www.visiondatum.com

Getting Started with DM-Datum

Ver 2.3.6 June. 2023

Vision System

Perfect

Perfect

Purpose of This Guide

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.The information contained in this manual is subject to change without notice, due to firmware updates or other reasons.

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Disclaimer

The information and specifications described in this guide are subject to change without notice.

Latest Version

For the latest version of this guide, see the Download Center on our web site at:www.visiondatum.com.

Technical Support

For technical support, e-mail: support@visiondatum.com.

Warranty

To ensure that your warranty remains in force, adhere to the following guidelines:

Do not remove the camera's serial number label

If the label is removed and the serial number can't be read from the camera's registers, the warranty is void.

Do not open the camera housing

Do not open the housing. Touching internal components may damage them.

Prevent ingress or insertion of foreign substances into the camera housing

Prevent liquid, flammable, or metallic substances from entering the camera housing. If operated with any foreign substances inside,the camera may fail or cause a fire.

Avoid electromagnetic fields

Do not operate the camera in the vicinity of strong electromagnetic fields. Avoid electrostatic charging.

Clean with care

Avoid cleaning the sensor if possible.

Handle this camera with care.

Do not abuse the camera. Avoid striking, shaking, etc. The camera could be damaged by improper handling.

Read the manual

Read the manual carefully before using the camera.

Overview

Introduction

DM-Datum 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, the Software allows you to determine the optimal settings for barcode reading.

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.**

System Requirements

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

Recommended

- Microsoft Windows 7/10 (32/64-bit) or Microsoft Windows XP (32-bit)
- CPU：Intel Pentium IV 3.0 GHz and above
- Memory：4 GB and above
- Network Adapter：Intel Pro1000, I210, I350 series
- Display Resolution：1920 × 1080 or above

Minimum

- Microsoft Windows 7/10 (32/64-bit) or Microsoft Windows XP (32-bit)
- CPU：Intel Pentium IV 2.0 GHz
- Memory：1 GB
- Network Adapter：Intel Pro1000, I210, I350 series
- Display Resolution：1366 × 768 or above

ⓘ	The Software interface requires the display resolution of at least 1366 × 768 or above for a complete display on the PC.

Running Environment Configuration

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

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.

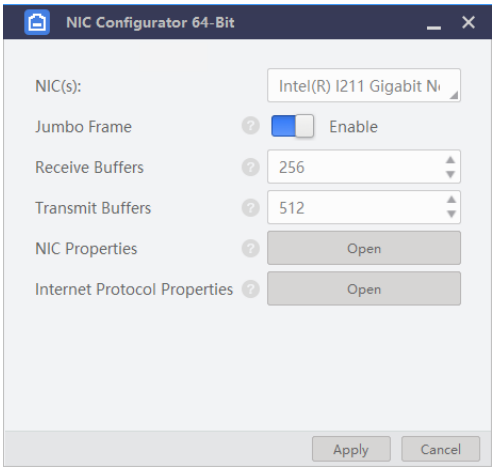
Before You Start

Open the NIC configurator. You can choose from one of the following ways to open it.

Steps

1. Go to Start → All Programs → DM-Datum → Tools → NIC_Configurator in the installation folder of the Software.

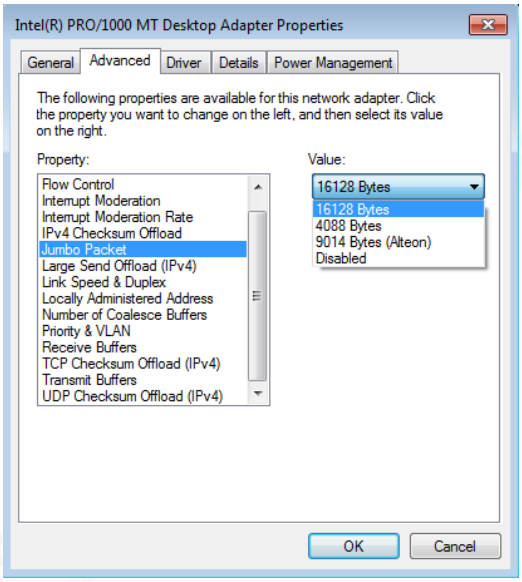
Right-click a network interface on the device list and then click NIC Settings.



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.
- 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.

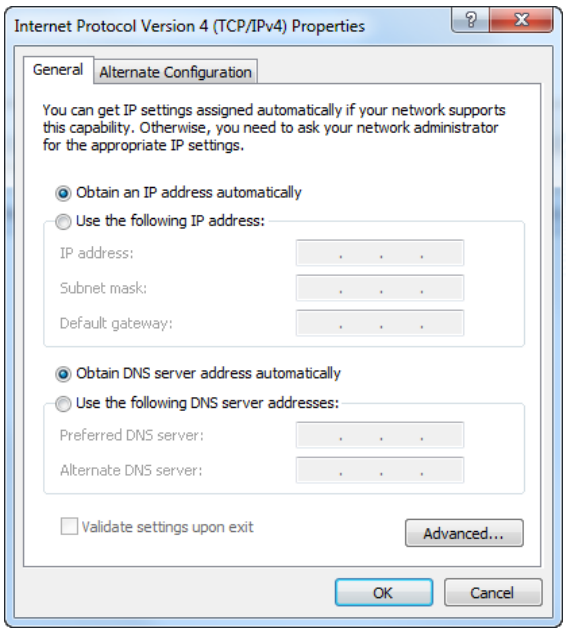
If enabling Jumbo Frame via NIC configurator fails, click Advanced on the properties page to check if Jumbo Frame is supported by the network interface card. If supported, set the Jumbo Frame value to 9014 Bytes or larger. If not, try updating the NIC driver or using other network interface card(s).



Configure NIC

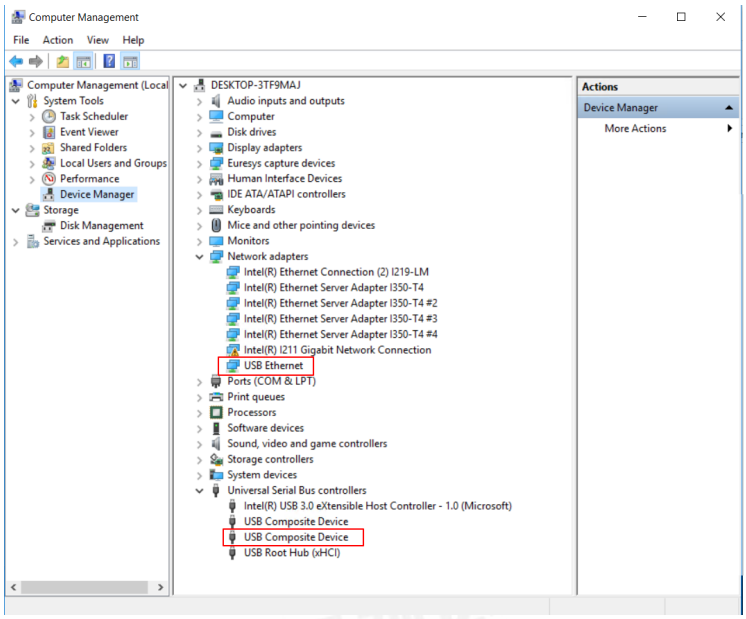
● Internet Protocol Properties: Click Open to open the properties page of the internet protocol, and then selectObtain an IP address automatically or use the IP address of which the IP segment is same with that of the devices.

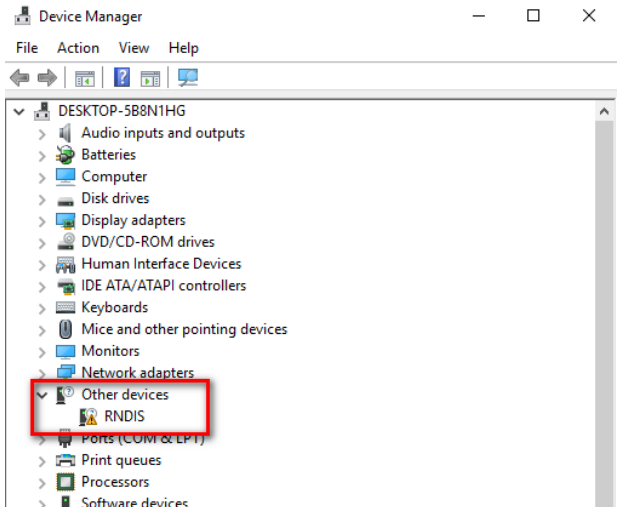
	The properties page of the internet protocol varies with different series of network interface card. The following picture takes Intel® Ethernet Connection I217-V for an example.



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



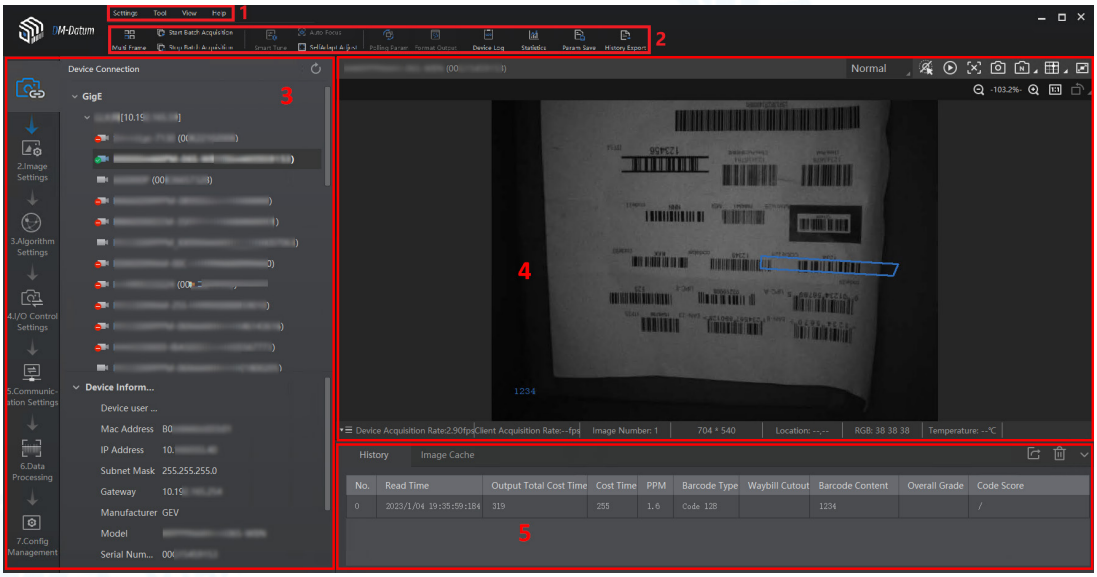


Main Window Introduction

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

	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.

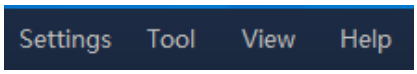
Refer to the image and table below for the description of each component of the main interface.



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. ● : Starting batch acquisition,which can start the acquisition of multiple devices in the collection with one click ● : Ending batch acquisition,which can stop the acquisition of multiple devices in the collection with one click ● : Window division mode,which can customize the setting window, providing a variety of screen layouts such as single-window, four-window and nine-window ● : Statistics,which can count the real-time reading of the code reader and display the real-time graph ● : Device logs, which record and display log information during the use of the device ● : Smart Tune,which completes the autofocus and adaptive adjustment function of the device with one button ● : Auto Focus,which can automatically adjust the lens according to the position of the barcode in the field of view ● : SelfAdapt Adjust,which can automatically adjust parameters such as exposure, gain, code type, and light source to achieve the best code reading effect, which is convenient for equipment debugging
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.

Menu Bar

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



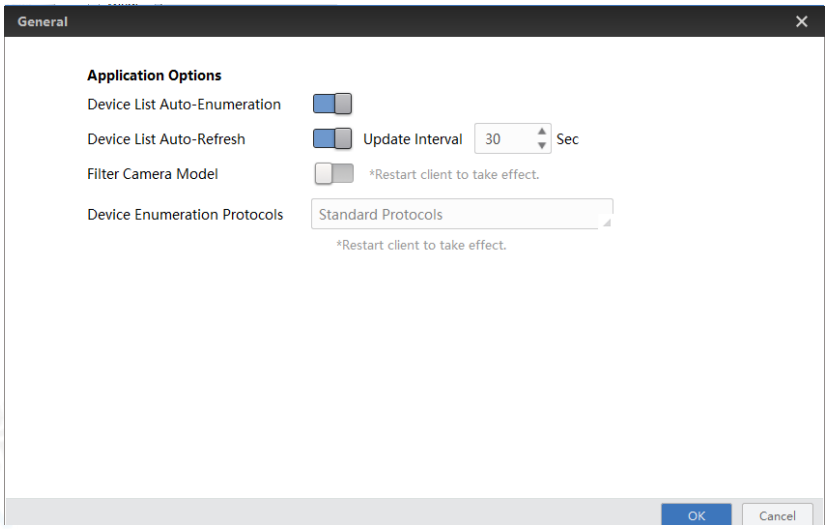
Settings

You can configure the Software settings, including general parameters, recording and capture parameters, network parameters, buffer size, history export, code draw, shortcut parameters, FTP Service parameters, and permission.

● General Settings

You can set user level and auto-refreshing camera list in the General Settings module.

Click Settings → General to enter the following page.



User Level

You can select Beginner, Expert, or Guru as the user level, which determines the visibility of features for users of different professional knowledge levels. The higher the user level, the more camera features will be displayed on the feature panel.

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.

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

- Only ID-Camera

If enabled, only ID-cameras will be displayed. You can set the Device filter tag to filter devices with certain name format.

i	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).
- Custom Protocols: Enumerate devices via custom protocols.
- Standard and Custom Protocols: Enumerate devices using standard protocols and custom protocols.

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

- ReadCode Rate Display Duration

The duration to display read rate line graph in the Statistics window (unit: minute). The line graph will be automatically cleared after the time duration. The default value is 30.

Click OK to finish setting.

● 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.

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.

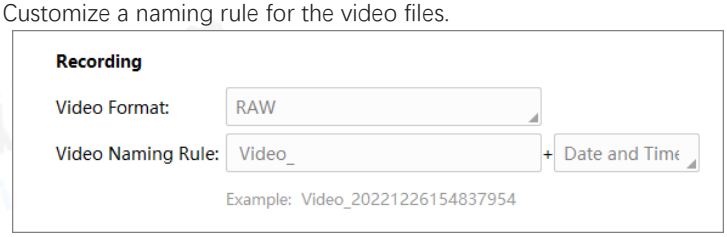
i	○ See Acquisition and Live View for details about live view. ○ See Capture and Recording for details about recording and capture during live view.

Recording

- Video Format: Set the video format of the recorded video files.

i	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.



Capturing

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

i	○ If you select Test or Normal, 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.

i	You can configure picture quality only when you select JPG.

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

i	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.

- 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.

Settings

- 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

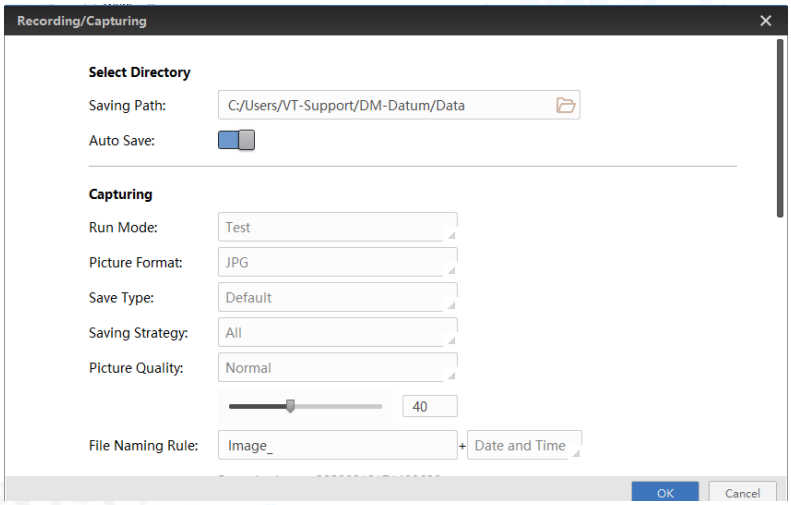
  Set the interval (in minute) to capture and the threshold to stop capturing. For example, you can enable the Software to capture at an interval of 1minute and stop capturing after 5 minutes.

  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

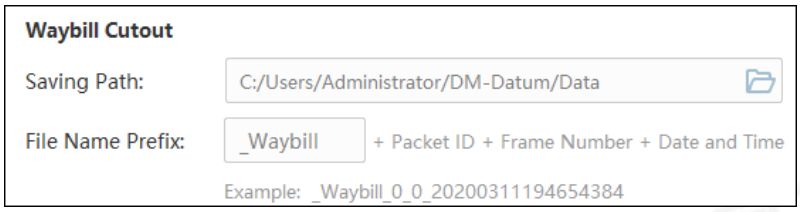
  Set whether to auto clean the images. If enabled, you need to set the maximum saving time (unit: day, range: 1~30). The images will be deleted after the saving time.



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.

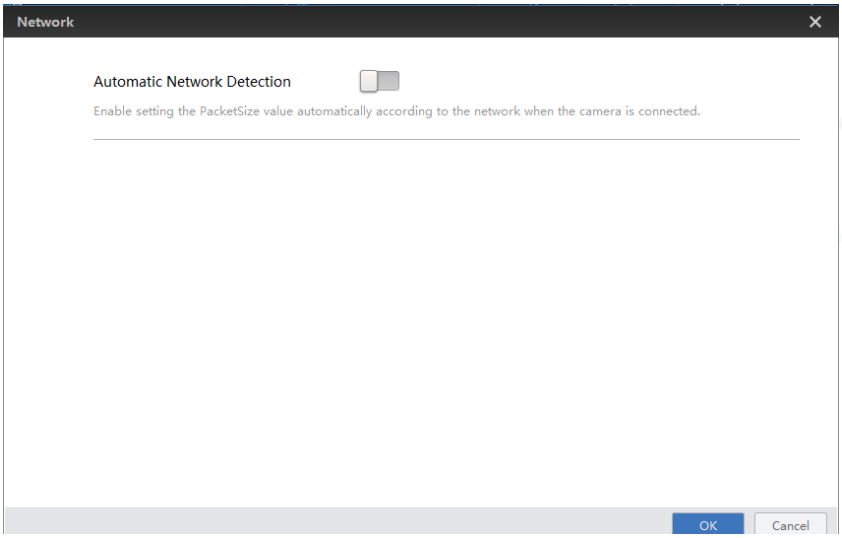
i	Make sure you have enabled waybill cutout. For details, see Waybill Cutout Settings.



● Network Settings

You can enable automatic network detection to ensure the fluency of image acquisition.

Click Settings → Network to enter the following page.



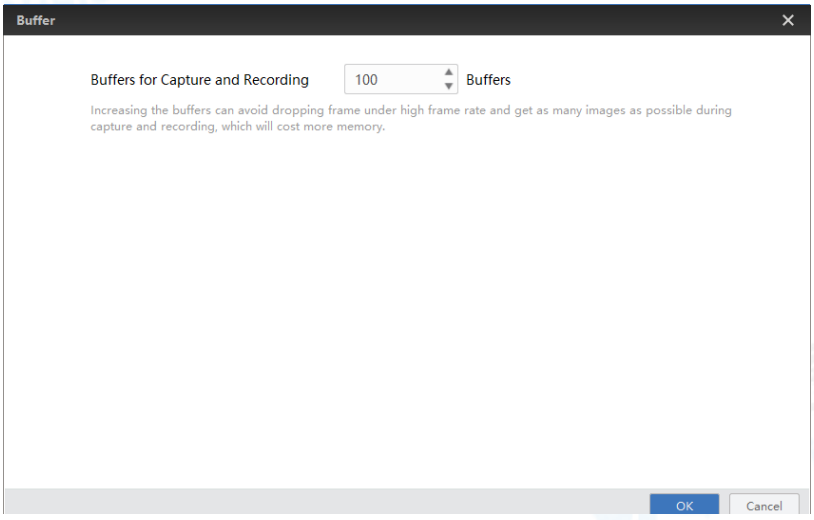
Enable or disable automatic network detection, and click OK to save the settings.

i	Automatic network detection is disabled by default.

● 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.

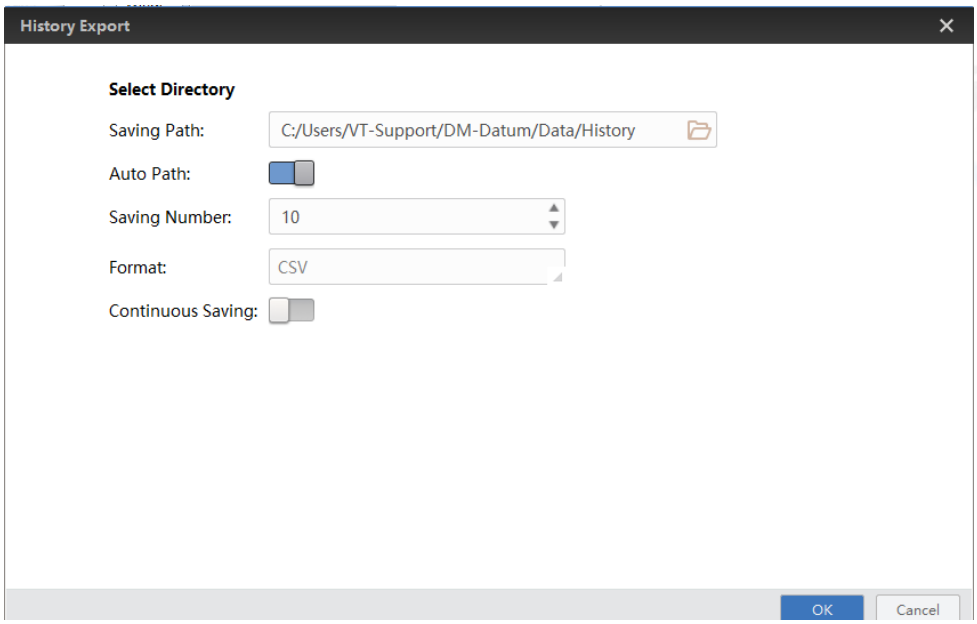


Set the buffer quantity used for capturing and recording according to the actual needs to avoid dropping frame, and click OK to save the settings.

● 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.



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.
- Save Number: You can set the maximun 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.

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

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

i	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.

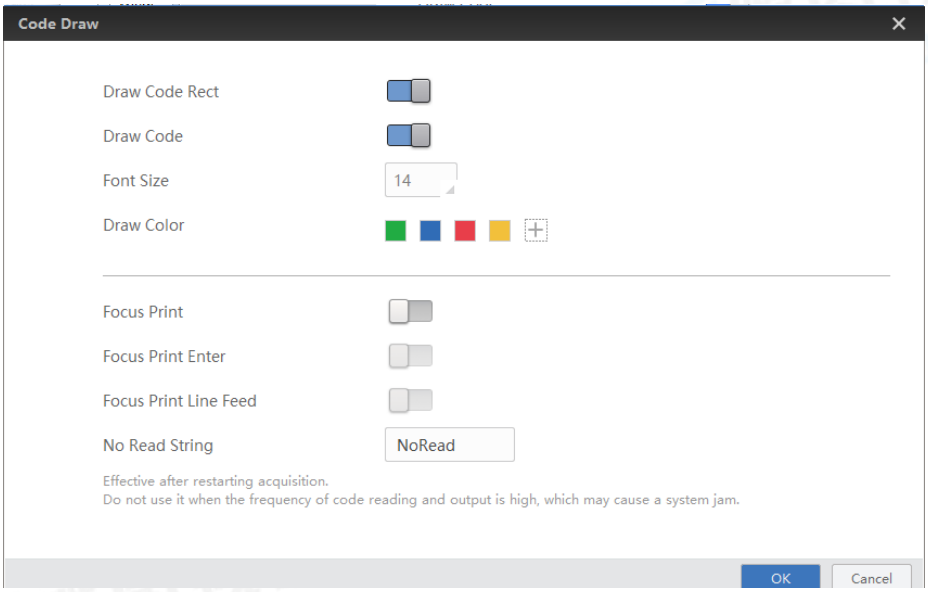
● Code Draw

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

Code Draw

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

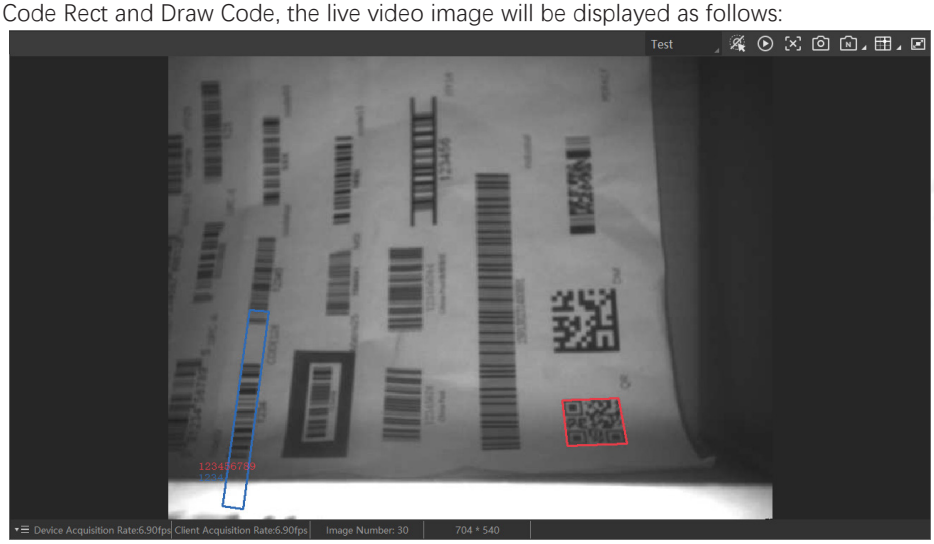
Click Settings → Code Draw to enter the following page.



- 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 barcode.
- Draw Color: Set color for the rectangle and the content of the barcode. You can click to add more colors.

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

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



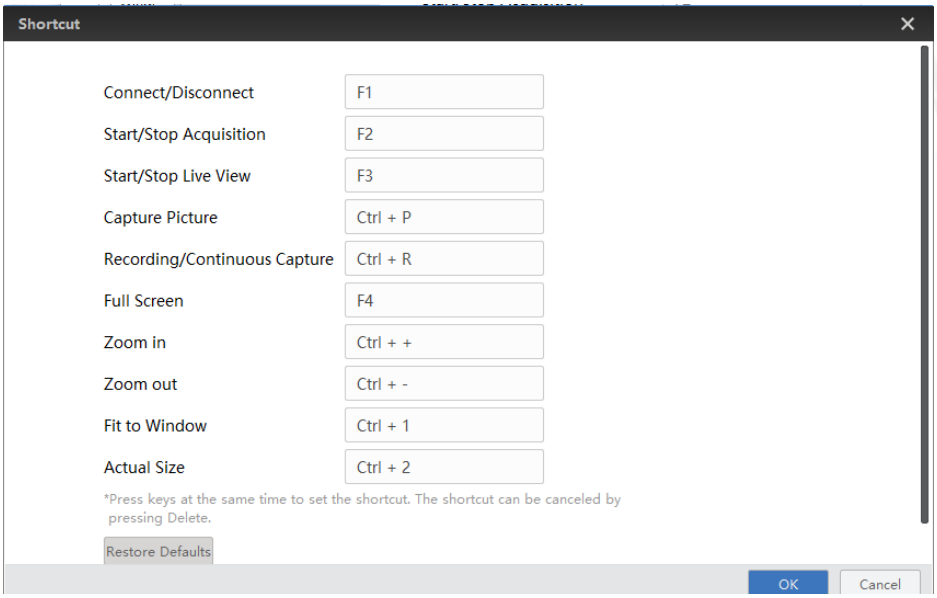
Focus Print

- Focus Print: If enabled, the content of the barcode will appear on an editable file.
- Focus Print Enter: Add an Enter at the end of the content of the barcode.
- Focus Print Line Feed: Add a Line Feed at the end of the content of the barcode.

● 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.



(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.

● FTP Service

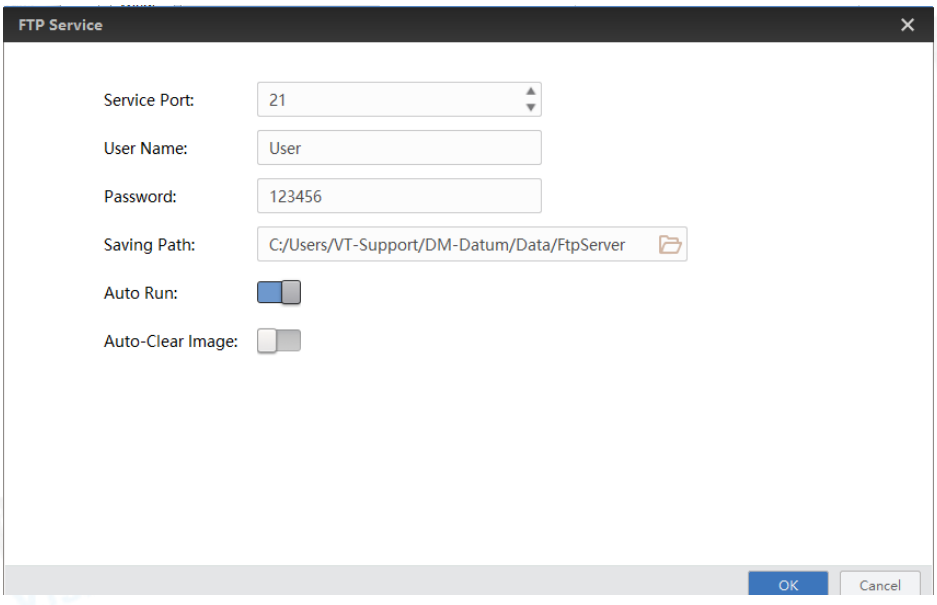
The Software supports configuring the FTP service for storing data. The data will be transmitted via FTP protocol.

	● Make sure the service port is not occupied. ● 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. Enable Auto Run to run the service automatically afterlaunching the Software. Click OK to save the settings.

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

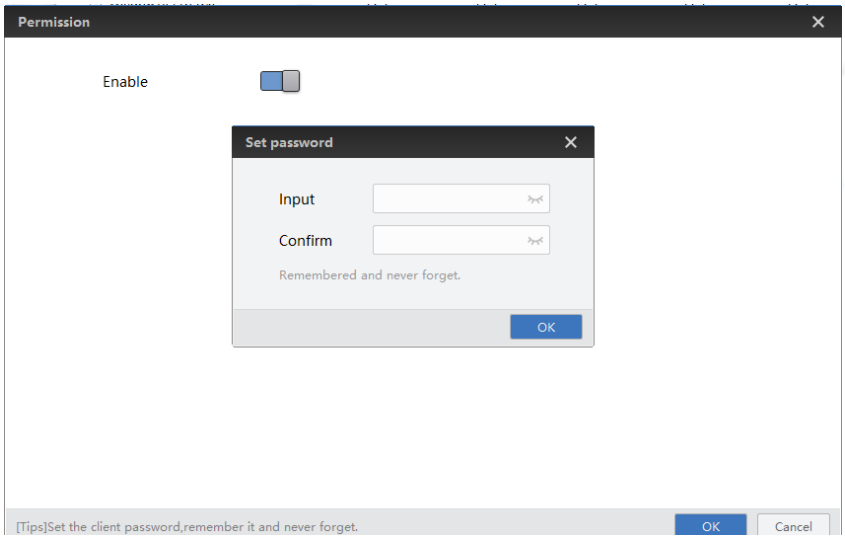


● Permission

You can register accounts and modify passwords in permission.

Steps

1. Click Settings → Permission to enter the following page.



2. If you want to set a password to log in to the Software, enable Permission.
3. Register an account (or modify the password of a registered account).
   1) Enter the user name and password, and confirm the password.

	● The user name and password should contain 3 to 6 characters. Only English letters,digits, and special characters !@#$_ are allowed. ● The first registered account will automatically become the administrator, who has the permission to register other accounts and modify passwords. Up to 5 accounts can be registered (including the administrator). ● When modifying the password, ensure that the account has been registered and the user name is correct.

   2) Click OK to finish setting.

   After setting the account and the password, each time when you launch the Software,you need to enter the user name and password to log in.
4. If you need to cancel logging in with a password, disable Settings Password. Meanwhile,all the account information will be cleared.

	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).

Tool

The Software provides multiple tools for camera configuration and management, such as IP configurator, firmware updater, and log viewer.

The following table shows the brief description of these tools.

● 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.

● 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.

● Log Viewer

View SDK logs. See SDK Logs for details.

● Virtual Camera

Used for testing developed Software when users have no real device. See Virtual Camera for details.

View

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

	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.

	● 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).

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.

Device Configuration

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

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

Device Connection and Management

You should connect devices to the Software before you can do further configuration. You can also do device management after adding devices, such as device IP address configuration, renaming device user ID, and resetting device.

● 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 Device Connection to display the device list, and then select a device and click to connect it to the Software.

	The icon beside the device name shows the device status. See details in Device Status.

You can click to refresh the devices on the same local subnet, or enable auto-refreshing. For details about auto-refreshing local devices, see General Settings.

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

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

Connect a Camera by CMD

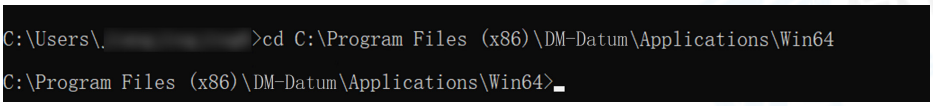
You can launch the Software and connect devices by CMD command.

Steps

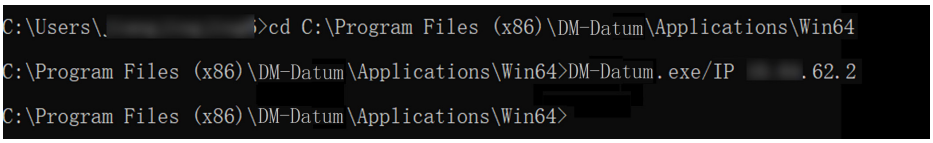
1. Open the CMD window in the PC system.
2. Enter cd and the file path of DM-Datum.exe, then press Enter.

   Example

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

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

   – Connect via device MAC address. Enter DM-Datum.exe/Mac xx.xx.xx.xx.xx.xx, then press Enter.
   – Connect via device serial No. Enter DM-Datum.exe/SN xxxxxxxx, then press Enter.

Result

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

Add Remote Camera

For the device NOT on the same local subnet with the Software, you can remotely add it to the device list.

Steps

1. Click Device Connection to display the device list.
2. Right-click the network interface displayed on the device to open the right-click menu,and then click Add Remote Device to open the Add Remote Device window.
3. Enter the device IP address and then click OK.

The camera will be displayed on the device list.

4. Select the camera, and then click to connect the device to the Software.

	For specific device status, device connecting will fail. For details about device status,see Device Status.

● 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
	Available and disconnected. 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 .
	Connected.
	The camera is acquiring streams. See Acquisition and Live View for details about how to start acquisition.
	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. 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.

● Modify IP Address of a Single Camera

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

Steps

1. Select a network interface.
2. Right-click the device row, and click Modify IP to open the Modify IP Address window.
3. Select the Static IP, DHCP, or LLA as the IP type.

i	You can change the IP type only when the device status is Free.

Static IP

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

i	After you change the address in Static IP, the device will restart automatically.

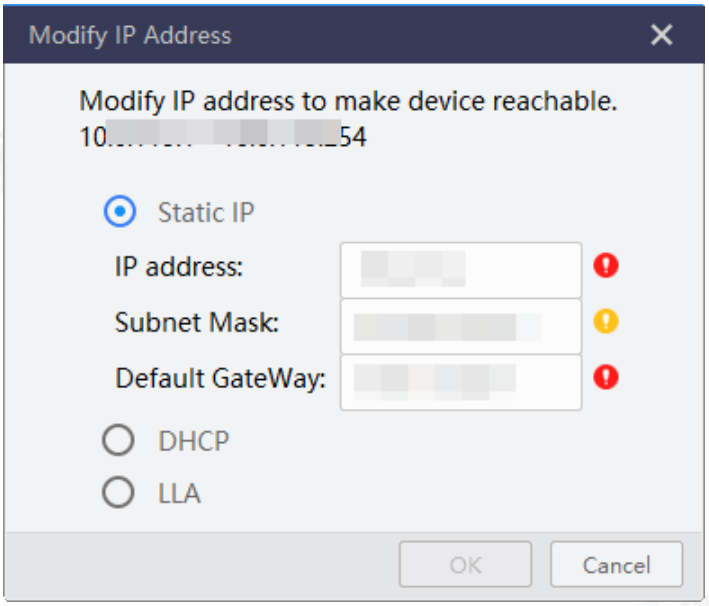
DHCP

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

LLA

The device use a default IP address from the link-local address block. Link-local addresses for IPv4 are defined in the address block 169.254 in CIDR notation.

In IPv6, they are assigned the address block fe80::/10.



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

i	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.

● Group Cameras

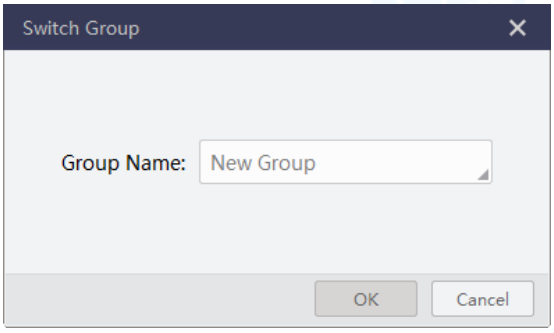
You can custom camera group(s) on Device Configuration Wizard Panel.

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.



   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.

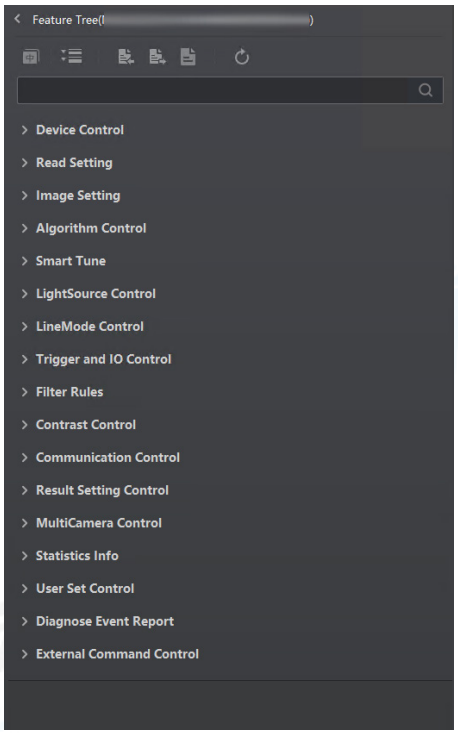
   The camera will be on the original place of the device list.

● 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.

	● The features displayed vary with the camera model. ● You can click to switch between Chinese and English.



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.

	● 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.

	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.

	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.

	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.

	● 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.

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

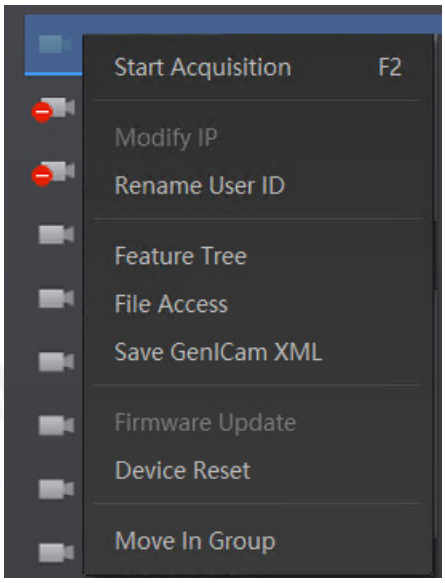
● Other Functions

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.

	The function should be supported by the device.

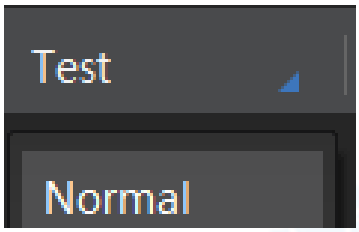
- Right-click a connected device and then click Auto Work to enable the device to enter working mode automatically when powered on.
- Right-click a connected device and then click Device Reset to reset the device to its power up state.



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.



The following table shows the description of each running mode.

Running Mode	Description
Test	The device outputs the acquired image data in real time, and the barcode information will be displayed. The mode is usually used when you configure device and adjust image quality.
Normal	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.
Raw	The device outputs the raw data and the barcode information will be displayed. The mode is usually used when you test image data.

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.

	The actual features displayed vary with the device model.

● Image Features

The following list introduces the parameters in the Image feature.

	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

Increasing 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.

Acquisition Line Rate

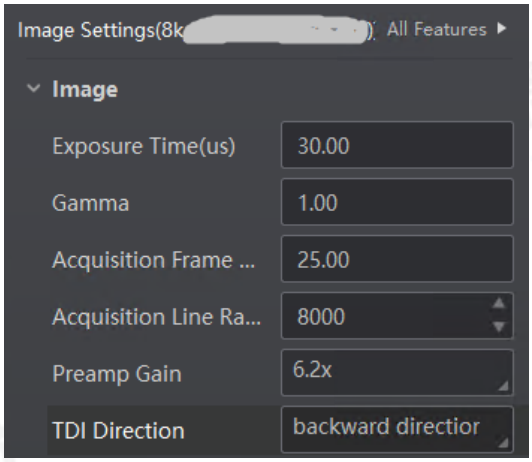
Control the rate (in Hertz) at which the Lines in a Frame are captured.

TDI Direction

Set the value according to the traveling direction of the conveyor belt and the shooting direction of the code reader. If the two directions are the same, select forward direction,

If are opposite, select backward direction.

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



● 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

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

Steps

1. Go to Image Settings → Polling Enable, and select Single at the Polling Enable field.
2. Select one parameter (e.g. Param1) from Polling Param.
3. Set Polling Exposure Time, Polling Gain, and Polling Gamma according to actual demands.
4. Optional: Enable Polling Lighting Enable according to actual demands.
5. Optional: Enable Polling Focus Enable, and set Polling Focus Pos and Polling Focus Temp according to actual demands.

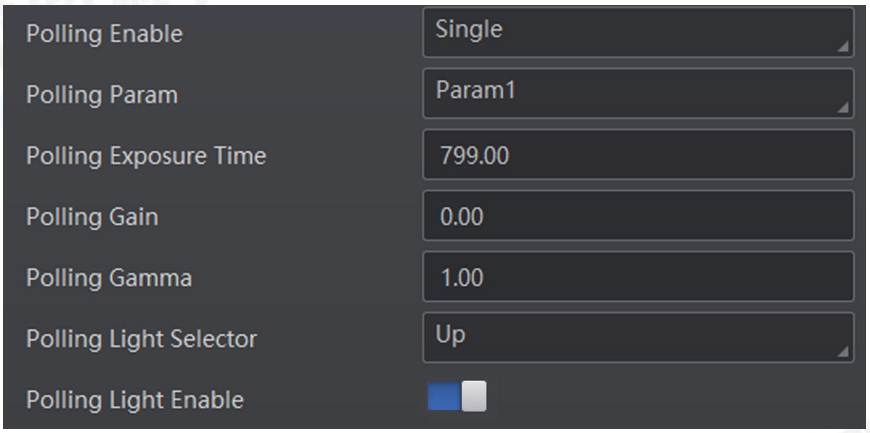
	● After polling is enabled, the device acquires images with its max. frame rate. Once the polling disabled, the frame rate you set in Acquisition Frame Rate takes effect. ● The polling function and specific parameters may differ by device model. ● It is recommended to use the polling function under the normal device mode, and test/raw modes are used for debugging only.

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.



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

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.

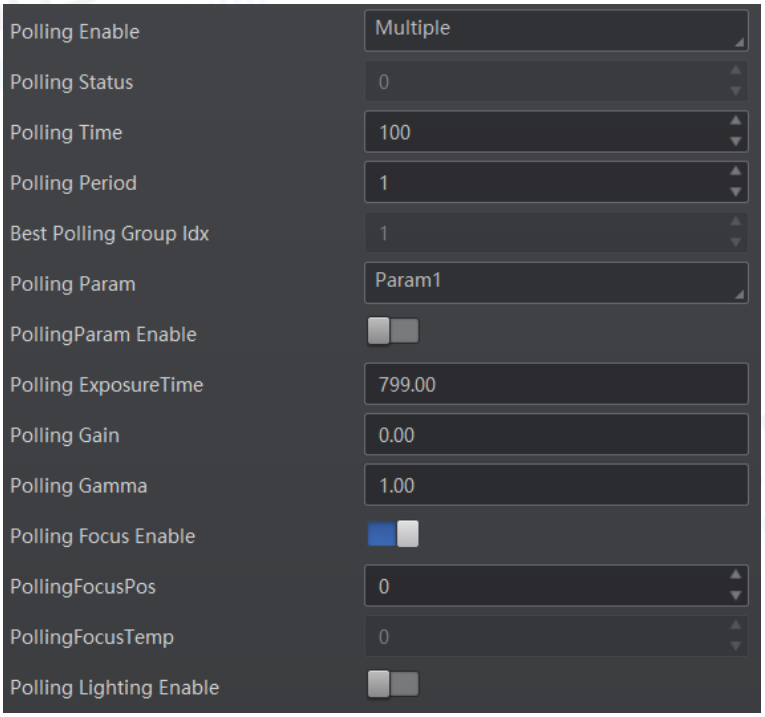
	● In multiple mode, the camera supports trigger parameters like software trigger, external trigger, TCP, etc., but does not support stopping polling via the external trigger. ● The parameter of Best Polling Group Idx is used to display the polling parameter number when the camera recognizes codes after 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 > Param1 > Param2 > Param4 > Param5.

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.



● 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.

> 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.

> ● 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.

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.

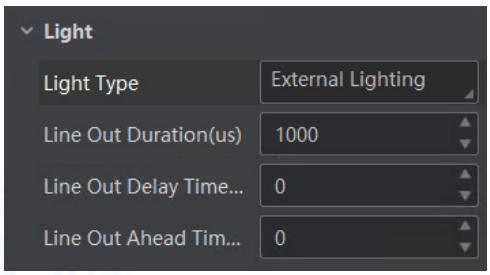


Image ROI

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

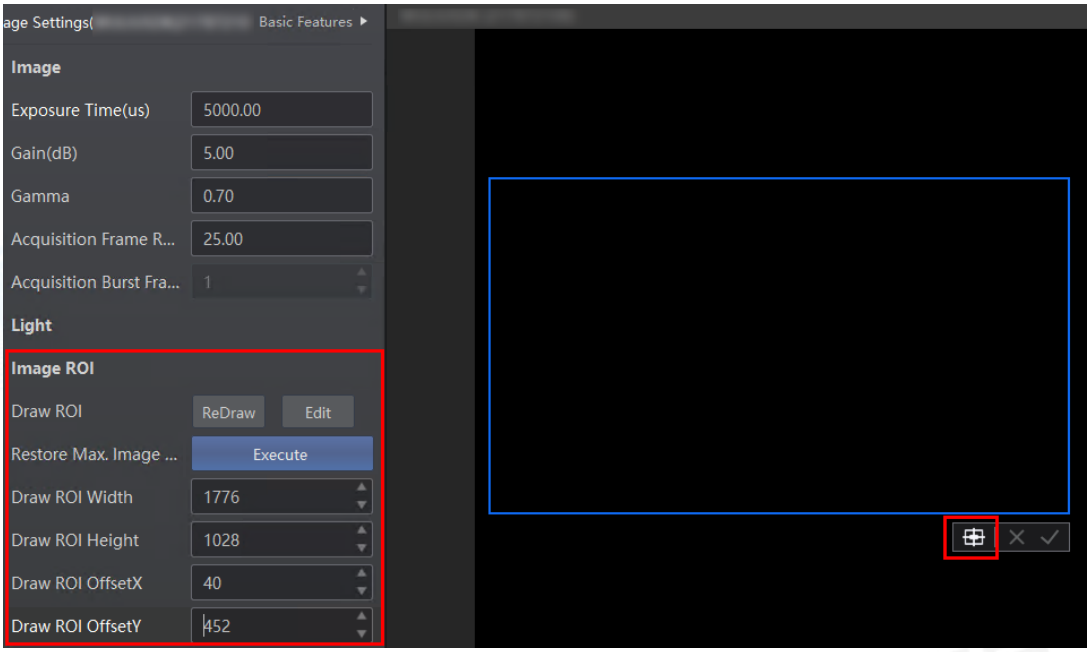
i	Image ROI should be supported by the device.

1. On the Image Settings panel, click All Features on the upper-right to display all image related features (including Image ROI).
2. Click Image ROI to show the related parameters.
3. 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.

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



4. 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).

5. Click ✓ or right-click the image and then click Finish.

Only the image data within the selected ROI will be displayed.

i	The image resolution will be lower after setting ROI.

6. 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.

● Smart Tune Control

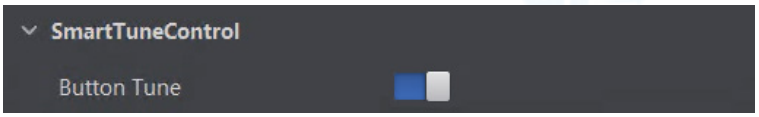
With smart tune control, you can configure device parameters to read codes with better reading quality conveniently by starting auto focus and/or self adapt with one click. When the process is completed, the code reading result will show up in the History panel.

	● 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 All Features → 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.



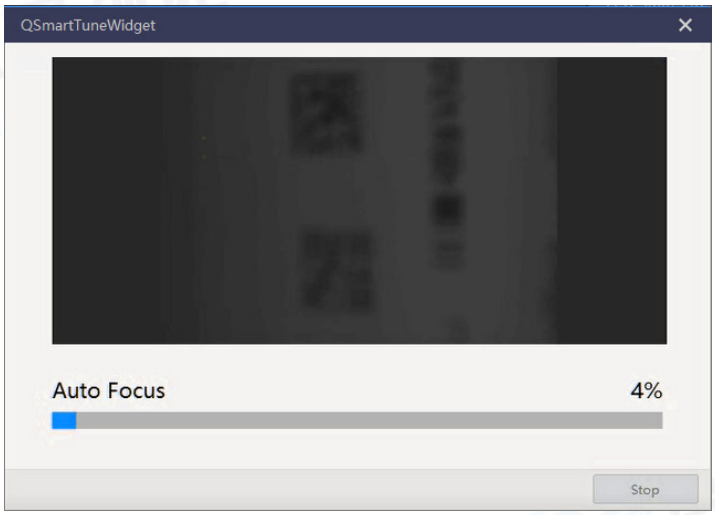
Configure Device Parameters via the Software

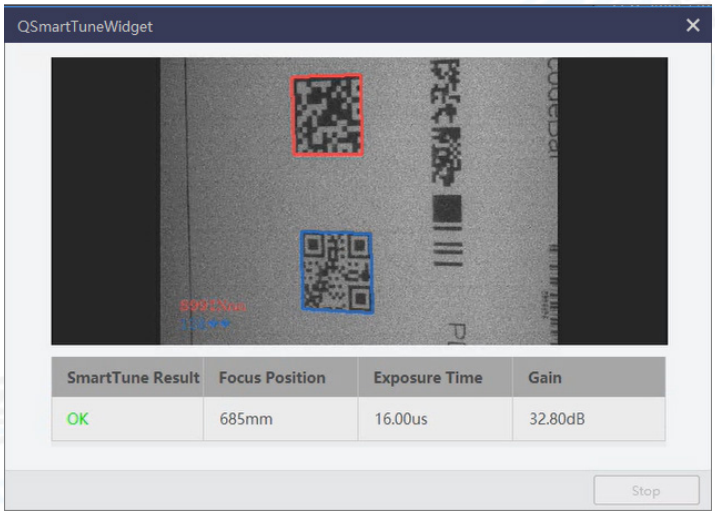
You can also configure device parameters via the Software.

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.

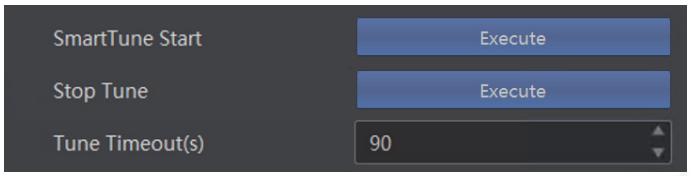
	● You can also click  on the toolbar at the top of the interface to start smart tuning. ● In the mid of the smart tuning process, you can click Stop on the bottom right of the window to end the process at any time.





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.



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.

- 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.

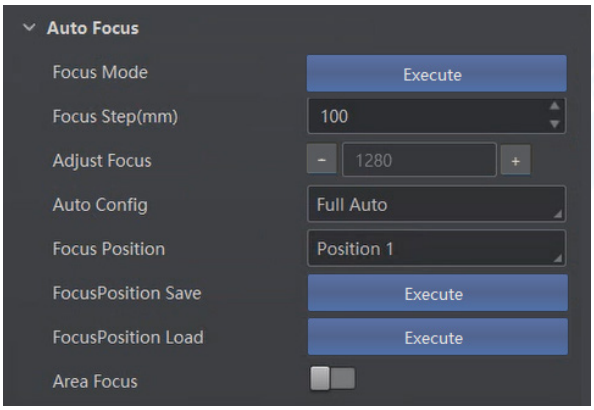
- You can also click on the toolbar at the top of the interface to start self adapt.
- The parameter configurations under SelfAdapt Param are similar to those for setting SelfAdapt Adjust. Refer to SelfAdapt Adjust for details about how to set the related parameters.

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.

- The function requires device support.
- Set the running mode to Test mode before setting focus. For details about running modes, see Running Mode.

On the Image Settings panel, click All Features in the upper-right corner, and click Auto Focus to show the related parameters.



Set the following parameters according to your needs.

Focus Mode

Click Execute to start auto focus. If Area Focus is not enabled below, focus will be adjusted based on the whole image.

Focus Step

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

Current Step

Displays the current focus position.

Adjust Focus

Increase or decrease the focus distance by the value set for Focus Step.

Original Position

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).

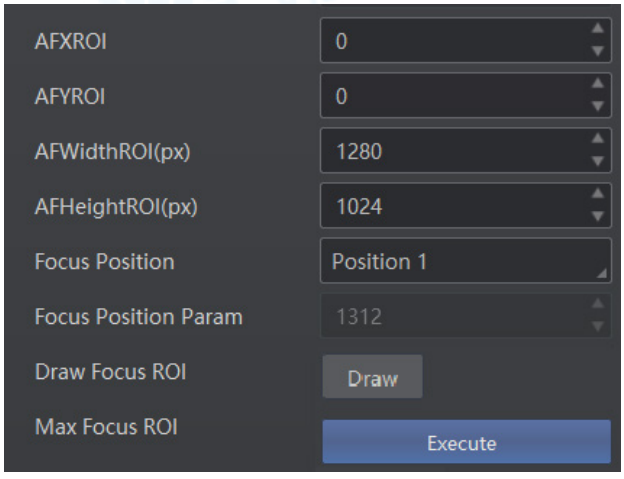
Focus Position Load

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

Area Focus

If enabled, 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

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

AFWidthROI

Width of the ROI.

AFHeightROI

Height of the ROI.

SelfAdapt Adjust

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

1. On the Image Settings panel, click All Features → SelfAdapt Adjust.
2. Select an adjust mode.

i	This function should be supported by the device.

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.

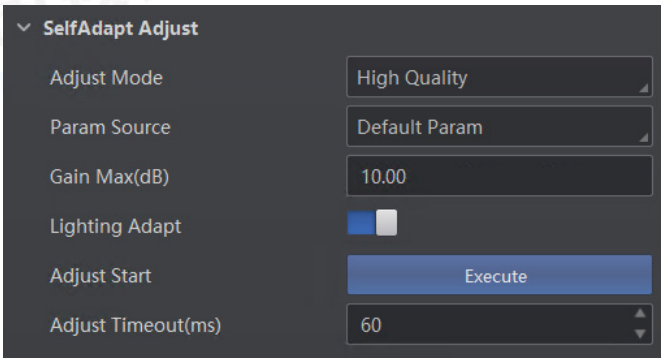
Default Param

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

Polling Param

The device will adjust the selected polling parameter.

4. Optional: Enable Lighting Adapt. If you enable this, the light will be enabled automatically when selfadapt adjusting is started.
5. Optional: Set the value for Gain Max or Exposure Max depending on the adjust mode you selected.
6. Set the value for Adjust Timeout. When the time costed for selfadapt adjust exceeds the set value, selfadapt adjust will stop.



i	This function should be supported by device.

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

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

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.

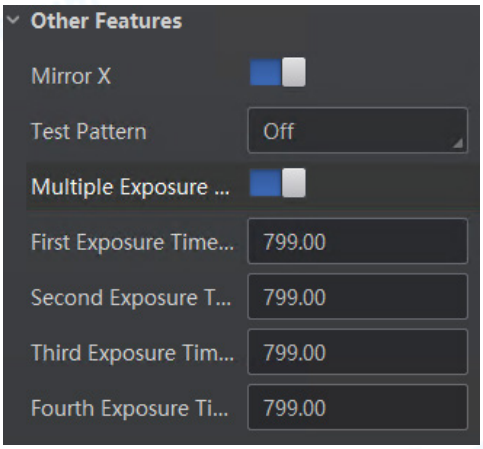
oblique mono bar

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.

	The features vary with different devices.



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.

	The features vary with different devices.

● 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

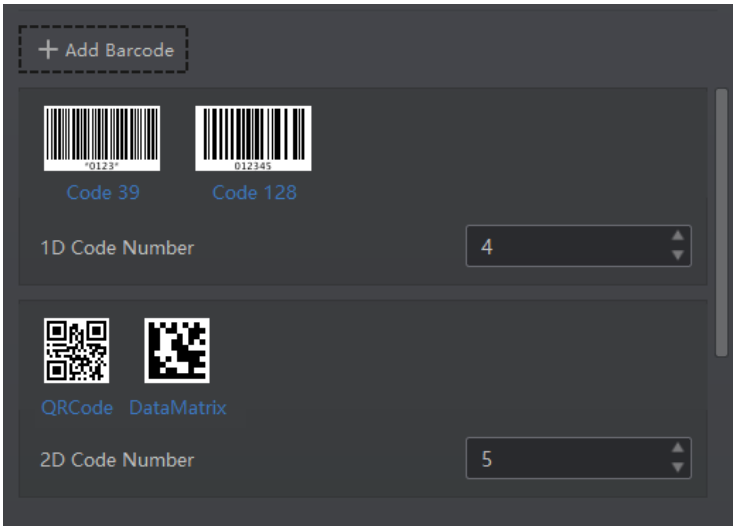
1. Click Algorithm Settings → Add Barcode to show the following panel.
2. Select barcode type(s).

The selected one(s) will be marked with Added.

	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 1D Code Number, 2D Code Number, and StackBar Number.

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



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

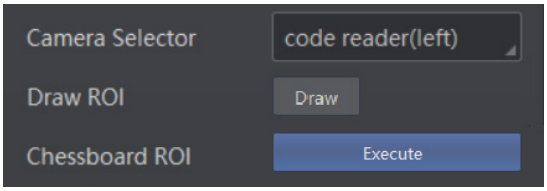
Start acquisition and then stop it to make sure an image is displayed. For details about acquisition and live view, see Acquisition and Live View.

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

Steps

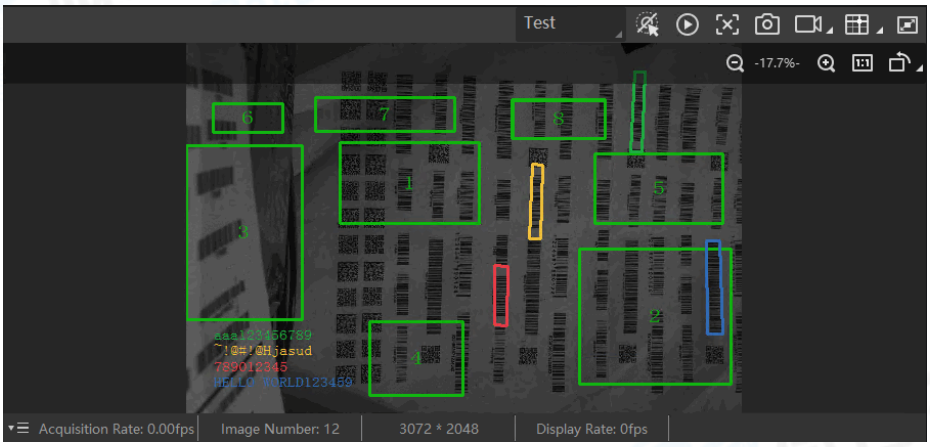
1. On the Algorithm Settings panel, click > next to Algorithm ROI to show parameters related to setting the algorithm ROI.
2. Select a channel from Channel Selector if the device has multiple channels.

	Skip this step if the device has only one channel.



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).

	The supported number of ROI varies for different device types.



   ● 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.

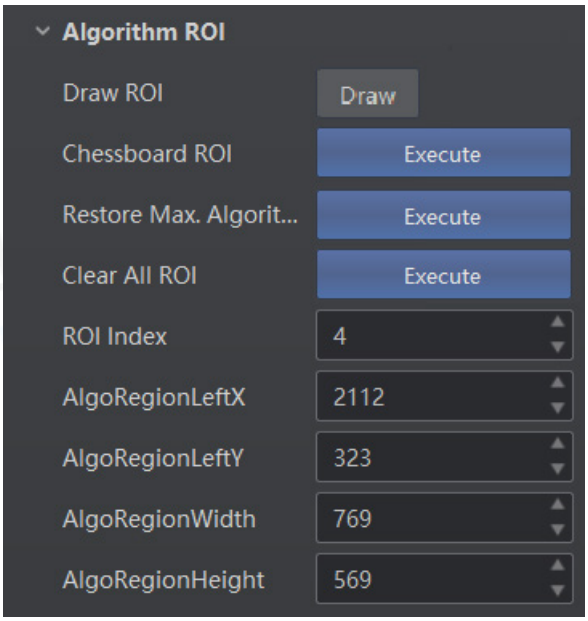
Column Spacing

The distance between each column of ROI.

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 and Size Precisely	Select an ROI from ROI Selector, and then set values for ROI 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.



● 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.

	● 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 model.

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 briefly introduces features related to 1D code algorithm.

Timeout Value
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.

2D Code Algorithm

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

	● 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.

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 table briefly introduces features related to 2D code algorithm.

Feature	Description
Algorithm Running Mode	● Balance Mode: Used in normal scenarios. ● HighPerformance: Provides high performance code reading. However, the processing time will be longer. ● HighSpeed: Used when the 2D code is clear, the quiet zone is wide and clear, and the code reading scenario is simple.
Timeout Value	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.
QR Distortion Correction	Enable this if the QR code is printed on a bottle or the QR code is creased.
DM Code Type	Select the version of DM codes that can be recognized by the device from ALL, ECC140, and ECC200.

Stack Code Algorithm

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

	● Make sure you have selected type PDF417 in Add Barcode. For details, refer to Add Barcode. ● For different models of the device, the specific parameters may differ, and the actual parameters displayed shall prevail.

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.

Timeout Value
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.

● Set Code Quality Evaluation

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

Steps

ℹ	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 Pro 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.

● Set Code Score

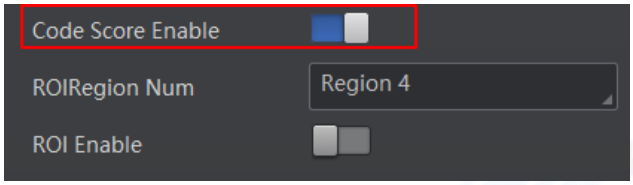
You can enable the Code Score function so that the Software can give the scores of the codes it has read.

Steps

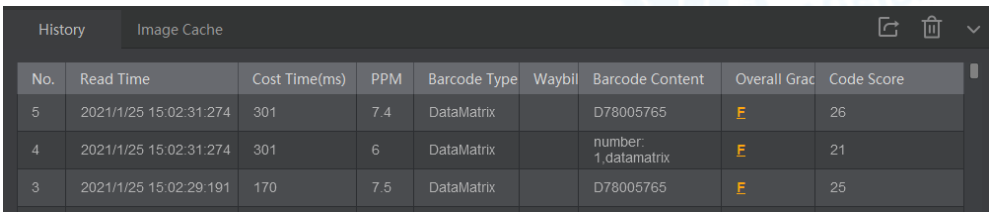
ℹ	● This function may differ by device models. ● In Test mode, this function is enabled by default. In Normal mode, you need to enable it manually. ● The score of a code is determined by two factors which are the image quality and print quality of codes. A score is between 0 and 100, and the higher the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



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



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.

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

● 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

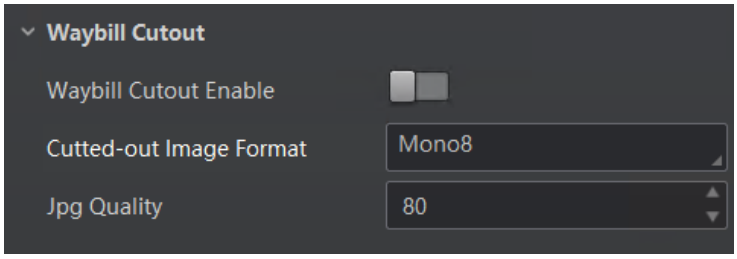
● Make sure you have set the running mode of the code reader to Normal. For details about setting running mode, see Running Mode.

● 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

	● 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).



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.

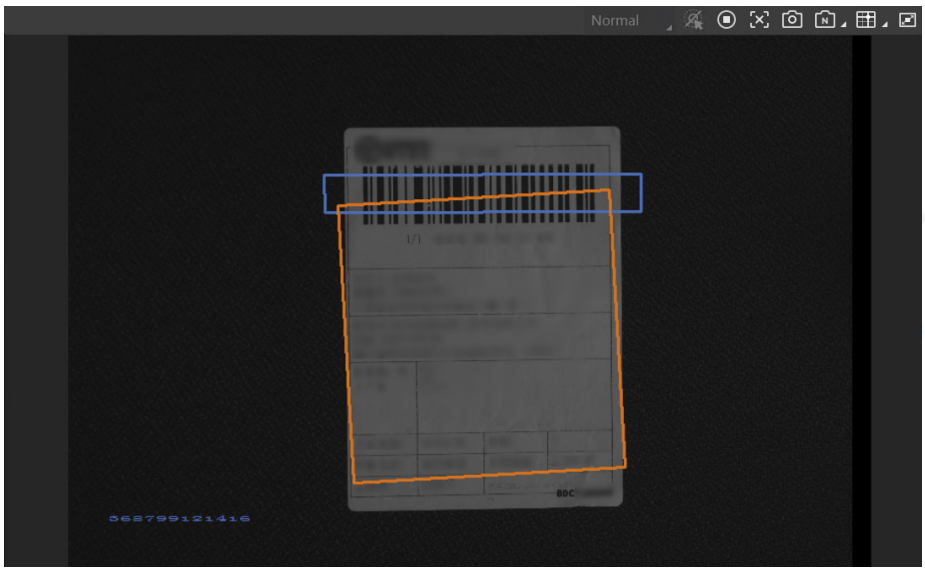
Cutted-out Image Format

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.



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.

● 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.

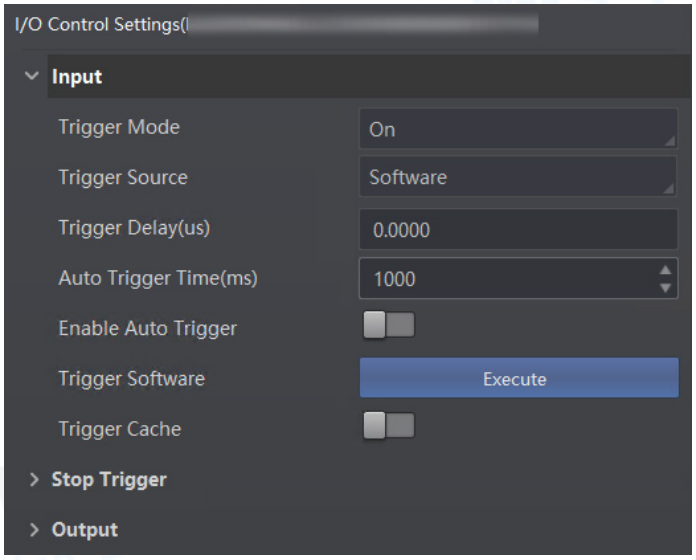
Before You Start

Connect a device to the Software.

Steps

ⓘ	The parameters displayed vary with the device model.

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



2. Set the Trigger Mode to On.

ⓘ	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.

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

   - ● 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.

ⓘ	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.

○ 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.text, the trigger signal will be outputted.

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.

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

ⓘ	Refer to Stop Trigger for details.

● 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.

ⓘ	● 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.

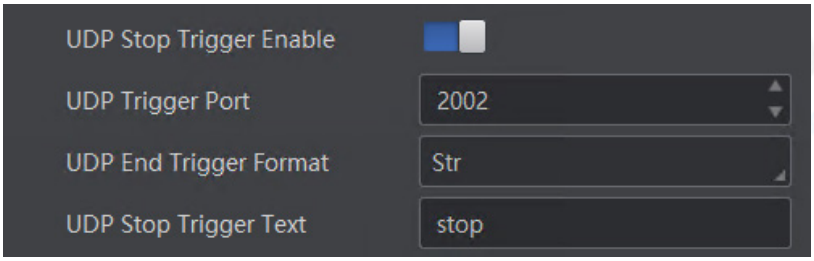
ⓘ	For some device models, you can select the text format from the drop-down list of TCP End Trigger Format. ● If Str is selected, enter the text in string format in the box next to TCP Stop Trigger Text. ● If Hex is selected, enter the text in hexadecimal format in the box below TCP Trigger End String. 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.

Stop Trigger via UDP

When the UDP server receives the specified string text, the trigger will be stopped.

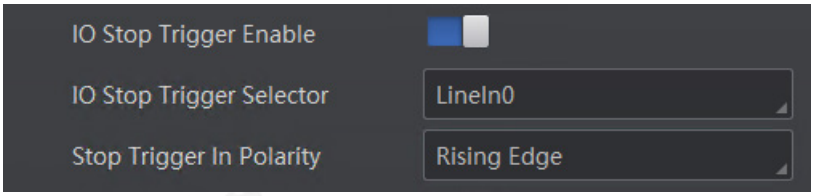
Switch on UDP Stop Trigger Enable, and set UDP Trigger Port and the text for stopping the trigger according to actual demands.

	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.

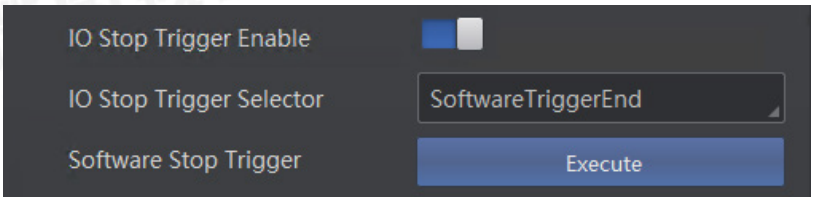


Stop Trigger via I/O

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.



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

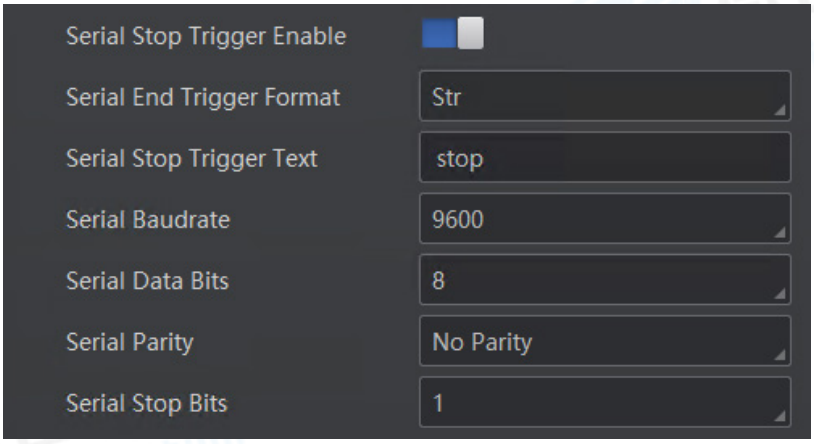


Stop Trigger via Serial Port

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.

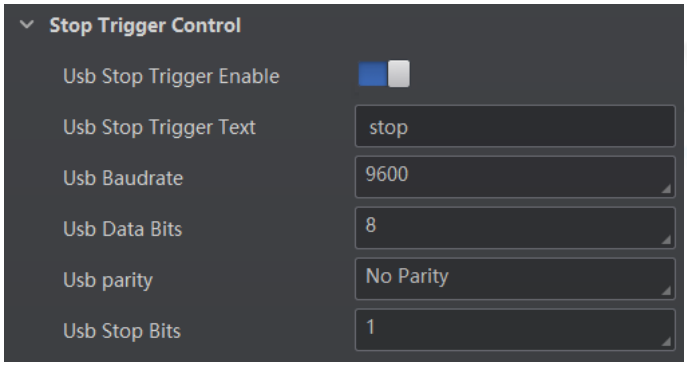
	The text format selection and the corresponding settings are similar to those for trigger stopping via TCP. For details about how to set text in string or hexadecimal format, refer to the note in the Stop Trigger via TCP section above.



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.

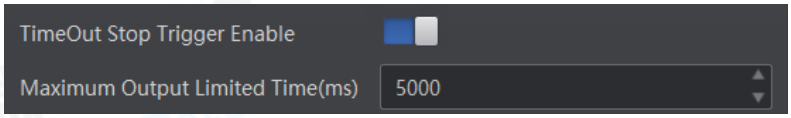


Stop Trigger via Timeout Duration

i	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.

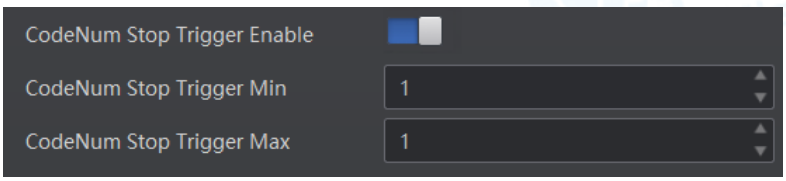


Stop Trigger via Code Number

i	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.



● Output

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

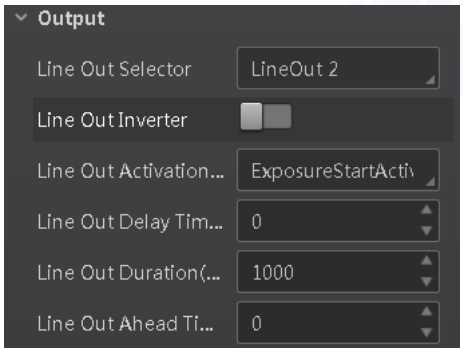
Before You Start

Connect a device to the Software.

Steps

	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.



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.

● LED

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

i	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.

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.

	● 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

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

● 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:

● 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 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:

● 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:

● 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 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：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:

- 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.
- 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:

- 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:

- 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.
- 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.

EthernetIp

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

- 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 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:

- 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:

- 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:

- 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

- 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.

Data Processing Settings

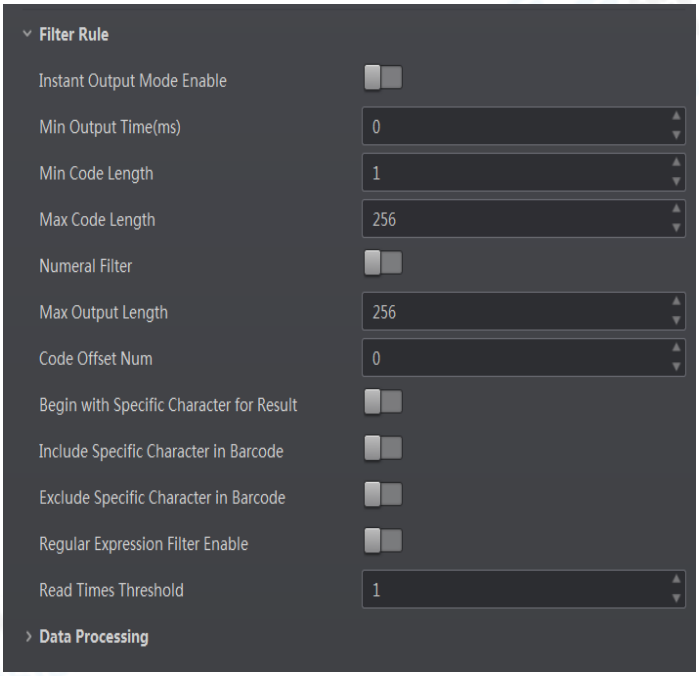
In the Data Processing panel, you can set filter rules for reading barcodes and other data processing related parameters.

	The parameters vary with different devices.

● Filter Rule

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

	The parameters vary with different device models.



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.

	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.

	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.

	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.

	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.

	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.

i	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

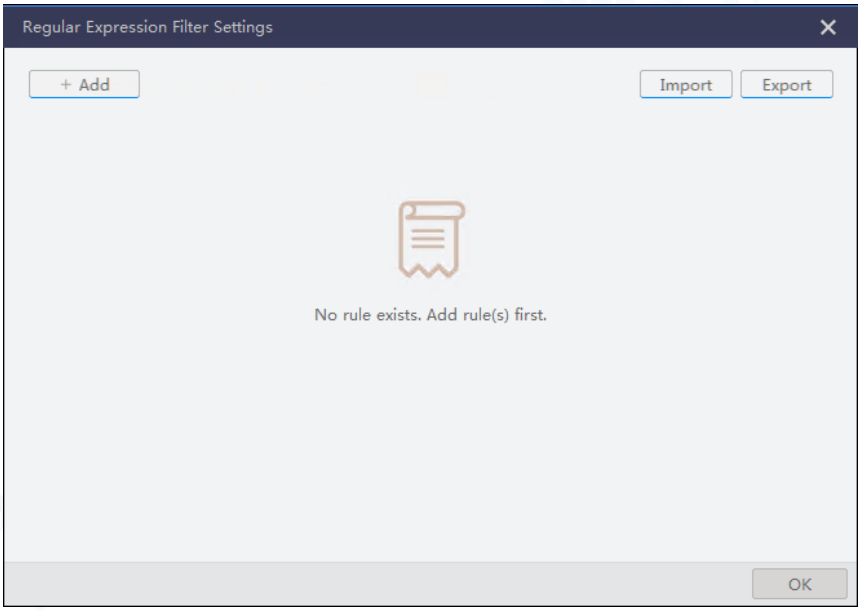
You can add regular expression filter rules to define how the barcodes will be regarded as valid.

Steps

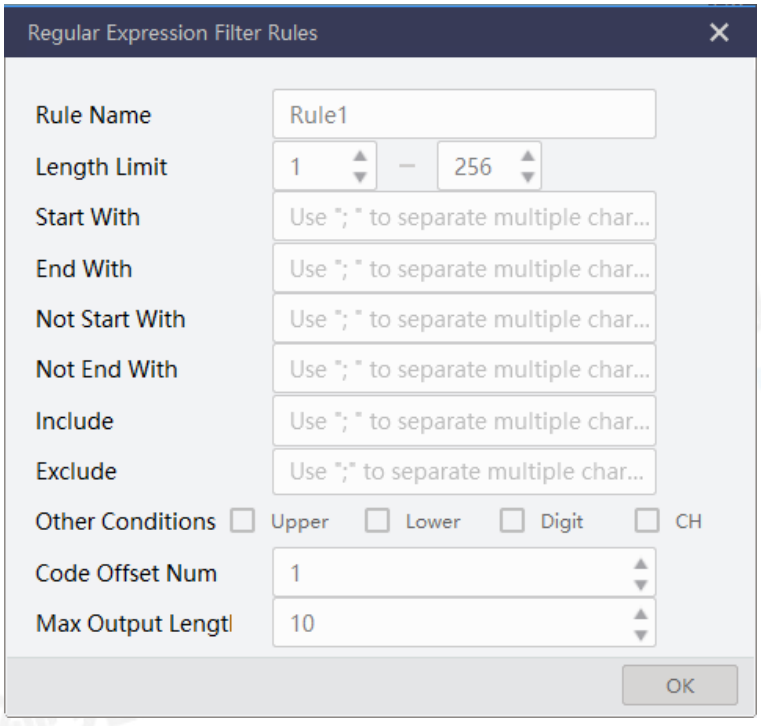
	Up to 10 rules can be added.

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.

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



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



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.

	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.

	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.

	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).

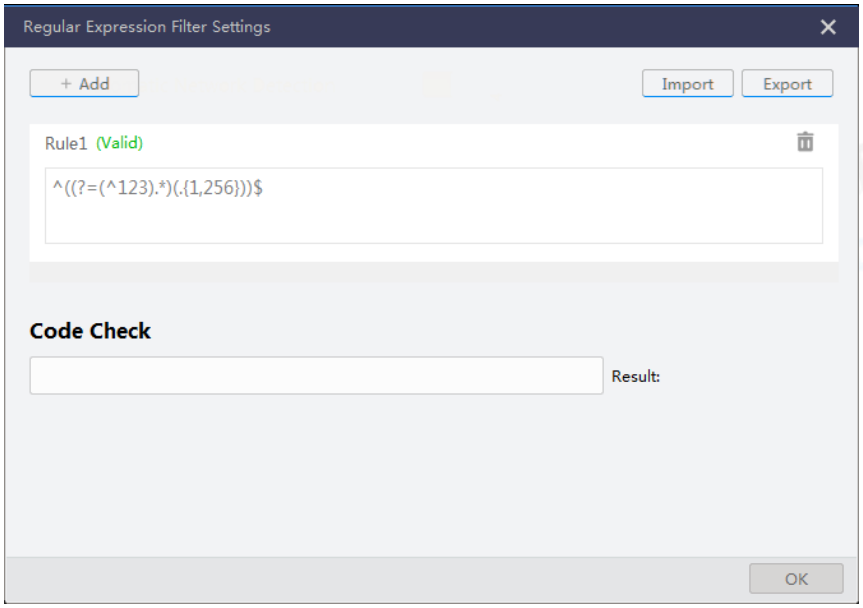
	For example, if it is set to 1, the code "12345678" will be output as "2345678".

Max Output Length

Set the maximum output length for a code.

	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.



6. Optional: Perform the following operations if needed.

	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 Checkto 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.

	Make sure the Filter Mode is selected as Regular Expressionon 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.

● Data Processing Settings

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

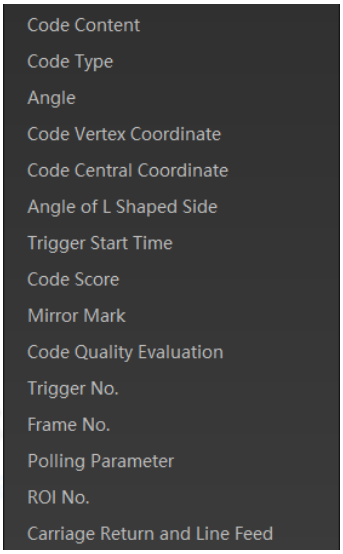
i	The actual parameters displayed may vary with different communication protocols. For details about communication settings, refer to Communication Settings.

When the Communication Protocol is TCP Client / Serial / TCP Server / Profinet / Melsec/ SLMP / EthernetIp / Modbus / UDP / FINS / USB

● ROI Output Noread Enable: Output the codes in the order of ROI index and add ROI index before the codes. Supplement the ROI that cannot read code with Noread.

● Output Format: Edit the output format.

i	This feature requires device support. Click to + add a parameter item.



● 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.

● 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.

When the Communication Protocol is FTP

● Output Retrans Enable: Enable to allow data re-transmission. Specify the limit of re-transmission attempts in Output Retrans Number.

● 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 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.

● FTP Time Format: Select a format type from the drop-down list for the time stamp contained in the file name.

i	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.

When the Communication Protocol is SmartSDK or HTTP

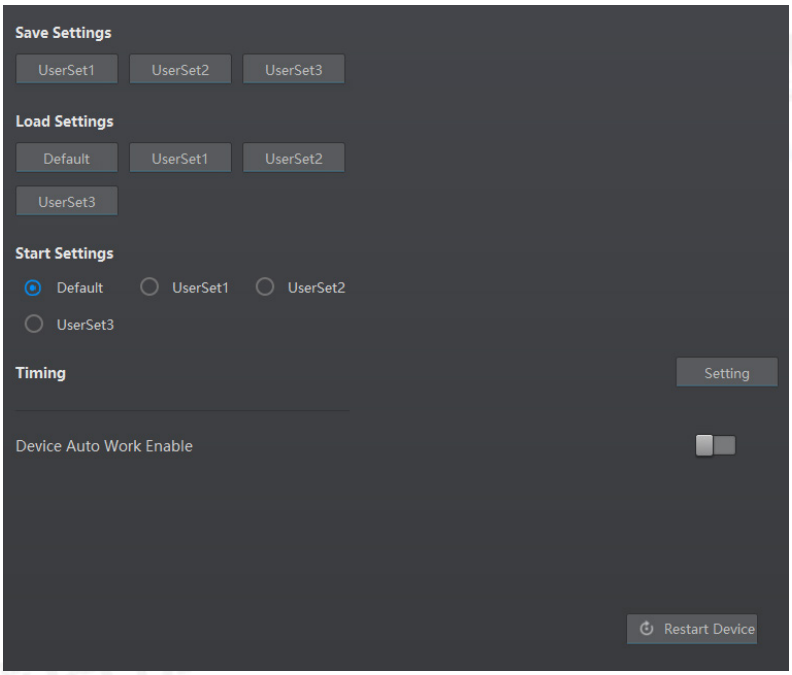
NoRead Image Index: Specify the index of the output image if no barcode is read. For example, if you set it to 5, the fifth image will be outputted if there are more than 5 images, or the last image will be outputted if there are less than 5 images.

Configuration Management

On the Configuration Management panel, you can configure and manage the User Set. A User Set is a group of parameter values with all the settings needed to control the device.

If you have configured the device parameters as desired, you can save them into the User Set. After that, you can load the User Set to restore the device to the saved group of parameter values again if required. You can also enable the device to work automatically after being powered on, and restart the camera.

Click Config Management to enter the Configuration Management panel.



The following operations are available:

- Save Settings: Select User Set1, User Set2, User Set 3 to save the configured device parameters into them respectively.
- Load Settings: Load the saved device parameters.
  - Default: Restore the device parameter settings to the factory settings.
  - User Set 1/2/3: Restore the device parameter settings to the parameters settings saved in User Set 1, User Set 2, or User Set 3 respectively.
- Start Settings: The selected User Set will be automatically loaded after the device being powered on. For example, if you select Default, the device parameter settings will be restored to the factory settings.
- Timing: Click Setting to enable Network Time Protocol (NTP) timing.
- Device Auto Work Enable: If enabled, the device will automatically enter the working mode after being powered on.
- Restart Device: Click Restart Device to restart the device.

Acquisition and Live View

You can acquire streams from the camera(s) 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 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

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

1. Connect camera(s) to the Software.
2. Click Test on the upper-left of the image and then select the camera's running mode (Test, Normal, or Raw).

i	For details about running mode, see Running Mode.

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

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

Click to resume live view

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

6. 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.

i	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.

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.

	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.

	After live view being stopped, acquisition still goes on.

7. Click  to batch stop acquisition.

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, you can double-click the image to enter or exit the full-screen mode.

You can also enter the full-screen mode via the keyboard shortcut (F4 by default).

For both multi-window mode and 1-window mode, you can press Esc on the keyboard to exit the full screen mode.

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.

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.
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.

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).

	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.

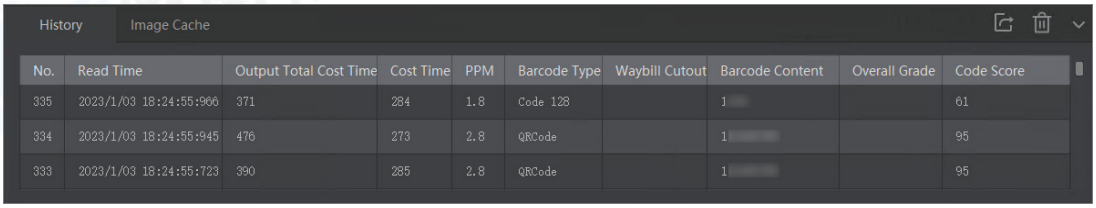
	The parameter should be supported by the device.

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.



No.	Read Time	Output Total Cost Time	Cost Time	PPM	Barcode Type	Waybill Cutout	Barcode Content	Overall Grade	Code Score
335	2023/1/03 18:24:55:966	371	284	1.8	Code 128		1		61
334	2023/1/03 18:24:55:945	476	273	2.8	QRCode		1		95
333	2023/1/03 18:24:55:723	390	285	2.8	QRCode		1		95

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.

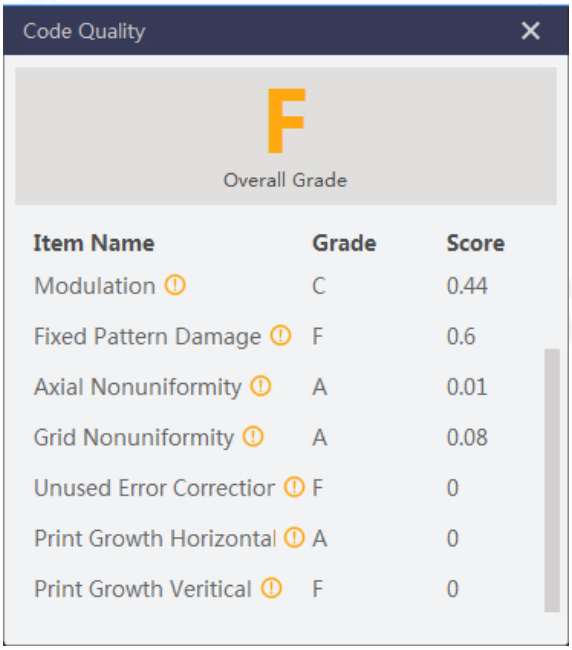
	○ The function should be supported by the device. ○ For details about enabling Waybill Cutout, see Enable Waybill Cutout.

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

	○ The default saving path is C:/Users/The Current System Account/DM-Datum/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.



- 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 Parameter	Description
Decode	Evaluate whether decoding is possible or not for the DM code. The greater the possibility, the higher the grade will be.
Symbol Contrast	Evaluate 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.
Modulation	Evaluate 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 Damage	Evaluate 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-uniformity	Evaluate 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-uniformity	Evaluate the biggest deviation from the grid. The bigger the deviation, the lower the grade will be.
Unused Err. Correction	Evaluate the amount of available Error Correction at the time of decoding. The more available Error Correction, the higher the grade will be.
Print Growth Horizontal	Evaluate the print deviation (Overprint or Underprint) of the DM code in the horizontal direction. The less the deviation, the higher the grade will be. Note: The grade based on this parameter is not included in the overall grade.
Print Growth Vertical	Evaluate the print deviation (Overprint or Underprint) of the DM code in the vertical direction. The less the deviation, the higher the grade will be. Note: The grade based on this parameter is not included in the overall grade.

Image Cache

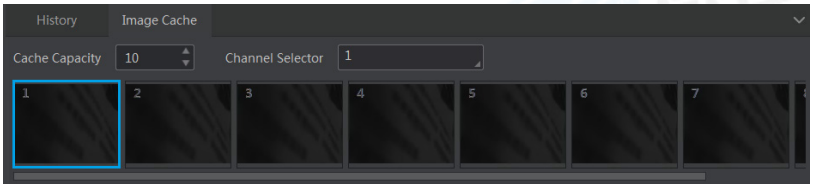
During live view, you can view the images temporarily saved in the cache list.

You can click Image Cache to view these images.

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.

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



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 on the Control Toolbar on the upper left to open the Statistics window.

Read Code Images

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

Unread Code Images

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

Total Code Images

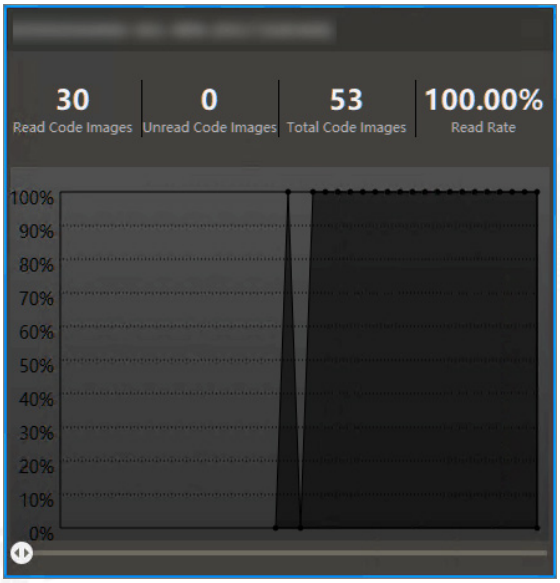
The total number of the code images.

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.



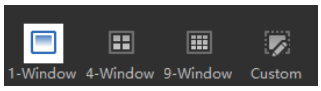
4. Optional: Click to refresh the statistics.

Window Division

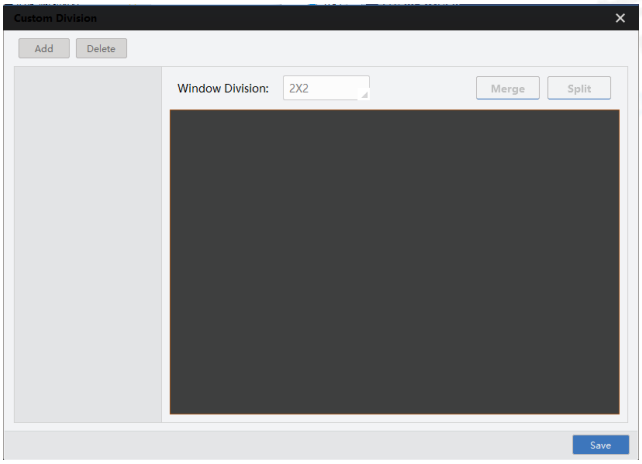
Three default window division modes are provided in Custom Division module, i.e., 2 X 2 (4-Window), 3 X 3 (9-Window), and 4 X 4 (16-Window). You can add the three modes to the Window Division panel, or merge (or split) windows based on the three modes.

Steps

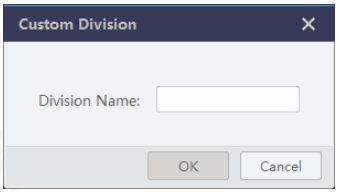
1. Click to display the window division panel.



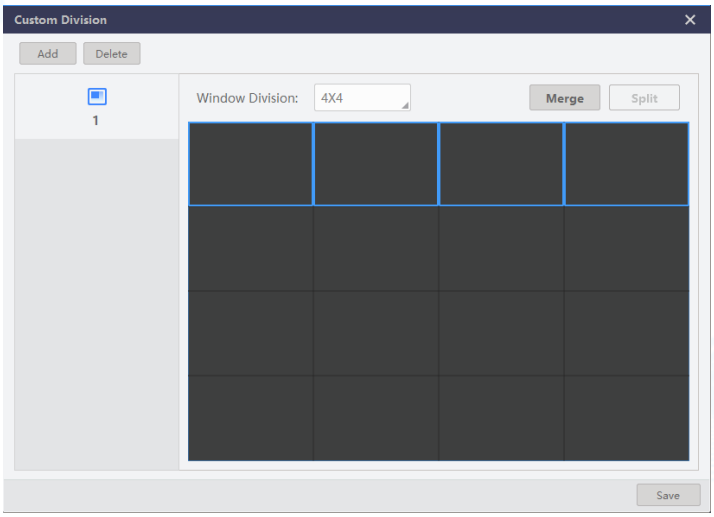
2. Click Custom to open the Custom Division window.



3. Click Add to open the following window.



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.

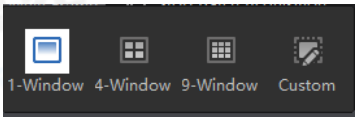


   2) Click Merge to merge the selected windows into a larger one.

	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.



Capture and Recording

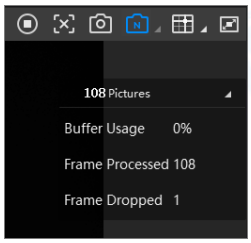
During live view, you can capture a picture and continuously capture pictures (or record video files).

Steps

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

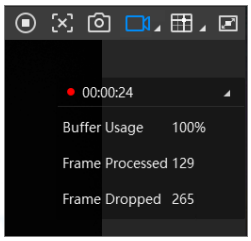
Click to capture a picture and save the picture to the local PC.Click to continuously capture pictures of the live view, and click the icon again to stop capturing.

	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.



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

	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.



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.

	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.

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.

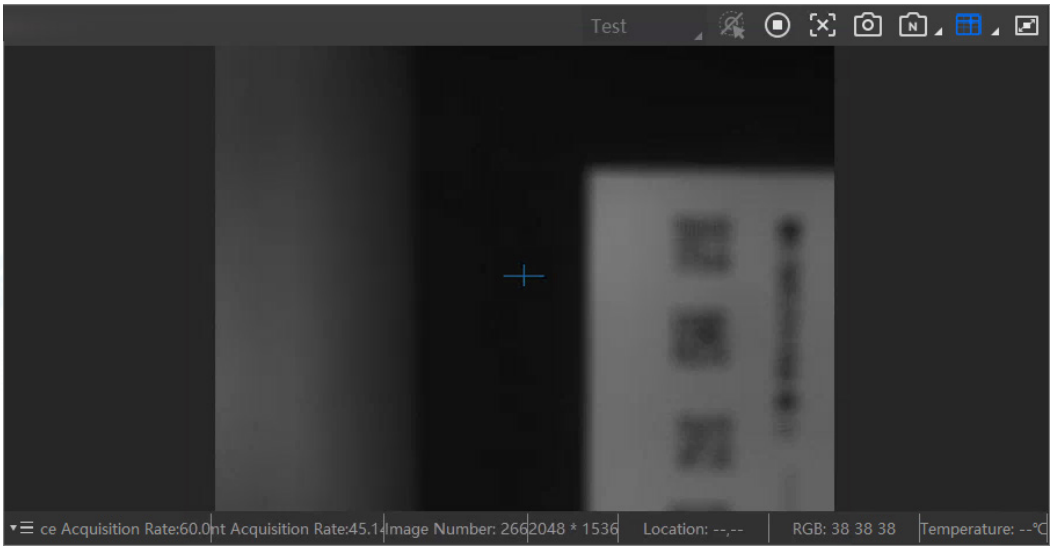
1. Select a camera and start the live view.

	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.

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.



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, display rate, location, RGB, and temperature.

Steps:

1. Start live view of a device.

	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.
   - 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.
   - Temperature: The temperature of the device.

More Functions

During live view, you can perform other operations such as digital zoom and rotating image.

- Digital Zoom: Right-click the image and then click Zoom in / Zoom out, or move the cursor to the image and scroll the mouse wheel to zoom in or zoom out the image. You can also click to zoom out or click to zoom in.
- Adjust Image Window Size: Click , or right-click the image and then click Fit to Window to fit the size of the image window to that of the display window. Click , or right-click the image and then click Actual Size to set size of the image window to its actual size.
- Rotate Image: Click , or right click the image and then click Rotate Left to rotate the image to the left. Click beside and then click Rotate Right, or right-click the image and then click Rotate Right to rotate the image to the right.
- Smart Tune: Click on the Control Toolbar on the upper left to perform smart tuning.

For details about the smart tuning configuration, see Smart Tune Control.

- Auto Focus: Click on the Control Toolbar on the upper left to perform auto focus. For details about the auto focus configuration, see Auto Focus.
- SelfAdapt Adjust: Click on the Control Toolbar on the upper left to adjust self-adaption. For details about the self-adaption configuration, see SelfAdapt Adjust.

Tool Management

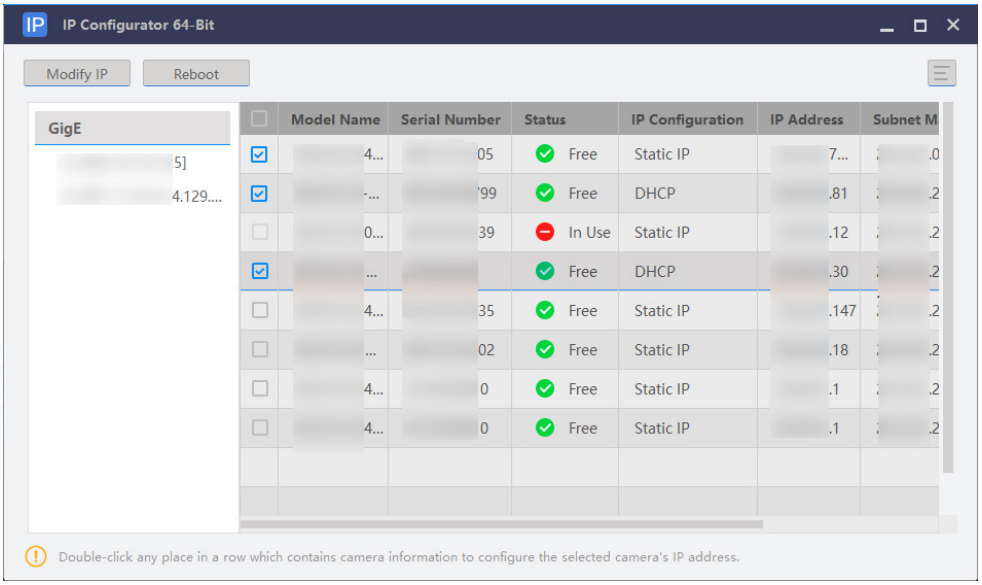
The Software provides multiples tools for the management, configuration, and maintenance of cameras, such as IP Configurator (for editing code reader IP address), Firmware Updater (for upgrading code reader firmware), etc.

IP Configurator

IP configurator allows you to modify the IP address(es) of the devices in the same local subnet with the PC the running the Software if the device status is Free or Unreachable.

i	Make sure you have disconnect the device from the Software.

Click Tool → IP Configurator to open the IP Configurator. You can also go to Start → All Programs → DM-Datum → Tools → Ip_ Configurator on the PC to open the IP Configurator.



All the detected devices in the same subnet will be displayed on the list. You can view the device status.

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.

See Acquisition and Live View for details about live view operations.

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 click Reboot to batch restart the selected cameras.

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.

● Modify IP Address of a Single Camera

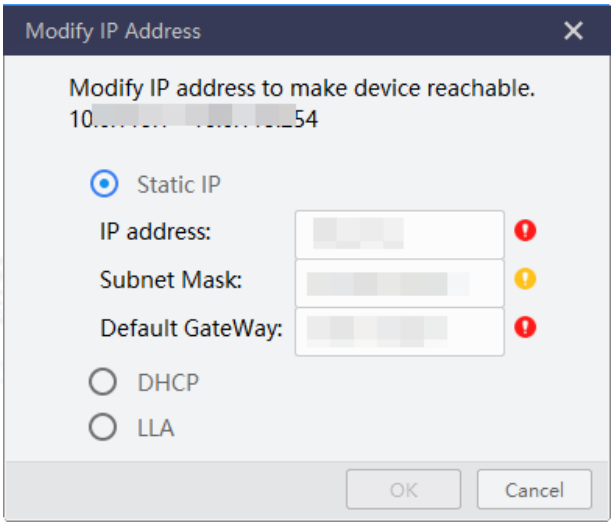
You can modify the IP address of a single device if the device status is Free or Unreachable.

Steps

1. Select a network interface.
2. Right-click the device row, and click Modify IP to open the Modify IP Address window.
3. Select the Static IP, DHCP, or LLA as the IP type.

i	You can change the IP type only when the device status is Free.

Type	Description
Static IP	For setting the IP type as Static IP, you can modify the IP address, subnet mask, and default gateway.Note: After you change the address in Static IP, the device will restart automatically.
DHCP	The device is set to automatically obtain an IP address. This means that the IP address will dynamically change (within a range) every time the device or computer is restarted.
LLA	The device use 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.



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

i	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.

● Edit IP Addresses of Multiple Cameras

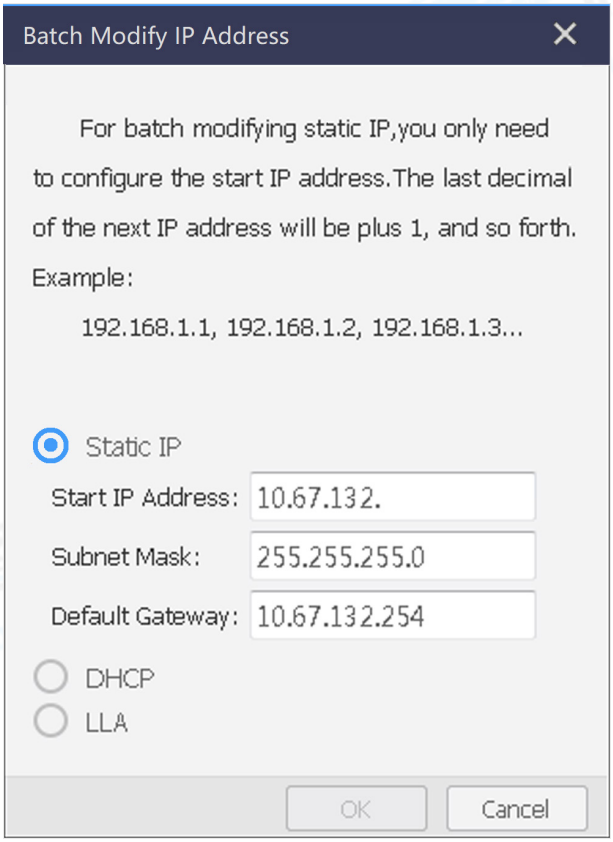
You can batch modify the IP addresses of multiple cameras.

Steps

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

i	You can select up to 20 cameras.

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



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

i	● 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.

i	If the modified IP address conflicts with another camera'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.

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.

Import/Export Features

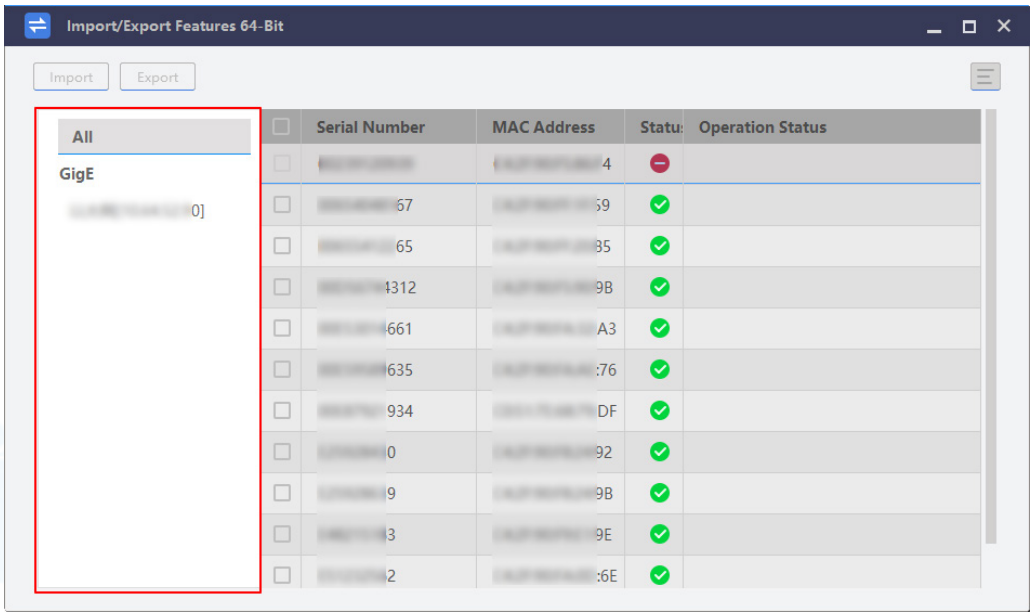
On the Import/Export Features window, all GigE Vision cameras on the same local subnet with the PC on which the Software runs will be displayed automatically. You can select camera(s) and then export their feature configurations to the local PC as MFS files or import MFS files to batch load the feature configurations to the camera(s).

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.



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

	● 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.

	The exported MFS file is named as "device model_serial number" by default.

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

	● 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.

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.

	You can select multiple cameras at a time.

3. Click Collect to start collecting the data of the camera(s).

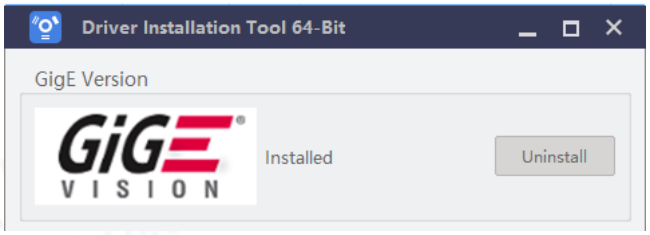
The simulated camera(s) will appear on the drop-down virtual camera list on the right side of the tool window.

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.

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.



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 Running Environment Configuration.

Logs

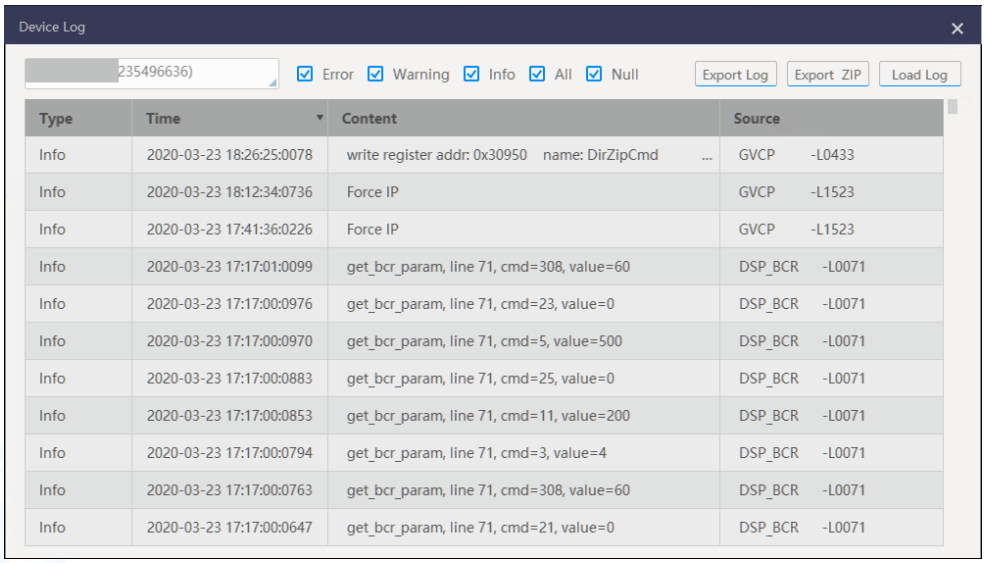
You view both logs about progresses and operations on the Software, and the SDK (Software Development Kit) logs.

Device Logs

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

	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.



(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.

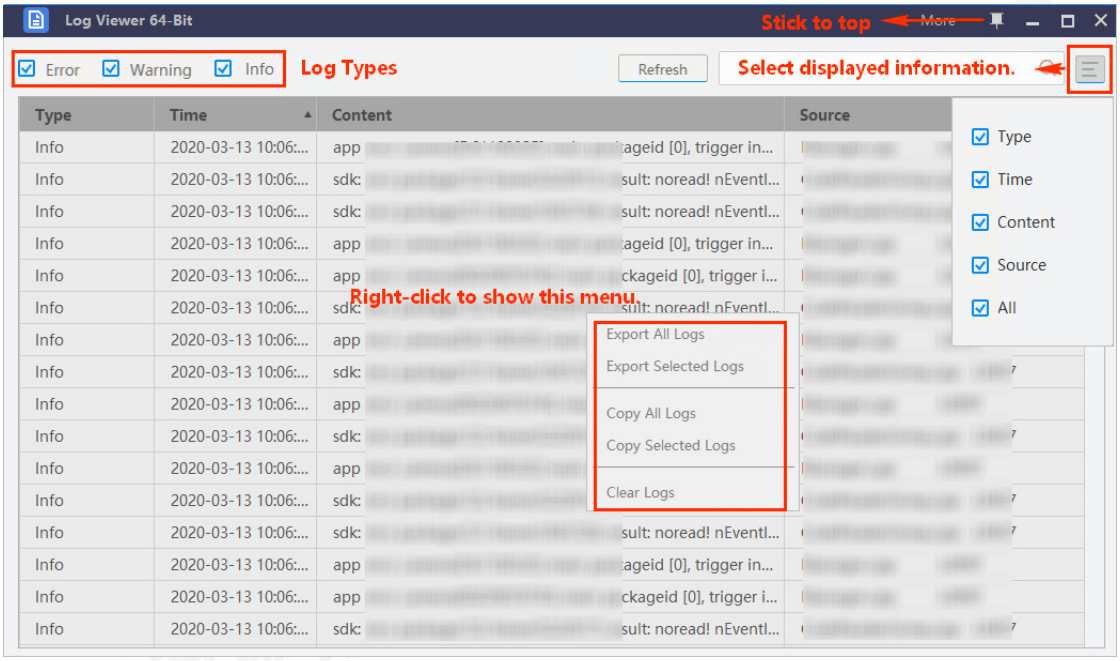
SDK Logs

Via the Log Viewer tool, you can perform operations including viewing/downloading/copying/deleting the SDK logs of different types, configure log settings such as the maximum number of the displayed SDK logs, etc.

View SDL Logs

You can view the SDK logs of the Client. Three types of SDK logs are available, i.e., error, warning, and information. Each log contains the information including log type, log time, log content, process name, etc.

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



The following table shows the descriptions of the three 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.

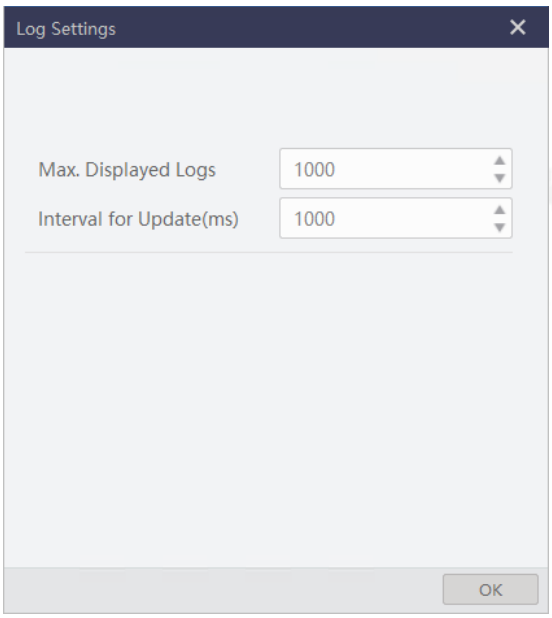
Operation	Description
Export All SDK Logs	Right-click the log list and then click Export All Logs.
Export Selected SDK Logs	Press and hold the Shift/Ctrl key and left-click the mouse to select multiple SDK logs continuously, and then right-click the log list and click Export Selected Logs.
Search Logs	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).

SDK Logs

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.



- 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.

FAQ

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

FAQs

■ **No device is enumerated after running the Software.**

Possible Causes:

The device does not start properly or the network cable is not connected properly.

Solution:

Check the power supply of the device and the network connection.

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

Possible Causes:

1: The device and the Software are not in the same network segment.

2: The device has been occupied by another software or program.

Solution:

● For Possible Causes1, Use IP Configurator to modify the IP address of the device. See Modify IP Address of a Single Camera for details.

● For Possible Causes2, Disconnect the device from any other software or program, and then connect it to the Software again.

■ **Why does the live view show black image?**

Question:

Why does the live view show black image?

Solution:

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.

■ **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?

Solution:

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.

■ **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?

Solution:

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.

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