

Hikrobot Co., Ltd.

# IDH3000 Series Wireless Handheld Code Reader

User Manual

**HIKROBOT**

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| 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 IDH3000 Series Wireless Handheld Code Reader.

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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 the specific power consumption of the device, please refer to the device's specifications.
- Do not cover the device's plug or outlet for disconnecting power supply.
- It is strictly forbidden to install, wire or maintain the device when it is powered on, otherwise there is a danger of electric shock.
- Using the wrong type of battery for replacement (for example, some types of lithium batteries) may cause the safety protection to fail.

- Protective measures like wearing safety goggles are required when installing, maintaining and debugging the device.
- Avoid aiming the lens at strong light (such as lighting, sunlight, or laser beams, etc.), otherwise the image sensor will be damaged.
- It is forbidden to touch the image sensor directly. If necessary, please moisten a soft clean cloth with 75% or less alcohol and gently wipe off the dust. When the device is not in use, please add a dust cover to protect the image sensor.
- 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.
- 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.
- Do not use the product in extremely heat, extremely cold, dusty environment, corrosive environment or high humidity environment.
- The device should not be placed with exposed flame sources, such as lighted candles.
- Please read the manual and safety instructions carefully before installing the device.
- 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.

### 1.4 Laser Product

The device complies with IEC60825.1:2014 and GB7247.1:2012, and its laser safety class belongs to laser 2.



**Figure 1-1 Laser 2**

Other parameters regarding the laser information are as follows:

- Laser safety class: Class 2
- Wavelength: 650 nm
- Pulse width: 8 ms
- Maximum power: 1 mW



#### **Caution**

- Do not look directly at the laser beam, and if necessary, adjust the direction of direct eye gaze or close your eyes for protection.
- Do not use optical instruments (such as telescopes, magnifier) to observe the laser beam.
- Do not place optical instruments (such as mirrors) within the irradiation range of the laser beam.
- Avoid shining the laser on highly-reflective materials. If it is unavoidable, the angle of the reflective material should be adjusted to prevent damage caused by laser reflection.
- Turn off the laser when the device is not in use.

- Please use this device correctly and safely in accordance with the contents of this manual and the local standards and laws and regulations. Otherwise the operator may be exposed to the risk of injury, electric shock, or radiation from the laser.

## Chapter 2 Overview

### 2.1 Introduction

The IDH3000 series wireless handheld code reader decodes different types of 1D and 2D codes rapidly. With the built-in intelligent code reading algorithm, it can easily decoding codes with spots, defects and low contrast ratio, and entry level DPM codes. With adaptive smart bases, the code reader can realize charging and data communication.

### 2.2 Key Features

- Built-in code reading algorithm for decoding different types of 1D and 2D codes.
- Provides good robustness to read codes with spots, defects and low contrast ratio.
- Supports continuous code reading, batch code reading for improving code reading efficiency.
- Adopts Bluetooth 5.0 wireless technology to provide convenient and efficient operations.
- With a smart bases, parameter configuration and device management via IDMVS client software are supported.
- Adopts 3150 mAh battery to provide long battery life.
- Supports IP52 and drop height of 1.8 m.

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#### Note

Refer to the specification of the device for detailed parameters.

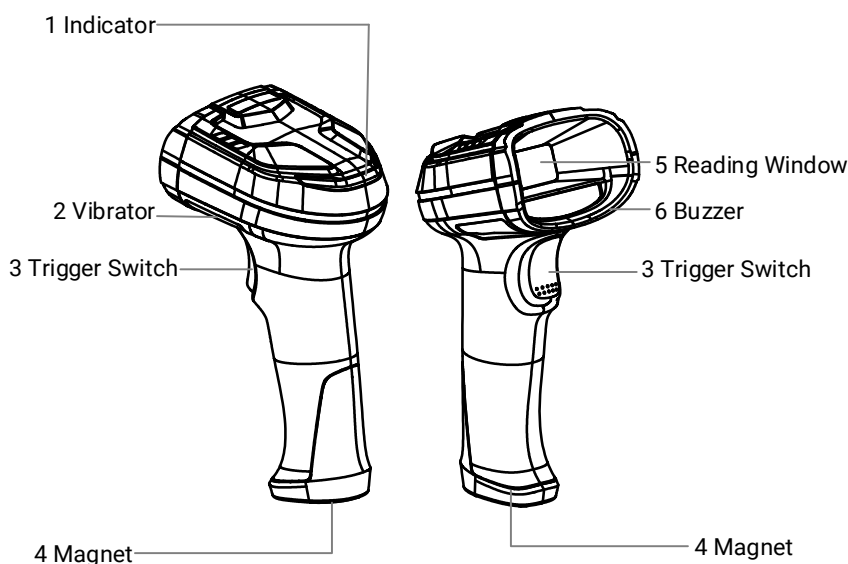
---

## Chapter 3 Appearance and Indicator

### 3.1 Appearance

#### Note

- Appearance here is for reference only. Refer to the device's specification for detailed dimension information.
- The IDH3000 series wireless handheld code reader should be used with a smart base.



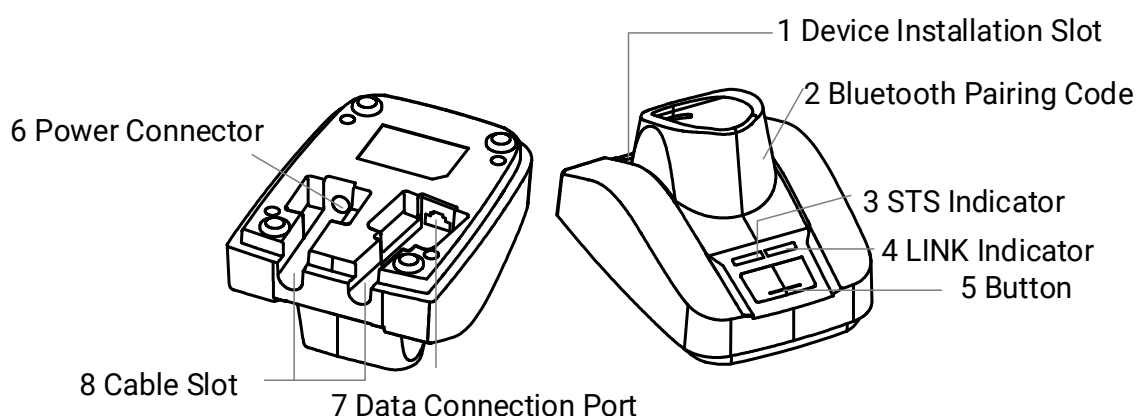
**Figure 3-1 Appearance of Device**

**Table 3-1 Component Description**

| No. | Name           | Description                                                                                                                                                                                                     |
|-----|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Indicator      | It indicates the status of the device. Refer to section <a href="#">Device Indicator</a> for details.                                                                                                           |
| 2   | Vibrator       | It indicates the device's operation status via vibration. Refer to section <a href="#">Component Status</a> for details.                                                                                        |
| 3   | Trigger Switch | When the device is in an external trigger mode, you can press the trigger switch to trigger the device once.<br> <b>Note</b> |

| No. | Name           | Description                                                                                                                                                                                          |
|-----|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                | Press and hold the trigger switch for 10 seconds, and release it when you hear a beep. After hearing the beep again, press and hold the trigger switch for 3 seconds to restore to factory settings. |
| 4   | Magnet         | It is used to fasten the device to the smart base to prevent falling.                                                                                                                                |
| 5   | Reading Window | It is used to acquire images, and consists of image sensor, lens, lighting, aiming system, etc.<br><b>⚠ Caution</b><br>Do not look directly at the laser beam from the reading window.               |
| 6   | Buzzer         | It indicates the device's operation status via buzzer. Refer to section <a href="#">Component Status</a> for details.                                                                                |

The device should be used with the smart base during connection and charging.



**Figure 3-2 Appearance of Smart Base**

**Table 3-2 Component Description**

| No. | Name                     | Description                                                                                                                                                                              |
|-----|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Device Installation Slot | It is used to install the device.                                                                                                                                                        |
| 2   | Bluetooth Pairing Code   | You can scan the Bluetooth pairing code to connect the device to the smart base via Bluetooth, and connect to the client software via the smart base for parameter viewing and settings. |

| No. | Name                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3   | STS Indicator        | It refers to the power indicator of the smart base, and is located on the left side.                                                                                                                                                                                                                                                                                                                                             |
| 4   | LINK Indicator       | It refers to the network status indicator of the smart base, and is located on the right side.                                                                                                                                                                                                                                                                                                                                   |
| 5   | Button               | <p>You can press the button to execute Find Me command and Bluetooth disconnection.</p> <ul style="list-style-type: none"> <li>• Shortly press the button three times within 2 seconds to send a Find Me command to the connected device. Repeat the triple-press within 2 seconds to stop the command transmission.</li> <li>• Press and hold the button for 3 seconds to disconnect the smart base from the device.</li> </ul> |
| 6   | Power Connector      | It is used to connect to a power adapter for power supply.                                                                                                                                                                                                                                                                                                                                                                       |
| 7   | Data Connection Port | It is used to connect to a cable for data transmission.                                                                                                                                                                                                                                                                                                                                                                          |
| 8   | Cable Slot           | It is used to insert a cable.                                                                                                                                                                                                                                                                                                                                                                                                    |

## 3.2 Component Status and Indicator

### 3.2.1 Component Status

You can refer to the table below for the status of the components.

**Table 3-3 Component Status**

| Component | Status Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Buzzer    | <ul style="list-style-type: none"> <li>• The buzzer beeps three times when the device starts up.</li> <li>• The buzzer beeps twice when the device scans Bluetooth pairing code.</li> <li>• The buzzer beeps once when the Bluetooth connection is succeeded.</li> <li>• The buzzer beeps twice when the Bluetooth connection is failed.</li> <li>• The buzzer beeps once when the device is placed into the smart base.</li> <li>• After Bluetooth connection is succeeded, the buzzer beeps once when the device reads codes successfully.</li> <li>• After Bluetooth connection is failed, the buzzer beeps twice when the device reads codes successfully.</li> </ul> |

| Component | Status Description                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | <ul style="list-style-type: none"> <li>The buzzer beeps three times when the device reads configuration codes successfully.</li> <li>The buzzer beeps once for 3 seconds when the device fails to upgrade firmware.</li> <li>The buzzer beeps three times in circle when the smart base calls the device.</li> </ul>                                                                                                                                                    |
| Vibrator  | <ul style="list-style-type: none"> <li>The device vibrates once for 300 ms when it is powered on.</li> <li>The device vibrates once when Bluetooth is connected.</li> <li>The device vibrates once when Bluetooth is disconnected.</li> <li>The device vibrates twice (duration: 300 ms, interval: 300 ms) when it reads configuration codes successfully.</li> <li>The device vibrates once (duration: 2 seconds) when it enters into low consumption mode.</li> </ul> |

### Note

You can set the parameters of buzzer and vibrator via the configuration codes or **I/O Control Settings** in the IDMVS client software. Refer to section [Configuration Codes](#) for details.

## 3.2.2 Device Indicator

You can observe the device's indicator to check whether the device operates normally or not.

**Table 3-4 Indicator Description**

| Device Status           |                                       | Power Indicator                                                                     |                                                 |
|-------------------------|---------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------|
| Normal Status           | Powering On                           |  | Solid red                                       |
|                         | Bluetooth Disconnected                |  | Solid yellow                                    |
|                         | Bluetooth Connection Progress         |  | Flashing green                                  |
|                         | Bluetooth Connected                   | -                                                                                   | Unlit                                           |
| Code Reading Status     | Successful Code Reading               |  | Green on                                        |
|                         | Failed Code Reading                   |  | Red on                                          |
|                         | Successful Configuration Code Reading |  | Green on                                        |
| Firmware Upgrade Status | Firmware Upgrade Progress             |  | Flashing yellow                                 |
|                         | Successful Firmware Upgrade           |  | Solid green (device restarting after 3 seconds) |

|  |                         |                                                                                   |                                               |
|--|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------|
|  | Failed Firmware Upgrade |  | Solid red (device restarting after 3 seconds) |
|--|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------|

### 3.2.3 Smart Base Indicator

You can observe the smart base's indicator to check the device operation.

**Table 3-5 Indicator Description**

| Device Status           |                                                    | STS Indicator                                   | LINK Indicator |
|-------------------------|----------------------------------------------------|-------------------------------------------------|----------------|
| Charging Status         | Not Charging                                       | Unlit                                           | -              |
|                         | Charging (0% to 20%)                               | Flashing red                                    | -              |
|                         | Charging (20% to 80%)                              | Flashing yellow                                 | -              |
|                         | Charging (80% to 100%)                             | Flashing green                                  | -              |
|                         | Charging Completed (100%)                          | Solid green                                     | -              |
| Connection Status       | Network Connection and Bluetooth Connection Normal | -                                               | Solid green    |
|                         | Network Disconnected                               | -                                               | Solid red      |
|                         | Bluetooth Disconnected                             | -                                               | Solid red      |
| Firmware Upgrade Status | Firmware Upgrade Progress                          | Flashing yellow                                 | -              |
|                         | Successful Firmware Upgrade                        | Solid green (device restarting after 3 seconds) | -              |
|                         | Failed Firmware Upgrade                            | Solid red (device restarting after 3 seconds)   | -              |

## Chapter 4 Quick Start Guide

The basic operation flow includes unboxing, connection, code reading, debugging, and charging.

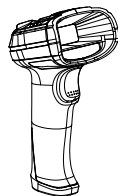
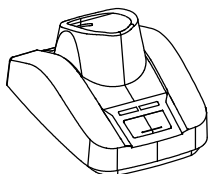
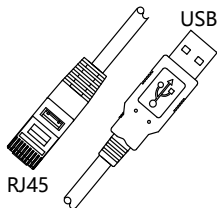
### 4.1 Device Unboxing

Refer to the table below for the included device and accessories in the package.

#### Note

The images below are for reference only.

**Table 4-1 Included Device and Accessories**

| No. | Name                 | Image                                                                               | Quantity | Description                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----|----------------------|-------------------------------------------------------------------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Handheld Code Reader |   | 1        | It refers to the IDH3000 series wireless handheld code reader.                                                                                                                                                                                                                                                                                                                                                                                           |
| 2   | Smart Base           |  | 1        | It is used to fix the device, charge it, achieve data communication, or connect the device to the client software. It has two types, including network type and USB type.                                                                                                                                                                                                                                                                                |
| 3   | Cable                |  | 1        | <p>It is used to connect to the device and provide power, and is included in the package.</p> <ul style="list-style-type: none"> <li>• Network type: You should use it with the smart base with network interface.</li> <li>• USB type: You should use it with the smart base with USB interface.</li> </ul> <p> <b>Note</b><br/>The image is the USB type cable.</p> |
| 4   | Power Adapter        |  | 1        | <p>It is used to provide power supply for the device. The power adapter with 12 V is included in the package.</p> <p> <b>Note</b><br/>Standard power adapter is recommended.</p>                                                                                                                                                                                      |

## 4.2 Device Connection

The device realizes communication connection via its smart base, and the smart base has two interfaces, including network interface and USB interface. Refer to content below for connection.

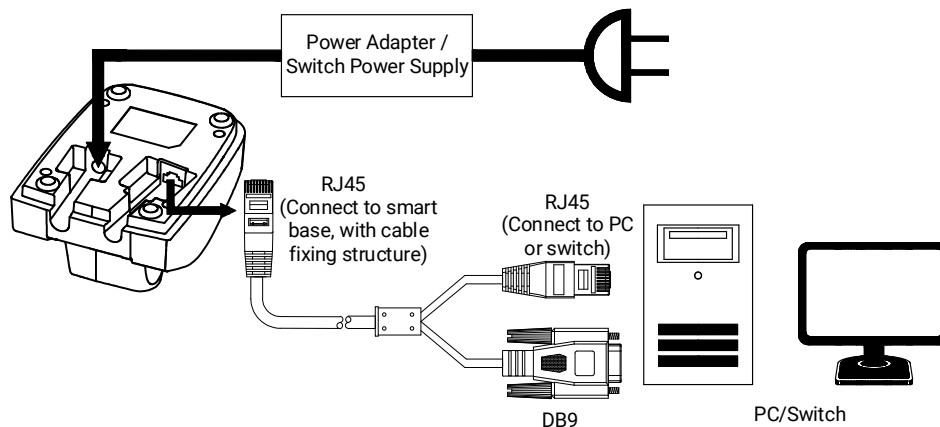
---

### Note

The images of cables below are for reference only.

---

### 4.2.1 Smart Base with Network Interface



**Figure 4-1 Connection of Smart Base with Network Interface**

---

### Note

Please use the cable in the package to connect the smart base to the PC. If other cables are used, the client software may fail to find the device.

---

### Steps

1. Connect the smart base to a power adapter via the power connector.
2. Connect the RJ45 connector with cable fixing structure to the data interface of the smart base.
3. Connect the RJ45 connector at the other end to a switch or a PC for image debugging or data communication.
4. (Optional) Connect the DB9 connector of the cable to the PC if you want to use the serial port function.
5. Use the device to scan the Bluetooth pairing code on the smart base. If you hear the beep and the LINK indicator on the smart base is in green color, the device has been

connected to the smart base via the Bluetooth.

---

### **Note**

Press the button on the smart base for 3 seconds to disconnect the connection between the device and the smart base, and then the smart base is in standby status.

---

6. (Optional) Shortly press the button on the smart base three times within 2 seconds to send a Find Me command to the connected device. After receiving the commands, the device's status indicator is flashing red for three times and buzzer beeps three times with interval of 1.5 seconds.

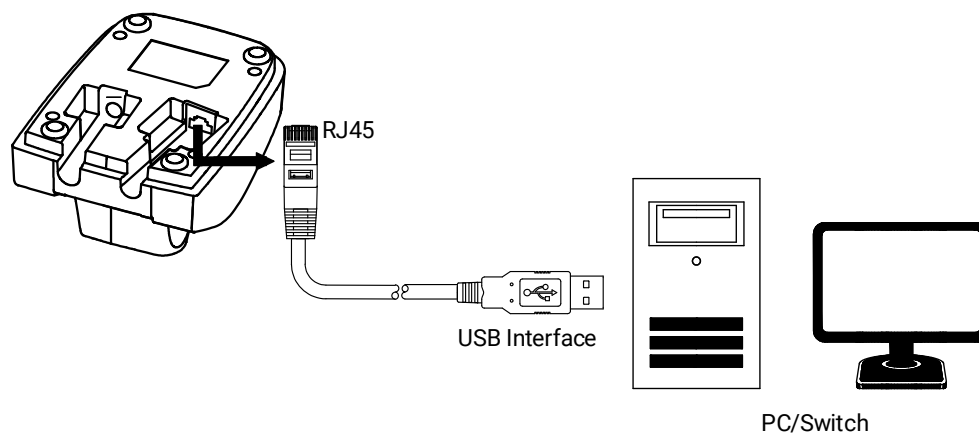
---

### **Note**

Shortly press the button three times within 2 seconds again, and the smart base stops sending Find Me command after you hear the beep. You can also press the device's trigger switch for less than 3 seconds to stop calling.

---

## 4.2.2 Smart Base with USB Interface



**Figure 4-2 Connection of Smart Base with USB Interface**

---

### **Note**

The device with USB interface supports replacement with the RS-232 serial cable and external communication via the serial protocol. You should purchase the serial cable separately.

---

### **Steps**

1. Connect the RJ45 connector to the data connection port of the smart base.
2. Connect the USB interface of the cable to a PC.
3. Use the device to scan the Bluetooth pairing code on the smart base. If you hear the beep and the LINK indicator on the smart base is in green color, the device has been connected

to the smart base via the Bluetooth.

---

### **Note**

Press the button on the smart base for 3 seconds to disconnect the connection between the device and the smart base, and then the smart base is in standby status.

---

4. (Optional) Shortly press the button on the smart base three times within 2 seconds to send a Find Me command to the connected device. After receiving the commands, the device's status indicator is flashing red for three times and buzzer beeps three times with interval of 1.5 seconds.

---

### **Note**

Shortly press the button three times within 2 seconds again, and the smart base stops sending Find Me command after you hear the beep. You can also press the device's trigger switch for less than 3 seconds to stop calling.

---

## 4.2.3 Mobile Terminal Connection via Bluetooth

You can connect the device to a mobile terminal via Bluetooth, such as mobile phone or tablet.

### **Steps**

1. Bluetooth mode settings: After the device is started, you can scan a configuration code of **Request of Switching Bluetooth to HID Mode** and a configuration code of **Confirmation of Switching Bluetooth to HID Mode** respectively. After code reading is succeeded, the device will vibrate, and the indicator be on and the buzzer beep after 10 seconds.



**Figure 4-3 Request of Switching Bluetooth to HID Mode**



**Figure 4-4 Confirmation of Switching Bluetooth to HID Mode**

2. Connection: Open the Bluetooth settings on the mobile terminal, and select the device

serial No. for connection. After connection is succeeded, the device will vibrate.

---

### **Note**

On the Bluetooth settings page, the device will be shown in a keyboard icon.

---

3. (Optional) If you need to switch to the smart base mode, scan a configuration code of **Request of Switching Bluetooth to Smart Base Mode** and a configuration code of **Confirmation of Switching Bluetooth to Smart Base Mode** respectively. After code reading is successful, the device will vibrate and the buzzer will beep.



**Figure 4-5 Request of Switching Bluetooth to Smart Base Mode**



**Figure 4-6 Confirmation of Switching Bluetooth to Smart Base Mode**

### **4.2.4 External Device Connection**

The device supports connecting to the external device via the USB-HID protocol, such as Pro-face screen, industrial display, Android industrial computer, or other third-party device. You can connect the device directly to the USB interface of the external device. The code reading results will be sent to the external device automatically.

---

### **Note**

When the device uses the USB-HID protocol, the **Composite HID Mode** is used by default. If the Pro-face screen should be connected, you can scan the keyboard mode code to change to the **Simple HID Mode**. Under the keyboard mode, the device cannot be enumerated.

---



**Figure 4-7 Keyboard Mode**

## 4.3 Code Reading

After the device connection is completed, you can press the trigger switch and aim at the code to read.

### **Before You Start**

Place the cursor at any of the text input locations on the PC, and scan any of the following codes. If “123456” is sent to the PC, it means that the device is connected.



Figure 4-8 Test Code

### **Steps**

Place the device close to the code, press the trigger switch, and aim at the code to read. The device will emit a cross aiming line for reading.



Figure 4-9 Code Reading

---

### **Note**

The buzzer beeps once and the device indicator is in green color when the device reads codes successfully.

---

## 4.4 Debugging

The device supports configuring parameters via reading special codes that are called

configuration codes or debugging in the client.

## Debugging via Configuration Code

The configuration code consists of three parts.



Figure 4-10 Configuration Code

Table 4-2 Configuration Code Description

| No. | Description                                                                                                                         |
|-----|-------------------------------------------------------------------------------------------------------------------------------------|
| 1   | It is the code part of the configuration code. After reading this part, the device can finish the corresponding parameter settings. |
| 2   | ** stands for the default settings.                                                                                                 |
| 3   | It is the content of configuration code.                                                                                            |

You can configure parameters according to the demands. Refer to section [Configuration Codes](#) for details.

## Debugging via Client Software

### Note

Refer to section [Client Software Installation and Operation](#) for the basic operations in the IDMVS client software.

### **Before You Start**

Make sure the client software is installed and the device is connected.

### Note

You can get the installation package of the IDMVS client software from <https://en.hikrobotics.com/>. It is recommended to use the latest version of the client software. In the IDMVS client software, you can set parameters related to image, algorithm, input/output, communication protocol, or code reading result. Refer to **IDMVS Client Software User Manual** for details.

---

**Steps**

1. Select codes in **Algorithm Settings** according to the demands.
2. Set trigger mode in **I/O Control Settings** and communication protocols in **Communication Settings**.

**Note**

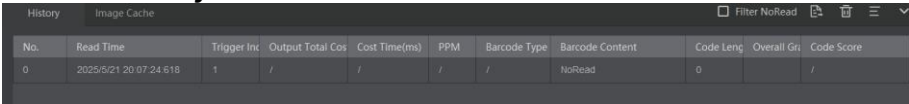
- The supported trigger modes are button trigger, brightness trigger, self trigger, and serial port trigger.
- The communication protocols supported by the USB type device are SmartSDK, USB, Serial, and Bluetooth. The communication protocols supported by the network type device are SmartSDK, TCP Client, Serial, FTP, TCP Server, UDP, Profinet, EthernetIP, Bluetooth, Modbus, Melsec/SLMP, and FINS.
- If you select the communication protocols except SmartSDK, please change the running mode to **Normal**.
- If you select Profinet, ModBus, EthernetIP, Melsec/SLMP, and FINS, please refer to **Smart Code Reader Industrial Protocol** on the official website for connection.

3. In the Normal mode, click  to start acquisition.

**Note**

During the image debugging, you can change the running mode to Test to obtain the image and code information output by the device.

4. View the code reading time, code type, code content, code length, and other code-related information in the **History** at the bottom of the client software.



| No. | Read Time              | Trigger Inc | Output Total Cos | Cost Time(ms) | PPM | Barcode Type | Barcode Content | Code Leng | Overall Gri | Code Score |
|-----|------------------------|-------------|------------------|---------------|-----|--------------|-----------------|-----------|-------------|------------|
| 0   | 2025/5/21 20:07:24.618 | 1           | /                | /             | /   | /            | NoRead          | 0         | /           | /          |

**Figure 4-11 History**

5. Go to **Image Settings** to adjust parameters, such as exposure time, gain, or Gamma.

**Note**

If you want to adjust exposure time and gain manually, go to **Feature Tree** → **Image Setting** to disable **Exposure Auto** and **Gain Auto**.

## 4.5 Device Charging

The device can be charged via the smart base. Put the device into the smart base, and connection between the device and the smart base is done after you hear the beep once.

**Before You Start**

Make sure that the smart base is connected to external power supply before charging.

During the charging, the statuses of the device are introduced below.

- If the battery level is lower than 4%, the device will shut down automatically.
- If the battery level is lower than 10%, after each successful code reading, the device will beep once followed by two short and low-pitched alarms when the Bluetooth is connected, or the device will beep twice followed by two short and low-pitched alarms when the Bluetooth is disconnected. If the device is not performing code reading, there is no battery prompt.
- If the battery level is lower than 10%, the device will have low battery level prompts, that is, the indicator is flashing red. The low battery level prompts will stop automatically once you put the device into the smart base.

## Chapter 5 Configuration Codes

Via reading configuration codes, the device can set communication, set data processing, set code reading, set trigger input, set aiming system, set light source, set buzzer, set vibration, set switching mode, set sending device information, set management, etc.

**Note**

Parameters of configuration code may differ by device model and firmware version.

---

### 5.1 Set Configuration Codes of Communication

#### 5.1.1 USB Communication

##### Enable/Disable USB Communication

**Table 5-1 Set Configuration Codes of Enabling/Disabling USB Communication**

| Function                 | Configuration Codes                                                                 | Function                  | Configuration Codes                                                                   |
|--------------------------|-------------------------------------------------------------------------------------|---------------------------|---------------------------------------------------------------------------------------|
| Enable USB Communication |  | Disable USB Communication |  |

##### Switch USB Communication

By default, the device's communication is USB HID. If you need to read specific configuration codes, switch the device's communication method to USB CDC.

**Table 5-2 Set Configuration Codes of Switching USB Communication**

| Function                   | Configuration Codes                                                                 | Function                   | Configuration Codes                                                                   |
|----------------------------|-------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------|
| USB HID Communication Mode |  | USB CDC Communication Mode |  |

## USB HID Communication Method

### Compound Mode & Keyboard Mode

The USB HID communication includes two types: compound mode and keyboard mode. The compound mode is set by default under USB HID communication. If the external device should be connected, you can switch to keyboard mode. Refer to section [External Device Connection](#) for details.

**Table 5-3 Set Configuration Codes of USB HID Communication**

| Function      | Configuration Codes                                                               | Function      | Configuration Codes                                                                 |
|---------------|-----------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|
| Compound Mode |  | Keyboard Mode |  |

### Multi-Language Output

**Table 5-4 Set Configuration Codes of Multi-Language Output**

| Function | Configuration Codes                                                                 | Function                | Configuration Codes                                                                   |
|----------|-------------------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------|
| Chinese  |  | English (United States) |  |
| Belgian  |  | Danish                  |  |
| Finnish  |  | French                  |  |

| Function       | Configuration Codes                                                                 | Function                 | Configuration Codes                                                                   |
|----------------|-------------------------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------|
| German         |    | English (United Kingdom) |    |
| Italian        |    | Italian (142)            |    |
| Norwegian      |    | Spanish                  |    |
| Swiss          |  | Swiss (Germany)          |  |
| Swiss (France) |  | Japanese                 |  |
| Korean         |  | Czech                    |  |

| Function | Configuration Codes                                                               | Function | Configuration Codes |
|----------|-----------------------------------------------------------------------------------|----------|---------------------|
| Others   |  | /        | /                   |

### Enable/Disable Keyboard

**Table 5-5 Set Configuration Codes of Enabling/Disabling Keyboard**

| Function        | Configuration Codes                                                               | Function         | Configuration Codes                                                                 |
|-----------------|-----------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------|
| Enable Keyboard |  | Disable Keyboard |  |

### Output Encoding Format of Chinese Characters

**Table 5-6 Set Configuration Codes of Output Encoding Format of Chinese Characters**

| Function                    | Configuration Codes                                                                 | Function                        | Configuration Codes                                                                   |
|-----------------------------|-------------------------------------------------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------|
| Output Encoding Format: GBK |  | Output Encoding Format: Unicode |  |

### Enable/Disable Input Method Ignore

**Table 5-7 Set Configuration Codes of Enabling/Disabling Input Method Ignore**

| Function                   | Configuration Codes                                                                 | Function                    | Configuration Codes                                                                   |
|----------------------------|-------------------------------------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------|
| Enable Input Method Ignore |  | Disable Input Method Ignore |  |

### Enable/Disable Numeric Keypad

**Table 5-8 Set Configuration Codes of Enabling/Disabling Numeric Keypad**

| Function              | Configuration Codes                                                               | Function               | Configuration Codes                                                                 |
|-----------------------|-----------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------|
| Enable Numeric Keypad |  | Disable Numeric Keypad |  |

**Enable/Disable Quick Output**
**Table 5-9 Set Configuration Codes of Enabling/Disabling Quick Output**

| Function            | Configuration Codes                                                               | Function             | Configuration Codes                                                                 |
|---------------------|-----------------------------------------------------------------------------------|----------------------|-------------------------------------------------------------------------------------|
| Enable Quick Output |  | Disable Quick Output |  |

**Control Character Output Method**
**Table 5-10 Set Configuration Codes of Control Character Output Method**

| Function            | Configuration Codes                                                                 | Function         | Configuration Codes                                                                   |
|---------------------|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|
| Function Key Output |  | Character Output |  |
| CTRL+X Output       |  | Ignore           |  |
| Escaping            |  | /                | /                                                                                     |

## Control Character Output Method Application

**Table 5-11 Set Configuration Codes of Control Character Output Method Application**

| Function                | Configuration Codes                                                               | Function      | Configuration Codes                                                                 |
|-------------------------|-----------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|
| Code                    |  | Prefix/Suffix |  |
| Code +<br>Prefix/Suffix |  | /             | /                                                                                   |

## Switch Output System

**Table 5-12 Set Configuration Codes of Switching Output System**

| Function                 | Configuration Codes                                                                 | Function               | Configuration Codes                                                                   |
|--------------------------|-------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------|
| Windows<br>System Output |  | Linux System<br>Output |  |

## Output Interval

**Table 5-13 Set Configuration Codes of Output Interval**

| Function                          | Configuration Codes                                                                 | Function                       | Configuration Codes                                                                   |
|-----------------------------------|-------------------------------------------------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------|
| Set Output<br>Interval as 0<br>ms |  | Set Output<br>Interval as 1 ms |  |

| Function                     | Configuration Codes                                                               | Function                      | Configuration Codes                                                                 |
|------------------------------|-----------------------------------------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------|
| Set Output Interval as 2 ms  |  | Set Output Interval as 20 ms  |  |
| Set Output Interval as 50 ms |  | Set Output Interval as 100 ms |  |

## USB CDC Communication Method

### Enable/Disable Control Character Escaping

**Table 5-14 Set Configuration Codes of Enabling/Disabling Control Character Escaping**

| Function                                         | Configuration Codes                                                                 | Function                                       | Configuration Codes                                                                   |
|--------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------|
| Enable Control Character Escaping                |  | Disable Control Character Escaping             |  |
| Control Character Escaping: Code Only            |  | Control Character Escaping: Prefix/Suffix Only |  |
| Control Character Escaping: Code + Prefix/Suffix |  | /                                              | /                                                                                     |

## 5.1.2 Serial Port Communication

The configuration codes of serial port can enable or disable serial port function, set the baud

rate, parity bit, and stop bit.

### Note

Parameters of configuration code may differ by device model and firmware version.

**Table 5-15 Set Configuration Codes of Serial Port**

| Function                    | Configuration Codes                                                                 | Function                     | Configuration Codes                                                                   |
|-----------------------------|-------------------------------------------------------------------------------------|------------------------------|---------------------------------------------------------------------------------------|
| Enable Serial Port Function |    | Disable Serial Port Function |    |
| Set Baud Rate as 4800       |    | Set Baud Rate as 9600        |    |
| Set Baud Rate as 19200      |  | Set Baud Rate as 38400       |  |
| Set Baud Rate as 57600      |  | Set Baud Rate as 115200      |  |
| Set None Parity             |  | Set Odd Parity               |  |

| Function        | Configuration Codes                                                               | Function       | Configuration Codes                                                                 |
|-----------------|-----------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------|
| Set Even Parity |  | Set Stop Bit 1 |  |
| Set Stop Bit 2  |  | /              | /                                                                                   |

## 5.2 Set Configuration Codes of Data Processing

You can set the device's output code results via scanning the specific configuration codes as shown below.

### 5.2.1 Prefix/Suffix Editing and Formatting

#### Prefix/Suffix Editing

##### Steps

1. Read configuration codes of editing prefix or editing suffix.

**Table 5-16 Configuration Codes of Editing Prefix or Suffix**

| Function    | Configuration Codes                                                                 | Function    | Configuration Codes                                                                   |
|-------------|-------------------------------------------------------------------------------------|-------------|---------------------------------------------------------------------------------------|
| Edit Prefix |  | Edit Suffix |  |

2. Set prefix and suffix characters according to actual demands, find the corresponding hexadecimal code value in ASCII table (refer to section [Appendix A ASCII Table](#) for details), and read the corresponding digital codes. For example, if the defined prefix and suffix content is \*, the corresponding ASCII code is 2a. Use to the device to read the digital code 2 and digital code a in turn. If the defined prefix and suffix content is 1, the corresponding ASCII code is 31. Use to the device to read the digital code 3 and digital code 1 in turn.

---

**Note**

Before setting prefix and suffix, you should scan codes of editing prefix or suffix, scan the digital codes, and scan codes of saving respectively.

---

**Table 5-17 Configuration Codes of a to f and 0 to 9**

| Function       | Configuration Codes                                                                 | Function       | Configuration Codes                                                                   |
|----------------|-------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------|
| Digital Code 0 |   | Digital Code 1 |   |
| Digital Code 2 |  | Digital Code 3 |  |
| Digital Code 4 |  | Digital Code 5 |  |
| Digital Code 6 |  | Digital Code 7 |  |

| Function       | Configuration Codes                                                                 | Function       | Configuration Codes                                                                   |
|----------------|-------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------|
| Digital Code 8 |    | Digital Code 9 |    |
| Digital Code a |    | Digital Code b |    |
| Digital Code c |    | Digital Code d |    |
| Digital Code e |  | Digital Code f |  |

3. Set separator among the codes. Use semicolon (;) to separate if there is more than one code.

**Table 5-18 Configuration Codes of Separator**

| Function       | Configuration Codes                                                                 | Function        | Configuration Codes                                                                   |
|----------------|-------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------|
| Edit Separator |  | Clear Separator |  |

4. Set start text or stop text for the code.

**Table 5-19 Configuration Codes of Start/Stop Text**

| Function        | Configuration Codes                                                               | Function       | Configuration Codes                                                                 |
|-----------------|-----------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------|
| Edit Start Text |  | Edit Stop Text |  |

5. Read the configuration codes of saving to save the parameter settings.


**Figure 5-1 Configuration Code of Saving**

## Formatting

**Table 5-20 Configuration Codes of Start/Stop Text**

| Function       | Configuration Codes                                                                 | Function        | Configuration Codes                                                                   |
|----------------|-------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------------------------------|
| Enable Enter   |  | Disable Enter   |  |
| Enable Newline |  | Disable Newline |  |
| Enable TAB     |  | Disable TAB     |  |

| Function                       | Configuration Codes                                                               | Function                  | Configuration Codes                                                                 |
|--------------------------------|-----------------------------------------------------------------------------------|---------------------------|-------------------------------------------------------------------------------------|
| Enable Enter and Newline       |  | Disable Enter and Newline |  |
| \r First, \n Second (Default)  |  | \n First, \r Second       |  |
| Disable All Special Characters |  | /                         | /                                                                                   |

## 5.2.2 Case Sensitivity Output

You can scanning the configuration codes below to set the case sensitivity of the output result.

**Table 5-21 Configuration Codes of Case Sensitivity**

| Function         | Configuration Codes                                                                 | Function           | Configuration Codes                                                                   |
|------------------|-------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------|
| Normal Output    |  | Uppercase Output   |  |
| Lowercase Output |  | Toggle Case Output |  |

### 5.2.3 Code Filtering Prompt

You can scanning the configuration codes below to enable/disable code filtering prompt.

**Table 5-22 Configuration Codes of Code Filtering Prompt**

| Function                     | Configuration Codes                                                               | Function                      | Configuration Codes                                                                 |
|------------------------------|-----------------------------------------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------|
| Enable Code Filtering Prompt |  | Disable Code Filtering Prompt |  |

## 5.3 Set Configuration Codes of Code Reading

### 5.3.1 Code Type

The device can be set what code type to be read via reading specific configuration codes. Currently, the device supports Code 39, Code 93, Code 128, CodeBar, ITF 25, ITF 14, EAN 8, EAN 13, UPCA, UPCE, QR Code, Data Matrix, MicroQR, AZTEC, HANXIN, MicroPDF417, PDF417, GS1-128, GS1-DM, and GS1-QR.

---

 **Note**

The supported code types may differ by device models.

---

**Table 5-23 Set Configuration Codes of Code Type**

| Function            | Configuration Codes                                                                 | Function             | Configuration Codes                                                                   |
|---------------------|-------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------|
| Enable All 1D Codes |  | Disable All 1D Codes |  |
| Enable All 2D Codes |  | Disable All 2D Codes |  |

| Function        | Configuration Codes                                                                 | Function         | Configuration Codes                                                                   |
|-----------------|-------------------------------------------------------------------------------------|------------------|---------------------------------------------------------------------------------------|
| Enable Code 39  |    | Disable Code 39  |    |
| Enable Code 128 |    | Disable Code 128 |    |
| Enable Code 93  |    | Disable Code 93  |    |
| Enable CodeBar  |  | Disable CodeBar  |  |
| Enable ITF 14   |  | Disable ITF 14   |  |
| Enable ITF 25   |  | Disable ITF 25   |  |

| Function           | Configuration Codes                                                                 | Function            | Configuration Codes                                                                   |
|--------------------|-------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------|
| Enable EAN 8       |    | Disable EAN 8       |    |
| Enable EAN 13      |    | Disable EAN 13      |    |
| Enable UPCA        |    | Disable UPCA        |    |
| Enable UPCE        |  | Disable UPCE        |  |
| Enable QR Code     |  | Disable QR Code     |  |
| Enable Data Matrix |  | Disable Data Matrix |  |

| Function                           | Configuration Codes                                                                 | Function                            | Configuration Codes                                                                   |
|------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------|
| Enable MicroQR Code                |    | Disable MicroQR Code                |    |
| Enable AZTEC Code                  |    | Disable AZTEC Code                  |    |
| Enable HANXIN Code                 |    | Disable HANXIN Code                 |    |
| Enable MicroPDF417                 |  | Disable MicroPDF417                 |  |
| Enable PDF 417                     |  | Disable PDF 417                     |  |
| Enable GS1-128, GS1-DM, and GS1-QR |  | Disable GS1-128, GS1-DM, and GS1-QR |  |

### 5.3.2 Code Scanning Mode

The device supports setting different code scanning modes via scanning configuration codes, including common mode, accurate mode, continuous mode, batch mode, and fixed

mode. Refer to section [Code Scanning Settings](#) for details.

**Table 5-24 Set Configuration Codes of Code Scanning Mode**

| Function        | Configuration Codes                                                               | Function      | Configuration Codes                                                                 |
|-----------------|-----------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------|
| Common Mode     |  | Accurate Mode |  |
| Continuous Mode |  | Batch Mode    |  |

Under the batch mode, you can scan the configuration codes below to set the code output mode.

**Table 5-25 Set Configuration Codes of Code Output Mode Under Batch Mode**

| Function                                    | Configuration Codes                                                                 | Function                                    | Configuration Codes                                                                   |
|---------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------|
| Free Mode                                   |  | Fixed Mode                                  |  |
| Code Quantity Upper Limit (Under Free Mode) |  | Code Quantity Lower Limit (Under Free Mode) |  |
| Target Code Quantity (Under Fixed Mode)     |  | /                                           | /                                                                                     |

**Note**

The supported code scanning modes may differ by device models.

Under the continuous mode, you can scan the configuration codes below to set the timeout duration.

**Table 5-26 Set Configuration Codes of Timeout Duration Under Continuous Mode**

| Function                     | Configuration Codes                                                                | Function                     | Configuration Codes                                                                  |
|------------------------------|------------------------------------------------------------------------------------|------------------------------|--------------------------------------------------------------------------------------|
| Set Timeout Duration as 10 s |   | Set Timeout Duration as 15 s |   |
| Set Timeout Duration as 20 s |  | Set Timeout Duration as 30 s |  |

### 5.3.3 Code Reading Quantity

You can set the device's code reading quantity via scanning the specific configuration codes as shown below.

#### Steps

1. Read configuration codes of editing code reading quantity.



**Figure 5-2 Edit Code Reading Quantity**

2. Read the corresponding digital codes according to actual demands.

**Note**

- The code reading quantity is supported when the code scanning mode is batch mode.
- When the code scanning mode is batch mode and the code reading quantity is no greater than 20, you should scan the digital code of tens digit first, and then scan the single digit. If the code reading quantity is single digit, the digital code of tens digit is 0. For example,

---

if the code reading quantity is 12, scan the digital code of 1 first, and then scan 2.

---

**Table 5-27 Digital Codes**

| Function       | Configuration Codes                                                                 | Function       | Configuration Codes                                                                   |
|----------------|-------------------------------------------------------------------------------------|----------------|---------------------------------------------------------------------------------------|
| Digital Code 0 |    | Digital Code 1 |    |
| Digital Code 2 |    | Digital Code 3 |    |
| Digital Code 4 |   | Digital Code 5 |   |
| Digital Code 6 |  | Digital Code 7 |  |
| Digital Code 8 |  | Digital Code 9 |  |

3. Read the configuration codes of saving to save the parameter settings.



Figure 5-3 Configuration Code of Saving

### 5.3.4 Code Color

You can set the device's code color via scanning the specific configuration codes as shown below.

Table 5-28 Digital Codes

| Function                       | Configuration Codes                                                                 | Function                       | Configuration Codes                                                                  |
|--------------------------------|-------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------|
| Black Code on White Background |   | White Code on Black Background |  |
| Self-Adaption                  |  | /                              | /                                                                                    |

## 5.4 Set Configuration Codes of Trigger Input

The configuration codes of trigger can let the device switch the trigger mode, including button trigger, self-trigger, brightness trigger, serial port trigger, software trigger, TCP client trigger, TCP server trigger, UDP trigger, and USB trigger, and support disabling trigger

mode.

**Table 5-29 Set Configuration Codes of Trigger**

| Function             | Configuration Codes                                                                 | Function           | Configuration Codes                                                                   |
|----------------------|-------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------|
| Disable Trigger Mode |    | Button Trigger     |    |
| Self-Trigger         |    | Brightness Trigger |    |
| Serial Port Trigger  |   | Software Trigger   |   |
| TCP Server Trigger   |  | TCP Client Trigger |  |
| UDP Trigger          |  | /                  | /                                                                                     |

Under the trigger mode, you can set sensitivity, unrespond time, and timeout duration via scanning the specific configuration codes.

**Table 5-30 Set Configuration Codes of Trigger-Related Parameters**

| Function                                 | Configuration Codes | Function | Configuration Codes |
|------------------------------------------|---------------------|----------|---------------------|
| <b>Sensitivity of Brightness Trigger</b> |                     |          |                     |

| Function                                      | Configuration Codes                                                                 | Function                  | Configuration Codes                                                                   |
|-----------------------------------------------|-------------------------------------------------------------------------------------|---------------------------|---------------------------------------------------------------------------------------|
| Sensitivity: 80                               |    | Sensitivity: 90           |    |
| Sensitivity: 97                               |    | /                         | /                                                                                     |
| <b>Unrespond Time of Brightness Trigger</b>   |                                                                                     |                           |                                                                                       |
| Unrespond Time: 300 ms                        |   | Unrespond Time: 500 ms    |   |
| Unrespond Time: 800 ms                        |  | Unrespond Time: 1000 ms   |  |
| Unrespond Time: 2000 ms                       |  | Unrespond Time: 3000 ms   |  |
| <b>Timeout Duration of Brightness Trigger</b> |                                                                                     |                           |                                                                                       |
| Timeout Duration: 1000 ms                     |  | Timeout Duration: 1500 ms |  |

| Function                        | Configuration Codes                                                               | Function                        | Configuration Codes                                                                 |
|---------------------------------|-----------------------------------------------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------|
| Timeout<br>Duration: 2000<br>ms |  | Timeout<br>Duration: 3000<br>ms |  |
| Timeout<br>Duration: 4000<br>ms |  | Timeout<br>Duration: 5000<br>ms |  |

## 5.5 Set Configuration Codes of Aiming System

The aiming system is used to locate codes in the field of view to help read codes easily. The configuration codes of aiming system can enable, disable, delay or set delay time of the aiming system.

**Table 5-31 Set Configuration Codes of Aiming System**

| Function                         | Configuration Codes                                                                 | Function                          | Configuration Codes                                                                   |
|----------------------------------|-------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------|
| Enable<br>Aiming<br>System       |  | Disable<br>Aiming<br>System       |  |
| Enable<br>Aiming<br>System Delay |  | Disable<br>Aiming<br>System Delay |  |
| Set Delay<br>Time as 1 s         |  | Set Delay<br>Time as 2 s          |  |

| Function              | Configuration Codes                                                               | Function               | Configuration Codes                                                                 |
|-----------------------|-----------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------|
| Set Delay Time as 5 s |  | Set Delay Time as 10 s |  |

## 5.6 Set Configuration Codes of Light Source

The configuration codes of light source can enable the light source.

**Table 5-32 Set Configuration Codes of Light Source**

| Function           | Configuration Codes                                                                 | Function            | Configuration Codes                                                                   |
|--------------------|-------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------|
| Enable White Light |   | Disable White Light |   |
| Enable Red Light   |  | Disable Red Light   |  |

## 5.7 Set Configuration Codes of Buzzer

The configuration codes of buzzer can enable or disable the buzzer function, set its duration, etc.

### Note

The supported configuration codes of buzzer may differ by device models.

**Table 5-33 Set Configuration Codes of Buzzer**

| Function                               | Configuration Codes                                                                 | Function                                | Configuration Codes                                                                   |
|----------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------|---------------------------------------------------------------------------------------|
| Enable Buzzer<br>When Reading<br>Codes |    | Disable Buzzer<br>When Reading<br>Codes |    |
| Set Buzzer<br>Duration 40<br>ms        |    | Set Buzzer<br>Duration 50<br>ms         |    |
| Set Buzzer<br>Duration 80<br>ms        |   | Set Buzzer<br>Duration 100<br>ms        |   |
| Set Buzzer<br>Duration 120<br>ms       |  | Set Buzzer<br>Duration 150<br>ms        |  |
| Set Buzzer<br>Duty Ratio 25%           |  | Set Buzzer<br>Duty Ratio 50%            |  |
| Set Buzzer<br>Duty Ratio 75%           |  | /                                       | /                                                                                     |

## 5.8 Set Configuration Codes of Vibration

The configuration codes of vibration can enable or disable the vibration function and set its duration.

**Table 5-34 Set Configuration Codes of Vibration**

| Function                       | Configuration Codes                                                                 | Function                       | Configuration Codes                                                                   |
|--------------------------------|-------------------------------------------------------------------------------------|--------------------------------|---------------------------------------------------------------------------------------|
| Enable Vibration               |    | Disable Vibration              |    |
| Set Vibration Duration 100 ms  |    | Set Vibration Duration 200 ms  |    |
| Set Vibration Duration 300 ms  |   | Set Vibration Duration 500 ms  |   |
| Set Vibration Duration 1000 ms |  | Set Vibration Duration 2000 ms |  |

## 5.9 Set Configuration Codes of Switching Mode

The device can switch to shutdown mode, low consumption mode, Bluetooth mode etc.

**Table 5-35 Set Configuration Codes of Switching Shutdown Mode and Low Consumption**

### Mode

| Function                   | Configuration Codes                                                               | Function                       | Configuration Codes                                                                 |
|----------------------------|-----------------------------------------------------------------------------------|--------------------------------|-------------------------------------------------------------------------------------|
| Enter Shutdown Mode        |  | Not Enter Shutdown Mode        |  |
| Enter Low Consumption Mode |  | Not Enter Low Consumption Mode |  |

**Table 5-36 Set Configuration Codes of Switching Bluetooth Mode**

| Function                                        | Configuration Codes                                                                 | Function                                             | Configuration Codes                                                                   |
|-------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------------------------------------------|
| Request of Setting Bluetooth as Smart Base Mode |   | Confirmation of Setting Bluetooth as Smart Base Mode |   |
| Request of Switching Bluetooth to HID Mode      |  | Confirmation of Switching Bluetooth to HID Mode      |  |
| Request of Deleting Pairing Information         |  | Confirmation of Deleting Pairing Information         |  |
| Bluetooth Disconnected                          |  | Enable Bluetooth Broadcast                           |  |

| Function                    | Configuration Codes                                                               | Function | Configuration Codes |
|-----------------------------|-----------------------------------------------------------------------------------|----------|---------------------|
| Disable Bluetooth Broadcast |  | /        | /                   |

You can scan the configuration code below to output cached data under batch mode.

#### Note

You should set **BLE DATATRANS MODE** to **Batch Mode** first. Refer to section [Set Bluetooth](#) for details.



**Figure 5-4 Configuration Code of Outputting Cached Data Under Batch Mode**

You can scan the configuration codes below to set keep-alive duration under shutdown mode and sleep mode.

**Table 5-37 Set Configuration Codes of Setting Keep-Alive Duration**

| Function                                               | Configuration Codes                                                                 | Function                                               | Configuration Codes                                                                   |
|--------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------|
| Set Keep-Alive Duration as 30 min Under Shutdown Mode  |  | Set Keep-Alive Duration as 60 min Under Shutdown Mode  |  |
| Set Keep-Alive Duration as 180 min Under Shutdown Mode |  | Set Keep-Alive Duration as 300 min Under Shutdown Mode |  |

| Function                                               | Configuration Codes                                                                 | Function                                               | Configuration Codes                                                                   |
|--------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------|
| Set Keep-Alive Duration as 420 min Under Shutdown Mode |    | Set Keep-Alive Duration as 600 min Under Shutdown Mode |    |
| Set Keep-Alive Duration as 720 min Under Shutdown Mode |    | Set Keep-Alive Duration as 900 min Under Shutdown Mode |    |
| Set Keep-Alive Duration as 180 s Under Sleep Mode      |   | Set Keep-Alive Duration as 600 s Under Sleep Mode      |   |
| Set Keep-Alive Duration as 1200 s Under Sleep Mode     |  | Set Keep-Alive Duration as 1800 s Under Sleep Mode     |  |
| Set Keep-Alive Duration as 3600 s Under Sleep Mode     |  | /                                                      | /                                                                                     |

## 5.10 Set Configuration Codes of Sending Device Information

The device can send its information to the PC via reading specific configuration codes, and the device information includes name, version, algorithm version, hardware version, and serial number.

**Table 5-38 Set Configuration Codes of Sending Device Information**

| Function             | Configuration Codes                                                                | Function                   | Configuration Codes                                                                  |
|----------------------|------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------|
| Send Device Name     |   | Get Device Version         |   |
| Get Hardware Version |   | Get Algorithm Version      |   |
| Get Serial Number    |  | Get All Device Information |  |

## 5.11 Set Configuration Codes of Management

The configuration codes of management can save or initialize user parameters, and restart the device.

**Table 5-39 Set Configuration Codes of Management**

| Function             | Configuration Codes                                                                 | Function                                 | Configuration Codes                                                                   |
|----------------------|-------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------|
| Save User Parameters |  | Initialize User Parameters               |  |
| Restart Device       |  | Request of Restoring to Default Settings |  |

| Function                                      | Configuration Codes                                                               | Function | Configuration Codes |
|-----------------------------------------------|-----------------------------------------------------------------------------------|----------|---------------------|
| Confirmation of Restoring to Default Settings |  | /        | /                   |

## Chapter 6 IDAS Mobile Client Operation

ID Android Set (in short, IDAS) is an Android program developed for handheld code readers. You can scan the configuration code generated by the Application offline to configure parameters and perform interactive operations.

You can contact technical support to get the IDAS installation package, and refer to the **ID Android Set User Manual** for details.



Figure 6-1 ID Android Set User Manual

# Chapter 7 Client Software Installation and Operation

## 7.1 Install Client Software

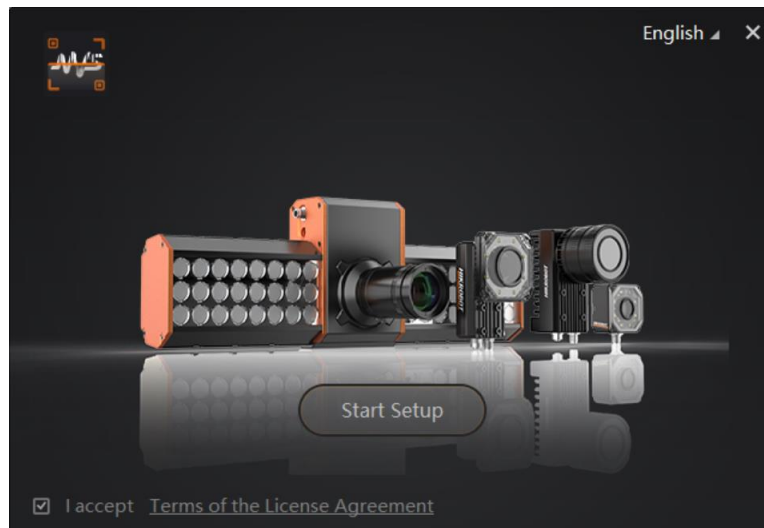
IDMVS is a client software for device configuration and remote operations.

### Note

- The client software is compatible with 32/64-bit Windows 7/10, and 64-bit Windows 11.
- You can get the client software installation package from <https://en.hikrobotics.com/>. It is recommended to use the latest version of the client software.
- The USB type device supports IDMVS V2.3.0 and above that has integrated USB drive only. And there is no need to download and install other drivers.
- The graphic user interface may differ by different versions of client software you use.

### Steps

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 7-1 Installation Interface**

6. Finish the installation according to the interface prompts.

## 7.2 Check USB Drive

Checking the USB drive on the PC is required before using the USB type device. After the USB type device is connected to the PC, the Windows system will automatically detect a new hardware device and install its corresponding drive.

Go to **Device Manager** by either pressing Win+X or right-clicking on the Windows menu button, and locate and expand the **Network adapters** to check the drive.

---

### Note

You can use the drive management tool to reinstall the USB drive if the installation is failed.

---

## 7.3 Set Device Network

You can connect the device to 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 to run it.
2. Click  to find the device.
3. Right click the device, and click **Modify IP**.
4. Set the IP address of the device in the same network segment with the PC.



Figure 7-2 Modify IP Address

5. Click **OK**.

## 7.4 Connect Device to Client Software

Make sure that your device 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 device list or click  to connect it to the client software.

## 7.5 Client Software Layout

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

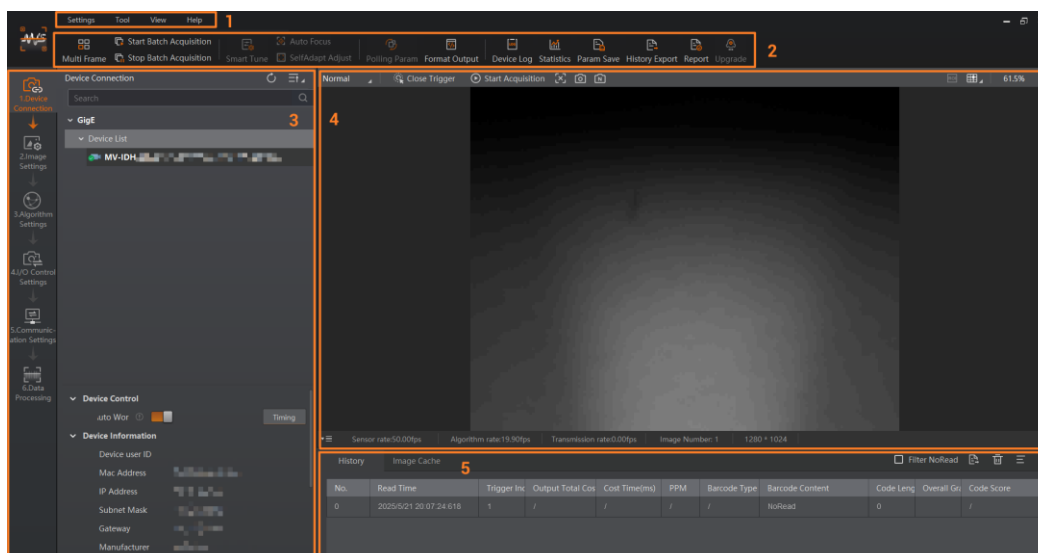


Figure 7-3 Main Window

### Note

- The specific interfaces of the client software may differ by its versions.
- Refer to the user manual of the client software for detailed introductions and operations.



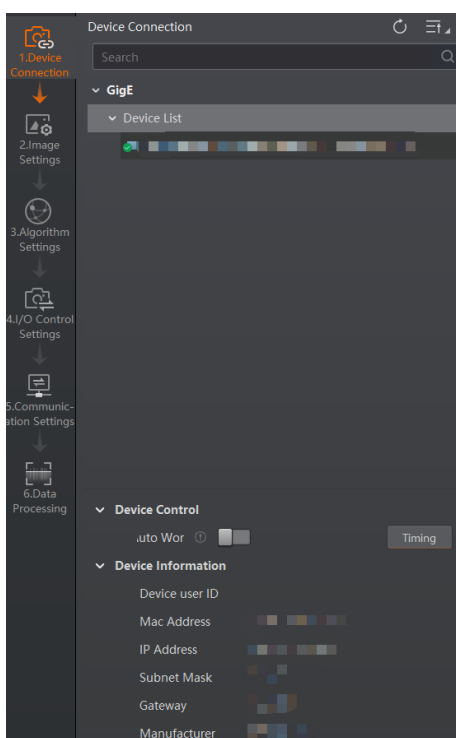
Figure 7-4 IDMVS Client Software User Manual

Table 7-1 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> . |

| No. | Name                           | Description                                                                                                                                                                                       |
|-----|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 7-5 Device Configuration Area**

**Table 7-2 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 codes, set number of codes, etc.                                        |

| No. | Module Name            | Description                                                                   |
|-----|------------------------|-------------------------------------------------------------------------------|
| 4   | I/O Control Settings   | You can set parameters related to input or output.                            |
| 5   | Communication Settings | You can select different communication protocols, and set related parameters. |
| 6   | Data Processing        | You can set filter rule for output result.                                    |

## Chapter 8 Device Settings

### 8.1 Device Mode Settings

The device supports 3 types of running 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.
- 

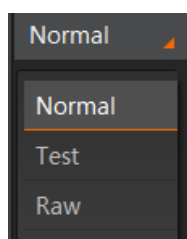


Figure 8-1 Select Device Mode

Table 8-1 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.

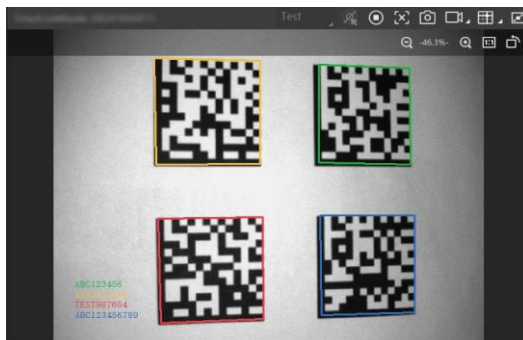


Figure 8-2 Code Reading

## 8.2 Feature Tree Introduction

### Note

The feature tree may differ by device models.

Table 8-2 Feature Tree Description

| No. | Module Name            | Description                                                                                     |
|-----|------------------------|-------------------------------------------------------------------------------------------------|
| 1   | Device Control         | You can view device information, edit its name, restart it, etc.                                |
| 2   | Image Setting          | You can set exposure, gain, Gamma, frame rate, etc.                                             |
| 3   | Read Setting           | You can set the device running mode and select code types.                                      |
| 4   | Algorithm Control      | You can set algorithm parameters of codes.                                                      |
| 5   | LightSource Control    | You can set light source type and other related parameters.                                     |
| 6   | Trigger and IO Control | You can set parameters related to input and output.                                             |
| 7   | Filter Rules           | You can set filter rules for output result.                                                     |
| 8   | Communication Control  | You can select different communication protocols, and set related parameters for output result. |
| 9   | User Set Control       | You can save and load user parameters, and restart the device.                                  |

## 8.3 Communication Settings

The communication protocol is used to transmit and output code reading result and image. The communication protocol is related to the device running mode. With various

device running modes, the device supports different communication protocols and corresponding parameters.

When device running mode is **Test**, the device only supports **SmartSDK** protocol and no parameter settings are required. While in **Normal** mode, the USB type device supports **SmartSDK**, **USB**, **Bluetooth**, and **Serial** protocol, and the network type device supports **SmartSDK**, **TCP Client**, **Serial**, **FTP**, **TCP Server**, **UDP**, **Profinet**, **Ethernet/IP**, **Bluetooth**, **ModBus**, **Melsec/SLMP**, and **FINS** communication protocols, and you need to set corresponding parameters.

---

### **Note**

- The **Profinet**, **Ethernet/IP**, **ModBus**, **Melsec/SLMP**, and **FINS** communication protocols are available on the device that supports industrial protocols.
  - The supported communication protocols may differ by device models and firmware version.
  - The specific parameters of communication protocols may differ by device models.
  - Only one communication protocol can be selected.
- 

### 8.3.1 Set Smart SDK

If **SmartSDK** is selected as the communication protocol, you can configure the following parameters.

**Table 8-3 SmartSDK Communication Protocol**

| Parameter                | Description                                                 |
|--------------------------|-------------------------------------------------------------|
| <b>SmartSDK Protocol</b> | If it is enabled, the device will output data via SmartSDK. |
| <b>SmartSDK Version</b>  | You can select <b>SmartSDK 1.0</b> or <b>SmartSDK 2.0</b> . |

---

### **Note**

If you use the SDK for secondary development and data receiving, it is recommended to select **SmartSDK** as the **Communication Protocols**.

---

### 8.3.2 Set USB

If **USB** is selected as the communication protocol, you can select **HID** or **CDC** in **USB Output Mode**.

---

### **Note**

- Only the USB type device supports the USB communication protocol.
  - The parameters may differ by firware versions. The content below is introduced based on firware version of V5.1.0.
-

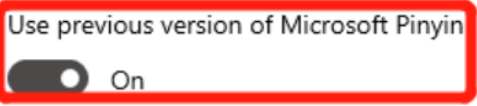
## HID Mode

In this mode, the device emulates a standard keyboard and transmits the barcode content as keyboard input to the target location.

### Note

In HID mode, focus output is executed only. And it is not necessary to install the driver when the client software is not in use.

**Table 8-4 HID Mode**

| Parameter       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output Country  | <p>After you select the country, the corresponding language version will be displayed. China is selected by default.</p> <p>Follow the content below to set the compatibility of the input method.</p> <ul style="list-style-type: none"> <li>For Windows 10 and Windows 11 operating system, it is recommended to use Sogou Input Method or iFLYTEK Input Method (both are from Chinese companies). If the Microsoft Pinyin Input Method is used, you need to right click the icon of input method, and go to <b>Settings</b> → <b>General</b> → <b>Compatibility</b> to enable it.</li> </ul> <div data-bbox="555 1048 1390 1384"> <p><b>Compatibility</b></p> <p>Microsoft Pinyin has upgraded to a new version, but not all features are compatible with it. If you encounter issues, you can return to using the previous version.</p> <div> <p>Use previous version of Microsoft Pinyin</p>  </div> </div> <p><b>Figure 8-3 Compatibility Settings</b></p> <ul style="list-style-type: none"> <li>For Windows operating system earlier than Windows 10, there is no need to set.</li> <li>For Linux operating system, you need to install ibus Input Method, Fcitx Input Method, or Sogou Input method with Linux version. If you have some problems, contact technical support for help.</li> </ul> |
| Keyboard Enable | It is enabled by default. If there is an output exception occurs, you can disable it.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Output Encoding | <p>You can select <b>GBK</b> or <b>Unicode</b> according to the encoding method of software.</p> <p> <b>Note</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

| Parameter                             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       | <ul style="list-style-type: none"> <li>• <b>GBK</b> is selected by default.</li> <li>• The output encoding method may differ by software and operating system. For example, <b>GBK</b> should be selected for content output in Windows 10 Notepad, and <b>Unicode</b> selected in Office Word and in Windows 11 Notepad.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Ignore Input Method</b>            | It is disabled by default. After enabled, the Chinese/English input method configuration will be ignored. It means the codes are output under the HID mode regardless of the current input method.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Numbers Output by Num Keyboard</b> | It is disabled by default. After enabled, the numeric characters will be output via the numeric keypad area of the keyboard.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Control Character Output Mode</b>  | <p>You can select <b>Function Keys</b>, <b>Character</b>, <b>Ctrl+X Mode</b>, <b>Ignore Mode</b>, or <b>Escape Mode</b>.</p> <ul style="list-style-type: none"> <li>• <b>Function Keys</b>: It maps the received control characters to their corresponding standard function-key commands on the keyboard (such as Enter or Backspace), simulating physical key presses.</li> <li>• <b>Character</b>: It treats control characters as ordinary visible characters and outputs them directly.</li> <li>• <b>Ctrl+X Mode</b>: It converts control characters to their corresponding caret notation (e.g., ETX as ^C) for easy identification and logging.</li> <li>• <b>Ignore Mode</b>: It discards the control character without processing or displaying it.</li> <li>• <b>Escape Mode</b>: It escapes control characters in a specific format for display. For example, the ETX control character is shown as [ETX] for log analysis and debugging.</li> </ul> |
| <b>Control Character Action Scope</b> | You can select <b>Only Code</b> , <b>Only Affixes</b> , or <b>Code And Affixes</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Operation System</b>               | You can select <b>Windows</b> or <b>Linux</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Quick Output</b>                   | <p>After it is enabled, characters are output continuously without being restricted by configured <b>Output Interval</b> and <b>Output Number After Interval</b>.</p> <p> <b>Note</b></p> <p>Please enable this function based on the actual processing capability of the receiving device. Insufficient performance on the receiving device may lead to data loss. If it occurs, disable this function and increase <b>Output Interval</b> accordingly.</p>                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Output Interval</b>                | This parameter refers to the time interval between batches of character outputs after a single trigger of the device. Increasing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| Parameter                           | Description                                                                                                                                                                                                                                                                       |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                     | this value appropriately can help alleviate system processing pressure and prevent data loss, while reducing this value can improve response speed for high-efficiency and rapid code reading scenarios.                                                                          |
| <b>Output Number After Interval</b> | This parameter indicates the number of characters output per batch after a single trigger of the device. Combined with the <b>Output Interval</b> , the device will output the set number of characters, wait for the preset interval, and then continue with subsequent batches. |

## CDC Mode

In this mode, the device creates a virtual serial port on the PC, and data is transmitted through that virtual serial port. You can enable **USB CDC Heartbeat Enable** and set the following parameters.

**Table 8-5 CDC Mode**

| Parameter                   | Description                                                                                                                                |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Barcode as Heartbeat</b> | It is disabled by default. After enabled, the code data that has been read is also sent as a heartbeat signal.                             |
| <b>Heartbeat Text</b>       | You can enter the content of heartbeat text. Only string format is supported. It cannot be empty, and the heartbeat is entered by default. |
| <b>Heartbeat Time</b>       | You can set the duration of the heartbeat signal, and the unit is second. The value range is from 1 to 60, and the default value is 5.     |

### 8.3.3 Set TCP Server

If **TCP Server** is selected as the communication protocol, you can configure the following parameters.

**Table 8-6 TCP Server Communication Protocol**

| Parameter                          | Description                                                                                                                           |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>TCP Server Enable</b>           | If it is enabled, the code reader will output data via TCP server.                                                                    |
| <b>TCP Server Port</b>             | Enter the port No. of the TCP server that receives data. The default value is 2002.                                                   |
| <b>Tcp Server Heartbeat Enable</b> | If it is enabled, it can check the connection between the client software and the server, ensuring reliable and stable communication. |
| <b>Tcp Server Barcode</b>          | If it is enabled, the code read by the client will be sent as a heartbeat                                                             |

| Parameter                 | Description                                                                                                         |
|---------------------------|---------------------------------------------------------------------------------------------------------------------|
| as Heartbeat              | packet.                                                                                                             |
| Tcp Server Heartbeat Text | Enter the content of heartbeat text. The heartbeat is entered by default, and the invisible characters are allowed. |
| Tcp Server Heartbeat Time | Set the duration of the heartbeat packet, and the unit is second. The default value is 5.                           |

### 8.3.4 Set Serial

If **Serial** is selected as the communication protocol, you can configure the following parameters. The serial communication is commonly used in short-distance, low-speed, and anti-electromagnetic interference scenarios, such as connecting to legacy PLCs, sensors, and other devices.

**Table 8-7 Serial Communication Protocol**

| Parameter        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Serial Protocols | If it is enabled, the device will output data via the RS-232 serial port.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Serial Baudrate  | <p>Set the serial port baud rate for the device used to receive data. The default value is 9600.</p> <p> <b>Note</b></p> <p>Make sure that the serial port baud rate of the code reader matches with that of the target device to prevent data loss or errors.</p>                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Serial Data Bits | Set the serial port data bit for the device used to receive data. You can select <b>7</b> or <b>8</b> , and it is usually set to <b>8</b> bits.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Serial Parity    | <p>Set the serial port parity bit for the device used to receive data. You can set this parameter to <b>NoParity</b>, <b>Odd Parity</b>, or <b>Even Parity</b>.</p> <ul style="list-style-type: none"> <li>• <b>NoParity</b>: Do not use the parity bit.</li> <li>• <b>Odd Parity</b>: Add a parity bit at the end of the data to ensure that there is an odd number of 1s. Upon receiving the data, the receiver checks whether the count of 1s is odd. If it is not, a data transmission error is assumed.</li> <li>• <b>Even Parity</b>: Add a parity bit at the end of the data to ensure that there is an even number of 1s. Upon receiving the data, the receiver checks whether the count of 1s is even. If it is not, a data transmission error is assumed.</li> </ul> |
| Serial Stop Bits | Set the serial port stop bits for the device used to receive data. You can select <b>1</b> or <b>2</b> , and the default value is <b>1</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

### 8.3.5 Set FTP

If **FTP** is selected as the communication protocol, you can configure the following parameters, and files generated by the code reader (such as images, and decoding result files) will be transferred to the server.

**Table 8-8 FTP Communication Protocol**

| Parameter            | Description                                                |
|----------------------|------------------------------------------------------------|
| <b>FTP Protocol</b>  | If it is enabled, the device will output data via the FTP. |
| <b>FTP Host Addr</b> | Set the host IP address of the FTP that receives data.     |
| <b>FTP Host Port</b> | Set the host port No. of the FTP that receives data.       |
| <b>FTP User Name</b> | Enter a user name used for FTP server login.               |
| <b>FTP User PWD</b>  | Enter a password used for FTP server login.                |

### 8.3.6 Set TCP Client

If **TCP Client** is selected as the communication protocol, you can configure the following parameters, and the code reader will act as a client to actively connect to external devices for data transmission.

**Table 8-9 TCP Client Communication Protocol**

| Parameter                   | Description                                                                                                                                       |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TCP Protocol</b>         | If it is enabled, the device will output data via the TCP/IP.                                                                                     |
| <b>TCP Dst Addr</b>         | Enter the IP address of the PC that receives data.                                                                                                |
| <b>TCP Dst Port</b>         | Enter the port No. of the PC that receives data.                                                                                                  |
| <b>Heartbeat Enable</b>     | If it is enabled, the client software will send a data packet (heartbeat packet) to the server to check whether the data communication is normal. |
| <b>Barcode as Heartbeat</b> | If it is enabled, the code read by the client will be sent as a heartbeat packet.                                                                 |
| <b>Heartbeat Text</b>       | Enter the content of heartbeat text. The heartbeat is entered by default, and the invisible characters are allowed.                               |
| <b>Heartbeat Time</b>       | Set the duration of the heartbeat, and the unit is second. If no heartbeat response is received in the set duration, the device will be released. |

### 8.3.7 Set Profinet

Profinet is an Ethernet communication protocol for industrial automation that supports

high-speed and real-time data transmission. When it is necessary to communicate with PLCs or other industrial devices that support the Profinet protocol, you can enable **Profinet Enable** and configure the following parameters.

**Table 8-10 Profinet Communication Protocol**

| Parameter                          | Description                                                                                                                                                                              |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Profinet Enable</b>             | If it is enabled, the device will output data via the Profinet.                                                                                                                          |
| <b>Profinet Device Name</b>        | Enter the device name of the code reader in the Profinet network. This name is used to distinguish the devices in the Profinet network, so please ensure that the device name is unique. |
| <b>Profinet Result Module Size</b> | Set the maximum length of the Profinet result. The unit is word.                                                                                                                         |
| <b>Profinet Result Timeout (s)</b> | Set the response time for the code reader after sending a request. If no response is received within this time, the code reader will consider the communication as timed out.            |

### 8.3.8 Set Ethernet/IP

Ethernet/IP is an Ethernet communication protocol for industrial automation, supporting high-speed, real-time data transfer and device control. When communicating with PLCs or other industrial devices supporting Ethernet/IP, you can enable the protocol and configure the following parameters.

**Table 8-11 Ethernet/IP Communication Protocol**

| Parameter                          | Description                                                                                                                                                                                                                                  |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ethernet/IP Enable</b>          | If it is enabled, the device will output data via the Ethernet/IP.                                                                                                                                                                           |
| <b>Input Assembly Size (Byte)</b>  | Set the buffer size of the code reader for receiving data from PLCs or other devices in bytes. This parameter determines the maximum number of received data.                                                                                |
| <b>Output Assembly Size (Byte)</b> | Set the buffer size of the code reader for sending data to PLCs or other devices in bytes. This parameter determines the maximum number of transmitted data.                                                                                 |
| <b>Byte Swap Endianness</b>        | Select whether to swap byte transmission order during data transmission. When it is enabled, bytes are transmitted in Big Endian mode. A high-order byte is the first, and a low-order byte is the last. Little Endian mode is the opposite. |
| <b>Response Wait Time (s)</b>      | Set the response time for the code reader after sending a request. If no response is received within this time, the code reader will consider the communication as timed out.                                                                |

### 8.3.9 Set ModBus

ModBus protocol is a commonly used industrial communication protocol. When communication with PLCs or other industrial devices supporting ModBus protocol is required, you can enable **Modbus Enable** and configure the following parameters.

**Table 8-12 ModBus Communication Protocol**

| Parameter                         | Description                                                                                                                                                                                                                                                                               |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ModBus Enable</b>              | If it is enabled, the device will output data via the ModBus.                                                                                                                                                                                                                             |
| <b>ModBus Mode</b>                | It includes server and client.                                                                                                                                                                                                                                                            |
| <b>ModBusServerIP</b>             | <p>It refers to the target IP address.</p> <p> <b>Note</b><br/>When the <b>ModBus Mode</b> is <b>client</b>, you can go to <b>Feature Tree</b> → <b>Communication Control</b> to set this parameter.</p> |
| <b>ModBusServerPort</b>           | <p>It refers to the target port No.</p> <p> <b>Note</b><br/>When the <b>ModBus Mode</b> is <b>client</b>, you can go to <b>Feature Tree</b> → <b>Communication Control</b> to set this parameter.</p>    |
| <b>Refresh Rate (ms)</b>          | Set the frequency of data synchronization between the code reader and the server. 100 is set by default.                                                                                                                                                                                  |
| <b>ModBus Control Space</b>       | It refers to the control address space.                                                                                                                                                                                                                                                   |
| <b>ModBus Control Offset</b>      | It refers to the control address offset, and is 0 by default.                                                                                                                                                                                                                             |
| <b>ModBus Control Size (Word)</b> | It refers to the control data volume, and is 1 by default.                                                                                                                                                                                                                                |
| <b>ModBus Status Space</b>        | It refers to the status address space.                                                                                                                                                                                                                                                    |
| <b>ModBus Status Offset</b>       | It refers to the status address offset, and is 1 by default.                                                                                                                                                                                                                              |
| <b>ModBus Status Size (Word)</b>  | It refers to the status data volume, and is 1 by default.                                                                                                                                                                                                                                 |
| <b>ModBus Result Space</b>        | It refers to the result address space.                                                                                                                                                                                                                                                    |
| <b>ModBus Result Offset</b>       | It refers to the result address offset.                                                                                                                                                                                                                                                   |

| Parameter                        | Description                                                                                                                  |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>ModBus Result Size (Word)</b> | It sets maximum length of ModBus result.                                                                                     |
| <b>ModBus Result Byte Swap</b>   | If it is enabled, the string bytes are stored in big-endian format. If not enabled, they are stored in little-endian format. |
| <b>ModBus Result Timeout (s)</b> | Set the waiting time before the PLC's response returns.                                                                      |

### 8.3.10 Set Melsec/SLMP

The Melsec/SLMP protocol is a communication protocol developed by Mitsubishi Electric for PLC communication, supporting high-speed data transmission and device control. When communication with a Mitsubishi PLC is required, you can enable the Melsec/SLMP protocol and configure its parameters.

**Table 8-13 Melsec/SLMP Communication Protocol**

| Parameter                            | Description                                                                                                                                                                                                                    |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Melsec/SLMP Enable</b>            | If it is enabled, the device will output data via the Melsec/SLMP.                                                                                                                                                             |
| <b>PLC Address</b>                   | Set the IP address for the code reader to connect to the PLC.                                                                                                                                                                  |
| <b>Server Port</b>                   | Set the port for the code reader to connect to the PLC.                                                                                                                                                                        |
| <b>Message Frame Type</b>            | Set the communication frame format used by the code reader in the Melsec/SLMP protocol.                                                                                                                                        |
| <b>Network Number</b>                | Set the network identity for the code reader in the Melsec/SLMP network.                                                                                                                                                       |
| <b>PLC Number</b>                    | Set the unique identity for the target PLC to ensure that the code reader can address and communicate correctly.                                                                                                               |
| <b>PLC Target IO Number</b>          | Set the starting number of the input/output registers used by the code reader for data exchange in the Melsec/SLMP protocol.                                                                                                   |
| <b>Refresh Rate</b>                  | Set the frequency of data synchronization between the code reader and PLCs or other external devices.                                                                                                                          |
| <b>Control Space</b>                 | It refers to the control address space.                                                                                                                                                                                        |
| <b>Control Region Address Offset</b> | Set the control data register address offset of the code reader in the corresponding communication protocol network, i.e., set the start of control data in the network to ensure correct communication with external devices. |
| <b>Control Size</b>                  | It refers to the control data volume.                                                                                                                                                                                          |

| Parameter                           | Description                                                                                                                                                                                                                                  |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Status Space</b>                 | It refers to the status address space.                                                                                                                                                                                                       |
| <b>Status Region Address Offset</b> | Set the status data register address offset of the code reader in the corresponding communication protocol network, i.e., set the start of status data in the network to ensure correct reading and writing of status data.                  |
| <b>Status Size</b>                  | It refers to the status data volume.                                                                                                                                                                                                         |
| <b>Result Space</b>                 | It refers to the result address space.                                                                                                                                                                                                       |
| <b>Result Region Address Offset</b> | Set the result data register address offset of the code reader in the corresponding communication protocol network, i.e., set the start of result data in the network to ensure correct reading of decoding results or other output data.    |
| <b>Result Region Size (word)</b>    | Set the number of registers used for result data in the corresponding communication protocol network for the code reader, in word units. This parameter determines the capacity of output result data.                                       |
| <b>Byte Swap Endianness</b>         | Select whether to swap byte transmission order during data transmission. When it is enabled, bytes are transmitted in Big Endian mode. A high-order byte is the first, and a low-order byte is the last. Little Endian mode is the opposite. |
| <b>Response Wait Time (s)</b>       | Set the response time for the code reader after sending a request. If no response is received within this time, the code reader will consider the communication as timed out.                                                                |

### 8.3.11 Set Fins

Fins protocol is a communication protocol developed by Fuji Electric for PLC communication, supporting high-speed data transfer and device control. When communicating with Fuji PLCs, you can enable the Fins protocol and configure the parameters.

**Table 8-14 Fins Communication Protocol**

| Parameter                        | Description                                                                                                                                                                                                                                                                                   |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fins Enable</b>               | If it is enabled, the device will output data via the Fins.                                                                                                                                                                                                                                   |
| <b>Fins Communication Method</b> | Select the communication method when using the Fins communication protocol. The options are as follows. <ul style="list-style-type: none"> <li>• <b>UDP</b>: The UDP communication method has a faster transmission speed but lower data communication reliability compared to the</li> </ul> |

| Parameter                            | Description                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                      | <p>TCP protocol. It is suitable for scenarios that require high real-time performance and can tolerate some data loss.</p> <ul style="list-style-type: none"> <li>● <b>TCP</b>: The TCP communication method is more reliable than UDP and suitable for scenarios that require data integrity and transmission order.</li> </ul> |
| <b>Server IP</b>                     | Enter the IP address of the target server (i.e., PLC or other devices) that connects to the code reader.                                                                                                                                                                                                                         |
| <b>Server Port</b>                   | Set the port number of the target server that connects to the code reader.                                                                                                                                                                                                                                                       |
| <b>Refresh Rate</b>                  | Set the frequency of data synchronization between the code reader and PLCs or other external devices.                                                                                                                                                                                                                            |
| <b>Control Space</b>                 | It refers to the control address space.                                                                                                                                                                                                                                                                                          |
| <b>Control Region Address Offset</b> | Set the control data register address offset of the code reader in the corresponding communication protocol network, i.e., set the start of control data in the network to ensure correct communication with external devices.                                                                                                   |
| <b>Control Size</b>                  | It refers to the control data volume.                                                                                                                                                                                                                                                                                            |
| <b>Status Space</b>                  | It refers to the status address space.                                                                                                                                                                                                                                                                                           |
| <b>Status Region Address Offset</b>  | Set the status data register address offset of the code reader in the corresponding communication protocol network, i.e., set the start of status data in the network to ensure correct reading and writing of status data.                                                                                                      |
| <b>Status Size</b>                   | It refers to the status data volume.                                                                                                                                                                                                                                                                                             |
| <b>Result Space</b>                  | It refers to the result address space.                                                                                                                                                                                                                                                                                           |
| <b>Result Region Address Offset</b>  | Set the result data register address offset of the code reader in the corresponding communication protocol network, i.e., set the start of result data in the network to ensure correct reading of decoding results or other output data.                                                                                        |
| <b>Result Region Size (word)</b>     | Set the number of registers used for result data in the corresponding communication protocol network for the code reader, in word units. This parameter determines the capacity of output result data.                                                                                                                           |
| <b>Byte Swap Endianness</b>          | Select whether to swap byte transmission order during data transmission. When it is enabled, bytes are transmitted in Big Endian mode. A high-order byte is the first, and a low-order byte is the last. Little Endian mode is the opposite.                                                                                     |
| <b>Response Wait Time</b>            | Set the response time for the code reader after sending a request.                                                                                                                                                                                                                                                               |

| Parameter | Description                                                                                                |
|-----------|------------------------------------------------------------------------------------------------------------|
| (s)       | If no response is received within this time, the code reader will consider the communication as timed out. |

### 8.3.12 Set UDP

If **UDP** is selected as the communication protocol, you can configure the following parameters.

**Table 8-15 UDP Communication Protocol**

| Parameter                  | Description                                                |
|----------------------------|------------------------------------------------------------|
| <b>UDP Protocol Enable</b> | If it is enabled, the device will output data via the UDP. |
| <b>UDP Dst IP</b>          | Set the IP address of the PC that receives data.           |
| <b>UDP Dst Port</b>        | Set the port No. of the PC that receives data.             |

### 8.3.13 Set Bluetooth

If **Bluetooth** is selected as the communication protocol, you can configure the following parameters.

**Table 8-16 Bluetooth Communication Protocol**

| Parameter                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BLE Output</b>         | <p>You can select <b>IDA</b> or <b>Mobile devices (HID output)</b> as the data output mode.</p> <ul style="list-style-type: none"> <li>• <b>IDA</b>: The device executes data communication by connecting to smart base via Bluetooth.</li> <li>• <b>Mobile devices (HID output)</b>: The device executes data communication by connecting to mobile phone or PC via Bluetooth. Refer to section for <a href="#">Mobile Terminal Connection via Bluetooth</a> details.</li> </ul>                                                                                                                                                                                                                                                                                                                                      |
| <b>BLE DATATRANS MODE</b> | <p>You can select <b>Real time Mode</b>, <b>ReTrans Mode</b>, or <b>Batch Mode</b> as data processing mode during Bluetooth disconnection.</p> <ul style="list-style-type: none"> <li>• <b>Real time Mode</b>: The device will not cache data.</li> <li>• <b>ReTrans Mode</b>: The device will cache data, and automatically retransmit the data upon Bluetooth reconnection. You can set <b>Ble Cache Num</b>.</li> </ul> <p> <b>Note</b><br/> <b>Ble Cache Num</b> refers to the maximum number of code data that the code reader can store when the Bluetooth is disconnected. The default value is 256.</p> <ul style="list-style-type: none"> <li>• <b>Batch Mode</b>: The device will cache data, and execute data</li> </ul> |

| Parameter | Description                                                                                                       |
|-----------|-------------------------------------------------------------------------------------------------------------------|
|           | transmission in batch after Bluetooth is reconnected and configuration code of outputting cached data is scanned. |

---

 **Note**

- The Bluetooth communication protocol may differ by device models and firmware versions. Refer to the device you purchased for actual conditions.
  - Refer to section [Set Configuration Codes of Switching Mode](#) for details of outputting data in batch mode.
- 

## 8.4 Data Processing Settings

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

---

 **Note**

The specific parameters may differ by device models and firmware versions.

---

### 8.4.1 Set Format Output

The **Format Output** supports organizing data output through communication protocols according to specific structures, formats, or rules, including adding or removing output content or characters, and configuring the start and end portions of the output content. The client software supports format configuration based on communication protocols. The operation steps are as follows.

#### **Before You Start**

Before using **Format Output**, you should enable communication protocols on the **Communication Settings** page, except for the **SmartSDK Protocol**.

---

 **Note**

When you enable **Script Enable** under the **Lua Script** tab, the format of the output content is controlled by the Lua script. And then, the function of **Format Output** cannot be configured.

---

#### **Steps**

1. Go to **Operator Settings** → **Data Processing** → **Format Output**, and enter the **Format Output** tab.
  2. Select the communication protocols.
  3. Set **Output Start** and **Output Stop**. You can enter the content in the input box, or click **Keyboard Shortcut** or **ASCII Table** to add the content.
-

## Note

The **Keyboard Shortcut** is supported when the communication protocol is USB and **USB Output Mode** is **HID**.

---

4. Set delimiter when the code reading method is batch mode.
5. Click **Code Type**, and select the required code types. All types are selected by default.
6. In the **String Preview** content box, enter the content manually or select the options below. You can also click Clear to delete all entered content.
7. Configure the related parameters of communication protocol. Refer to the section below.

## FTP

When transferring files generated by the code reader through the FTP protocol, it supports formatting the upload path and transmission image name of the file.

- **FTP Upload Directory String:** You can customize the FTP upload file path, and the content and order included in the file path can be selected according to actual needs, such as **Device ip**, **image**, **Year**, **Month**, **Day**, and characters in the ASCII table.
  - **FTP Result File Settings:** You can define the content of the result file for FTP upload. You can choose the content and sequence included in the result name according to your actual needs. You can select **Code Content**, **Code Type**, **Angel**, **Total time**, **Trigger Start Time**, **Mirror Mark** and so on, as well as characters in the ASCII table.
- 

## Note

- You can configure this parameter when you select **JustResult** or **ResultAndPicture** on the **Communication Settings** → **Communication Protocols Config** → **FTP Protocol** → **Transfer Content** page.
  - The parameters that can be selected are as shown on the interface, and will not be listed one by one here.
- 
- **FTP Picture Name:** You can customize the FTP upload image name, and you can choose the content and order included in the image name according to actual needs, such as **Read Bar Result**, **Code Content**, **Code Type**, **Frame Time**, **Trigger No.**, **Frame No.**, **Polling Parameter**, **ROI No.**, **Incremental Value**, and characters in the ASCII table.

## Other Protocols

For communication protocols such as TCP client, TCP server, Serial, Profinet, MELSEC/SLMP, EtherNet/IP, ModBus, UDP, and FINS, output content can be formatted.

- **\*\*Output NoRead Enable:** It sets whether to output a preset text when there is no decoding result. When enabled, the preset text can be specified by configuring the **\*\*Output NoRead Text**. The default text is "NoRead".
- **\*\*Output Barcode Enter Character Enable:** It sets whether to automatically add an enter character after each output content.
- **\*\*Output Barcode Newline Character Enable:** It sets whether to automatically add a newline character after each output content.

- **\*\*Output Barcode Horizon Tab Character Enable:** It sets whether to automatically add a horizontal tab after each output content.
- **\*\*Barcode Format Rules:** It sets the rule for special characters. You can select **Enter Then Newline** or **Newline Then Enter**.

## 8.4.2 Set Data Editing

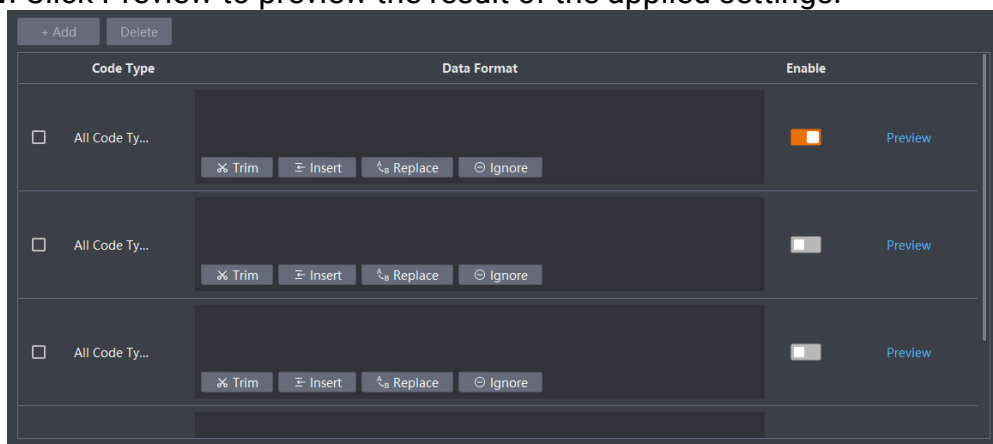
The device supports adjustment of the code content, such as trimming, inserting, replacement, and ignoring.

### Note

The maximum length of the processed data is 2048. If this limit is exceeded, the data will be automatically truncated in the IDMVS.

### Steps

1. Go to **Operator Settings** → **Data Processing** → **Data Edit**, and enter the **Data Edit** tab.
2. Click **Add** to add a rule.
3. Set the following parameters.
  - **Code Type:** Click the specific code type to enter the code settings window, and select the required code types. All code types are selected by default.
  - **Data Format:** Click the specific rule to enter the rule settings window. There are four rules: trimming, inserting, replacement, and ignoring, and refer to sections [Trimming](#), [Inserting](#), [Replacement](#), and [Ignoring](#) for details.
  - **Enable:** Enable or disable this rule.
  - **Preview:** Click Preview to preview the result of the applied settings.



**Figure 8-4 Add Rules**

4. Select **Convert Mode**, including **Normal Output**, **To UpperCase**, **To LowerCase**, and **Reverse Case**.
  - **Normal Output:** It refers to the original format.
  - **To UpperCase:** All letters will be changed to uppercase format. For example, abc123 will be changed to ABC123.
  - **To LowerCase:** All letters will be changed to lowercase format. For example, ABC123 will

be changed to abc123.

- **Reverse Case:** All letters will be switched between uppercase and lowercase formats in a reversible manner. For example, AbC123 will be changed to aBc123.

5. Click **Save All** to save all settings above.

---

### **Note**

All settings will only take effect after you click **Save All**.

---

## Trimming

It refers to remove the specified characters. You can click **Trim** to set the trimming types.

- **Trim by character type:** Trimming will be executed based on the matched character type.
  - **Counting from the front, keep to the first digit/non-digit character:** Keep from the beginning until the first specified digit/non-digit character.
  - **Counting from the front, trim to the first digit/non-digit character:** Trim from the beginning until the first specified digit/non-digit character.
  - **Counting from the back, keep to the first digit/non-digit character:** Keep from the end until the first specified digit/non-digit character.
  - **Counting from the back, trim to the first digit/non-digit character:** Trim from the end until the first specified digit/non-digit character.
- **Trim by count:** Trimming will be executed based on the number of characters.
  - **Counting from the front, trim N character(s):** Trim the specified number of characters from the beginning of the string.
  - **Counting from the front, keep N character(s):** Keep the specified number of characters from the beginning of the string, and trim the rest.
  - **Counting from the back, trim N character(s):** Trim the specified number of characters from the end of the string.
  - **Counting from the back, keep N character(s):** Keep the specified number of characters from the end of the string, and trim the rest.
- **Trim by character matching:** Trimming will be executed based on the matched characters.
  - **Counting from the front, keep string to \*\*:** Search for the target string from the beginning, and keep the content up to and including the target string.
  - **Counting from the back, keep string to \*\*:** Search for the target string from the end, and keep the content up to and including the target string.
  - **Retain string itself:** After it is enabled, the string will be output.

## Inserting

It refers to insert the characters into the code content. You can click **Insert** to set the inserting types.

- **Insert Type & Insert Position:** You can select the following types and corresponding position rules.

- **Insert by character position:** The characters will be inserted based on the character position.
  - **Counting from the front, the left of N character(s):** Starting from the beginning of the string, count forward and insert the content after the Nth character.
  - **Counting from the back, the right of N character(s):** Starting from the end of the string, count backward and insert the content after the Nth character.
- **Insert by character content:** The characters will be inserted based on the matched character.
  - **In front of \*\*:** Insert characters before \*\*.
  - **Behind of \*\*:** Insert characters after \*\*.
- **Insert by character type:** The characters will be inserted based on the matched character type.
  - **Before the first numeric content:** Search for the first numeric character from the beginning and insert the content before it.
  - **Before the first non-numeric content:** Search for the first non-numeric character from the beginning and insert the content before it.
- **Inserted Content:** You can enter the content in the input box, or click **ASCII Table** to select the content to be inserted.
- **Insertion Count:** You can set the times to repeat the insertion.

## Replacement

It refers to replace the specified character in the code with other content. You can click **Replace** to set the replacement types.

- **Replace:** You can select the following types.
  - **Replace by quantity:** The characters will be replaced based on the configured replacement range. Starting from the beginning of the string, replace the content from the Nth to the Mth characters. Here, N is the starting position and M is the ending position of the replacement range.
  - **Replace by character:** The characters will be replaced based on the matched character. You should enter the target character after **Replace string**.
  - **Replace by datatype:** The characters will be replaced based on the data type, including **Replace all digit characters**, **Replace all non-digit characters**, and **Replace all control characters**.
- **Replace To:** You can enter the content in the input box, or click **ASCII Table** to select the content to be replaced.

## Ignoring

It refers to ignore the specified character in the code. You can click **Ignore** to set the ignoring types.

- **Ignore by position:** The characters will be ignored based on the configured position.
  - **Counting from the front N to M character(s):** Starting from the beginning of the string, ignore the content from the Nth to the Mth characters.
  - **Counting from the back N to M character(s):** Starting from the end of the string,

ignore the content between the Nth and Mth characters from the end.

- **Ignore by character:** The characters will be ignored based on the matched character. You should enter the target character after **Ignore the string**.
- **Ignore by datatype:** The characters will be ignored based on the data type, including **Ignore all digit characters**, **Ignore all non-digit characters**, and **Ignore all control characters**.

### 8.4.3 Filter Sorting

The client software supports filtering code-reading results through three modes: normal filtering, regular expression filtering, and script-based filtering, and allows setting sorting rules to optimize data output.

#### Normal Filter

The Filter Rules module supports setting normal rules to filter codes simply, suitable for basic screening requirements such as filtering based solely on code length or fixed-position strings.

The descriptions of parameters are as follows.

##### Parameters Specific to Normal Filter Mode

- **Only Output Numerics:** When it is enabled, the output code information will be pure numeric data. Non-numeric information will be filtered out.
- **Control Char Filter Enable:** It is disabled by default. After enabled, the control characters (0x00 to 0x1f and 0x7f in ASCII table) will be automatically removed.
- **Begins with Specific Strings:** When it is enabled, only codes starting with specific strings will be output. Mismatched codes will be filtered. Enable this feature and enter the specific characters in the **Begins with**.
- **Include Specific Strings:** When it is enabled, only codes containing specific strings will be output. Non-matching codes will be filtered. Enable this feature and enter the specific characters in the **Specific Strings**. Set the start and end of searching the **Specific Strings** in codes by setting the parameters of the **String Search Area Start** and **String Search Area End**.
- **Exclude Specific String Enable:** When enabled, only codes excluding specific strings will be output. Codes containing these strings will be filtered. Enable this feature and enter the characters to exclude in the **Exclude Specific String**. Set the start and end index of searching the **Exclude Specific Strings** in codes by setting the parameters of the **Exclude String Search Area Start** and **Exclude String Search Area End**.

##### Parameters Common to All Filter Modes

- **Filter Warn Enable:** It is disabled by default. After enabled, if code type filtering is executed, the buzzer will beep at 500 Hz for 500 ms.
- **Non-Mirror Code Enable:** When it is enabled, the non-mirror codes will be output, and mirror codes filtered out.

### **Note**

Mirror or non-mirror code is determined by the algorithm. Except for 2D codes, all other symbologies are non-mirror codes.

---

- **Filter Duplicate Code by Trigger:** This parameter is used to control whether duplicate read codes are filtered during continuous triggering. When it is enabled, the system will automatically remove duplicate decoding results within a specified number of triggers, retaining only unique code data to prevent duplicate data output. After enabling this parameter, the **Trigger Count for Filter** can be configured to specify the number of continuous triggers during which duplicate code filtering is applied.
- 

### **Note**

Only enable **Trigger Mode** can you configure this parameter.

---

- **Max. Decoding Length:** It sets the maximum code length. Codes exceeding this length will not be analyzed.
- 

### **Note**

- When an image contains N codes, the maximum output length is calculated as:  $N * \text{Max. Decoding Length}$ .
  - This parameter does not limit formatting characters. If each of the N barcodes contains formatting characters, the maximum output length is:  $N * (\text{Barcode Length} + \text{Formatting Character Length})$ .
- 
- **Min. Decoding Length:** It sets the minimum code length. Codes shorter than this length will not be analyzed.
  - **History Filter Mode:** It filters codes based on the code reader history. Available modes are as follows.
    - **Time-based:** Set a time interval in which only new codes will be read and repeated codes will be filtered. In this mode, the time interval can be set by configuring the **Filter Time (ms)**.
    - **Quantity-based:** Set a history code-reading range in which only new codes will be read and repeated codes will be filtered. In this mode, the code-reading range can be set by configuring the **Max history code num value**.
  - **Read Times Threshold:** It sets the times threshold for code reading. A code is considered valid and output only if its decoding times exceed this threshold; otherwise, it is regarded invalid and the results will not be output.
  - **JPEG Transmission Conditions:** It sets the conditions for transmitting JPEG image data. The available conditions are as follows.
    - **All:** The code reader transmits JPEG image data regardless of decoding results.
    - **ReadBarcode:** The code reader transmits JPEG image data only when a code is successfully read.
    - **NoReadBarcode:** The code reader transmits JPEG data only when no code is read.
-

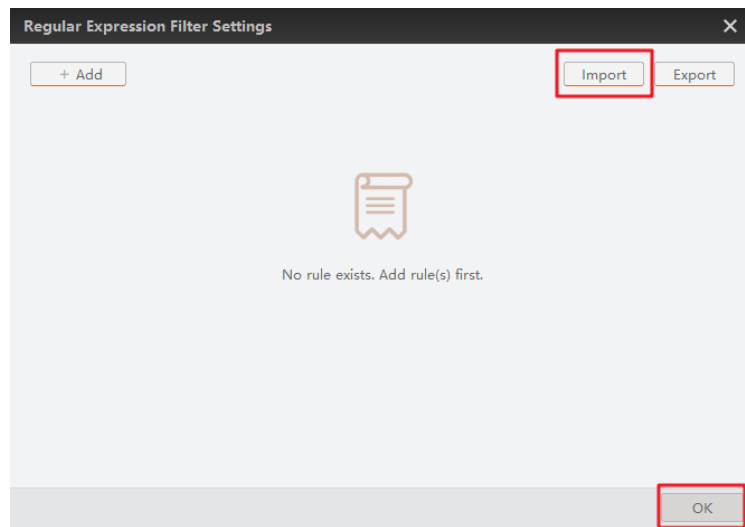
## Regular Expression Filter

The Filter Rules module supports setting regular expressions for complex matching and filtering of codes, such as handling dynamically changing components or matching multiple formats.

You can follow these steps to configure regular expression filtering.

### Steps

1. Select **Regular Expression** as the **Filter Mode**, and click **Config** in **Regular Expression Quick Config** 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 8-5 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.

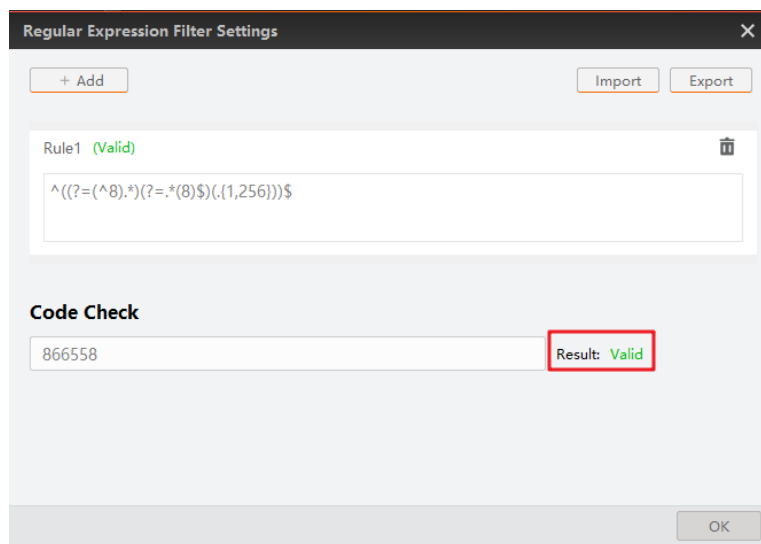
**Figure 8-6 Enter Customized Regular Expression Filter Rules**

**Table 8-17 Filter Rule Parameters**

| Parameter      | 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   | It excludes the specific end with code. You can use semicolon to separate if there are multiple characters.                                                                                                                                                                                                     |

| Parameter        | Description                                                                                                                                                                                                                                                                                                    |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | <p> <b>Note</b></p> <p>If multiple characters are used, code meeting one of these characters is valid.</p>                                                                                                                    |
| Include          | <p>It sets the code with specific content. You can use semicolon to separate if there are multiple characters.</p> <p> <b>Note</b></p> <p>If multiple characters are used, code meeting all these characters is valid.</p>    |
| Exclude          | <p>It sets the code without specific content. You can use semicolon to separate if there are multiple characters.</p> <p> <b>Note</b></p> <p>If multiple characters are used, code meeting all these characters is valid.</p> |
| Character        | <p>Set a filter for a specific character in the code that must start from a certain position. The first digit from left to right represents the 0th position. For example, if you set this parameter to <b>aa from 2 Bit Start</b>, the code "1aa23" does not meet the requirement, whereas "12aa3" does.</p>  |
| Other Conditions | <p>You can select uppercase, lowercase, digit or Chinese.</p>                                                                                                                                                                                                                                                  |

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



**Figure 8-7 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.
6. Click **Ok** at the bottom of the **Regular Expression Filter Settings** page to save the configured regular expressions.
7. Select the valid regular expression rules through the **Regex Group Num** in the **Filter Rules**.

---

### Note

- The filter rule parameters of the regular expression may differ by device models and firmware versions.
  - For descriptions of other configurable filter parameters, please refer to section [Parameters Common to All Filter Modes](#).
- 

## Script

When the **Filter Mode** is **Script**, you can refer to section [Parameters Common to All Filter Modes](#) for the descriptions of the configurable parameter.

### 8.4.4 Sorting Method

The Sorting Method module supports setting rules to sort code data, applicable for scenarios requiring ordered processing of decoded data.

Go to **Operator Settings** → **Data Processing** → **Filter Sort** to configure sorting rules in the **Sorting Method**. You can select sorting rules for the output results based on requirements. Available options include:

- **Center Coordinate X ASC/DESC**: Output results based on ascending or descending X-coordinate of code center points.
- **Center Coordinate Y ASC/DESC**: Output results based on ascending or descending Y-coordinate of code center points.
- **Scan ASC/DESC**: Output results based on ascending or descending scanning sequence of codes.
- **Code Type ASC/DESC**: Output results based on ascending or descending code types.
- **Code Length ASC/DESC**: Output results based on ascending or descending content length of codes.

### 8.4.5 Lua Script

---

#### Note

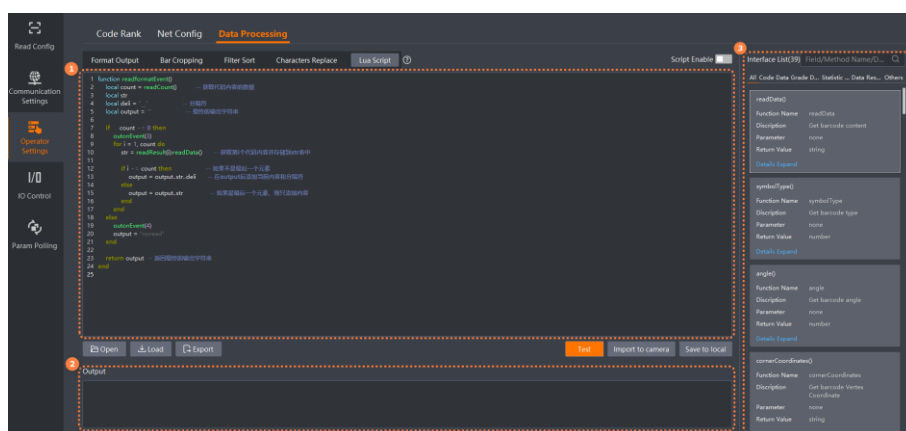
Lua Script is available for some device models.

---

The Lua Script is an embedded scripting language featuring concise syntax, high execution efficiency, and easy integration. IDMVS supports custom configurations for

code reader format output and data filtering through Lua scripts.

In the navigation bar of the main interface, select **Operator Settings** → **Data Processing** → **Lua Script** to access the Lua Script page, as shown in the following picture.



**Figure 8-8 Lua Script**

The descriptions of each module are in the table below.

**Table 8-18 Lua Script Module Description**

| No. | Module Name         | Function Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | Script Editing Area | <p>It is used for editing Lua script code.</p> <hr/> <p><b>Note</b></p> <p>The script editing area supports real-time syntax notification.</p> <hr/> <p>Button functions in the script editing area are introduced below:</p> <ul style="list-style-type: none"> <li>• <b>Script Enable:</b> Select whether to enable the format output function of the Lua Script. Once it is enabled, format output cannot be configured.</li> </ul> <hr/> <p><b>Note</b></p> <p>When the script contains formatting-related API, it will be enabled automatically.</p> <hr/> <ul style="list-style-type: none"> <li>• <b>Open:</b> Open the local script files.</li> <li>• <b>Load:</b> Load script files from the code reader.</li> <li>• <b>Export:</b> Export Lua scripts from the code reader to the selected directory.</li> <li>• <b>Test:</b> Execute the scripts in the script editing area and view the results in the output area.</li> <li>• <b>Import to Camera:</b> Save the scripts in the script editing area to the connected code reader.</li> <li>• <b>Save to Local:</b> Save the scripts in the script editing area as Lua</li> </ul> |

| No. | Module Name        | Function Description                                                                                                                                                                                                                                                                   |
|-----|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                    | files to the local.                                                                                                                                                                                                                                                                    |
| 2   | Script Output Area | <p>You can view script execution results here.</p> <ul style="list-style-type: none"> <li>• If compilation is successful, this area will show <b>Verify Success</b> with test results.</li> <li>• If compilation is failed, it will display error details and line numbers.</li> </ul> |
| 3   | API List           | <p>Display supported Lua APIs and related descriptions.</p> <hr/> <p> <b>Note</b></p> <p>Some APIs provide sample codes. You can check and copy sample codes.</p> <hr/>                               |

Using the Lua Script requires some cautions and procedures. Refer to the latest version of **IDMVS Client Software User Manual** for details.

## 8.5 Code Scanning Settings

The code scanning method determines how the device identifies and processes code data during code reading. You can go to **Feature Tree** → **Trigger and IO Control** to select the code reading method: **Common Mode**, **Accurate Mode**, **Continuous Mode**, **Batch Mode**, and **Fixed Mode**.

**Table 8-19 Code Scanning Mode**

| Code Scanning Mode | Description                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Common Mode        | It reads codes that are closest to the cross laser center only. The code reading process ends if codes are read successfully or the trigger switch is released.                                                                                                                                                                                                                                            |
| Accurate Mode      | The code can still be properly read and output as long as it falls within the adjustable recognition frame extension range, even when it is not aligned with the laser center. You may configure the extension ranges in four directions: top, bottom, left, and right.                                                                                                                                    |
| Continuous Mode    | <p>It reads codes containing the cross laser center in the code area only.</p> <p>In this mode, the trigger method is set to falling-edge trigger (rising-edge on some devices, depending on the hardware level). In non-trigger status, pressing the trigger switch initiates continuous code reading, and the device starts a countdown based on your configured duration for continuous reading (10</p> |

| Code Scanning Mode | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | <p>seconds by default). During triggering, pressing the switch again or reaching the set continuous reading duration will terminate the current trigger.</p> <p>The corresponding code information and prompt will be output once the code is read successfully. The same code is filtered according to the filter rules while the trigger switch is pressed.</p> <p> <b>Note</b></p> <p>For optimal scanning in continuous mode, the following should be noted:</p> <ul style="list-style-type: none"> <li>• 1D code: Place the code horizontally. A vertical direction may cause scanning failure.</li> <li>• 2D code: Avoid oversized code.</li> <li>• Angle: The scanning angle should be kept as perpendicular as possible to the code surface.</li> <li>• Refer to section <b>Sorting Method</b> to sort multiple codes.</li> </ul> |
| Batch Mode         | <p>It can read multiple codes when the trigger switch is pressed. After code reading is finished, the result will be packaged and output. The code reading process ends if expected code quantity is reached or exceeded, code reading timed out, valid frame quantity is reached, or the trigger switch is released.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Fixed Mode         | <p>After selecting this mode, multiple methods will be applied to control the start/stop of image acquisition and code reading.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

Under the **Batch Mode**, you can select **Free Mode** or **Fixed Mode** according to the needs.

### Free Mode

After the trigger button is released, the device will output the code content immediately. **Read Code Num Min** and **Read Code Num Max** should be set.

**Read Code Num Min:** When the code reading quantity is less than the min. value, the code content will not be outputted, and the red light is flashing. The min. value is 1 by default, and it should be between 1 and the max. value.

**Read Code Num Max:** When the code reading quantity is greater than the max. value N, the content of the first N codes will be outputted, and the subsequent codes omitted. The max. value is 5 by default, and it should be between 1 and 20.

### Fixed Mode

After the trigger button is released, or the code reading quantity is reached the value set in **Read Code Num Target**, the code reading is finished. If the code reading quantity is less than the value of **Read Code Num Target**, the code content will not be outputted, and the buzzer will beep once. The value is 5 by default, and it should be between 1 and 20.

 **Note**

The **Free Mode** is set by default.

---

Under the **Accurate Mode**, you can select the following parameters according to the needs.

- **Accurate Top Offset (px)**: Set the pixel value for expanding the barcode reading frame upward. The default value is 10, indicating that barcodes within 10 pixels above the laser center can be read.
  - **Accurate Bottom Offset (px)**: Set the pixel value for expanding the barcode reading frame downward. The default value is 15, indicating that barcodes within 10 pixels below the laser center can be read.
  - **Accurate Left Offset (px)**: Set the pixel value for expanding the barcode recognition frame to the left. The default value is 150, indicating that barcodes within 150 pixels to the left of the laser center can be read.
  - **Accurate Right Offset (px)**: Set the pixel value for expanding the barcode recognition frame to the right. The default value is 150, indicating that barcodes within 150 pixels to the right of the laser center can be read.
- 

 **Note**

It is recommended to set the **Accurate Top Offset (px)** and **Accurate Bottom Offset (px)** parameters at first.

---

## 8.6 Device Control Settings

---

 **Note**

The specific parameters may differ by device models and firmware versions.

---

Go to **Device Control**, you can view battery value, temperature, and other information of the device and smart base.

### 8.6.1 Device Parameters

The parameters related to device are shown below.

**Table 8-20 Device Parameters**

| Device Parameters       | Description                                                                                                            |
|-------------------------|------------------------------------------------------------------------------------------------------------------------|
| IDH Battery State       | It displays the battery state of the device, including Charge, Leave, Charge, Discharge, Not Discharge and Not Charge. |
| IDH Battery Value       | It displays the battery value of the device, ranging from 0% to 100%.                                                  |
| IDH Battery Temperature | It displays the battery temperature of the device.                                                                     |

| Device Parameters                 | Description                                                                                                                                                                                                                    |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IDH Battery KeepAlive Timeout (s) | If no operation is performed on the device within the configured duration, the device will enter low consumption mode. The unit is second, and the value range is from 0 to 65535.                                             |
| IDH Power Off Timeout (min)       | It sets the duration for switching low consumption mode to shutdown mode. All power supplies will be closed except low consumption MCU when the device shuts down. The unit is minute, and the value range is from 0 to 65535. |
| Battery Manager Version           | It displays the battery version of the device.                                                                                                                                                                                 |
| IDH Ble SoftVersion               | It displays the Bluetooth version of the device.                                                                                                                                                                               |
| IDH Ble Name                      | It displays the Bluetooth name of the device. You can edit it.                                                                                                                                                                 |

## 8.6.2 Smart Base Parameters

The parameters related to smart base are shown below. The charging information of the smart base will only be displayed after the battery is inserted into the smart base.



### Note

The specific parameters may differ by device models and firmware versions.

---

**Table 8-21 Smart Base Parameters**

| Smart Base Parameters | Description                                                             |
|-----------------------|-------------------------------------------------------------------------|
| IDA Ble SoftVersion   | It displays the Bluetooth version of the smart base.                    |
| Connected IDH Number  | It displays the number of devices that are connected to the smart base. |

## 8.7 Prompt Settings



### Note

The specific parameters may differ by device models and firmware versions.

---

The device's buzzer, vibrator, indicator, and buttons of the smart base can be configured via the client software.

### 8.7.1 Set Buzzer

Go to **Tigger and IO Control**, and you can set buzzer parameters of the device after code reading is successful.

- **Buzzer Enable:** If it is enabled, you can set buzzer parameters.

- **Buzzer Duration(ms)**: It sets the output duration of the buzzer, and the unit is ms.
- **Buzzer Frequency(hz)**: It sets output frequency of the buzzer, and the unit is hz.

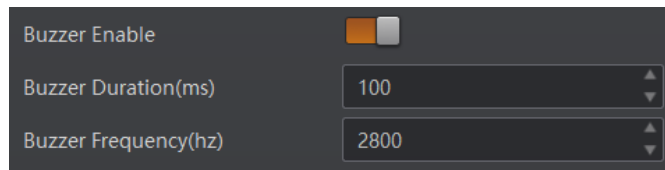


Figure 8-9 Set Buzzer

### 8.7.2 Set Vibrator

Go to **Tigger and IO Control**, and you can set vibrator parameters of the device after code reading is successful.

- **Vibrator Enable**: If it is enabled, you can set vibrator parameters.
- **Bcr Vibrator Duration(ms)**: It sets the output duration of the vibrator, and the unit is ms.

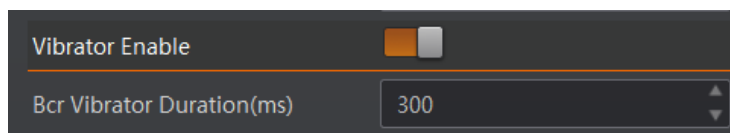


Figure 8-10 Set Vibrator

### 8.7.3 Set Button on Smart Base

Go to **Device Control**, and you can enable **IDA Key Enable** to execute Find Me and Bluetooth disconnection via the smart base.

- **Fine Me**: Shortly press the button three times within 2 seconds to send a Find Me command to the connected device. Repeat the triple-press within 2 seconds to stop the command transmission.
- **Bluetooth Disconnection**: Press the button for 3 seconds to disconnect the device from the smart base. The smart base is in standby status.



Figure 8-11 Set Button on Smart Base

## 8.8 Image 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.

---

## 8.8.1 Set Image

You can set different image parameters like exposure time, gain, Gamma, and acquisition frame rate in image parameters.

---

### **Note**

- Make sure the device to be set is selected 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( $\mu$ s)**

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(dB)**

You can increase gain to improve image brightness.

---

### **Note**

- To some extent, increasing gain will create more image noises, and impact image quality.
  - If you want to set exposure time and gain manually, go to **Feature Tree** → **Image Settings** to disable exposure auto and gain auto.
- 

### **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 number of images that is acquired by the device per second.

Go to **Feature Tree** → **Image Settings** to set other parameters.

### **Average Rate of Algorithm Identify**

It refers to the absolute value of the maximum allowable acquisition frame rate. The absolute value is a floating-point value that represents the maximum acquisition frame rate based on the current settings that the exposure time and bandwidth are configured.

### Width Max

It refers to the maximum width of the image, and the unit is pixel.

### Height Max

It refers to the maximum height of the image, and the unit is pixel.

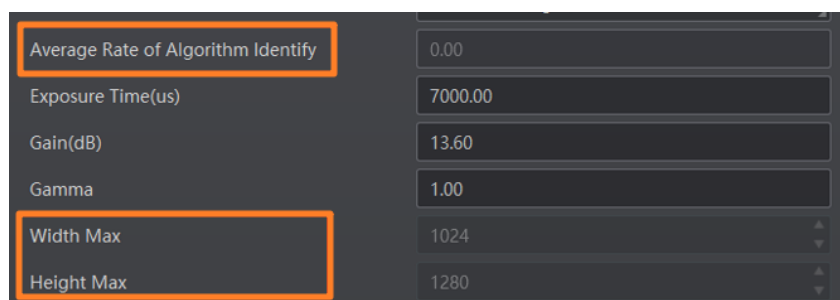


Figure 8-12 Image Settings in Feature Tree

## 8.8.2 Set Exposure

The device supports two types of exposure modes, including off and continuous. Refer to the table below for details.

Go to **Feature Tree** → **Image Settings** → **Exposure Auto**, and select it according to actual demands.

Table 8-22 Exposure Mode

| Exposure Auto | Description                                                                                       |
|---------------|---------------------------------------------------------------------------------------------------|
| Off           | The device exposures according to the value configured by the user in <b>Exposure Time (μs)</b> . |
| Continuous    | The device adjusts the exposure time continuously according to the image brightness.              |

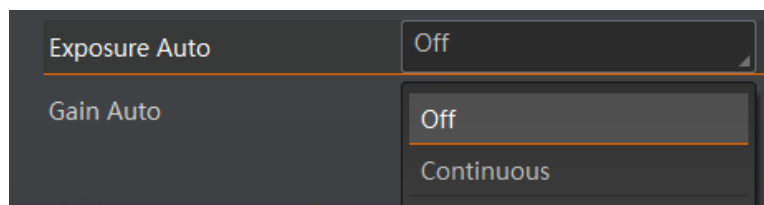


Figure 8-13 Set Exposure

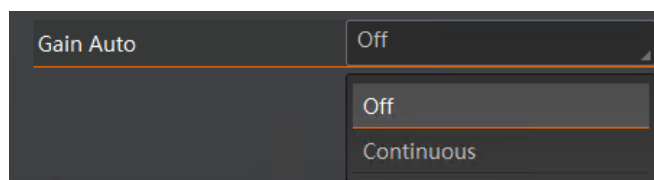
## 8.8.3 Set Gain

The device supports two types of gain modes, including off and continuous. Refer to the table below for details.

Go to **Feature Tree** → **Image Settings** → **Gain Auto**, and select it according to actual demands.

**Table 8-23 Gain Mode**

| Gain Auto  | Description                                                                                |
|------------|--------------------------------------------------------------------------------------------|
| Off        | The device adjust gain according to the value configured by the user in <b>Gain (dB)</b> . |
| Continuous | The device adjusts gain continuously according to the image brightness.                    |



**Figure 8-14 Set Gain**

## 8.8.4 Set Light Source

Light source control allows you to enable the device's aiming system and light source, and set related parameters according to actual demands.

---

### Note

- Light source parameters may differ by device models.
  - Make sure you have selected the device to be set in **Device Connection** before setting light source parameters.
- 

### **AimingLight Enable**

It enables or disables the device's aiming light.

### **AimingLight Delay Enable**

After this parameter is enabled, you can enter **AimingLight Delay Duration** to delay the close time of the aiming light.

### **Lighting Enable**

It enables the device's supplement light.

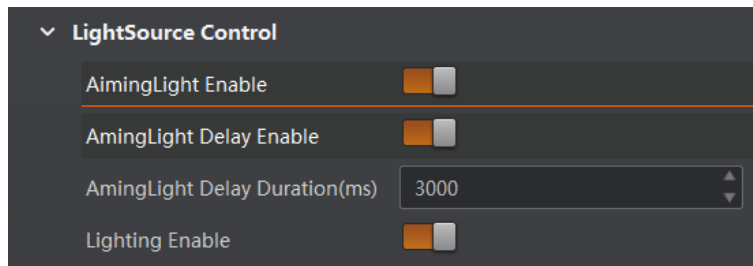


Figure 8-15 Set Light Source

## 8.8.5 Set Test Pattern

You can select the test 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.

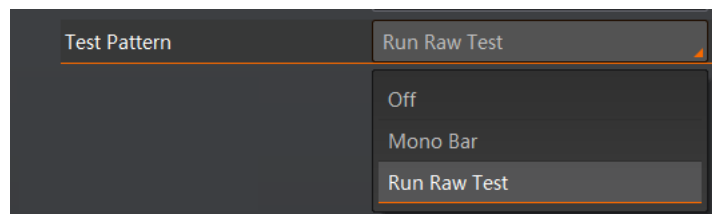


Figure 8-16 Set Test Pattern

### Off

If you select **Off**, the device will output the real-time image.

### Mono Bar

If you select **Mono Bar**, the device will output the test image, and the image pattern is black and white vertical stripes.

### Run Raw Test

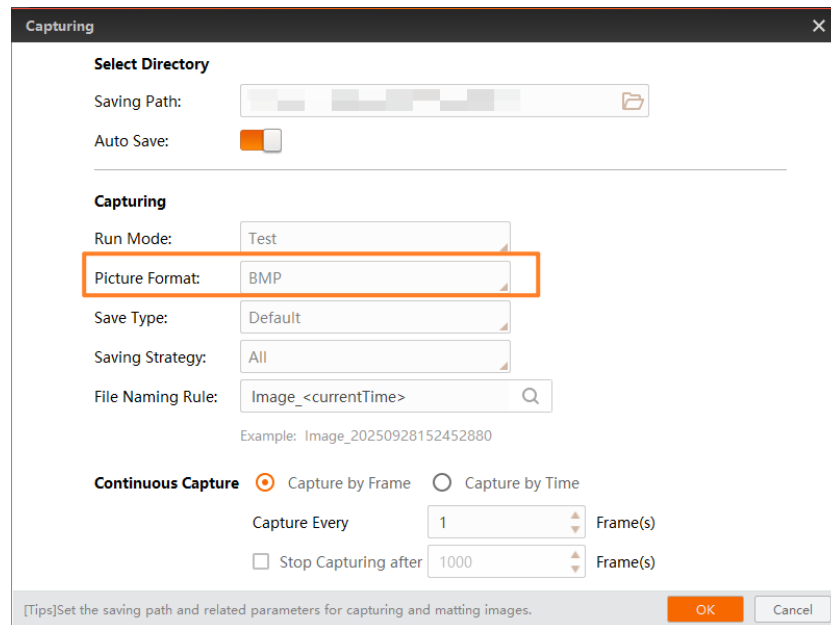
The test images used by the code reader are sourced from its test image folder, where all images are preloaded via FTP instead of being captured in real-time. You can follow the steps below to upload the test image.



Figure 8-17 Test Image Process

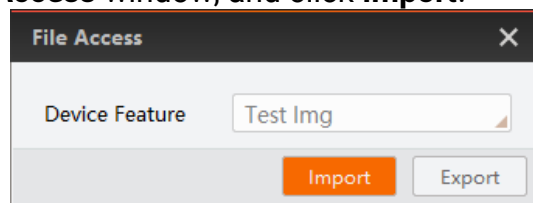
### Steps

1. Go to **Settings** → **Capturing**, and open **Capturing** window.
2. Set image format as **RAW** or **BMP**. **JPG** is not supported.
3. (Optional) Set other parameters according to the needs, such as Saving Path, **File Naming Rule**, or **Continuous Capture**.



**Figure 8-18 Capturing Settings**

4. Start acquisition, and click  to capture image. The image will be saved to the saving path.
5. Stop acquisition, right click the device name in the device list, and select **File Access**.
6. Select **Test Img** in **File Access** window, and click **Import**.



**Figure 8-19 Test Img**

7. Open the saving path of captured image, and import the image.
  8. Select **Run Raw Test** in **Test Pattern**.
- Upon acquisition, the code reader will process the imported test image, without reading the code in the scene.

## 8.9 Algorithm Settings

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

### 8.9.1 Add Code

Adding 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**, you can select types of codes to be read, and set the **Number of 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.
- The code reader may output actual code number when the mismatch between the actual code number and the code number set in the client software occurs.
- **Number of code** is shown when code scanning mode is batch mode.

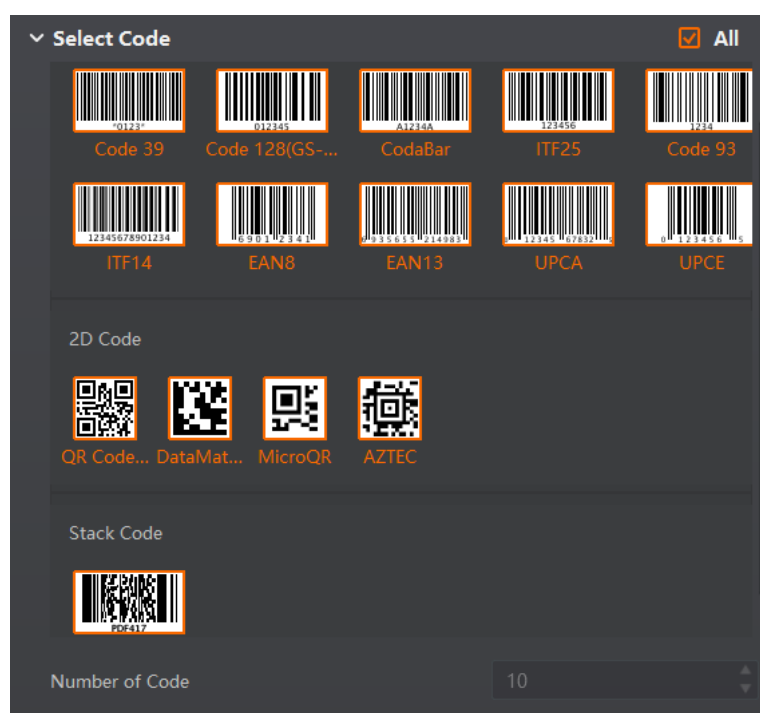


Figure 8-20 Add Code

## 8.9.2 Set Algorithm Parameter

Click **All** on the upper-right to display all algorithm parameters.

## Note

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

### Waiting Time(ms)

Waiting time 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 set as 0, the actual running time of algorithm will prevail.

### DM Code Type

You can select **All**, **ECC140**, or **ECC200** according to the needs.

### Code Color

It defines the readable code color. **WhiteCodeOnBlackWall** means that the client software can recognize the white code with black background. **BlackCodeOnWhiteWall** means that the client software can recognize the black code with white background. **Adaptive** means that the device can recognize both types of codes mentioned above. However, the reading time will be longer compared with the above two modes.

### Code39 Check

Enable this parameter if Code 39 uses the parity bit.

---

#### Note

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

---

### ITF25 Check

Enable this parameter if ITF 25 uses the parity bit.

---

#### Note

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

---

### GS1 Format Output Enable

Enable this parameter if GS1 codes are required. GS1-128, GS1-DM, and GS1-QR are supported.

---

#### Note

The **GS1 Format Output Enable** should be set in **Feature Tree** → **Algorithm Control**.

---

## 8.10 Signal Input Settings

In the signal input module, you can set the trigger-related parameters. In general, the device supports different trigger sources, including software trigger, button trigger, TCP server trigger, UDP trigger, serial trigger, self trigger, brightness trigger, TCP client trigger, and USB trigger.

---

#### Note

- The specific parameters may differ by device models and firmware versions.
- The stop trigger command can be set in the stop trigger settings module to configure the end trigger condition for the corresponding trigger source. Refer to section [Stop](#)

[Trigger Settings](#) for details.

---

### 8.10.1 Set and Execute Software Trigger

The trigger signal is issued by the software and transmitted to the code reader via a Gigabit or 10-Gigabit Ethernet network for image capturing.

#### Steps

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

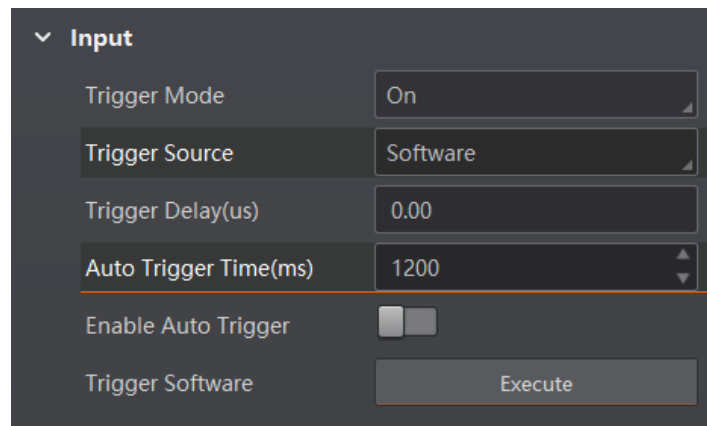


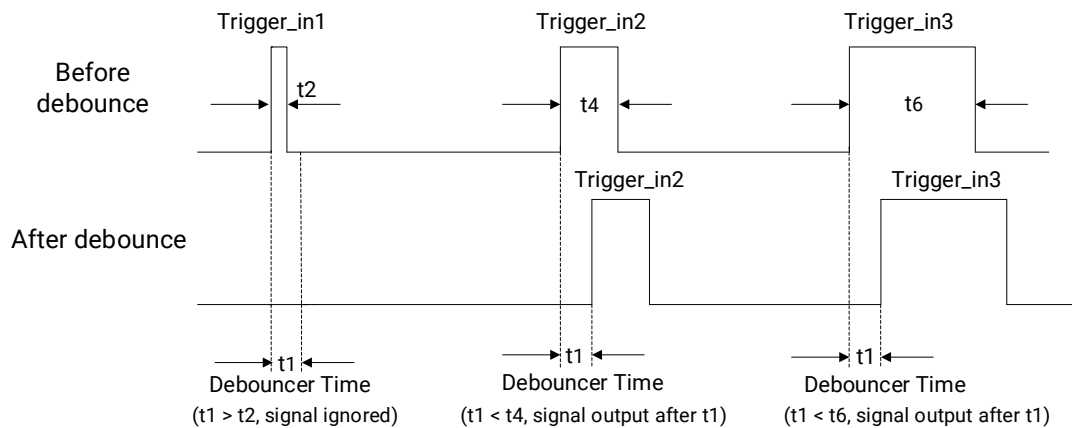
Figure 8-21 Set and Execute Software Trigger Mode

### 8.10.2 Set and Execute Button Trigger

The code reader is triggered when its trigger button is pressed.

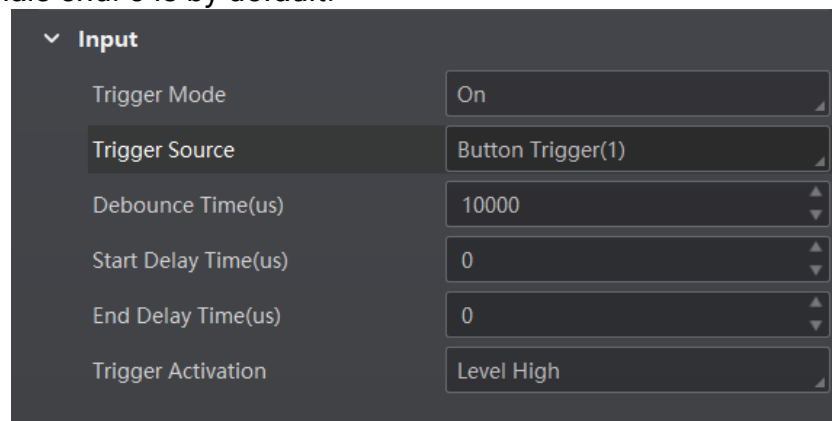
#### Steps

1. Go to **I/O Control Settings** → **Input** → **Trigger Mode**.
2. Select **On** as **Trigger Mode**.
3. Select **Button Trigger(1)** as **Trigger Source**, and set **Debounce Time**, **Start Delay Time**, **End Delay Time**, and **Trigger Activation** accordingly.
  - o **Debounce Time**: If the duration of a signal is shorter than the configured 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. The sequence diagram of trigger delay is shown below.



**Figure 8-22 Sequence Diagram of Trigger Debounce**

- **Trigger Activation:** You can select **Level High**. And **Start Delay Time** and **End Delay Time** should be set.
- **Start Delay Time:** Specify the delay for the code reader to acquire images after receiving trigger signals. 0 is by default.
- **End Delay Time:** Specify the delay for the code reader to stop acquiring images after trigger signals end. 0 is by default.



**Figure 8-23 Set and Execute Button Trigger**

### 8.10.3 Set and Execute TCP Server Trigger

TCP server start specifies the TCP server as the source for the trigger signal. When the server receives the specified string text, the trigger signal will be output.

#### Steps

1. Go to **I/O Control Settings** → **Input** → **Trigger Mode**.
2. Select **On** as **Trigger Mode**.
3. Select **TCP Server Start** as **Trigger Source**.
4. Set the following parameters according to the actual demands.
  - **TCP Server Trigger Port:** Set the TCP server port No. for receiving TCP trigger.

- **TCP Server Trigger Text Format:** Set the TCP trigger text format, including **Str** or **Hex**.
- **TCP Server Start Trigger Text/Hex Command:** Set the TCP trigger command. The trigger command can be self-defined based on the selected **TCP Server Trigger Text Format**. When the text format is **Hex**, click **Edit** on the right side, popping up the Hex ASCII table for selection.
- **TCP Server Handshake Request Text:** Customize the handshake request command under the TCP. The default text is **hello**.
- **TCP Server Handshake Response Text:** Customize the handshake response command under the TCP. The default text is **world**.
- **TCP Server Return Data to Trigger Port:** Select whether to return the output result to the triggering port.
- **TCP Server Auto Reconnect:** Select whether to reconnect the client software after the network interruption.
- **Fuzzy Trigger:** Select whether to enable fuzzy matching for the start trigger text and stop trigger command string. When it is enabled, as long as the sent text contains the start trigger text, triggering will start; as long as the sent text contains the stop trigger command string, triggering will stop. If the start trigger text and stop trigger command string contain each other, only exact matching is supported, and fuzzy matching will no longer be applied.
- **Continuous Command Triggering:** Configure whether the code reader keeps triggering until receiving the corresponding stop trigger command.

### 8.10.4 Set and Execute UDP Trigger

UDP start specifies the UDP server as the source for the trigger signal. When the server receives the specified string text, the trigger signal will be output.

#### Steps

1. Go to **I/O Control Settings** → **Input** → **Trigger Mode**.
2. Select **On** as **Trigger Mode**.
3. Select **UDP Start** as **Trigger Source**.
4. Set the following parameters according to the actual demands.
  - **UDP Trigger Port:** Set the port No. of UDP trigger.
  - **UDP Trigger Text Format:** Set the UDP trigger text format, including **Str** or **Hex**.
  - **UDP Start Trigger Text:** Set the UDP trigger command. The trigger command can be self-defined based on the selected **UDP Trigger Text Format**. When the text format is **Hex**, click **Edit** on the right side, popping up the Hex ASCII table for selection.
  - **UDP Handshake Request Text:** Customize the handshake request command under the UDP. The default text is **hello**.
  - **UDP Handshake Response Text:** Customize the handshake response command under the UDP. The default text is **world**.
  - **Fuzzy Trigger:** Select whether to enable fuzzy matching for the start trigger text and stop trigger command string. When it is enabled, as long as the sent text contains the start trigger text, triggering will start; as long as the sent text contains the stop trigger command string, triggering will stop. If the start trigger text and stop trigger command

string contain each other, only exact matching is supported, and fuzzy matching will no longer be applied.

- **Continuous Command Triggering:** Configure whether the code reader keeps triggering until receiving the corresponding stop trigger command.

### 8.10.5 Set and Execute Serial Port Trigger

Serial start specifies the serial port as the source for the trigger signal. When the serial port receives the specified string text, the trigger signal will be output.

#### Steps

1. Go to **I/O Control Settings** → **Input** → **Trigger Mode**.
2. Select **On** as **Trigger Mode**.
3. Select **Serial Start** as **Trigger Source**.
4. Set the following parameters according to the actual demands.
  - **Serial Baud Rate:** Select the serial port baud rate of the code reader, which represents the number of bits (bit/s) transmitted per second by the serial port. **9600** is set by default.

---

#### **Note**

Please ensure that the serial port baud rate of the code reader and the target device are consistent to avoid data loss or errors.

---

- **Serial Data Bit:** Set the bit for each character during data transmission, including 7 and 8. It is usually set to 8 bits.
- 

#### **Note**

The Hex trigger is only available for 8 serial data bits.

---

- **Serial Stop Bit:** Set the bit used to identify the end of strings after data transmission, including 1 or 2.
- **Serial Parity Check:** Set the bit used to detect transmission errors, with the following three methods:
  - NoParity:** Do not use the parity bit.
  - Odd Parity:** Add a parity bit at the end of the data to ensure that there is an odd number of 1s. Upon receiving the data, the receiver checks whether the count of 1s is odd. If it is not, a data transmission error is assumed.
  - Even Parity:** Add a parity bit at the end of the data to ensure that there is an even number of 1s. Upon receiving the data, the receiver checks whether the count of 1s is even. If it is not, a data transmission error is assumed.
- **Serial Trigger Text Format:** Set the serial trigger text format, including **Str** or **Hex**.
- **Serial Start Trigger Text/Hex Command:** Set the serial trigger command. The trigger command can be self-defined based on the selected **Serial Trigger Text Format**. When the text format is **Hex**, click **Edit** on the right side, popping up the Hex ASCII table for selection.

- **Serial Handshake Request Text:** It customizes the handshake request command under the serial port. The hello is entered by default.
- **Serial Handshake Response Text:** It customizes the handshake response command under the serial port. The world is entered by default.
- **Fuzzy Trigger:** Select whether to enable fuzzy matching for the start trigger text and stop trigger command string. When it is enabled, as long as the sent text contains the start trigger text, triggering will start; as long as the sent text contains the stop trigger command string, triggering will stop. If the start trigger text and stop trigger command string contain each other, only exact matching is supported, and fuzzy matching will no longer be applied.
- **Continuous Command Triggering:** Configure whether the code reader keeps triggering until receiving the corresponding stop trigger command.

### 8.10.6 Set and Execute Self Trigger

Self trigger allows you to trigger the device according to the trigger period you configured.

#### Steps

1. Go to **I/O Control Settings** → **Input** → **Trigger Mode**.
2. Select **On** as **Trigger Mode**.
3. Select **Self Trigger** as **Trigger Source**, and set **Self Trigger Period** and **Self Trigger Count** accordingly.

---

#### Note

- **Self Trigger Period** should be greater than the reciprocal of the actual frame rate.
- If the **Self Trigger Count** is set to 0, it means that the device can be triggered indefinitely until the execution of self-trigger stops.

- 
4. Click **Execute** in **Self Trigger Start** to let the device perform the trigger operation with configured **Self Trigger Period** and trigger will automatically stop when trigger count reaches configured **Self Trigger Count**.
  5. (Optional) Click **Execute** in **Self Trigger Stop** to stop trigger.

---

#### Note

- If the code scanning mode is batch mode, the self trigger is not available.
  - You can use the device's trigger switch to start and stop self trigger.
- 

### 8.10.7 Set and Execute Brightness Trigger

When the change of the brightness exceeds the configured trigger sensitivity, the code reading and code output will be triggered automatically.

---

#### Note

If the device fails to read the code, you can press the button to rescan.

---

### Steps

1. Go to **I/O Control Settings** → **Input** → **Trigger Mode**.
2. Select **On** as **Trigger Mode**.
3. Select **Brightness** as **Trigger Source**, and set **Brightness Sensitivity**, **Brightness Unrespond Time**, **Brightness Timeout**, and **Brightness Fill Light** accordingly.
  - **Brightness Sensitivity**: The code reader is triggered to acquire images when the brightness change exceeds the configured sensitivity threshold.
  - **Brightness Unrespond Time**: The interval between the current trigger and the next trigger.
  - **Brightness Timeout**: If no code is read within the set timeout period, the current trigger is forcibly ended.
  - **Brightness Fill Light**: After it is enabled, the supplement light will be turned on.

## 8.10.8 Set and Execute TCP Client Trigger

The external device sends TCP commands as the TCP client to the code reader to acquire images.

### Steps

1. Click **I/O Control Settings** → **Input** → **Trigger Mode**.
2. Select **On** as **Trigger Mode**.
3. Select **TCP Client Start** as **Trigger Source**.
4. Set the following parameters according to the actual demands.
  - **TCP Dst Trigger IP**: Set the host IP address for TCP trigger.
  - **TCP Dst Trigger Port**: Set the host port No. for TCP trigger.
  - **TCP Client Trigger Text Format**: Set the TCP trigger text format, including **Str** or **Hex**.
  - **TCP Client Start Trigger Text/Hex Command**: Set the TCP trigger command. The trigger command can be self-defined based on the selected **TCP Client Trigger Text Format**. When the text format is **Hex**, click **Edit** on the right side, popping up the Hex ASCII table for selection.
  - **TCP Client Handshake Request Text**: Customize the handshake request command under the TCP. The default text is **hello**.
  - **TCP Client Handshake Response Text**: Customize the handshake response command under the TCP. The default text is **world**.
  - **TCP Server Auto Reconnect**: Select whether to reconnect the client software after the network interruption.
  - **Fuzzy Trigger**: Select whether to enable fuzzy matching for the start trigger text and stop trigger command string. When it is enabled, as long as the sent text contains the start trigger text, triggering will start; as long as the sent text contains the stop trigger command string, triggering will stop. If the start trigger text and stop trigger command string contain each other, only exact matching is supported, and fuzzy matching will no longer be applied.
  - **Continuous Command Triggering**: Configure whether the code reader keeps triggering until receiving the corresponding stop trigger command.

### 8.10.9 Set and Execute USB Trigger

The external device sends USB commands to the code reader to acquire images.

---

#### Note

Only USB type device supports this function.

---

#### Steps

1. Go to **I/O Control Settings** → **Input** → **Trigger Mode**.
2. Select **On** as **Trigger Mode**.
3. Select **USB Start** as **Trigger Source**.
4. Set the following parameters according to the actual demands.
  - **USB CDC Trigger Text Format**: Set the USB trigger text format, including **Str** or **Hex**.
  - **USB CDC Trigger Text/Hex Command**: Set the USB trigger command. The trigger command can be self-defined based on the selected **USB CDC Trigger Text Format**. When the text format is **Hex**, click **Edit** on the right side, popping up the Hex ASCII table for selection.
  - **USB CDC Handshake Request Text**: Customize the handshake request command under the USB. The default text is **hello**.
  - **USB CDC Handshake Response Text**: Customize the handshake response command under the USB. The default text is **world**.

## 8.11 Stop Trigger Settings

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

---

#### Note

- For specific trigger stopping methods, refer to the actual device you got.
  - The Stop Trigger will be shown when the code scanning mode is fixed mode.
- 

### 8.11.1 Stop Trigger via TCP Sever

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

#### Steps

1. Go to **I/O Control Settings** → **Stop Trigger**.
2. Enable **TCP Server Stop Trigger Enable**.
3. Set following parameters according to actual demands.
  - **TCP Trigger Port**: Set the port No. of the TCP server sending the stop command.
  - **TCP End Trigger Format**: You can select the text format from the drop-down list, including **Str** and **Hex**.

- **TCP Stop Trigger Text/Hex Command:** Set the TCP stop trigger command. The trigger command can be self-defined based on the selected **TCP End Trigger Format**. When the text format is **Hex**, click **Edit** on the right side, popping up the Hex ASCII table for selection.

### 8.11.2 Stop Trigger via TCP Client

When the TCP client receives the specified string text, the trigger will be stopped.

#### Steps

1. Go to **I/O Control Settings** → **Stop Trigger**.
2. Enable **TCP Client Stop Trigger Enable**.
3. Set following parameters according to actual demands.
  - **TCP Dst Trigger IP:** Set the IP address of the TCP client sending the stop command.
  - **TCP Dst Trigger Port:** Set the port No. of the TCP client sending the stop command.
  - **TCP Client End Trigger Format:** You can select the text format from the drop-down list, including **Str** and **Hex**.
  - **TCP Client Stop Trigger Text/Hex Command:** Set the TCP stop trigger command. The trigger command can be self-defined based on the selected **TCP Client End Trigger Format**. When the text format is **Hex**, click **Edit** on the right side, popping up the Hex ASCII table for selection.

### 8.11.3 Stop Trigger via UDP

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

#### Steps

1. Go to **I/O Control Settings** → **Stop Trigger**.
2. Enable **UDP Stop Trigger Enable**.
3. Set following parameters according to actual demands.
  - **UDP Trigger Port:** Set the port No. of the UDP stop trigger. It is 2002 by default.
  - **UDP End Trigger Format:** You can select the text format from the drop-down list, including **Str** and **Hex**.
  - **UDP Stop Trigger Text:** Set the UDP stop trigger command, and it is **stop** by default. The trigger command can be self-defined based on the selected **UDP End Trigger Format**. When the text format is **Hex**, click **Edit** on the right side, popping up the Hex ASCII table for selection.

### 8.11.4 Stop Trigger via Software

#### Steps

1. Go to **I/O Control Settings** → **Stop Trigger**.
2. Click **Execute** in **Software Stop Trigger**.

### 8.11.5 Stop Trigger via Serial Port

When the specified serial port receives the specified string text, the trigger will be stopped.

#### Steps

1. Go to **I/O Control Settings** → **Stop Trigger**.
2. Enable **Serial Stop Trigger Enable**.
3. Set following parameters according to actual demands.
  - **Serial End Trigger Format**: You can select the text format from the drop-down list, including **Str** and **Hex**.

---

#### Note

The Hex trigger is only available for 8 serial data bits.

---

- **Serial Stop Trigger Text**: Set the serial port stop trigger command, and it is **stop** by default. The trigger command can be self-defined based on the selected **Serial End Trigger Format**. When the text format is **Hex**, click **Edit** on the right side, popping up the Hex ASCII table for selection.
- **Serial Baudrate**: It sets the baud rate of the serial port, and it is 9600 by default.
- **Serial Data Bits**: It sets the data bits of the serial port, and it is 8 by default.
- **Serial Parity**: It sets the parity of the serial port, and it is **No Parity** by default.
- **Serial Stop Bits**: It sets the stop bits of the serial port, and it is 1 by default.

### 8.11.6 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.

#### Steps

1. Go to **I/O Control Settings** → **Stop Trigger**.
2. Enable **USB Stop Trigger Enable**.
3. Set following parameters according to actual demands.
  - **USB CDC End Trigger Format**: You can select the text format from the drop-down list, including **Str** and **Hex**.
  - **USB CDC Stop Trigger Text**: Set the USB stop trigger command. The trigger command can be self-defined based on the selected **USB CDC End Trigger Format**. When the text format is **Hex**, click **Edit** on the right side, popping up the Hex ASCII table for selection.

### 8.11.7 Stop Trigger via Timeout Duration

---

#### Note

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

---

When the trigger time reaches the specified maximum value (ms), the trigger will be stopped.

You can enable **TimeOut Stop Trigger Enable**, and set **Maximum Output Limited Time** according to actual demands.

---

#### Note

The range of **Maximum Output Limited Time** is between 0 ms and 10000 ms.

---

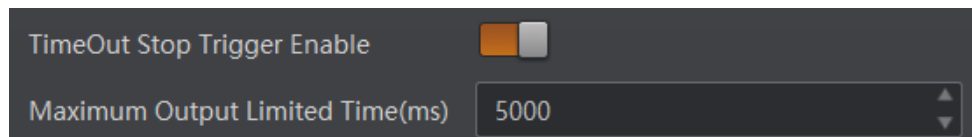


Figure 8-24 Stop Trigger via Timeout Duration

### 8.11.8 Stop Trigger via Code Number

---

#### Note

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

---

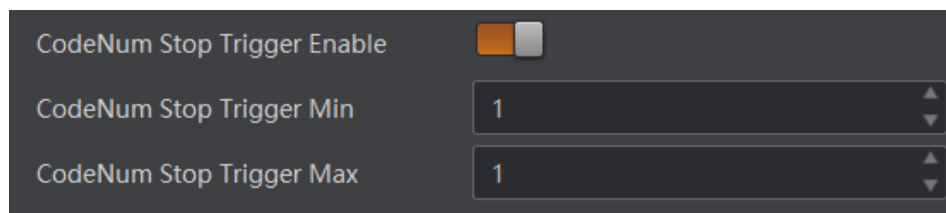
This function means that the code quantity output by the device is restricted to the settings you configured here.

You can enable **CodeNum Stop Trigger Enable**, and set **CodeNum Stop Trigger Min** and **CodeNum Stop Trigger Max** according to actual demands.

---

#### Note

- If the output code quantity is smaller than configured **CodeNum Stop Trigger Min**, and the device will output codes continuously.
  - If the output code quantity reaches to the configured **CodeNum Stop Trigger Max**, and the device will stop outputting codes.
  - If the output code quantity is between configured **CodeNum Stop Trigger Min** and **CodeNum Stop Trigger Max**, and the device will read and output codes according to trigger signals.
  - If **CodeNum Stop Trigger Min** is same with **CodeNum Stop Trigger Max**, and the device will stop outputting codes when the number of output codes reaches the configured number.
-



**Figure 8-25 Stop Trigger via Code Number**

## Chapter 9 Other Operations

### 9.1 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., and export logs.

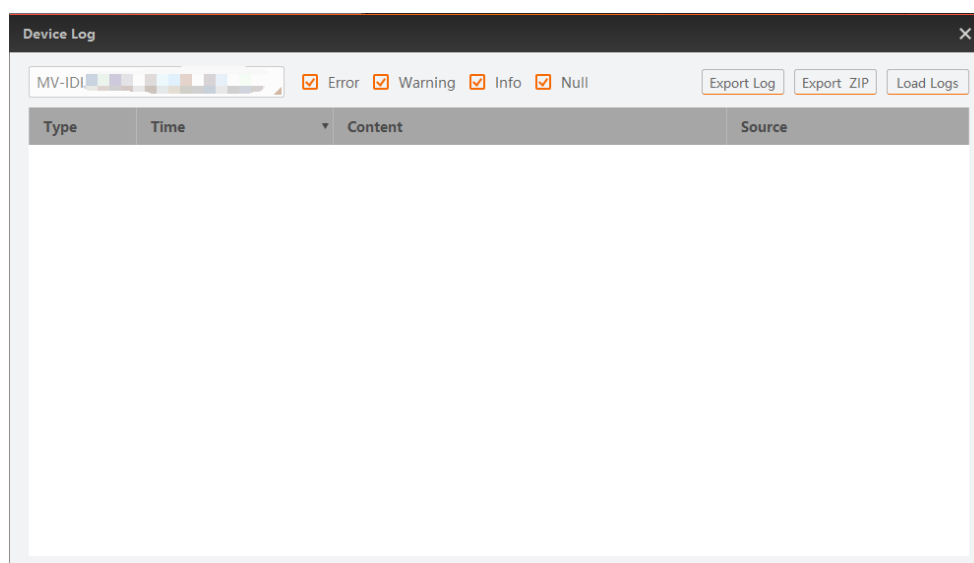
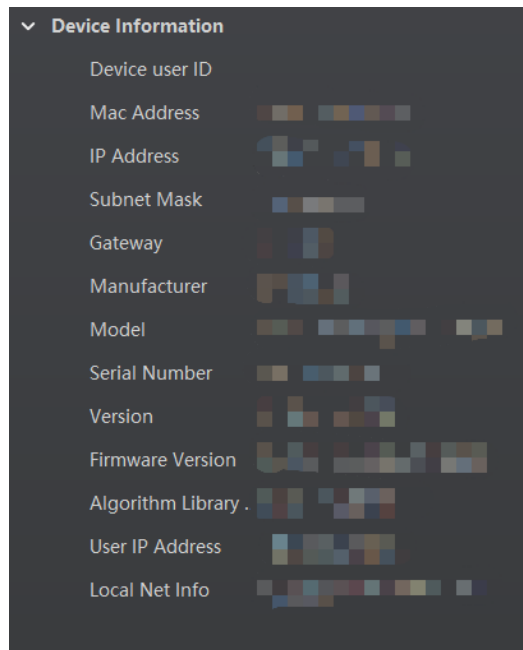


Figure 9-1 View Log

### 9.2 View Device Information

After the device is connected, you can view the basic information of the device under the **Device Connection**, including MAC address, IP address, subnet mask, gateway, manufacturer, device model, device serial number, device version, firmware version, and other information.



**Figure 9-2 View Device Information**

### 9.3 Set Time

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

#### **Steps**

1. Go to **Device Connection**, and click **Timing**.
2. Set parameters according to actual demands.

#### **NTP Enable**

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

#### **IP Address**

It refers to the IP address of the NTP server.

#### **Interval**

It refers to the interval for correcting camera time.

3. Click **OK** after settings.

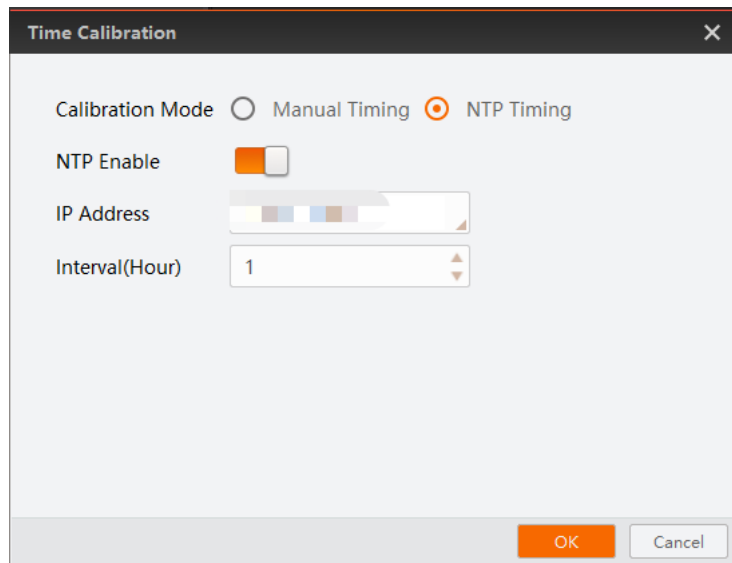


Figure 9-3 Set NTP Timing

## 9.4 Save Parameter

Click  on the control toolbar to save the parameters. You can save or load parameters, or set the default parameters.

## 9.5 Update Firmware

The device supports updating firmware via the client software.

### Note

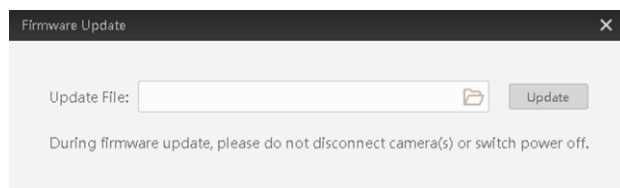
- Disconnect the device from the client software.
- Please use the firmware package of the corresponding device model for updating.
- Do not power off the device or disconnect network during upgrading, otherwise it may cause device damage.
- The device will restart automatically after updating the firmware.

### Steps

1. Select the device to be updated in the device list, and right click the device.
2. Click **Firmware Update**.
3. 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.



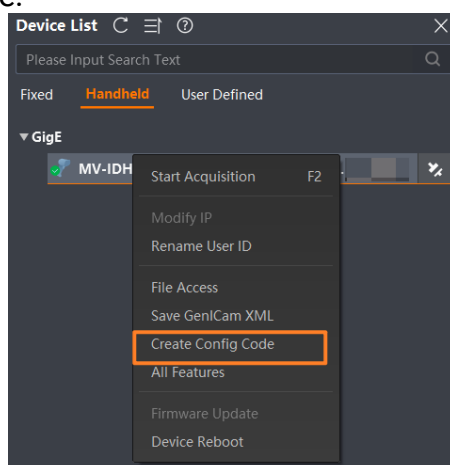
**Figure 9-4 Update Firmware**

## 9.6 Restart Device

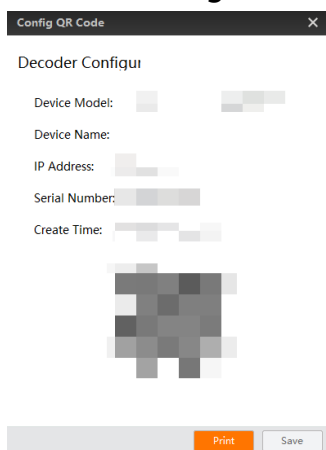
You can select the device in the device list, right click the device, and click **Device Reboot**.

## 9.7 Create Configuration Code

You can select the device in the device list, right click the device, and click **Create Config Code**. The created configuration code will be shown in the **Config QR Code** window, and you can print or save the code.



**Figure 9-5 Create Configuration Code**



**Figure 9-6 Configuration Code**

## Chapter 10 Device Maintenance

### 10.1 Prohibited Substances

Some substances may damage the housing of the code reader. Please avoid direct contact of the device with the following substances: bleach, ether, acetone, ammonia, ethyl alcohol, chlorinated hydrocarbon, benzene, toluene, gasoline, carboric acid, amino compound, ethanolamine, etc.

### 10.2 Reading Window Cleaning

The reading window needs to be cleaned regularly to avoid affecting the reading performance.

#### **Steps**

1. Use a soft and non-abrasive cloth wet with water or a mild cleaner to gently wipe the window.
2. (Optional) If a cleaner is used, wipe the window again with a soft cloth wet with water to avoid cleaner residue.
3. Dry the window with a soft cloth immediately after cleaning to prevent water streaks.

---

#### **Note**

- Do not immerse the device directly in liquids.
  - Do not wipe with an abrasive cloth, which may scratch the window.
  - Disconnect the device from the power supply before cleaning, and avoid wiping when the device is in use.
-

## Chapter 11 FAQ (Frequently Asked Question)

### 11.1 Why there is no buzzer sound and the indicator is unlit after the device is connected?

Table 11-1 Question 1

| Possible Cause                                    | Solution                          |
|---------------------------------------------------|-----------------------------------|
| The device's drive is not installed successfully. | Install the device's drive again. |

### 11.2 Why the device does not read codes after powering on and getting triggered?

Table 11-2 Question 2

| Possible Cause                                   | Solution                                                                          |
|--------------------------------------------------|-----------------------------------------------------------------------------------|
| The function of <b>Auto Work</b> is not enabled. | Go to <b>Feature Tree</b> → <b>Device Control</b> , and enable <b>Auto Work</b> . |

### 11.3 Why the device does not read codes after connecting to client software and getting triggered?

Table 11-3 Question 3

| Possible Cause                                     | Solution                                        |
|----------------------------------------------------|-------------------------------------------------|
| Acquisition is not started in the client software. | Start acquisition and trigger the device again. |

### 11.4 Why there is no buzzer sound after the device reads

## codes successfully?

Table 11-4 Question 4

| Possible Cause                         | Solution                            |
|----------------------------------------|-------------------------------------|
| The device's device mode is test mode. | Set the device mode as normal mode. |

## 11.5 Why only a few codes read successfully on the batch code scanning mode?

Table 11-5 Question 5

| Possible Cause                                   | Solution                                                                                                                                    |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Improper settings in <b>Algorithm Settings</b> . | Go to <b>Algorithm Settings</b> → <b>Add Barcode</b> , set the <b>1D Code Number</b> and <b>2D Code Number</b> according to actual demands. |

## 11.6 Why the image is very dark during the live view?

Table 11-6 Question 6

| Possible Cause                              | Solution                                                |
|---------------------------------------------|---------------------------------------------------------|
| The light source of the device is disabled. | Enable the light source of the device.                  |
| Too small value of exposure and gain.       | Increase exposure and gain according to actual demands. |

## 11.7 Why the USB type device cannot be listed when no error occurs in the driver and the gateway can discover the device?

Table 11-7 Question 7

| Possible Cause                                                        | Solution                                                                 |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------|
| The device is found but the IP address is not obtained automatically. | Go to PC network settings page to set an IP address for the PC manually. |

## 11.8 Why the USB type device cannot set plug and play mode?

Table 11-8 Question 8

| Possible Cause                                                                                                                                                 | Solution                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| The USB type device is incompatible with the terminals, such as Pro-face screen, industrial display, Android industrial computer, or other third-party device. | Set <b>Simple HID Mode</b> in the USB type device, and then connect to the terminals to check. |

### Steps

1. Scan the configuration code of enabling.



Figure 11-1 Configuration Code of Enabling

2. Scan the configuration code of simple HID mode.



Figure 11-2 Configuration Code of Simple HID Mode

---

### Note

After you set **Simple HID Mode**, the device cannot be listed in the client software. You should switch to **Composite HID Mode**, and then the device can be listed.

---

3. Scan the configuration code of enabling.



Figure 11-3 Configuration Code of Enabling

4. Scan the configuration code of composite HID mode.



Figure 11-4 Configuration Code of Composite HID Mode

## 11.9 Why the unreadable codes are output after you set HID as the USB output method?

Table 11-9 Question 9

| Possible Cause                                                                                                              | Solution                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| The loss of the content may be caused by excessive data, rapid HID output speed, and low speed of receiving and processing. | Limit the speed of data output. And contact the technical support for the firmware. |

## 11.10 Why there is no live view and no parameters can be set?

Table 11-10 Question 10

| Possible Cause                                                                                               | Solution                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Only the model of the smart base is shown in the device list. The smart base is not connected to the device. | Use the device to scan the Bluetooth pairing code on the smart base. If you hear the beep and the LINK indicator on the smart base is in green color, the device has been connected to the smart base via the Bluetooth. |

## 11.11 What to do if the Bluetooth pairing code is damaged?

Table 11-11 Question 11

| Possible Cause                                           | Solution                                                                                                                |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| The Bluetooth pairing code on the smart base is damaged. | You need to generate a connection code via the serial No. View the serial No. of the smart base in the client software, |

| Possible Cause | Solution                                                                                                                                                                                                                                                                                                                   |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | and enter the code No. (\$IDA+serial No.+ >) in the code generation tool. Open the client software, and view the code in <b>BLE Pair Code</b> .<br> <b>Note</b><br>The serial No. entered in code No. should exclude the first two zeros. |

## 11.12 Why the device is not emitting cross laser aiming line and fails to scan code?

Table 11-12 Question 12

| Possible Cause                | Solution                                                                                                                                                                                                           |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The device is not powered on. | Long press the device button for 3 to 5 seconds until you hear the beep. If the indicator on the top of the device is in yellow color, the device can be powered on and emit a cross aiming line for reading code. |

## 11.13 What acquisition is failed when clicking Start Acquisition?

Table 11-13 Question 13

| Possible Cause                   | Solution                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The Bluetooth pairing is failed. | <ol style="list-style-type: none"><li>1. Long press the device button for 3 to 5 seconds until you hear the beep. If the indicator on the top of the device is in yellow color, the device can be powered on and emit a cross aiming line for reading code.</li><li>2. Scan the Bluetooth pairing code on the smart base for connection.</li><li>3. When the power indicator of the device is unlit, the client software displays the feature tree, and the running mode can be switched, you can click <b>Start Acquisition</b>.</li></ol> |

## Chapter 12 Revision History

Table 12-1 Revision History

| Version No. | Date          | Revision Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| V1.1.0      | Sep. 30, 2026 | <ul style="list-style-type: none"><li>• Edit Section <a href="#">USB Communication</a>.</li><li>• Add Section <a href="#">Code Filtering Prompt</a>.</li><li>• Edit Section <a href="#">Set USB</a>.</li><li>• Edit Section <a href="#">Set Format Output</a>.</li><li>• Edit Section <a href="#">Set Data Editing</a>.</li><li>• Edit Section <a href="#">Filter Sorting</a>.</li><li>• Edit Section <a href="#">Sorting Method</a>.</li><li>• Add Section <a href="#">Lua Script</a>.</li><li>• Add Section <a href="#">Create Configuration Code</a>.</li></ul> |
| V1.0.0      | Sep. 29, 2025 | Original version.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## Appendix A ASCII Table

### Note

- Refer to section [Set Configuration Codes of Data Processing](#) for digital codes and letter codes.
- For function of prefix/suffix editing, the USB type device only supports the orange bold characters in the table below.

Table A-1 ASCII Table

| Character | Value | Character | Value | Character | Value | Character | Value |
|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| NUL       | 0     | (Space)   | 20    | @         | 40    | `         | 60    |
| SOH       | 1     | !         | 21    | A         | 41    | a         | 61    |
| STX       | 2     | "         | 22    | B         | 42    | b         | 62    |
| ETX       | 3     | #         | 23    | C         | 43    | c         | 63    |
| EOT       | 4     | \$        | 24    | D         | 44    | d         | 64    |
| ENQ       | 5     | %         | 25    | E         | 45    | e         | 65    |
| ACK       | 6     | &         | 26    | F         | 46    | f         | 66    |
| BEL       | 7     | '         | 27    | G         | 47    | g         | 67    |
| BS        | 8     | (         | 28    | H         | 48    | h         | 68    |
| HT        | 9     | )         | 29    | I         | 49    | i         | 69    |
| LF/NL     | 0a    | *         | 2a    | J         | 4a    | j         | 6a    |
| VT        | 0b    | +         | 2b    | K         | 4b    | k         | 6b    |
| FF/NP     | 0c    | ,         | 2c    | L         | 4c    | l         | 6c    |
| CR        | 0d    | -         | 2d    | M         | 4d    | m         | 6d    |
| SO        | 0e    | .         | 2e    | N         | 4e    | n         | 6e    |
| SI        | 0f    | /         | 2f    | O         | 4f    | o         | 6f    |
| DLE       | 10    | 0         | 30    | P         | 50    | p         | 70    |
| DC1/XON   | 11    | 1         | 31    | Q         | 51    | q         | 71    |
| DC2       | 12    | 2         | 32    | R         | 52    | r         | 72    |
| DC3/XOFF  | 13    | 3         | 33    | S         | 53    | s         | 73    |

| Character | Value | Character | Value | Character | Value | Character | Value |
|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| DC4       | 14    | 4         | 34    | T         | 54    | t         | 74    |
| NAK       | 15    | 5         | 35    | U         | 55    | u         | 75    |
| SYN       | 16    | 6         | 36    | V         | 56    | v         | 76    |
| ETB       | 17    | 7         | 37    | W         | 57    | w         | 77    |
| CAN       | 18    | 8         | 38    | X         | 58    | x         | 78    |
| EM        | 19    | 9         | 39    | Y         | 59    | y         | 79    |
| SUB       | 1A    | :         | 3A    | Z         | 5A    | z         | 7A    |
| ESC       | 1B    | ;         | 3B    | [         | 5B    | {         | 7B    |
| FS        | 1C    | <         | 3C    | \         | 5C    |           | 7C    |
| GS        | 1D    | =         | 3D    | ]         | 5D    | }         | 7D    |
| RS        | 1E    | >         | 3E    | ^         | 5E    | ~         | 7E    |
| US        | 1F    | ?         | 3F    | _         | 5F    | DEL       | 7F    |



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