Hikrobot Co., Ltd.

SC3000X Series Vision Sensor

Quick Start Guide

HIKROBOT

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Symbol Conventions

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

Symbol	Description
Danger	Indicates a hazard with a high level of risk, which if not avoided, will result

Symbol	Description
	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 SC3000X Series Vision Sensor.

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Contents

Chapter 1 Safety Instruction **1**
1.1 Safety Claim 1
1.2 Safety Instruction 1
1.3 Electromagnetic Interference Prevention 3
Chapter 2 Overview **4**
2.1 Introduction 4
2.2 Key Feature 4
Chapter 3 Appearance **5**
Chapter 4 Connector and Indicator **8**
4.1 12-Pin Connector 8
4.2 17-Pin Connector 9
4.3 Indicator 10
Chapter 5 Device Installation and Wiring **11**
5.1 Installation Preparation 11
5.2 Install Device 12
5.3 Wire Device 14
5.3.1 Wire Device Type I 14
5.3.2 Wire Device Type II 15
Chapter 6 Device Debugging **16**
6.1 Set PC Network 16
6.2 Install Client Software 17
6.3 Set Device Network 18
6.4 Login 19
Chapter 7 Client Layout and Operation Flow **20**
7.1 Main Window Introduction 20
7.2 Operation Flow 21
Chapter 8 I/O and Serial Port **23**
8.1 I/O Electrical Feature 23
8.1.1 Input Signal 23
8.1.2 Output Signal 24
8.2 I/O Wiring 25
8.2.1 Input Signal Wiring 25

8.2.2 Output Signal Wiring 26
8.3 RS-232 Serial Port 27
8.3.1 RS-232 Serial Port Introduction 27
8.3.2 RS-232 Serial Port Wiring 28
Chapter 9 FAQ (Frequently Asked Question) **29**
9.1 Why the client software cannot list devices? 29
9.2 Why the image is very dark? 29
9.3 Why the image's frame rate is very low in the live view? 29
9.4 Why there is no image in the live view? 30

Chapter 1 Safety Instruction

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

1.1 Safety Claim

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

1.2 Safety Instruction

Caution

- Do not install the device if it is found that the device and accessories are damaged, rusted, water ingress, model mismatch, missing parts, etc., when unpacking.
- Avoid storage and transportation in places such as water splashing and rain, direct sunlight, strong electric fields, strong magnetic fields, and strong vibrations.
- Avoid dropping, smashing or vigorously vibrating the device and its components.
- It is forbidden to install the indoor device in an environment where it may be exposed to water or other liquids. If the device is damp, it may cause fire and electric shock hazard.
- Place the device in a place out of direct sunlight and ventilation, away from heat sources such as heaters and radiators.
- This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
- In the use of the device, you must be in strict compliance with the electrical safety regulations of the nation and region.
- Use the power adapter provided by the official manufacturer. The power adapter must meet the Limited Power Source (LPS) requirements. For specific requirements, please refer to the device's technical specifications.
- It is strictly forbidden to wire, maintain, and disassemble the device is powered on. Otherwise, there is a danger of electric shock.
- Before powering on the device, please confirm that the device is installed in good condition, the wiring is firm, and the power supply meets the requirements.
- This device is not suitable for use in places where children may appear.
- Using the wrong type of battery replacement (for example, some types of lithium batteries) may cause the safety protection to fail.
- Do not throw the battery into a fire or heating furnace, do not squeeze, bend or cut the battery, which

may cause an explosion.
- Do not place the battery in an extremely high temperature or low pressure environment, which may cause the battery to explode or leak flammable liquids or gases.
- Waste batteries can cause pollution to the environment, please follow the instructions to dispose of the used batteries.
- If the device emits smoke, odor or noise, please turn off the power and unplug the power cord immediately, and contact the dealer or service center in time.
- It is strictly forbidden to touch any terminal of the device when operating it. Otherwise there is a danger of electric shock.
- It is strictly forbidden for non-professional technicians to detect signals during device operation, otherwise it may cause personal injury or device damage.
- It is strictly forbidden to maintain the device is powered on, otherwise there is a danger of electric shock.
- Avoid aiming the lens at strong light such as lighting, sunlight, or laser beams, etc., otherwise the image sensor will be damaged.
- It is forbidden to touch the image sensor directly. If necessary, please moisten a soft clean cloth with 75% or less alcohol and gently wipe off the dust. When the device is not in use, please add a dust cover to protect the image sensor.
- Keep clean of the device's image acquisition window. It is recommended to use cleaning water to wipe off the dust.
- If the device does not work properly, please contact your dealer or the nearest service center. Never attempt to disassemble the device yourself. We shall not assume any responsibility for problems caused by unauthorized repair or maintenance.
- Caution: If the device has battery, risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.
- Please dispose of the device in strict accordance with the relevant national or regional regulations and standards to avoid environmental pollution and property damage.

Note

- Check whether the device's package is in good condition, whether there is damage, intrusion, moisture, deformation, etc. before unpacking.
- Check the surface of the device and accessories for damage, rust, bumps, etc. when unpacking.
- Check whether the quantity and information of the device and accessories are complete after unpacking.
- Store and transport the device according to the storage and transport conditions of the device, and the storage temperature and humidity should meet the requirements.
- It is strictly prohibited to transport the device in combination with items that may affect or damage the device.
- Do not contact the device with strong acids, alkalis, oils, greases or organic solutions such as thinners.
- Please read the manual and safety instructions carefully before installing the device.
- Quality requirements for installation and maintenance personnel:
  - Qualification certificate or working experience in weak current system installation and maintenance, and relevant working experience and qualifications. Besides, the personnel must possess the following knowledge and operation skills.
  - The basic knowledge and operation skills of low voltage wiring and low voltage electronic circuit connection.
  - The ability to comprehend the contents of this manual.

1.3 Electromagnetic Interference Prevention

- Make sure that the shielding layer of cables is intact and 360° connected to the metal connector when using shielded cables.
- Do not route the device together with other equipment (especially servo motors, high-power devices, etc.), and control the distance between cables to more than 10 cm. Make sure to shield the cables if unavoidable.
- The control cable of the device and the power cable of the industrial light source must be wired separately to avoid bundled wiring.
- The power cable, data cable, signal cable, etc. of the device must be wired separately. Make sure to ground them if the wiring groove is used to separate the wiring and the wiring groove is metal.
- During the wiring process, evaluate the wiring space reasonably, and do not pull the cables hard, so as not to damage the electrical performance of the cables.
- If the device is powered on and off frequently, it is necessary to strengthen the voltage isolation, and consider adding a DC/DC isolation power supply module between the device and the adapter.
- Use the power adapter to supply power to the device separately. If centralized power supply is necessary, make sure to use a DC filter to filter the power supply of the device separately before use.
- The unused cables of the device must be insulated.
- When installing the device, if you cannot ensure that the device itself and all equipment connected to the device are well grounded, you should isolate the device with an insulating bracket.
- To avoid the accumulation of static electricity, ensure that other equipment (such as machines, internal components, etc.) and metal brackets on site are properly grounded.
- Make sure that the connector metal barrier of the device is well connected to the PC and other chassis, and if necessary, copper foil should be used to enhance the grounding effect.
- During the installation and use of the device, high voltage leakage must be avoided.
- Use a figure-eight bundle method if the device cable is too long.
- When connecting the device and metal accessories, they must be connected firmly to maintain good conductivity.
- Use a shielded network cable to connect to the device. If you use a self-made network cable, make sure that the shielding shell at the aviation head is well connected to the aluminum foil or metal braid of the shielding cable.

Chapter 2 Overview

2.1 Introduction

The vision sensor mentioned in this manual integrates functions of image acquisition, image processing and result output, and is used in machine vision inspection. The device uses image sensors and optical elements to obtain the image of the measured object, realizes the functions of counting, existence, measurement and recognition via the built-in algorithms, and can output the detection results through a variety of communication methods. With the client software, the device can quickly build the project and finish related configurations, and it is easy to use, widely used in the industrial field.

2.2 Key Feature

- Adopts embedded hardware platform to realize high-speed image processing.
- Provides built-in algorithms for high-precision positioning, measurement, and recognition which can be applied in applications such as counting, defect detection, existence, and positioning.
- Supports RS-232, TCP, UDP, FTP, ModBus, PROFINET, EtherNet/IP and other communication modes.
- Adopts multiple IO interfaces for input and output signals.
- Supports viewing the device's status in real time via multi-angle visual indicator, convenient for debugging and maintenance.
- Adopts polarized, diffused, and full-transparent multiple optical lighting with good environmental adaptability.
- High degree of protection without fear of harsh industrial application environments.

Note

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

Chapter 3 Appearance

Note

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



Figure 3-1 Appearance of Type I (Device Without Attached Cable)



Figure 3-2 Appearance of Type II (Device with Attached Cable)

Table 3-1 Component Description

No.	Name	Description
1	Lens Cap	● The device with mechanical focusing: It adopts polarized + diffused + full-transparent lens cap. ● The device with liquid lens focusing: It adopts polarized + full-transparent lens cap. With lens cap, the device can easily adapt to environmental changes and ensure the stability of image processing. **Note** It can be replaced with other lens cap according to actual demands.
2	Image Sensor	It is used to acquire images.
3	Light Source	● The device with mechanical focusing: It is the white spot light source × 4 and white diffused light source × 18 by default. ● The device with liquid lens focusing: It is the white spot light source × 4. Light source is used to provide light when the device acquires images. **Note** It can be replaced with red/blue/IR light source according to actual demands.

No.	Name	Description
4	Aiming System	It is orange LED light used to show the field of view and aim targets.
5	Trigger Button	It is used to trigger the device via pressing the button. If the device is in trigger mode, press the button and the device triggers once.
6	Device Indicator	It is a multi-angle visible indicator for observing the device's status. Refer to section ***Indicator*** for details.
7	Rear Screw Hole	It is used to fix the device, and you should use M3 screws.
8	Right Angle Rotation Structure	It is used to rotate the device's cables. **Note** It is supported by the device type I.
9	12-Pin Connector	It provides power supply, I/O, and RS-232 signals. **Note** It is supported by the device type I.
10	Network Interface	It is fast Ethernet for transmitting data. **Note** It is supported by the device type I.
11	Bottom Screw Hole	It is used to connect protective cover, and you should use M3 screws.
12	Cable	It provides power supply, I/O, Ethernet, and serial port signal. **Note** It is supported by the device type II.
13	Extended Interface Cover (Micro SD Card)	Loosen the screws to remove the cover, and you can insert the Micro SD (TF) card. **Note** It is supported by the device models with liquid lens focusing.

Chapter 4 Connector and Indicator

4.1 12-Pin Connector

Read the following section to get pin definitions of 12-pin connector. It is used for device type I.

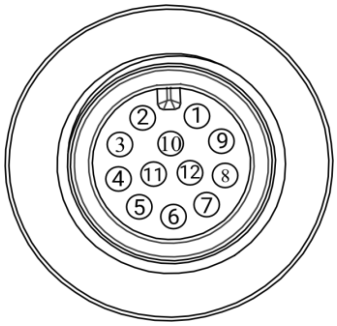


Figure 4-1 12-Pin Connector

Table 4-1 Pin Definitions

No.	Cable Color		Signal	I/O Signal Source	Description
1	White		DC-PWR	--	Direct current power supply positive
2	Brown		GND	--	Power supply ground
3	Green		LINE 3	LINE 3 signal line	I/O isolated output 3
4	Yellow		LINE 4	LINE 4 signal line	I/O isolated output 4
5	Gray		LINE 5	LINE 5 signal line	I/O isolated output 5
6	Pink		OUT_COM	LINE 3/4/5 signal ground	Output common port
7	Blue		LINE 0	LINE 0 signal line	I/O isolated input 0
8	Red		LINE 1	LINE 1 signal line	I/O isolated input 1
9	Black		LINE 2	LINE 2 signal line	I/O isolated input 2
10	Purple		IN_COM	LINE 0/1/2 signal ground	Input common port
11	Gray/Pink		RS-232_R	--	RS-232 input
12	Red/Blue		RS-232_T	--	RS-232 output

Note

You should refer to the table above and the label attached to the supplied power and I/O cable to wire the device.

4.2 17-Pin Connector

Read the following section to get pin definitions of 17-pin connector. It is used for device type II.

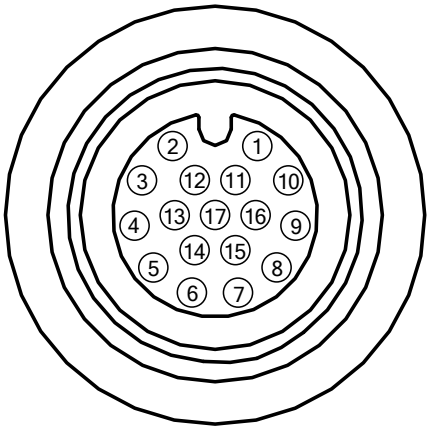


Figure 4-2 17-Pin Connector

Table 4-2 Pin Definitions

No.	Cable Color		Signal	I/O Signal Source	Description
1	Red		24V	--	Direct current power supply positive
2	Brown		OPTO_OUT2	LINE 5 signal line	Opto-isolated output
3	Purple/White		OUT_COM	LINE 3/4/5 signal ground	Output common port
4	Green		232_TXD	--	RS-232 output
5	Green/White		232_RXD	--	RS-232 input
6	Yellow		MDI0+	--	Fast Ethernet signal MDI0+
7	Orange/White		MDI1-	--	Fast Ethernet signal MDI1-
8	Blue/White		OPTO_OUT0	LINE 3 signal line	Opto-isolated output
9	Blue		OPTO_IN2	LINE 2 signal line	Opto-isolated input
10	Brown/White		OPTO_OUT1	LINE 4 signal line	Opto-isolated output
11	Black		GND	--	Power supply ground
12	Pink		IN_COM	LINE 0/1/2 signal ground	Input common port
13	--	—	--	--	--
14	Yellow/White		MDI0-	--	Fast Ethernet signal MDI0-
15	Orange		MDI1+	--	Fast Ethernet signal MDI1+

No.	Cable Color		Signal	I/O Signal Source	Description
16	Gray		OPTO_IN0	LINE 0 signal line	Opto-isolated input
17	White		OPTO_IN1	LINE 1 signal line	Opto-isolated input

Note

You should refer to the table above and the label attached to the supplied power and I/O cable to wire the device.

4.3 Indicator

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

Table 4-3 Indicator Description

Device Status		Indicator Status	
Power Off Status		Unlit	--
Non-Streaming Status		Solid Yellow	
Streaming Status	Project Result OK	Solid Green	
	Project Result NG	Solid Red	

Chapter 5 Device Installation and Wiring

5.1 Installation Preparation

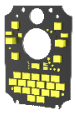
You need to prepare following accessories before installation. The included accessories are in the device's package, and you can purchase optional accessories according to actual demands.

Table 5-1 Included Accessories

No.	Name	Picture	Quantity	Description
1	12-Pin Power and I/O Cable		1	It refers to the 3-meter 12-pin M12 to open cable. **Note** It is supplied for the device type I.
2	M12 Network Cable		1	It refers to the 3-meter M12 to RJ45 network cable. **Note** It is supplied for the device type I.
3	17-Pin Power and I/O Cable		1	It refers to the 0.5-meter 17-pin M12 to green terminal cable. **Note** It is supplied for the device type II.
4	Installation Bracket		1	It is used to fix the device.

Table 5-2 Optional Accessories

No.	Name	Picture	Quantity	Description
1	Power Adapter		1	You should select suitable power adapter or switch power supply according to the device power supply and consumption.
2	ESD Protective Cover		1	It is used to achieve ESD protection.
3	Diffuser Cover		1	It is used to suppress background interference.
4	YAG Protective Cover		1	It is used to avoid YAG laser.

No.	Name	Picture	Quantity	Description
5	12-Pin Power and I/O Cable		1	You can purchase flexible or different-length 12-pin M12 to open cable according to actual demands. **Note** It is supplied for the device type I.
6	M12 Network Cable		1	You can purchase flexible or different-length M12 to RJ45 network cable according to actual demands. **Note** It is supplied for the device type I.
7	17-Pin Power and I/O Cable		1	You can purchase different-length 17-pin M12 to green terminal cable according to actual demands. **Note** It is supplied for the device type II.
8	Lens Cap		1	You can purchase a diffused + full-transparent lens cap or a polarized + diffused lens cap. **Note** It can be replaced with other lens cap according to actual demands.
9	Light Board		1	You can purchase a red/blue/IR light board. **Note** It can be replaced with other light board according to actual demands.

Note

The pictures here are for reference only. Please refer to the actual device.

5.2 Install Device

Before You Start

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

Steps

1. Select a suitable installation location according to the device's field of view.

Note

- Refer to the device's datasheet for its field of view and installation range.
- The pictures here are for reference only. Please refer to the actual device.

2. (Optional) Adjust the device's right angle rotation structure according to the installation location.

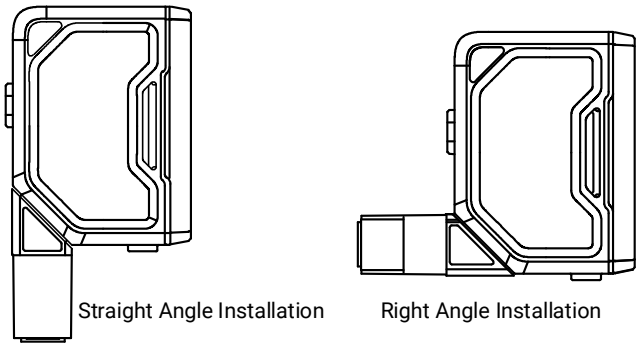


Figure 5-1 Adjust Right Angle Rotation Structure

Note

- Refer to the device's datasheet for the dimension of the right angle rotation structure.
- Only the device type I supports the right angle rotation.

3. Use M3 screws to fix the installation bracket to the device, as shown below.

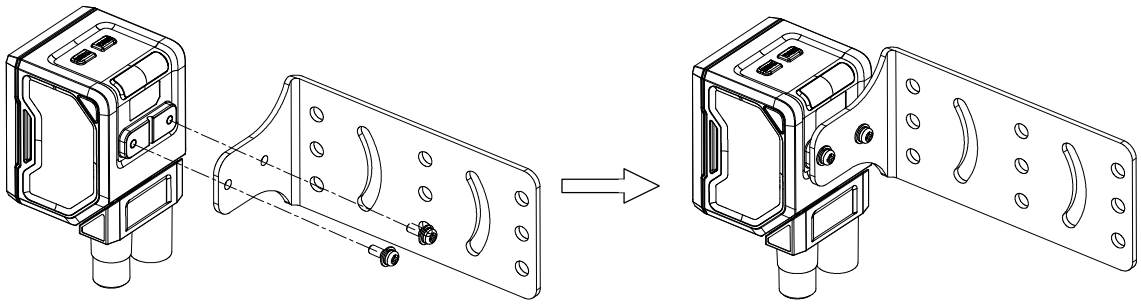


Figure 5-2 Fix Installation Bracket

4. Install the device to the installation location via the bracket.
5. (Optional) loosen the two screws on the cover as shown below, and plug the Micro SD (TF) card. Please keep the screws in a safe place.

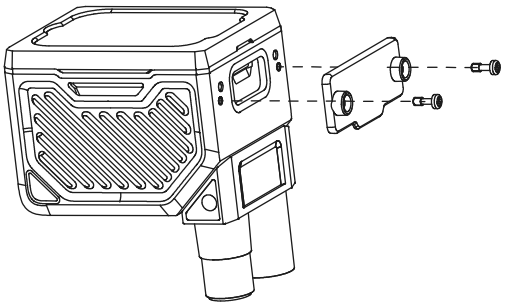


Figure 5-3 Install SD Card

Note

- Only the device models with liquid lens focusing support the installation of Micro SD (TF) card.
- The pictures here are for reference only. Please refer to the actual device.

5.3 Wire Device

5.3.1 Wire Device Type I

After installing the device, you should connect the device to a network cable for image debugging and data communication, and connect the device to a power and I/O cable for power supply.

Steps

1. Use the supplied 8-pin M12 network cable to connect the device's network interface.

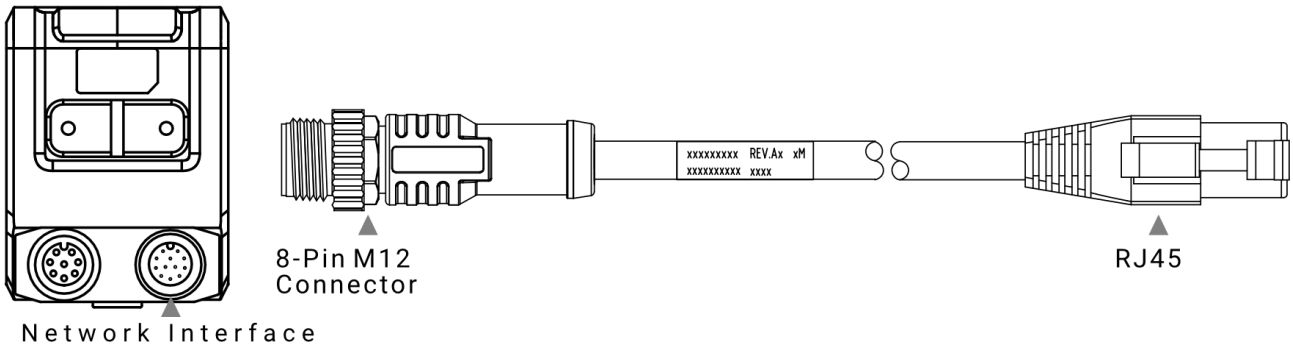


Figure 5-4 Connect Device's Network Interface

Note

The 8-pin M12 connector has screw thread, and it is recommended to tighten the connector before using the device to reduce looseness due to the vibration on-site.

2. Insert the RJ45 port of the supplied 8-pin M12 network cable to the PC.
3. Use the supplied power and I/O cable to connect the device's 12-pin connector.

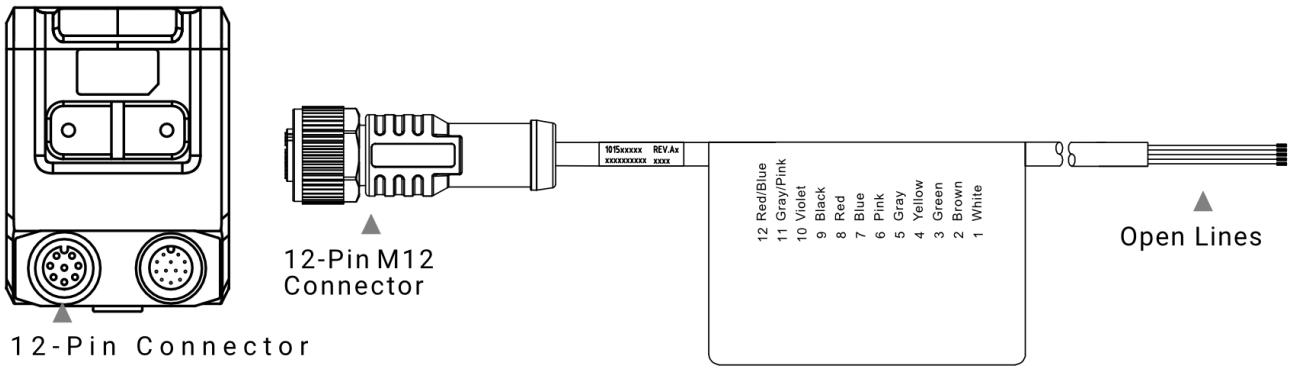


Figure 5-5 Connect Device's 12-Pin Connector

Note

The 12-pin M12 connector has screw thread, and it is recommended to tighten the connector before using the device to reduce looseness due to the vibration on-site.

4. Select suitable power adapter to connect the open lines of the supplied power and I/O cable for power supply.

Note

- The device's indicator is solid yellow after powering on the device without streaming.
- Refer to the pin definitions of the 12-pin connector for specific color of open lines.

5.3.2 Wire Device Type II

After installing the device, you should connect the device to the supplied cable for power supply, I/O, Ethernet, and serial port.

Steps

1. Use the supplied 17-pin M12 cable to connect the device's network interface.

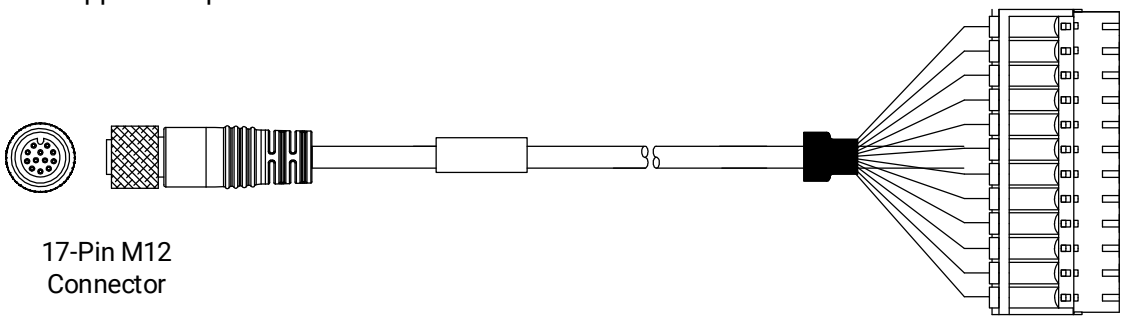


Figure 5-6 Connect Device

2. Use the supplied green terminal to connect the network interface of the PC or the switch.
3. Select suitable power adapter to connect the supplied green terminal and power supply.

Note

- The device's indicator is solid yellow after powering on the device without streaming.
- Refer to the pin definitions of the 17-pin connector for details.

Chapter 6 Device Debugging

Before debugging the device, you need to set the PC's network, install the client software and log into the device.

6.1 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.

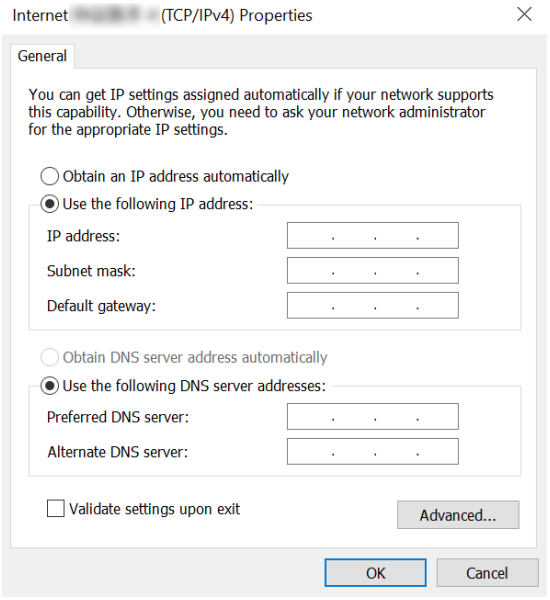


Figure 6-1 Set PC Network

Note

It is recommended to use the static IP address to reduce time for searching the device.

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 **Speed and Duplex** as **Auto-Negotiation** or **100 Mbps**.

6.2 Install Client Software

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

Note

- Check the Windows version. The client software is compatible with 32/64-bit Windows 7/10 and 64-bit Windows 11.
- You can get the client software installation package from ***https://en.hikrobotics.com/***.
- The graphic user interface may differ by different versions of client software you use.

Steps

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

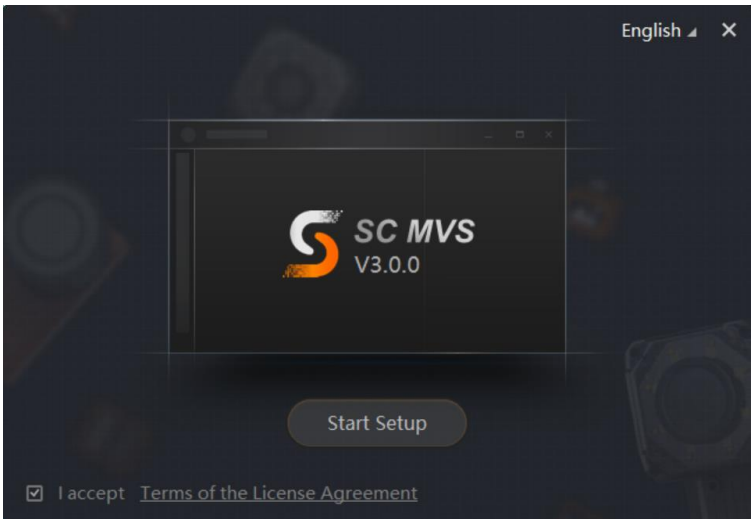


Figure 6-2 Installation Window

5. Select installation directory and click **Next**.

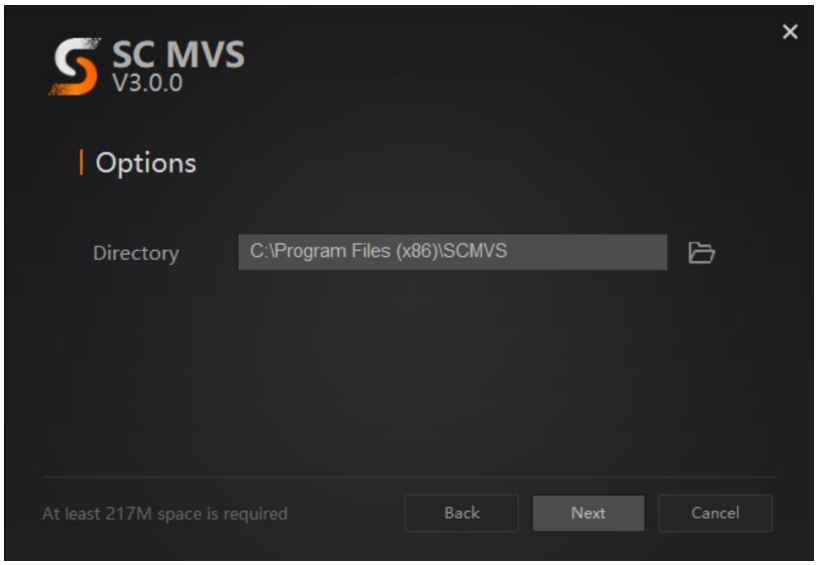


Figure 6-3 Click Next

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 to run it.
2. Click in the device list to find the device, or click to add the device remotely.
3. Right click the device to be connected.
4. Click **Edit IP Address**.
5. Set the IP address of the device in the same network segment with the PC.

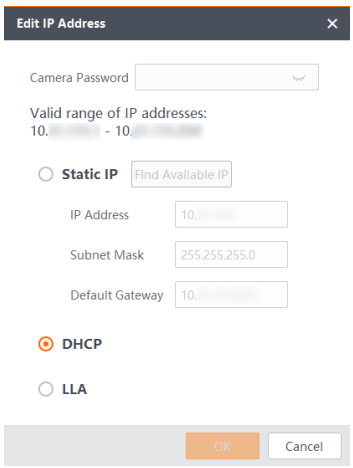


Figure 6-4 Edit IP Address

6. Click **OK**.

6.4 Login

Note

- Make sure that your device IP address is in the same network segment with the PC where you installed the client software before connecting the device to it.
- The default login password is Abc1234, and it is highly recommended to change the password for the first time use.
- Follow the guidance to find the password if you forget it.
- The client interface and functions vary with client versions, and the actual interface shall prevail.
- Refer to the user manual of the SCMVS client software for detailed operation.

Steps

1. Click the device in the device list.
2. Enter password.
3. Click  to log in.

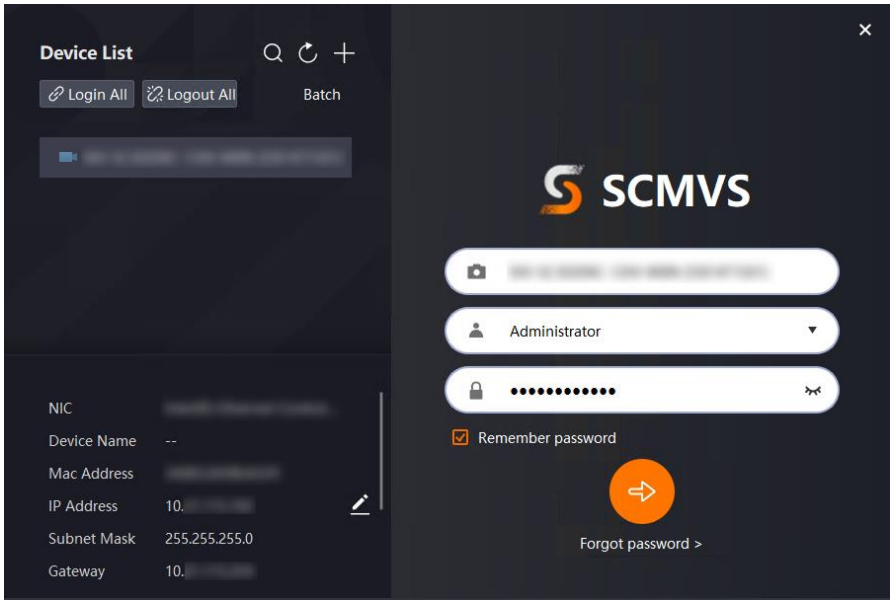


Figure 6-5 Login Window

4. (Optional) Check **Remember me** to remember the password if necessary.

Note

If you forget password, click **Forgot Password** in the login interface to view the device's serial No., and mail it to the technical support personnel or call them to get the corresponding resetting file. After that, import the resetting file and reset the password as the default one.

Chapter 7 Client Layout and Operation Flow

7.1 Main Window Introduction

After logging into the client software, you can see the main window as shown below.

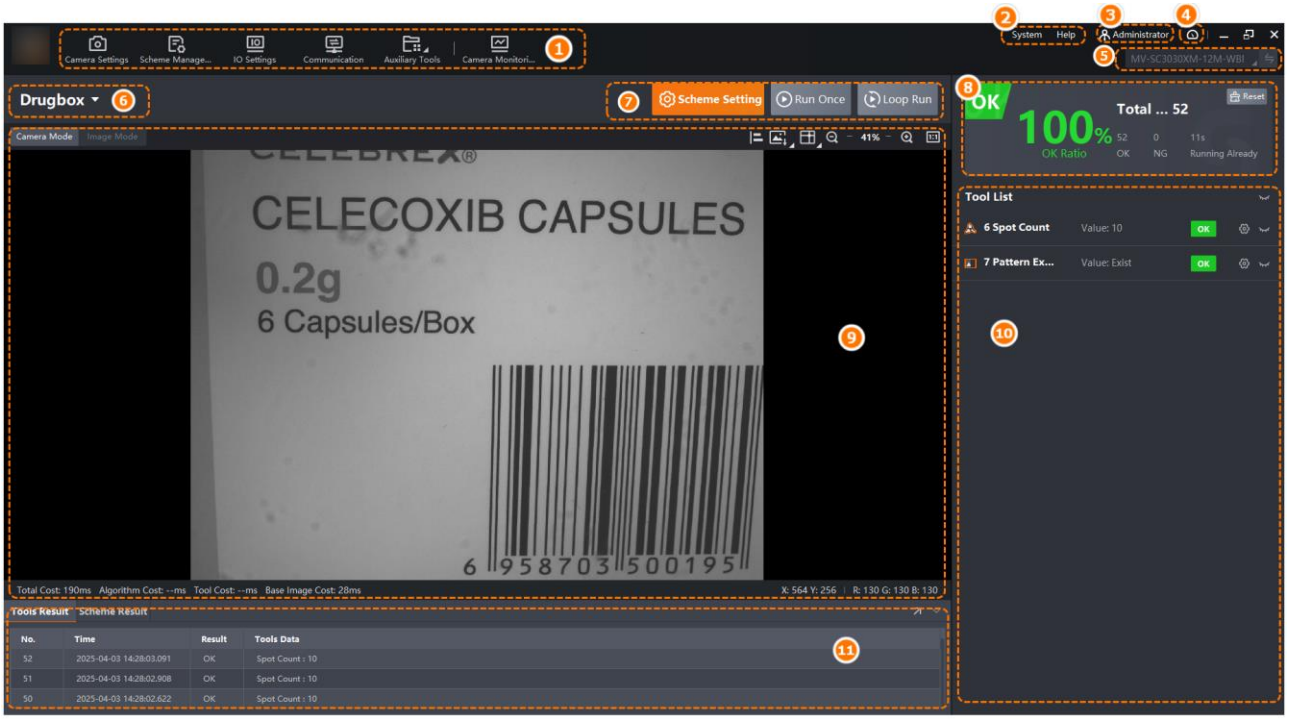


Figure 7-1 Main Window

Note

- The specific interfaces of the client software may differ by its versions.
- The client software loads and runs previous projects after logging in. If there is no project, the client software will create and run a new project.

Table 7-1 Main Window Description

No.	Name	Description
1	Menu Bar	The menu bar includes options such as **Camera Settings**, **Scheme Management**, **IO Settings**, **Communication**, **Auxiliary Tools**, and **Monitor**.
2	System and Help	Provides menu options such as system settings and help. Through these menus, you can easily change the system language, basic system settings, and view the help documentation.
3	User Role	You can view, switch, and manage roles. The roles include administrator, technical support, maintenance personnel, and operator. Different roles have

No.	Name	Description
		different permissions. The role management is only available for the administrator.
4	Resource Information	You can view the usage of memory, intelligent memory, and CPU. ● Memory usage: It refers to the percentage of total memory being used by the system. ● Intelligent memory usage: It refers to the percentage of total memory being used by the algorithm. ● CPU usage: It refers to the percentage of time that the processor spends executing tasks.
5	Device List	Allows you to view the camera currently in use or switch to a camera that you have logged into. If you want to log in or log out multiple cameras, click and select the desired cameras. Up to 9 cameras are allowed to connect the Software.
6	Scheme Name	● Displays the current scheme name. ● Allows you to quickly switch or add schemes by clicking the scheme name and selecting from the dropdown list.
7	Project Management	You can run (once/loop), stop, or edit schemes here.
8	Project Status Display Area	This area displays operation status of current projects in real time.
9	Live View Window	This area displays images and results under camera mode and image mode in real time. Under image mode, you can import images into the device.
10	Tool Display Area	This area displays operation results of vision tools loaded in projects in real time. You can edit the specific vision tool.
11	Result Area	This area displays operation results of projects or tools.

7.2 Operation Flow

Note

- Refer to the user manual of the SCMVS client software for detailed parameter settings and operations.
- Click **Help** on the upper right corner of the client software, and click **User Manual** to open.

You can follow the overall operation flow below to create or edit projects via the client software.

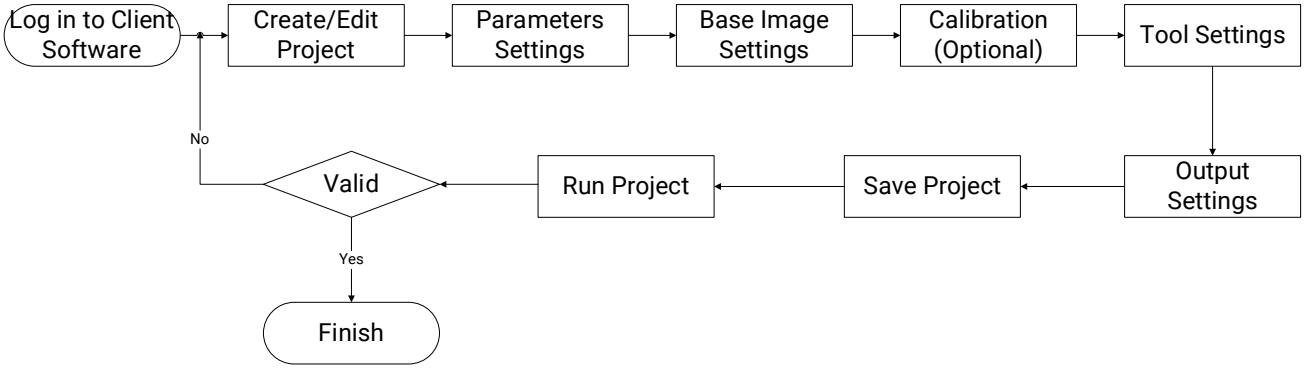


Figure 7-2 Operation Flow

Chapter 8 I/O and Serial Port

The device's 12-pin connector has three opto-isolated inputs (LINE 0/1/2), three opto-isolated outputs (LINE 3/4/5), and one RS-232 serial port. This section introduces the I/O electrical feature and I/O wiring, as well as RS-232 serial port.

8.1 I/O Electrical Feature

This section introduce the electrical feature of opto-isolated input and opto-isolated output.

8.1.1 Input Signal

The device's LINE 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.

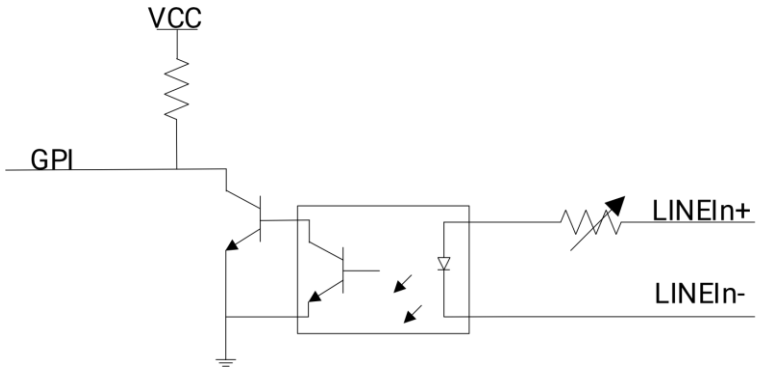


Figure 8-1 Internal Circuit of Input Signal

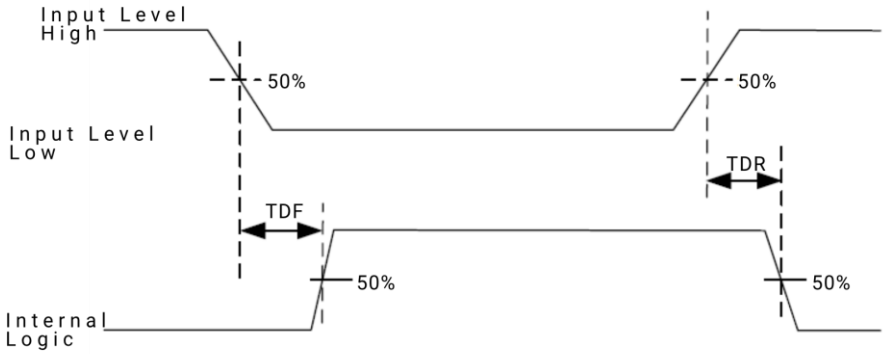


Figure 8-2 Input Logic Level

Table 8-1 Input Electrical Feature

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

8.1.2 Output Signal

The device's LINE 3/4/5 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.
- If the external voltage and resistance change, the corresponding current of output signal and output logic level low may differ.

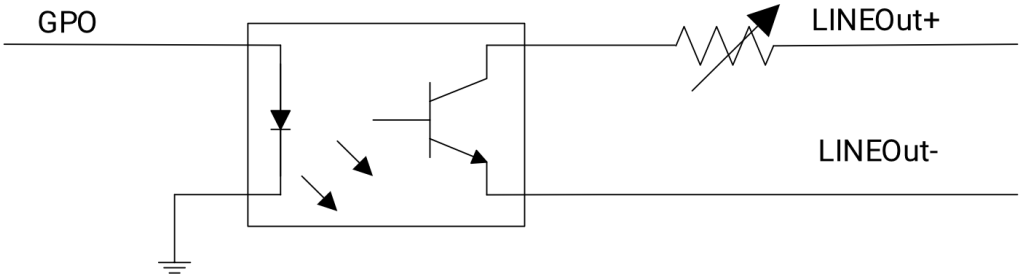


Figure 8-3 Internal Circuit of Output Signal

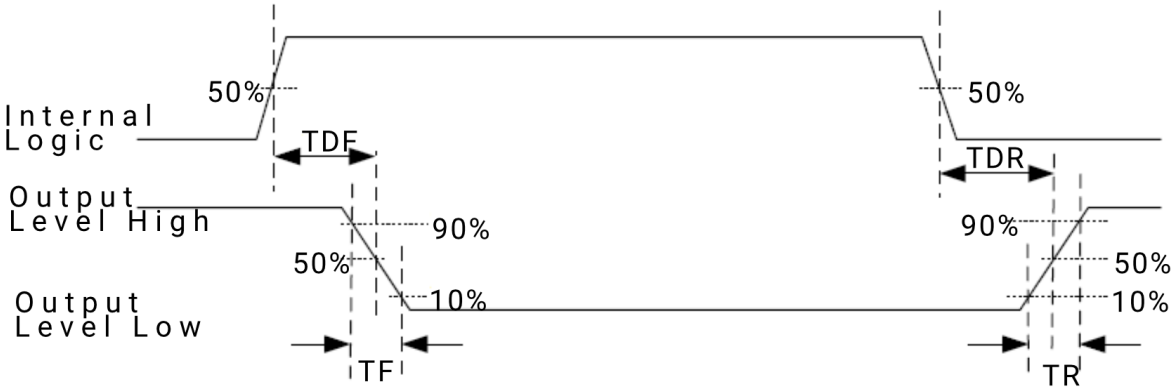


Figure 8-4 Output Logic Level

Table 8-2 Output Electrical Feature

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

8.2 I/O Wiring

The device receives an externally input signal or output a signal to an external device through its 12-pin connector. This section introduces how to wire the I/O parts.

Note

- Here we take LINE 0 as an example to introduce input signal wiring, and take LINE 3 as an example to introduce output signal wiring.
- The pictures here are for reference only. Please refer to the actual device.

8.2.1 Input Signal Wiring

Note

Input signal wiring may differ by external device types.

PNP Device

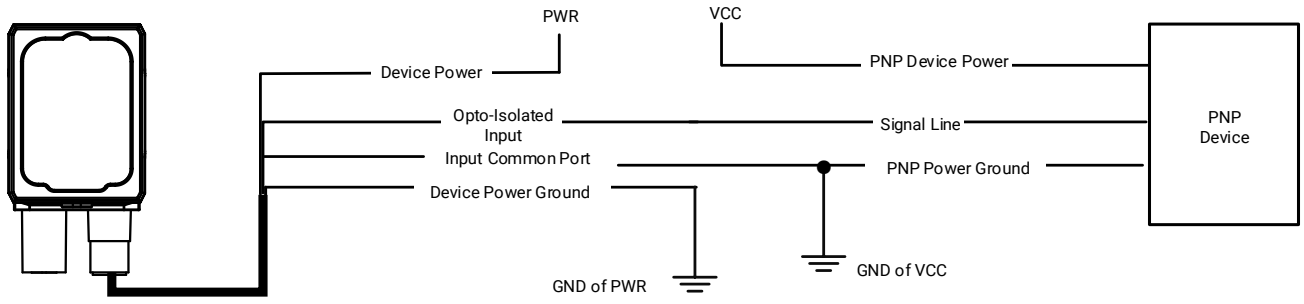


Figure 8-5 Input Signal Connecting to PNP Device

NPN Device

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

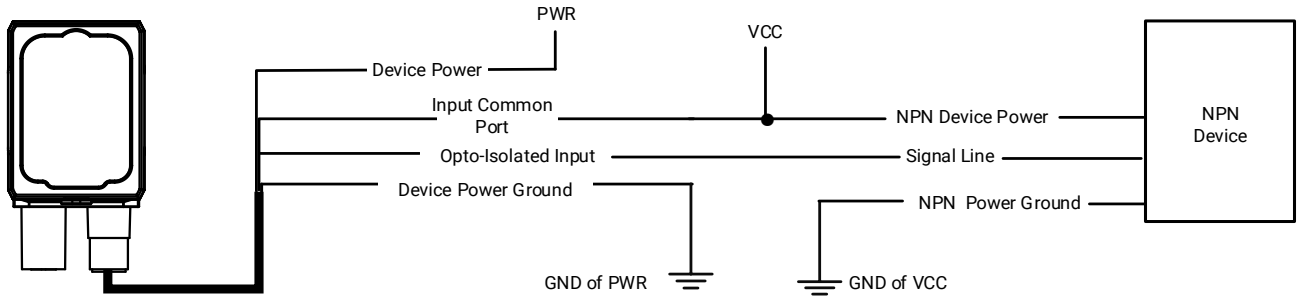


Figure 8-6 Input Signal Connecting to NPN Device without Pull-Up Resistor

If the VCC of NPN device is 12 VDC or 24 VDC and 1 KΩ pull-up resistor is used, its wiring is as follows.

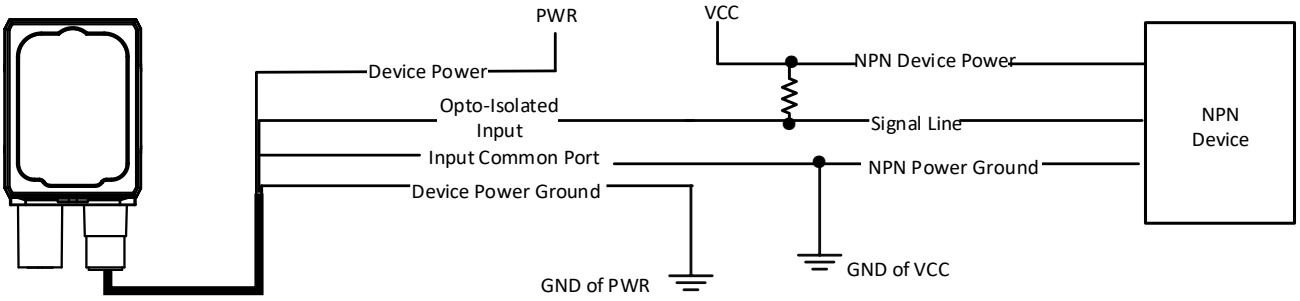


Figure 8-7 Input Signal Connecting to NPN Device with Pull-Up Resistor

8.2.2 Output Signal Wiring

Note

- Output signal wiring may differ by external device types.
- The voltage of VCC should not higher than that of PWR. Otherwise, the device's output signal may have exception.

PNP Device

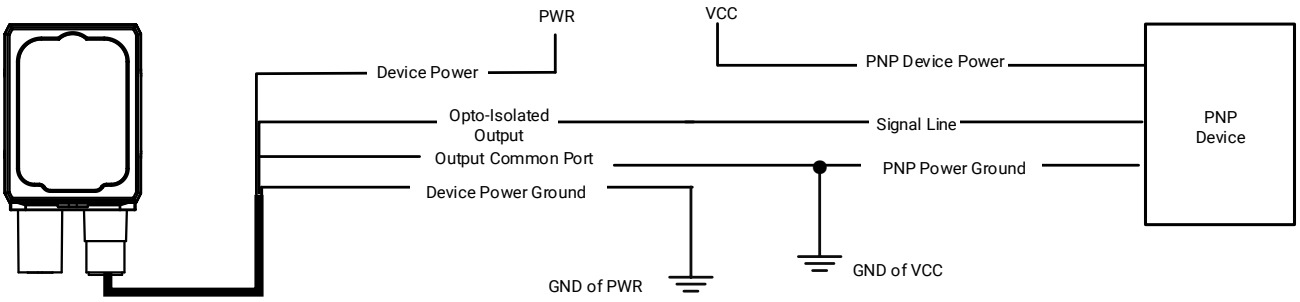


Figure 8-8 Output Signal Connecting to PNP Device

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.

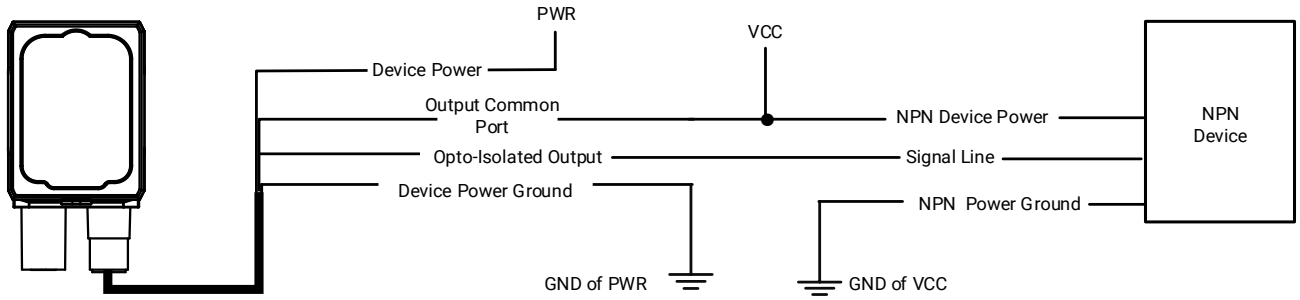


Figure 8-9 Output Signal Connecting to NPN Device without Pull-Up Resistor

If the VCC of NPN device is 12 VDC or 24 VDC and 1 KΩ pull-up resistor is used, its wiring is as follows.

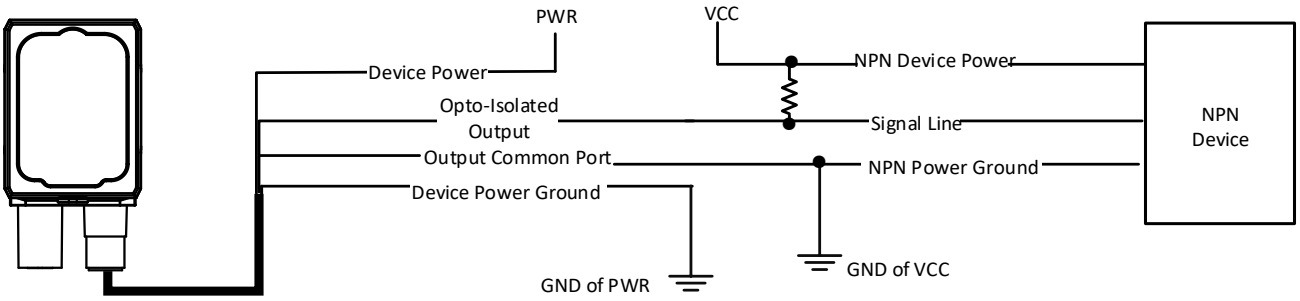


Figure 8-10 Output Signal Connecting to NPN Device with Pull-Up Resistor

8.3 RS-232 Serial Port

The device supports outputting via the RS-232 serial port.

8.3.1 RS-232 Serial Port Introduction

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.

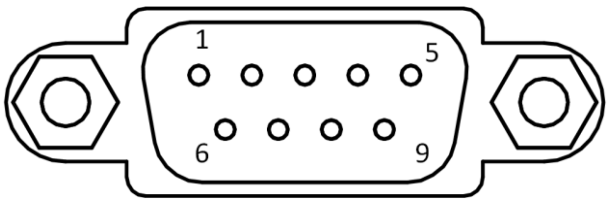


Figure 8-11 9-Pin Connector

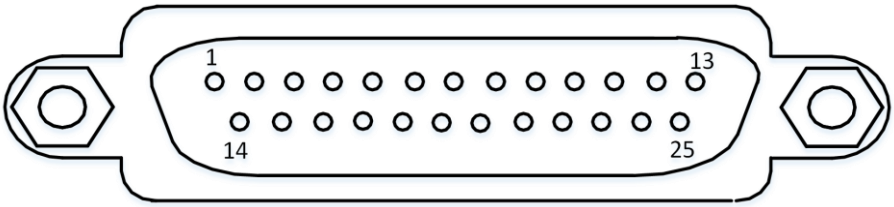


Figure 8-12 25-Pin Connector

Table 8-3 Description

Serial Port Type	Pin No.	Name	Function
9-Pin Connector	2	RX	Receive Data
	3	TX	Transmit Data
	5	GND	Signal Ground
25-Pin Connector	2	TX	Transmit Data
	3	RX	Receive Data
	7	GND	Signal Ground

8.3.2 RS-232 Serial Port Wiring

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

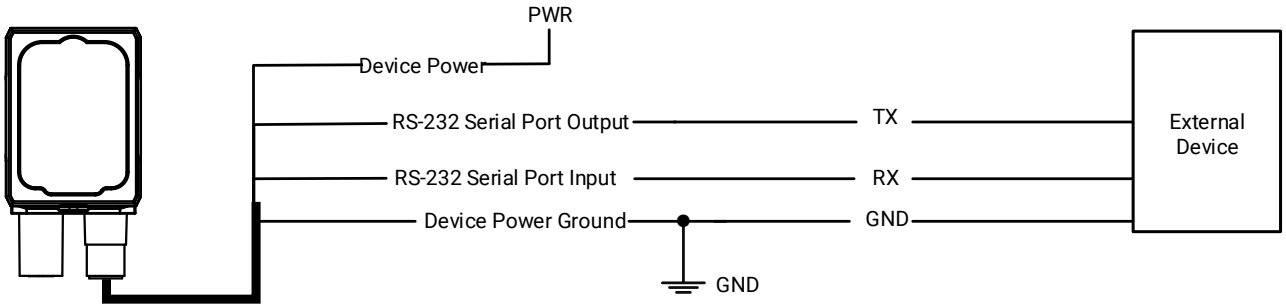


Figure 8-13 RS-232 Serial Port Wiring

Chapter 9 FAQ (Frequently Asked Question)

9.1 Why the client software cannot list devices?

Table 9-1 Question 1

Possible Cause	Solution
Device is not started up normally.	Check device power wiring (observe PWR indicator).
Network connection exception occurs.	Check network connection (observe LNK indicator). Ensure the device and the PC are in the same network segment.

9.2 Why the image is very dark?

Table 9-2 Question 2

Possible Cause	Solution
All black during live view. It may be caused by insufficient brightness of light source.	Increase the brightness of light source appropriately, or change to a brighter one.
Too dark during live view. It may be caused by too small value of exposure and gain.	Increase exposure and gain appropriately.

9.3 Why the image's frame rate is very low in the live view?

Table 9-3 Question 3

Possible Cause	Solution
Network circuitry speed is not 1000 Mbit/s.	Check if the network transit speed is 1000 Mbit/s or above.

9.4 Why there is no image in the live view?

Table 9-4 Question 4

Possible Cause	Solution
Enabled trigger mode, but there is no trigger signal.	Send the trigger signal to the device, or disable the trigger mode.

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