



ID7000 Series Industrial Code Reader

User Manual

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Regulatory Information

FCC Information

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC compliance: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Conditions

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

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 EMC Directive 2014/30/EU, LVD Directive 2014/35/EU, the RoHS Directive 2011/65/EU.



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>.



2006/66/EC (battery directive): This product contains a battery that 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), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: <http://www.recyclethis.info>.

Symbol Conventions

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

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

Available Model

This manual is applicable to the ID7000 Series Industrial Code Reader.

Safety Instruction

These instructions are intended to ensure that the user can use the product correctly to avoid danger or property loss.

Laws and Regulations

The device should be used in compliance with local laws, electrical safety regulations, and fire prevention regulations.

Light Source

- This device has a retinal blue light hazard that belongs to the class II hazard. Do not observe the device in close range during its operation.

- Protective measures like wearing safety goggles are required when installing, maintaining and debugging the device.
- In the absence of proper protection, you should keep safety distance with the light source, or avoid direct eye exposure with the light source during device installation, operation, and maintenance.

Power Supply

- When wiring or dismantling, make sure that the device power is cut off, and do not operate under electrification.
- Avoid contact with exposed circuit. When the device is powered on, avoid contact with exposed junctions and parts.
- Do not connect multiple devices to one power adapter, to avoid over-heating or fire hazards caused by overload.
- Make sure the plug is properly connected to the power socket.

Transportation

- The product contains precision optical components and electronic components. During transportation, storage and installation, incorrect operations like heavy pressure and violent vibration should be avoided. Otherwise, the product may be damaged.
- Avoid sudden collision, and pack the product with the accompanied carton and cushioning material or similar package.

Using Environment

- Do not touch the heat-radiating part of the device to avoid scalding.
- In order to reduce the risk of fire or electric shock, do not let the product get wet or damp.
- Do not drop objects onto the product and avoid vigorous vibration.
- Keep the product away from magnetic interference.
- Do not use the product in extremely heat, extremely cold, dusty environment, corrosive environment or high humidity environment.
- Do not aim the product lens at objects of strong light, such as the sun and incandescent lamp. Otherwise, the lens may be damaged.
- The product should be stored in dry environment without corrosive gas. Avoid placing the product in direct sunlight and poorly ventilated locations, or near heat sources such as heater or heating (ignoring this warning may lead to fire hazards).
- Do not operate in explosive environment.
- Keep the surrounding area well ventilated to avoid heat accumulation. Do not contact the radiator directly to avoid scald.

Electrostatic Protection

- Remove all conductive objects (such as jewelry, watch, etc.) on the product body before touching the product, and touch the grounding metal bracket by hand to release the static electricity.
- It is suggested to wear anti-static suit to prevent damage to the equipment caused by static electricity.
- When installing or maintaining the product, please wear anti-static wrist band or anti-

static gloves. Make sure that the wristband is tightly attached to the skin and is reliably grounded.

- It is forbidden to touch exposed circuit boards with bare hands. Static electricity generated by human body may damage electrostatic sensitive components on circuit boards.
- When touching electrostatic sensitive components or devices, proper grounding measures must be taken.
- Put electrostatic sensitive components into anti-static bags for protection.
- It is suggested to place humidifier in dry environment to maintain suitable humidity and reduce static electricity generation.

Maintenance

- If the product is not working properly, contact the store or the nearest service center. Do not disassemble or modify the device in any way. (The company does not bear any liability for any problem arising from unauthorized modification or maintenance).
- Please properly preserve all the original packaging materials of the product so that when problems arise, the product can be packed with packaging materials and sent to the agent or returned to the manufacturer for processing. The company does not bear any liability for accidental damage during transportation caused by non-original packaging.
- This product is a precision electronic device, no components can be maintained by user, please do not disassemble the device arbitrarily.

Cleaning

Please do not touch the image sensor directly. If the sensor needs to be cleaned, please use a clean rag and wet it with alcohol, then gently wipe off the dirt; if the device is not in use, please cover the image sensor with dust cover for protection.

Installation

Please do not install the product on vibrating surface or places that are vulnerable to impact.

Personnel Requirement

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.

Contact Information

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Contents

Chapter 1 Overview.....	1
1.1 Introduction.....	1
1.2 Key Features.....	1
Chapter 2 Appearance	2
Chapter 3 I/O Interface and Indicator	5
3.1 I/O Interface	5
3.1.1 12-Pin M12 Connector.....	5
3.1.2 10-Pin Green Terminal.....	6
3.2 Indicator.....	7
Chapter 4 I/O Electrical Features and Wiring	8
4.1 Device with 12-Pin M12 Connector.....	8
4.1.1 Input Signal.....	8
4.1.2 Output Signal.....	9
4.1.3 Input Signal Wiring	10
4.1.4 Output Signal Wiring	12
4.2 Device with 10-Pin Green Terminal.....	13
4.2.1 Input Signal.....	13
4.2.2 Output Signal	15
4.2.3 Input Signal Wiring	16
4.2.4 Output Signal Wiring	20
4.3 RS-232 Serial Port	21
Chapter 5 Installation	23
5.1 Installation Preparation.....	23
Chapter 6 Device Connection	25
6.1 Set PC Environment	25
6.1.1 Turn off Firewall	25
6.1.2 Set PC Network	26
6.2 Install Client Software	27
6.3 Set Device Network.....	27

6.4 Connect Device to Client Software	28
Chapter 7 Client Software Layout.....	29
Chapter 8 Device Mode Settings	31
Chapter 9 Device Settings.....	33
9.1 Image Quality Settings	33
9.1.1 Set Image	33
9.1.2 Set Light Source	35
9.2 Code Algorithm Settings	35
9.2.1 Add Code	35
9.2.2 Set 1D Algorithm Parameter	36
9.2.3 Set 2D Algorithm Parameter	37
9.3 Signal Input Settings	40
9.3.1 Internal and External Trigger Mode.....	40
9.3.2 Enable Internal Trigger Mode.....	41
9.3.3 Enable External Trigger Mode.....	41
9.3.4 Set Trigger Mode.....	41
9.3.5 Set Shaft Encoder Control	44
9.3.6 Set Frequency Converter Control	45
9.4 Signal Output Settings	46
9.4.1 Select Output Signal.....	46
9.4.2 Set Event Source	47
9.4.3 Enable Line Inverter	52
9.5 Code Reading Result Settings.....	53
9.5.1 Set Filter Rule	53
9.5.2 Set Result Format	55
9.6 Communication Settings.....	59
9.6.1 Smart SDK.....	59
9.6.2 TCP Client.....	59
9.6.3 Serial	60
9.6.4 FTP	60
9.6.5 HTTP.....	61
9.6.6 TCP Server.....	62

9.7 User Set Customization.....	62
Chapter 10 Device Operation	64
10.1 Live View.....	64
10.2 Enable Acquisition	64
10.3 Add Cross Line.....	65
10.4 Start Recording.....	65
10.5 Split Window	66
10.6 View Reports	66
10.7 View Log	67
10.8 Enable Device Auto Work.....	67
Chapter 11 Device Maintenance.....	68
11.1 Update Firmware	68
11.2 Reboot Device.....	68
Chapter 12 FAQ (Frequently Asked Question)	70
12.1 Why there is no device listed after I run the client software?	70
12.2 Why the image is very dark?	70
12.3 Why the image quality is very poor during the live view?	70
12.4 Why there is no image in the live view?.....	71
12.5 Why the recognized codes are opposite in direction with actual ones?.....	71
12.6 Why codes within the field of view cannot be recognized?	72
12.7 How to adjust focal length for code reading?	72

Chapter 1 Overview

1.1 Introduction

The device is mainly used in logistics code reading scenario. The image is acquired via the image sensor, and processed by the algorithm of the device to analyze the meaning of codes in the image. The device can quickly transmit images and code analysis results in real time via the GigE cable. Through the client software, you can acquire images and set different parameters.

1.2 Key Features

- Built-in code reading algorithm to read different types of one-dimensional and two-dimensional codes with good robustness.
- Supports image stitching and outputting combined images according to order.
- Adopts image sensor to acquire and provide high-quality images.
- Supports different trigger modes and image acquisition modes.
- Adopts multiple IO interfaces for input/output signals.
- Supports RS-232 serial communication protocol.
- Integrated light source design with LED lamps.

Note

- Key features may differ by device models.
 - Refer to the specification of the device for detailed parameters.
-

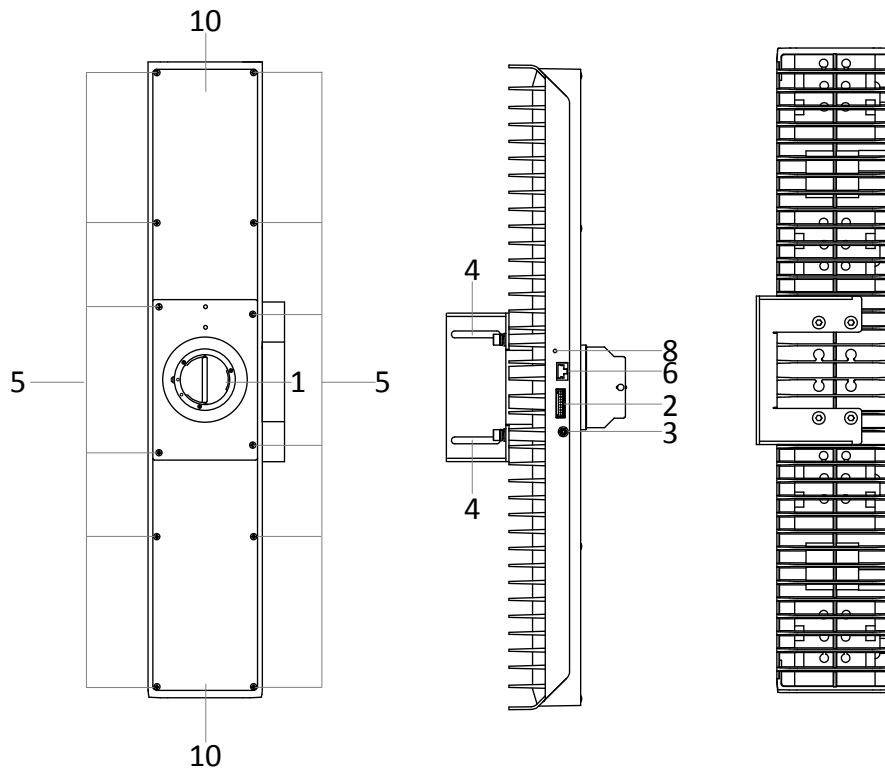


Figure 2-2 Device with 10-Pin Green Terminal and F Lens Mount

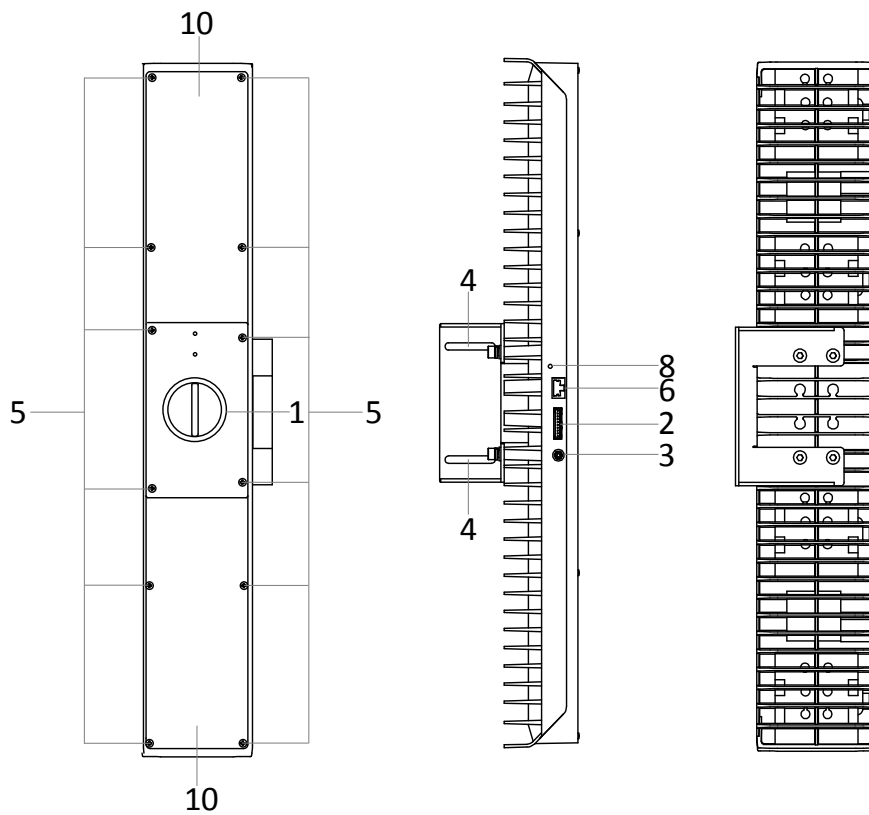


Figure 2-3 Device with 10-Pin Green Terminal and M42 Lens Mount

Table 2-1 Component Description

No.	Name	Description
1	Lens	It refers to the lens.
2	I/O Interface	It provides input and output signals, and the serial port signal. Refer to section I/O Interface for details.
3	Power Supply Interface	It provides the power supply for the device. The power supply is 48 VDC.
4	Screw Hole	It is used to fix the device. You should use supplied M6 screws in the package.
5	Screw	It is used to fix the device body and the front/rear cover.
6	Gigabit Ethernet Interface	It refers to the gigabit Ethernet interface for transmitting data.
7	Screw Hole of GigE Interface	It is used to fix the network cable.
8	Indicator	It indicates the operating status of the device. Refer to section Indicator for details.
9	Fan	It is used to cool the device.
10	Light Source	It refers to the LED lamps that provide lighting.

Chapter 3 I/O Interface and Indicator

3.1 I/O Interface

The device has two types of I/O interfaces, including 12-pin M12 connector and 10-pin green terminal.

3.1.1 12-Pin M12 Connector

The 12-pin M12 connector provides input and output signals, and the serial port signal.

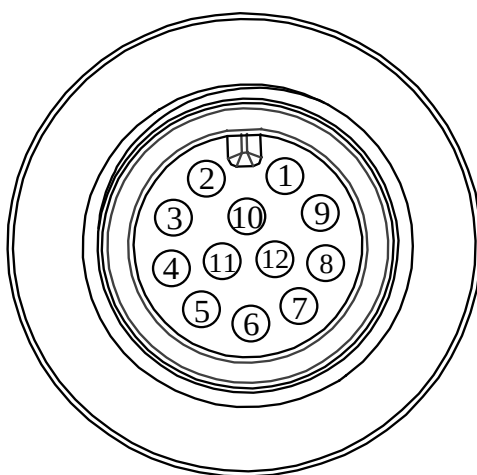


Figure 3-1 12-Pin M12 Connector

Refer to the pin definitions below and labels attached to the I/O cable to wire the device.

Table 3-1 Pin Definitions of 12-Pin M12 Connector

No.	Signal	I/O Signal Source	Description
1	Reversed		
2	Reversed		
3	OPTO_OUT0	LineOut0 signal line	Opto-isolated output 0
4	OPTO_OUT1	LineOut1 signal line	Opto-isolated output 1
5	OPTO_OUT2	--	It controls the device's own light source.
6	OUT_COM	LineOut0/1/2 signal ground	Output signal ground
7	OPTO_IN0	LineIn0 signal line	Opto-isolated input 0

No.	Signal	I/O Signal Source	Description
8	OPTO_IN1	LineIn1 signal line	Opto-isolated input 1
9	OPTO_IN2	LineIn2 signal line	Opto-isolated input 2
10	IN_COM	LineIn0/1/2 signal ground	Input signal ground
11	RS232_R	--	RS-232 input
12	RS232_T	--	RS-232 output

3.1.2 10-Pin Green Terminal

The 10-pin green terminal provides input and output signals, and the serial port signal.

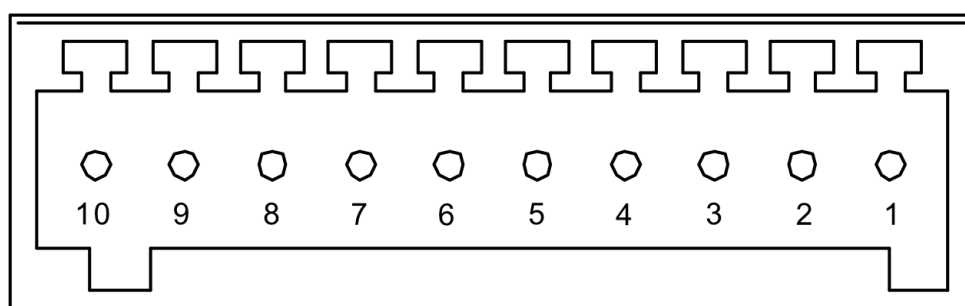


Figure 3-2 10-Pin Green Terminal

Table 3-2 Pin Definitions of 10-Pin Green Terminal

No.	Signal	I/O Signal Source	Description
1	OPTO_OUT0	LineOut0 signal line	Opto-isolated output 0
2	OPTO_OUT1	LineOut1 signal line	Opto-isolated output 1
3	GND	--	RS-232 serial port ground
4	OUT_COM	LineOut0/1 signal ground	Output common terminal
5	OPTO_IN0+	LineIn0+ signal line	Differential input 0+
6	OPTO_IN0-	LineIn0- signal line	Differential input 0-
7	OPTO_IN1	LineIn1 signal line	Opto-isolated input 1
8	IN_COM	LineIn1 signal ground	Input common terminal
9	RS232_TX	--	RS-232 output
10	RS232_RX	--	RS-232 input

3.2 Indicator

The device's indicator is used to indicate the operating status of the device.

Table 3-3 Indicator

Indicator Color	Device Status	Solution
Unlit	Power supply exception occurs.	Check the wiring of the power supply cable.
Solid blue	The device runs normally.	--
	Network exception occurs.	Check the network cable wiring.
	The device's software is not started.	Restart the device.
	The device exception occurs.	Restart the device and check its firmware version.

Chapter 4 I/O Electrical Features and Wiring

This section introduces the I/O electrical features and wiring of the device.

Note

Device with 12-pin M12 connector and device with 10-pin green terminal have different I/O electrical features and wiring.

4.1 Device with 12-Pin M12 Connector

The device with 12-pin M12 connector has three opto-isolated inputs and two opto-isolated outputs.

4.1.1 Input Signal

The device's LineIn 0/1/2 are opto-isolated inputs, and their internal circuit is as follows.

Note

- The input voltage ranges from 5 VDC to 30 VDC.
- The breakdown voltage is 36 VDC. Keep voltage stable.

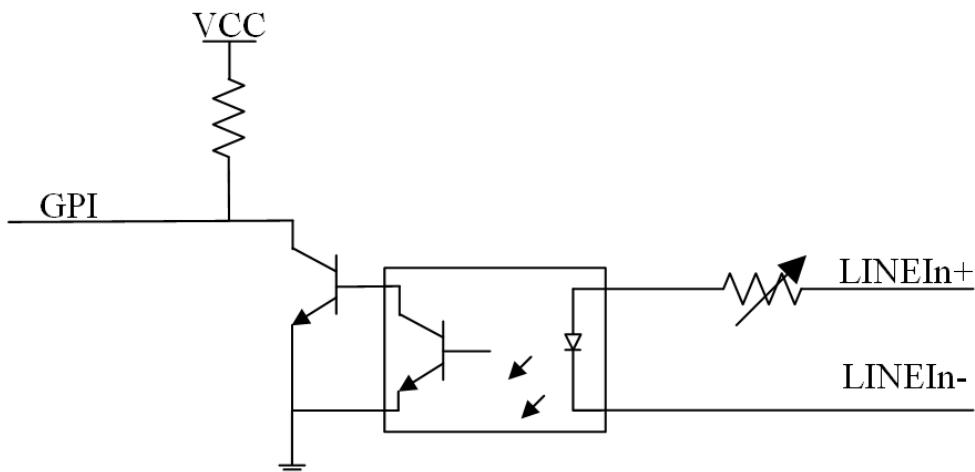


Figure 4-1 Internal Circuit of Input Signal

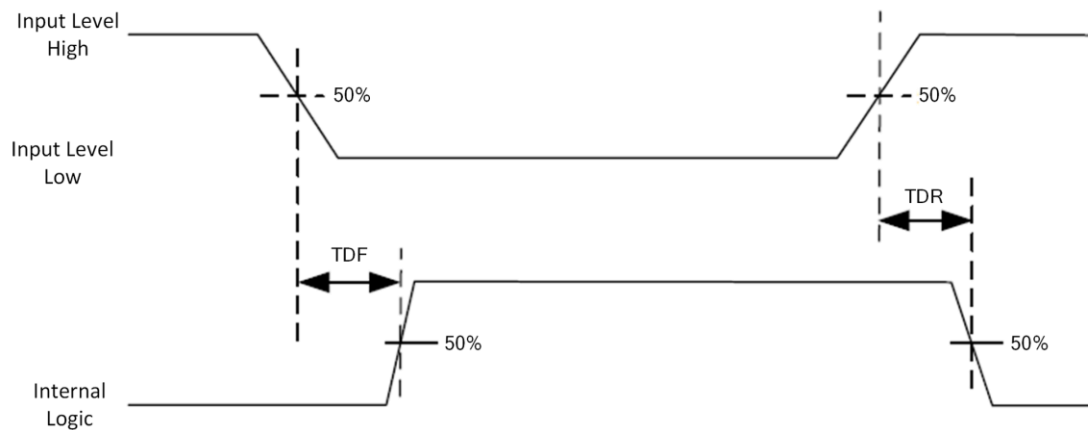


Figure 4-2 Input Logic Level

Table 4-1 Input Electrical Feature

Parameter Name	Parameter Symbol	Value
Input Logic Level Low	VL	1.5 VDC
Input Logic Level High	VH	2 VDC
Input Falling Delay	TDF	81.6 μ s
Input Rising Delay	TDR	7 μ s

4.1.2 Output Signal

The device's LineOut 0/1 are opto-isolated outputs, and their internal circuit is as follows.

Note

- The output voltage ranges from 5 VDC to 30 VDC.
- The maximum output current is 45 mA.
- Do not directly connect with inductive load (e.g. DC motor, etc.) when outputting.

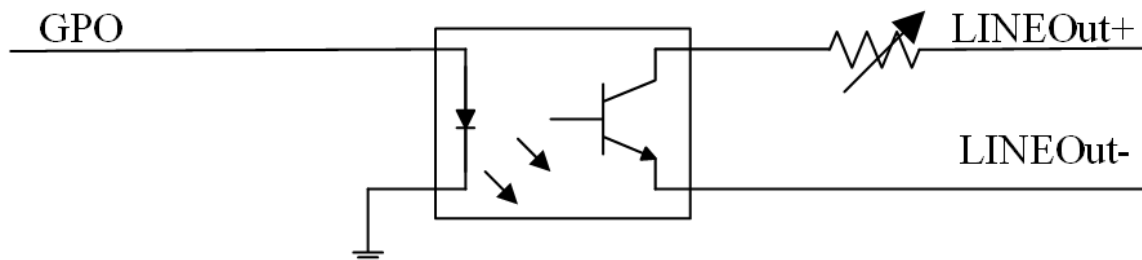


Figure 4-3 Internal Circuit of Output Signal

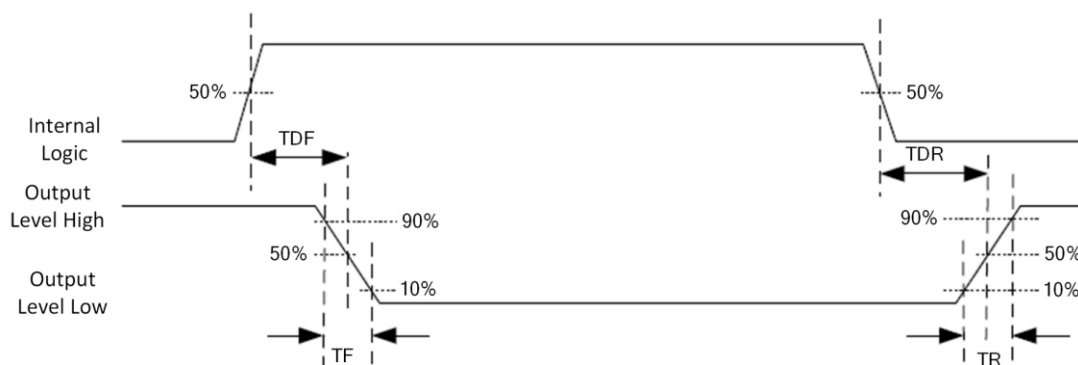


Figure 4-4 Output Logic Level

When the external voltage is 12 VDC and the external resistance is 1 K Ω , the electrical feature of opto-isolated output is shown below.

Table 4-2 Output Electrical Feature

Parameter Name	Parameter Symbol	Value
Output Logic Level Low	VL	730 mV
Output Logic Level High	VH	3.2 VDC
Output Falling Delay	TDF	6.3 μ s
Output Rising Delay	TDR	68 μ s
Output Falling Time	TF	3 μ s
Output Rising Time	TR	60 μ s

Note

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

4.1.3 Input Signal Wiring

The device can receive external input signal via its I/O interface. This section introduces how to wire the device to different types of external devices.

Note

- Here we take LineIn0 as an example to introduce the input signal wiring.
- Input signal wiring may differ with different types of external devices.

PNP Device

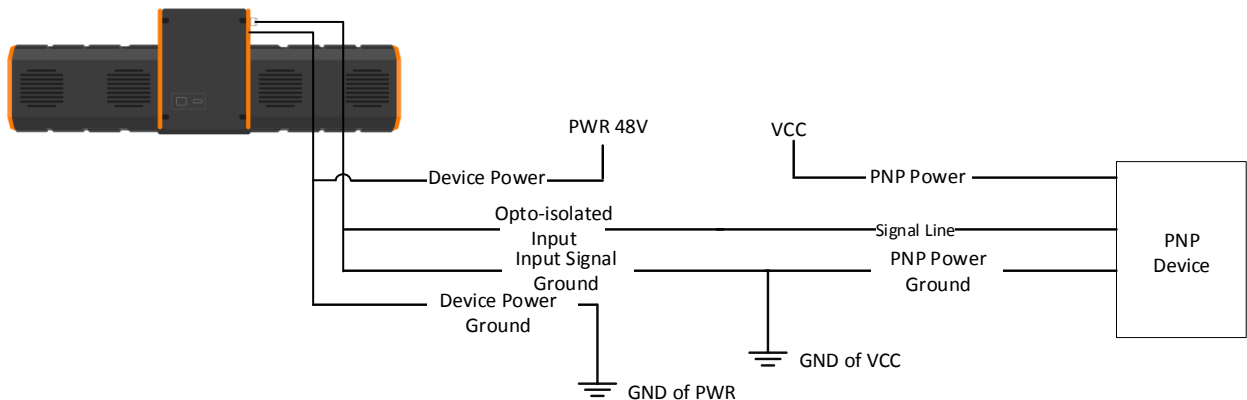


Figure 4-5 Input Signal Connects PNP Device

NPN Device

If the VCC of NPN device is 12 VDC or 24 VDC and pull-up resistor is not used, its wiring is as follows.

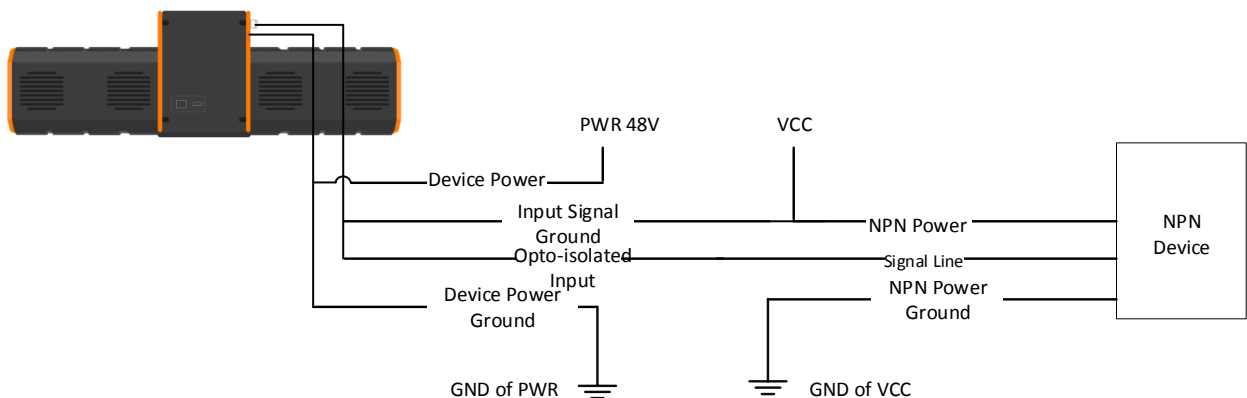


Figure 4-6 Input Signal Connects to NPN Device without Pull-Up Resistor

If the VCC of NPN device is 12 VDC or 24 VDC and pull-up resistor is used, its wiring is as

follows.

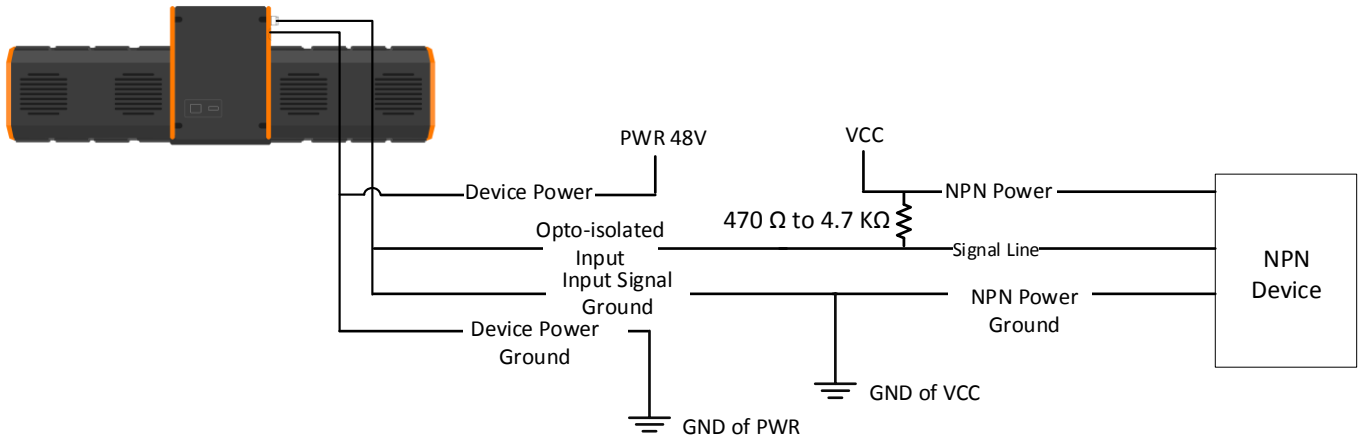


Figure 4-7 Input Signal Connects to NPN Device with Pull-Up Resistor

4.1.4 Output Signal Wiring

The device can output signals to external devices via its I/O interface. This section introduces how to wire the device to different types of external devices.

Note

- Here we take LineOut0 as an example to introduce the input signal wiring.
- Output signal wiring may differ with different types of external devices.

PNP Device

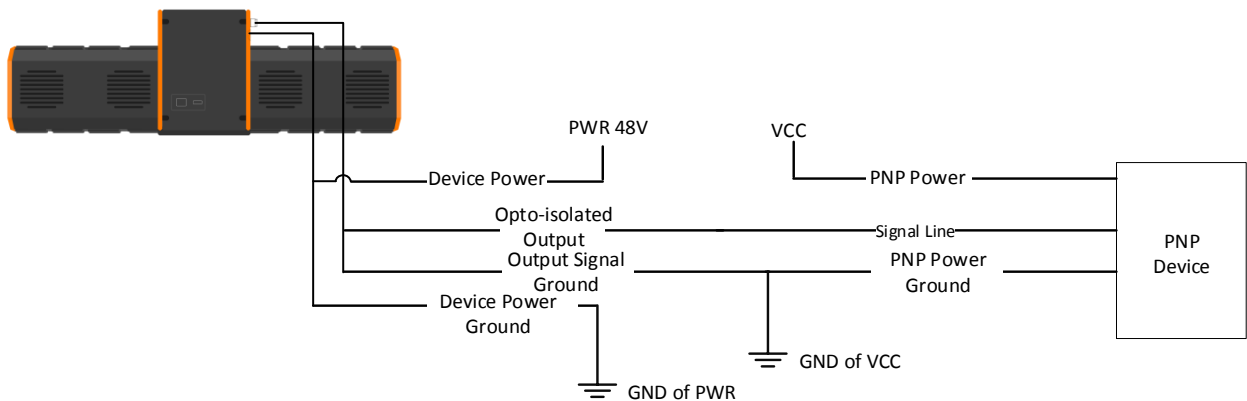


Figure 4-8 Output Signal Connects PNP Device

NPN Device

If the VCC of NPN device is 12 VDC or 24 VDC and pull-up resistor is not used, its wiring is

as follows.

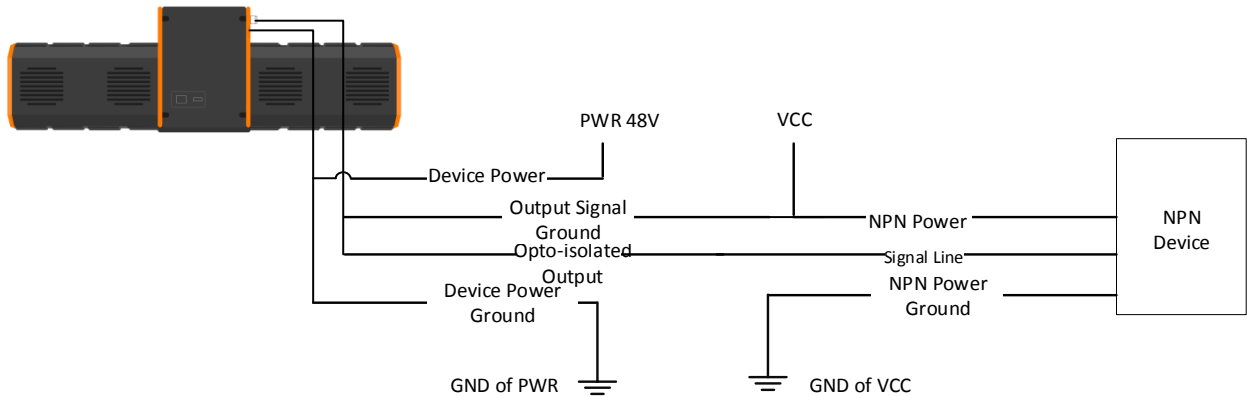


Figure 4-9 Output Signal Connects to NPN Device without Pull-Up Resistor

If the VCC of NPN device is 12 VDC or 24 VDC and pull-up resistor is used, its wiring is as follows.

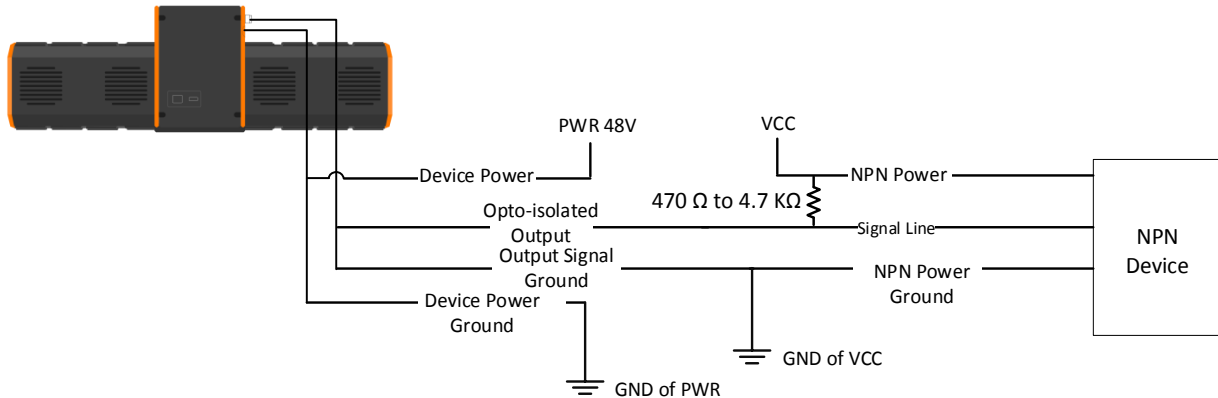


Figure 4-10 Output Signal Connects to NPN Device with Pull-Up Resistor

4.2 Device with 10-Pin Green Terminal

The device with 10-pin green terminal has one opto-isolated input, one differential input, and two opto-isolated outputs.

4.2.1 Input Signal

The device's LineIn 1 is opto-isolated input, and its internal circuit is as follows.

Note

- The input voltage ranges from 5 VDC to 30 VDC.
- The breakdown voltage is 36 VDC. Keep voltage stable.

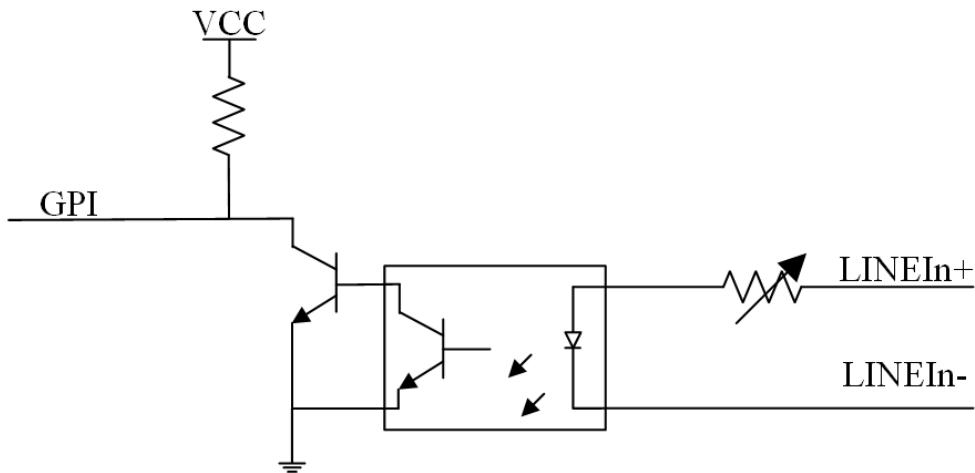


Figure 4-11 Internal Circuit of Input Signal

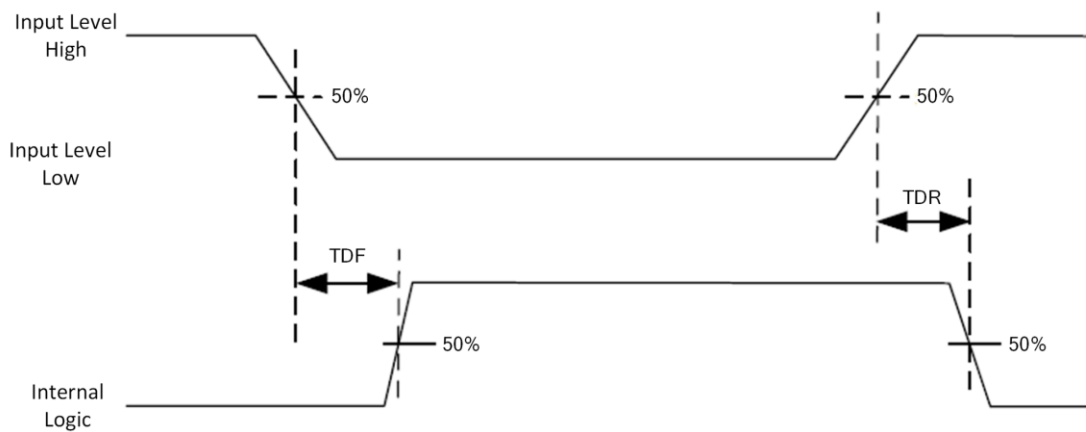


Figure 4-12 Input Logic Level

Table 4-3 Input Electrical Feature

Parameter Name	Parameter Symbol	Value
Input Logic Level Low	VL	1.5 VDC
Input Logic Level High	VH	2 VDC
Input Falling Delay	TDF	81.6 μ s
Input Rising Delay	TDR	7 μ s

The device's LineIn0+/- are differential inputs, and their internal circuit is as follows.

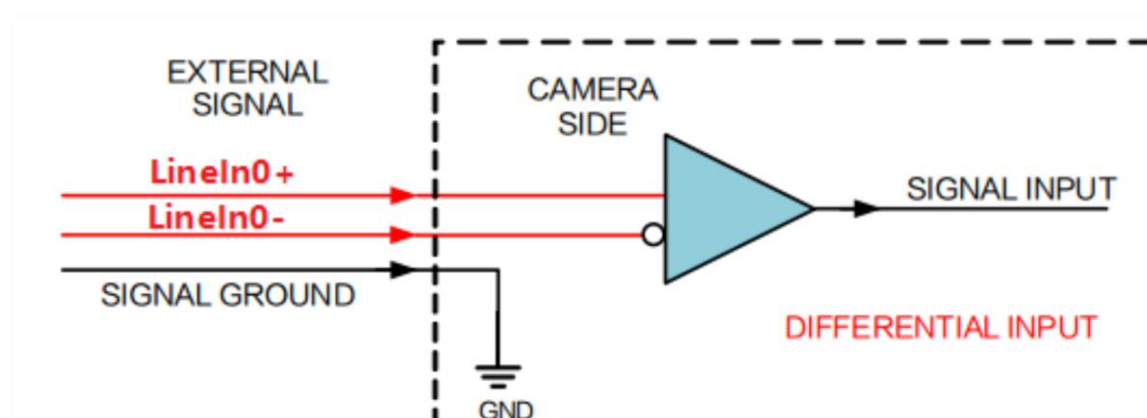


Figure 4-13 Internal Circuit of Differential Input

Note

The input voltage ranges from 5 VDC to 30 VDC.

4.2.2 Output Signal

The device's LineOut 0/1 are opto-isolated outputs, and their internal circuit is as follows.

Note

- The output voltage ranges from 5 VDC to 30 VDC.
- The maximum output current is 45 mA.
- Do not directly connect with inductive load (e.g. DC motor, etc.) when outputting.

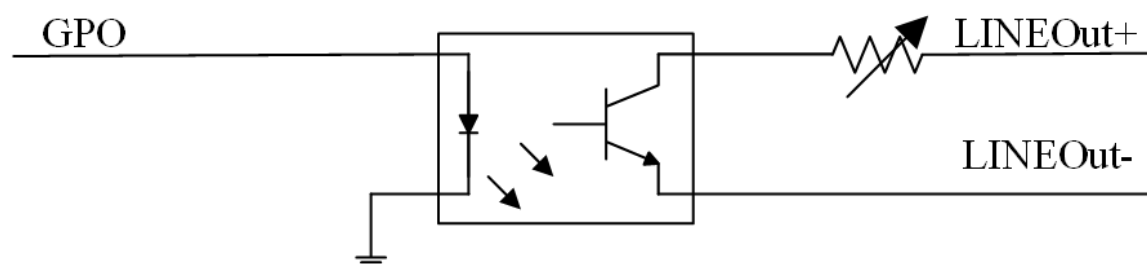


Figure 4-14 Internal Circuit of Output Signal

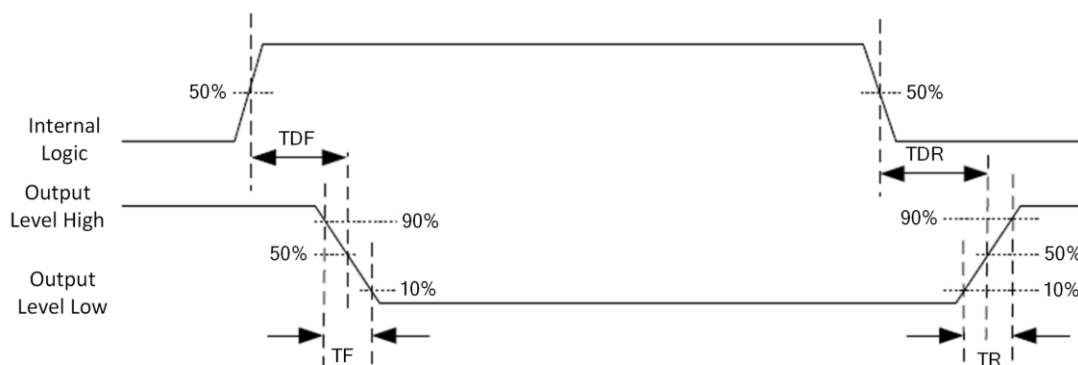


Figure 4-15 Output Logic Level

When the external voltage is 12 VDC and the external resistance is 1 K Ω , the electrical feature of opto-isolated output is shown below.

Table 4-4 Output Electrical Feature

Parameter Name	Parameter Symbol	Value
Output Logic Level Low	VL	730 mV
Output Logic Level High	VH	3.2 VDC
Output Falling Delay	TDF	6.3 μ s
Output Rising Delay	TDR	68 μ s
Output Falling Time	TF	3 μ s
Output Rising Time	TR	60 μ s

Note

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

4.2.3 Input Signal Wiring

The device can receive external input signal via its I/O interface. This section introduces how to wire the device to different types of external devices.

Note

Input signal wiring may differ with different types of external devices.

LineIn0 Wiring with PNP Device

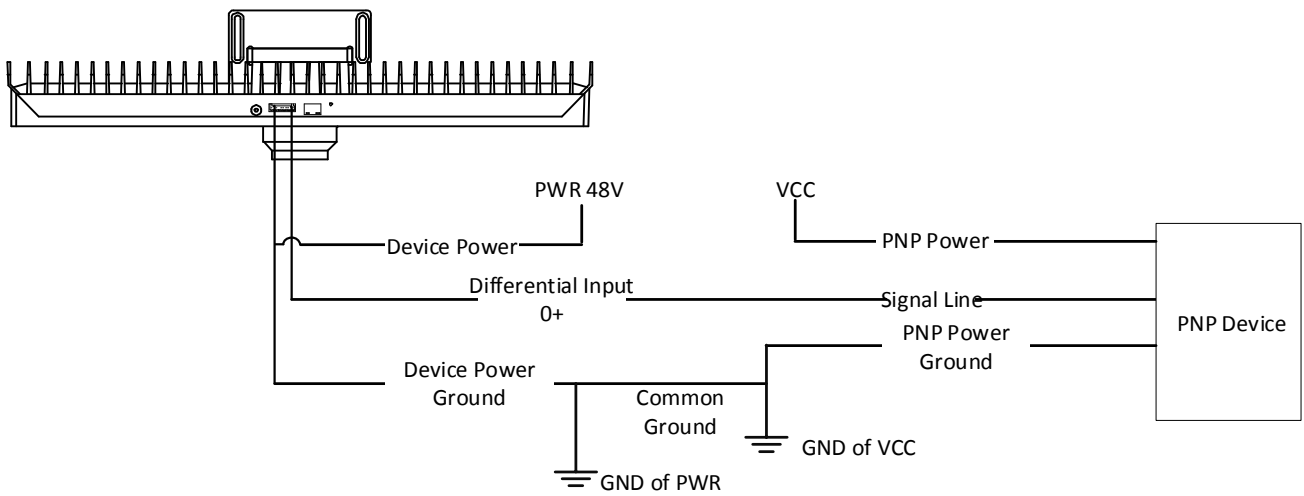


Figure 4-16 LineIn0 Wiring with PNP Device

Note

The differential input 0- signal is not used and no wiring is required.

LineIn1 Wiring with PNP Device

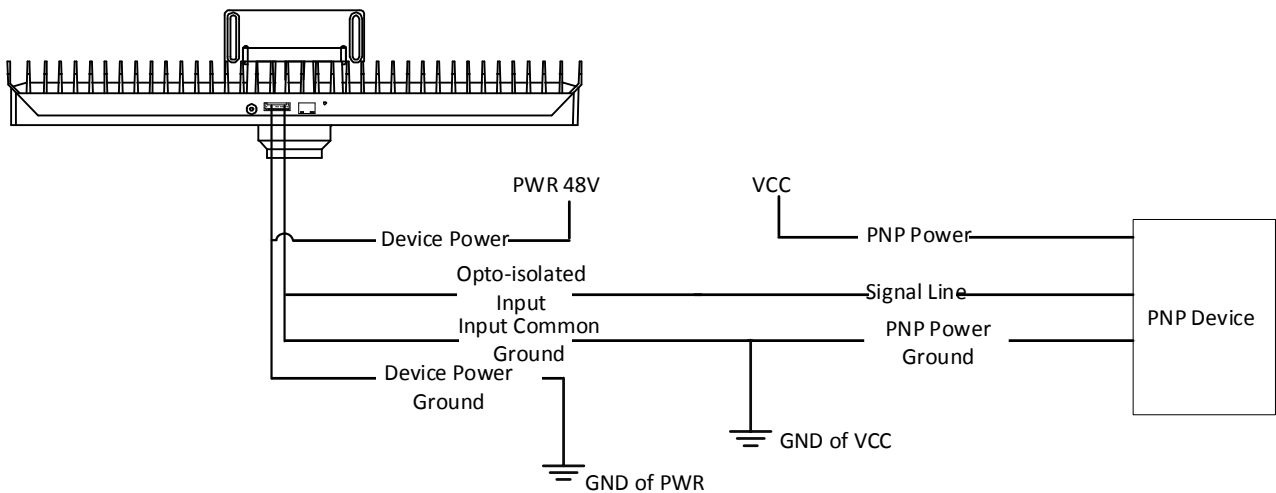


Figure 4-17 LineIn1 Wiring with PNP Device

LineIn0 Wiring with NPN Device

If the VCC of NPN device is 12 VDC or 24 VDC and pull-up resistor is not used, its wiring is as follows.

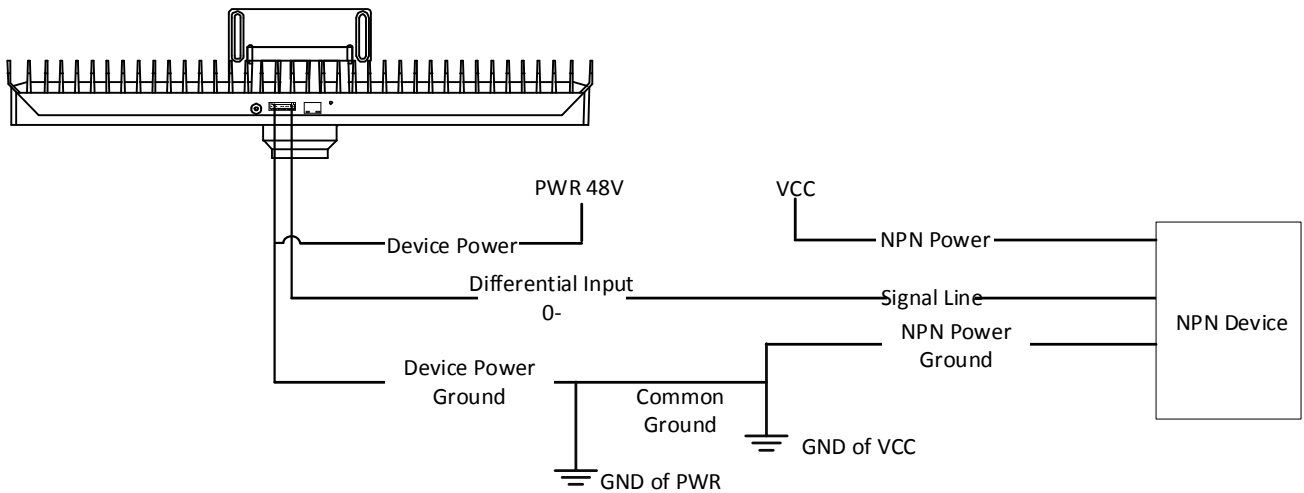


Figure 4-18 LineIn0 Wiring with NPN Device

Note

The differential input 0+ signal is not used and no wiring is required.

LineIn1 Wiring with NPN Device

If the VCC of NPN device is 12 VDC or 24 VDC and pull-up resistor is not used, its wiring is as follows.

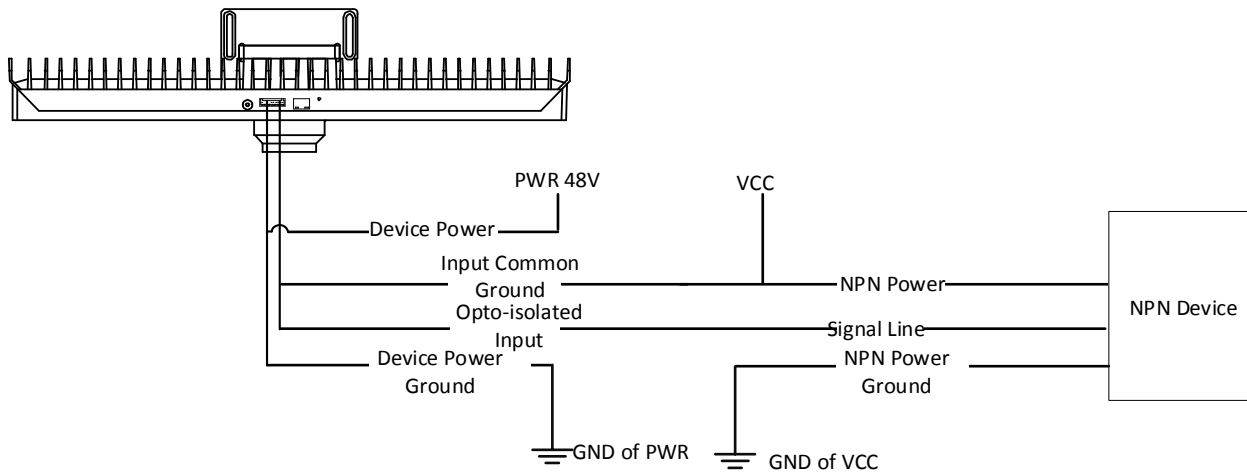


Figure 4-19 LineIn1 Wiring with NPN Device without Pull-Up Resistor

If the VCC of NPN device is 12 VDC or 24 VDC and pull-up resistor is used, its wiring is as

follows.

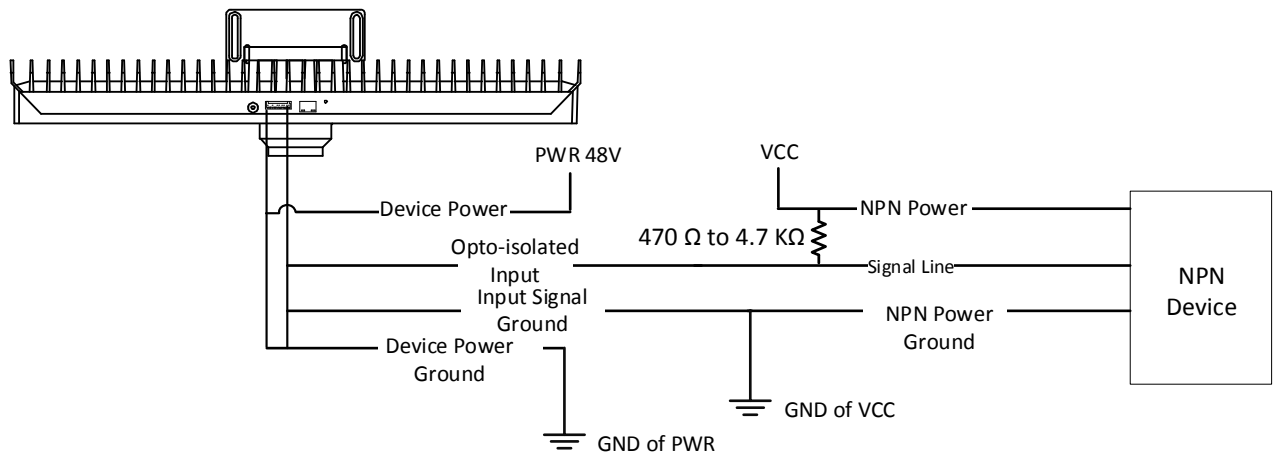


Figure 4-20 Lineln1 Wiring with NPN Device with Pull-Up Resistor

Note

Lineln0 is not used and no wiring is required.

Lineln0 Wiring with Encoder Device

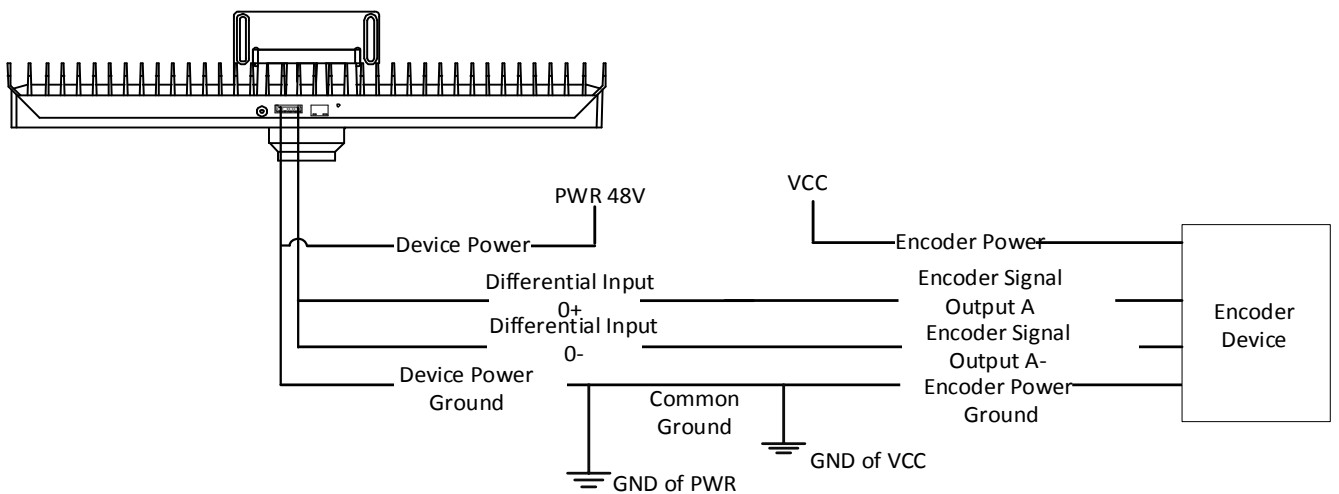


Figure 4-21 Lineln0 Wiring with Encoder Device

LineIn0 Wiring with Line Trigger Device

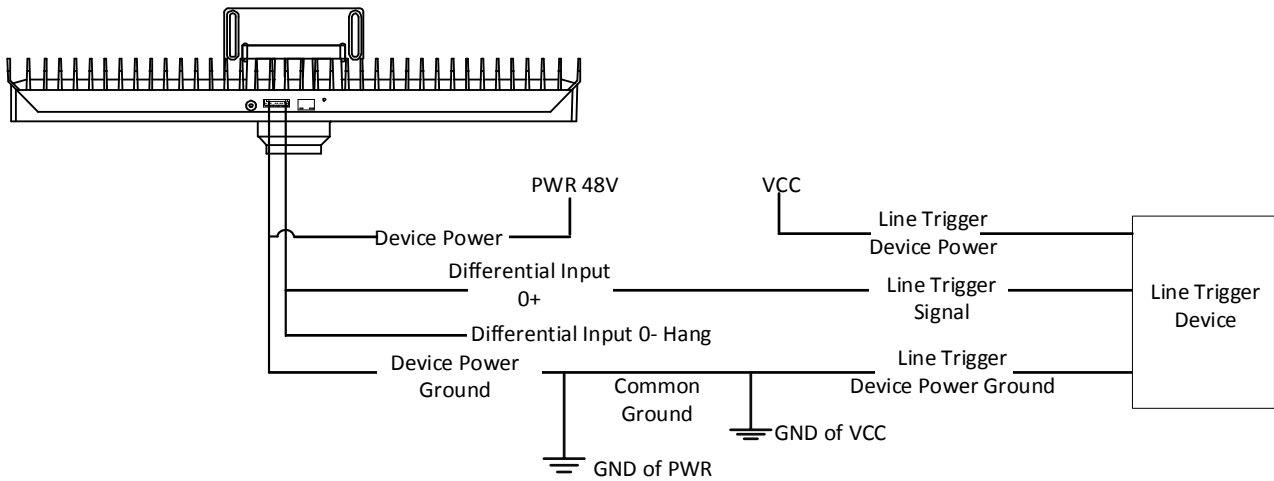


Figure 4-22 LineIn0 Wiring with Line Trigger Device

4.2.4 Output Signal Wiring

The device can output signals to external devices via its I/O interface. This section introduces how to wire the device to different types of external devices.

Note

- Here we take LineOut0 as an example to introduce the input signal wiring.
- Output signal wiring may differ with different types of external devices.

PNP Device

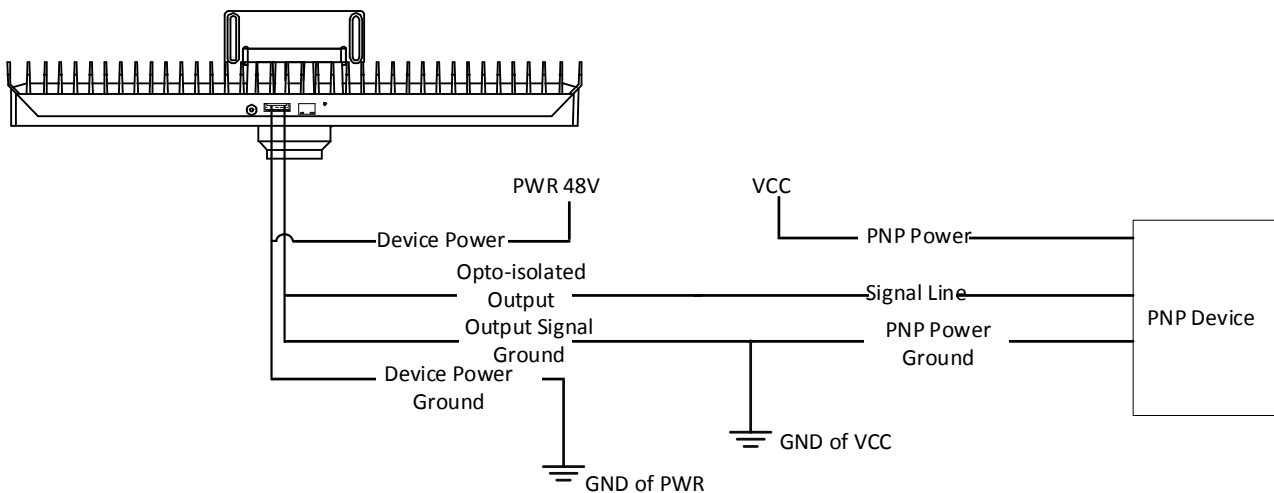


Figure 4-23 Output Signal Connects PNP Device

NPN Device

If the VCC of NPN device is 12 VDC or 24 VDC and pull-up resistor is not used, its wiring is as follows.

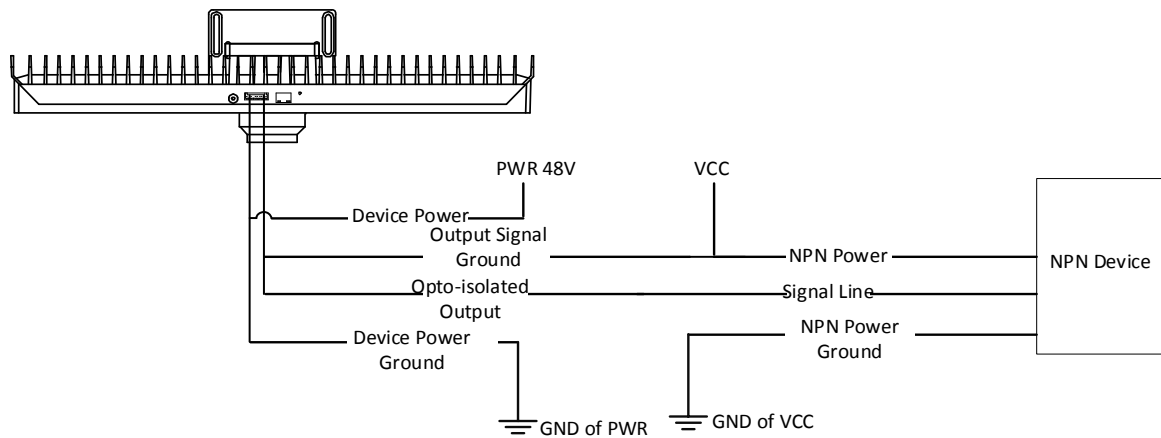


Figure 4-24 Output Signal Connects to NPN Device without Pull-Up Resistor

If the VCC of NPN device is 12 VDC or 24 VDC and pull-up resistor is used, its wiring is as follows.

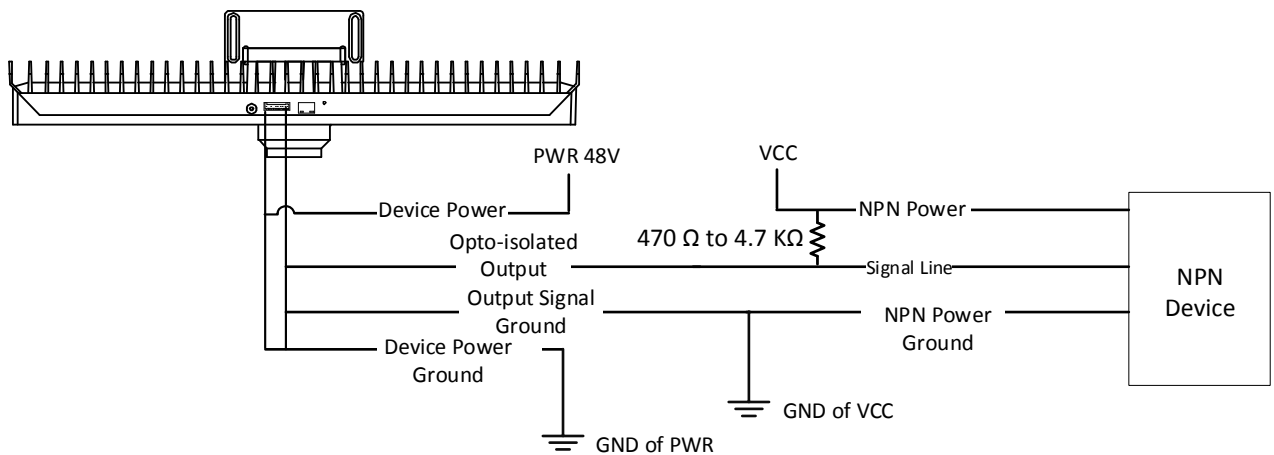


Figure 4-25 Output Signal Connects to NPN Device with Pull-Up Resistor

4.3 RS-232 Serial Port

The device supports output via RS-232 serial port. The 9-pin male connector and 25-pin male connector are commonly used serial ports, as shown below. You can refer to the table below

for the specific pin name and function.

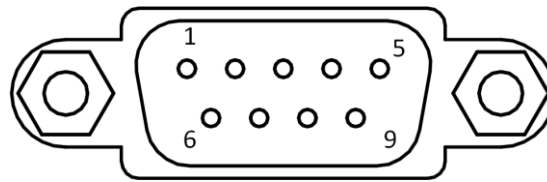


Figure 4-26 9-Pin Male Connector

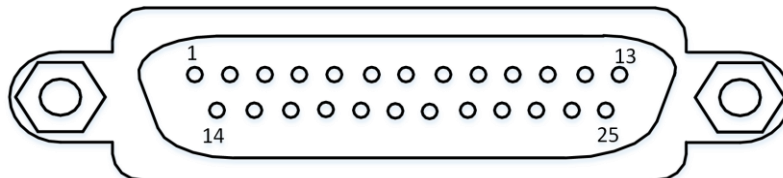


Figure 4-27 25-Pin Male Connector

Table 4-5 Pin Definitions

Serial Port Type	Pin No.	Name	Function
9-Pin Male Connector	2	RX	Receive data
	3	TX	Send data
	5	GND	Signal ground
25-Pin Male Connector	2	TX	Send data
	3	RX	Receive data
	7	GND	Signal ground

You can refer to the serial port wiring below to connect the device with an external device.

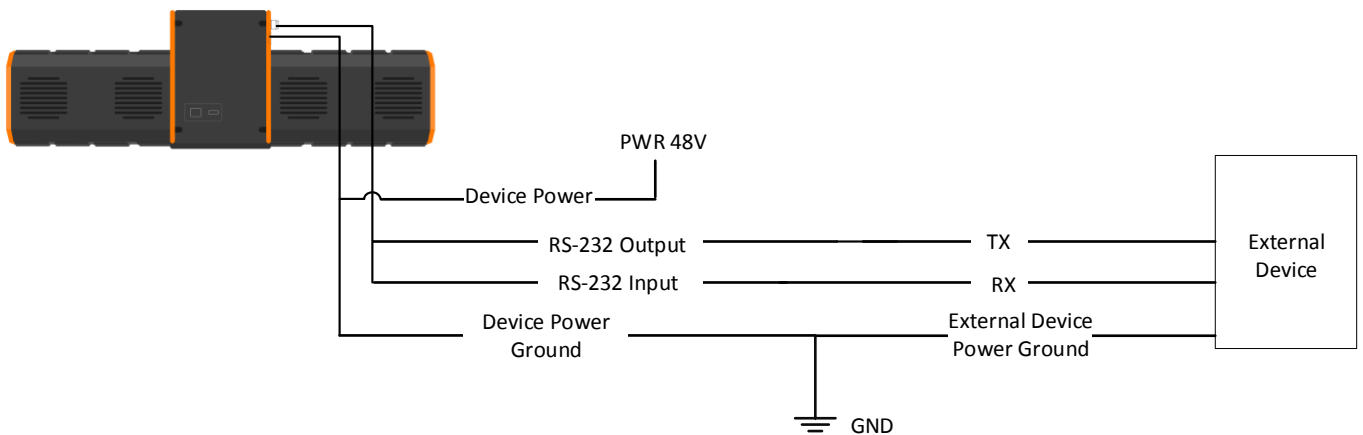


Figure 4-28 RS-232 Serial Port Wiring

Chapter 5 Installation

5.1 Installation Preparation

Table 5-1 Accessories

No.	Name	Quantity	Description
1	I/O Cable	1	• The device with 12-pin M12 connector needs a 12-pin to open cable (7 meters), and it is supplied in the package. • The device with 10-pin green terminal needs a 10-pin green terminal to open cable (7 meters), and it is supplied in the package.
2	Network Cable	1	The supplied gigabit Ethernet cable (10 meters).
3	DC Switch Power Supply	1	The supplied DC switch power supply of 48 VDC, above 5 A.
4	Power Supply Cable	1	The supplied power supply cable with DC connector (10 meters).
5	Lens	1	The supplied lens.
6	Reflector	1	When using the device, you need to have a reflector to read codes on the bottom. It is sold separately. Refer to the image below for reference
7	Reflector Bracket	1	It is used to set up the reflector, and it is sold separately.

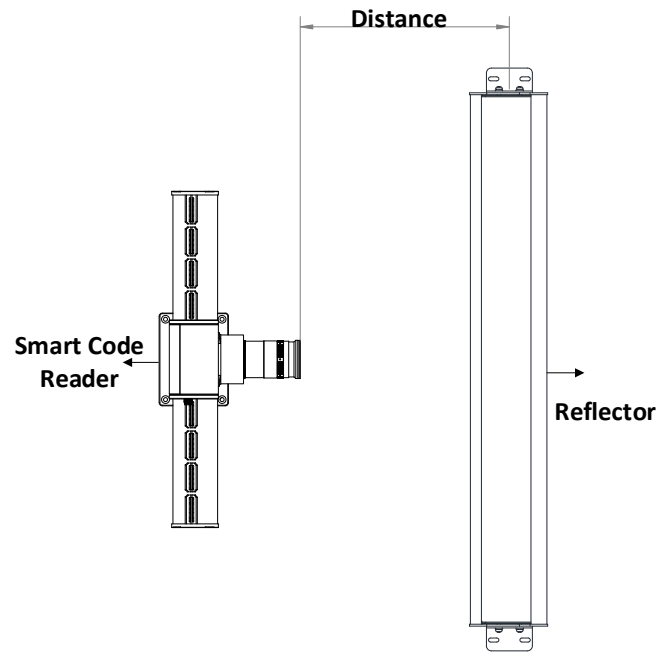


Figure 5-1 Industrial Code Reader and Reflector

Chapter 6 Device Connection

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

6.1 Set PC Environment

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

6.1.1 Turn off Firewall

Steps

Note

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

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

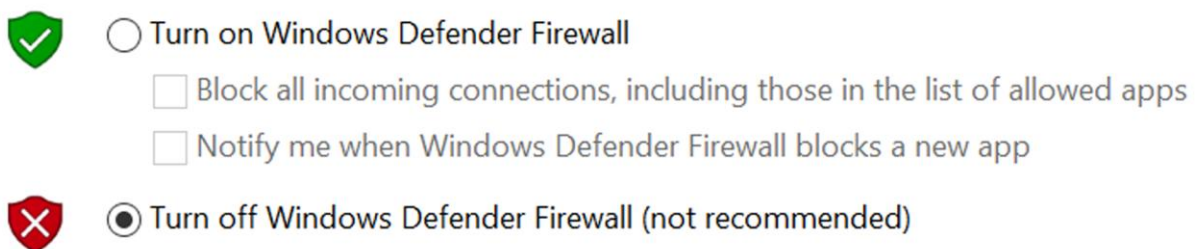


Figure 6-1 Windows Defender Firewall

4. Click **OK**.

6.1.2 Set PC Network

To ensure stable image transmission and normal communication between the PC and the device via client software, you need to set the PC network before using the client software.

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.

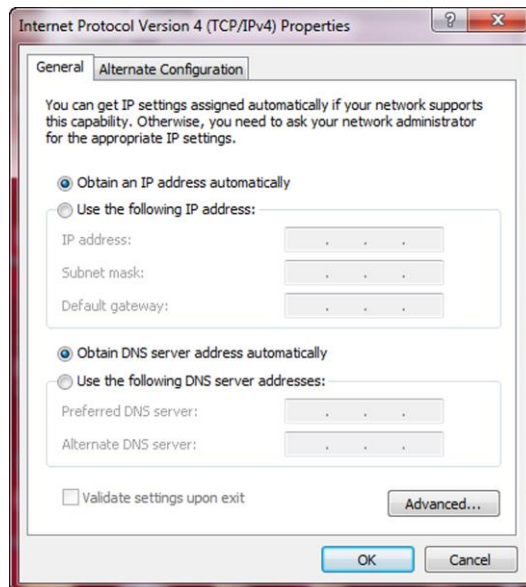


Figure 6-2 Set PC Network

3. Set NIC property.
 - 1) Go to NIC settings page: **Control Panel** → **Hardware and Sound** → **Device Manager** → **Network Adapter**.
 - 2) Select corresponding network interface card, and click **Advanced**.
 - 3) Set **Jumbo Packet** value to 9014 Bytes, **Transmit Buffers** and **Receive Buffers** to 2048, **Interrupt Moderation Rate** to Extremum.

Note

The value may vary from different network interface cards. Just set the maximum value if value changes.

6.2 Install Client Software

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

Steps

Note

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

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

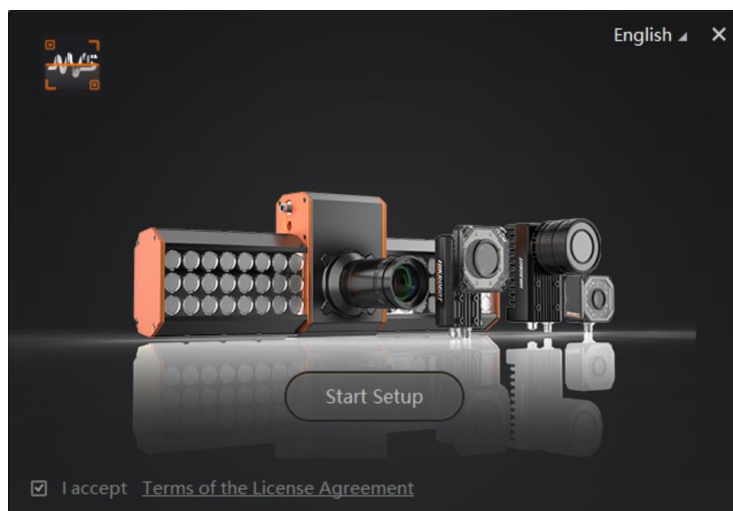


Figure 6-3 Installation Interface

6. Finish the installation according to the interface prompts.

6.3 Set Device Network

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

Steps

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

4. Click **Modify IP**.

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

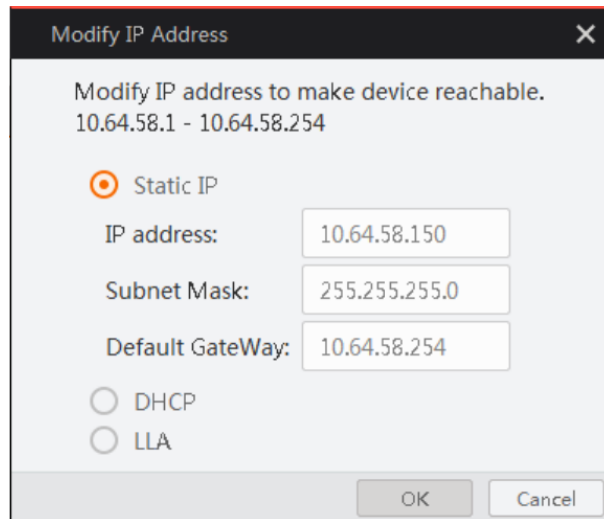


Figure 6-4 Modify IP Address

6. Click **OK**.

6.4 Connect Device to Client Software

Make sure 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 the device list, or click  to connect the device to the client software.

Chapter 7 Client Software Layout

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

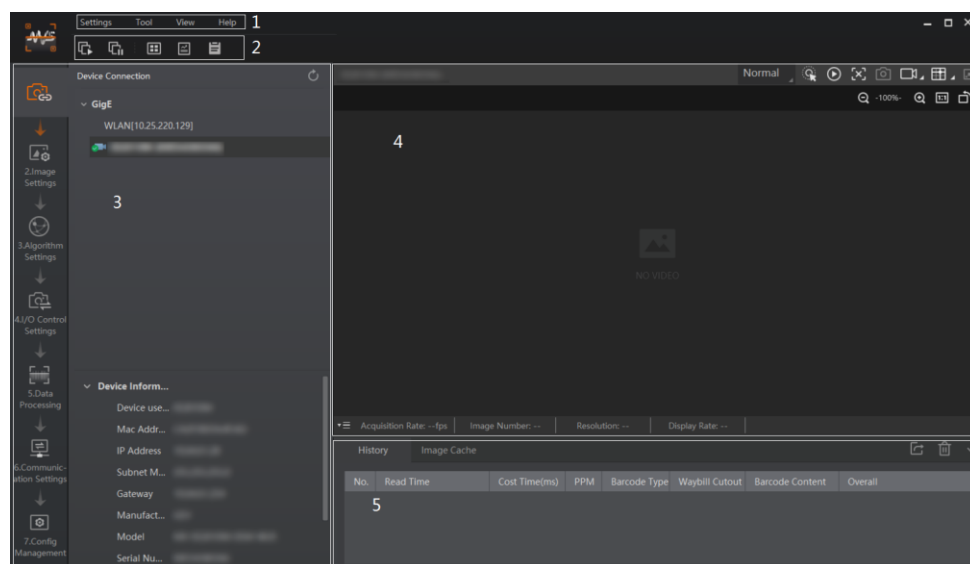


Figure 7-1 Main Window

Note

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

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.

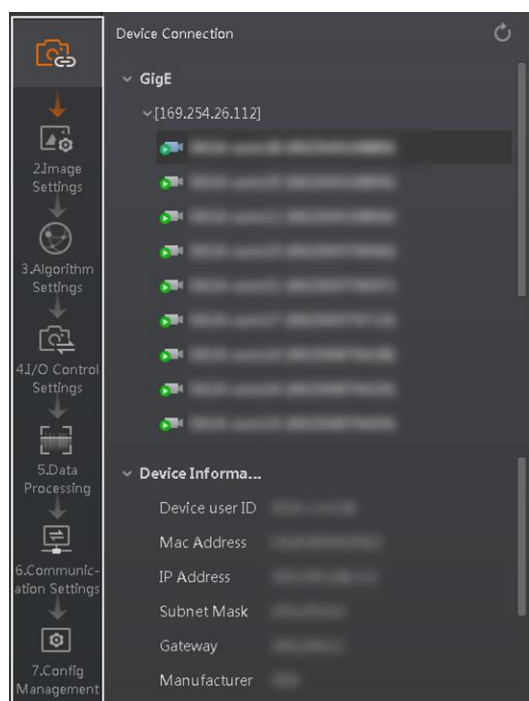


Figure 7-2 Device Configuration Area

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 barcodes, set barcode number, etc.
4	I/O Control Settings	You can set parameters related with input and output.
5	Data Processing	You can set filter rule for output result.
6	Communication Settings	You can select different communication protocols, and set related parameters for output result.
7	Configuration Management	You can save and load user parameters, and restart the device.

Chapter 8 Device Mode Settings

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

Note

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

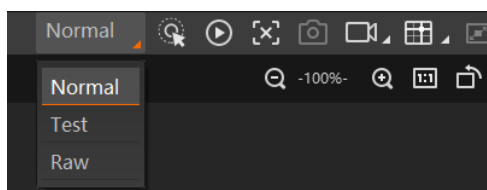


Figure 8-1 Select Device Mode

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

You are recommended to complete device settings in following order: **Device Connection** → **Image Settings** → **Algorithm Settings** → **I/O Control Settings** → **Data Processing** → **Communication Settings** → **Configuration Management**.

- **Device Connection:** It tells you how to connect the device to the client software. And you can configure and operate the device remotely via the client software only when you have connected the device to the client software. Refer to **Connect Device to Client Software** for details.
- **Image Settings:** It tells you how to set image related parameters of the device via client software. Refer to **Image Quality Settings** for details.
- **Algorithm Settings:** It tells you how to set the types of code to be read, the 1D code algorithm, the 2D code algorithm, etc. Refer to **Code Algorithm Settings** for details.
- **I/O Control Settings:** It tells you how to set the parameters related to the control of input and output signals of device. Refer to **Signal Input Settings** and **Signal Output Settings** for details.
- **Data Processing:** It tells you how to set filter rules for reading codes and other data processing related parameters. Refer to **Code Reading Result Settings** for details.
- **Communication Settings:** It tells you how to select different communication protocols, and set their corresponding parameters. Refer to **Communication Settings** for details.
- **Configuration Management:** It tells you how to set and manage the user parameters, restart device, etc. Refer to **User Set Customization** for details.

9.1 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.

9.1.1 Set Image

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

Note

- Make sure you have selected the device to be set in **Device Connection** before setting image parameters.
- For specific parameter range, refer to the device's specification for details.

Exposure Time

You can increase exposure time to improve image brightness.

Note

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

Gamma

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

Acquisition Frame Rate

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

Acquisition Line Rate

Line rate refers to the line number that is acquired by the device per second.

Preamp Gain

You can increase gain to improve image brightness.

Note

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

TDI Direction

It includes backward direction and forward direction.

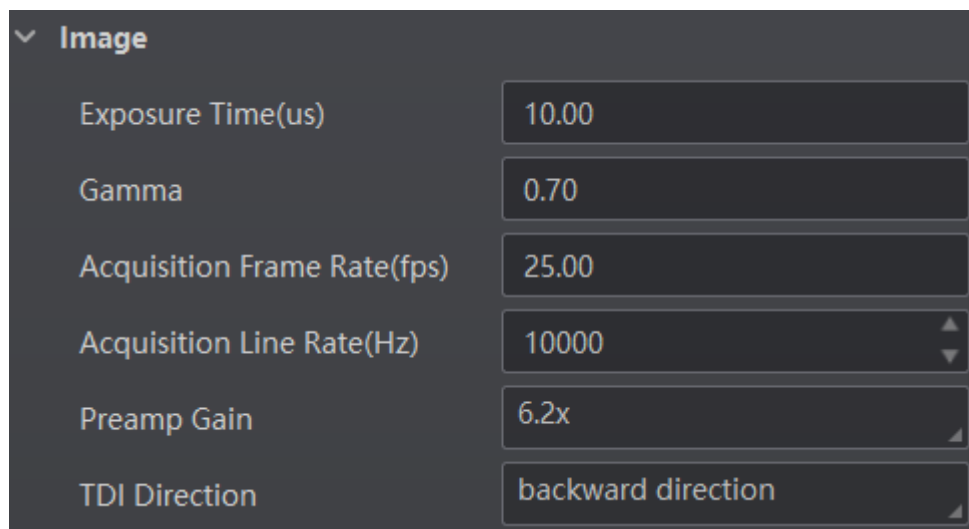


Figure 9-1 Set Image

9.1.2 Set Light Source

You can select light type, and set related parameters in the light interface.

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.

You can set the duration, delay time and precharge time of the light source when selecting **External Lighting** as **Light Type**.

Lighting Out Duration

It sets the lighting duration and the unit is μs .

Lighting Out Delay Time

It sets the delay time for lighting after exposure and the unit is μs .

Line Out Ahead Time

It determines how earlier the light source starts lighting before exposure and the unit is μs .

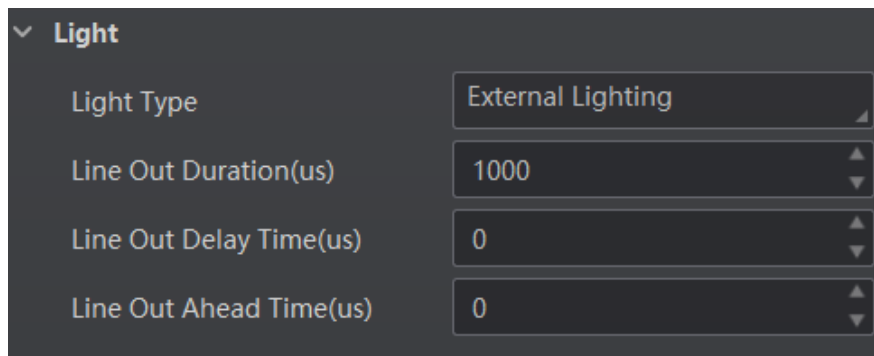


Figure 9-2 Set Light Source

9.2 Code Algorithm Settings

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

9.2.1 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**, click **Add Barcode**, select the types of codes to be read, and set the

1D Code Number and **2D Code Number** 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.
- No matter 1D code or 2D code, up to 20 codes can be added at a time. Note that adding more codes may consume more time to recognize codes in the image. Therefore, the code number is recommended to be set according to the actual demands.
- The device may output actual code number when the mismatch between the actual code number and the code number set in the client software occurs.

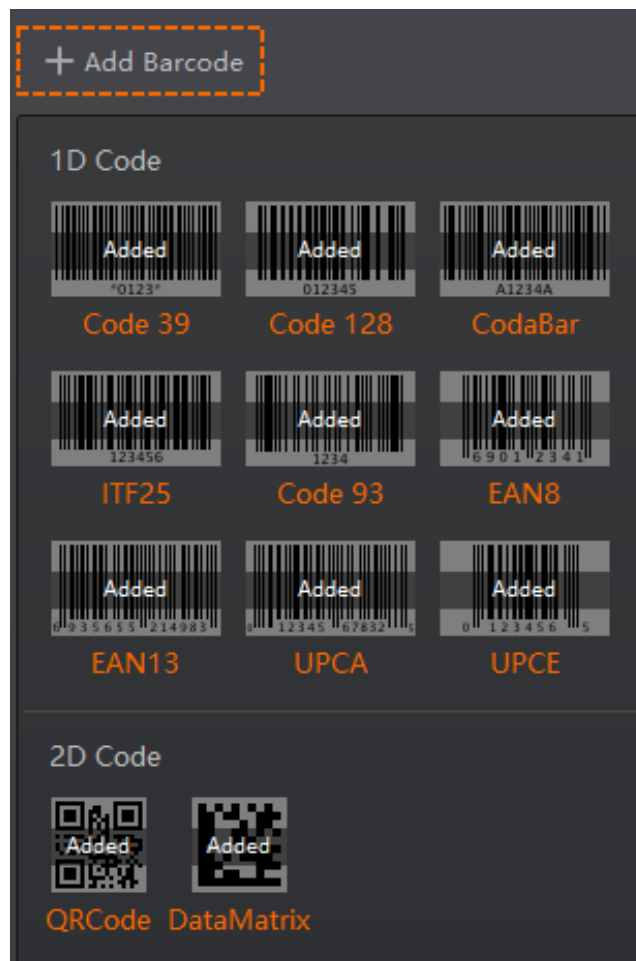


Figure 9-3 Add Code

9.2.2 Set 1D Algorithm Parameter

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

Parameter page, select **1D Code** as **Arithmetic Type**, and then you can set its corresponding parameters.

Note

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

Timeout Value

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

Code 39 Check

Enable this parameter if Code 39 uses the parity bit.

Note

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

ITF 25 Check

Enable this parameter if ITF 25 uses the parity bit.

Note

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

Code Score Enable

If it is enabled, the device will evaluate code quality and display overall grade and code score in history record area of the client software. The higher the score, and the better the code quality.

9.2.3 Set 2D Algorithm Parameter

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

Note

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

Timeout Value

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

waiting time configured.

Algorithm Running Mode

It is used to be set the algorithm operating mode. It includes **High Speed (0)**, **High Performance (1)**, and **Balance (2)**. **High Speed** focuses on recognition speed, and the algorithm can recognize the code rapidly, while **High Performance** refers to the algorithm can recognize the code that has distortion, spot or white gap, but its recognition speed is slow. **Balance** refers to the algorithm makes a balance between speed and performance.

2D Code Max. Size

It refers to the max. recognizable code width. The 2D code will not be recognized if its width exceeds the configured value.

Mirror Mode

It is useful when the recognized image is a mirror one, mirroring in X coordinate. 3 modes are available: **Non Mirror (0)**, **Mirror (1)**, and **Adaptive (2)**.

Downsampling Level

It refers to the pixel sample size that the code reader takes. Increasing this parameter will improve the code reading efficiency at the expense of code recognition rate.

Note

Increasing this parameter value will improve the code reading efficiency at the cost of code recognition rate.

Code Color

It defines the readable code color. **Black Code On White Wall (0)** means that the client software can recognize the black code with white background. **White Code On Black Wall (1)** means that the client software can recognize the white code with black background. **Adaptive (2)** means that the client software can recognize both the black code with white background, and the white code with black background.

Note

- For QR code, the code color is determined by the color of the concentric square on it.
 indicates that the code color is white, and  indicates that the code color is black.



Figure 9-4 White QR Code



Figure 9-5 Black QR Code

- For DM code, the code color is determined by the color of its "L" shaped sides. White "L" shaped sides indicate that the code color is white, and black "L" shaped sides indicate that the code color is black.



Figure 9-6 White DM Code



Figure 9-7 Black DM Code

Discrete Flag

Continuous (0) stands for the minimum units in the "L" shaped sides of the DM code are continuous, or the minimum units in the concentric square like  or  in the QR code are continuous. Usually the continuous code uses squares as the minimum units.

Discrete (1) stands for the minimum units in the "L" shaped sides of the DM code are discrete, or the minimum units in the concentric square like  or  in the QR code are discrete. Usually the discrete code uses dots as the minimum units.

Adaptive (2) stands for the device can recognize both continuous code and the discrete

code.

QR Distortion Correction

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

Note

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

Advance Param

This parameter is applicable to some special codes, and it is recommended to use the default value.

DM Code Shape

It defines the recognizable code shape. **Square (0)** stands for square mode: If the 2D code is square shaped, it can be recognized by the device. **Rectangle (1)** stands for rectangle mode: If the 2D code is rectangle shaped, it can be recognized by the device. **Adaptive (2)** stands for compatible mode: The device can recognize 2D codes of both the above-mentioned two shapes.

DM Code Type

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

Code Score Enable

If it is enabled, the device will evaluate code quality and display overall grade and code score in history record area of the client software. The higher the score, and the better the code quality.

9.3 Signal Input Settings

9.3.1 Internal and External Trigger Mode

Internal Trigger Mode

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

External Trigger Mode

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

Note

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

9.3.2 Enable Internal Trigger Mode

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

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

9.3.3 Enable External Trigger Mode

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

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

9.3.4 Set Trigger Mode

The device supports free trigger mode, line trigger, frame trigger, and line plus frame trigger.

Free Trigger Mode

In the free trigger mode, the device generates trigger signals by itself, and outputs images continuously in accordance with the configured frame rate.

Steps

1. Right click the device in the **Device Connection**, and click **Feature Tree**.
2. Go to **Trigger and IO Control** → **Trigger Selector**.
3. Set **Trigger Mode** as **Off** after selecting **Line Start** and **Frame Burst Start** as **Trigger Selector**.

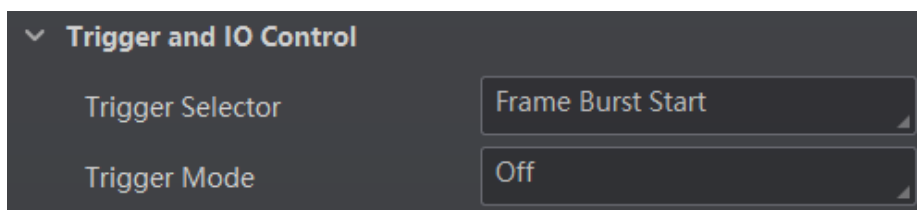


Figure 9-8 Free Trigger Mode

Frame Trigger Mode

Steps

1. Right click the device in the **Device Connection**, and click **Feature Tree**.
2. Go to **Trigger and IO Control** → **Trigger Selector**.
3. Set **Trigger Mode** as **On** after selecting **Frame Burst Start** as **Trigger Selector**.
4. Select **Trigger In Source** according to actual demands.

Note

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

5. Set **Start Delay Time** and **End Delay Time** according to actual demands.

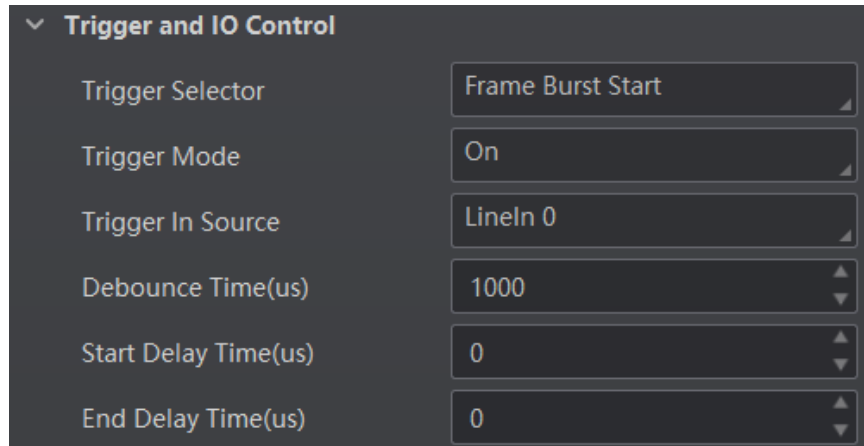


Figure 9-9 Frame Trigger Mode

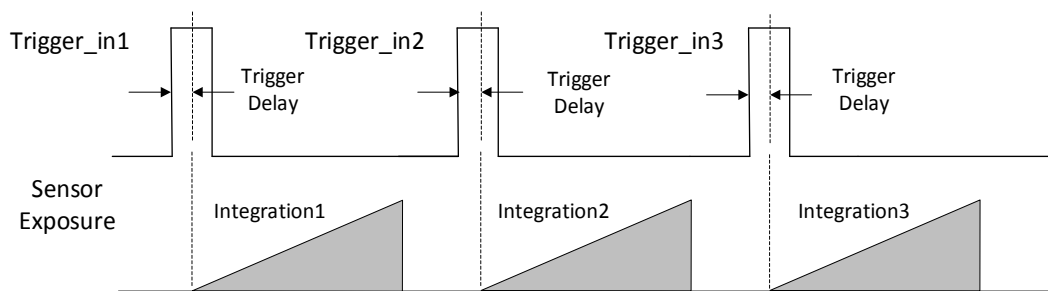


Figure 9-10 Trigger Delay Principle

6. Set **Debounce Time** according to actual demands.

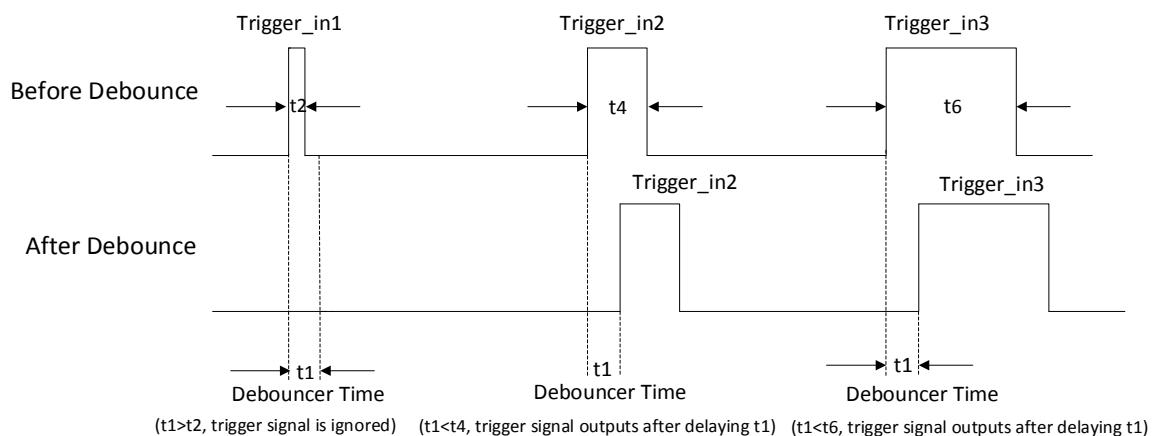


Figure 9-11 Debouncer Sequence Diagram

Note

If the configured debouncer time is larger than the pulse width of trigger signal, the trigger signal will be ignored. Otherwise, the trigger signal will be outputted after delay.

Line Trigger Mode

Steps

1. Right click the device in the **Device Connection**, and click **Feature Tree**.
2. Go to **Trigger and IO Control** → **Trigger Selector**.
3. Set **Trigger Mode** as **On** after selecting **Line Start** as **Trigger Selector**.
4. Select **Trigger In Source** according to actual demands.

Note

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

5. Set **Debouncer Time** after selecting **LineIn *** as **Trigger Source**.

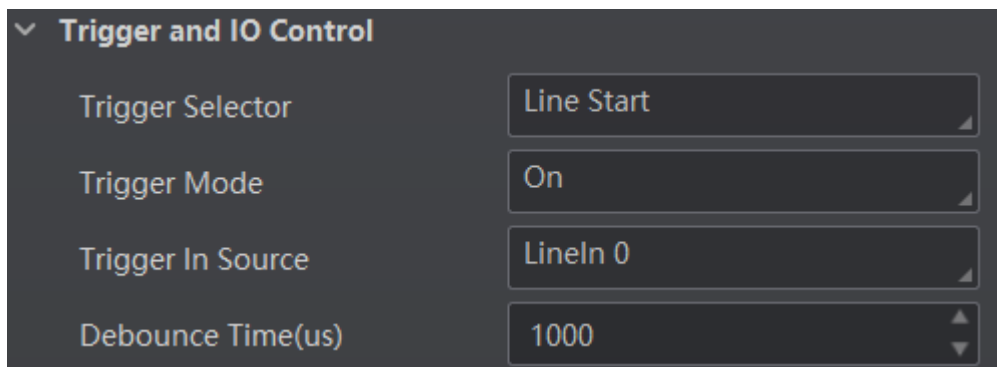


Figure 9-12 Set Debouncer Time

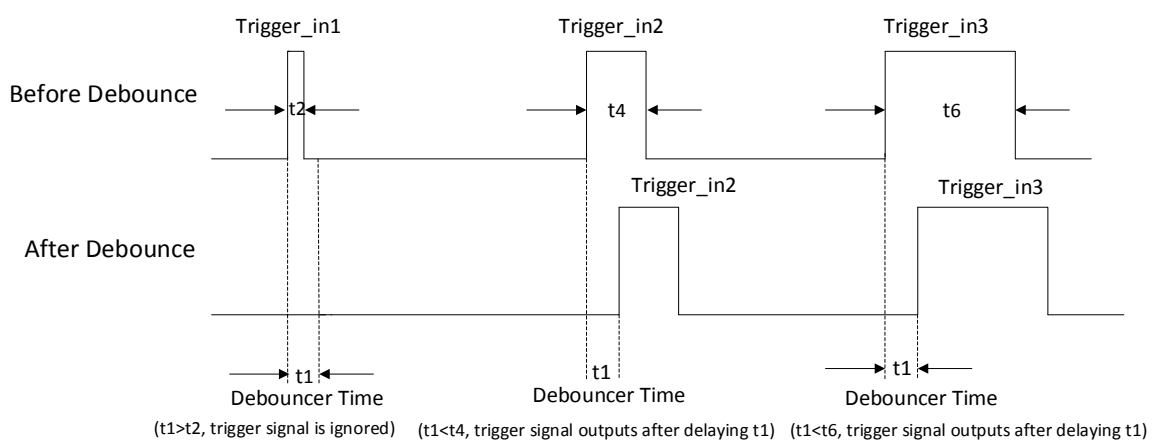


Figure 9-13 Debouncer Sequence Diagram

Note

If the configured debouncer time is larger than the pulse width of trigger signal, the trigger signal will be ignored. Otherwise, the trigger signal will be outputted after delay.

6. You need to set related parameters of shaft encoder control in **Encoder Control** after selecting **Encoder Module Out** as **Trigger In Source**. Refer to section **Set Shaft Encoder Control** for details.
7. You need to set related parameters of frequency converter control in **Frequency Converter Control** after selecting **Frequency Converter** as **Trigger In Source**. Refer to section **Set Frequency Converter Control** for details.

Line + Frame Trigger Mode

In this trigger mode, both line trigger and frame trigger are enabled. The device image acquisition is controlled by frame trigger signal and line trigger signal. The number of lines in a frame is controlled by the frame height register, and the line rate is controlled by the line trigger signal provided by external devices, and is also limited by the acquisition line rate. The line trigger signal only works after the device receives the frame trigger signal.

9.3.5 Set Shaft Encoder Control

The device supports shaft encoder control function that the device receives signal A and signal B with phase difference. After internal computing, the outputted signal of the shaft encoder can be used as device's trigger signal. The function demonstration of shaft encoder module is shown below.

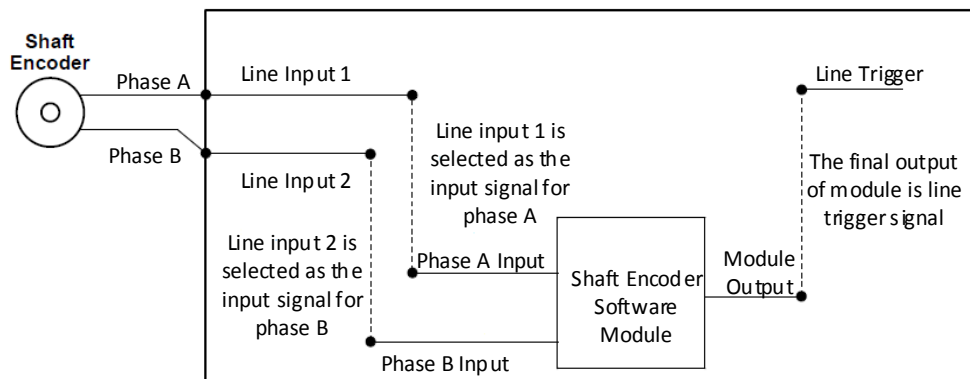


Figure 9-14 Function Demonstration

The advantages of shaft encoder are as follows:

- Encoder output pulse frequency is proportional to rotating speed.
- The output pulse acts as a trigger signal for the device.
- Synchronize acquisition speed and sample movement of device.
- Non-uniform motion can also be a perfect match.
- A trigger signal can be set as acquiring multiple lines or multiple frames with adjustable

ratio.

You should go to **Encoder Control** to select the signal source of signal A and signal B via **Encoder Source A** and **Encoder Source B**.

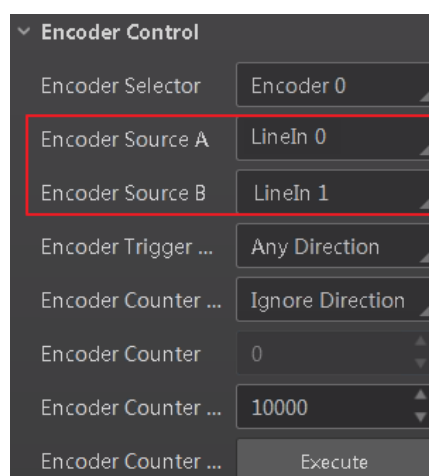


Figure 9-15 Set Encoder Source A and Encoder Source B

Note

- After selecting **Encoder Module Out** as the trigger source in line trigger mode, you can select LineIn0 or LineIn1 for **Encoder Source A** and **Encoder Source B** only. And you can select LineIn2 as the trigger source only in frame trigger.
 - For different models of the device, the specific parameters may differ, and the actual device you purchased shall prevail.
-

9.3.6 Set Frequency Converter Control

The device supports the frequency converter control function that allows the signal frequency of the trigger device to be different from required input signal frequency. Go to **Frequency Converter Control** → **Input Source**, and select the input source according to actual demands.

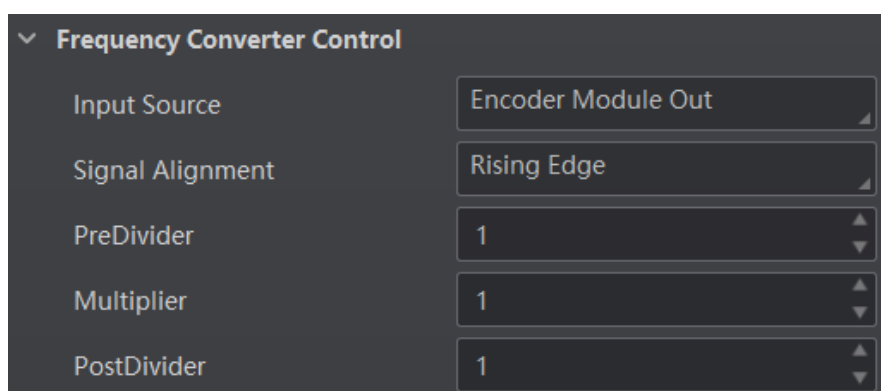


Figure 9-16 Set Frequency Converter Control

Note

- For specific input source, refer to the actual device you got.
-

The frequency converter module includes **PreDivider**, **Multiplier** and **PostDivider**. The signal after being processed by these 3 modules is the device's final trigger signal.

PreDivider

The input signal first enters the PreDivider module, which reduces source signal frequency via integer division, and then the signal is sent to the Multiplier module. The PreDivider module reduces periodic jitter on the input signal, and signals above 100 kHz must go through the PreDivider module to reduce the frequency for the Multiplier can only receive signals in the range of 10 Hz to 100 kHz frequency range. The periodic jitter of shaft encoder signal is accepted.

Multiplier

After the signal is processed by the PreDivider, it is sent to the Multiplier. The Multiplier multiplies the signal by an integer to increase its signal frequency, and then the signal is sent to the PostDivider.

Parameter can be set as rising or falling edge. If a rising edge is set, each rising edge of the signal coming from the PreDivider will be locked to match the signal of the rising edge, and vice versa. During this process, make sure do not increase signal frequency via too larger multipliers to avoid trigger signal frequency beyond the max. line rate of the device. Even if a smaller multiplier is selected, an excessively high frequency may be generated in the frequency adjustment, exceeding the max. line rate of the device.

PostDivider

PostDivider reduces signal frequency via an integer factor, and uses the newly generated frequency signal as the device's trigger signal.

9.4 Signal Output Settings

9.4.1 Select Output Signal

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

Note

- The specific output signals may differ by device models.
 - The LineOut2 cannot be used as the output signal because it is the output port of controlling light source mode.
-

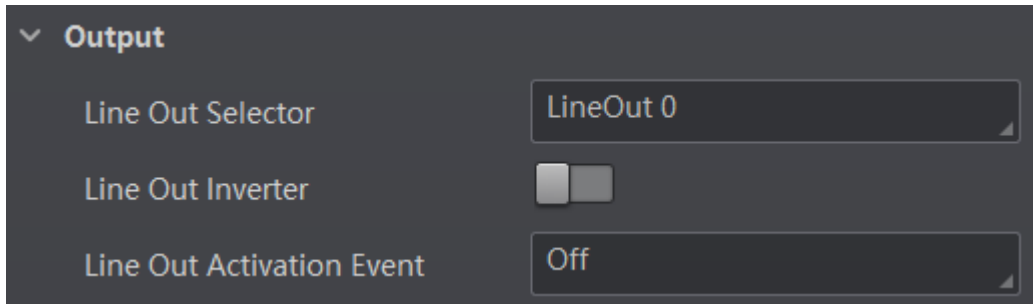


Figure 9-17 Select Output Signal

9.4.2 Set Event Source

Note

The event source parameters may differ by device model.

The device supports outputting different trigger signals according to the event source you select. Click **I/O Control Settings** → **Output** → **Line Out Activation Event** to select event source. The device supports following event sources, including **Acquisition Start Active**, **Acquisition Stop Active**, **Exposure Start Active**, **Soft Trigger Active**, **Timer Active**, **No Code Read**, **Read Success**, and **Light Strobe Long**.

Note

Off refers to no event source.

Acquisition Start Active

If acquisition starts, the output signal will be triggered.

Acquisition Stop Active

If acquisition stops, the output signal will be triggered.

Exposure Start Active

If the exposure starts, the output signal will be triggered.

Soft Trigger Active

The client software triggers the output signal.

Timer Active

The timer triggers the output signal.

No Code Read

If no code read by the device, the output signal will be triggered.

Read Success

If the code is read by the device, the output signal will be triggered.

Light Strobe Long

If the light mode is **Strobe Long**, the output signal will be triggered.

Note

- You need to set different parameters when selecting these event sources.
 - If LineOut2 is selected as **Line Out Selector**, the corresponding event source should be **Light Strobe Long**.
-

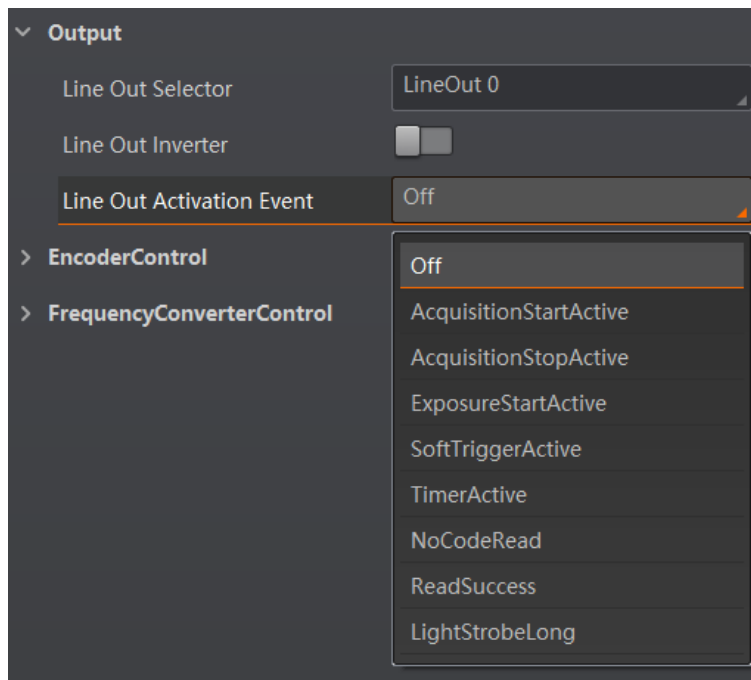


Figure 9-18 Set Event Source

Select Acquisition Start Active

If you select **Acquisition Start Active** as **Line Out Activation Event**, you can set its output delay time and duration.

Line Out Delay Time

It sets the delay time for outputting the output signal.

Line Out Duration

It sets the time duration of the output signal.

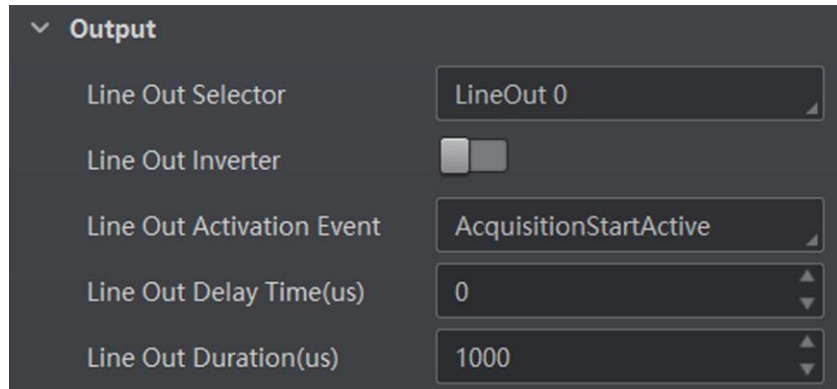


Figure 9-19 Select Acquisition Start Active

Select Acquisition Stop Active

If you select **Acquisition Stop Active** as **Line Out Activation Event**, you can set its output delay time and duration.

Line Out Delay Time

It sets the delay time for outputting the output signal.

Line Out Duration

It sets the time duration of the output signal.

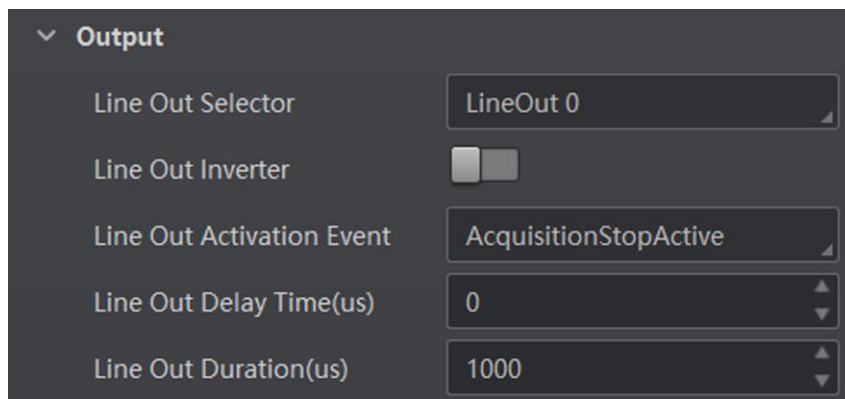


Figure 9-20 Select Acquisition Stop Active

Select Exposure Start Active

If you select **Exposure Start Active** as **Line Out Activation Event**, you can set its output delay time and duration.

Line Out Delay Time

It sets the delay time for outputting the output signal.

Line Out Duration

It sets the time duration of the output signal.

Line Out Ahead Time

It sets the ahead time for outputting the signal.

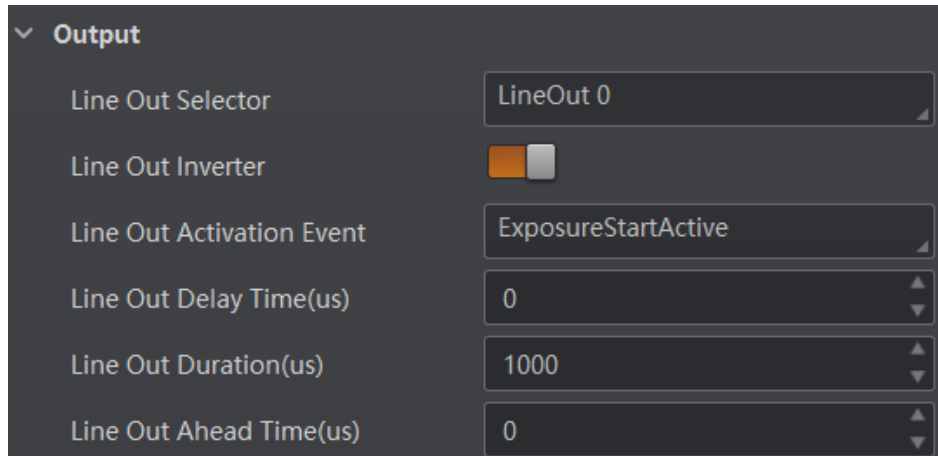


Figure 9-21 Select Exposure Start Active

Select Soft Trigger Active

If you select **Soft Trigger Active** as **Line Out Activation Event**, you can set its output delay time, duration, and execute outputting signal manually.

Line Out Delay Time

It sets the delay time for outputting the output signal.

Line Out Duration

It sets the time duration of the output signal.

Line Trigger Software

Click **Execute** for manually outputting the output signal.

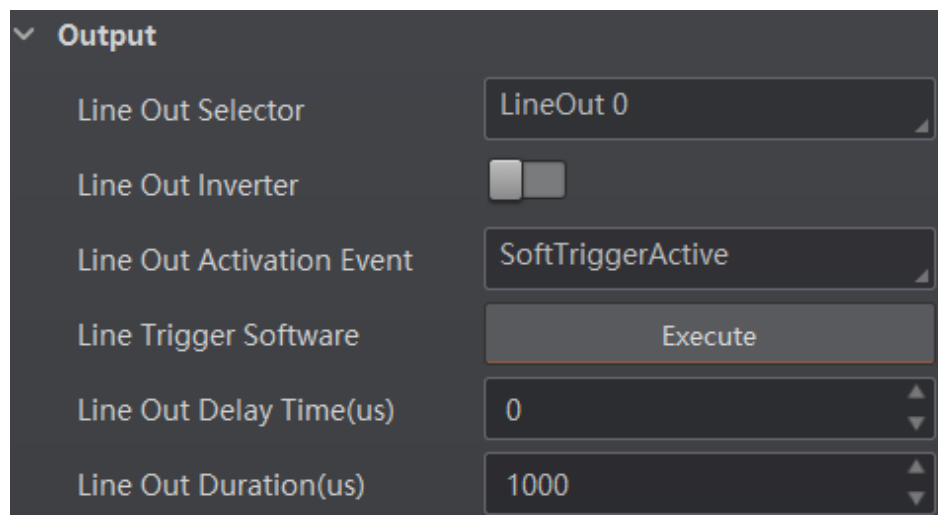


Figure 9-22 Select Soft Trigger Active

Select Timer Active

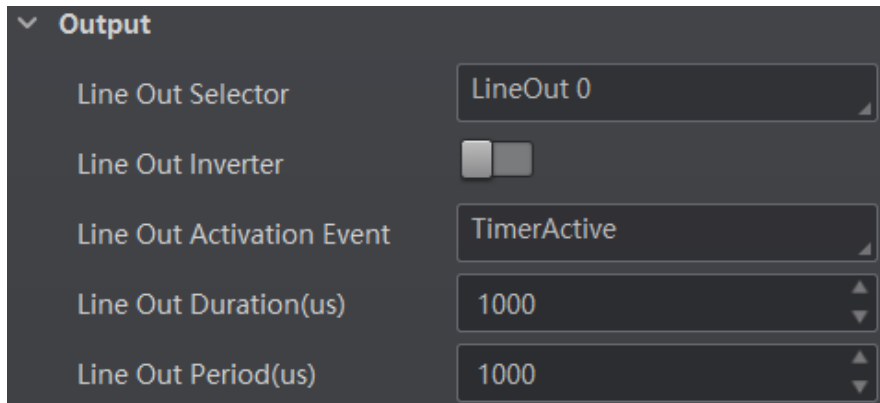
If you select **Timer Active** as **Line Out Activation Event**, you can set its output duration and period.

Line Out Duration

It sets the time duration of the output signal.

Line Out Period

It sets the time period of the output signal.



The screenshot shows a configuration window titled 'Output' with a dropdown arrow. It contains five settings:

Setting	Value
Line Out Selector	LineOut 0
Line Out Inverter	☐
Line Out Activation Event	TimerActive
Line Out Duration(us)	1000
Line Out Period(us)	1000

Figure 9-23 Select Timer Active

Select No Code Read

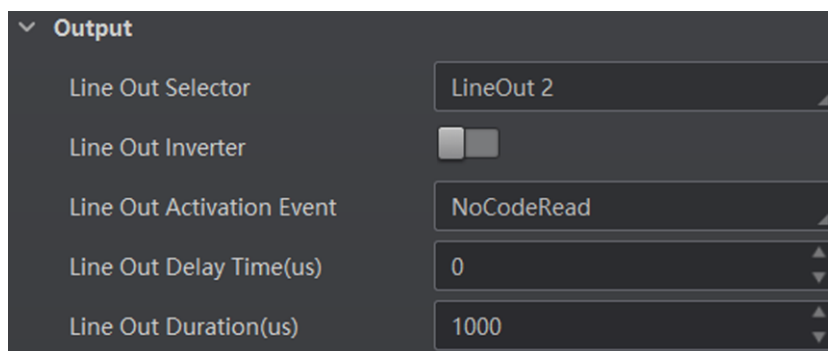
If you select **No Code Read** as **Line Out Activation Event**, you can set its output delay time and duration.

Line Out Delay Time

It sets the delay time for outputting the output signal.

Line Out Duration

It sets the time duration of the output signal.



The screenshot shows a configuration window titled 'Output' with a dropdown arrow. It contains five settings:

Setting	Value
Line Out Selector	LineOut 2
Line Out Inverter	☐
Line Out Activation Event	NoCodeRead
Line Out Delay Time(us)	0
Line Out Duration(us)	1000

Figure 9-24 Select No Code Read

Select Read Success

If you select **Read Success** as **Line Out Activation Event**, you can set its output delay time and duration.

Line Out Delay Time

It sets the delay time for outputting the output signal.

Line Out Duration

It sets the time duration of the output signal.

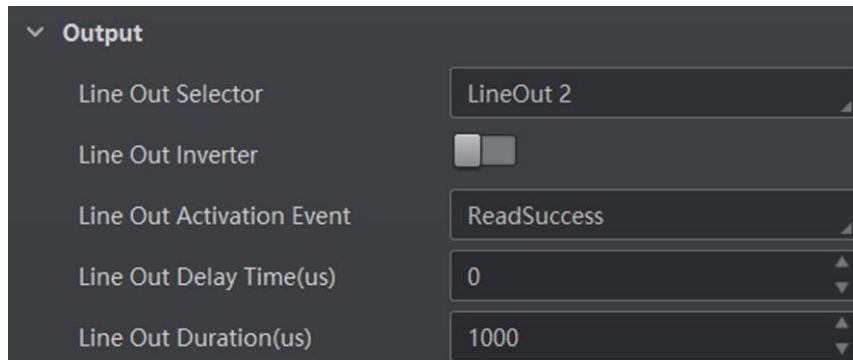


Figure 9-25 Select Read Success

Select Light Strobe Long

If you select **Light Strobe Long** as **Line Out Activation Event**, you do not need to set any parameters.

9.4.3 Enable Line Inverter

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

Note

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

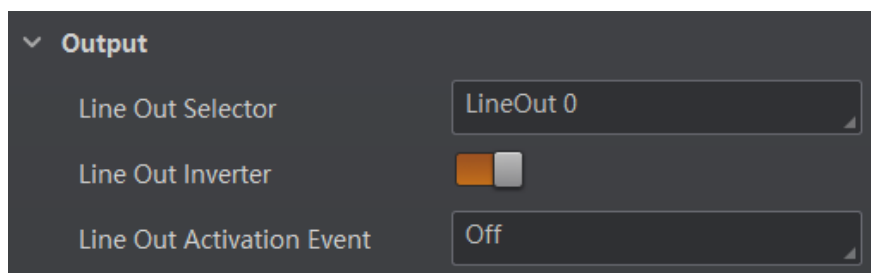


Figure 9-26 Enable Line Out Inverter

9.5 Code Reading Result Settings

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

9.5.1 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 device mode and trigger mode you select. Here we take normal device mode and internal trigger mode as an example.

Instant Output Mode Enable

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

Min. Output Time

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

Numerical Filter

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

Max Output Length

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

Code Offset Num

It sets the range of barcode to be filtered. For example, the barcode is ABCDEFG, if you set this parameter as 2, the device will output CDEFG at last and filter AB.

Begin with Specific Character for Result

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

Include Specific Character in Barcode

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

Exclude Specific Character in Barcode

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

character in **Character**.

Regular Expression Filter Enable

If this parameter is enabled, the device will only read the codes which contain a specific regular expression. You can enter the specific regular expression in **Regular Expression Filter**.

Min. Code Length

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

Max. Code Length

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

NoRead TimeOut

If no codes are not recognized after the time you set here, the client software will output NoRead instead.

Read Times Threshold

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

The image shows a configuration window titled "Filter Rule" with a list of settings. Each setting has a label and a control element (checkbox or numeric input field with up/down arrows).

Setting	Value / State
Instant Output Mode Enable	Off (checkbox)
Min Output Time(ms)	0
Numeral Filter	Off (checkbox)
Max Output Length	256
Code Offset Num	0
Begin with Specific Character for Result	Off (checkbox)
Include Specific Character in Barcode	Off (checkbox)
Exclude Specific Character in Barcode	Off (checkbox)
Regular Expression Filter Enable	Off (checkbox)
Min Code Length	1
Max Code Length	256
NoRead TimeOut(ms)	1000
Read Times Threshold	1

Figure 9-27 Set Filter Rule

9.5.2 Set Result Format

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

Note

- The supported communication protocols may differ by device models.
 - Result format settings are only available if you select **TCP Client**, **TCP Server**, **Serial** and **FTP** as the communication protocol when the device mode is **Normal**. Result format settings are not available for **Smart SDK** and **HTTP**.
 - For details about communication protocol, see section **Communication Settings** for details.
-

Result Output via Smart SDK or HTTP

When the communication protocol is **Smart SDK** or **HTTP**, device mode is **Normal** and trigger mode is **On**, you just need to set **NoRead Image Index** in the **Data Processing**.

Note

The configurable parameters may differ if the internal trigger mode is enabled.

NoRead Image Index

It sets the specific image that is outputted when no code information is read. For example, if you set this parameter as 5, and the 5th image will be output.

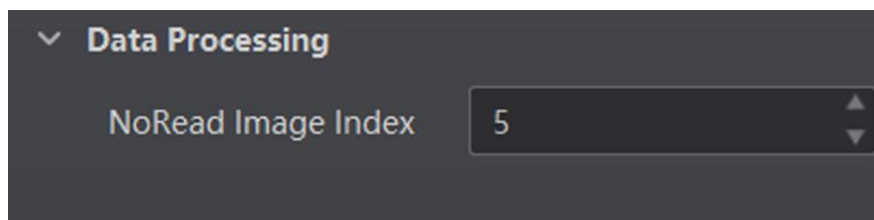


Figure 9-28 Result Output via Smart SDK or HTTP

Result Output via TCP Client, TCP Server or Serial

If **TCP Client**, **TCP Server** or **Serial** is selected as **Communication Protocols**, you need to set following parameters.

Note

- The configurable parameters may differ by the trigger mode, and here we take the external trigger mode as an example.

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

NoRead Image Index

It sets the specific image that is outputted when no code information is read. For example, if you set this parameter as 5, and the 5th image will be output.

TCP Output Barcode Name Enable

If this parameter is enabled, the outputted code information will contain the name of the code.

TCP Output Barcode Position Enable

If this parameter is enabled, the outputted code information will contain the position of the code.

TCP Output Barcode Angle Enable

If this parameter is enabled, the outputted code information will contain the angle of the code.

TCP Output Barcode MainPackageID Enable

If this parameter is enabled, the outputted barcode information will contain the package ID.

TCP Output NoRead Enable

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

TCP Output NoRead Text

When no code is recognized, the device will output the content you set here.



Note

The default content is **NoRead**.

TCP Output Start Text

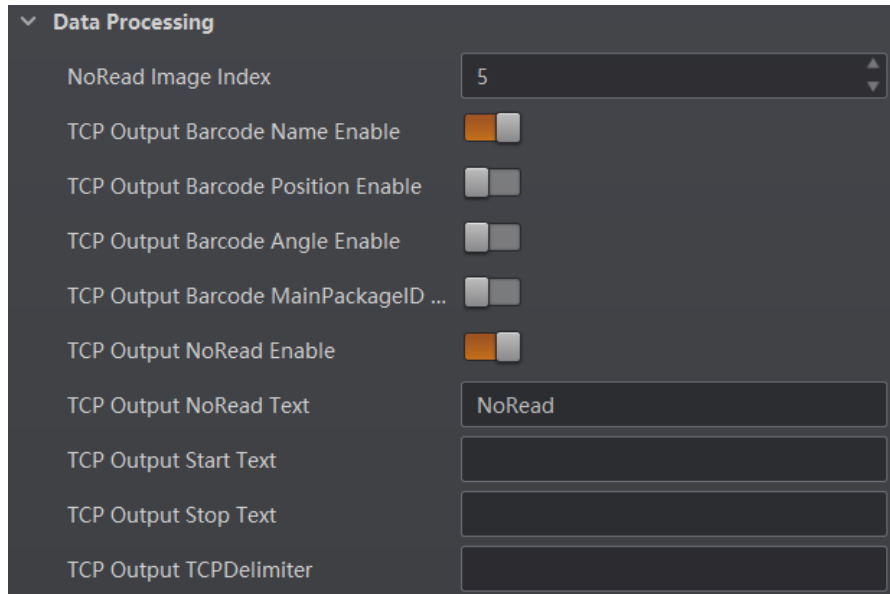
The contents of the start part of the data outputted. You can set the contents according to actual condition.

TCP Output Stop Text

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

TCP Output TCP Delimiter

It refers to the delimiter that separates code name, position, angle, package ID, etc. You can set it according to actual condition.



The screenshot shows a configuration window titled "Data Processing" with a dropdown arrow on the left. It contains several settings:

- NoRead Image Index: A dropdown menu showing the value "5".
- TCP Output Barcode Name Enable: A toggle switch that is currently turned on (orange).
- TCP Output Barcode Position Enable: A toggle switch that is currently turned off (grey).
- TCP Output Barcode Angle Enable: A toggle switch that is currently turned off (grey).
- TCP Output Barcode MainPackagelD ...: A toggle switch that is currently turned off (grey).
- TCP Output NoRead Enable: A toggle switch that is currently turned on (orange).
- TCP Output NoRead Text: A text input field containing the text "NoRead".
- TCP Output Start Text: An empty text input field.
- TCP Output Stop Text: An empty text input field.
- TCP Output TCPDelimiter: An empty text input field.

Figure 9-29 Result Output via TCP Client

Result Output via FTP

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

Note

The configurable parameters may differ by the trigger mode, and here we take the external trigger mode as an example.

NoRead Image Index

It sets the specific image that is outputted when no code information is read. For example, if you set this parameter as 5, and the 5th image will be output.

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

FTP Transmission Result Contain

It selects contents to upload to the FTP server. **Just Result** refers to only upload the content of the 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 Image Format

It sets the format of the picture uploaded to FTP server.

Note

The device currently support JPG format only.

FTP File Default Name

It refers to the default name of the file uploaded to FTP server. You can set it according to actual condition.

FTP File Separator

It refers to the separator that separates file name. You can set it according to actual condition.

FTP File Name Contain Package Number Enable

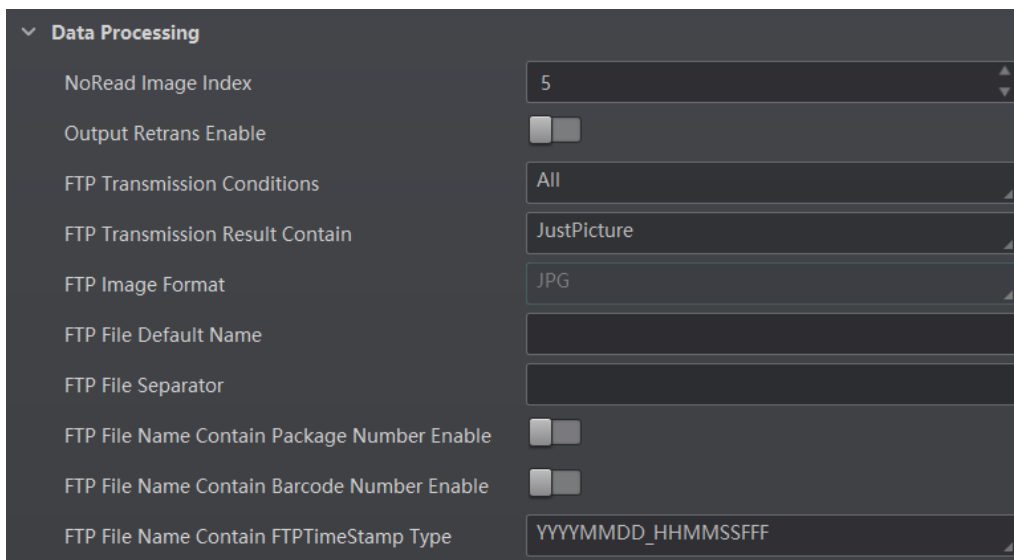
If this parameter is enabled, the name of the file uploaded to FTP server will contain the package ID.

FTP File Name Contain Barcode Number Enable

If this parameter is enabled, the name of the file uploaded to FTP server will contain the number of the barcode.

FTP File Name Contain FTP Timestamp Type

If this parameter is enabled, you can select different types of timestamp.



The screenshot shows a settings menu titled "Data Processing" with a dropdown arrow. It contains the following settings:

- NoRead Image Index: 5
- Output Retrans Enable: ☐
- FTP Transmission Conditions: All
- FTP Transmission Result Contain: JustPicture
- FTP Image Format: JPG
- FTP File Default Name: (empty text field)
- FTP File Separator: (empty text field)
- FTP File Name Contain Package Number Enable: ☐
- FTP File Name Contain Barcode Number Enable: ☐
- FTP File Name Contain FTPTimeStamp Type: YYYYMMDD_HHMMSSFF

Figure 9-30 Result Output via FTP

9.6 Communication Settings

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

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

Note

The supported communication protocols may differ by device models.

9.6.1 Smart SDK

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

Encode JPG Flag

If enabled, the device will compress the image data.

Quantity of Jpg

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

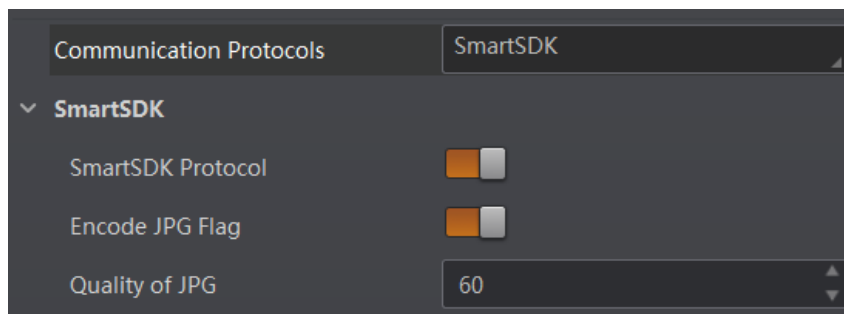


Figure 9-31 Smart SDK

9.6.2 TCP Client

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

Output Result Buffer

If enabled, when the TCP server is abnormal, the device will cache the images. When the server returns to normal, the device will send the cached images to the server. After this parameter being enabled, you can set **Output Result Buffer Number** to determine the number of the images that the device will cache.

You can also enable **TCP Protocol**, enter **TCP Dst Addr** and **TCP Dst Port**.

The screenshot shows a configuration window for 'TCP Client'. At the top, 'Communication Protocols' is set to 'TCP Client'. Below this, 'Output Result Buffer' is a toggle switch that is turned on. 'Output Result Buffer Number' is set to 15. A section titled 'TCPClient' is expanded, showing 'TCP Protocol' as a toggle switch (turned on), 'TCP Dst Addr' as '0.0.0.0', and 'TCP Dst Port' as 5000.

Figure 9-32 TCP Client

9.6.3 Serial

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

The screenshot shows a configuration window for 'Serial'. 'Communication Protocols' is set to 'Serial'. The 'Serial' section is expanded, showing 'Serial Protocol' as a toggle switch (turned on). 'Serial Baudrate' is set to 9600, 'Serial Data Bits' is set to 8, 'Serial Parity' is set to 'NoParity', and 'Serial Stop Bits' is set to 1.

Figure 9-33 Serial

9.6.4 FTP

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

Output Result Buffer

If enabled, when the FTP server is abnormal, the device will cache the images. When the FTP server returns to normal, the device will send the cached images to the server. After this parameter being enabled, you can set **Output Result Buffer Number** to determine the number of the images that the device will cache.

You can also you can enable **FTP Protocol**, enter **FTP Host Addr**,**FTP Host Port**, **FTP User Name**, and **FTP User PWD**.

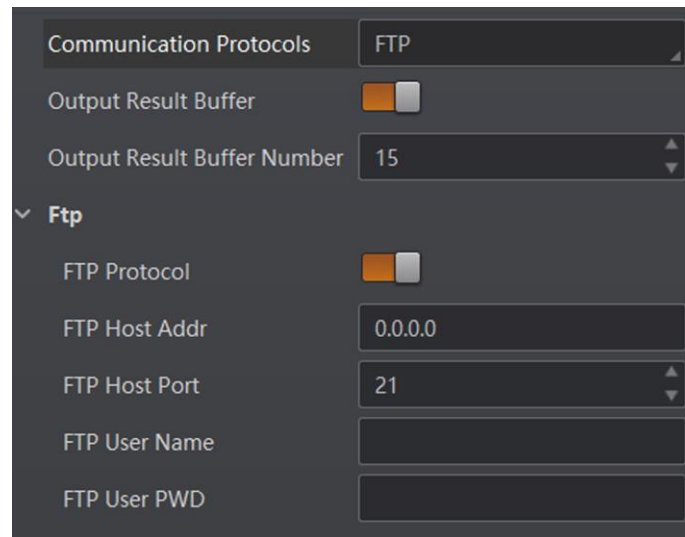


Figure 9-34 FTP

9.6.5 HTTP

If select **HTTP** as the **Communication Protocols**, you can enable **HTTP Server**, enter **HTTP Sever Port** and **WebRefresh Cycle**.

HTTP Server

If enabled, the device will output data via HTTP server.

HTTP Server Port

Enter the port No. of the HTTP server.

WebRefresh Cycle

Set the frequency to refresh the Web.

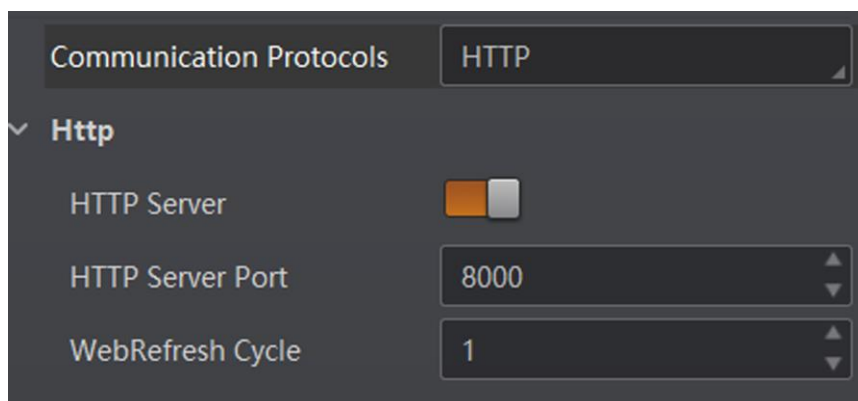


Figure 9-35 HTTP

9.6.6 TCP Server

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

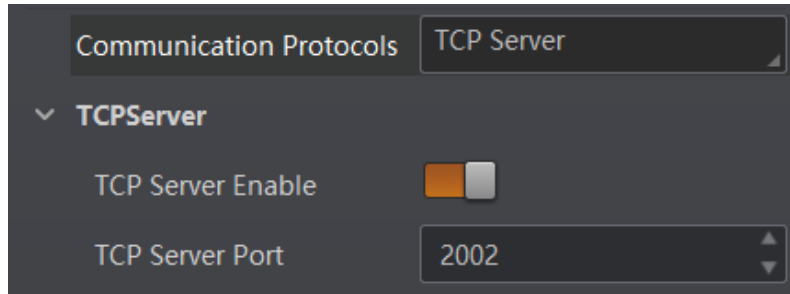


Figure 9-36 TCP Server

9.7 User Set Customization

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

Save Settings

If you have set the device parameters as desired, you can save them into the user set. Go to **Config Management** → **Save Settings**, and click **UserSet1**, **UserSet2**, or **UserSet3** to save the current device settings.

Load Settings

You can load the user set to restore the device to the saved group of parameter values again if required. Go to **Config Management** → **Load Settings**, and click **Default**, **UserSet1**, **UserSet2**, or **UserSet3** to load settings.

Note

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

Start Settings

The selected user set will be automatically loaded after the device being powered on. For example, if you select **Default**, the device parameter settings will be restored to the factory settings.

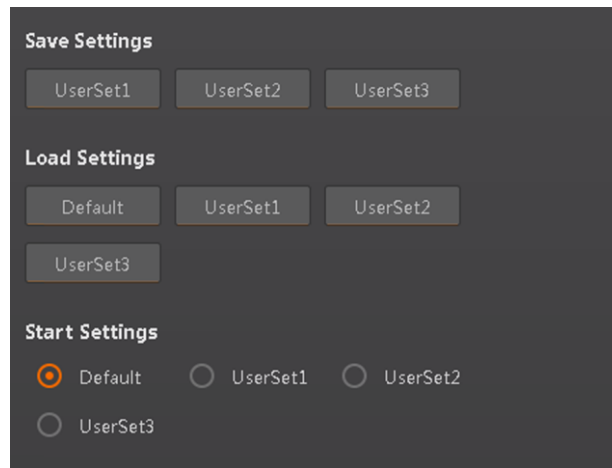


Figure 9-37 User Set Customization

Chapter 10 Device Operation

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

Note

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

10.1 Live View

You can view the real-time image in the live view window.

Click  in live view window to start live view, or click  to stop.

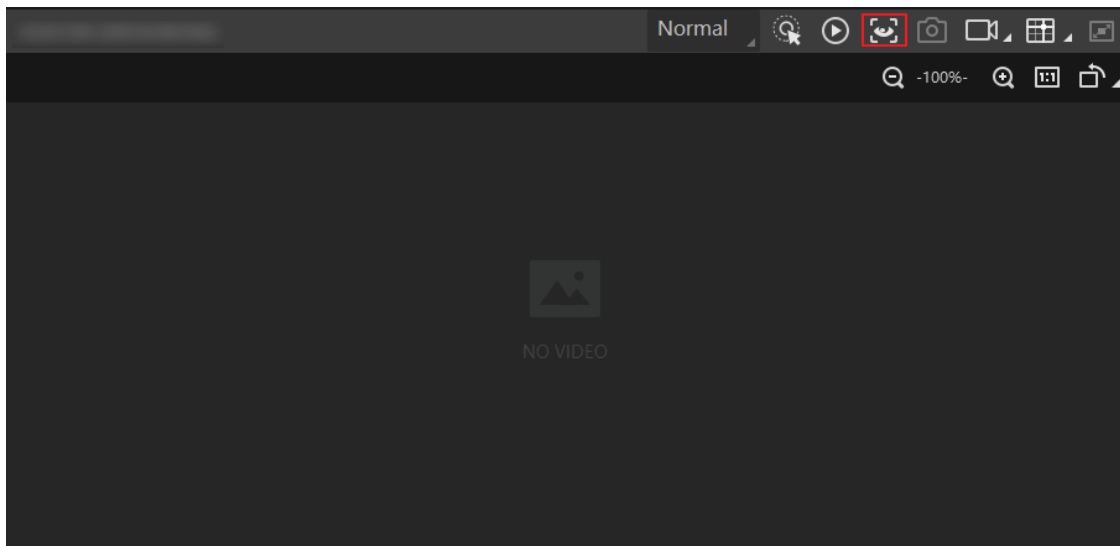


Figure 10-1 Live View

10.2 Enable Acquisition

Enabling acquisition allows the device to acquire the real-time stream.

Click  in live view window to start acquisition, or click  to stop. You can also right click the device on the device list, and click **Stop Acquisition** to stop acquiring streams.

Note

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

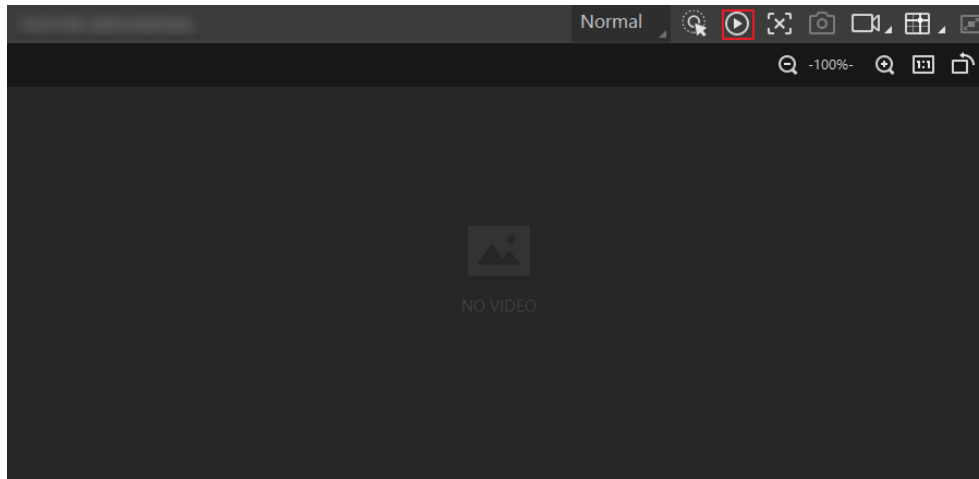


Figure 10-2 Enable Acquisition

10.3 Add Cross Line

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

Click  in live view window to add cross line, and click  (beside ) to open the editing window to set cross line parameters.



Figure 10-3 Add Cross Line

10.4 Start Recording

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

Note

Enabling acquisition is required before recording.

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

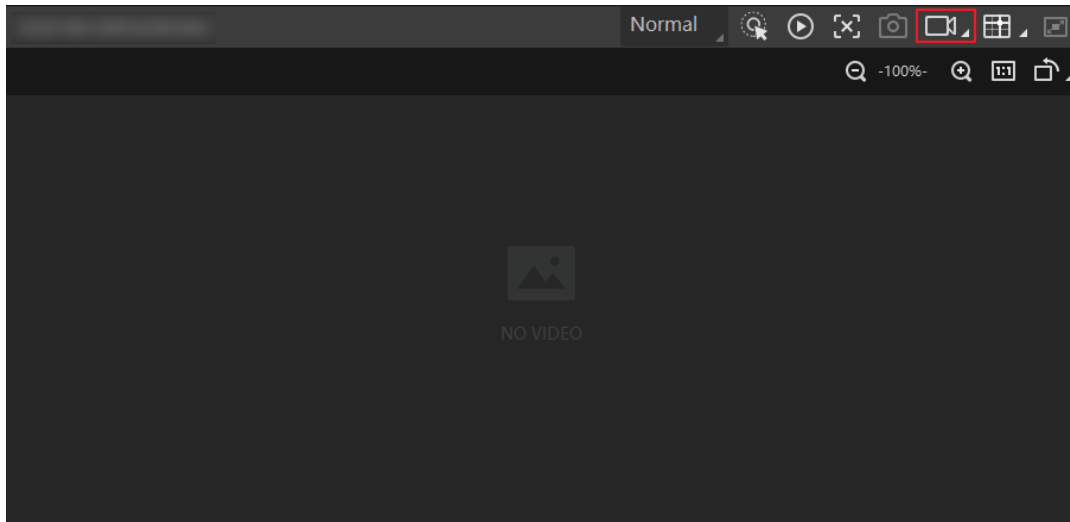


Figure 10-4 Start Recording

10.5 Split Window

The client software supports window division function that allows you to split the window into multiple-window mode to view the live view of multiple devices at the same time.

Click  in control toolbar to select window division mode. You can click **Custom** to customize window division as you desired.

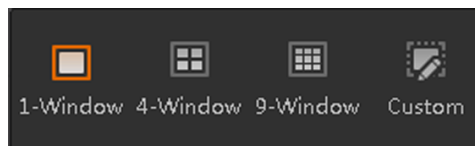


Figure 10-5 Split Window

10.6 View Reports

During acquisition or live view, you can view the reading status of the device.

Click  in control toolbar to open the statistics window to view the detailed information.

Read Code Images refers to the number of the images on which the codes are read by the device. **Unread Code Images** refers to the number of the images on which the codes are not read by the device. **Read Rate** refers to the code reading rate.

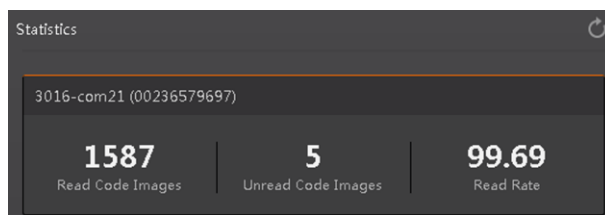


Figure 10-6 View Reports

10.7 View Log

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

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

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

Figure 10-7 View Log

10.8 Enable Device Auto Work

This function allows the device to automatically enter the operating status after being powered on.

You can go to **Config Management** → **Device Auto Work Enable**, and enable **Device Auto Work Enable**.

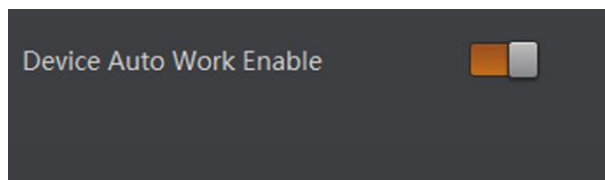


Figure 10-8 Enable Device Auto Work

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.

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

Note

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

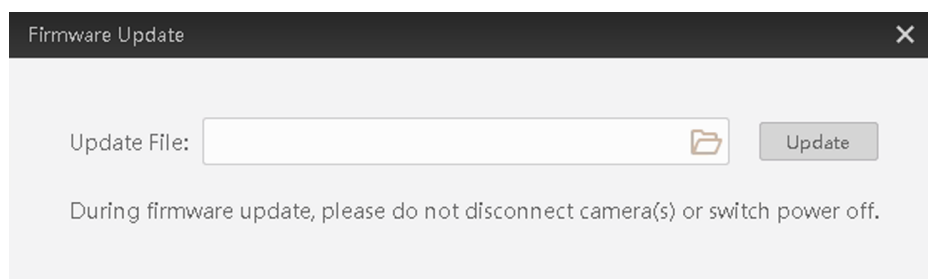


Figure 11-1 Update Firmware

11.2 Reboot Device

You can reboot the device via client software in 2 ways. Go to **Config Management**, and click **Restart Device**. Or, you can select the device to be rebooted in the device list, right click the device, and click **Device Reset**.

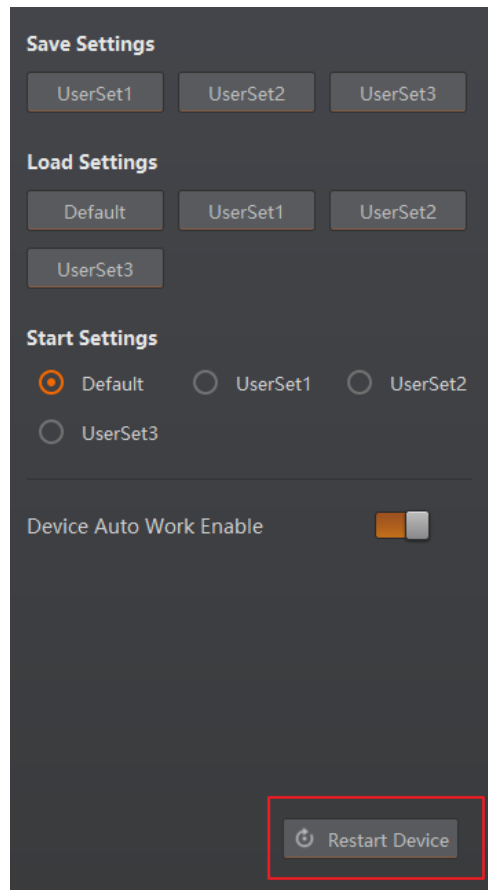


Figure 11-2 Reboot Device

Chapter 12 FAQ (Frequently Asked Question)

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

Reason

- The device is powered off.
- Network exception.

Solution

- Check the device power connection (observe whether the indicator is solid blue or not) to make sure the device is powered up normally.
- Check the network connection to make sure that the device can be connected to the network normally. PC port and the device are in the same network segment.

12.2 Why the image is very dark?

Reason

Insufficient brightness of supplement light due to the small distance between conveyer belts.

Solution

Increase the distance between conveyer belts. It is recommended to have the distance of 30 mm at least.

12.3 Why the image quality is very poor during the live view?

Reason

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

Solution

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

12.4 Why there is no image in the live view?

Reason

- Enabled trigger mode, but there is no trigger signal.
- Incorrect device mode settings, and no codes are recognized within the field of view.

Solution

- Disable the trigger mode.
- Set the device mode as the test mode.

12.5 Why the recognized codes are opposite in direction with actual ones?

Reason

Inconsistency between TDI Direction settings and the running direction of the conveyer belt and the direction that device captures images.

Solution

Go to **Feature Tree** → **Image Settings** → **TDI Direction**, and set the **TDI Direction** according to actual demands.

If the running direction of the conveyer belt is the same with the direction that device captures images, and select **Forward Direction** as **TDI Direction**. Otherwise, select **Backward Direction** as **TDI Direction**.

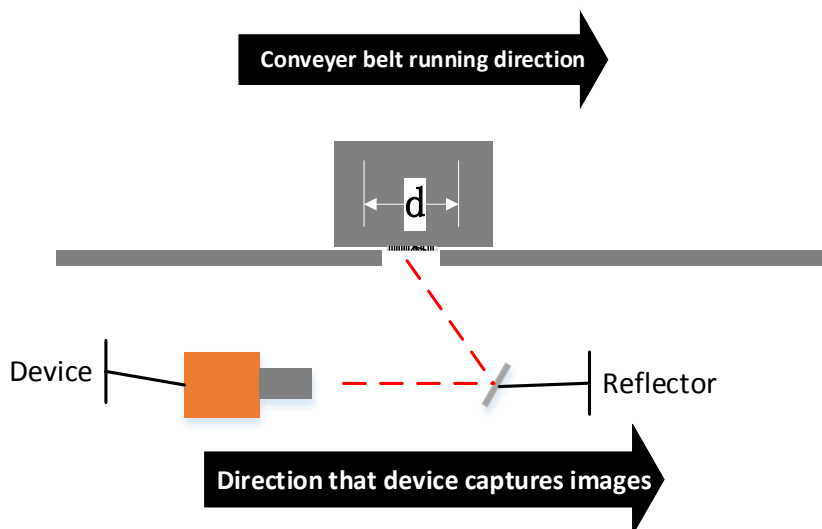


Figure 8-1 Same Direction

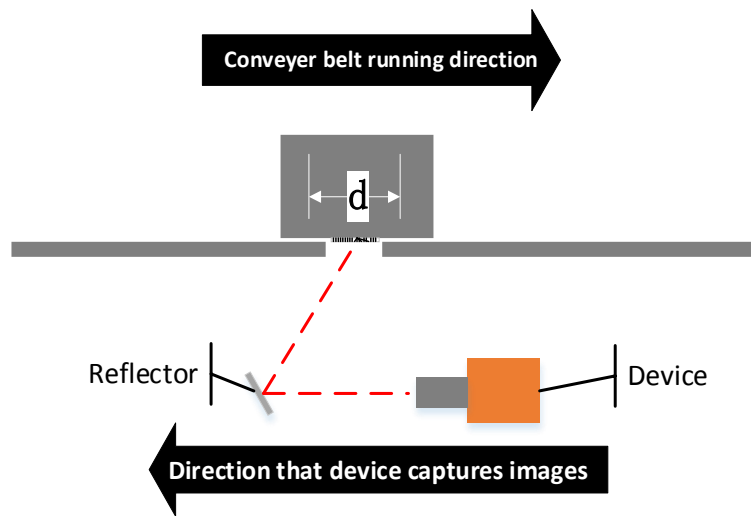


Figure 8-2 Opposite Direction

12.6 Why codes within the field of view cannot be recognized?

Reason

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

Solution

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

12.7 How to adjust focal length for code reading?

Reason

The static debugging of the device is very inconvenient because the image acquisition is in a dynamic way. Besides, regarding code recognition, the code definition requirements of different mils are also different.

Solution

Find three codes that need to be recognized (codes with the lowest density), and place codes facing down on the left, middle, and right of the conveyor (codes placed horizontally). At this time, these codes can also be seen in the static preview of the device. Adjust focal length to make sure that three images can be clearly distinguished. Tighten screws after adjusting the focal length.



See Far, Go Further