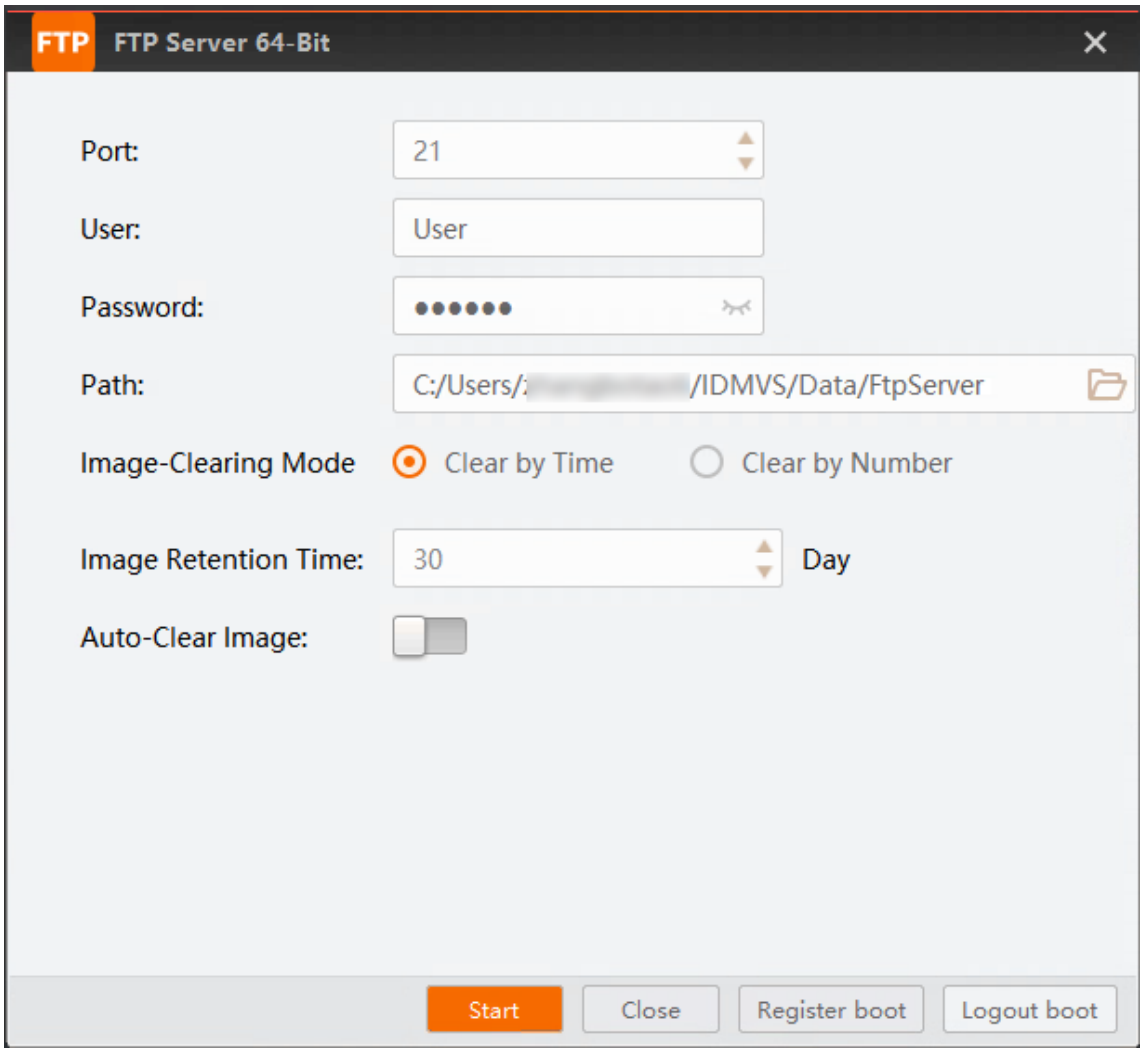

Figure 9-6 FTP Service

Note

After being enabled, the FTP server will run in the background, and will not be stopped after quitting the Software. It can be minimized in the task list.

Port

The host's port number of FTP server.

User

The user name of the FTP server.

Password

The password for logging in the FTP server.

Path

Click to set the saving path of transmitted files.

Image-Clearing Mode

Clear by Time

The images will be cleared when the image retention time ends.

Clear by Number

The server will clear images when the image number exceeds the **Image Save Frame** you set.

Auto-Clear Image

After this parameter is enabled, when the image number exceeds the **Image Save Frame** you set, or the storing time exceeds the image retention time you set, the images will be automatically cleared.

Note

The port, user name, and password you entered here should be the same with those you configured on the Communication Settings page.
You can start or stop the FTP server and set its auto-launch function via the pop-up window.

Start

Click **Start** on the lower right of the pop-up window to start the FTP server.

Close

Click **Close** on the lower right of the pop-up window to stop running the FTP server.

Register boot

Click **Register boot** on the lower right of the pop-up window to automatically launch the FTP server when the PC is power-on.

Logout boot

Click **Logout boot** on the lower right of the pop-up window to disable the auto-launch of the FTP server.

9.6 Log Collection Tool

This tool is used for collecting logs on the device.

Steps

1. Click **Tool** → **Log Collection Tool** to open the saving location of HIKTerm Terminal.
2. In the Tools window, unzip the HIKTerm.zip file.
3. Open the folder named HIKTerm, open the folder named Terminal, and double-click the Terminal.exe to run the program.

Note

For details about how to use this tool, contact the technical support.

9.7 Reading Training Tool

With this tool, you can simulate code reading environment with local images, which helps test reading results thereby determining the optimal algorithm settings for your code reading applications.

Before You Start

Make sure the dongle of MVID-M series has been plugged in, or the tool will be unavailable.

Steps

1. Click **Tool** → **Reading Training Tool** to open the tool window.
2. Click to upload local barcode images to the tool.

Note

- The barcode images should be in the format of JPG or BMP.
- Up to 20 barcode images can be uploaded.

3. Click to start reading the uploaded local images automatically (the images will be automatically switched per second).

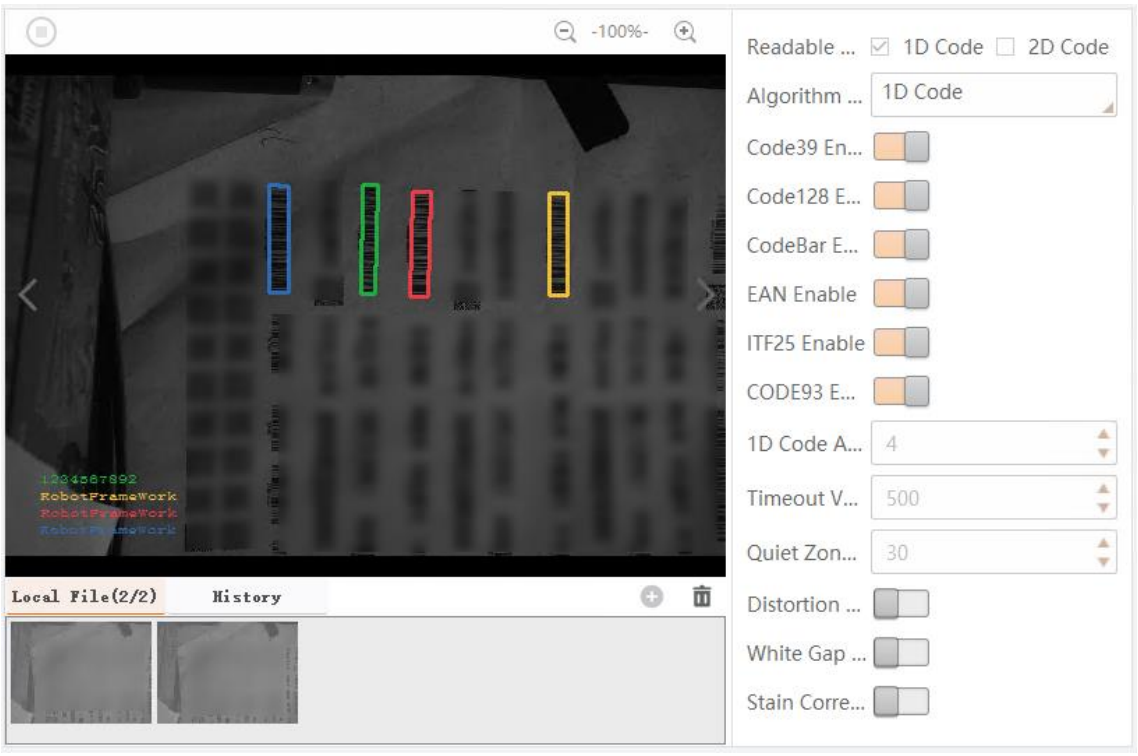

Figure 9-7 Virtual Code Reader

4. Set the parameters of the barcode reading algorithm on the right, such as readable code type, timeout value, quiet zone width, etc.

   Readable Code Type

   Select 1D code or 2D code as the readable code type.

   Algorithm Type

   Select the algorithm for reading 1D code or 2D code, and different parameters will be displayed accordingly.

Note

For details about 1D code algorithm parameters, see *1D Code Algorithm*. For details about 2D code algorithm parameters, see *2D Code Algorithm*.

5. Optional: Perform the following operations if required.

Digital Zoom	Click or to zoom in or zoom out the image respectively.
Manually Control Code Reading	Click to stop auto-reading and then click or to manually switch images for code reading.
Delete an Image	Hover the cursor onto a thumbnail of an image and then click to delete it.
Delete All Images	Click to delete all the uploaded local images.

View Read History	Click **History** to view the code reading history of the Virtual Code Reader. You can view the information including read time, cost time, PPM, barcode type, and barcode content. ● **Read Time:** The time when the barcode is read. ● **Cost Time:** The algorithm processing time cost to recognize the information contained in the barcode.
Export Read History	Click **History** and then click to export the code reading history of the Virtual Code Reader as a CSV or xlsx file to the local PC.

9.8 Virtual Camera

Virtual Camera is a tool designed for scenarios where constructing a real setup of code reading environment is not feasible. It can simulate cameras and generate virtual cameras, in order to help simplify tests during development stage.

Steps

1. Click **Tool** → **Virtual Camera** to open the Virtual Camera window.
2. On the left side of the Virtual Camera window, select the camera(s) you want to simulate.

Note

You can select multiple cameras at a time.

3. Click **Collect** to start collecting the data of the camera(s).
   The simulated camera(s) will appear on the drop-down virtual camera list on the right side of the tool window.
4. Select the camera from the drop-down list, and click **Add**.
5. On the Device Connection panel on the main window, refresh the device list to enumerate the added virtual camera(s).
6. Optional: On the Virtual Camera window, right-click a virtual camera and click **Delete** to delete the virtual camera.

9.9 Driver Installation Tool

The Driver Manager can manage the drivers needed by the Software.
Double click **Driver_Installation_Tool** in the installation folder. The drivers' installation status will be detected automatically and you can select to install or uninstall the related drivers.

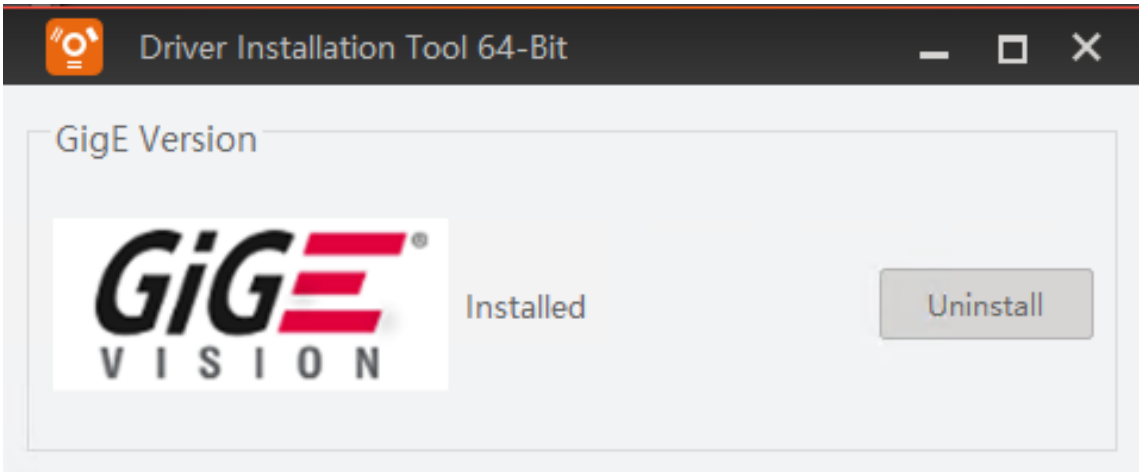

Figure 9-8 Driver Installation Tool

9.10 NIC Configurator

NIC Configurator allows you to configure properties for the network interface cards. For details about how to configure properties of the network interface cards, see *Environment Configuration*.

Chapter 10 Logs

You view both logs about progresses and operations on the Software, and the SDK (Software Development Kit) logs.

10.1 Device Logs

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

Note

The functionality should be supported by the device.

Click to open the Device Log window. You can view different types of device logs, including device errors, warning, and informational log, etc.

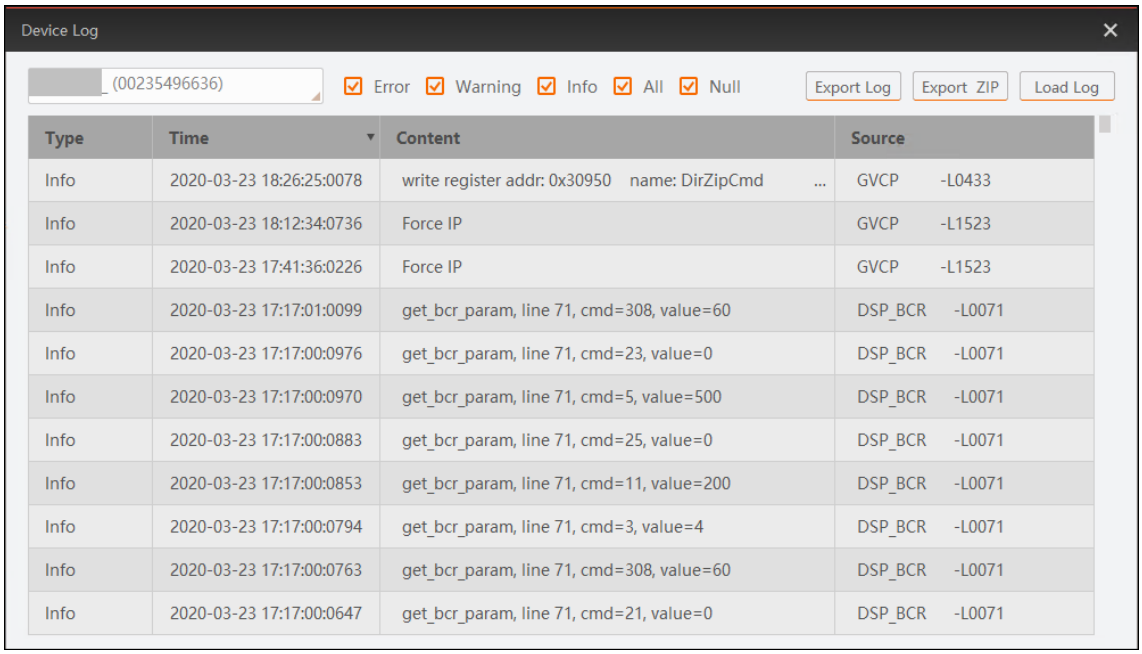

Figure 10-1 Device Log

(Optional) Perform the following operations.

- Check the checkbox(es) to view the selected type of logs.
- Click **Export Log** to export the logs to the local PC.
- Click **Export ZIP** to export the logs as ZIP to the local PC.
- Click **Load Log** to refresh the logs.

10.2 SDK Log Viewer Tool

Via the SDK Log Viewer tool, you can perform operations including viewing, downloading,

copying, and deleting the SDK logs of different types, configure log settings such as the maximum number of the displayed SDK logs, etc.

Note

The Log Viewer Tool is only supported in 64-bit operating system.

View SDK Logs

Click **Tool** → **Log Viewer** to open the Log Viewer window.

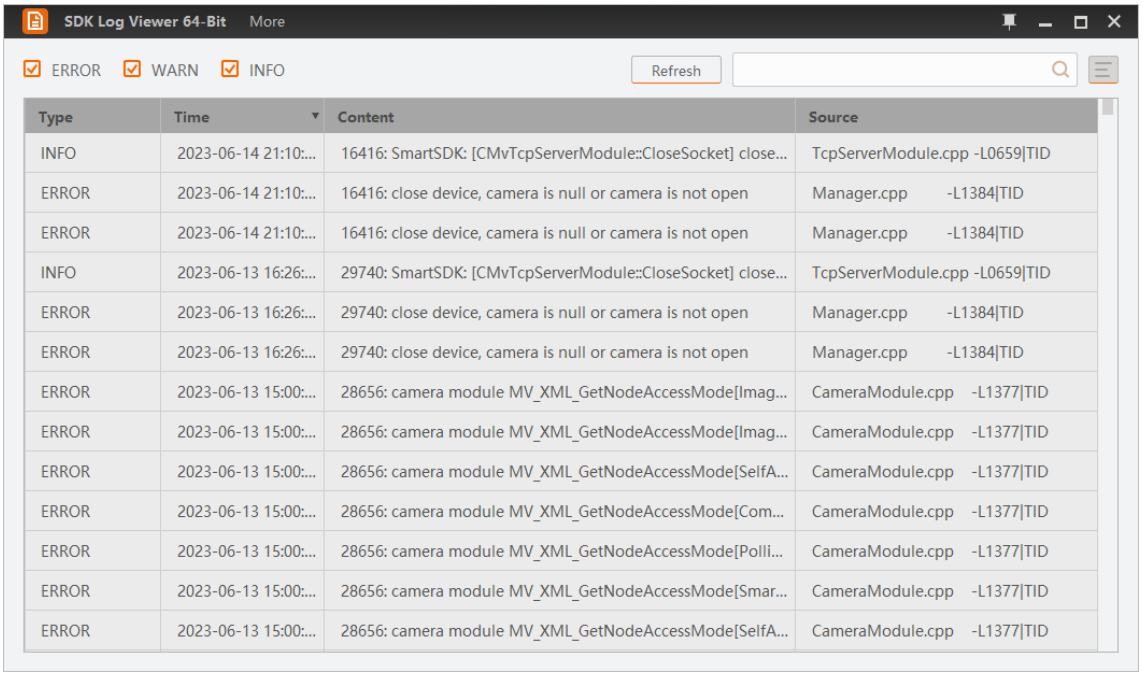

Figure 10-2 Log Viewer Window

You can view the SDK logs of the Client.
Each log contains the information including log type, log time, log content, process name, etc. You can click to select and display the information of interest.
Three types of SDK logs are available, i.e., error, warning, and information. In the top left corner, you can check log type(s) to display the corresponding logs.
The following table shows the descriptions of the three types of SDK logs.

Table 10-1 Types of SDK Logs

Log Type	Description
Error	Errors occurred on the Client.
Warning	The warning information sent by the Client when precondition error occurs.
Information	The information about operations.

You can perform the following operations.

Table 10-2 SDK Log Operations

Operation	Description
Export All SDK Logs	Right-click the log list and then click **Export All Logs**.
Export Selected SDK Logs	Press and hold the **Shift/Ctrl** key and left-click the mouse to select multiple SDK logs continuously, and then right-click the log list and click **Export Selected Logs**.
Search Logs	Enter the keywords on the top right to search logs. **Note** You can only search by the keywords of the content of the log. Searching by the keywords of log type, log time, or log source is not supported.
Refresh Logs	Click **Refresh** on the top of the Software to refresh logs.
Copy All SDK Logs	Right-click the log list and then click **Copy All Logs**.
Copy Selected SDK Logs	Press and hold the **Shift/Ctrl** key and left-click the mouse to select multiple SDK logs continuously, and then right-click the log list and click **Copy Selected Logs**.
Clear All SDK Logs	Right-click the log list ant then click **Clear Logs**.
Stick to the Top or Not	Click on the top of the Software to stick the Log Viewer to the top, and click to undo.
Select Displayed Information	Click on the top right to select the to-be-displayed information (time, type, content, source, etc.).
Rank Logs	Click the **Time** table header to rank the logs by time (descending order or ascending order).

Configure SDK Logs

You can set the maximum number of the displayed logs and the interval for updating the log list.

Click **More** → **Settings** to set the following two parameters.

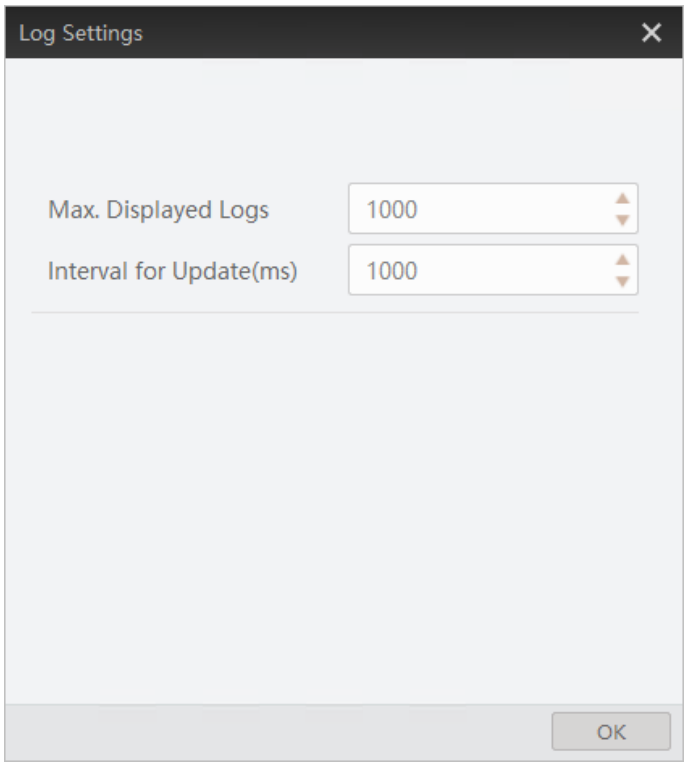

Figure 10-3 Log Settings

- **Max. Displayed Logs:** the maximum number of displayed logs, which ranges from 1 to 100,000. By default, the maximum number is 1,000.
- **Interval for Update (ms):** the maximum number of displayed logs, which ranges from 1 to 100,000. By default, the maximum number is 1,000.

Chapter 11 FAQ

You can refer to the topics below if you encounter the problems described in the following frequently asked questions.

11.1 No device is enumerated after running the Software.

Possible Causes

1. The device does not start properly or the network cable is not connected properly.
2. The auto-enumeration is disabled.
3. The **Private Discovery Protocol** of the device is enabled.

Solution

1. Check the power supply of the device and the network connection.
2. Go to **Settings** → **General**, and enable the **Device List Auto-enumeration**.
3. Go to **Settings** → **General**, and set the **Device Enumeration Protocols** as **Standard Protocol And Private Protocol**.

11.2 The Software enumerates a device, but fails to connect it.

Possible Cause	Solution
The device and the Software are not in the same network segment.	Use IP Configurator to modify the IP address of the device. See *Edit IP Address of a Single Camera* for details.
The device has been occupied by another software or program.	Disconnect the device from any other software or program, and then connect it to the Software again.

11.3 Why does the live view show black image?

Question

Why does the live view show black image?

Answer

It might be because the iris value is too large or the exposure value is too small. Hence,

you can decrease the iris value, increase the exposure value, or enable auto-exposure.

11.4 Why do I fail to set the Exposure Time and Gain in the Image Settings section?

Question

Why do I fail to set the Exposure Time and Gain in the Image Settings section?

Answer

It might because the Exposure Time or Gain is under auto mode. You can load default settings in the Config Management section or go to the feature tree and turn off Exposure Auto or Gain Auto.

11.5 Why can only the SmartSDK be selected as the communication protocol in Communication Settings section?

Question

Why can only the SmartSDK be selected as the communication protocol in Communication Settings section?

Answer

It might because the device is under Test mode. You can go to the live view window and set the device running mode to Normal mode.

Chapter 12 Get Support

You can get support from us in the following ways:

- **Official Website**: visit *https://en.hikrobotics.com/* to get other related documents.
- **Email**: global.support@hikrobotics.com.

Chapter 13 Legal Information

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