

Hangzhou Hikrobot Technology Co.,Ltd.

IDH9000 Wired Handheld Code Reader

User Manual

HIKROBOT

Legal Information

© Hangzhou Hikrobot Co., Ltd. All rights reserved.

About this Document

This Document includes instructions for using and managing the Product. Pictures, charts, images and all other information hereinafter are for description and explanation only. The information contained in the Document is subject to change, without notice, due to firmware updates or other reasons. Please find the latest version in the company website (<https://en.hikrobotics.com/>). Unless otherwise agreed, Hangzhou Hikrobot Co., Ltd. or its affiliates (hereinafter referred to as "Hikrobot") makes no warranties, express or implied. Please use the Document with the guidance and assistance of professionals trained in supporting the Product.

Acknowledgment of Intellectual Property Rights

- Hikrobot owns the copyrights and/or patents related to the technology embodied in the Products described in this Document, which may include licenses obtained from third parties. Any part of the Document, including text, pictures, graphics, etc., belongs to Hikrobot. No part of this Document may be excerpted, copied, translated, or modified in whole or in part by any means without written permission.
- **HIKROBOT** and other Hikrobot's trademarks and logos are the properties of Hikrobot in various jurisdictions. Other trademarks and logos mentioned are the properties of their respective owners.

LEGAL DISCLAIMER

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, THIS MANUAL AND THE PRODUCT DESCRIBED, WITH ITS HARDWARE, SOFTWARE AND FIRMWARE, ARE PROVIDED "AS IS" AND "WITH ALL FAULTS AND ERRORS". HIKROBOT MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY, SATISFACTORY QUALITY, OR FITNESS FOR A PARTICULAR PURPOSE. THE USE OF THE PRODUCT BY YOU IS AT YOUR OWN RISK. IN NO EVENT WILL HIKROBOT BE LIABLE TO YOU FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, OR INDIRECT DAMAGES, INCLUDING, AMONG OTHERS, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, OR LOSS OF DATA, CORRUPTION OF SYSTEMS, OR LOSS OF DOCUMENTATION, WHETHER BASED ON BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE), PRODUCT LIABILITY, OR OTHERWISE, IN CONNECTION WITH THE USE OF THE PRODUCT, EVEN IF HIKROBOT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR LOSS.

YOU ACKNOWLEDGE THAT THE NATURE OF INTERNET PROVIDES FOR INHERENT SECURITY RISKS, AND HIKROBOT SHALL NOT TAKE ANY RESPONSIBILITIES FOR ABNORMAL OPERATION, PRIVACY LEAKAGE OR OTHER DAMAGES RESULTING FROM CYBER-ATTACK, HACKER ATTACK, VIRUS INFECTION, OR OTHER INTERNET SECURITY RISKS; HOWEVER, HIKROBOT WILL PROVIDE TIMELY TECHNICAL SUPPORT IF REQUIRED.

YOU AGREE TO USE THIS PRODUCT IN COMPLIANCE WITH ALL APPLICABLE LAWS, AND

YOU ARE SOLELY RESPONSIBLE FOR ENSURING THAT YOUR USE CONFORMS TO THE APPLICABLE LAW. ESPECIALLY, YOU ARE RESPONSIBLE, FOR USING THIS PRODUCT IN A MANNER THAT DOES NOT INFRINGE ON THE RIGHTS OF THIRD PARTIES, INCLUDING WITHOUT LIMITATION, RIGHTS OF PUBLICITY, INTELLECTUAL PROPERTY RIGHTS, OR DATA PROTECTION AND OTHER PRIVACY RIGHTS. YOU SHALL NOT USE THIS PRODUCT FOR ANY PROHIBITED END-USES, INCLUDING THE DEVELOPMENT OR PRODUCTION OF WEAPONS OF MASS DESTRUCTION, THE DEVELOPMENT OR PRODUCTION OF CHEMICAL OR BIOLOGICAL WEAPONS, ANY ACTIVITIES IN THE CONTEXT RELATED TO ANY NUCLEAR EXPLOSIVE OR UNSAFE NUCLEAR FUEL-CYCLE, OR IN SUPPORT OF HUMAN RIGHTS ABUSES.

THE PERFORMANCE DATA IN THIS PUBLICATION IS BASED ON HIKROBOT'S INTERNAL RESEARCH/EVALUATION. ACTUAL DATA MAY VARY DEPENDING ON SPECIFIC CONFIGURATIONS AND OPERATING CONDITIONS AND HIKROBOT SHALL NOT BEAR THE CONSEQUENCES ARISING THEREFROM.

IN THE EVENT OF ANY CONFLICTS BETWEEN THIS MANUAL AND THE APPLICABLE LAW, THE LATTER PREVAILS.

Regulatory Information



Note

These clauses apply only to the products bearing the corresponding mark or information.

EU Conformity Statement



This product and - if applicable - the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the Directive 2014/30/EU(EMCD), Directive 2001/95/EC(GPSD) and Directive 2011/65/EU(RoHS).



2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: <http://www.recyclethis.info>



Regulation (EU) 2023/1542(Battery Regulation): This product contains a battery and it is in conformity with the Regulation (EU) 2023/1542. The battery cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), or lead (Pb). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: www.recyclethis.info.

KC Mark Certification

Class A: The device is advised to note that as a seller or a business user (Class A) Devices and intended for use outside the Home area.

A급 기기: 이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기바라며, 가정 외의 지역에서 사용하는 것을 목적으로 합니다.

Symbol Conventions

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

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

Available Model

This manual is applicable to the IDH9000 wired handheld code reader.

Contact Information

Hangzhou Hikrobot Co., Ltd.

E-mail: global.support@hikrobotics.com

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

Contents

Chapter 1 Safety Instruction	1
1.1 Safety Claim	1
1.2 Safety Instruction	1
1.3 Electromagnetic Interference Prevention	2
1.4 Laser Product	3
Chapter 2 Overview	4
2.1 Introduction	4
2.2 Key Features	4
Chapter 3 Appearance	5
Chapter 4 Screen and Indicator	8
4.1 Screen	8
4.1.1 Home Page	8
4.1.2 Operation Page	8
4.1.3 Prompt Information Page	10
4.2 Device/Component Status and Indicator	11
4.2.1 Device/Component Status	11
4.2.2 Indicator	12
Chapter 5 Quick Start Guide	14
5.1 Device Unboxing	14
5.2 Device Connection	15
5.2.1 Fast Ethernet Type Device	15
5.2.2 USB Type Device	16
5.3 Code Reading	17
5.4 Debugging	19
Chapter 6 Setting Codes	22
6.1 Enable/Disable Setting Codes	22
6.2 Set Setting Codes of Communication	22
6.2.1 USB Communication	22
6.2.2 Serial Port Communication	23

6.3 Set Setting Codes of Data Processing	24
6.4 Set Setting Codes of Code Reading	28
6.4.1 Code Type	28
6.4.2 Code Reading Mode	31
6.4.3 Code Reading Quantity	31
6.4.4 Code Color	33
6.5 Set Setting Codes of Trigger	34
6.6 Set Setting Codes of Aiming System	37
6.7 Set Setting Codes of Light Source	37
6.8 Set Setting Codes of Buzzer	38
6.9 Set Setting Codes of Vibration	39
6.10 Set Setting Codes of Sending Device Information	40
6.11 Set Setting Codes of Management	41
Chapter 7 Client Software Installation and Operation	42
7.1 Install Client Software	42
7.2 Set PC Environment	43
7.2.1 Turn off Firewall for Fast Ethernet Type Device	43
7.2.2 Set PC Network for Fast Ethernet Type Device	43
7.2.3 Check USB Drive for USB Type Device	44
7.3 Set Device Network	44
7.4 Connect Device to Client Software	45
7.5 Client Software Layout	45
Chapter 8 Device Mode Settings	48
Chapter 9 Device Settings	49
9.1 Feature Tree Introduction	49
9.2 Image Quality Settings	50
9.2.1 Set Image	50
9.2.2 Set Screen Control	54
9.2.3 Set Light Source	54
9.2.4 Set Smart Tune	55
9.2.5 Set Focus Parameter	57
9.2.6 Set Other Parameters	58

9.3 Code Algorithm Settings	58
9.3.1 Add Code	58
9.3.2 Set Algorithm Parameter	59
9.4 Signal Input Settings	60
9.4.1 Set and Execute Software Trigger	60
9.4.2 Set and Execute Button Trigger	61
9.4.3 Set and Execute Serial Port	62
9.4.4 Set and Execute Self Trigger	63
9.4.5 Set and Execute Response Trigger	64
9.4.6 Set and Execute ToF	65
9.5 Communication Settings	65
9.5.1 Set Smart SDK	65
9.5.2 Set USB	66
9.5.3 Set TCP Client	66
9.5.4 Serial	67
9.5.5 FTP	68
9.5.6 TCP Server	68
9.5.7 Profinet	68
9.5.8 Ethernet/IP	69
9.5.9 ModBus	69
9.5.10 UDP	70
9.6 Code Reading Result Settings	71
9.6.1 Set Filter Rule	71
9.6.2 Set Result Format	77
Chapter 10 Other Operations	81
10.1 View Log	81
10.2 View Device Information	81
10.3 Set Time	82
Chapter 11 Device Maintenance	84
11.1 Update Firmware	84
11.2 Reboot Device	84
11.3 Prohibited Substances	84

11.4 Reading Window Cleaning	85
Chapter 12 FAQ (Frequently Asked Question)	86
12.1 Why there is no buzzer sound and the indicator is unlit after the device is connected?	86
12.2 Why the device does not read codes after powering on and getting triggered?	86
12.3 Why the device does not read codes after connecting to client software and getting triggered?	86
12.4 Why there is no buzzer sound after the device reads codes successfully?	86
12.5 Why configuring setting codes failed though there is buzzer sound?	87
12.6 Why only a few codes read successfully on the batch code reading mode?	87
12.7 Why the image is very dark during the live view?	87
12.8 Why the USB type device cannot be listed when no error occurs in the driver and the gateway can discover the device?	88
12.9 Why the USB type device cannot set plug and play mode?	88
12.10 Why the unreadable codes are output after you set HID as the USB output method?	89
12.11 Why the data cannot be output in the virtual serial port?	89
Chapter 13 Revision History	90
Appendix A ASCII Table	91

Chapter 1 Safety Instruction

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

1.1 Safety Claim

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

1.2 Safety Instruction

Caution:

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



Other parameters regarding the laser information are as follows:

- Wavelength: 650 nm
- Pulse width: 6.6 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 IDH9000 wired handheld code reader adopts code reading algorithm to provide good decoding capability for codes with spots, defects, and low contrast ratio. It has illumination system to provide different types of lighting. The code reader also adopts OLED display for quick viewing of the device and code information, and supports smart tune and quick configuration of code parameters. It is sturdy and durable, resistance to falling and rolling, and also resistance to harsh industrial environment with oil, dust, and water. The code reader is applicable to industries of automobile parts, consumer electronics, PCB, and medical equipment.

2.2 Key Features

- Built-in code reading algorithm and illumination system for decoding codes with spots, defects and low contrast ratio.
- Adopts 4 lighting modes for different scenes, such as direct lighting, polarized lighting, diffused reflection lighting, and bi-directional lighting.
- Supports communication protocols, including TCP, FTP, Profinet, Ethernet/IP, ModBus, Serial, SmartSDK, etc.
- Adopts ergonomic design and easy to hold.
- Sturdy and durable, resistance to falling and rolling, and also resistance to chemical corrosion and strong static electricity interference.
- Adopts OLED display for quick viewing of the device and barcode information.
- Supports smart tune and quick configuration of code parameters.

Note

Refer to the specification of the device for detailed parameters.

Chapter 3 Appearance

Note

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

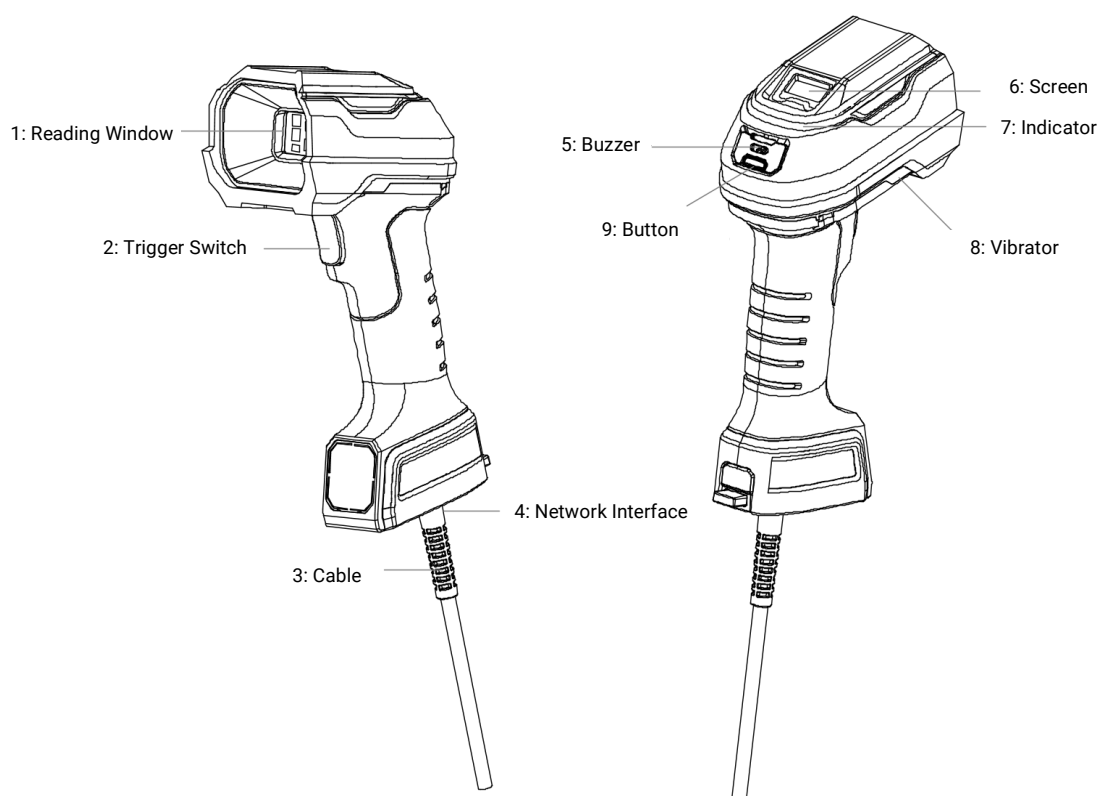


Figure 3-1 Appearance of Device

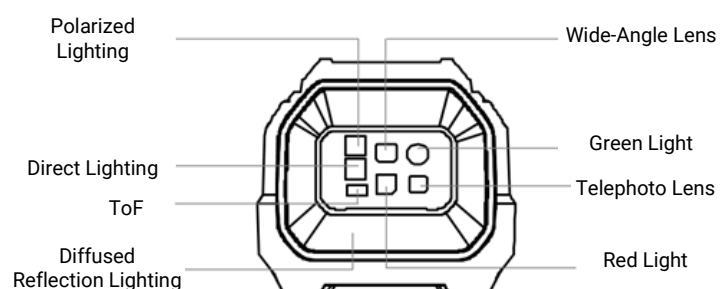


Figure 3-2 Appearance of Reading Window (MV-IDH9000/13HHD Device)

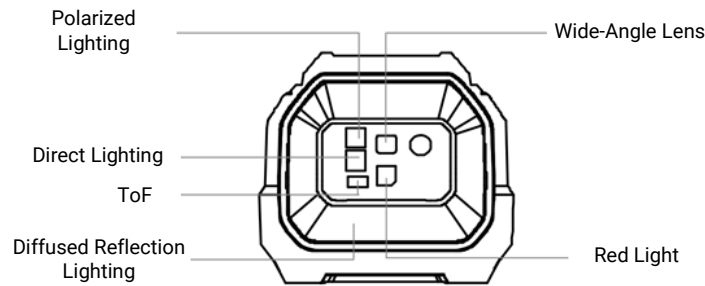


Figure 3-3 Appearance of Reading Window (Other IDH9000 Devices)

Table 3-1 Component Description

No.	Name	Description
1	Reading Window	It is used to acquire images, and consists of lens, lighting, aiming system, ToF, etc. Note Do not look directly at the laser beam from the reading window.
2	Trigger Switch	Press the trigger switch to trigger the device or confirm the operation on the screen. Note • Triggering: When the device is in an external trigger mode and starts acquisition, and the home page is shown on the screen, you can press the trigger switch to trigger the device once. • Operation confirmation: When the home page is not shown on the screen, you can press the trigger switch to confirm the operation.
3	Cable	It provides power, transmits data, and has functions of Ethernet and serial port. Note The function of cables may differ by device models.
4	Network Interface	It has 10-pin connector, and is used to transmit data and provide power.
5	Buzzer	It indicates the device's operation status via buzzer.
6	Screen	It is used to view the device status, code reading result, system information, and operate functions such as parameter configuration, smart tune, and reboot.
7	Indicator	It indicates the status of the device.
8	Vibrator	It indicates the device's operation status via vibration.
9	Button	You can press the button to switch menu or options on the

IDH9000 Wired Handheld Code Reader User Manual

No.	Name	Description
		screen, and then press the trigger switch to confirm the information.

Chapter 4 Screen and Indicator

4.1 Screen

You can view device status and code reading result on the screen, and operate functions such as parameter configuration, smart tune, and scanning mode.

Note

- You can press the button to switch menu or options on the screen, and then press the trigger switch to confirm the information.
 - When the home page is shown on the screen, you can press the trigger switch to trigger the device. When the home page is not shown, press and hold the button for 3 seconds to return to the home page.
-

4.1.1 Home Page

The home page shows device status on the right and code reading information on the left.

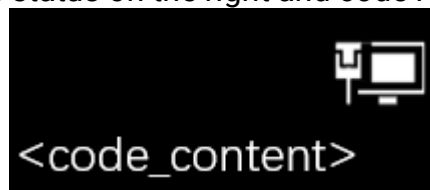


Figure 4-1 Device Connected

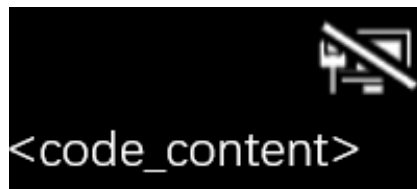


Figure 4-2 Device Disconnected

4.1.2 Operation Page

The operation page shows 5 functions of the device, including smart tune, scanning mode, parameter configuration, system information, and device restarting.

Smart Tune

After you press the trigger switch on the smart tune page, the progress of the smart tune will be shown on the screen. If the result is "Succeeded", you can return to the home page.

If the result is “Failed”, you can return or try again.

Scanning Mode

You can press the trigger switch to select the scanning mode.

Table 4-1 Scanning Mode

Code Reading Mode	Description
Common Mode	It reads codes that are closest to the cross laser center only. The code reading process ends if codes are read successfully or the trigger switch is released.
Accurate Mode	It reads codes containing the cross laser center in the code area only. The code reading process ends if codes are read successfully or the trigger switch is released.
Continuous Mode	It reads codes containing the cross laser center in the code area only. The device reads codes continuously when the trigger switch is pressed and ends reading when the switch is released. 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.
Batch Mode	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.
HHD	The code reader adopts telephoto lens.  Note Only the MV-IDH9000/13HHD device supports the HHD mode.

Parameter Configuration

You can press the trigger switch to configure the related parameters.

Table 4-2 Parameter Configuration

Parameter	Description
USB Mode	You can select HID or CDC formats.

Parameter	Description
	 Note Only the USB type device supports the USB mode.
Enter Character	After this parameter is enabled, a carriage return will be added at the last of the output code.
Newline Character	After this parameter is enabled, a newline will be added at the last of the output code.
STD Aim	After this parameter is enabled, the device will emit red aiming frame and aiming line.
HHD Aim	After this parameter is enabled, the device will emit red aiming frame, red aiming line, and green aiming point. The best reading position is where the aiming line intersects the center of the green aiming point and the green point is at the center of the minimum code.  Note Only the MV-IDH9000/13HHD device supports the HHD aim function.
Screen Orientation	You can rotate the screen by 180°.
Auto-Lock Time	You can select 10 mins or 60 mins.
Restore Default	You can restore the device to default settings.

System Information

You can press the trigger switch to view the system information, such as device information, firmware information, serial No., algorithm information, IP address, user ID, and other information.

Device Reboot

You can press the trigger switch to restart the device.

4.1.3 Prompt Information Page

During firmware upgrade, some messages will be shown on the screen.

- “Upgrading... Do not power off.” shows the progress of the upgrade.
- “Succeeded. Restart soon.” means that the device is upgraded and will be restarted.
- “Failed. Restart soon.” means that the device fails to upgrade and will be restarted.

4.2 Device/Component Status and Indicator

4.2.1 Device/Component Status

Device Status

Table 4-3 Device Status

Device Status	Description
Power On	The device will automatically start up after device is powered on.
Power Off	The device will automatically shut down after device is powered off.
Restart	You can follow one of the operations below to restart the device. • The device will automatically restart after the firmware upgrade is succeeded. • Press Reboot on the device screen. • Press button and trigger switch on the device at the same time for more than 3 seconds to restart the device. • Go to Feature Tree → Device Control → Device Reset to restart the device.

Component Status

Table 4-4 Component Starts

Component	Status Description
Buzzer	• The buzzer beeps three times after the device is powered on. • The buzzer beeps once when the device reads codes successfully (configurable). • The buzzer beeps twice when the device reads setting codes successfully. • The buzzer beeps once when the device fails to upgrade firmware. • The buzzer beeps twice when the firmware upgrade is succeeded. • The buzzer beeps once when the button is pressed and then released. • The buzzer beeps three times with high frequency when the

Component	Status Description
	smart tune is succeeded. • The buzzer beeps once with low-frequency long beeps when the smart tune is failed. • The buzzer beeps for 1 second with high frequency and then emits low-frequency long beeps when code reading is succeeded and communication failed.
Vibrator	• The device vibrates once for 300 ms when it is powered on. • The device vibrates once for 300 ms when it recognize codes. The vibrator is off by default. • The device vibrates twice (duration 300 ms, interval 300 ms) when it recognizes setting codes. • The device vibrates twice when smart tune is succeeded. • The device vibrates once for 1 second when smart tune is failed. • The device vibrates when code reading is succeeded and communication failed.

 Note

You can set setting codes on the screen or go to **I/O Control Settings** in the client to set the parameters of buzzer and vibrator.

4.2.2 Indicator

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

Table 4-5 Indicator Description

Device Status		Indicator
Normal Status	Powering On	Solid Red
	Network/USB Disconnected	Solid Yellow
	Network/USB Connected	Unlit
Code Reading Status	Failed Code Reading	Red On
	Successful Code Reading	Green On
	Successful Code Reading and Failed Communication	Solid Yellow
Firmware Upgrade Status	Firmware Upgrade Progress	Flashing Yellow
	Failed Firmware Upgrade	Solid Red (device restarting after 3 seconds)

	Successful Firmware Upgrade	Solid Green (device restarting after 3 seconds)
Smart Tune	Failed Smart Tune	Red On
	Successful Smart Tune	Green On

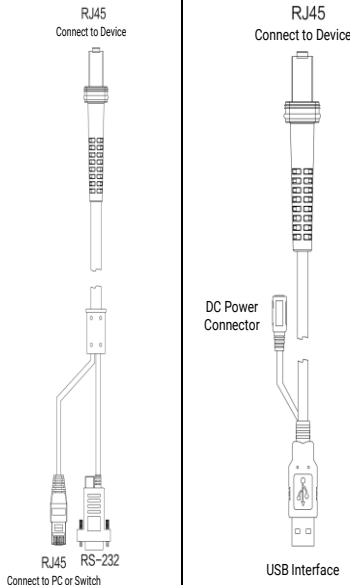
Chapter 5 Quick Start Guide

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

5.1 Device Unboxing

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

Table 5-1 Included Device and Accessories

No.	Name	Image	Quantity	Description
1	Handheld Code Reader		1	It refers to the IDH9000 wired handheld code reader.
2	Cable		1	It is used to connect to the device and provide power, and is included in the package. • USB type device: You should use USB connection cable. • Fast Ethernet type: You should use Ethernet connection cable.
3	Power Adapter		1	It is used to provide power supply for the device. The power adapter with 12 V is included in the package. Standard power adapter is recommended.

5.2 Device Connection

The device each has two types, including USB type and fast Ethernet type. Refer to sections below to connect the corresponding device type.

Note

The images of cables below are for reference only.

5.2.1 Fast Ethernet Type Device

Steps

1. Refer to the figure below. Push component 3 until the component 1 ejects, insert the RJ45 connector into the component 2, and then push component 1 into the device again.



Figure 5-1 Insert RJ45 Connector

Note

If you want to remove the cable, follow the above steps to push component 3 and pull out the cable.

2. Connect another end of the RJ45 connector to the PC or a switch for data transmission or PoE power supply.

3. (Optional) Connect the DB9 connector to the power adapter for power supply.

4. (Optional) Connect the RS-232 connector of the cable to the PC if you want to use the serial port function.

Note

The RJ45 connector is used to provide PoE power supply, and the power adaptor to provide power supply. It is recommended to use power adaptor.

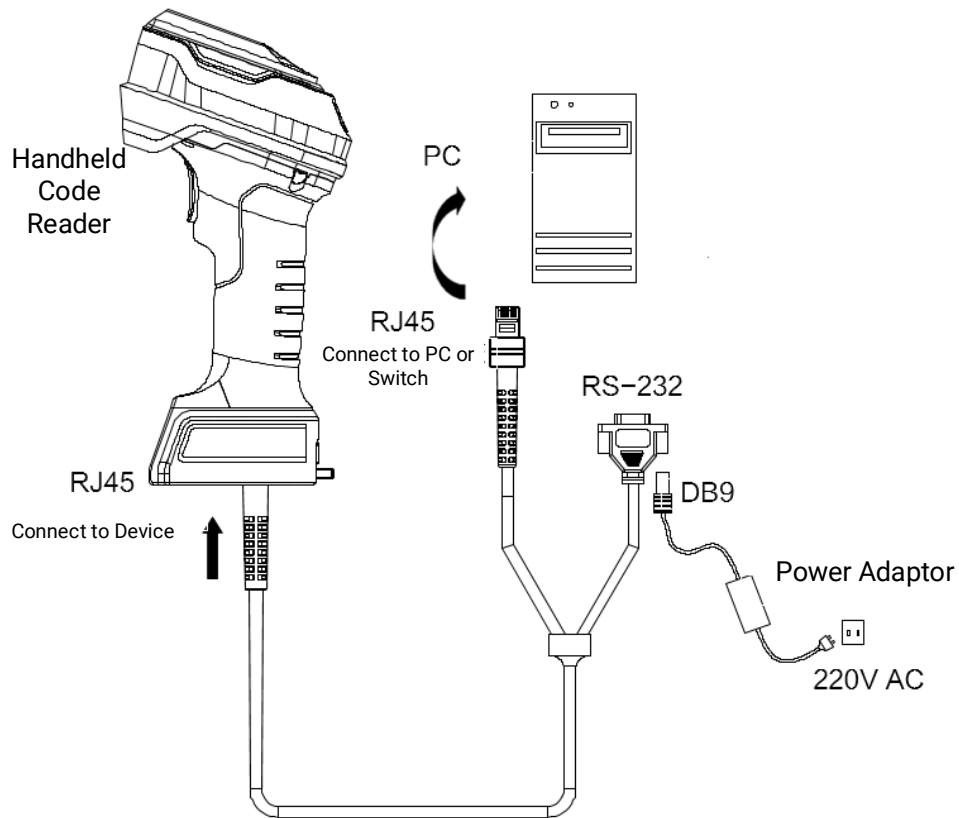


Figure 5-2 Connection of Fast Ethernet Type Device

5.2.2 USB Type Device

Steps

1. Refer to the figure below. Push component 3 until the component 1 ejects, insert the RJ45 connector into the component 2, and then push component 1 into the device again.



Figure 5-3 Insert RJ45 Connector

Note

If you want to remove the cable, follow the above steps to push component 3 and pull out the cable.

2. Connect the USB interface to the PC for data transmission.
3. Connect the DC power connector to the power adaptor for power supply.

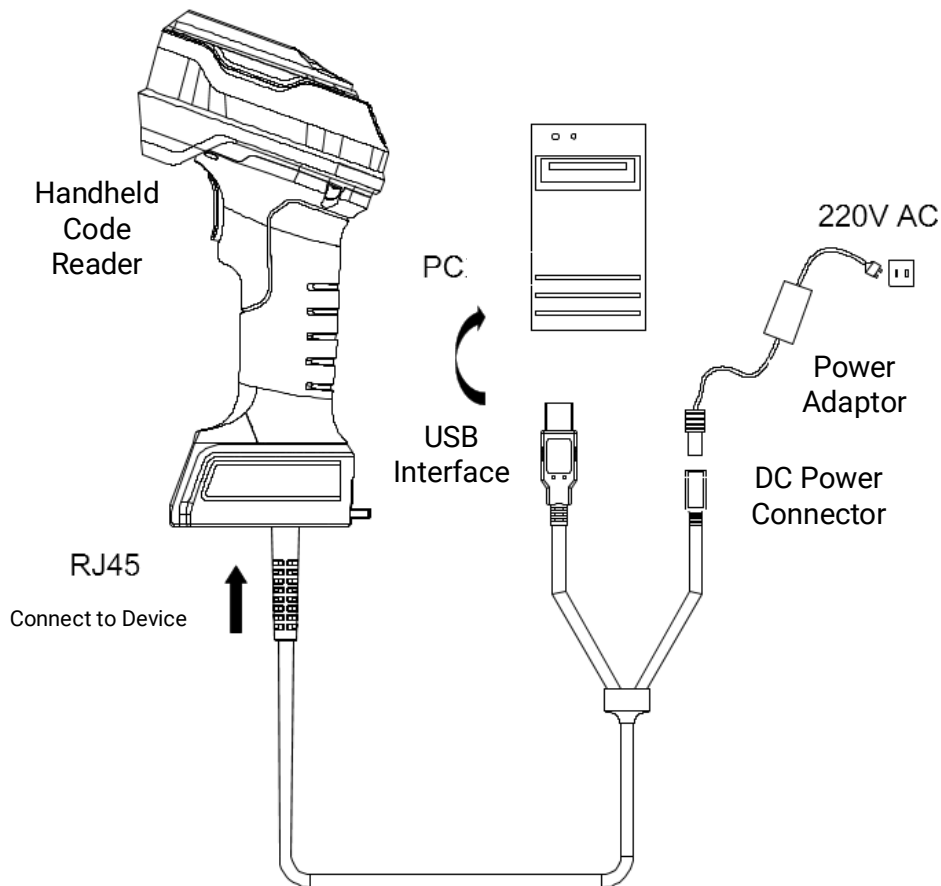


Figure 5-4 Connection of USB Type Device

Caution

When the external DC power supply is required, the device can only be connected to a general power supply with internal positive and external negative, otherwise the device may be damaged.

5.3 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.

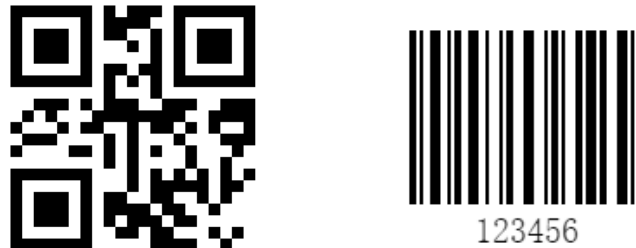


Figure 5-5 Test Code

Steps

Place the device close to the code, and press the trigger switch. The device will emit a red aiming frame and aiming line according to the scanning mode. Refer to the methods below to improve the code reading efficiency.

- For the MV-IDH9000/13HHD device, you should enable **Minimum Code Aiming** in the client. The device will emit a red aiming frame, a red aiming line, and a green aiming point. The best reading position is where the aiming line intersects the center of the green aiming point and the green point is at the center of the minimum code.

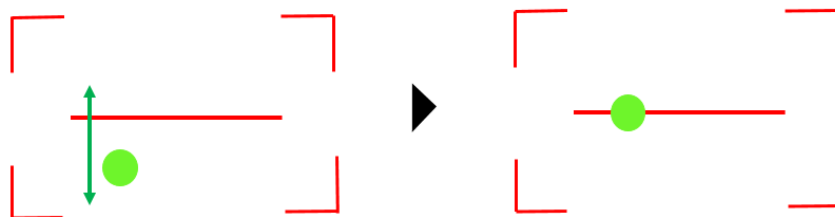


Figure 5-6 Minimum Code Reading

For other IDH9000 devices, place the code inside the aiming frame and align the aiming line to the center of the code for reading.



Figure 5-7 Code Reading

- Place the reading window parallel to the plane of the code for quick reading.
- For reading codes with low contrast, such as dot matrix codes and laser-engraved codes, you can adjust the position of the code reader in different directions and try to find the best reading angle.
- The buzzer beeps once and the green light is turned on when the device reads codes

successfully.

5.4 Debugging

The device supports configuring parameters via reading special codes that are called setting codes and debugging in the client.

Debugging via Setting Code

The setting code consists of three parts.



Figure 5-8 Setting Code

Table 5-2 Setting Code Description

No.	Description
1	It is the code part of the setting 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 setting code.

Steps

1. Scan **Enable Setting Codes** first to activate the function of setting codes.



Figure 5-9 Enable Setting Code

2. Configure parameters according to the demands. Refer to section [Setting Codes](#).
3. (Optional) Scan the setting code below or click  on the top of the client to save the

parameters.



Figure 5-10 Setting Code for Parameter Saving

4. Scan **Disable Setting Codes** to exit setting codes function.



Figure 5-11 Disable Setting Code

Debugging via Client Software

Note

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

Before you start

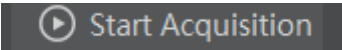
Make sure the client software is installed and the device is connected.

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

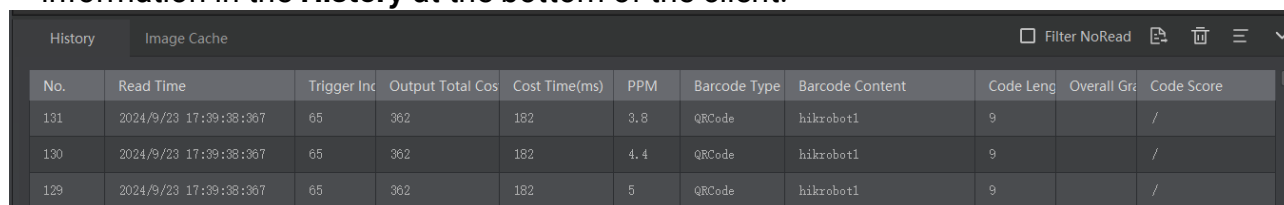
- If you select the communication protocols except SmartSDK, please change the running mode to **Normal**.
 - If you select Profinet, ModBus, Ethernet/IP, and other industrial protocols, please refer to **Smart Code Reader Industrial Protocol** on the official website for connection.
-

3. In the Normal mode, click  to start acquisition. The device is in smart scanning mode, which allows lens switch according to the scene (only for the MV-IDH9000/13HHD device), auto polling of light source, and data recording.
-

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.



No.	Read Time	Trigger Inc	Output Total Cos	Cost Time(ms)	PPM	Barcode Type	Barcode Content	Code Leng	Overall Gr	Code Score
131	2024/9/23 17:39:38:367	65	362	182	3.8	QRCode	hikrobot1	9		/
130	2024/9/23 17:39:38:367	65	362	182	4.4	QRCode	hikrobot1	9		/
129	2024/9/23 17:39:38:367	65	362	182	5	QRCode	hikrobot1	9		/

Figure 5-12 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**.

Refer to section [Device Settings](#) for details.

Chapter 6 Setting Codes

Via reading setting codes, the device can set enable/disable settings, set code type, set code reading mode, set quantity of code reading, set data processing, set aiming system, set light source, set buzzer, set vibration, set USB communication, set serial port, etc.

Note

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

6.1 Enable/Disable Setting Codes

Before using other setting codes, you need to scan **Enable Setting Codes** first to activate the function of setting codes. Scan **Disable Setting Codes** to exit setting codes function.

Table 6-1 Enable/Disable Setting Codes

Function	Setting Codes	Function	Setting Codes
Enable Setting Codes		Disable Setting Codes	

6.2 Set Setting Codes of Communication

6.2.1 USB Communication

The setting codes of USB communication can enable or disable the USB communication function.

Note

- Only the USB type device supports the USB communication.
 - By default, the device's communication is USB keyboard. By reading specific setting codes, the device's communication method can be switched to USB CDC.
-

Table 6-2 Set Setting Codes of USB Communication

Function	Setting Codes	Function	Setting Codes
Enable USB Communication		Disable USB Communication	
USB HID Communication Mode		USB CDC Communication Mode	
Compound Mode		Keyboard Mode	

6.2.2 Serial Port Communication

The setting codes of serial port can enable or disable serial port function, set the baud rate, parity bit, and stop bit.

Table 6-3 Set Setting Codes of Serial Port

Function	Setting Codes	Function	Setting Codes
Enable Serial Port Function		Disable Serial Port Function	
Set Baud Rate as 4800		Set Baud Rate as 9600	

Function	Setting Codes	Function	Setting Codes
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	
Set Even Parity		Set Stop Bit 1	
Set Stop Bit 2		/	/

6.3 Set Setting Codes of Data Processing

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

Steps

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

Table 6-4 Setting Codes of Editing Prefix or Suffix

Function	Setting Codes	Function	Setting Codes
Edit Prefix		Edit Suffix	

2. Set prefix and suffix characters according to actual demands, find the corresponding hexadecimal code value in ASCII table (see **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.

Table 6-5 Setting Codes of a to f and 0 to 9

Function	Setting Codes	Function	Setting Codes
Digital Code 0		Digital Code 1	
Digital Code 2		Digital Code 3	
Digital Code 4		Digital Code 5	

Function	Setting Codes	Function	Setting Codes
Digital Code 6		Digital Code 7	
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.

4. Set stop text for the code.

Table 6-6 Setting Codes of Data Processing

Function	Setting Codes	Function	Setting Codes
Edit Separator		Clear Separator	
Edit Stop Text		Enable Newline	
Disable Newline		Enable Enter	
Disable Enter		Enable Horizontal TAB	
Disable Horizontal TAB		/	/

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


Figure 6-1 Setting Codes of Saving

6.4 Set Setting Codes of Code Reading

6.4.1 Code Type

The device can be set what code type to be read via reading specific setting 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, and PDF417.

Note

The supported code types may differ by device models.

Table 6-7 Set Setting Codes of Code Type

Function	Setting Codes	Function	Setting Codes
Enable All 1D Codes		Disable All 1D Codes	
Enable All 2D Codes		Disable All 2D Codes	
Enable Code 39		Disable Code 39	
Enable Code 128		Disable Code 128	

Function	Setting Codes	Function	Setting Codes
Enable Code 93		Disable Code 93	
Enable CodeBar		Disable CodeBar	
Enable ITF 14		Disable ITF 14	
Enable ITF 25		Disable ITF 25	
Enable EAN 8		Disable EAN 8	
Enable EAN 13		Disable EAN 13	

Function	Setting Codes	Function	Setting Codes
Enable UPCA		Disable UPCA	
Enable UPCE		Disable UPCE	
Enable QR Code		Disable QR Code	
Enable Data Matrix		Disable Data Matrix	
Enable MicroQR Code		Disable MicroQR Code	
Enable AZTEC Code		Disable AZTEC Code	

Function	Setting Codes	Function	Setting Codes
Enable PDF 417		Disable PDF 417	

6.4.2 Code Reading Mode

The device supports setting different code reading modes via scanning setting codes, including common mode, accurate mode, continuous mode, batch mode, and HHD mode.

Table 6-8 Set Setting Codes of Code Reading Mode

Function	Setting Codes	Function	Setting Codes
Common Mode		Accurate Mode	
Continuous Mode		Batch Mode	
HHD Mode		/	/

Note

- The supported code reading modes may differ by device models.
- Refer to section [Scanning Mode](#) for the definition of the different modes.

6.4.3 Code Reading Quantity

You can set the device's code reading quantity via scanning the specific setting codes as

shown below.

Steps

1. Read setting codes of editing code reading quantity.



Figure 6-2 Edit Code Reading Quantity

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

Note

- The code reading quantity is supported when the code reading mode is batch mode.
 - When the code reading 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 6-9 Digital Codes

Function	Setting Codes	Function	Setting Codes
Digital Code 0		Digital Code 1	
Digital Code 2		Digital Code 3	
Digital Code 4		Digital Code 5	

Function	Setting Codes	Function	Setting Codes
Digital Code 6		Digital Code 7	
Digital Code 8		Digital Code 9	

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



Figure 6-3 Setting Codes of Saving

6.4.4 Code Color

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

Table 6-10 Digital Codes

Function	Setting Codes	Function	Setting Codes
Black Code on White Background		White Code on Black Background	
Self-Adaption		/	/

6.5 Set Setting Codes of Trigger

The setting codes of trigger can let the device switch the trigger mode, including button trigger, self-trigger, response trigger, serial port trigger, software trigger, ToF trigger, and support disabling trigger mode.

Table 6-11 Set Setting Codes of Trigger

Function	Setting Codes	Function	Setting Codes
Disable Trigger Mode		Button Trigger	
Self-Trigger		Response Trigger	
Software Trigger		ToF Trigger	
Serial Port Trigger		/	/

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

Table 6-12 Set Setting Codes of Trigger-Related Parameters

Function	Setting Codes	Function	Setting Codes
Trigger Distance of ToF Trigger			

Function	Setting Codes	Function	Setting Codes
Trigger Distance: 50 mm		Trigger Distance: 75 mm	
Trigger Distance: 100 mm		Trigger Distance: 125 mm	
Trigger Distance: 150 mm		Trigger Distance: 175 mm	
Trigger Distance: 200 mm		/	/
Sensitivity of Response Trigger			
Sensitivity: Low		Sensitivity: Medium	
Sensitivity: High		/	/
Unrespond Time of Response Trigger			

Function	Setting Codes	Function	Setting Codes
Unrespond Time: 300 ms		Unrespond Time: 500 ms	
Unrespond Time: 800 ms		Unrespond Time: 1000 ms	
Unrespond Time: 2000 ms		Unrespond Time: 3000 ms	
Timeout Duration of Response Trigger			
Timeout Duration: 1000 ms		Timeout Duration: 1500 ms	
Timeout Duration: 2000 ms		Timeout Duration: 3000 ms	
Timeout Duration: 4000 ms		Timeout Duration: 5000 ms	

6.6 Set Setting Codes of Aiming System

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

Note

Only the MV-IDH9000/13HHD device supports the green aiming settings. For the MV-IDH9000/13HHD device, you can scan code of enabling aiming system to enable the red light and disable the green light, scan code of disabling aiming system to disable all lights, scan code of enabling green aiming system to enable red and green lights, and scan code of disabling green aiming system to disable green light.

Table 6-13 Set Setting Codes of Aiming System

Function	Setting Codes	Function	Setting Codes
Enable Aiming System		Disable Aiming System	
Enable Green Aiming System		Disable Green Aiming System	

6.7 Set Setting Codes of Light Source

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

Note

The supported setting codes of light source may differ by device models.

Table 6-14 Set Setting Codes of Light Source

Function	Setting Codes	Function	Setting Codes
Enable Diffused Reflection Lighting		Enable Bi-Directional Lighting	
Enable Direct Lighting		Enable Polarized Lighting	

6.8 Set Setting Codes of Buzzer

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

Note

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

Table 6-15 Set Setting Codes of Buzzer

Function	Setting Codes	Function	Setting Codes
Enable Buzzer When Reading Codes		Disable Buzzer When Reading Codes	
Set Buzzer Duration 40 ms		Set Buzzer Duration 50 ms	

Function	Setting Codes	Function	Setting Codes
Set Buzzer Duration 80 ms		Set Buzzer Duration 100 ms	
Set Buzzer Duration 120 ms		Set Buzzer Duration 150 ms	
Set Buzzer Duty Ratio 25%		Set Buzzer Duty Ratio 50%	
Set Buzzer Duty Ratio 75%		/	/

6.9 Set Setting Codes of Vibration

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

Table 6-16 Set Setting Codes of Vibration

Function	Setting Codes	Function	Setting Codes
Enable Vibration		Disable Vibration	

Function	Setting Codes	Function	Setting Codes
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	

6.10 Set Setting Codes of Sending Device Information

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

Table 6-17 Set Setting Codes of Sending Device Information

Function	Setting Codes	Function	Setting Codes
Send Device Name		Get Device Version	
Get Hardware Version		Get Algorithm Version	

Function	Setting Codes	Function	Setting Codes
Get Serial Number		/	/

6.11 Set Setting Codes of Management

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

Table 6-18 Set Setting Codes of Management

Function	Setting Codes	Function	Setting Codes
Save User Parameters		Initialize User Parameters	
Restart Device		Request of Restoring to Default Settings	
Confirmation of Restoring to Default Settings		/	/

Chapter 7 Client Software Installation and Operation

7.1 Install Client Software

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

Steps

Note

- The client software is compatible with 32/64-bit Windows XP/7/10/11.
 - 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.
-

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**.

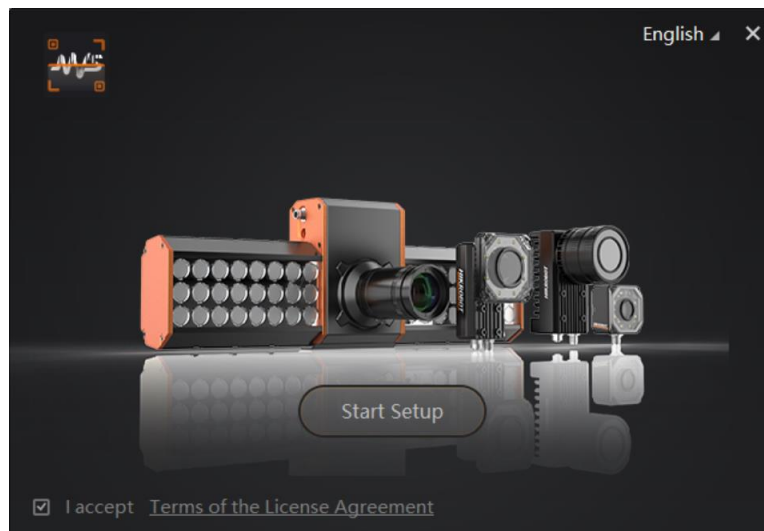


Figure 7-1 Installation Interface

6. Finish the installation according to the interface prompts.

7.2 Set PC Environment

To ensure stable client running and data transmission, you are recommended to set PC environment. For the fast Ethernet type device, you need to turn off the firewall and set PC network. For the USB type device, you need to check the USB drive on the PC.

7.2.1 Turn off Firewall for Fast Ethernet Type Device

Steps

Note

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

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

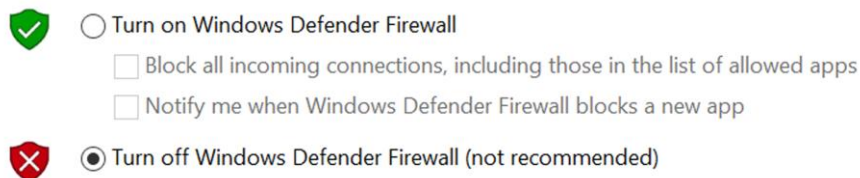


Figure 7-2 Windows Defender Firewall

4. Click **OK**.

7.2.2 Set PC Network for Fast Ethernet Type Device

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

Steps

Note

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

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

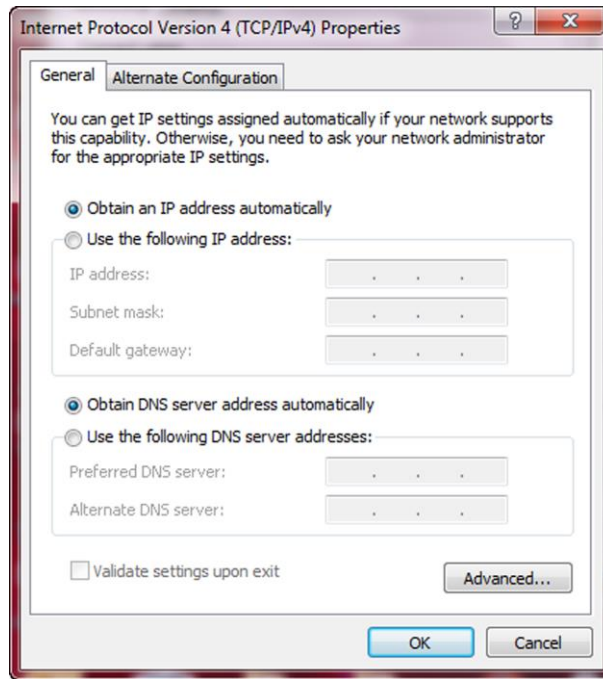


Figure 7-3 Set PC Network

7.2.3 Check USB Drive for USB Type Device

Checking the USB drive on the PC is required before using the USB type device. After connecting the USB type device 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 set and operate the device in the client software only when the device is in the same

network segment with the PC where the client software is installed.

Steps

1. Double click the client software to run it.
2. Click  to find the device.
3. Right click the device to be connected.
4. Click **Modify IP**.
5. Set the IP address of the device in the same network segment with the PC.

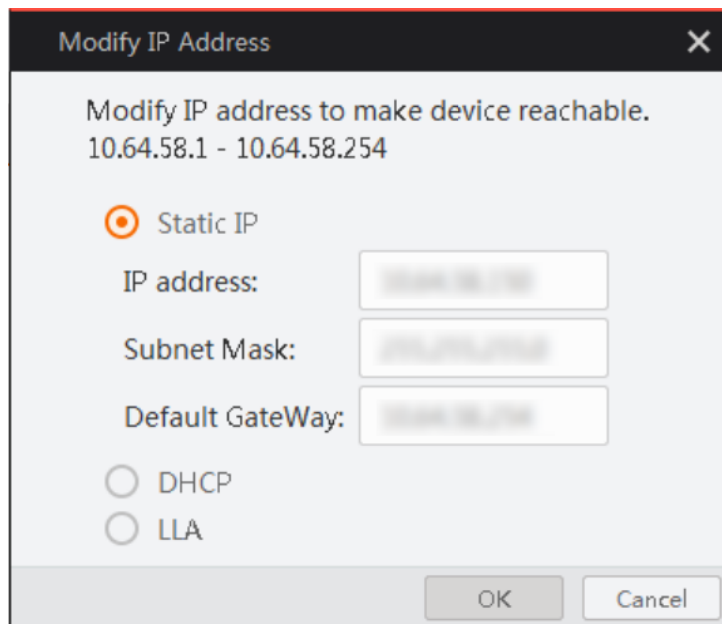


Figure 7-4 Modify IP Address

6. Click **OK**.

7.4 Connect Device to Client Software

Make sure that your device 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.

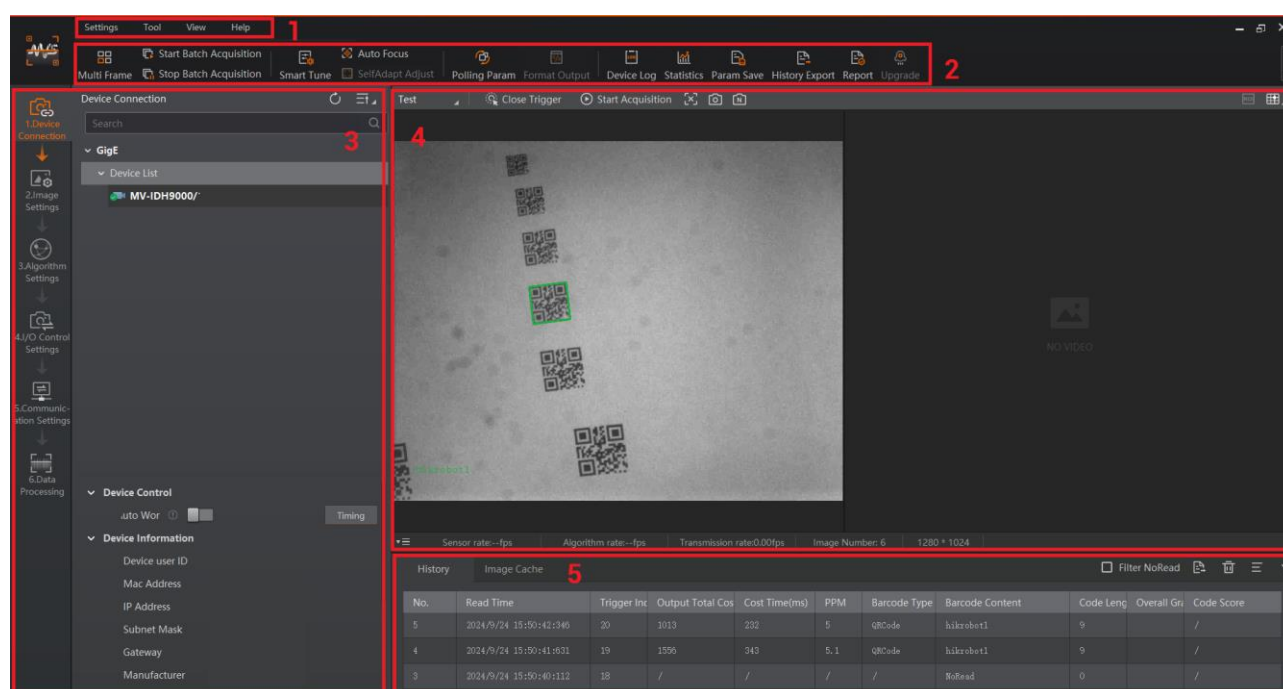


Figure 7-5 Main Window

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.

Table 7-1 Description of Main Window

No.	Name	Description
1	Menu Bar	The menu bar displays function modules, including Settings , Tool , View , and Help .
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.

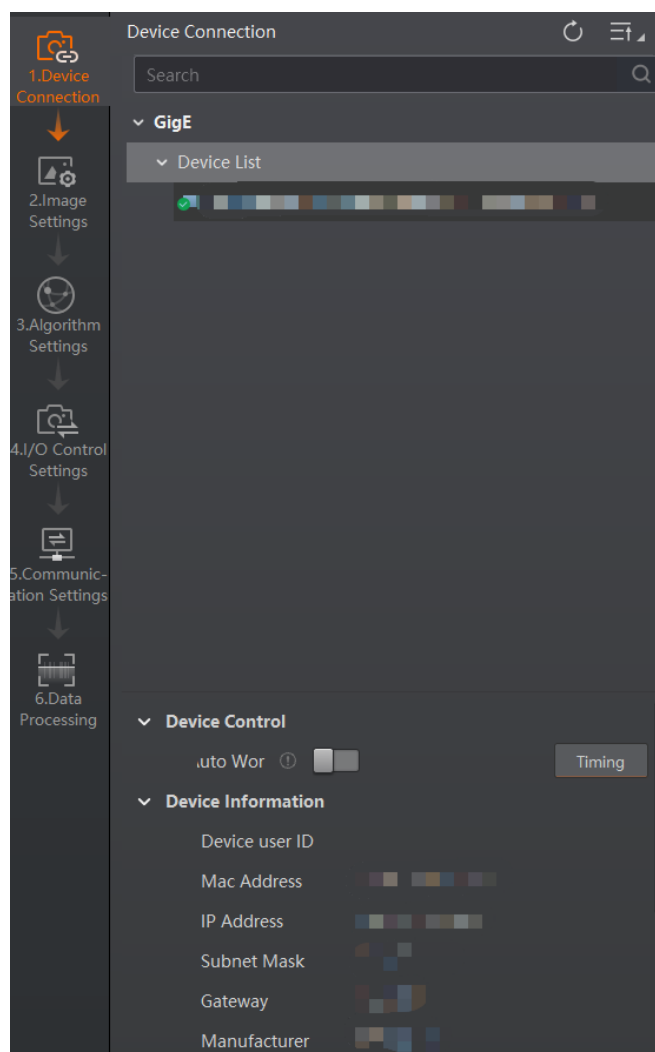


Figure 7-6 Device Configuration Area

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.
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 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.

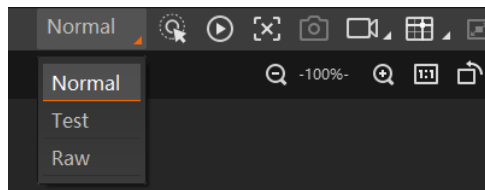


Figure 8-1 Select Device Mode

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

Chapter 9 Device Settings

9.1 Feature Tree Introduction

Note

The feature tree may differ by device models.

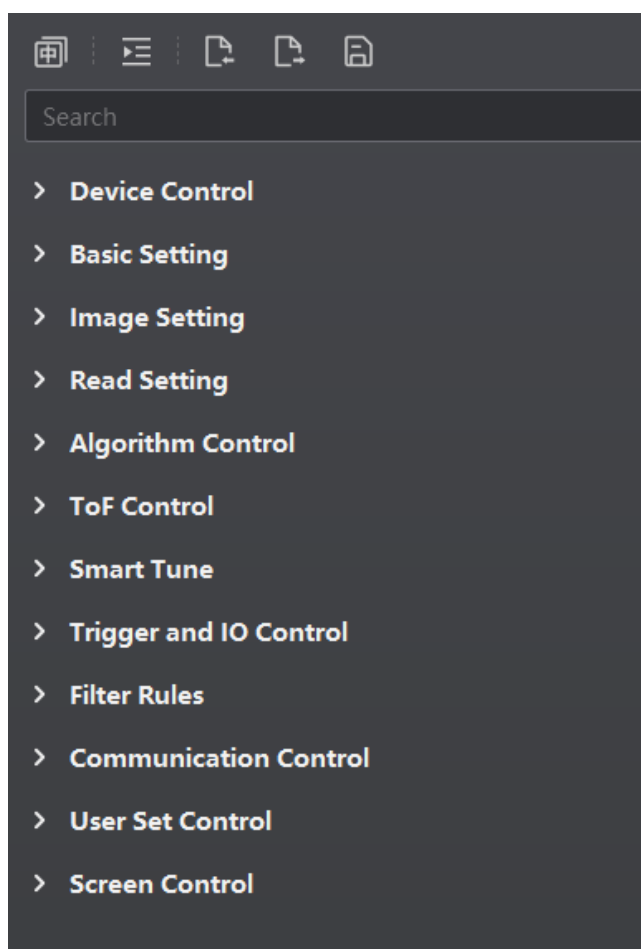


Figure 9-1 Feature Tree

Table 9-1 Feature Tree Description

No.	Module Name	Description
1	Device Control	You can view device information, edit its name, restart it, etc.
2	Basic Setting	You can set image output mode, minimum code aiming, and light mode.

No.	Module Name	Description
3	Image Setting	You can set exposure, gain, Gamma, frame rate, etc.
4	Read Setting	You can set the device running mode and select code types.
5	Algorithm Control	You can set algorithm parameters of codes.
6	ToF Control	You can enable fast focus, and set ToF-related parameters.
7	Smart Tune	You can set parameters related to smart tune.
8	Focus Control	You can adjust focus for improving image quality.
9	Trigger and IO Control	You can set parameters related to input and output.
10	Filter Rules	You can set filter rules for output result.
11	Communication Control	You can select different communication protocols, and set related parameters for output result.
12	User Set Control	You can save and load user parameters, and restart the device.
13	Screen Control	You can set screen-related parameters, including adjusting brightness, switching language, direction, and shutdown time.

9.2 Image Quality Settings

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

Note

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

9.2.1 Set Image

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

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.
-

Channel Selector

You can select **code reader(left)** or **code reader(right)** that corresponds to the wide-angle lens on the left and the telephoto lens on the right. After selection, the image settings will be valid for the selected channel.

Note

Only the MV-IDH9000/13HHD device supports the **Channel Selector**.

Exposure Time(μ 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 Setting** 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.

Reading Code Mode

It includes **Common Mode**, **Accurate Mode**, **Continuous Mode**, **Batch Mode**, and **Minimum Mode**. Refer to section [Scanning Mode](#) for details.

Note

- The **Reading Code Mode** is supported when device running mode is **Normal**.
 - If you select **Minimum Mode**, the follow parameters are not shown:
 - Image:** **Exposure Time**, **Gain**, **Gamma**, and **Polling**
 - Light:** **Camera Output Image Policy** and **Light Mode Control**
 - SmartTuneControl:** **Param Source** and **Param Save Mode**
-

Polling Target

It includes **Only Smart**, **Only User**, and **Smart And User**.

Only Smart: Polling is executed according to the general code reading logic. It cannot be configured.

Only User: Polling is executed according to the original polling parameters. It can be configured.

Smart And User: Polling is executed based on the two modes above.

Best Polling Group Idx

It is used to display the polling parameter group number when the camera recognizes codes after enabling polling. If the polling is disabled or polling parameters are edited, it displays 1 by default.

Polling Param

Select one set of parameters (e.g., **Param1**) from **Polling Param**.

- **Polling Param Enable:** After it is enabled, polling will be executed.
- **Polling Param Name:** It sets the polling name.
- **Polling Exposure Time(μ s):** It sets the exposure time of polling.
- **Polling Gain(dB):** It set the polling gain.
- **Polling Gamma:** It sets the polling Gamma value. If the value is between 0 and 1, when the image brightness increases, dark area becomes brighter. If the value is between 1 and 4, when the image brightness decreases, dark area becomes darker.
- **Polling Lens Type:** You can select **Fixed** for the telephoto lens and **NR**, **SR**, **FR** for the wide-angle lens.
- **Polling Focus Pos:** It sets the polling focus position.
- **Polling Light Selector:** You can select **Diffuse light source**, **Bilateral light source**, **Direct light source**, and **Polarized light source**.

Note

Only when **Smart Output** is selected as **Camera Output Image Policy**, and **Minimum Mode** is not set as the **Reading Code Mode**, the polling-related parameters above are available.

Upload Test Raw Picture Enable

When the parameter is enabled, the **Test Pattern** panel is displayed in the lower right corner of the main window, in which you can import test images of .RAW or .BMP format.

- : Import one or multiple test images.
- : Import a folder that contains the needed test images.
- : Clear the test images.

Parameter	Value
Channel Selector	code reader(right)
Exposure Time(us)	7000.00
Gain(dB)	13.60
Gamma	1.00
Reading Code Mode	Common Mode
Polling Target	Smart And User
Best Polling Group Idx	-1
Polling Param	Param1
Polling Param Enable	☐
Polling Param Name	PollingParam1
Polling Exposure Time(us)	799.00
Polling Gain(dB)	10.00
Polling Gamma	1.00
Polling Light Selector	Diffuse light source
Polling Focus Pos	100
Polling Lens Type	SR
Upload Test Raw Picture Enable	☐

Figure 9-2 Set Image

Go to **Feature Tree** → **Image Setting** 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.

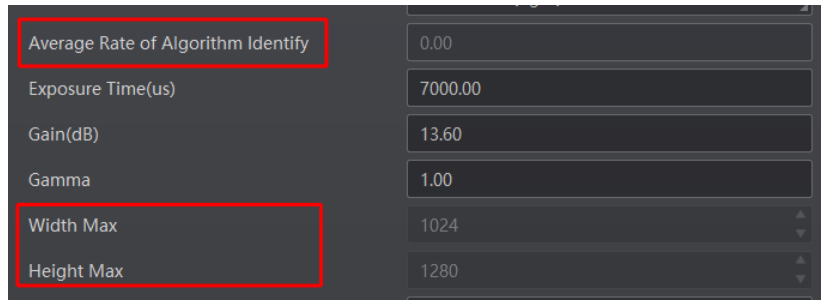


Figure 9-3 Image Settings in Feature Tree

9.2.2 Set Screen Control

Screen control allows you to set screen-related parameters according to actual demands.

Screen Enable

If it is enabled, the device screen can be used.

Screen Lumi

You can adjust the luminance of the screen.

Screen Language

You can change the language on the screen.

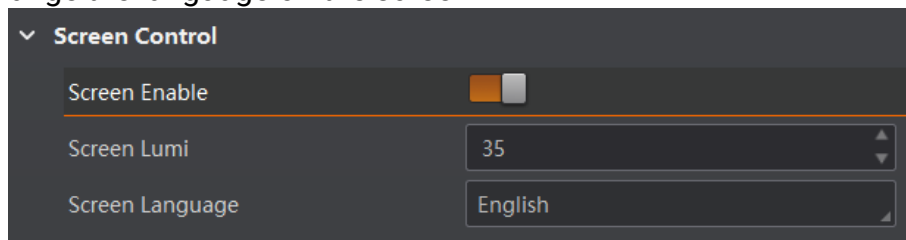


Figure 9-4 Set Screen

Note

You can set screen direction and shutdown time in **Feature Tree** → **Screen Control**.

9.2.3 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.
-

Camera Output Image Policy

It includes **Short Focus Output**, **Long Focus Output**, and **Smart Output**.

- **Short Focus Output**: It is used to output image with the wide-angle lens.
- **Long Focus Output**: It is used to output image with the telephoto lens.
- **Smart Output**: Automatically switch to the wide-angle lens or the telephoto lens based on the actual conditions.

Standard Aiming(red)

After this parameter is enabled, the device will emit red aiming frame and aiming line. It can be used for the reading code modes except **Minimum Mode**.

Minimum Code Aiming(red + green)

After this parameter is enabled, the device will emit red aiming frame, red aiming line, and green aiming point. It can be used for the **Minimum Mode**.

Note

- Only the MV-IDH9000/13HHD device supports the **Minimum Code Aiming(red + green)**.
 - For the MV-IDH9000/13HHD device, the **Minimum Code Aiming(red + green)** is enabled by default. If the **Minimum Code Aiming(red + green)** is disabled, the **Standard Aiming(red)** will be displayed.
-

Light Mode Control

You can select **Diffuse light source**, **Bilateral light source**, **Direct light source**, and **Polarized light source** according to the actual demands.

9.2.4 Set Smart Tune

You can set the following parameters and then execute the smart tune.

Tune Timeout(s)

The smart tune will be stopped when the adjustment time exceeds the set time, and timeout information will prompt.

Tune Status

You can view the progress of the smart tune.

Current Position

You can view the current focus step distance.

Adjust Read Mode

You can select **Read Mode Adapt**, **Normal Code Adapt**, and **Minimum Code Adapt** according to the actual demands.

- **Read Mode Adapt**: All codes are supported (minimum code included).
- **Normal Code Adapt**: Normal codes are supported (minimum code excluded).
- **Minimum Code Adapt**: Only minimum codes are supported.

Adjust Mode

You can select **High Quality** and **High Speed**.

- **High Quality**: If you select this mode, exposure will be adjusted in priority. The acquired picture will have a smaller gain and noise, which makes a higher picture quality. It is suitable for objects with a slow moving speed.
- **High Speed**: If you select this mode, gain will be adjusted in priority. There may be more noise on the picture. It is suitable for objects with a fast moving speed.

Param Source

You can select **Default Param** and **Polling Param**.

- **Default Param**: It adjusts the default parameters.
- **Polling Param**: It adjusts parameters configured in polling. And **Param Save Mode** should be set.

Param Save Mode

You can select **Assignment** and **Cyclic Coverage**.

- **Assignment**: It can save parameters in a group.
- **Cyclic Coverage**: It can save parameters in different groups in cycle.

Exposure Max

It sets the max. exposure during the smart tune.

Gain Max

It sets the max. gain during the smart tune.

Light Adapt

The client software will select the best one from all lighting options during the smart tune.

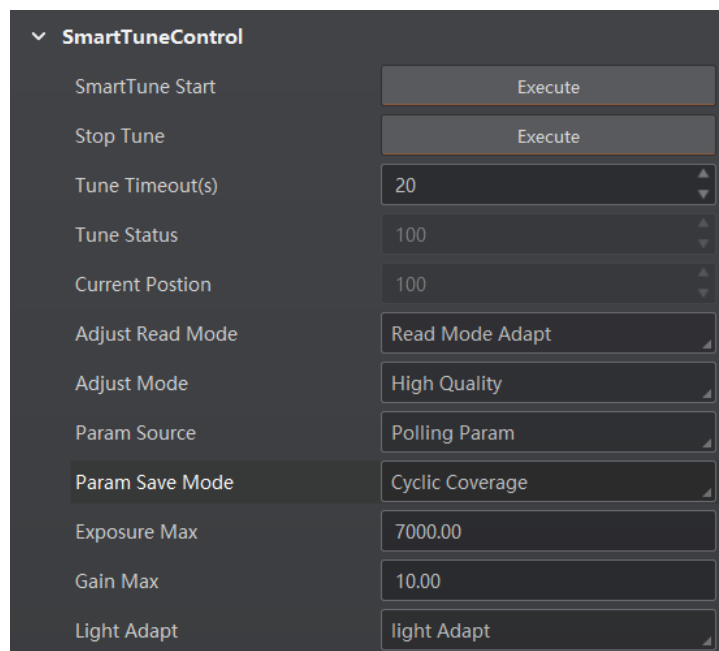


Figure 9-5 Set Smart Tune

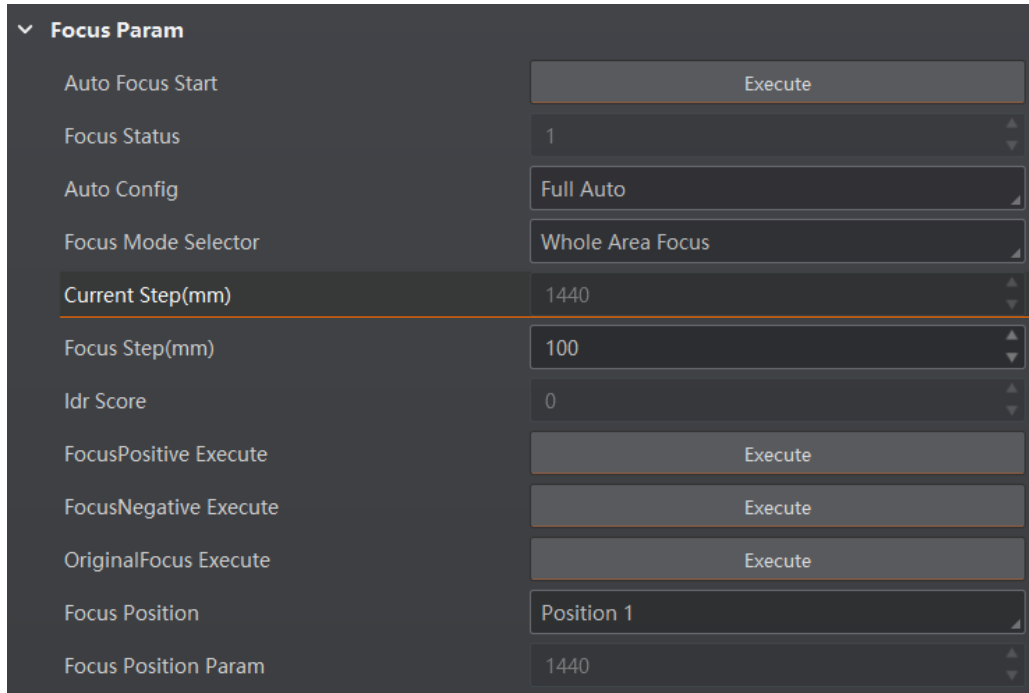
9.2.5 Set Focus Parameter

The global focus allows you to adjust lens focus in a global field of view just by once.

Note

It is recommended to set the following parameters when the device running mode is **Test**. After auto focus is completed, you can switch to **Normal**.

The **Focus Param** is supported when the **Short Focus Output** is selected as the **Camera Output Image Policy**.



Focus Param	
Auto Focus Start	Execute
Focus Status	1
Auto Config	Full Auto
Focus Mode Selector	Whole Area Focus
Current Step(mm)	1440
Focus Step(mm)	100
Idr Score	0
FocusPositive Execute	Execute
FocusNegative Execute	Execute
OriginalFocus Execute	Execute
Focus Position	Position 1
Focus Position Param	1440

Figure 9-6 Focus Param

Steps

1. Go to **Image Settings** → **Focus Param** → **Focus Mode Selector**, and select **Whole Area Focus**.
2. Click  in the live view window, and click it again to stop acquisition and make sure there is an image in the window.
3. Select the focus mode in **Auto Config**:
 - **Full Auto**: In this mode, the device will automatically change parameters like focus position, exposure, gain, Gamma and light source when adjusting focus.
 - **Motor Only**: In this mode, the device will change focus position only when adjusting focus.
 - **Auto and Restore**: In this mode, the device will automatically change parameters like focus position, exposure, gain, Gamma and light source when adjusting focus, and keep focus position and restore other parameters after completing focus adjustment.
4. Set the **Focus Step** which defines the distance for each focus increase or decrease.

5. Click **Execute** in **FocusPositive / FocusNegative Execute** to increase/decrease the focus distance by the value set for **Focus Step**.
6. (Optional) Select the position parameter from **Focus Position**.
7. Click **Execute** in **Auto Focus Start**, and the device starts to adjust focus automatically.
8. (Optional) View the score in **Idr Score** after the auto focus is finished.

9.2.6 Set Other Parameters

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.

Off

Image is coming from the sensor.

Mono Bar

Image is filled with stripes of white and black.

Run Raw Test

Run the test images that you imported in the **Text Pattern** module.

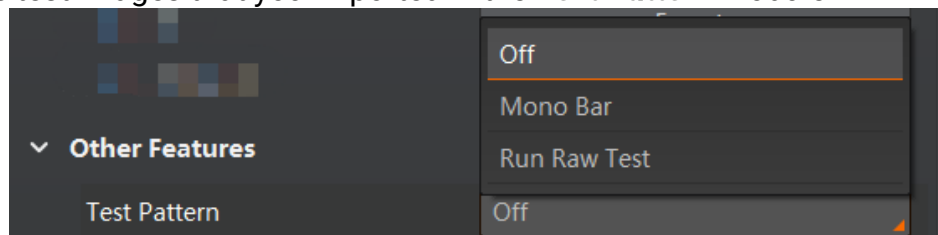


Figure 9-7 Set Test Pattern

9.3 Code 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.

9.3.1 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 amount and added code amount 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 **Reading Code Mode** is **Batch Mode**.

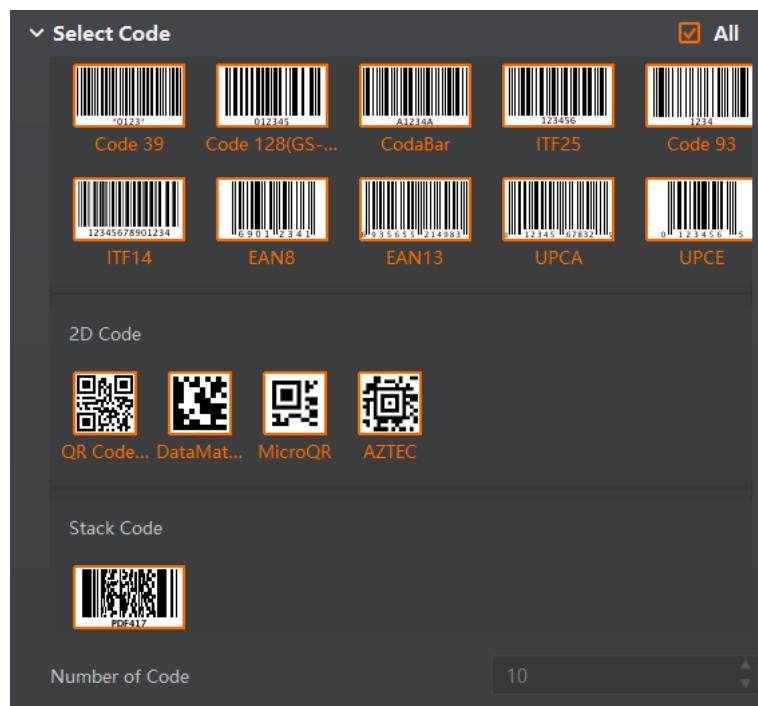


Figure 9-8 Add Code

9.3.2 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.

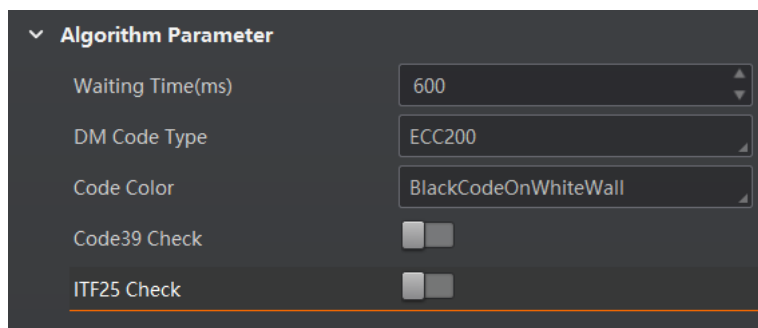


Figure 9-9 Set Algorithm Parameter

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

It includes **All**, **ECC140**, and **ECC200**.

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.

Code 39 Check

Enable this parameter if Code 39 uses the parity bit.



Note

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

ITF 25 Check

Enable this parameter if ITF 25 uses the parity bit.



Note

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

9.4 Signal Input Settings

In the signal input module, you can set the trigger-related parameters. In general, the device supports 5 different trigger sources, including **Software**, **Button Trigger(1)**, **Serial Start**, **Self Trigger**, and **TOF**.



Note

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

9.4.1 Set and Execute Software Trigger

In software trigger, the software sends trigger signal to the device to acquire images.

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 then enable **Enable Auto Trigger** to let the client software automatically send trigger signal to device according to the interval you set.

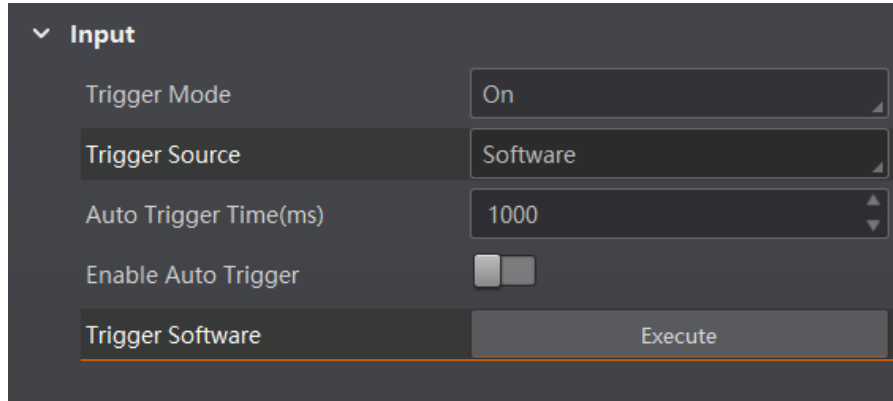


Figure 9-10 Set and Execute Software Trigger

9.4.2 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.
 - **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.

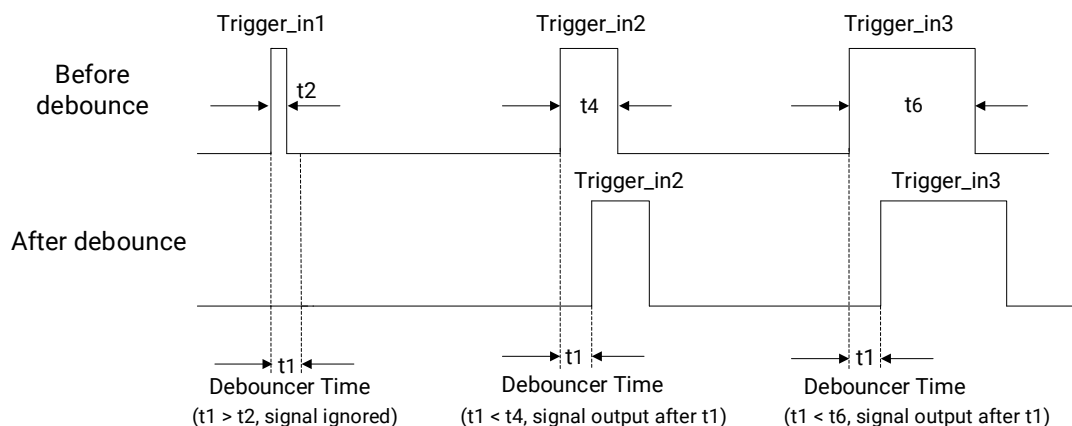


Figure 9-11 Sequence Diagram of Trigger Debounce

- **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.

The screenshot shows a settings menu with a dark background. At the top, there is a dropdown arrow followed by the word 'Input'. Below this, there are six rows of settings, each with a label on the left and a value in a box on the right. The settings are: 'Trigger Mode' set to 'On', 'Trigger Source' set to 'Button Trigger(1)', 'Debounce Time(us)' set to '10000', 'Start Delay Time(us)' set to '0', 'End Delay Time(us)' set to '0', and 'Trigger Activation' set to 'Level High'. Each value box has small upward and downward arrows on its right side, indicating it is a dropdown or a field with range controls.

Input	
Trigger Mode	On
Trigger Source	Button Trigger(1)
Debounce Time(us)	10000
Start Delay Time(us)	0
End Delay Time(us)	0
Trigger Activation	Level High

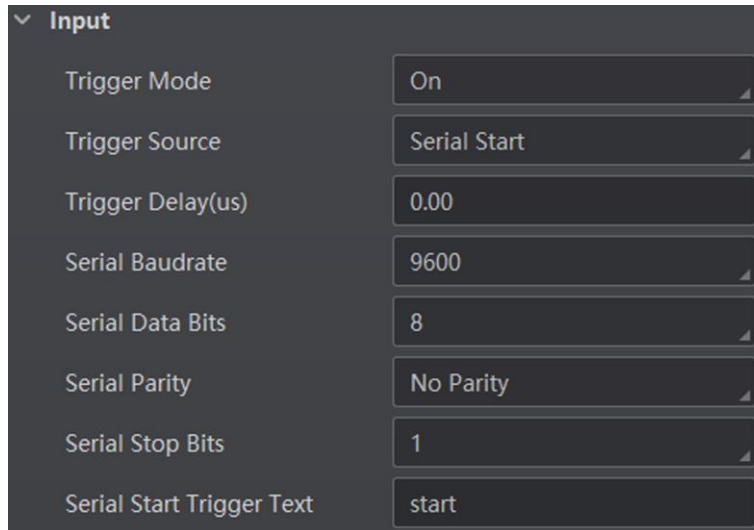
Figure 9-12 Set and Execute Button Trigger

9.4.3 Set and Execute Serial Port

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 **Trigger Delay**, **Serial Baudrate**, **Serial Data Bits**, **Serial Parity**, **Serial Stop Bits**, and **Serial Start Trigger Text** according to the actual demands.



The screenshot shows a settings menu titled 'Input' with a dropdown arrow. It contains eight configuration items, each with a label on the left and a value in a box on the right:

Label	Value
Trigger Mode	On
Trigger Source	Serial Start
Trigger Delay(us)	0.00
Serial Baudrate	9600
Serial Data Bits	8
Serial Parity	No Parity
Serial Stop Bits	1
Serial Start Trigger Text	start

Figure 9-13 Set and Execute Serial Port Trigger

9.4.4 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**, 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

You can use the device's trigger switch to start and stop self trigger.

The screenshot shows the 'Input' settings menu with the following configuration:

Setting	Value
Trigger Mode	On
Trigger Source	Self Trigger
Self Trigger Period(ms)	300
Self Trigger Count	0
Self Trigger Start	Execute
Self Trigger Stop	Execute

Figure 9-14 Set and Execute Self Trigger

9.4.5 Set and Execute Response Trigger

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

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**, and **Brightness Timeout** 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.

The screenshot shows the 'Input' settings menu with the following configuration:

Setting	Value
Trigger Mode	On
Trigger Source	Brightness
Brightness Sensitivity	97
Brightness Unrespond Time(ms)	500
Brightness Timeout	1500

Figure 9-15 Set and Execute Response Trigger

9.4.6 Set and Execute ToF

When the changes of the distance between the code reader and the object exceeds the set threshold, the code reader is triggered to acquire images.

Steps

1. Go to **I/O Control Settings** → **Input** → **Trigger Mode**.
2. Select **On** as **Trigger Mode**.
3. Select **TOF** as **Trigger Source**.
4. Set **TOF Trigger Threshold** according to the actual demands.



Refer to the *IDMVS Client Software User Manual* for the details of all input parameters.

9.5 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**, and **Serial** protocol, and the fast Ethernet type device supports **SmartSDK**, **UDP**, **TCP Client**, **Serial**, **FTP**, **TCP Server**, **Profinet**, **Ethernet/IP**, and **ModBus** communication protocols, and you need to set corresponding parameters.



- The supported communication protocols may differ by device models and firmware version.
 - The specific parameters of communication protocols may differ by device models.
-

9.5.1 Set Smart SDK

If **SmartSDK** is selected as the **Communication Protocols**, you can configure the following parameters.

Table 9-2 SmartSDK Communication Protocol

Parameter	Description
SmartSDK Protocol	If it is enabled, the device will output data via SmarkSDK.
SmartSDK Version	SmartSDK 1.0 or SmartSDK 2.0 can be selected.
Output Channel	You can select code reader(left) or code reader(right) that

Parameter	Description
Selector	corresponds to the wide-angle lens on the left and the telephoto lens on the right.  Note Only the MV-IDH9000/13HHD device supports the Output Channel Selector .
Output Channel Enable	If it is enabled, the device will output data in corresponding channel via SmarkSDK.
Encode JPEG Flag	You can set the Quality of JPEG to determine the compression quality.

 Note

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

9.5.2 Set USB

If **USB** is selected as the **Communication Protocols**, you can configure the following parameters.

Table 9-3 USB Communication Protocol

Parameter	Description
USB Enable	If it is enabled, the device will output data via USB.
USB Output	You can select CDC or HID as the USB output method.  Note When the USB Output is HID , focus output is executed only. And there is not required to install the driver when the client software is not in use.

 Note

Only the USB type device supports the USB communication protocol.

9.5.3 Set TCP Client

If **TCP Client** is selected as the **Communication Protocols**, you can configure the following

parameters.

Table 9-4 TCP Client Communication Protocol

Parameter	Description
TCP Protocol	If it is enabled, the device will output data via the TCP/IP.
TCP Dst Addr	Enter the IP address of the PC that receives data.
TCP Dst Port	Enter the port No. of the PC that receives data.
Heartbeat Enable	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.
Barcode as Heartbeat	If it is enabled, the code read by the client will be sent as a heartbeat packet.
Heartbeat Text	Enter the content of heartbeat text. The heartbeat is entered by default, and the invisible characters are allowed.
Heartbeat Time	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.

9.5.4 Serial

If **Serial** is selected as the **Communication Protocols**, you can configure the following parameters.

 Note

The **Serial** communication protocol is supported when you use the cable with serial port or USB interface. The cable with USB interface is included in the package, and the cable with serial port should be purchased separately.

Table 9-5 Serial Communication Protocol

Parameter	Description
Serial Protocol	If it is enabled, the device will output data via the RS-232 serial.
Serial Baudrate	Set the serial baudrate of the PC that receives data.
Serial Data Bits	Set the serial data bits of the PC that receives data.
Serial Parity	Set the serial parity of the PC that receives data.
Serial Stop Bits	Set the serial stop bits of the PC that receives data.

9.5.5 FTP

If **FTP** is selected as the **Communication Protocols**, you can configure the following parameters.

Table 9-6 FTP Communication Protocol

Parameter	Description
FTP Protocol	If it is enabled, the device will output data via the FTP.
FTP Host Addr	Set the host IP address of the FTP that receives data.
FTP Host Port	Set the host port No. of the FTP that receives data.
FTP User Name	Enter a user name of the FTP if it is required.
FTP User PWD	Enter a password of the FTP if it is required.

9.5.6 TCP Server

If **TCP Server** is selected as the **Communication Protocols**, you can configure the following parameters.

Table 9-7 TCP Server Communication Protocol

Parameter	Description
TCP Server Enable	If it is enabled, the code reader will output data via TCP server.
TCP Server Port	Enter the port No. of the TCP server that receives data.

9.5.7 Profinet

If **Profinet** is selected as the **Communication Protocols**, you can configure the following parameters.

Table 9-8 Profinet Communication Protocol

Parameter	Description
Profinet Enable	If it is enabled, the device will output data via the Profinet.
Profinet Device Name	Enter the device name, which is the same as the configured device name.
Profinet Result Module Size	Set the maximum length of the Profinet result. The unit is word.
Profinet Result Timeout (s)	Set the waiting time before the PLC's response returns.

9.5.8 Ethernet/IP

If **Ethernet/IP** is selected as the **Communication Protocols**, you can configure the following parameters.

Table 9-9 Ethernet/IP Communication Protocol

Parameter	Description
Ethernet/IP Enable	If it is enabled, the device will output data via the Ethernet/IP.
Ethernet/IP Input Component Size (Byte)	Enter the input data volume. The unit is byte.
Ethernet/IP Output Component Size (Byte)	Enter the output data volume. The unit is byte.
Ethernet/IP Result Byte Exchange	If it is enabled, the string bytes are stored in big-endian format. If not enabled, they are stored in little-endian format.
Ethernet/IP Result Timeout (s)	Set the waiting time before the PLC's response returns.

9.5.9 ModBus

If **ModBus** is selected as the **Communication Protocols**, you can configure the following parameters.

Table 9-10 ModBus Communication Protocol

Parameter	Description
ModBus Enable	If it is enabled, the device will output data via the ModBus.
ModBus Mode	It includes server and client.
ModBus Server IP	It refers to the target IP address.  Note When the ModBus Mode is client , you can go to Feature Tree → Communication Control to set this parameter.
ModBus Server Port	It refers to the target port No.  Note When the ModBus Mode is client , you can go to Feature Tree → Communication Control to set this parameter.
Slave ID	It refers to the IP address of the client device.

Parameter	Description
	 Note When the ModBus Mode is Client , this parameter can be set.
ModBus Control Space	It refers to the control address space, and is holding_register by default.
ModBus Control Offset	It refers to the control address offset, and is 0 by default.
ModBus Control Size (Word)	It refers to the control data volume, and is 1 by default.
ModBus Status Space	It refers to the status address space, and is holding_register by default.
ModBus Status Offset	It refers to the status address offset, and is 0 by default.
ModBus Status Size (Word)	It refers to the status data volume, and is 2 by default.
ModBus Result Space	It refers to the result address space, and is holding_register by default.
ModBus Result Offset	It refers to the result address offset, and is 4 by default.
ModBus Result Size (Word)	It sets maximum length of ModBus result.
ModBus Result Byte Swap	If it is enabled, the string bytes are stored in big-endian format. If not enabled, they are stored in little-endian format.
ModBus Result Timeout (s)	Set the waiting time before the PLC's response returns.

9.5.10 UDP

If **UDP** is selected as the **Communication Protocols**, you can configure the following parameters.

Table 9-11 UDP Communication Protocol

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

9.6 Code Reading Result Settings

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

9.6.1 Set Filter Rule

You can set rules to filter unwanted codes to improve the reading efficiency in **Filter Rule**.



Note

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

Normal Mode

When the filter mode is **Normal**, you can set the following parameters according to actual demands.

Numeral Filter

If this parameter is enabled, the device will only parse and read the numeral contents of the codes, and the non-numeral contents will be filtered out.

Begin with Specific Character for Result

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

Include Specific Character in Code

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

Exclude Specific Character in Code

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

Min. Code Length

If the length of a code is shorter (in terms of the number of characters contained in the code) than the configured value, the device will not parse the contents of the code. For example, if you set the value as 6, the device will not parse the contents of the codes which contain less than 6 characters.

Max. Code Length

If the length of a code is longer (in terms of the number of characters contained in the code) than the configured value, the device will not parse the contents of the code. For example, if you set the value as 9, the device will not parse the contents of the codes

which contain more than 9 characters.

History Filter Mode

You can select **Time-based** and **Quantity-based**.

Time-based: Set **Filter Time(ms)**. Duplicate codes are filtered within the set time range.

Quantity-based: Set **Max. History Code Number**. The codes are filtered when the maximum number of history codes is reached. The default value is 20, and the range is 1 to 20.

Note

The **History Filter Mode** is available when the trigger is closed. If the trigger is on, you can enable **De-duplication Enable By Trigger** to filter duplicate codes within specific trigger times that you set in **De-duplication Windows Size**.

Cut Mode

You can select **Code Offset** and **Character Expression**.

Code Offset: You can set Code Start Offset Num and Code End Offset Num to crop the barcode from the start or end of the specified content length, and output the remaining code information.

Character Expression: You can set Range of the Character Expression to crop the code. For example, the barcode content is 123456789. When the character expression is set as (5), 5 will be output; when set as (1-4), 1234 will be output; when set as (1-4,6-9), 12346789 will be output; when set as (1-4,8-), 123489 will be output; when set as (1-), 123456789 will be output.

Read Times Threshold

If the reading result of a code is same for the configured times, the code will be regarded as valid and its reading result will be output. Or the code will be regarded as invalid and its reading result will not be output.

Jpg Transmission Conditions

You can select **All**, **ReadBarcode**, and **NoReadBarcode** to output JPEG picture.

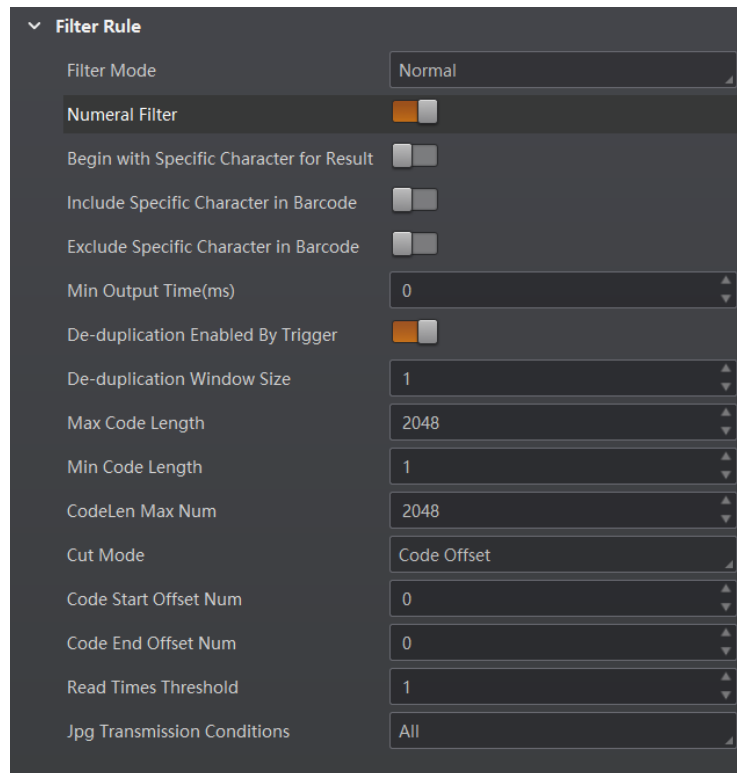


Figure 9-16 Normal Mode

Regular Expression Mode

When the filter mode is **Regular Expression**, you can follow the steps below to set parameters.

Steps

1. Select **Regular Expression** as the **Filter Mode**, and click **Set** in **Regular Expression Filter** to enter regular expression filter settings window.
2. Import local files or add customized filter rules to set the regular expression.
 - Import local files: Click **Import** to import local .xml files, and click **OK** to finish.

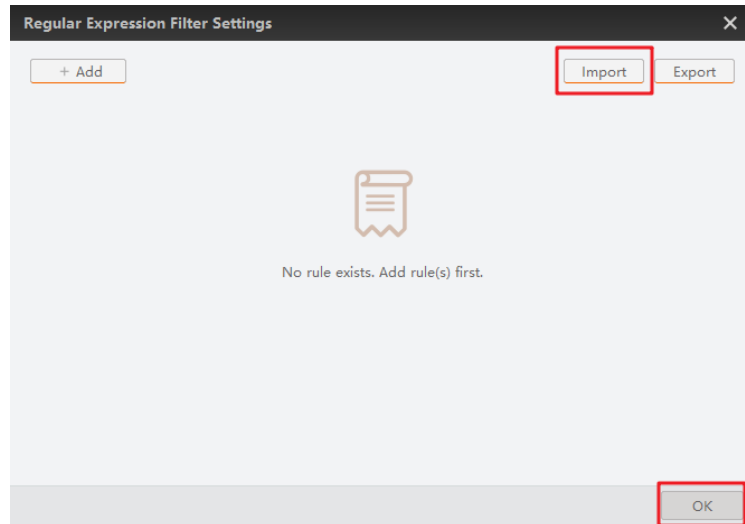


Figure 9-17 Regular Expression Filter Settings

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

 Note

Up to 10 filter rules can be added.

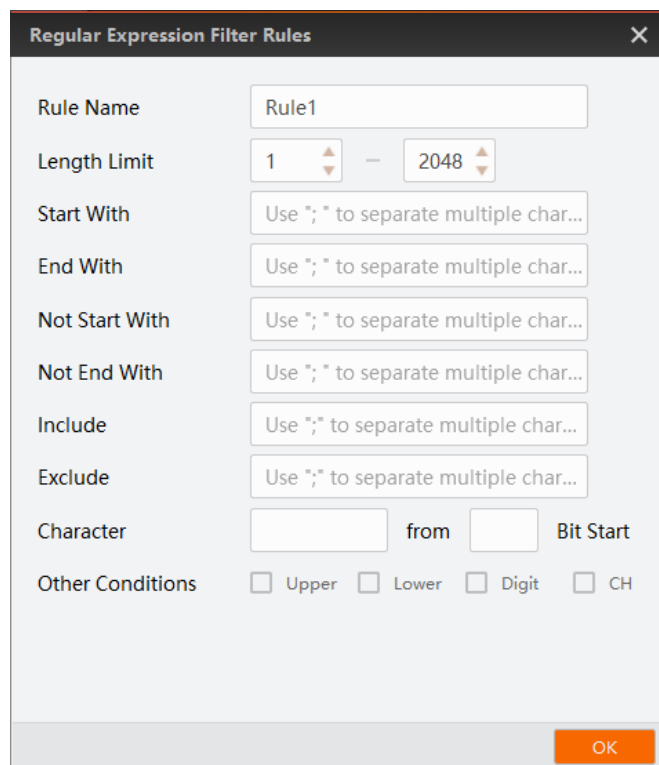


Figure 9-18 Enter Customized Regular Expression Filter Rules

Table 9-12 Filter Rule Parameters

Parameter	Description
Rule Name	The default rule name is Rule1, and cannot be edited.
Length Limit	It sets the length range of the code, and its upper limit is 2048.
Start With	It sets the specific start with code. You can use semicolon to separate if there are multiple characters.  Note If multiple characters are used, code meeting one of these characters is valid.
End With	It sets the specific end with code. You can use semicolon to separate if there are multiple characters.  Note If multiple characters are used, code meeting one of these characters is valid.
Not Start With	It excludes the specific start with code. You can use semicolon to separate if there are multiple characters.  Note If multiple characters are used, code meeting one of these characters is valid.
Not End With	It excludes the specific end with code. You can use semicolon to separate if there are multiple characters.  Note If multiple characters are used, code meeting one of these characters is valid.
Included	It sets the code with specific content. You can use semicolon to separate if there are multiple characters.  Note If multiple characters are used, code meeting all these characters is valid.
Excluded	It sets the code without specific content. You can use semicolon to separate if there are multiple characters.  Note If multiple characters are used, code meeting all these characters is valid.
Character	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 aa from 2 Bit Start , the code "1aa23" does not meet the requirement, whereas "12aa3" does.
Other Conditions	You can select uppercase, lowercase, digit or Chinese.

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

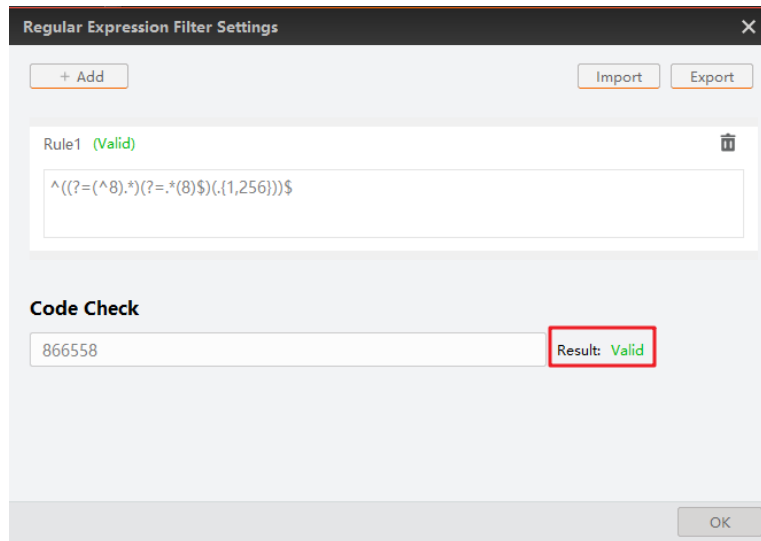


Figure 9-19 Code Check

Note

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

4. (Optional) Click  or  to delete or edit the filter rules.

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

Note

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

6. Set other parameters according to the demands.

Min. Code Length

If the length of a code is shorter (in terms of the number of characters contained in the code) than the configured value, the device will not parse the contents of the code. For example, if you set the value as 6, the device will not parse the contents of the codes which contain less than 6 characters.

Max. Code Length

If the length of a code is longer (in terms of the number of characters contained in the code) than the configured value, the device will not parse the contents of the code. For example, if you set the value as 9, the device will not parse the contents of the codes which contain more than 9 characters.

History Filter Mode

You can select **Time-based** and **Quantity-based**.

Time-based: Set **Filter Time(ms)**. Duplicate codes are filtered within the set time range.

Quantity-based: Set **Max. History Code Number**. The codes are filtered when the

maximum number of history codes is reached. The default value is 20, and the range is 1 to 20.

Note

The **History Filter Mode** is available when the trigger is closed. If the trigger is on, you can enable **De-duplication Enable By Trigger** to filter duplicate codes within specific trigger times that you set in **De-duplication Windows Size**.

Cut Mode

You can select **Code Offset** and **Character Expression**.

Code Offset: You can set Code Start Offset Num and Code End Offset Num to crop the barcode from the start or end of the specified content length, and output the remaining code information.

Character Expression: You can set Range of the Character Expression to crop the code. For example, the barcode content is 123456789. When the character expression is set as (5), 5 will be output; when set as (1-4), 1234 will be output; when set as (1-4,6-9), 12346789 will be output; when set as (1-4,8-), 123489 will be output; when set as (1-), 123456789 will be output.

Read Times Threshold

If the reading result of a code is same for the configured times, the code will be regarded as valid and its reading result will be output. Or the code will be regarded as invalid and its reading result will not be output.

Jpg Transmission Conditions

You can select **All**, **ReadBarcode**, and **NoReadBarcode** to output JPEG picture.

9.6.2 Set Result Format

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

Note

- The supported communication protocols may differ by device models.
 - Result format settings are only available if you select **TCP Client**, **Serial**, **FTP**, **TCP Server**, **Profinet**, **MELSEC**, **Ethernet/IP**, **ModBus**, **UDP**, and **USB** as the communication protocol when device mode is **Normal**. Result format settings are not available for **Smart SDK**.
 - For details about communication protocol, see section [Communication Settings](#) for details.
-

Result Output via Smart SDK

When the communication protocol is **Smart SDK**, device running mode is **Normal**, and trigger mode is **On**, there is no need to set any parameters in the **Data Processing**.

Result Output via FTP

If **FTP** is selected as **Communication Protocols**, you need to set following parameters.

FTP Picture Name Format

Click **Edit** to select one or multiple items to be contained in the picture name and click **Save**. The selected items will be displayed in the frame below. You can also enter more contents directly in the frame.

Local Picture Type

Specify the type of pictures saved locally. You can select **JPEG** or **BMP**.

Encode Format

You can select **GB2312** or **UTF8**.

Output Retrans Enable

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

Note

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

FTP Transmission Conditions

It sets the condition to upload the data output by the device to FTP server.

All refers to upload the data always.

Read Code refers to upload the data only when the code is read by the device.

No Read Code refers to upload the data only when no code is read by the device.

FTP Transmission Result Contain

It selects contents to upload to the FTP server.

Just Result refers to only upload the content of the code.

Just Picture refers to only upload the code picture.

Result and Picture refers to upload both the content of the code and the picture.

FTP File Name Content

It includes frame number, code content, and code type.

FTP Picture Name

The name does not include the file's suffix, which will change depending on the image format selected by the user

FTP Time Format

Select a format type from the drop-down list for the time stamp contained in the file name.

The screenshot shows the 'Data Processing' settings window. At the top, there is a section for 'FTP Picture Name Format' with an 'Edit' button. Below this is a text input field containing the placeholder '<frame_time>_<frame_num>_<trigger_num>'. To the right of the input field is a page indicator '38/127'. Below the input field, there are several settings: 'Local Picture Type' set to 'JPEG', 'Output Retrans Enable' with a toggle switch, 'Output Retrans Number' set to '3', 'FTP Transmission Conditions' set to 'All', 'FTP Transmission Result Contain' set to 'JustPicture', and 'FTP Time Format' set to 'YYYYMMDD_HHMMSSFF'.

Figure 9-20 Result Output via FTP

The screenshot shows the 'Result Setting Control' settings window. It contains several settings: 'Noread Picture Format' set to 'JPEG', 'Encode Format' set to 'GB2312', 'Output Retrans Enable' with a toggle switch, 'Output Retrans Number' set to '3', 'FTP Transmission Conditions' set to 'All', 'FTP Transmission Result Contain' set to 'JustPicture', 'FTP File Name Content' set to 'Read Bar Result', 'FTP Picture Name' set to '<frame_time>_<frame_num>_<trigger_num>', and 'FTP Time Format' set to 'YYYYMMDD_HHMMSSFF'.

Figure 9-21 FTP Output Settings

Result Output via TCP Client, TCP Server, Serial, MELSEC, Profinet, Ethernet/IP, ModBus, UDP, or USB

If TCP Client, TCP Server, Serial, MELSEC, Profinet, Ethernet/IP, ModBus, UDP, or USB is selected as **Communication Protocols**, you need to set following parameters.

** Output Format Flag Add

Click  to add the contents you want to output, or enter the contents in the input box. You can select multiple contents as needed.

**** Output NoRead Enable**

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

**** Output Start Text**

It refers to the contents of the start part of the data output. You can set the contents according to actual condition.

**** Output Stop Text**

It refers to the contents of the end part of the data output. You can set the contents according to actual condition.

**** Output SerialDelimiter**

It refers to the separators (;) to separate the multiple codes, and the separators are not added after the last code.

**** Output Barcode Enter Character Enable**

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

**** Output Barcode Newline Character Enable**

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

**** Output Barcode Horizontal Tab Character Enable**

If it is enabled, a horizontal space will be added between the front and back codes based on 4 characters.

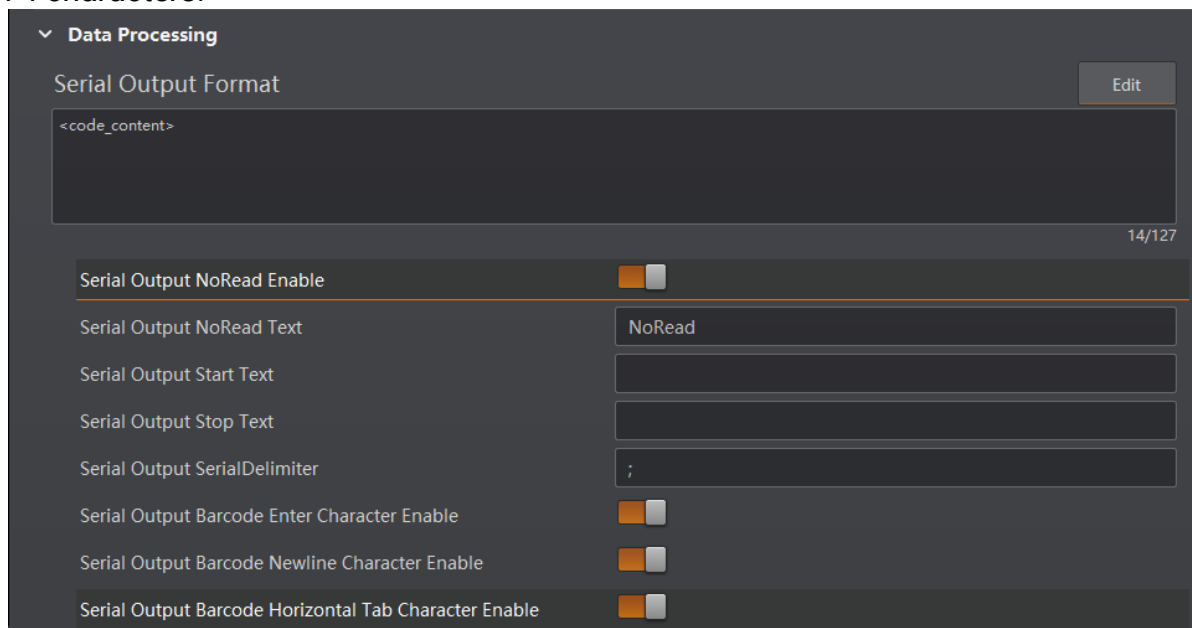


Figure 9-22 Result Output via Serial Port

Chapter 10 Other Operations

10.1 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.

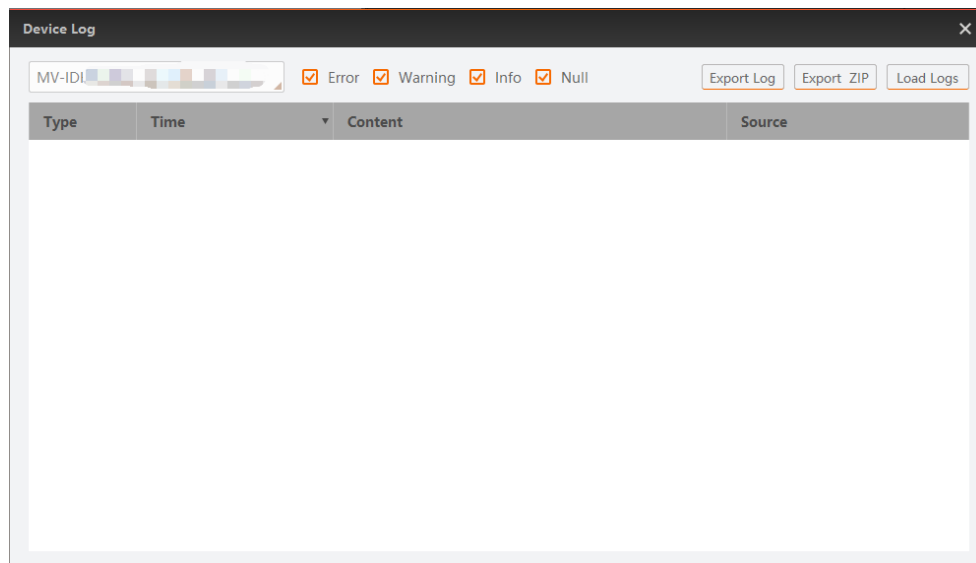


Figure 10-1 View Log

10.2 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.

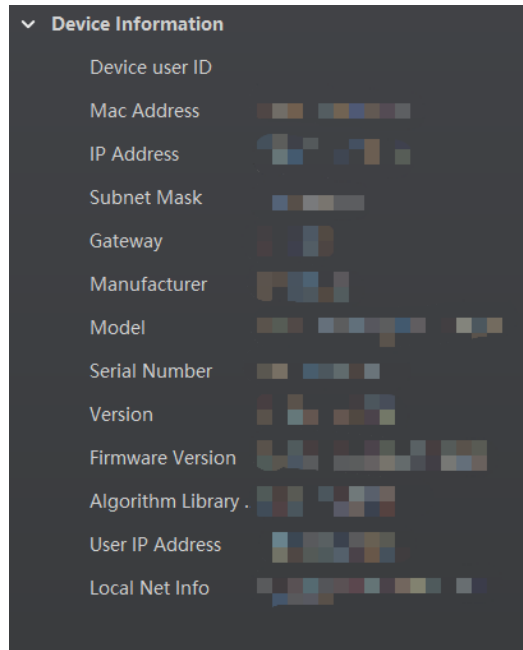


Figure 10-2 View Device Information

10.3 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.

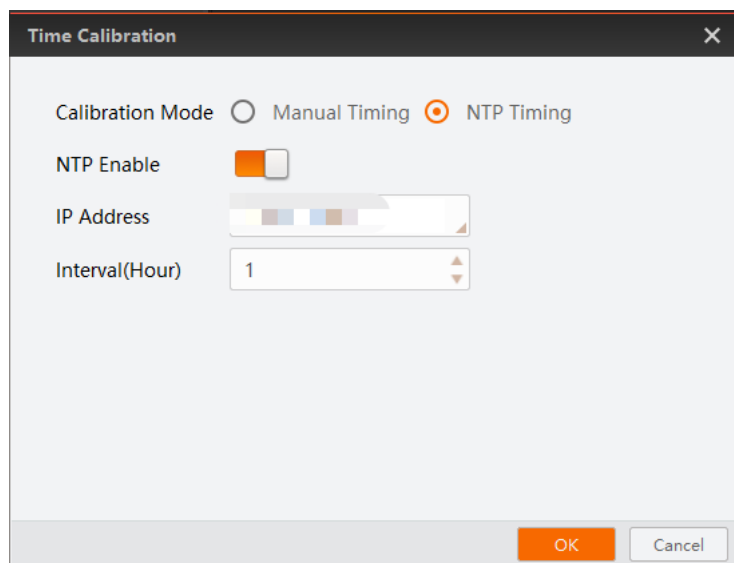


Figure 10-3 Set NTP Timing

Chapter 11 Device Maintenance

11.1 Update Firmware

The device supports updating firmware via the client software.

Note

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

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.

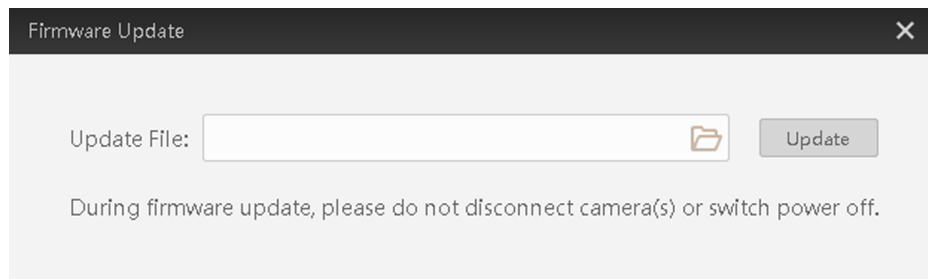


Figure 11-1 Update Firmware

11.2 Reboot Device

You can select the device to be rebooted in the device list, right click the device, and click **Device Reset**.

11.3 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.

11.4 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 12 FAQ (Frequently Asked Question)

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

Reason

The device's drive is not installed successfully.

Solution

Install the device's drive again.

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

Reason

The function of Device Auto Work Enable is not enabled.

Solution

G to **Config Management** → **Device Auto Work Enable**, and enable **Device Auto Work Enable**.

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

Reason

Acquisition is not started in the client software.

Solution

Start acquisition and trigger the device again.

12.4 Why there is no buzzer sound after the device reads

codes successfully?

Reason

The device's device mode is test mode.

Solution

Set the device mode as normal mode.

12.5 Why configuring setting codes failed though there is buzzer sound?

Reason

The function of setting codes is not activated because **Enable Setting Codes** is not scanned and read.

Solution

Before using other setting codes, you need to scan **Enable Setting Codes** first to activate the function of setting codes.

12.6 Why only a few codes read successfully on the batch code reading mode?

Reason

Improper settings in **Algorithm Settings**.

Solution

Go to **Algorithm Settings** → **Add Barcode**, set the **1D Code Number** and **2D Code Number** according to actual demands.

12.7 Why the image is very dark during the live view?

Reason

- The light source of the device is disabled.
- Too small value of exposure and gain.

Solution

- Enable the light source of the device.
- Increase exposure and gain according to actual demands.

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

Reason

The device is found but the IP address is not obtained automatically.

Solution

Go to PC network settings page to set an IP address for the PC manually.

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

Reason

The USB type device is incompatible with the terminals, such as Pro-face screen, industrial display, Android industrial computer, or other third-party device.

Solution

Set **Simple HID Mode** in the USB type device, and then connect to the terminals to check.

Steps

1. Scan the setting mode of enabling.

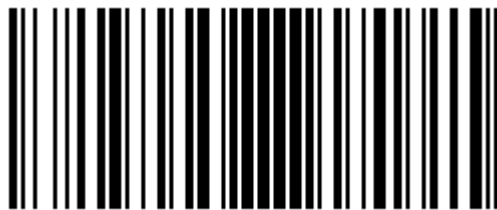


Figure 12-1 Setting Mode of Enabling

2. Scan the setting mode of simple HID mode.



Figure 12-2 Setting Mode 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 setting mode of enabling.



Figure 12-3 Setting Mode of Enabling

4. Scan the setting mode of composite HID mode.



Figure 12-4 Setting Mode of Composite HID Mode

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

Reason

The loss of the content may be caused by excessive data, rapid HID output speed, and low speed of receiving and processing.

Solution

Limit the speed of data output. And contact the technical support for the firmware.

12.11 Why the data cannot be output in the virtual serial port?

Reason

In Windows 7 and XP systems, the required INF file may be missing from the driver, and you should update manually.

Solution

Please contact the technical support to get the compressed package and run the .bat file. After running, there are no driver errors in Device Manager and the corresponding port No. appears.

Chapter 13 Revision History

Table 13-1 Revision History

Version No.	Document No.	Date	Revision Details
V1.0.0	UD39780B	Sep. 30, 2024	Original version.

Appendix A ASCII Table

Note

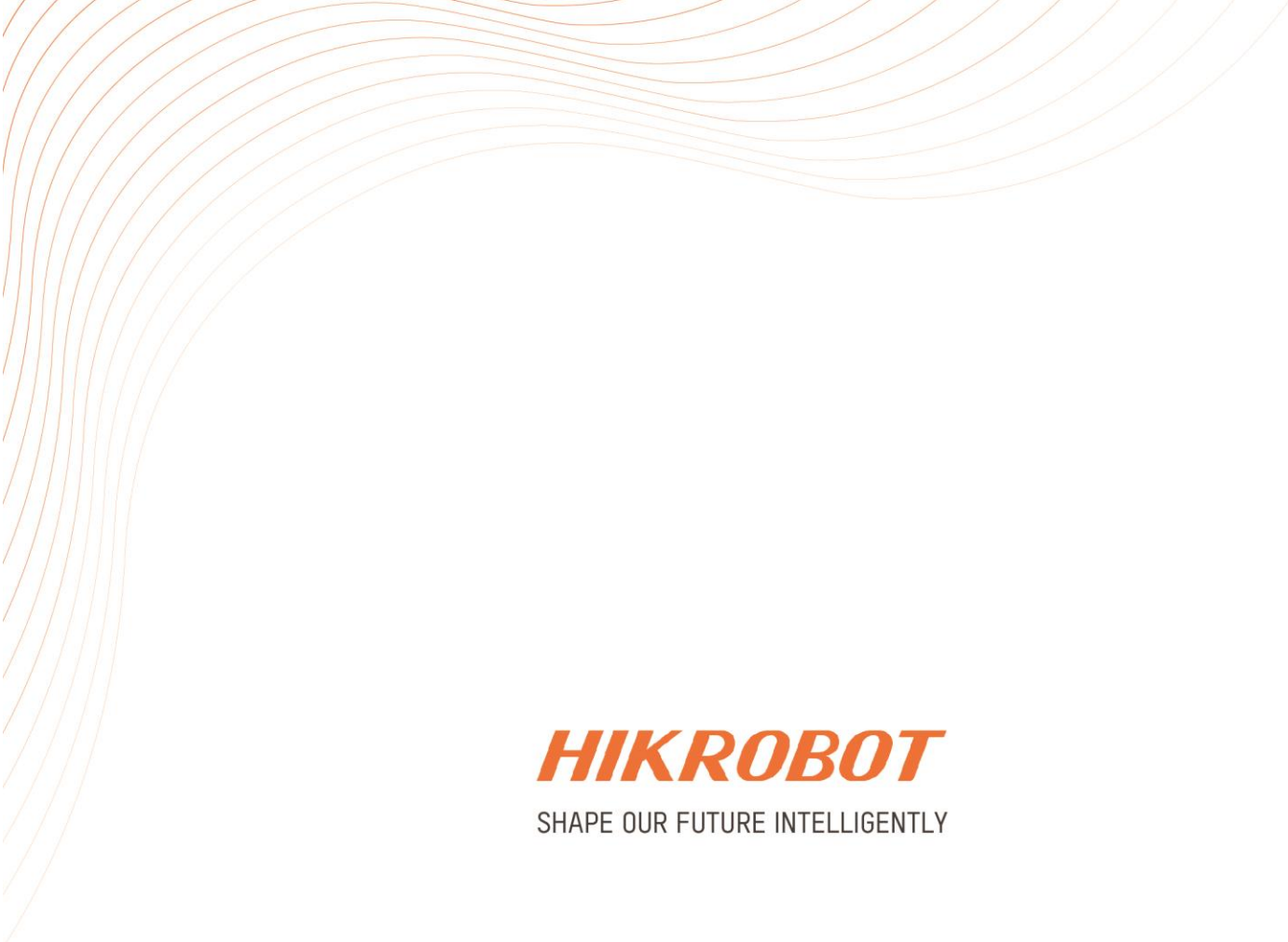
Refer to section [Set Setting Codes of Data Processing](#) for digital codes and letter codes.

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
DC4	14	4	34	T	54	t	74
NAK	15	5	35	U	55	u	75

IDH9000 Wired Handheld Code Reader User Manual

Character	Value	Character	Value	Character	Value	Character	Value
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



HIKROBOT

SHAPE OUR FUTURE INTELLIGENTLY

Hangzhou Hikrobot Technology Co.,Ltd.

E-mail: global.support@hikrobotics.com

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

UD39780B