

Hangzhou Hikrobot Technology Co.,Ltd.

# Logistics Code Reader

User Manual

**HIKROBOT**

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

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

## Available Model

This manual is applicable to the Logistics Code Reader.

## Contact Information

Hangzhou Hikrobot Co., Ltd.

E-mail: [global.support@hikrobotics.com](mailto:global.support@hikrobotics.com)

Website: <https://en.hikrobotics.com/>

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# Chapter 1 Safety Instruction

The safety instructions are intended to ensure that the user can use the device correctly to avoid danger or property loss. Read and follow these safety instructions before installing, operating and maintaining the device.

## 1.1 Safety Claim

- To ensure personal and device safety, when installing, operating, and maintaining the device, follow the signs on the device and all safety instructions described in the manual.
- The note, caution and danger items in the manual do not represent all the safety instructions that should be observed, but only serve as a supplement to all the safety instructions.
- The device should be used in an environment that meets the design specifications, otherwise it may cause malfunctions, and malfunctions or component damage caused by non-compliance with relevant regulations are not within the scope of the device's quality assurance.
- Our company will not bear any legal responsibility for personal safety accidents and property losses caused by abnormal operation of the device.

## 1.2 Safety Instruction

### **Caution:**

- In the use of the device, you must be in strict compliance with the electrical safety regulations of the nation and region.
- Install the device in accordance with the installation method mentioned in this manual, and makes sure that the device is firmly fixed.
- It is forbidden to install the indoor device in an environment where it may be exposed to water or other liquids. If the device is damp, it may cause fire and electric shock hazard.
- If the device emits smoke, odor or noise, please turn off the power and unplug the power cord immediately, and contact the dealer or service center in time.
- Use the power adapter provided by the official manufacturer. The power adapter must meet the Limited Power Source (LPS) requirements. For specific requirements, please refer to the device's technical specifications.
- Do not cover the device's plug or outlet for disconnecting power supply.
- Do not directly touch cooling parts of the device to avoid scald.
- Do not debug the device for a long time in close distance to avoid scald.
- It is strictly forbidden to install, wire or maintain the device when it is powered on, otherwise there is a danger of electric shock.
- Protective measures like wearing safety goggles are required when installing, maintaining

and debugging the device.

- In the absence of proper protection, you should keep safety distance with the light source, or avoid direct eye exposure with the light source during device installation and maintenance.
- Avoid aiming the lens at strong light (such as lighting, sunlight, or laser beams, etc.), otherwise the image sensor will be damaged.
- If it is necessary to clean the device, use a damp paper towel or a soft clean cloth to moisten a little pure water, gently wipe off the dust, and do not use alcohol-based corrosive solutions. Make sure to power off the device and unplug the power socket when cleaning.
- If the device does not work properly, please contact your dealer or the nearest service center. Never attempt to disassemble the device yourself (we shall not assume any responsibility for problems caused by unauthorized repair or maintenance).
- Please dispose of the device in strict accordance with the relevant national or regional regulations and standards to avoid environmental pollution and property damage.

### **Note:**

- Check whether the device's package is in good condition, whether there is damage, intrusion, moisture, deformation, etc. before unpacking.
- Check the surface of the device and accessories for damage, rust, bumps, etc. when unpacking.
- Check whether the quantity and information of the device and accessories are complete after unpacking.
- Store and transport the device according to the storage and transport conditions of the device, and the storage temperature and humidity should meet the requirements.
- It is strictly prohibited to transport the device in combination with items that may affect or damage the device.
- Please read the manual and safety instructions carefully before installing the device.
- The device should not be placed with exposed flame sources, such as lighted candles.
- Avoid covering the light source with foreign matter, lighting the light source with stroboscopic light for a long time and other improper use methods, so as to avoid damage to the device and the risk of fire.
- Quality requirements for installation and maintenance personnel:
  - Qualification certificate or working experience in weak current system installation and maintenance, and relevant working experience and qualifications. Besides, the personnel must possess the following knowledge and operation skills.
  - The basic knowledge and operation skills of low voltage wiring and low voltage electronic circuit connection.
  - The ability to comprehend the contents of this manual.

## 1.3 Electromagnetic Interference Prevention

- Make sure that the shielding layer of cables is intact and 360° connected to the metal connector when using shielded cables.

- Do not route the device together with other equipment (especially servo motors, high-power devices, etc.), and control the distance between cables to more than 10 cm. Make sure to shield the cables if unavoidable.
- The control cable of the device and the power cable of the industrial light source must be wired separately to avoid bundled wiring.
- The power cable, data cable, signal cable, etc. of the device must be wired separately. Make sure to ground them if the wiring groove is used to separate the wiring and the wiring groove is metal.
- During the wiring process, evaluate the wiring space reasonably, and do not pull the cables hard, so as not to damage the electrical performance of the cables.
- If the device is powered on and off frequently, it is necessary to strengthen the voltage isolation, and consider adding a DC/DC isolation power supply module between the device and the adapter.
- Use the power adapter to supply power to the device separately. If centralized power supply is necessary, make sure to use a DC filter to filter the power supply of the device separately before use.
- The unused cables of the device must be insulated.
- When installing the device, if you cannot ensure that the device itself and all equipment connected to the device are well grounded, you should isolate the device with an insulating bracket.
- To avoid the accumulation of static electricity, ensure that other equipment (such as machines, internal components, etc.) and metal brackets on site are properly grounded.
- During the installation and use of the device, high voltage leakage must be avoided.
- Use a figure-eight bundle method if the device cable is too long.
- When connecting the device and metal accessories, they must be connected firmly to maintain good conductivity.
- Use a shielded network cable to connect to the device. If you use a self-made network cable, make sure that the shielding shell at the aviation head is well connected to the aluminum foil or metal braid of the shielding cable.

## Chapter 2 Overview

### 2.1 Introduction

Logistics code reader integrates functions of image acquisition, data processing, and result output. It not only improves the efficiency of image data transmission and processing, but also reduces the performance requirements for supporting devices.

Relying on code recognition technology, logistics code reader can automatically read codes, output corresponding code information, and connect to major express information management platforms, and is widely used in code recognition scenarios in the express logistics industry.

### 2.2 Key Feature

- Built-in code reading algorithm to read different types of one-dimensional and two-dimensional codes with good robustness.
- Integrates functions of image acquisition, data processing, and result output.
- Adopts integrated structure design for convenient installation.
- Centralized light with high luminescence efficiency.
- Long lifetime, stable performance, and strong environmental compatibility.

---

#### Note

- The specific functions may differ by device models.
  - Refer to the device's specifications for specific parameters.
-

# Chapter 3 Appearance

 **Note**

Appearance here is for reference only. Refer to the device's specification for detailed dimension information.

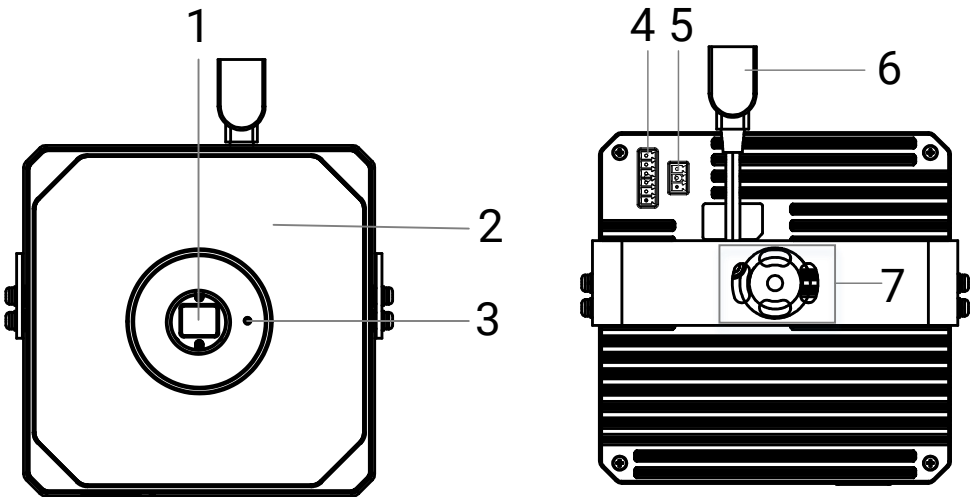


Figure 3-1 Appearance

Table 3-1 Component Description

| No. | Name               | Description                                                                                                                                                                                                                                                                |
|-----|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Lens Mount         | It is used to install the lens. Refer to the device’s specification for specific lens mount information.                                                                                                                                                                   |
| 2   | Light Source       | It has 24 LED lamps that provide light.                                                                                                                                                                                                                                    |
| 3   | Indicator          | It displays operation status of the device. Refer to section <i>Indicator</i> for details.                                                                                                                                                                                 |
| 4   | 6-Pin Terminal     | It provides power supply and I/O interface. Refer to section <i>6-Pin Terminal</i> for details.                                                                                                                                                                            |
| 5   | RS-232 Serial Port | The device supports RS-232 output.                                                                                                                                                                                                                                         |
| 6   | GigE Cable         | It has a built-in GigE interface to transmit data.                                                                                                                                                                                                                         |
| 7   | Screw Holes        | They are used to fix the device’s bracket to other structures. It is recommended to use the supplied M4 screws in the package or use the metric M4 screws whose length should be less than the sum of the thickness of the mounting plate and the depth of the screw hole. |

## Chapter 4 6-Pin Terminal and Indicator

### 4.1 6-Pin Terminal

The device has a 6-pin terminal that provides power supply and I/O interface. Refer to the table below for detailed pin definitions.

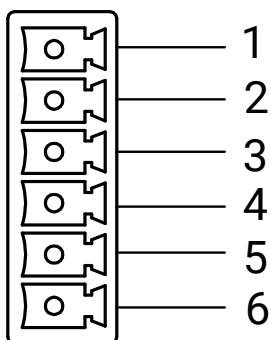


Figure 4-1 6-Pin Terminal

Table 4-1 Pin Definitions

| Pin No. | Signal | I/O Signal Source                 | Description                  |
|---------|--------|-----------------------------------|------------------------------|
| 1       | GPIO   | LineIn 2/LineOut 4 IO Signal Line | Configurable input/output IO |
| 2       | OUT3   | LineOut 3 Signal Line             | Opto-isolated output 3       |
| 3       | GND_IO | Isolated IO Ground                | --                           |
| 4       | IN0    | LineIn 0 Signal Line              | Opto-isolated input 0        |
| 5       | GND    | --                                | Power supply ground          |
| 6       | DC_PWR | --                                | DC power supply              |

### 4.2 Indicator

The indicator displays the operation status of the device. Refer to the table below for detailed device status.

Table 4-2 Indicator Description

| Indicator Status    | Device Status                            |
|---------------------|------------------------------------------|
| Rapid Flashing Blue | The device is acquiring images normally. |

| Indicator Status                       | Device Status                        |
|----------------------------------------|--------------------------------------|
| Solid Blue                             | The device is in idle status.        |
| Slow Flashing Red and Blue Alternately | The device is updating its firmware. |

---

 **Note**

When the indicator is flashing rapidly or slowly, its unlit interval is 0.2 sec and 1 sec respectively.

---

## Chapter 5 I/O Electrical Features and Wiring

### 5.1 I/O Electrical Features

#### 5.1.1 Input Signal

The device's LineIn 0 is opto-isolated input, and its internal circuit is as follows.

##### Note

- The maximum input current is 25 mA.
- The breakdown voltage is 30 VDC. Keep voltage stable.
- Make sure that the input voltage is not from 1 VDC to 3.3 VDC because the input level is not stable between this range.

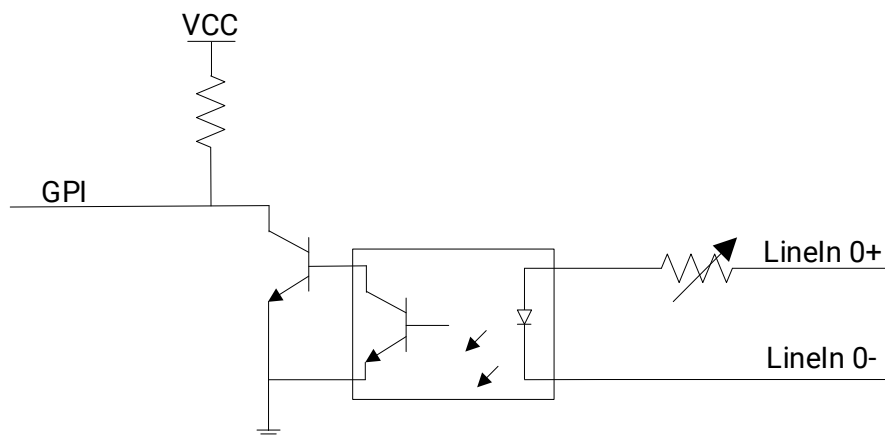


Figure 5-1 Internal Circuit of Input Signal

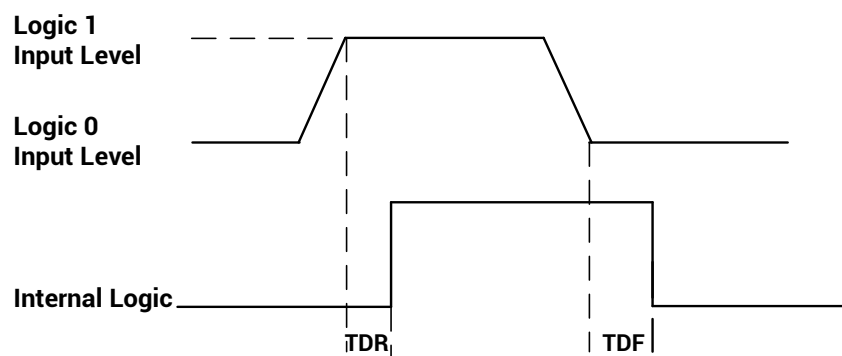


Figure 5-2 Input Logic Level

**Table 5-1 Input Electrical Feature**

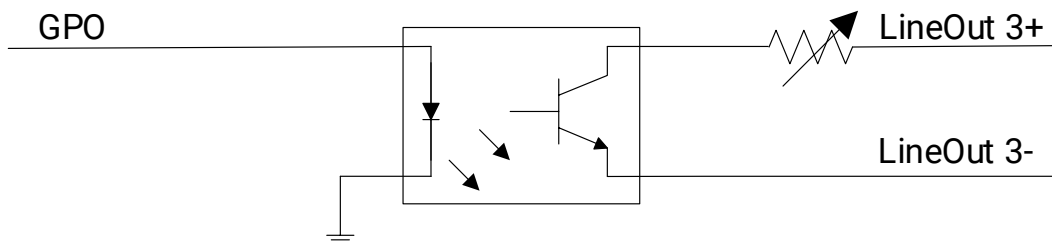
| Parameter Name         | Parameter Symbol | Value                      |
|------------------------|------------------|----------------------------|
| Input Logic Level Low  | VL               | 0 VDC to 1 VDC             |
| Input Logic Level High | VH               | 1.5 VDC to 24 VDC          |
| Input Falling Delay    | TDF              | 16.8 $\mu$ s to 22 $\mu$ s |
| Input Rising Delay     | TDR              | 1.8 $\mu$ s to 4.6 $\mu$ s |

## 5.1.2 Output Signal

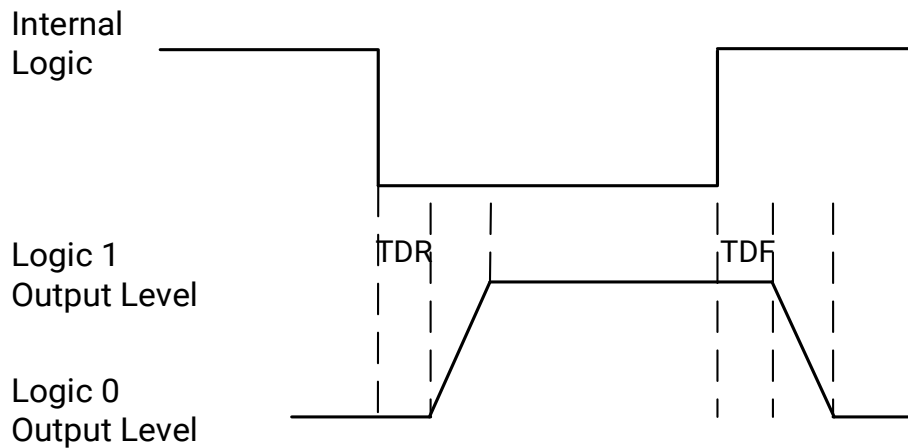
The device's LineOut 3 is opto-isolated output, and its internal circuit is as follows.

### Note

The maximum output current is 25 mA.



**Figure 5-3 Internal Circuit of Output Signal**



**Figure 5-4 Output Logic Level**

When the external voltage is 3.3 VDC and the external resistance is 1 K $\Omega$ , the electrical feature of opto-isolated output is shown below.

**Table 5-2 Output Electrical Feature**

| Parameter Name          | Parameter Symbol | Value                    |
|-------------------------|------------------|--------------------------|
| Output Logic Level Low  | VL               | 575 mV                   |
| Output Logic Level High | VH               | 3.3 VDC                  |
| Output Rising Time      | TR               | 8.4 $\mu$ s              |
| Output Falling Time     | TF               | 1.9 $\mu$ s              |
| Output Rising Delay     | TDR              | 15 $\mu$ s to 60 $\mu$ s |
| Output Falling Delay    | TDF              | 3 $\mu$ s to 6 $\mu$ s   |

**Note**

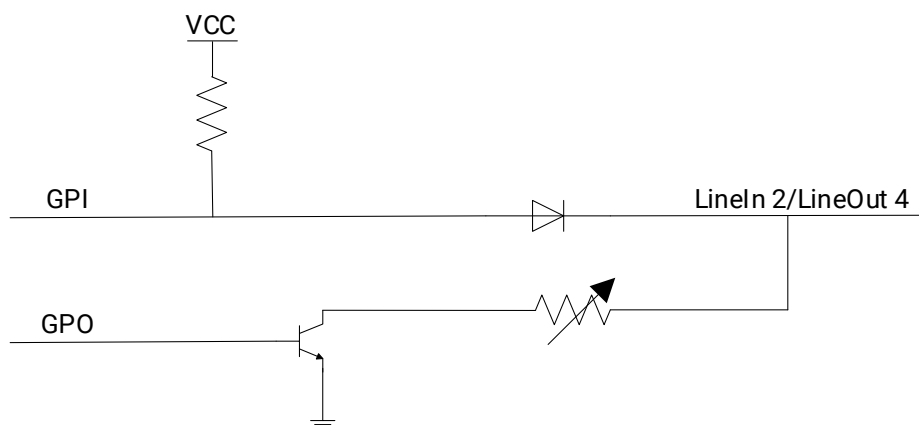
If the external voltage and resistance change, the corresponding current of output signal and output logic level low may differ.

**Table 5-3 Parameters of Output Logic Level Low**

| External Voltage | External Resistance | VL     | Output Current |
|------------------|---------------------|--------|----------------|
| 3.3 VDC          | 1 K $\Omega$        | 575 mV | 2.7 mA         |
| 5 VDC            | 1 K $\Omega$        | 840 mV | 4.1 mA         |
| 12 VDC           | 2.4 K $\Omega$      | 915 mV | 4.6 mA         |
| 24 VDC           | 4.7 K $\Omega$      | 975 mV | 4.9 mA         |

### 5.1.3 Bi-Directional Signal

The device has one bi-directional I/O signal (LineIn 2/LineOut 4), and you can set it as input signal or output signal according to demands. Its internal circuit is as follows.



**Figure 5-5 Internal Circuit of Bi-Directional Signal**

## Configured as Input Signal

### Note

- Make sure that the input voltage is not from 0.3 VDC to 3.3 VDC as the electric status between these two values are not stable.
- The breakdown voltage is 30 VDC. Keep voltage stable.
- To prevent damage to the GPIO pin, please connect GND first and then input voltage in LineIn 2/LineOut 4.

With the condition of 100  $\Omega$  resistance and 5 VDC voltage, the logic level and electrical feature of configuring LineIn 2 as input signal are shown below.

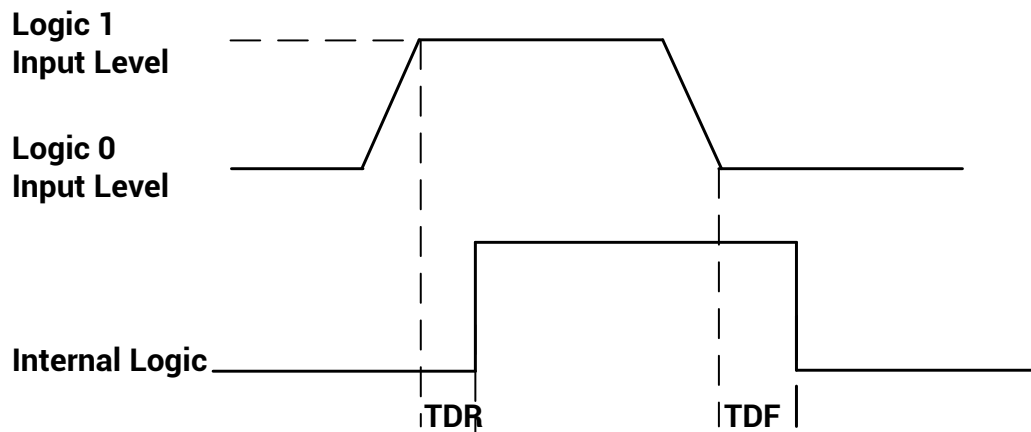


Figure 5-6 Input Logic Level

Table 5-4 Input Electrical Feature

| Parameter Name         | Parameter Symbol | Value             |
|------------------------|------------------|-------------------|
| Input Logic Level Low  | VL               | 0 VDC to 0.3 VDC  |
| Input Logic Level High | VH               | 3.3 VDC to 24 VDC |
| Input Falling Delay    | TDF              | < 1 $\mu$ s       |
| Input Rising Delay     | TDR              | < 1 $\mu$ s       |

## Configured as Output Signal

### Note

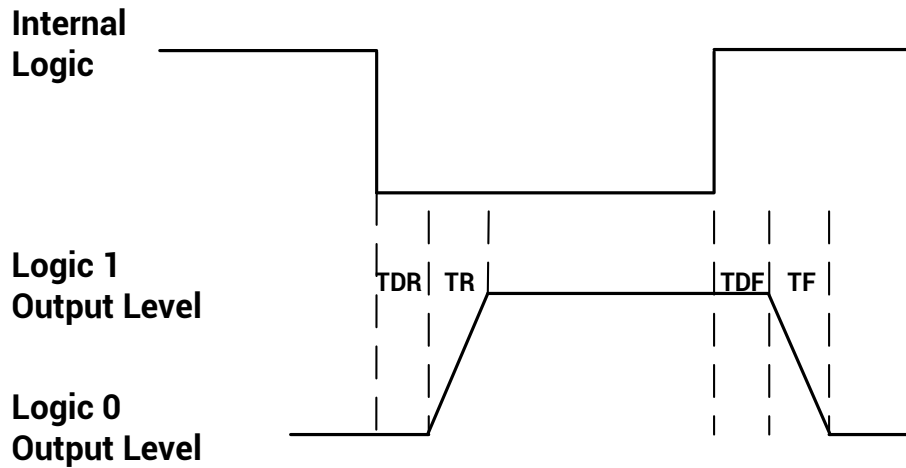
The maximum current is 25 mA and the output impedance is 40  $\Omega$ .

The relation among external voltage, resistance and the output level low is shown below.

**Table 5-5 Parameters of Output Logic Level Low**

| External Voltage | External Resistance | VL (GPIO2) |
|------------------|---------------------|------------|
| 3.3 VDC          | 1 K $\Omega$        | 160 mV     |
| 5 VDC            | 1 K $\Omega$        | 220 mV     |
| 12 VDC           | 1 K $\Omega$        | 460 mV     |
| 24 VDC           | 1 K $\Omega$        | 860 mV     |
| 30 VDC           | 1 K $\Omega$        | 970 mV     |

When the voltage of external resistance (1 K $\Omega$ ) is pulled up to 5 VDC, the logic level and electrical feature of configuring LineOut 4 as output are shown below.



**Figure 5-7 Output Logic Level**

**Table 5-6 Output Electrical Feature**

| Parameter Name          | Parameter Symbol | Value                  |
|-------------------------|------------------|------------------------|
| Output Logic Level Low  | VL               | 220 mV                 |
| Output Logic Level High | VH               | 4.75 VDC               |
| Output Rising Time      | TR               | 0.06 $\mu$ s           |
| Output Falling Time     | TF               | 0.016 $\mu$ s          |
| Output Rising Delay     | TDR              | 0 $\mu$ s to 4 $\mu$ s |
| Output Falling Delay    | TDF              | < 1 $\mu$ s            |

## 5.2 I/O Wiring

The device can receive external input signal or output signals to external devices via its I/O interface. This section introduces how to wire the device with external devices.

### 5.2.1 Input Signal Wiring

#### Note

- Input signal wiring may differ with different types of external devices.
- The appearance here is for reference only, and the actual device you purchased shall prevail.

#### PNP Device

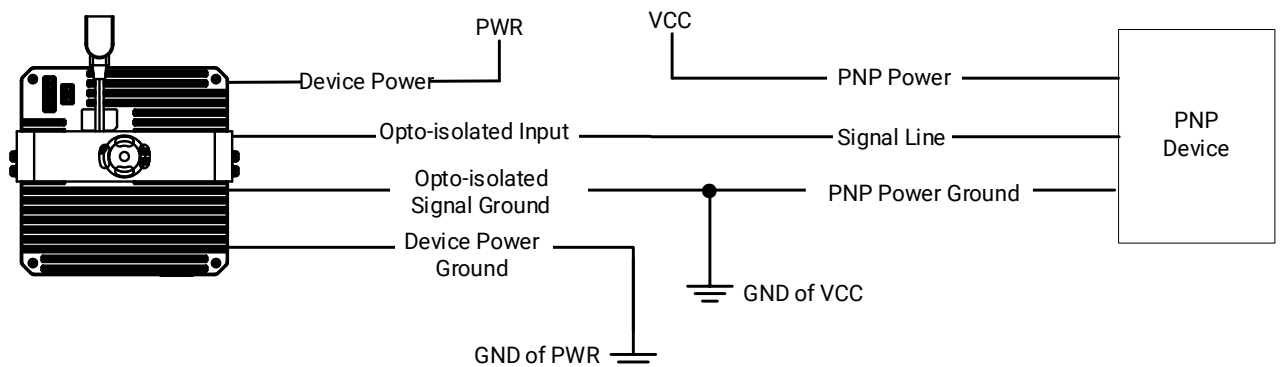


Figure 5-8 Input Signal Connects PNP Device

#### NPN Device

- If the VCC of NPN device is 24 VDC, it is recommended to use 4.7 K $\Omega$  pull-up resistor.
- If the VCC of NPN device is 12 VDC, it is recommended to use 1 K $\Omega$  pull-up resistor.

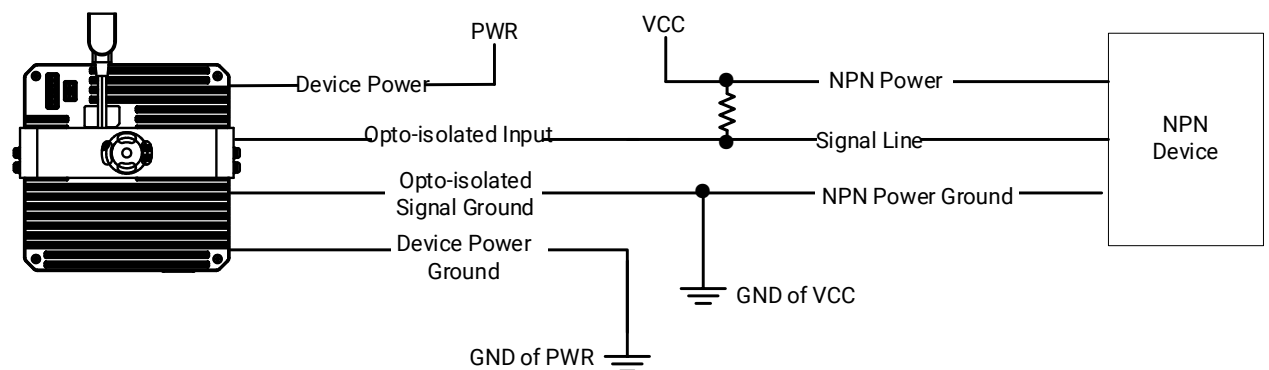


Figure 5-9 Input Signal Connects NPN Device

## Switch

It is recommended to use 4.7 K $\Omega$  resistor to protect the circuit if the VCC of the switch is 24 VDC.

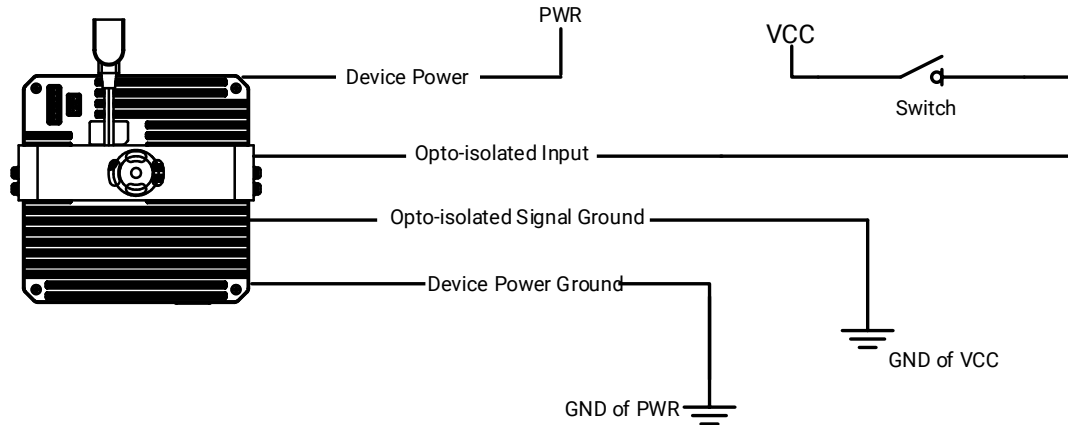


Figure 5-10 Input Signal Connects a Switch

## 5.2.2 Output Signal Wiring

### Note

- Output signal wiring may differ with different types of external devices.
- The appearance here is for reference only, and the actual device you purchased shall prevail.

### PNP Device

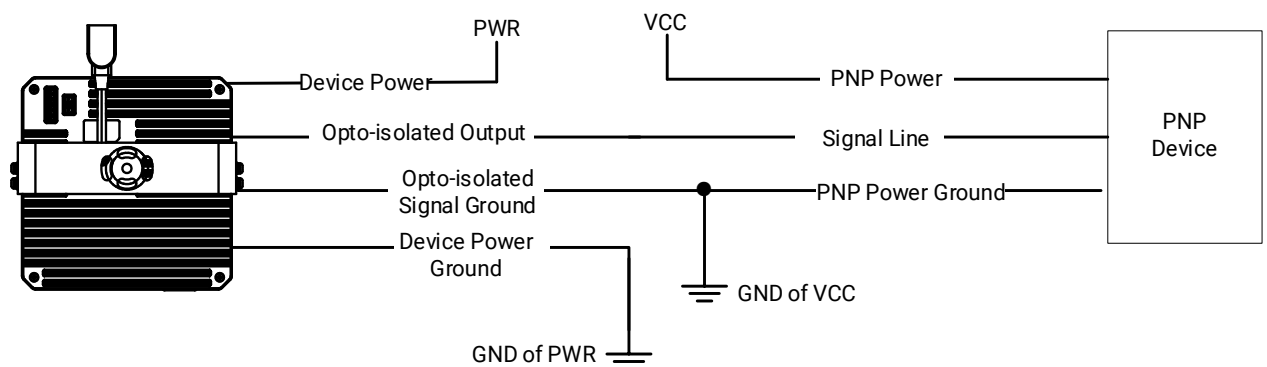
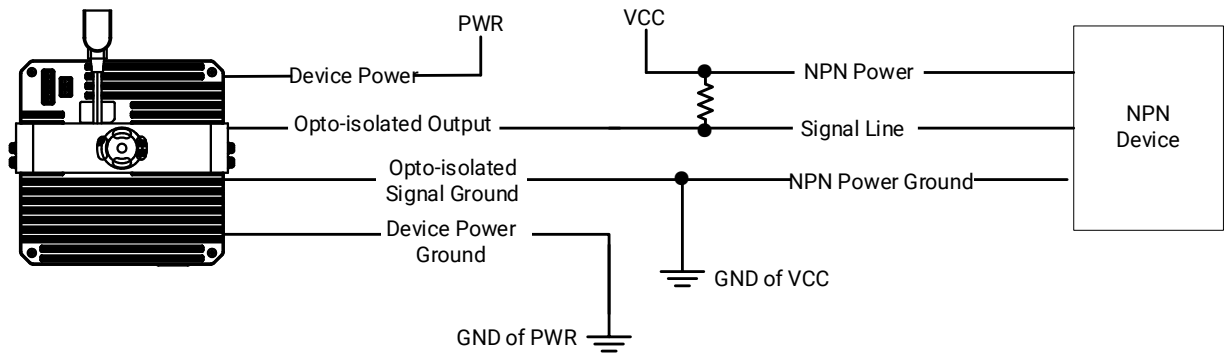


Figure 5-11 Output Signal Connects PNP Device

### NPN Device

- If the VCC of NPN device is 24 VDC, it is recommended to use 4.7 K $\Omega$  pull-up resistor.
- If the VCC of NPN device is 12 VDC, it is recommended to use 1 K $\Omega$  pull-up resistor.



**Figure 5-12 Output Signal Connects NPN Device**

## 5.2.3 Bi-Directional Signal Wiring

The device's LineIn 2/LineOut 4 can be used as input signal and output signal.

### Configured as Input Signal

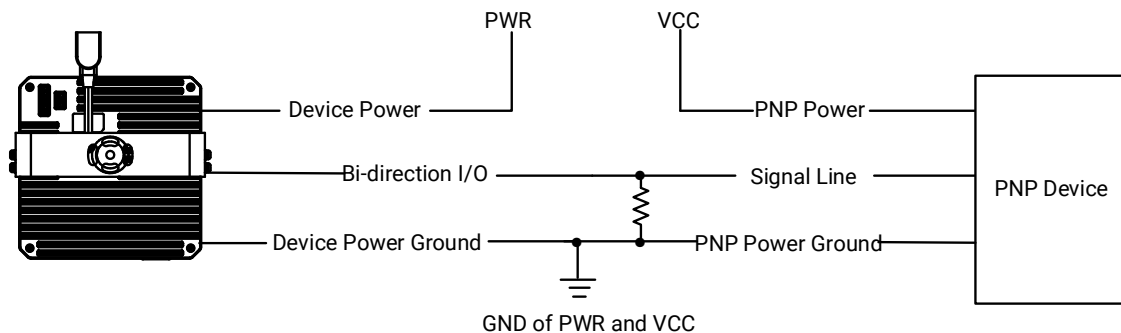
The input signal wiring is shown below when the device's LineIn 2/LineOut 4 is configured as input signal.

#### Note

Input signal wiring may differ by the external device type.

### PNP Device

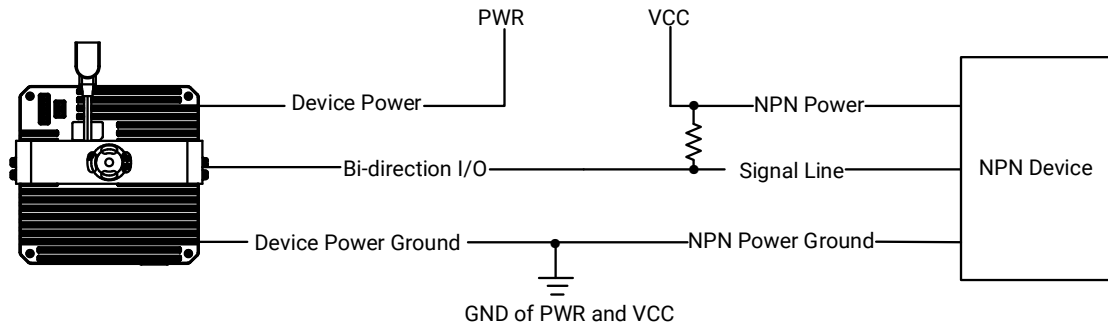
It is recommended to use 330  $\Omega$  pull-down resistor.



**Figure 5-13 Input Signal Connects to PNP Device**

### NPN Device

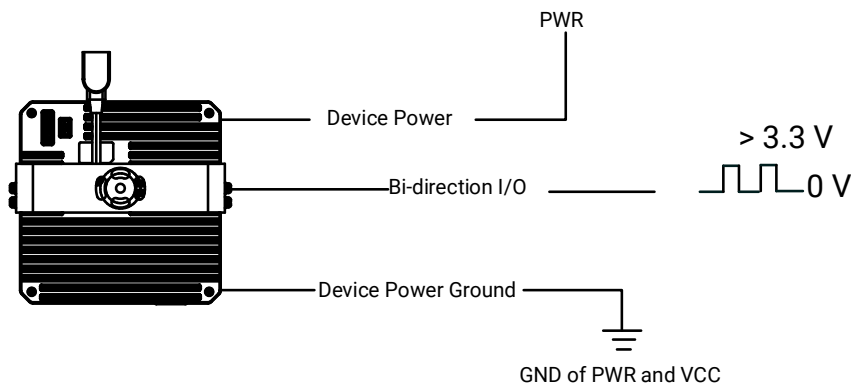
- If the VCC of NPN device is 24 VDC, it is recommended to use 4.7 K $\Omega$  pull-up resistor.
- If the VCC of NPN device is 12 VDC, it is recommended to use 1 K $\Omega$  pull-up resistor.



**Figure 5-14 Input Signal Connects to NPN Device**

## Switch

The switch value can provide low electrical level to trigger LineIn 2.



**Figure 5-15 Input Signal Connects to Switch**

## Configured as Output Signal

The output signal wiring is shown below when the device's LineIn 2/LineOut 4 is configured as output signal.

---

### Note

Output signal wiring may differ by the external device type.

---

## PNP Device

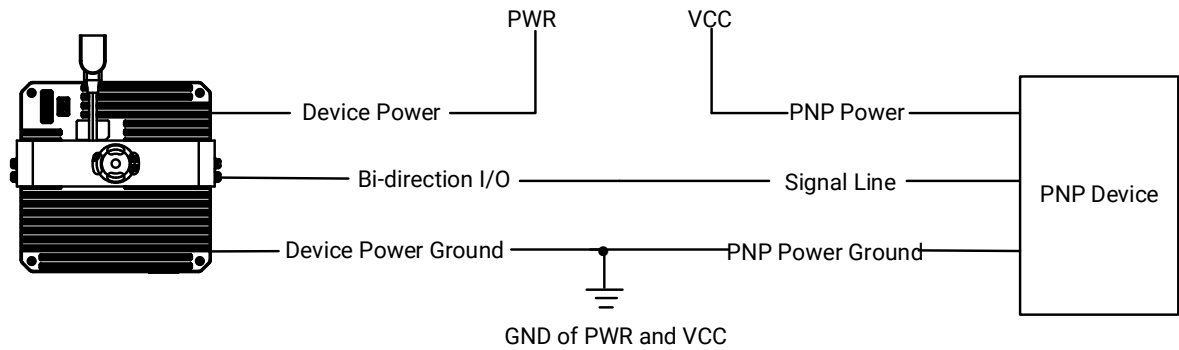


Figure 5-16 Output Signal Connects to PNP Device

## NPN Device

- If the VCC of NPN device is 24 VDC, it is recommended to use 4.7 K $\Omega$  pull-up resistor.
- If the VCC of NPN device is 12 VDC, it is recommended to use 1 K $\Omega$  pull-up resistor.

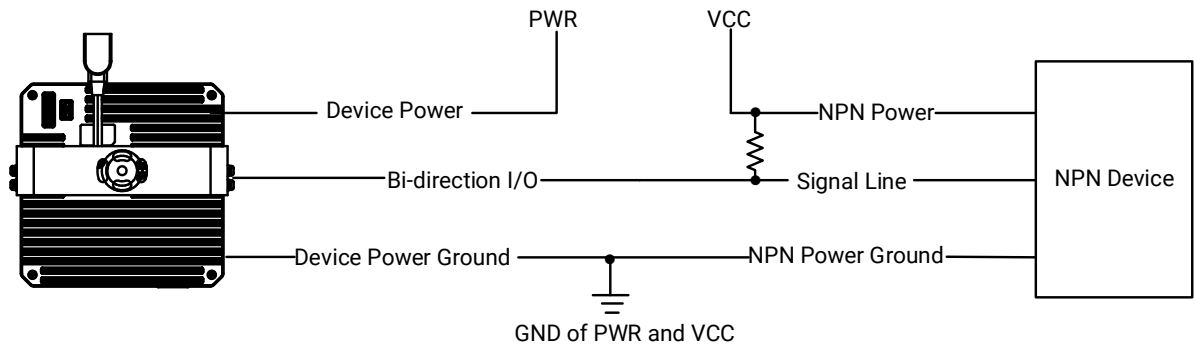


Figure 5-17 Output Signal Connects to NPN Device

## 5.3 RS-232 Serial Port

The device supports data output via its RS-232 serial port, and this section introduces the pin definition of the RS-232 serial port and the wiring of RS-232 serial port.

### 5.3.1 Pin Definition

The pin definition of the RS-232 serial port is shown below.

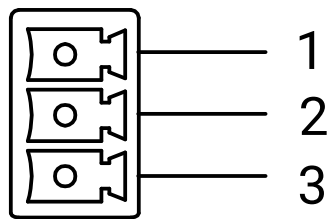


Figure 5-18 Serial Port

Table 5-7 Pin Definition

| Pin No. | Name | Function      |
|---------|------|---------------|
| 1       | TX   | Send data     |
| 2       | GND  | Signal ground |
| 3       | RX   | Receive data  |

### 5.3.2 Wiring

The wiring of RS-232 serial port is shown below.

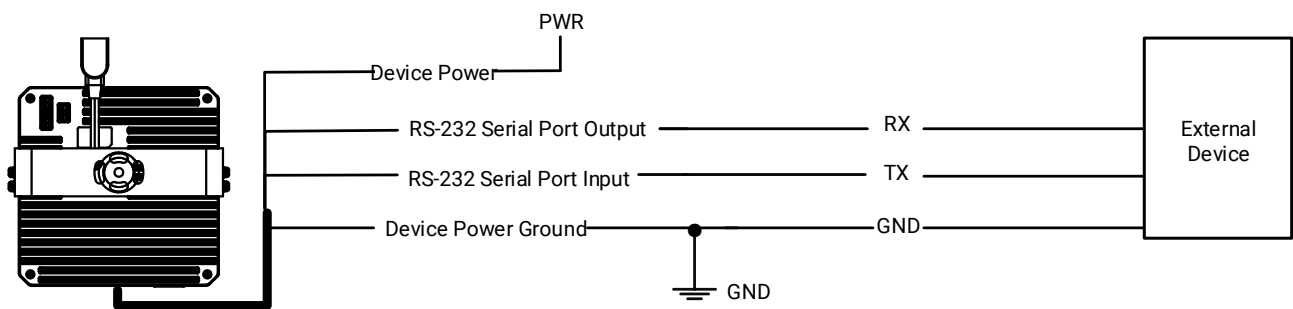


Figure 5-19 RS-232 Serial Port Wiring

## Chapter 6 Installation

### 6.1 Installation Preparation

You need to prepare following accessories before installation.

**Table 6-1 Accessories**

| No. | Name               | Quantity | Description                                                                        |
|-----|--------------------|----------|------------------------------------------------------------------------------------|
| 1   | Lens               | 1        | It refers to FA lens and is included in the package.                               |
| 2   | Power Adapter      | 1        | It refers to 24 V, 2.5 A power adapter, and is included in the package.            |
| 3   | Power Supply Cable | 1        | It is used to connect the device and power adapter. It is included in the package. |
| 4   | Network Cable      | 1        | It refers to a 5-meter network cable and is included in the package.               |

### 6.2 Install Device

#### Before You Start

- Make sure that the device in package is in good condition and all accessories are included.
- Make sure that all related devices are powered off during the installation.

#### Steps

1. Install the lens to the device.
2. Fix the device to a proper installation position.
3. Use CAT5E or CAT6 Ethernet cable to connect the device to a switch or NIC.
4. Use the power adapter to power the device.

## Chapter 7 Device Connection

Device connection to the client software is required for device's configuration and operations. This section introduces how to set PC environment, install the client software, connect the device to the client software, etc.

### 7.1 Set PC Environment

Setting PC environment is required before installing and using the client software to ensure stable running of the client software and data transmission.

#### 7.1.1 Turn off Firewall

##### Steps

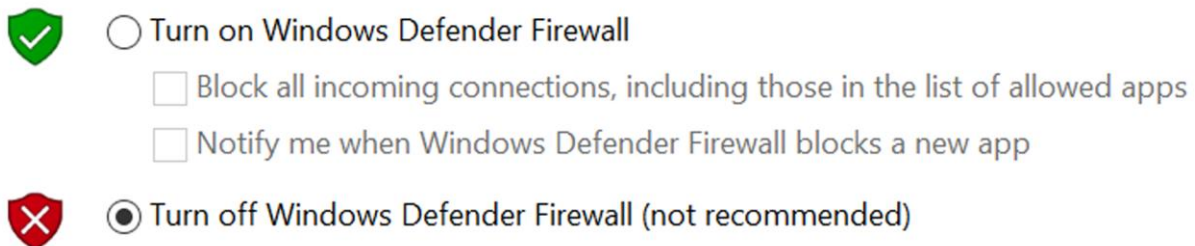
---

##### Note

For different Windows versions, the path name or interface may differ. Please refer to the actual condition.

---

1. Go to Windows Firewall.
  - Windows XP system: Click **Start** → **Control Panel** → **Security Center** → **Windows Firewall**.
  - Windows 7 system: Click **Start** → **Control Panel** → **Windows Firewall**.
  - Windows 10 system: Click **Start** → **Control Panel** → **System and Security** → **Windows Defender Firewall**.
2. Click **Turn Windows Defender Firewall on or off** on the left.
3. Select **Turn off Windows Defender Firewall (not recommended)**.



**Figure 7-1 Windows Defender Firewall**

4. Click **OK**.

## 7.1.2 Set PC Network

To ensure stable data transmission and normal communication between the PC and the device via the client software, you should set the PC network and make sure that they are in the same network segment.

### Steps

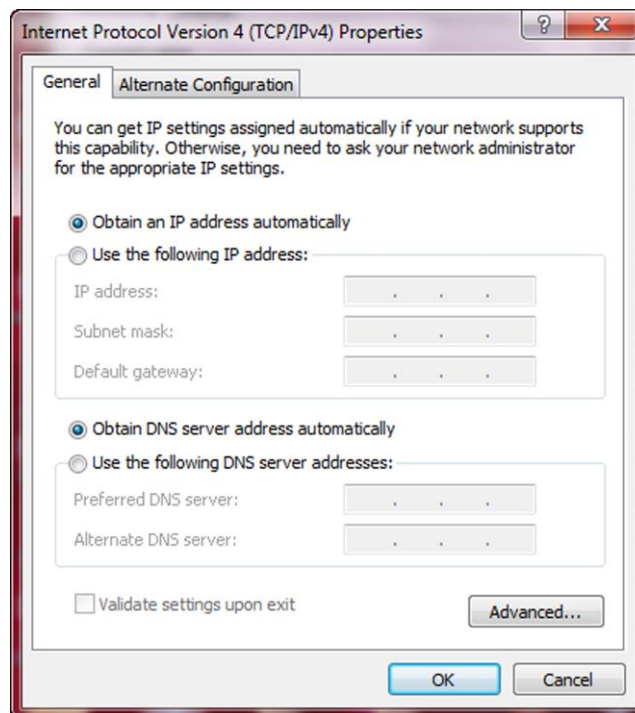
---

#### Note

For different Windows versions, the specific setting path and interface may differ. Please refer to the actual condition.

---

1. Go to PC network settings page: **Start** → **Control Panel** → **Network and Internet** → **Network and Sharing Center** → **Change adapter settings**.
2. Select NIC and set the IP obtainment mode according to actual demands.
  - Select **Obtain an IP address automatically** to get an IP address of the PC automatically.
  - Select **Use the following IP address** to set an IP address for the PC manually.



**Figure 7-2 Set PC Network**

## 7.2 Install Client Software

IDMVS is a client software for device configuration and remote operations.

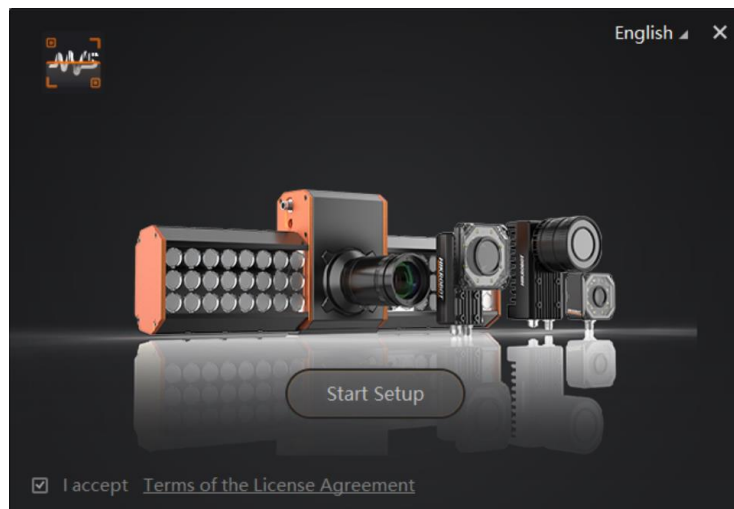
### Steps

---

#### Note

- The client software is compatible with 32/64-bit Windows XP/7/10.
  - It is recommended to install the latest version of the client software, and you can download the installation package from <https://en.hikrobotics.com/>.
  - The graphic user interface may differ by versions of client software you use.
- 

1. Double click the installation package to start installing the client software.
2. Select the language.
3. Read and check **Terms of the License Agreement**.
4. Click **Start Setup**.
5. Select installation directory and click **Next**.



**Figure 7-3 Installation Interface**

6. Finish the installation according to the interface prompts.

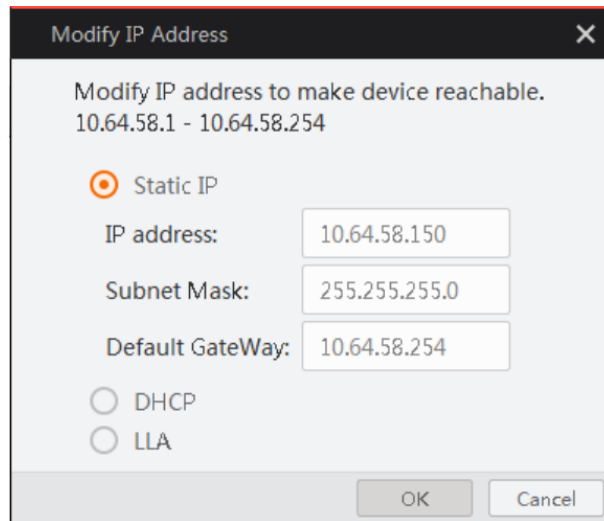
## 7.3 Set Device Network

You can set and operate the device in the client software only when the device is in the same network segment with the PC where the client software is installed.

### Steps

1. Double click the client software.
2. Click  to find the device.
3. Right click the device to be connected.
4. Click **Modify IP**.

5. Set the IP address of the device in the same network segment with the PC.



**Figure 7-4 Modify IP Address**

6. Click **OK**.

## 7.4 Connect Device to Client Software

Make sure that your device's IP address is in the same network segment with the PC where you installed the client software before connecting the device to it.

Double click the device in the device list, or click  to connect the device to the client software.

## Chapter 8 Client Software Layout

After connecting to the device, the client software can read the device information and display it.

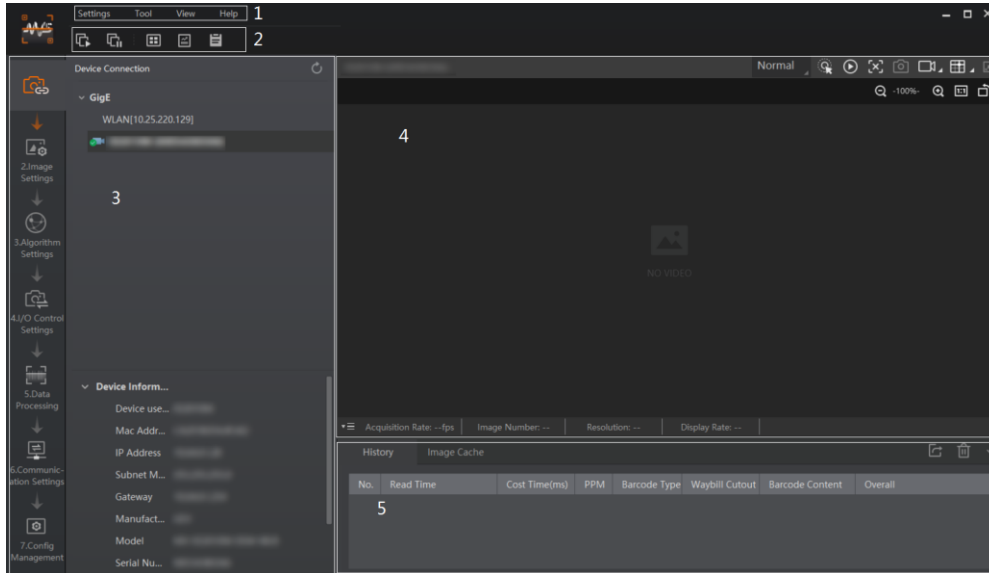


Figure 8-1 Main Window

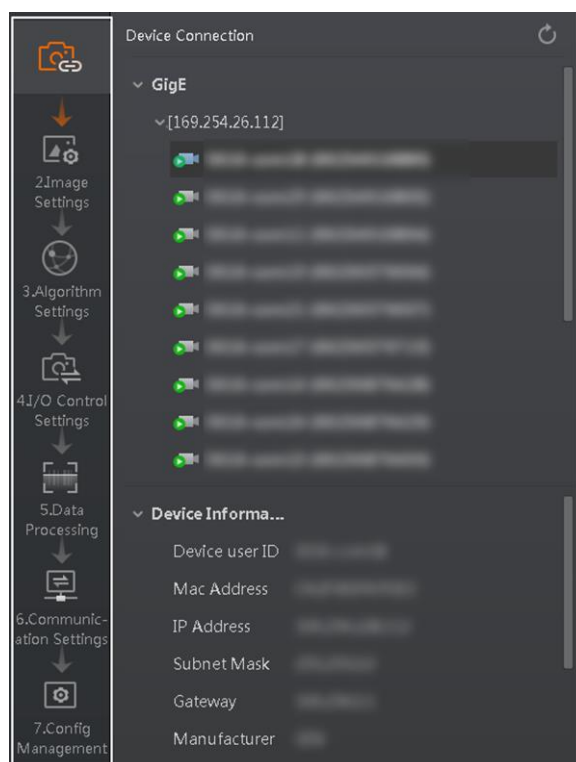
### Note

The specific interfaces of the client software may differ by its versions.

Table 8-1 Description of Main Window

| No. | Name                           | Description                                                                                                                                                                                        |
|-----|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Menu Bar                       | The menu bar displays function modules, including <b>Settings</b> , <b>Tool</b> , <b>View</b> , and <b>Help</b> .                                                                                  |
| 2   | Control Toolbar                | The control toolbar provides quick operations for the device. You can click different icons to start or stop batch acquisition, change window layout, view statistics information, and device log. |
| 3   | Device Configuration Area      | You can connect or disconnect device, set parameters, and modify device IP address in this area.                                                                                                   |
| 4   | Live View Window               | This area displays the acquisition images and algorithm reading result in real-time. You can click different icons to capture and save image, record, etc.                                         |
| 5   | History Record and Image Cache | This area displays different barcode information read by the device in real-time. You can also set image cache here.                                                                               |

You can set device parameters in device configuration area.



**Figure 8-2 Device Configuration Area**

**Table 8-2 Configuration Area Description**

| No. | Module Name              | Description                                                                                     |
|-----|--------------------------|-------------------------------------------------------------------------------------------------|
| 1   | Device Connection        | You can connect or disconnect device, modify device IP address, view device information, etc.   |
| 2   | Image Settings           | You can set image parameters, light parameters, etc.                                            |
| 3   | Algorithm Settings       | You can add different barcodes, set barcode number, etc.                                        |
| 4   | I/O Control Settings     | You can set parameters related with input and output.                                           |
| 5   | Data Processing          | You can set filter rule for output result.                                                      |
| 6   | Communication Settings   | You can select different communication protocols, and set related parameters for output result. |
| 7   | Configuration Management | You can save and load user parameters, and restart the device.                                  |

## Chapter 9 Device Mode Settings

The device supports 3 types of operating modes, including **Test**, **Normal**, and **Raw**. You can select different modes in live view window according to actual demands.

### Note

- Stopping the real-time acquisition is required before selecting modes.
- You need to set device mode as **Normal** before specific device settings. Otherwise, the device parameters may be different.

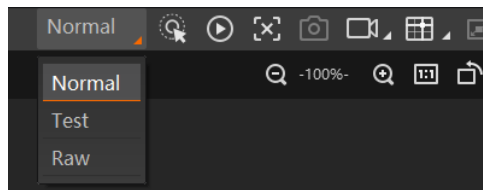


Figure 9-1 Select Device Mode

Table 9-1 Device Mode Description

| Device Mode | Description                                                                                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------|
| Test Mode   | It is used during device debugging. The device outputs images that are acquired in real-time, and displays code information. |
| Normal Mode | It is used during device normal operation. After reading code in image, the device outputs image and code information.       |
| Raw Mode    | It is used during testing image data. The device outputs raw data and displays code information.                             |

You can click  in live view window to view images and code reading effect. If the effect is not very good, you can adjust related parameters like exposure time, gain, etc. in the **Image Settings** area.



Figure 9-2 Code Reading

## Chapter 10 Device Settings

### 10.1 Feature Tree Introduction

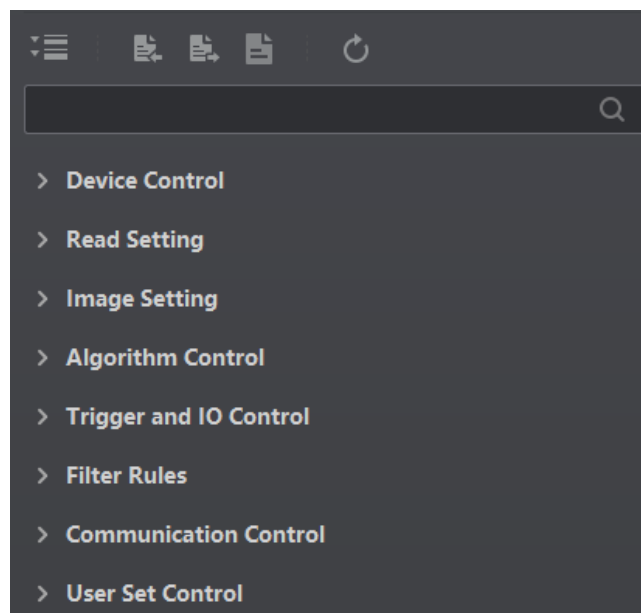
After the device is connected to the client software, and you can right click the device in **Device Connection**, and click **Feature Tree**.

---

#### **Note**

The parameters of the feature tree may differ by device models and firmware versions.

---



**Figure 10-1 Feature Free**

**Table 10-1 Feature Tree Description**

| Name                   | Description                                                             |
|------------------------|-------------------------------------------------------------------------|
| Device Control         | It allows you to view the device's information and edit its name, etc.  |
| Read Setting           | It allows you to set the device's operation mode and select code types. |
| Image Setting          | It allows you to set frame rate, exposure, gain, Gamma, etc.            |
| Algorithm Control      | It allows you to algorithm parameters.                                  |
| Trigger and IO Control | It allows you to set parameters of input and output.                    |
| Filter Rules           | It allows you to set the filter rule of codes.                          |

| Name                   | Description                                                                   |
|------------------------|-------------------------------------------------------------------------------|
| Communication Control  | It allows you to set parameters related to different communication protocols. |
| Result Setting Control | It allows you to set parameters of outputted contents.                        |
| User Set Control       | It allows you to save and load configured user set.                           |

## 10.2 Image Quality Settings

This section introduces how to set image related parameters of the device via client software.

---

### Note

For different models of the device, the specific parameters may differ, and the actual device you purchased shall prevail.

---

### 10.2.1 Set Image

You can set different image parameters like exposure time, gain, Gamma, acquisition frame rate, acquisition burst frame count, etc. in image parameters interface.

---

#### Note

- Make sure you have selected the device to be set in **Device Connection** before setting image parameters.
  - For specific parameter range like exposure time, gain and acquisition frame rate, refer to the device's specification for details.
- 

#### Exposure Time

You can increase exposure time to improve image brightness.

---

#### Note

To some extent, increasing exposure time will reduce acquisition frame rate, and impact image quality.

---

#### Gain

You can increase gain to improve image brightness.

---

#### Note

To some extent, increasing gain will create more image noises, and impact image quality.

---

#### Gamma

Gamma allows you to adjust the image contrast. It is recommended to reduce Gamma to increase brightness in dark background.

### Acquisition Frame Rate

Acquisition frame rate refers to the image number that is acquired by the device per second.

### Acquisition Burst Frame Count

Acquisition burst frame count refers to the outputted image number when the device is triggered once.

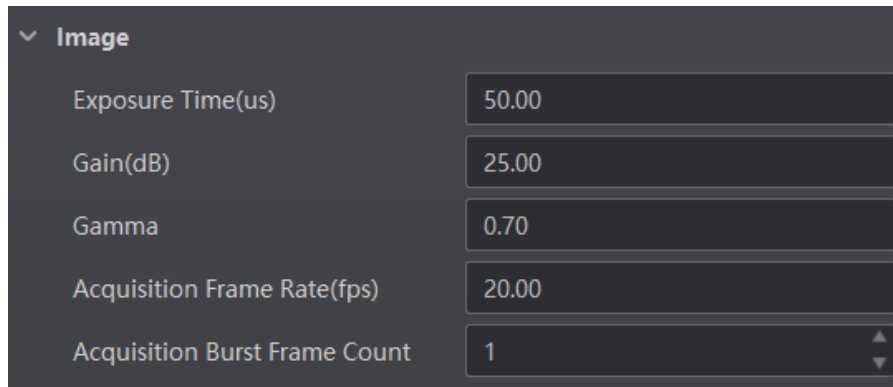


Figure 10-2 Set Image

## 10.2.2 Set Other Parameters

You can select other parameters in the **Image Settings**.

---

### Note

The displayed parameters may differ by device model.

---

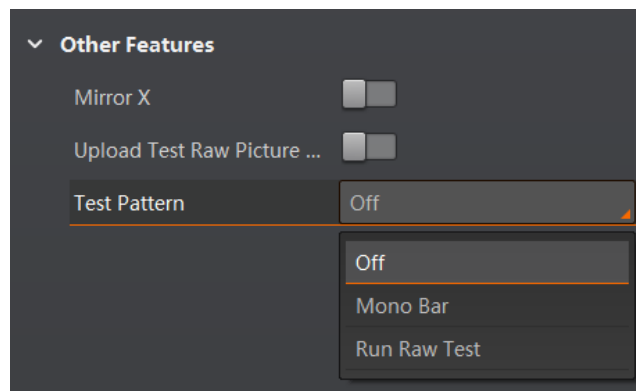


Figure 10-3 Set Other Parameters

### Mirror X

If this function is enabled, the image will be reversed in a horizontal way. This function is

enabled by default.

### Test Pattern

Test pattern refers to the device's test images, and it is off by default. When exceptions occur in images acquired by the device in real time, you can check if images under the test pattern have similar problems to determine the cause of an exception.

### SmoothMode

If this function is enabled, the acquisition frame rate will be increased. When the network is poor, it is recommended to disable the function, otherwise it may affect image quality.

### Upload Test Raw Picture

If this function is enabled, the **Test Pattern** will be shown at the bottom of the interface. You can import test images in RAW and BMP formats to the directory of the device, add or delete the test images.

- Click  to import test images.
- Click  to import a file folder of test images.
- Click  to delete the selected test images.
- Click  to clear all test images.

---

### Note

When **Run Raw Test** is selected as **Test Pattern** in **Other Features**, the test images cannot be deleted.

---



Figure 10-4 Test Image

## 10.3 Code Algorithm Settings

The device supports reading multiple types of 1D code and 2D code, and you can add and set code parameters via the client software.

### 10.3.1 Select Code

Select code before you set code parameters via the client software. In **Algorithm Settings**, you can add different types of codes according to actual demands.

In **Algorithm Settings**, select the types of codes to be read, and set the **Number of 1D Code**,

**Number of 2D Code**, and **Number of Stack Code** according to actual demands.

---

### Note

- For different models of the device, the specific parameters may differ, and the actual device you purchased shall prevail.
  - Selected symbology quantity and added code quantity may affect the code recognition time. Note that selecting more symbologies or adding more codes may consume more time to recognize codes in the image. Please select according to the actual demands.
  - The device may output actual code quantity when the mismatch between the actual code quantity and the code quantity set in the client software occurs.
- 

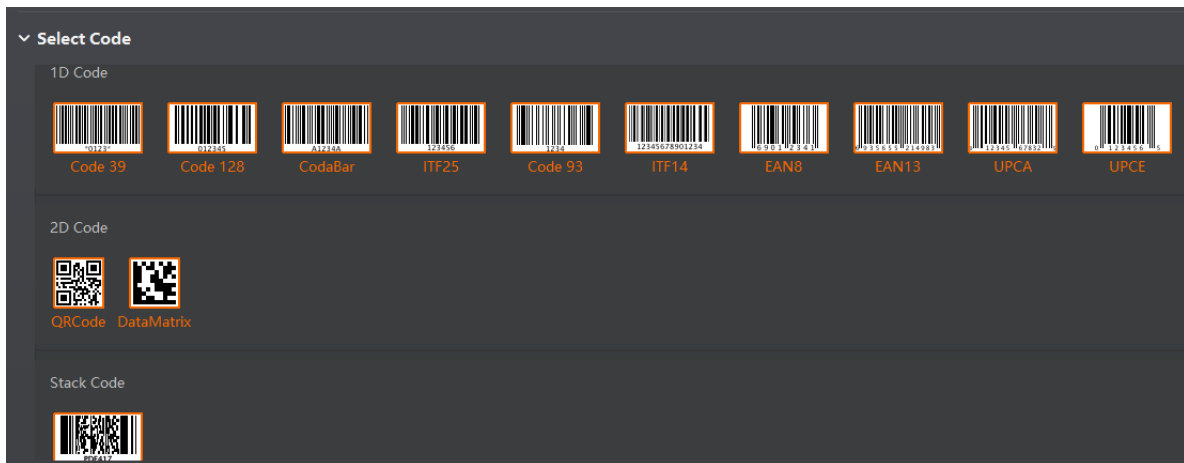


Figure 10-5 Select Code

### 10.3.2 Set Code Reading ROI

Algorithm ROI (Region of Interest) allows the device to execute algorithms and read codes on the specific area you selected, and thus improving code reading efficiency. Currently, multiple ROIs can be configured, and the device outputs codes according to the number of ROI (e.g. Region 1, Region 2, and Region 3...) in turn. The client software supports drawing single group of ROI and drawing ROI via chessboard.

---

### Note

- If no code is recognized in the algorithm ROI, and the device will output "noread".
  - Before drawing ROIs, make sure that there are images in the live view window after stopping preview.
  - If no algorithm ROI is enabled, and the full screen is the algorithm ROI by default.
  - This function may differ by device models.
-

## Draw Single Group of ROI

### Steps

1. Go to **Algorithm Settings**, and find **Algorithm ROI**.
2. Click **Draw** in **Draw ROI** to draw ROI in the live view window.

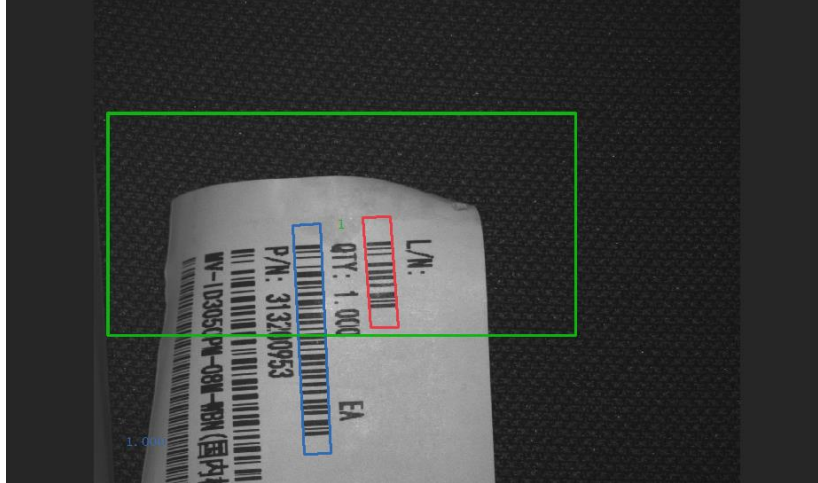


Figure 10-6 Draw ROI

3. (Optional) Repeat the above step to draw multiple ROIs according to actual demands.

---

### Note

The client software only parse codes in the ROI you drawn.

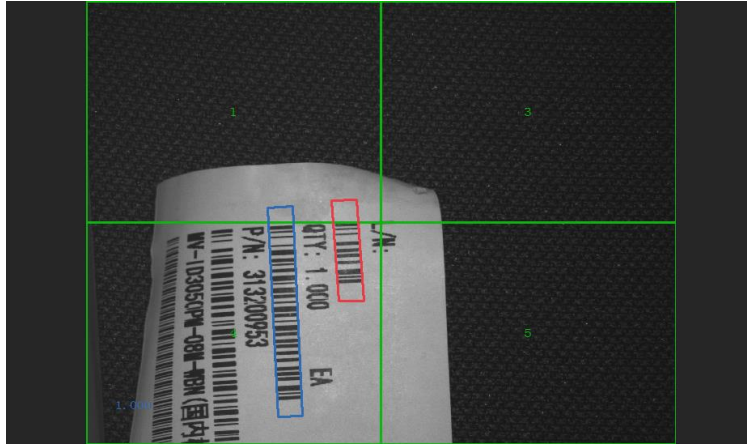
---

4. (Optional) Right click the ROI and click **Delete** to delete it.
5. (Optional) Click **Execute** in **Clear All ROI** to delete all ROIs.
6. (Optional) Enable **ROI Link IO Enable** in **Algorithm Control**, and there will be prompts by the output device when codes are not read in any ROIs.

## Draw ROI via Chessboard

### Steps

1. Go to **Algorithm Settings**, and find **Algorithm ROI**.
2. Click **Execute** in **Chessboard ROI**, set parameters, and click **OK** after setting.
3. Click ☒ after creating ROI, and the red frame becomes green as shown below.



**Figure 10-7 Draw ROI via Chessboard**

4. (Optional) Click  to restore the ROI to full screen, and click  to clean all ROIs.
5. Repeat other optional steps mentioned in drawing single group of ROI.
6. (Optional) Enable **ROI Link IO Enable** in **Algorithm Control**, and there will be prompts by the output device when codes are not read in any ROI.

---

### **Note**

The figures above are for reference only, and refer to the actual conditions.

---

### 10.3.3 Set 1D Algorithm Parameter

Click **All Features** on the upper-right to display all algorithm parameters. In the **Algorithm Parameter** page, select **1DCode** as **Arithmetic Type**, and then you can set its corresponding parameters.

---

### **Note**

- At least one type of 1D code is selected.
  - For different models of the device, the specific parameters may differ, and the actual device you purchased shall prevail.
- 

#### **Timeout Value**

Timeout value refers to the maximum running time of algorithm, and its unit is ms. The code reader will stop parsing the images and return results if the time is exceeded the waiting time configured. When the value is 0, the actual algorithm time consumed prevails.

#### **Code Color**

It defines the readable code color. **White Code On Black Wall** means that the client software can recognize the white code with black background. **Black Code On White Wall** means that the client software can recognize the black code with white background.

#### **Code 39 Check**

Enable this parameter if Code 39 uses the parity bit.

---

### **Note**

You need to select **Code 39** in **Add Barcode**.

---

### **ITF 25 Check**

Enable this parameter if ITF 25 uses the parity bit.

---

### **Note**

You need to select **ITF 25** in **Add Barcode**.

---

### **Algo Debug Info**

If it is enabled, some key information in the algorithm process will be saved to the image file for troubleshooting of reading failure.

---

### **Note**

When the function is enabled, all information will be saved, which takes up a large amount of memory. It is recommended to enable it only for troubleshooting.

---

## **10.3.4 Set 2D Algorithm Parameter**

Click **All Features** on the upper-right to display all algorithm parameters. In the **Algorithm Parameter** page, select **2D Code** as **Arithmetic Type**, and then you can set its corresponding parameters.

---

### **Note**

- At least one type of 2D code is selected.
  - For different models of the device, the specific parameters may differ, and the actual device you purchased shall prevail.
- 

### **Timeout Value**

Timeout value refers to the maximum running time of algorithm, and its unit is ms. The code reader will stop parsing the images and return results if the time is exceeded the waiting time configured. When the value is 0, the actual algorithm time consumed prevails.

### **QR Distortion Correction**

If the QR code or DM code is distorted, you can enable this parameter to improve code recognition rate.

---

### **Note**

If you enable this parameter, the more time will be consumed to recognize the codes in the image.

---

### **Algo Debug Info**

If it is enabled, some key information in the algorithm process will be saved to the image file for troubleshooting of reading failure.

---

### Note

When the function is enabled, all information will be saved, which takes up a large amount of memory. It is recommended to enable it only for troubleshooting.

---

## 10.3.5 Set Algorithm Parameter of Stack Code

In the **Algorithm Parameter**, select **Stack Code** as **Arithmetic Type**, and then you can set its corresponding parameters.

---

### Note

- At least one type of stack code is selected.
  - For different models of the device, the specific parameters may differ, and the actual device you purchased shall prevail.
- 

### Timeout Value

Timeout value refers to the maximum running time of algorithm, and its unit is ms. The code reader will stop parsing the images and return results if the time is exceeded the waiting time configured. When the value is 0, the actual algorithm time consumed prevails.

## 10.4 Signal Input Settings

### 10.4.1 Set Trigger Mode

The device has 2 types of trigger mode: Internal trigger mode and external trigger mode.

#### Internal Trigger Mode

In this mode, the device acquires images via its internal signals.

#### External Trigger Mode

In this mode, the device acquires images via external signals like software signal and hardware signal (physical lines).

---

### Note

For specific trigger sources, refer to the actual device you got.

---

### 10.4.2 Enable Internal Trigger Mode

In the internal trigger mode, the device acquires images via its internal signals. You have 2

methods to enable the internal trigger mode:

- Click **I/O Control Settings** → **Input** → **Trigger Mode**, and select **Off** as **Trigger Mode**.
- In the live view page, click  to enable the internal trigger mode.

### 10.4.3 Enable External Trigger Mode

In the external trigger mode, the device acquires images via external signals like software signal and hardware signal. You have 2 methods to enable the external trigger mode:

- Click **I/O Control Settings** → **Input** → **Trigger Mode**, and select **On** as **Trigger Mode**.
- In the live view page, click  to enable the external trigger mode.

### Set and Execute Software Trigger Mode

In software trigger, the software sends trigger signal to the device via I/O interface to acquire images.

#### Steps

1. Click **I/O Control Settings** → **Input** → **Trigger Mode**.
2. Select **On** as **Trigger Mode**.
3. Select **Software** as **Trigger Source**.
4. Click **Execute** in **Trigger Source** to send trigger commands.
5. (Optional) Enter **Auto Trigger Time**, and then enable **Enable Auto Trigger** to let the client software automatically send trigger signal to device according to the interval you set.

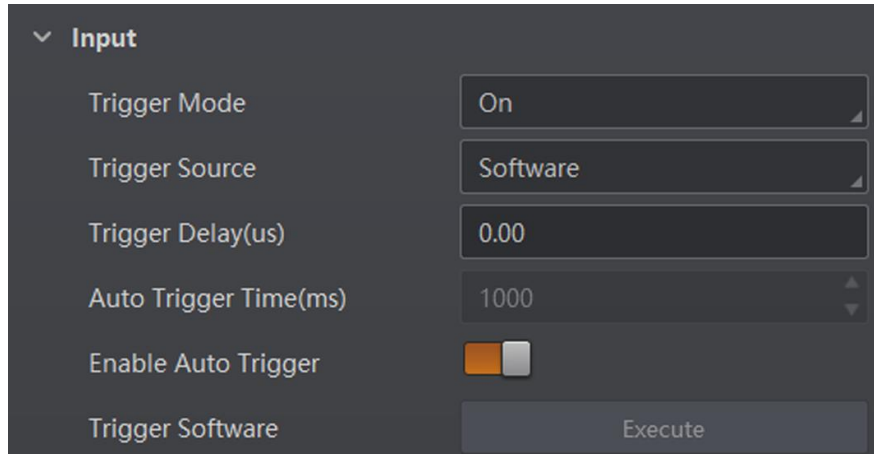


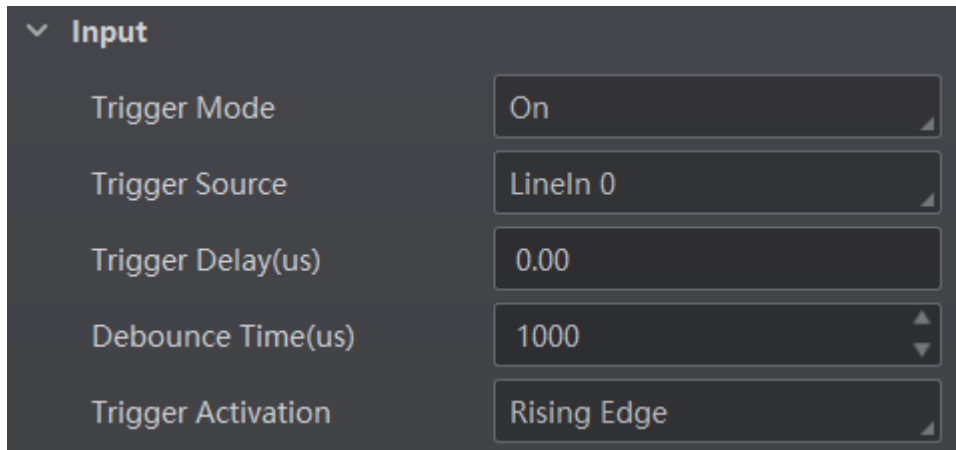
Figure 10-8 Set and Execute Software Trigger Mode

### Set and Execute Hardware Trigger Mode

#### Steps

1. Click **I/O Control Settings** → **Input** → **Trigger Mode**.
2. Select **On** as **Trigger Mode**.
3. Select the specific line as **Trigger Source** according to actual demands.

4. Set **Debounce Time** and **Trigger Activation** according to actual demands.



|                    |             |
|--------------------|-------------|
| Trigger Mode       | On          |
| Trigger Source     | LineIn 0    |
| Trigger Delay(us)  | 0.00        |
| Debounce Time(us)  | 1000        |
| Trigger Activation | Rising Edge |

Figure 10-9 Set and Execute Hardware Trigger Mode

---

 **Note**

- When selecting **Rising Edge** or **Falling Edge** as **Trigger Activation**, you can set **Trigger Delay**.
  - When selecting **Level High** or **Level Low** as **Trigger Activation**, you can set **Start Delay Time** and **End Delay Time** according to actual demands.
- 

## 10.5 Signal Output Settings

### 10.5.1 Select Output Signal

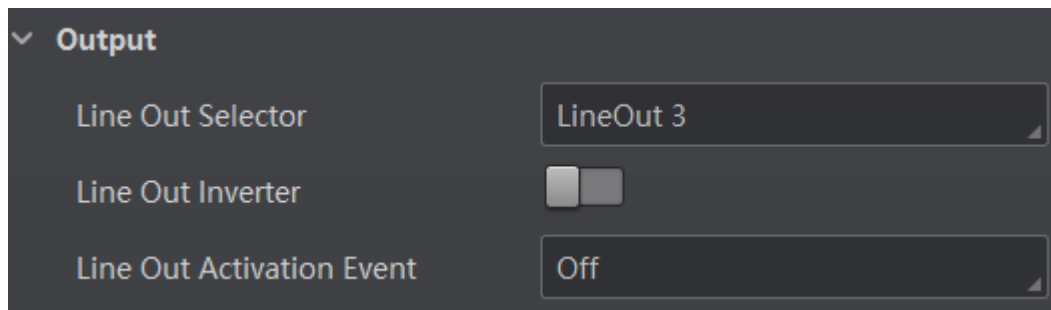
The device's output signal can control external devices like PLC, flashing light, etc. Click **I/O Control Settings** → **Output** → **Line Out Selector** to select output signal.

---

 **Note**

The specific output signals may differ by device models.

---



|                           |                          |
|---------------------------|--------------------------|
| Line Out Selector         | LineOut 3                |
| Line Out Inverter         | <input type="checkbox"/> |
| Line Out Activation Event | Off                      |

Figure 10-10 Select Output Signal

## 10.5.2 Enable Line Inverter

The line inverter function allows the device to invert the electrical signal level of an I/O line, and meet requirements of different devices for high or low electrical signal level. You can go to **I/O Control Settings** → **Output** → **Line Out Inverter** to enable it.

### Note

The **Line Out Inverter** function is disabled by default.

---

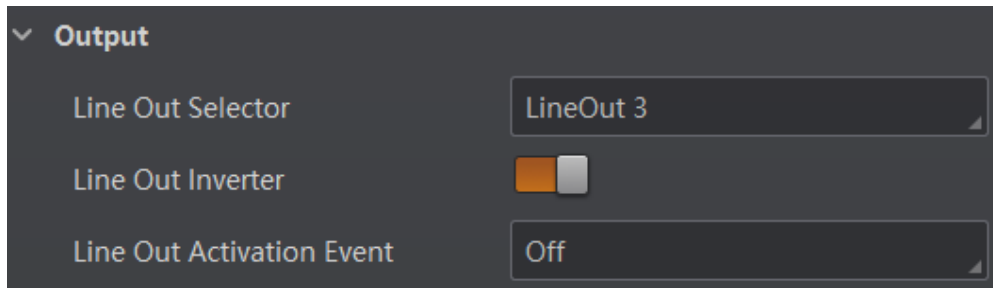


Figure 10-11 Enable Line Out Inverter

## 10.5.3 Set Event Source

### Note

The event source parameters may differ by device model.

---

The device supports outputting different trigger signals according to the event source you select.

### Steps

1. Click **I/O Control Settings** → **Output** → **Line Out Activation Event**.
2. Select **Line Out Activation Event** according to actual demands.
3. (Optional) Set **Line Out Delay Time** and **Line Out Duration** if you select **Read Success** or

### Read Fail as Line Out Activation Event.

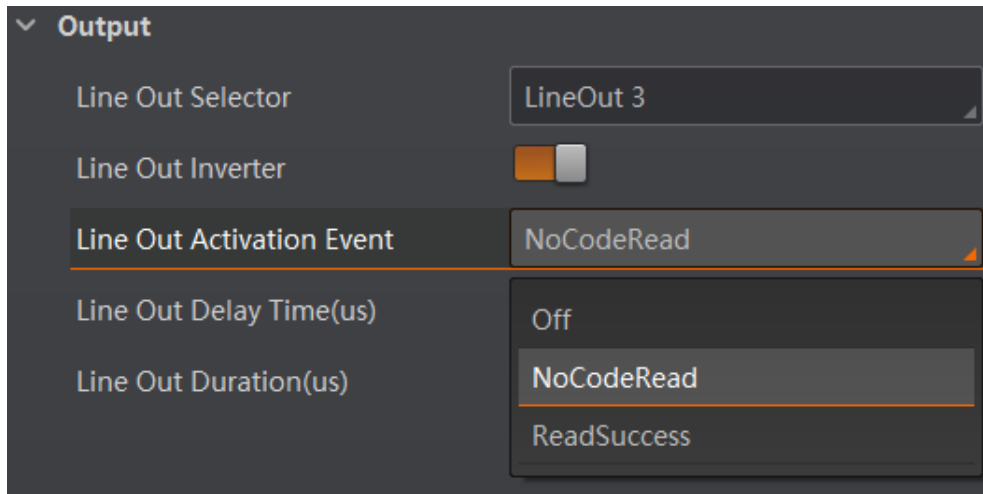


Figure 10-12 Set Event Source

## 10.6 Code Reading Result Settings

In **Data Processing** module, you can set filter rules for reading codes and other data processing related parameters.

### 10.6.1 Set Filter Rule

You can set rules to filter unwanted codes to improve the reading efficiency in **Filter Rule**. The filter mode includes normal filter mode and regular expression.

#### Note

The filter rule parameters may differ with different device modes, firmware versions, and trigger modes.

---

### Normal Filter Mode

When the device mode is **Normal**, **Trigger Mode** is **On**, and **Filter Mode** is **Normal**, you can set the following parameters according to actual demands.

#### Instant Output Mode Enable

If this parameter is enabled, the device can instantly output code reading result when recognizing codes. If it is not enabled, the device will not output code reading result until the trigger stops.

#### Min. Output Time

It sets the min. waiting time before data output. For example, if you set 500 ms as **Minimum Output Time**, the barcode would not be outputted until 500 ms is passed.

### Numeral Filter

If this parameter is 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

It sets the max. code length that can be outputted.

### Begin with Specific Character for Result

If this parameter is enabled, the device will only read the barcodes which begin with a specific character. Otherwise, the barcodes will be filtered out. You can enter the specific character in **Begin with**.

### Include Specific Character in Barcode

If this parameter is enabled, the device will only read the barcodes which include a specific character. Otherwise, the barcodes will be filtered out. You can enter the specific character in **Character**.

### Exclude Specific Character in Barcode

If this parameter is enabled, the device will only read the barcodes which exclude a specific character. Otherwise, the barcodes will be filtered out. You can enter the specific character in **Character**.

### Min. Code Length

If the length of a barcode is shorter (in terms of the number of characters contained in the barcode) than the configured value, the device will not parse the contents of the barcode. The valid value is from 1 to 256. For example, if you set the value as 6, the device will not parse the contents of the barcodes which contain less than 6 characters.

### Max. Code Length

If the length of a barcode is longer ((in terms of the number of characters contained in the barcode) than the configured value, the device will not parse the contents of the barcode. The valid value is from 1 to 256. For example, if you set the value as 9, the device will not parse the contents of the barcodes which contain more than 9 characters.

### 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 reading result will be outputted. Or the barcode will be regarded as invalid and its reading result will not be outputted.

## Regular Expression Filter Mode

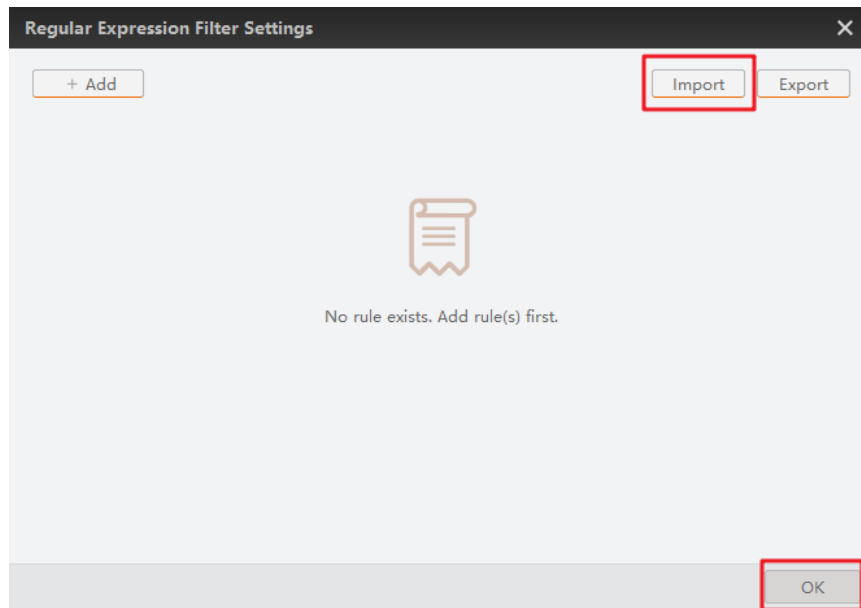
The device supports filtering codes via the regular expression.

### Steps

1. Select **Regular Expression** as the **Filter Mode**, and click **Set** in **Regular Expression Filter** to enter regular expression filter settings window.

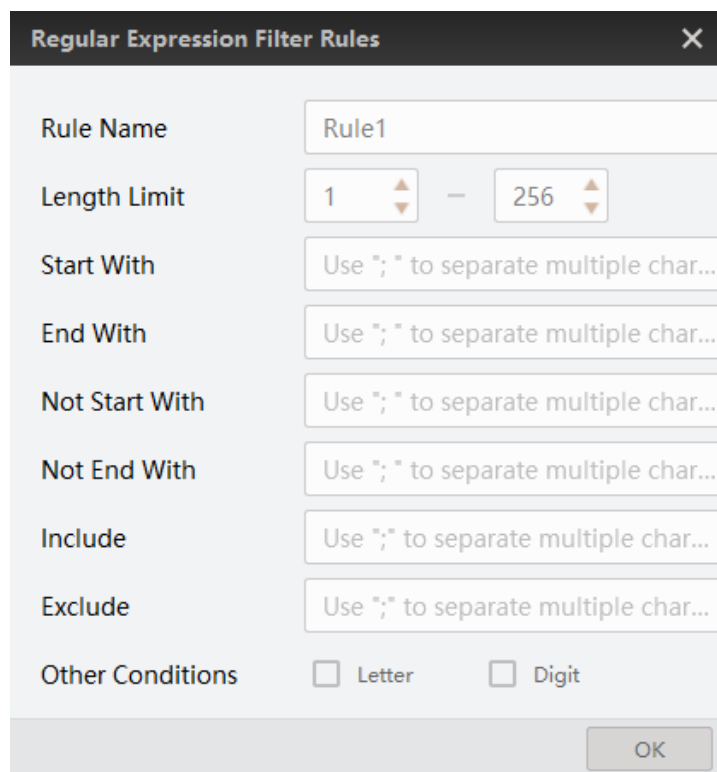
2. Import local files or add customized filter rules to set the regular expression.

- Import local files: Click **Import** to import local .xml files, and click **OK** to finish.



**Figure 10-13 Regular Expression Filter Settings**

- Add customized filter rule: Click **Add** and set related parameters in the popped-up window, and click **OK** after configuring parameters.

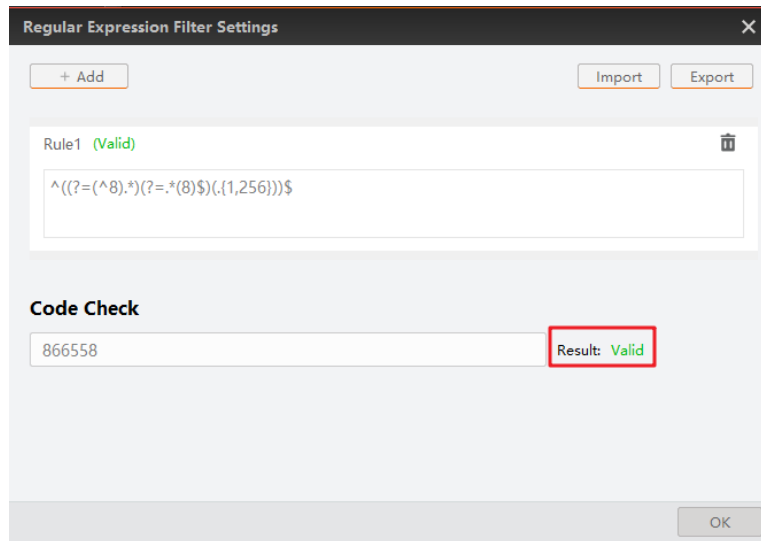


**Figure 10-14 Enter Customized Regular Expression Filter Rules**

**Table 10-2 Filter Rule Parameters**

| Parameter Name   | Description                                                                                                                                                                                                                                                                                                     |
|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rule Name        | The default rule name is Rule 1, and you can edit it according to actual demands.                                                                                                                                                                                                                               |
| Length Limit     | It sets the length range of the code, and its upper limit is 256.                                                                                                                                                                                                                                               |
| Start With       | <p>It sets the specific start with code. You can use semicolon to separate if there are multiple characters.</p> <p> <b>Note</b><br/>If multiple characters are used, code meeting one of these characters is valid.</p>       |
| End With         | <p>It sets the specific end with code. You can use semicolon to separate if there are multiple characters.</p> <p> <b>Note</b><br/>If multiple characters are used, code meeting one of these characters is valid.</p>         |
| Not Start With   | <p>It excludes the specific start with code. You can use semicolon to separate if there are multiple characters.</p> <p> <b>Note</b><br/>If multiple characters are used, code meeting one of these characters is valid.</p> |
| Not End With     | <p>It excludes the specific end with code. You can use semicolon to separate if there are multiple characters.</p> <p> <b>Note</b><br/>If multiple characters are used, code meeting one of these characters is valid.</p>   |
| Included         | <p>It sets the code with specific content. You can use semicolon to separate if there are multiple characters.</p> <p> <b>Note</b><br/>If multiple characters are used, code meeting all these characters is valid.</p>      |
| Excluded         | <p>It sets the code without specific content. You can use semicolon to separate if there are multiple characters.</p> <p> <b>Note</b><br/>If multiple characters are used, code meeting all these characters is valid.</p>   |
| Other Conditions | You can select letter and digit.                                                                                                                                                                                                                                                                                |

3. After setting filter rule, enter the code in **Code Check** to check if the filter rule is successful.



**Figure 10-15 Code Check**

---

### **Note**

If the filter rule you configured is correct, the result is valid. Otherwise, it is invalid.

---

4. (Optional) Click  to delete unwanted filter rules.

5. (Optional) Click **Export** to export configured filter rules to local PC.

---

### **Note**

The filter rule parameters of the regular expression may differ by device models and firmware versions.

---

## 10.6.2 Set Result Format

Result format settings allow you to set the format and contents contained in the outputted code information. Result format is related to communication protocol and trigger mode. With different selected communication protocol and trigger mode, you need to set corresponding parameters. Here we use normal device mode and trigger is on as an example to introduce corresponding parameters.

---

### **Note**

- The supported communication protocols may differ by device models.
  - Result format settings are available if you select **Smart SDK**, **TCP Client**, **TCP Server**, **Serial** and **FTP** as the communication protocol when the device mode is **Normal**.
  - For details about communication protocol, see section **Communication Settings** for details.
-

## Result Output via Smart SDK

When the communication protocol is **Smart SDK**, device mode is **Normal** and trigger mode is **On**, you can set following parameters. The configurable parameters below are related to the trigger mode, and here we take the external trigger mode as an example.

### Sorting Rules

It decides the output order of codes, and you can select it according to actual demands.

### One By One Enable

If it is enabled, the device will send one piece of code information each time in accordance with the specified interval. You can set the interval via **One By One Interval** and the default value 100 ms.

### Local Save Picture Mode

It includes **Off** and **NoRead**. You can select **NoRead** to let the device save images when no code is read.

### Local Picture Type

It sets the image saving type, including JPEG and BMP.

### Local Override Strategy

It includes **Off**, **Max Count**, **Loop Max Count**, and **Reserve Space**. **Off** means that disk will not be overridden. **Max Count** means that the device will save image quantity configured in **Local Override Max. Count**, and no more imaged will be saved when the disk is full. **Loop Max Count** means that after the image quantity is reached the number configured in **Local Override Max. Count**, the device will delete the first image and continue to save the latest image. **Reserve Space** means that the device will save images when the disk is safe in terms of storage space. If the available disk space is lower than configured value, and images will be deleted.

### Local Override Max. Count

You need to set this parameter when selecting **Max Count** or **Loop Max Count** as **Local Override Strategy**.

### Local Picture Name Format

It selects what contents you want to display in file name, including frame time, trigger No. and frame No.

### Local Time Format

It selects a format type from the drop-down list for the time stamp contained in the file name. Take YYYYMMDD\_HHMMSSFFF as an example, (from the left to the right) YYYY represents year, MM represents month, DD represents date, HH represents hour, MM represents minute, SS represents second, and FFF represents millisecond.

### Local Save Picture Strategy

It sets the picture saving method. Four methods are available, including recently frame, all frames, range frames and specific frame. If specific frame is selected as **Local Save**

**Picture Strategy**, you need to set **Local Picture Index**.

### Result Output via FTP

When the communication protocol is **FTP**, device mode is **Normal** and trigger mode is **On**, you can set following parameters. The configurable parameters below are related to the trigger mode, and here we take the external trigger mode as an example.

#### Sorting Rules

It decides the output order of codes, and you can select it according to actual demands.

#### FTP Picture Name Format

Click **Edit** to edit the output format of FTP picture name.



You can select the formats or enter the formats in the preview box.

---

#### FTP Upload Directory String

Click  to select device IP, Image, Year, Month, and Day.

#### FTP Upload Directory

View the configured FTP upload directory. Data are separated by “/”.

#### FTP Picture OK/NG Directory

After the function is enabled, the reading-succeeded pictures are saved in OK directory, and the reading-failed pictures saved in NG directory.



If the function is disabled, all pictures are saved in one directory.

---

#### Local Save Picture Mode

It includes **Off** and **NoRead**. You can select **NoRead** to let the device save images when no code is read.

#### Local Picture Type

It sets the image saving type, including JPEG and BMP.

#### Local Override Strategy

It includes **Off**, **Max Count**, **Loop Max Count**, and **Reserve Space**. **Off** means that disk will not be overridden. **Max Count** means that the device will save image quantity configured in **Local Override Max. Count**, and no more imaged will be saved when the disk is full. **Loop Max Count** means that after the image quantity is reached the number configured in **Local Override Max. Count**, the device will delete the first image and continue to save the latest image. **Reserve Space** means that the device will save images when the disk is safe in terms of storage space. If the available disk space is lower than configured value, and images will be deleted.

### Local Override Max. Count

You need to set this parameter when selecting **Max Count** or **Loop Max Count** as **Local Override Strategy**.

### Local Picture Name Content

It selects what contents you want to display in file name, including frame time, trigger No. and frame No.

### Local Time Format

It selects a format type from the drop-down list for the time stamp contained in the file name. Take YYYYMMDD\_HHMMSSFFF as an example, (from the left to the right) YYYY represents year, MM represents month, DD represents date, HH represents hour, MM represents minute, SS represents second, and FFF represents millisecond.

### Local Save Picture Strategy

It sets the picture saving method. Four methods are available, including recently frame, all frames, range frames and specific frame. If specific frame is selected as **Local Save Picture Strategy**, you need to set **Local Picture Index**.

### Output Retrans Enable

If this parameter is enabled, the data is allowed to retransmit to FTP server, and you should set specific value in **Output Retrans Number**.

---

#### Note

If data retransmission is still failed after the times allowed for data retransmission is reached, the retransmission will be discarded.

---

### FTP Transmission Conditions

It sets the condition to upload the data outputted by the device to FTP server. **All** refers to upload the data always. **Read Barcode** refers to upload the data only when the barcode is read by the device. **No Read Barcode** refers to upload the data only when no barcode is read by the device.

### FTP Transmission Result Contain

It selects contents to upload to the FTP server. **Just Result** refers to only upload the content of the barcode. **Just Picture** refers to only upload the barcode picture. **Result and Picture** refers to upload both the content of the barcode and the picture.

### FTP File Format

It includes CSV, XLS, and TXT.

### FTP File Content Configuration

You can set FTP file content. Barcode type, trigger number, frame number, code reading time, and code reading content can be selected.

### FTP Result File Content Configuration

You can set FTP result file content. The <frame\_num>, <trigger\_num>, and

<ftp\_code\_content> can be configured by default.

### FTP NoRead String

The string is output during NoRead customization, None by default.

### FTP Time Format

It selects a format type from the drop-down list for the time stamp contained in the file name. Take YYYYMMDD\_HHMMSSFFF as an example, (from the left to the right) YYYY represents year, MM represents month, DD represents date, HH represents hour, MM represents minute, SS represents second, and FFF represents millisecond.

### FTP Save Picture Strategy

It sets the FTP picture saving method when no code is read. Four methods are available, including recently frame, all frames, range frames and specific frame. If specific frame is selected as **FTP Save Picture Strategy**, you need to set **FTP Picture Index**.

### FTP Picture Index

In a complete trigger process, if the barcode cannot be recognized, this parameter can be used to decide to output the image. When the parameter is set to n, the nth image is output if the number of images is no less than n, or the last image is output if the number of images is less than n.

### One By One Enable

If it is enabled, the device will send one piece of code information each time in accordance with the specified interval. You can set the interval via **One By One Interval** and the default value 100 ms.

### FTP NoRead Picture Classification

You can select **WholeFrame** or **SingleFrame**.

## Result Output via Other Communication Protocols

When the communication protocol is **TCP Client**, **TCP Server**, or **Serial**, device mode is **Normal** and trigger mode is **On**, you can set following parameters. The configurable parameters below are related to the trigger mode, and here we take the external trigger mode as an example.

---

### Note

When the communication protocol is **TCP Client**, **TCP Server**, or **Serial**, the configurable parameters are similar with slight difference in term of parameter names. Here we take **Serial** as **Communication Protocols** as an example, and refer to the actual device you got for details.

---

### Sorting Rules

It decides the output order of codes, and you can select it according to actual demands.

### One By One Enable

If it is enabled, the device will send one piece of code information each time in accordance with the specified interval. You can set the interval via **One By One Interval** and the default value 100 ms.

### Local Save Picture Mode

It includes **Off** and **NoRead**. You can select **NoRead** to let the device save images when no code is read.

### Local Picture Type

It sets the image saving type, including JPEG and BMP.

### Local Override Strategy

It includes **Off**, **Max Count**, **Loop Max Count**, and **Reserve Space**. **Off** means that disk will not be overridden. **Max Count** means that the device will save image quantity configured in **Local Override Max. Count**, and no more imaged will be saved when the disk is full. **Loop Max Count** means that after the image quantity is reached the number configured in **Local Override Max. Count**, the device will delete the first image and continue to save the latest image. **Reserve Space** means that the device will save images when the disk is safe in terms of storage space. If the available disk space is lower than configured value, and images will be deleted.

### Local Override Max. Count

You need to set this parameter when selecting **Max Count** or **Loop Max Count** as **Local Override Strategy**.

### Local Picture Name Format

It selects what contents you want to display in file name, including frame time, trigger No. and frame No.

### Local Time Format

It selects a format type from the drop-down list for the time stamp contained in the file name. Take YYYYMMDD\_HHMMSSFFF as an example, (from the left to the right) YYYY represents year, MM represents month, DD represents date, HH represents hour, MM represents minute, SS represents second, and FFF represents millisecond.

### Local Save Picture Strategy

It sets the picture saving method. Four methods are available, including recently frame, all frames, range frames and specific frame. If specific frame is selected as **Local Save Picture Strategy**, you need to set **Local Picture Index**.

### Serial Output Format

It selects what contents you want to output, including code content, code type, angle, trigger start time, code score, etc. You can select multiple contents as desired.

### Serial Output Barcode Enter Character Enable

If it is enabled, carriage return will be added at the last of a trigger number.

### Serial Output Barcode Newline Character Enable

If it is enabled, a newline will be added at the last of a trigger number.

### **Serial Output NoRead Enable**

If it is enabled, and the device will output the content you set in **Serial Output NoRead Text** when no code is recognized.

### **Serial Output Start Text**

The contents of the start part of the data outputted. You can set the contents according to actual condition.

### **Serial Output Stop Text**

The contents of the end part of the data outputted. You can set the contents according to actual condition.

## **10.7 Communication Settings**

The communication protocol is used to transmit and output code reading result and image. The communication protocol is related to the device modes. With various device modes, the device supports different communication protocols and corresponding parameters.

When the device mode is **Test** or **Raw**, the device only supports **SmartSDK** protocol and no parameter settings are required. While in **Normal** mode, the device supports **SmartSDK**, **TCP Client**, **Serial**, **FTP**, **TCP Server**, and **UDP** communication protocols, and you need to set corresponding parameters.



### **Note**

The supported communication protocols may differ by device models.

---

### **10.7.1 Smart SDK**

If **Smart SDK** is selected as the **Communication** Protocols, you can enable **SmartSdk Protocol** to let the device output data via **Smart SDK**.

#### **Encode JPG Flag**

If enabled, the device will compress the image data.

#### **Quantity of Jpg**

You can enter a number (range: 50 to 99) to determine the compression quality

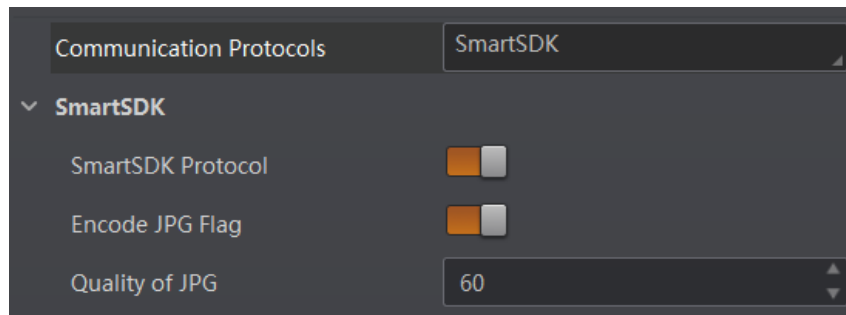


Figure 10-16 Smart SDK

## 10.7.2 TCP Client

If select **TCP Client** as the **Communication Protocols**, you need to set following parameters.

### TCP Protocol

You can set following parameters if you enable **TCP Protocol**.

### TCP Dst Addr

It is the IP address of PC that receives data.

### TCP Dst Port

It is the port number of PC that receives data.

### Heartbeat Enable

It is used to confirm whether the current information transmission channel works or not.

### Barcode As Heartbeat

It uses barcode as heartbeat information after enabling it.

### Heartbeat Text

It sets the content of the heartbeat information.

### Heartbeat Time

It sets the heartbeat interval.

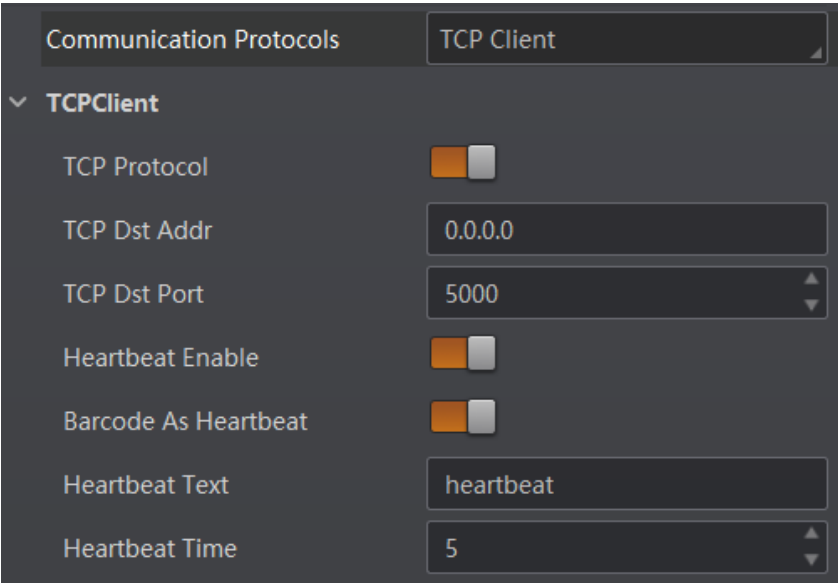


Figure 10-17 TCP Client

### 10.7.3 Serial

If **Serial** is selected as the **Communication Protocols**, you can enable **Serial Protocol**, enter **Serial Baud Rate**, **Serial Data Bits**, **Serial Parity**, and **Serial Stop Bits**.

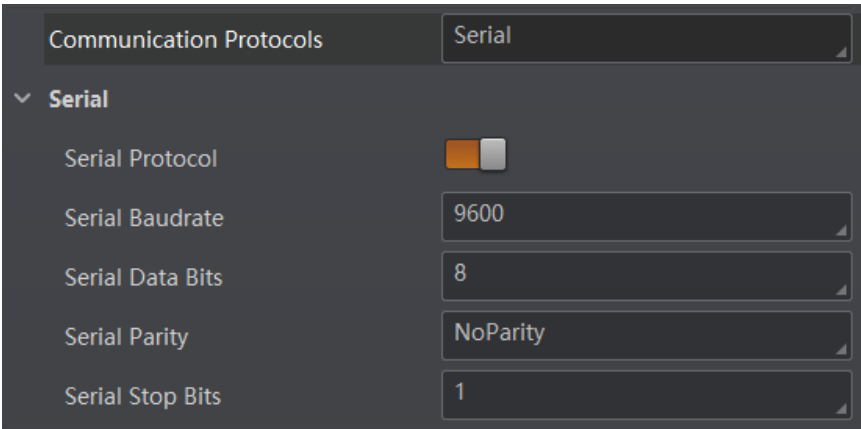


Figure 10-18 Serial

### 10.7.4 FTP

If **FTP** is selected as the **Communication Protocols**, you can enable **FTP Protocol**, enter **FTP Host Addr**, **FTP Host Port**, **FTP User Name**, and **FTP User PWD**.

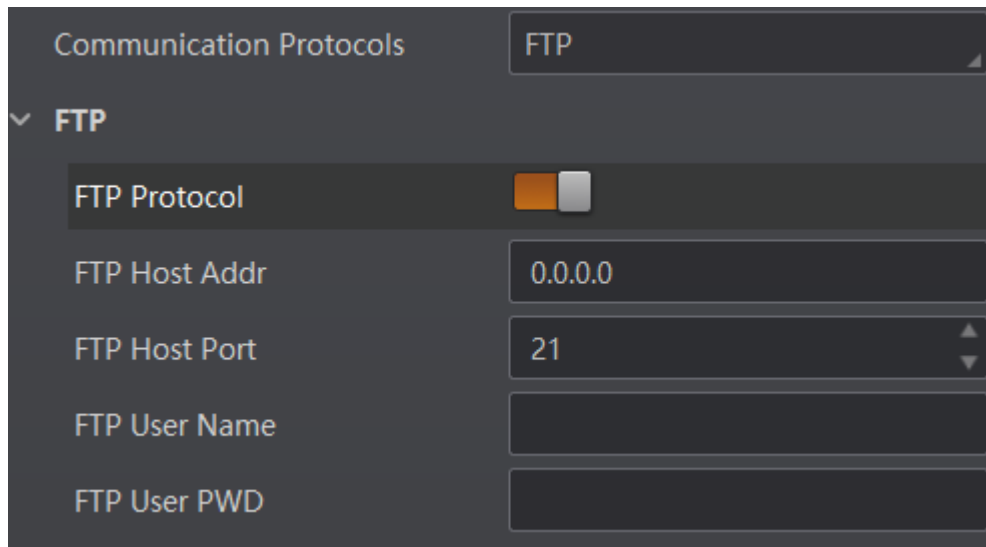


Figure 10-19 FTP

### 10.7.5 TCP Server

If **TCP Server** is selected as the **Communication Protocols**, you can enable **TCP Server Enable**, and enter **TCP Server Port**.

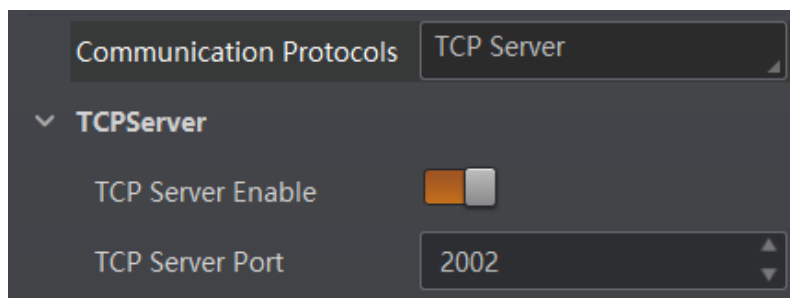


Figure 10-20 TCP Server

### 10.7.6 UDP

If **UDP** is selected as the **Communication Protocol**, you can enable **UDP Protocol Enable**, and enter **UDP Dst IP** and **UDP Dst Port**.

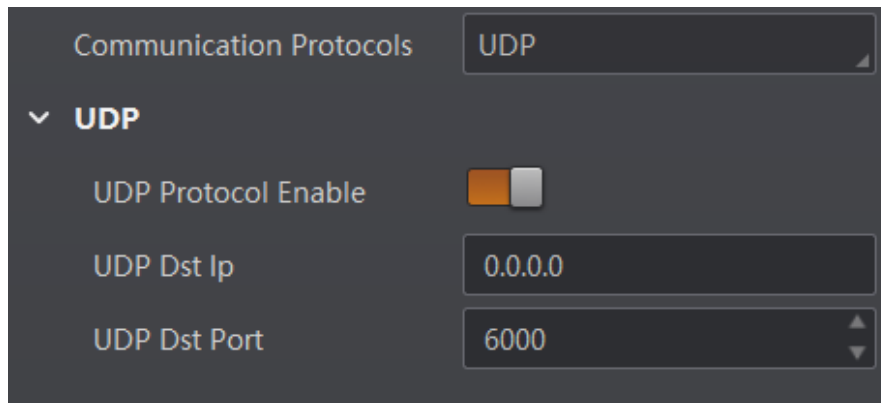


Figure 10-21 UDP

## 10.8 User Set Customization

A user set is a group of parameter values with all the settings needed to control the device, and you can save, load and switch different user sets.

Click  on the toolbar to add/load/delete user set.

The device supports four groups of user sets, including **User Set 1**, **User Set 2**, **User Set 3**, and **Default**. Up to 8 user sets can be added.

### Saving Settings

If you have set the device parameters as desired, you can save them into the user set. Go to **Param Save**, and click **User Set1/2/3** to save the current device settings.

### Loading Settings

You can load the user set to restore the device to the saved group of parameter values again if required. Go to **Param Save**, and click **Default** or **User Set1/2/3** to load settings.

---

### Note

The **Default** refers to restore the device parameter settings to the factory ones.

---

### Adding/Deleting Settings

You can click  to add user set. Up to 8 user sets can be added.

You can select the user set to delete. **Default** or **User Set1/2/3** cannot be deleted.

### 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.

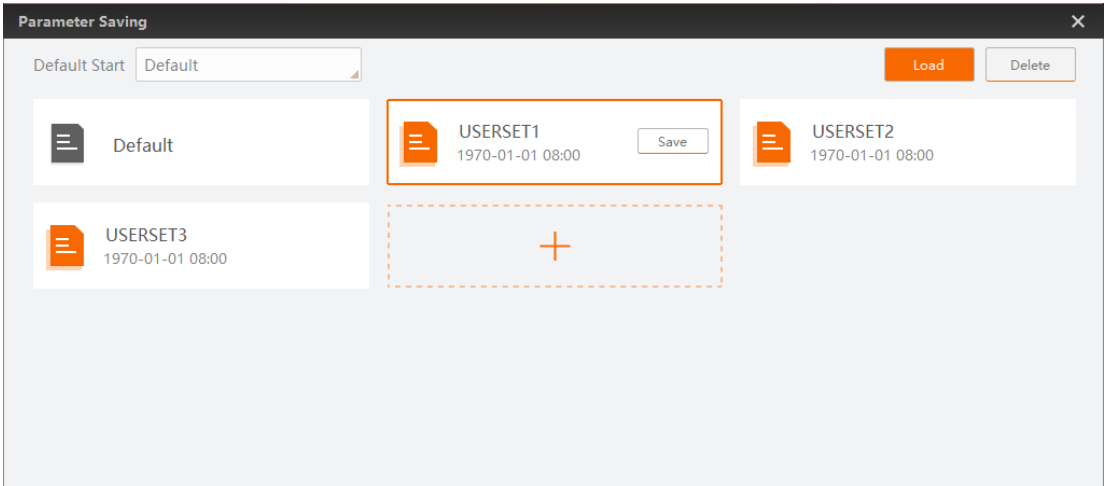


Figure 10-22 User Set Customization

## Chapter 11 Device Operation

The device operation section introduces some basic device operations about how to start live view, acquisition and recording, cross line in the image, split window, view reports, etc.

---

### Note

Connecting the device to the client software is required before device operation.

---

### 11.1 Live View

You can view the real-time image in the live view window. Click  in live view window to start live view, or click  to stop.

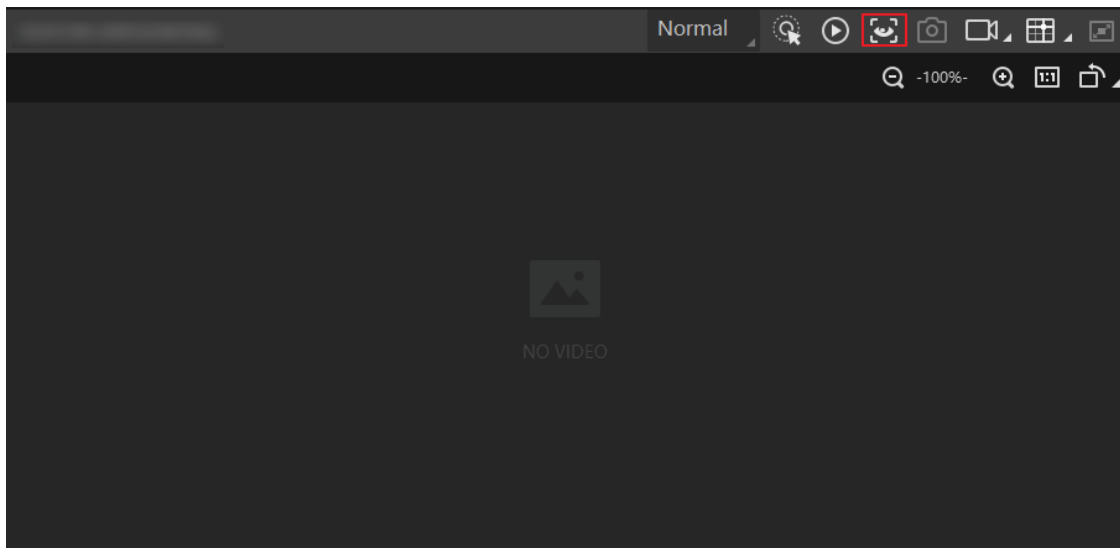


Figure 11-1 Live View

### 11.2 Enable Acquisition

Enabling acquisition allows the device to acquire the real-time stream. Click  in live view window to start acquisition, or click  to stop. You can also right click the device on the device list, and click **Stop Acquisition** to stop acquiring streams.

---

### Note

Acquisition is still going on if you only stop live view.

---

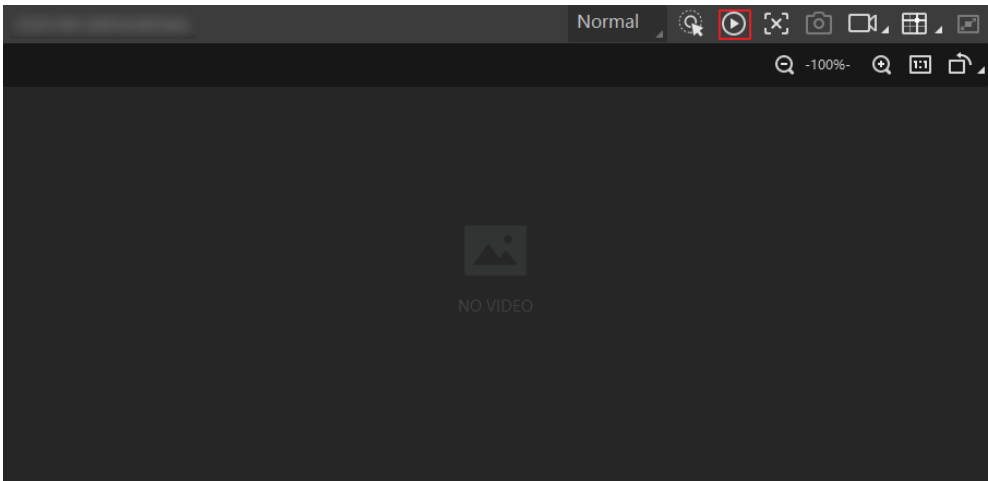


Figure 11-2 Enable Acquisition

### 11.3 Add Cross Line

During live view, you can add a cross line on the live view image to adjust the position of the object in the view. Click  in live view window to add cross line, and click  (beside ) to open the editing window to set cross line parameters.

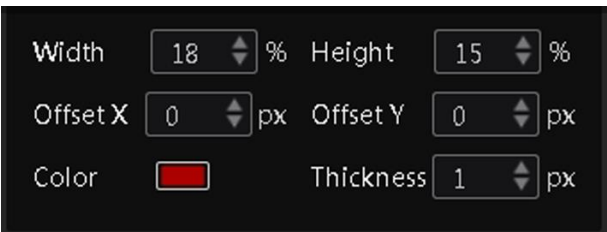


Figure 11-3 Add Cross Line

### 11.4 Start Recording

During live view, you can record video files and capture images continuously.

---

 **Note**

Enabling acquisition is required before recording.

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Click  in live view window to start recording, and click the icon again to stop. You can also click  (beside ) , and then click  to capture images of the live view continuously.

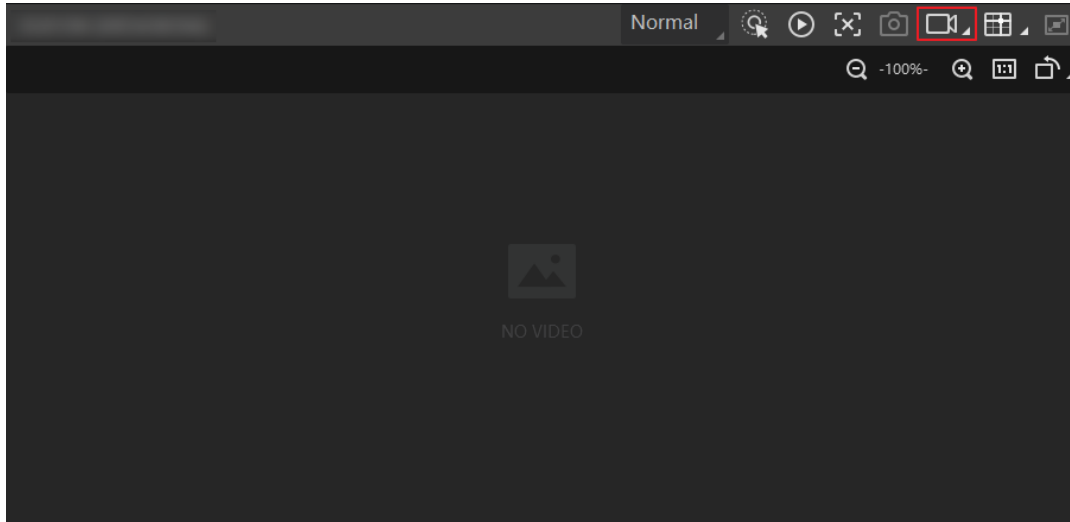


Figure 11-4 Start Recording

### 11.5 Split Window

The client software supports window division function that allows you to split the window into multiple-window mode to view the live view of multiple devices at the same time. Click  in control toolbar to select window division mode. You can click **Custom** to customize window division as you desired.

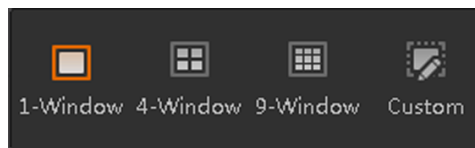


Figure 11-5 Split Window

### 11.6 View Reports

**During** acquisition or live view, you can view the reading status of the device. Click  in control toolbar to open the statistics window to view the detailed information. **Read Code Images** refers to the number of the images on which the codes are read by the device. **Unread Code Images** refers to the number of the images on which the codes are not read by the device. **Read Rate** refers to the code reading rate.

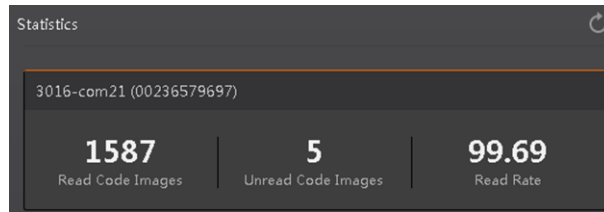


Figure 11-6 View Reports

## 11.7 View Log

You can view the device logs and export them to the local PC. Click  in control toolbar to open the device log window, and you can view different types of logs, including device errors, warning, and informational log, etc.

| Type  | Time                     | Content                                                    | Source            |
|-------|--------------------------|------------------------------------------------------------|-------------------|
| Info  | 2019-06-19 17:26:05:0216 | dir is : (D:\SmartCamera\0\SmartCameraLog\), time is (...) | SmartConfig.cp... |
| Info  | 2019-06-19 17:26:05:0216 | Read command export log file!                              | Manager.cpp ...   |
| Error | 2019-06-19 17:23:00:0742 | Over and current time is [179774033.858915]ms!             | SmartConfig.cp... |
| Info  | 2019-06-19 17:23:00:0742 | no need to compress again! time:918.756448(ms).            | SmartConfig.cp... |
| Info  | 2019-06-19 17:23:00:0742 | Read command export log file!                              | Manager.cpp ...   |
| Error | 2019-06-19 17:23:00:0742 | Over and current time is [179774033.695433]ms!             | SmartConfig.cp... |
| Error | 2019-06-19 17:23:00:0742 | log file len:461356!                                       | SmartConfig.cp... |
| Info  | 2019-06-19 17:22:59:0822 | dir is : (D:\SmartCamera\0\SmartCameraLog\), time is (...) | SmartConfig.cp... |
| Info  | 2019-06-19 17:22:59:0822 | Read command export log file!                              | Manager.cpp ...   |
| Info  | 2019-06-19 17:21:53:0652 | The package(22) frame (56396) identify BCR codenum...      | BcrProc.cpp ...   |
| Info  | 2019-06-19 17:14:48:0384 | The package(22) frame (45763) identify BCR codenum...      | BcrProc.cpp ...   |

Figure 11-7 View Log

## 11.8 Set Time

After enabling NTP time synchronization, the device will synchronize time according to the configured interval.

### Steps

1. Go to **Config Management**, and find **Timing**.
2. Click **Setting** and enable **NTP Enable**.
3. Set parameters according to actual demands.

### Note

Configure NTP server settings before using NTP time synchronization function.

4. Click **OK** after settings.

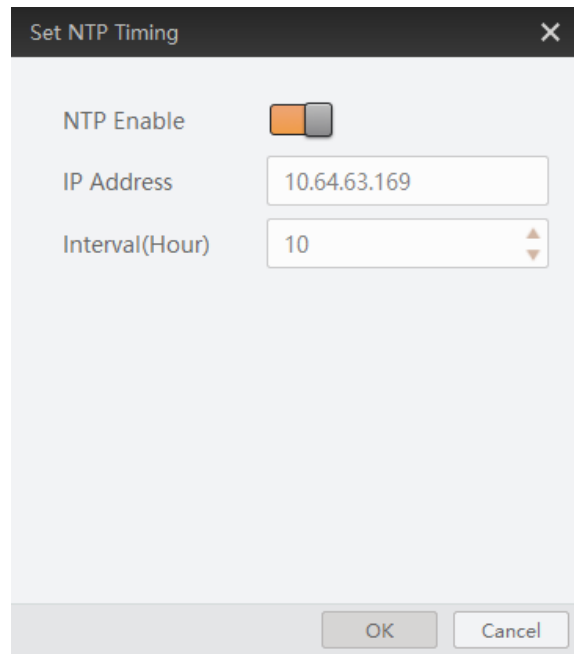


Figure 11-8 Set NTP Timing

## 11.9 Enable Device Auto Work

This function allows the device to automatically enter the operating status after being powered on. You can go to **Config Management** → **Device Auto Work Enable**, and enable **Device Auto Work Enable**.

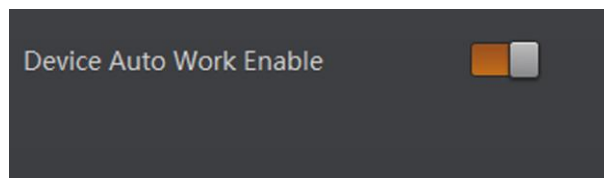


Figure 11-9 Enable Device Auto Work

## Chapter 12 Device Maintenance

### 12.1 Update Firmware

#### Update via UDP

The device supports updating firmware via the client software.

##### Note

- Disconnect the device with client software.
- Please use the firmware package of the corresponding device model for upgrading.
- Do not power off the device or disconnect network during upgrading.
- The device will reboot automatically after updating the firmware.

Select the device to be updated in the device list, right-click the device, and click **Firmware Update**. Click  to select update file from local PC, and click **Update** to update firmware.

##### Note

You can also go to **Tool** → **Firmware Updater** to update firmware.

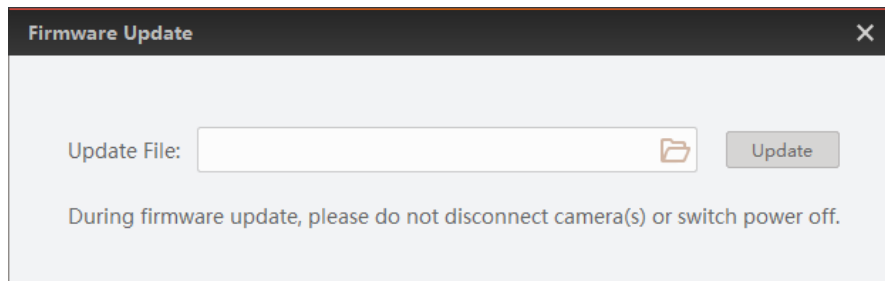


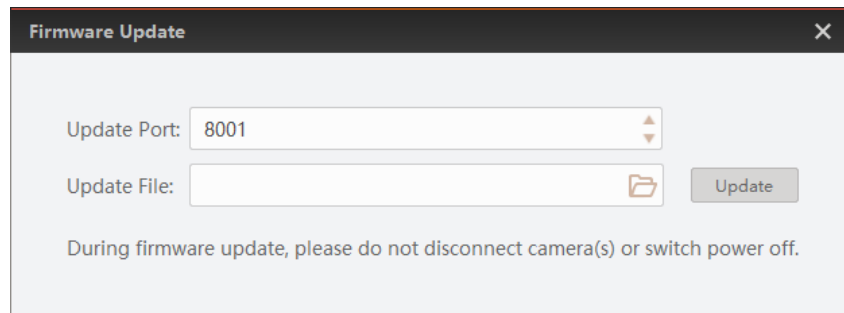
Figure 12-1 Update Firmware via UDP

#### Update via TCP

##### Note

- Connect the device with client software.

Select the device to be updated in the device list, right-click the device, and click **Firmware Update**. Click  to select update file from local PC, enter port No. of TCP update, and click **Update** to update firmware.



**Figure 12-2 Update Firmware via TCP**

## 12.2 Restart Device

You can restart the device via client software. Go to **Device Control**, and click **Execute** next to **Device Reset**.



**Figure 12-3 Reboot Device**

## Chapter 13 FAQ (Frequently Asked Question)

### 13.1 Why there is no device listed after I run the client software?

#### Reason

- The device is powered off.
- Network exception occurs.

#### Solution

- Check the device's power connection to make sure that the device is powered up normally.
- Check the network connection.

### 13.2 Why the image is very dark?

#### Reason

Too small adjustment value of exposure and gain.

#### Solution

Increase exposure and gain appropriately.

### 13.3 Why the image quality is very poor during the live view?

#### Reason

- The network may be Fast Ethernet.
- Incorrect jumbo packet setting.

#### Solution

- Confirm whether the network transmission speed is 1 Gbps and NIC is the gigabit NIC, etc.
- Set jumbo packet value as 9 KB, or 9014 bytes.

## 13.4 Why there is no image in the live view?

### Reason

Incorrect device mode settings, and no codes are recognized within the field of view.

### Solution

Set the device mode as the test mode.

## 13.5 Why codes within the field of view cannot be recognized?

### Reason

Correct code types are not selected in the **Algorithm Settings**.

### Solution

Go to **Algorithm Settings** → **Add Barcode**, and add different types of codes according to actual demands.

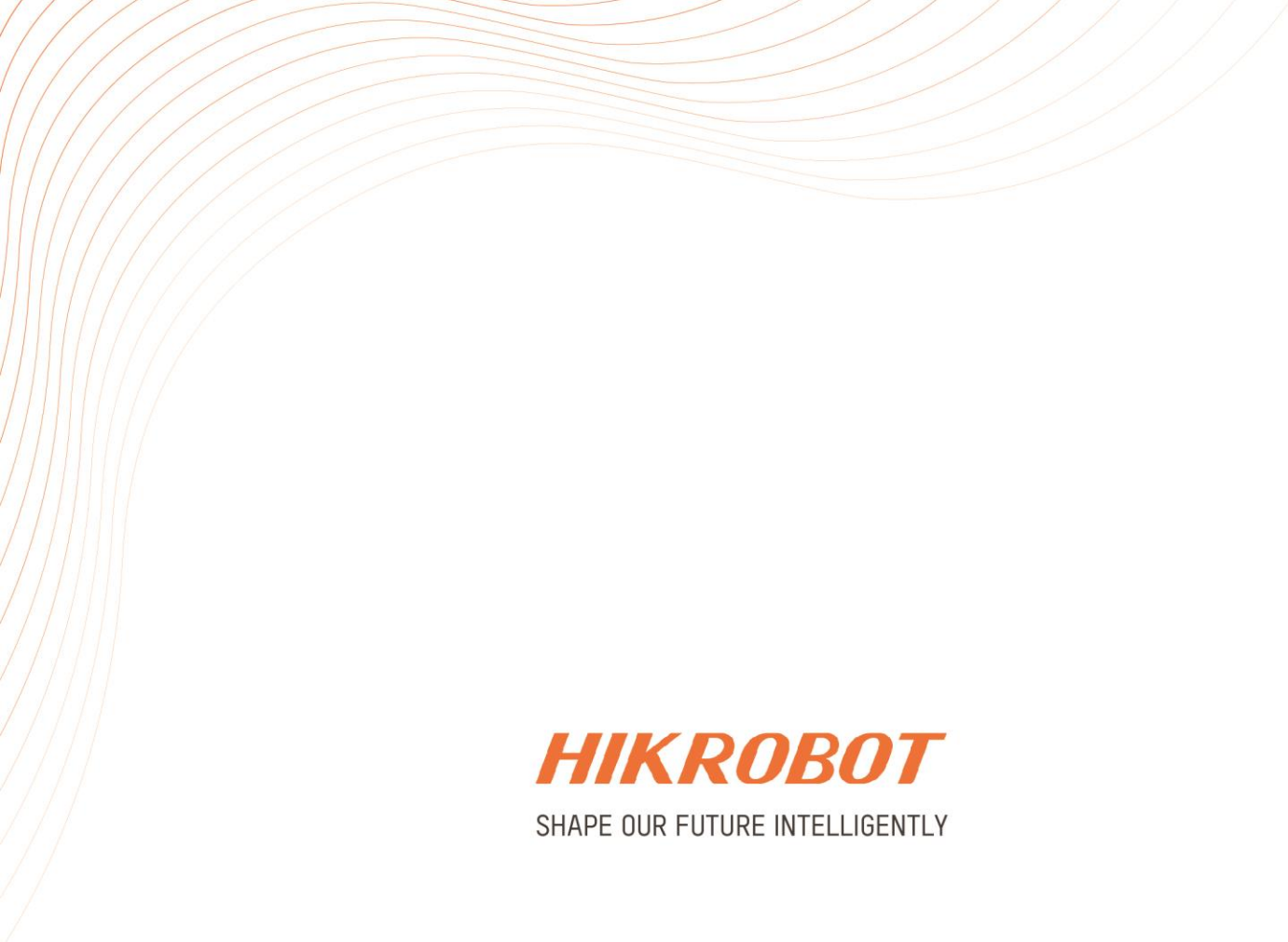
## 13.6 Why the recognized barcodes are incomplete?

### Reason

- Number of codes exceeds the limit.
- **Numeral Filter** is enabled.
- The code length is limited.

### Solution

- Go to **Algorithm Settings** > **Select Code** to reset the number of codes.
  - Go to **Data Processing** > **Filter Rule** to disable the **Numeral Filter** function.
- Go to **Data Processing** > **Filter Rule** to edit the code length.



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**Hangzhou Hikrobot Technology Co.,Ltd.**

E-mail: [global.support@hikrobotics.com](mailto:global.support@hikrobotics.com)

Website: <https://en.hikrobotics.com/>

**UD38884B**