

# MW7001 Series Vision Sensor

## Quick Start Guide

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- These clauses apply only to the products bearing the corresponding mark or information.
  - Due to the product shape and dimension, the name and address of the importer/manufacturer are printed on the package.
- 

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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.

### KC Mark Certification

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

## Symbol Conventions

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

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

## Available Model

This manual is applicable to the MW7001-14 & MW7001-6 Series Vision Sensor.

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# Chapter 1 Safety Instruction

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

## 1.1 Safety Claim

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

## 1.2 Safety Instruction



### Caution

- 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 device. In the living environment, this device may cause radio interference. In this case, the user may be required to take practical measures against the interference.
- In the use of the device, you must be in strict compliance with the electrical safety regulations of the nation and region.
- Do not connect multiple devices to the same power adapter. Exceeding the adapter load may cause a fire due to excessive heat generation.
- 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.
- Make sure that the device is installed in good condition, the wiring is firm, and the power supply meets the requirements before powering on the device.
- 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.
- If it is necessary to clean the filter outside the image sensor, please moisten the soft clean cloth with 75% or less alcohol and gently wipe off the dust.
- It is forbidden to touch the image sensor directly. If it is necessary to clean, please use wet tissue or soft clean cloth to slightly moisten pure water and gently wipe off dust. It is forbidden to use alcohol corrosive solution. When cleaning, make sure to power off the device and unplug the power socket. Please keep the image acquisition window clean. It is recommended to wipe with clean water. Damage caused by improper maintenance will not be liable for warranty.
- If the device does not work properly, please contact your dealer or the nearest service center. Never attempt to disassemble the device yourself. We shall not assume any responsibility for problems caused by unauthorized repair or maintenance.
- Please dispose of the device in strict accordance with the relevant national or regional regulations and standards to avoid environmental pollution and property damage.

### **Note**

- Check whether the device's package is in good condition, whether there is damage, intrusion, moisture, deformation, etc. before unpacking.
- Check the surface of the device and accessories for damage, rust, bumps, etc. when unpacking.
- Check whether the quantity and information of the device and accessories are complete after unpacking.
- Store and transport the device according to the storage and transport conditions of the device, and the storage temperature and humidity should meet the requirements.
- It is strictly prohibited to transport the device in combination with items that may affect or damage the device.
- The device should not be placed with exposed flame sources, such as lighted candles.
- Please read the manual and safety instructions carefully before installing the device.
- Quality requirements for installation and maintenance personnel:
  - Qualification certificate or working experience in weak current system installation and maintenance, and relevant working experience and qualifications. Besides, the



personnel must possess the following knowledge and operation skills.

- The basic knowledge and operation skills of low voltage wiring and low voltage electronic circuit connection.
- The ability to comprehend the contents of this manual.

### 1.3 Electromagnetic Interference Prevention

- Make sure that the shielding layer of cables is intact and 360° connected to the metal connector when using shielded cables.
- Do not route the device together with other equipment (especially servo motors, high-power devices, etc.), and control the distance between cables to more than 10 cm. Make sure to shield the cables if unavoidable.
- The control cable of the device and the power cable of the industrial light source must be wired separately to avoid bundled wiring.
- The power cable, data cable, signal cable, etc. of the device must be wired separately. Make sure to ground them if the wiring groove is used to separate the wiring and the wiring groove is metal.
- During the wiring process, evaluate the wiring space reasonably, and do not pull the cables hard, so as not to damage the electrical performance of the cables.
- If the device is powered on and off frequently, it is necessary to strengthen the voltage isolation, and consider adding a DC/DC isolation power supply module between the device and the adapter.
- Use the power adapter to supply power to the device separately. If centralized power supply is necessary, make sure to use a DC filter to filter the power supply of the device separately before use.
- The unused cables of the device must be insulated.
- When installing the device, if you cannot ensure that the device itself and all equipment connected to the device are well grounded, you should isolate the device with an insulating bracket.
- To avoid the accumulation of static electricity, ensure that other equipment (such as machines, internal components, etc.) and metal brackets on site are properly grounded.
- 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

With built-in positioning and measurement algorithms, MW7001 series vision sensor can detect object's existence, position, dimension, color, etc. It can be monitored and operated via the SCMVS client. It can output results via RS-232 and Ethernet, and cooperate with other processes via IO. The vision sensor supports multiple result output methods and customized result text output. It is applicable to consumer electronics, food and medical industry, automobile, etc.

### 2.2 Key Features

- Adopts embedded hardware platform for high-speed image processing.
- Adopts built-in positioning and measurement algorithms to detect object's existence, position, dimension, etc.
- Multiple IO interfaces for input and output signals.
- Multiple indicators for displaying device status.
- Adopts light source to ensure uniform brightness in the illuminated area.
- Supports multiple communication protocols, including RS-232, TCP, UDP, FTP, PROFINET, Modbus, etc.

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#### **Note**

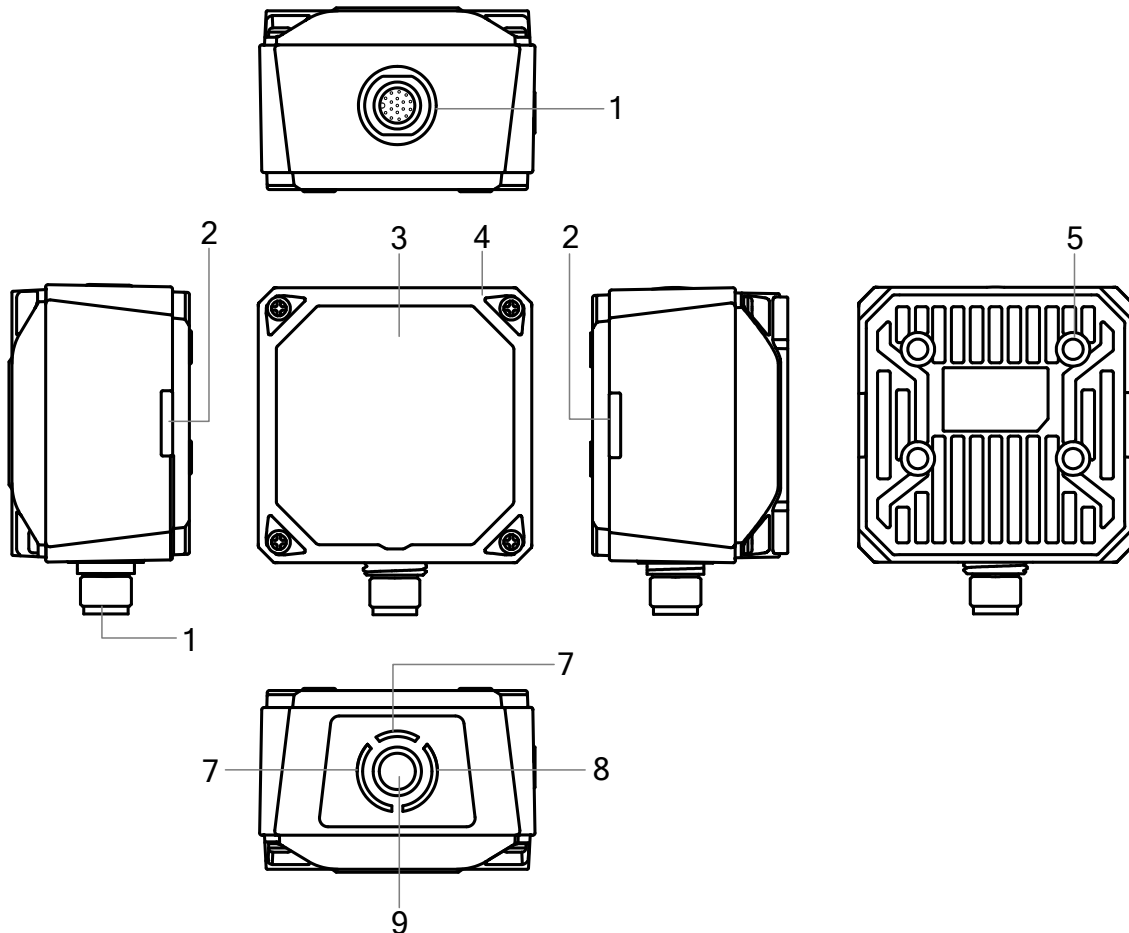
Refer to the device's specifications for specific parameters.

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## Chapter 3 Appearance

### Note

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




**Figure 3-1 Appearance**

**Table 3-1 Appearance Description**

No.	Name	Description
1	17-Pin Interface	It provides power, input/output, Ethernet, and serial port signal. The interface is designed with screw threads to tighten connection between the device and cable, and thus avoiding influence caused by vibration.
2	OK/NG Indicator	It indicates the result of projects. <ul style="list-style-type: none"> <li>• The indicators are green when the project result is OK.</li> </ul>

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No.	Name	Description
		<ul style="list-style-type: none"> <li>• The indicators are red when the project result is NG.</li> <li>• The indicators are green and red when switching projects. After switching, the indicators are unlit.</li> <li>• The indicators are yellow when the device restarts or error occurs.</li> </ul>
3	Acquisition Module and Light Circuit Board	<p>It consists of three parts.</p> <ul style="list-style-type: none"> <li>• The center part is the acquisition module used for image acquisition.</li> <li>• The part on the left and right side are the aiming system, used for showing the field of view and aim targets.</li> <li>• The part on the top and bottom side are the light sources for providing light. It provides 14 white LED lamp beads.</li> </ul> <p> <b>Note</b> Light source color is decided by light circuit board. The device adopts the white light circuit board by default, and can be replaced with red/blue/IR light circuit board according to actual demand.</p>
4	Lens Cap	It refers to the supplied transparent lens cap for protecting lens and light source, which can be replaced by polarization or half polarization lens cap that needs to be purchased separately.
5	Screw Hole	It is used to fix the device to the installation position. You should use M4 screw.
6	PWR Indicator	It is the power indicator. The indicator is green when the device operates normally. Otherwise, it is red.
7	STS Indicator	It is the status indicator. The indicator is green when the project operates normally. Otherwise, it is red.
8	LNK Indicator	It is network status indicator. The indicator is flashing green when the network transmission is normal. Otherwise, it is unlit.
9	Button	It is used to trigger device to acquire images or switch projects.

## Chapter 4 Device Installation and Wiring

### 4.1 Installation Preparation

You need to prepare following accessories before installation.

**Table 4-1 Accessories**

No.	Name	Image	Quantity	Description
1	17-Pin Cable		1	<p>It refers to the supplied 17-pin cable that is included in the package.</p> <p><b>Note</b></p> <ul style="list-style-type: none"> <li>There are two types of 17-pin cable, i.e., cable with 8-pin terminal block and cable without 8-pin terminal block. The actual cable you receive shall prevail and wiring varies by cable types. For more details, refer to section <b>Wire Device</b>.</li> <li>If cable without 8-pin terminal block is received, you need to purchase the network cable with CAT 5 or higher cable class to ensure your device wiring.</li> </ul>
2	Power Adapter or Switch Power Supply		1	You should select suitable power adapter or switch power supply according to the device power supply and consumption. You need to purchase separately.
3	Lens Cap		1	It refers to the supplied transparent lens cap. You can also use polarization or half polarization lens cap that needs to be purchased separately.
4	Light Circuit Board	—	1	The device adopts the white light circuit board by default, and can be replaced with red/blue/IR light circuit board according to actual demand. You need to purchase separately.
5	Installation Bracket	—	1	It is used to fix the device, and you need to purchase separately.

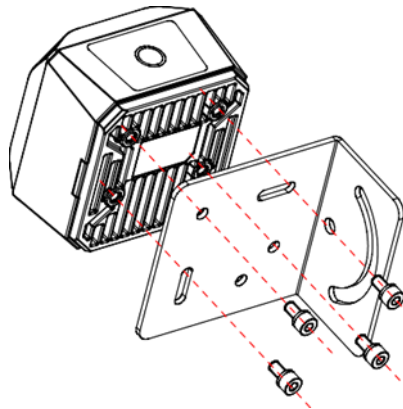
## 4.2 Install Device

### Before You Start

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

### Steps

1. Use M4 screws to fix the device to the installation bracket, as shown below.



**Figure 4-1 Fix Installation Bracket**

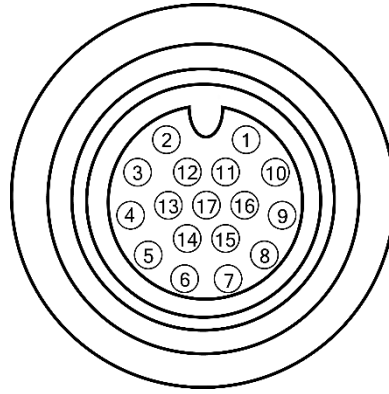
2. Install the device to other mechanical parts via the installation bracket.
3. Use the power and I/O cable to connect the device to a power adapter or switch power supply.

## 4.3 Wire Device

### 4.3.1 Interface Definition and Cable Introduction

The device's power and I/O connector is a 17-pin M12 male connector that provides input × 2 (Line 0/1), output × 3 (Line 5/6/7, which can be configured as NPN or PNP), configurable input/output × 2 (Line 2/3/4), RS-232 × 1, and external button × 1. The included cable can be cable with or without 8-pin terminal block, and the actual cable you receive shall prevail.

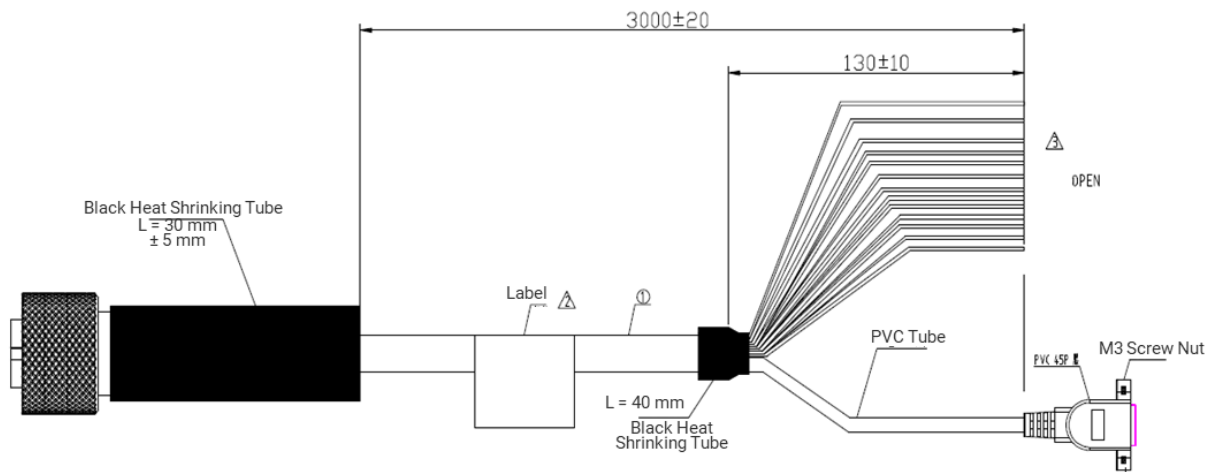
The pin interface of the connector is shown below, and you can refer to tables below for the detailed pin definition for two types of cables.



**Figure 4-2 17-Pin Interface**

## 17-Pin Cable Without 8-Pin Terminal Block

If cable without 8-pin terminal block is received, the 6th, 7th, 14th, and 15th pin have been made as RJ45 adapter. The lines of other pins should be wired according to the actual demands. See the reference pin appearance and pin definition below.



**Figure 4-3 Cable Appearance**

**Table 4-2 Pin Definition for Cable Without 8-Pin Terminal Block**

No.	Signal	I/O Signal Source	Description	Included Cable
1	POWER_IN	--	Direct current power supply positive	Red open
2	I/O_1	Line 3 signal line	Can be configured as input or output	Brown open
3	DO_2	Line 7 signal line	Opto-isolated output	Purple/white open
4	RS232TX	--	RS232 serial port output	Green open
5	RS232RX	--	RS232 serial port input	Green/white open
6	MDIO+	--	Fast Ethernet signal MDIO+	RJ45 cable

No.	Signal	I/O Signal Source	Description	Included Cable
7	MDI1-	--	Fast Ethernet signal MDI1-	RJ45 cable
8	DO_0	Line 5 signal line	Opto-isolated output	Blue/white open
9	I/O_0	Line 2 signal line	Can be configured as input or output	Blue open
10	DO_1	Line 6 signal line	Opto-isolated output	Brown/white open
11	GND	Signal ground	Direct current power supply negative	Black open
12	IN_COM	Line 0/1/2/3/4 input signal ground	Input signal ground	Pink open
13	I/O_2	Line 4 signal line	Can be configured as input or output	Purple open
14	MDI0-	--	Fast Ethernet signal MDI0-	RJ45 cable
15	MDI1+	--	Fast Ethernet signal MDI1+	RJ45 cable
16	DI_0	Line 0 signal line	Opto-isolated input	Gray open
17	DI_1	Line 1 signal line	Opto-isolated input	White open

#### 17-Pin Cable with 8-Pin Terminal Block

If cable with 8-pin terminal block is received, the pins of power supply and I/O communication have been made as 8-pin terminal block, the 6th, 7th, 14th, and 15th pin have been made as RJ45 connector, and the RS-232 communication pins have been made as DB9 connector. Use 8-pin terminal block, RJ45 connector, and DB9 connector to connect device, and no lines of pins should be wired. See the reference pin appearance and pin definition below.

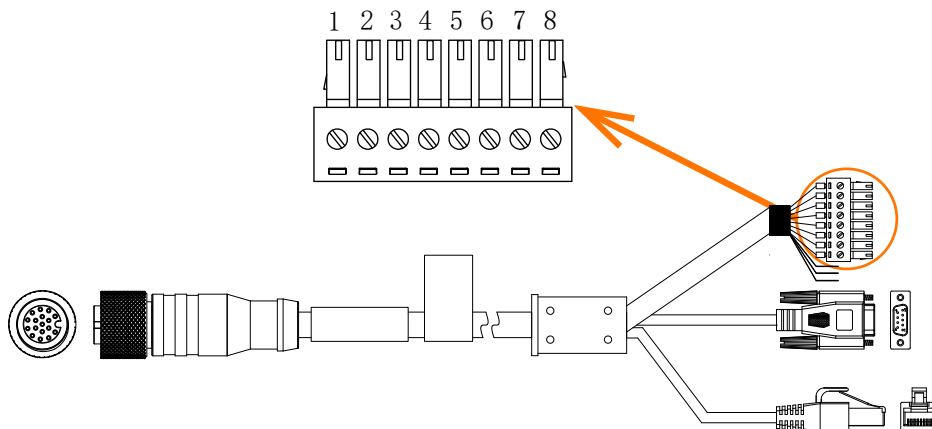


Figure 4-4 Cable Appearance



**Table 4-3 Pin Definition for Cable with 8-Pin Terminal Block**

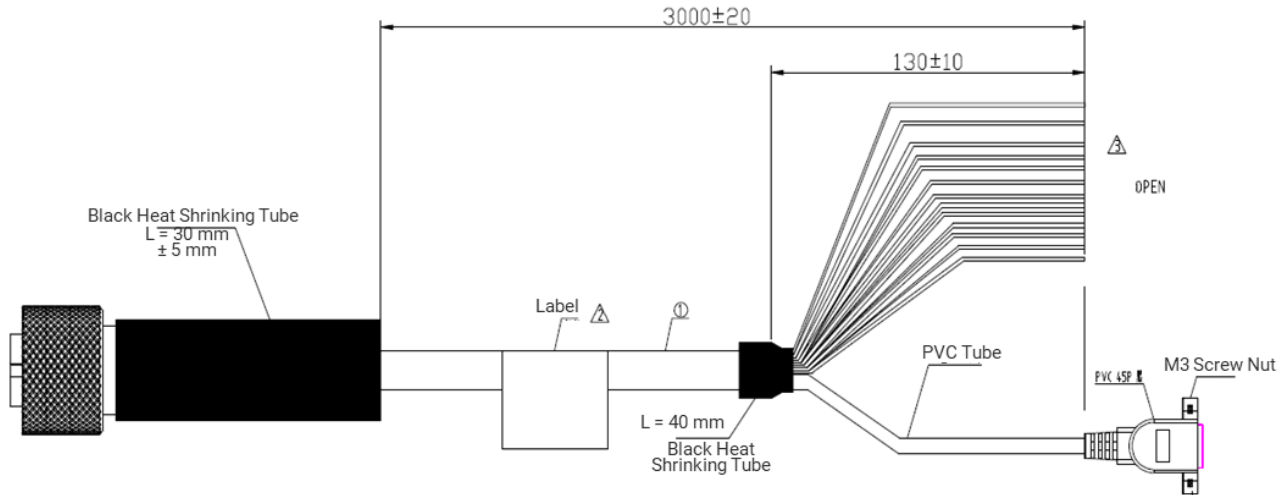
No.	Signal	I/O Signal Source	Description	Included Cable
1	POWER_IN	--	Direct current power supply positive	Red cable. Connect to pin 8 of the 8-pin terminal
2	I/O_1	Line 3 signal line	Can be configured as input or output	Brown cable. Connect to pin 6 of the 8-pin terminal
3	DO_2	Line 7 signal line	Opto-isolated output	Purple/white
4	RS232TX	--	RS232 serial port output	DB9 connector
5	RS232RX	--	RS232 serial port input	DB9 connector
6	MDI0+	--	Fast Ethernet signal MDI0+	RJ45 connector
7	MDI1-	--	Fast Ethernet signal MDI1-	RJ45 connector
8	DO_0	Line 5 signal line	Opto-isolated output	Blue/white cable. Connect to pin 4 of the 8-pin terminal
9	I/O_0	Line 2 signal line	Can be configured as input or output	Blue cable. Connect to pin 3 of the 8-pin terminal
10	DO_1	Line 6 signal line	Opto-isolated output	Brown/white cable. Connect to pin 5 of the 8-pin terminal
11	GND	Signal ground	Direct current power supply negative	Black cable. Connect to pin 7 of the 8-pin terminal
12	IN_COM	Line 0/1/2/3/4 input signal ground	Input signal ground	Pink
13	I/O_2	Line 4 signal line	Can be configured as input or output	Purple
14	MDI0-	--	Fast Ethernet signal MDI0-	RJ45 connector
15	MDI1+	--	Fast Ethernet signal MDI1+	RJ45 connector
16	DI_0	Line 0 signal line	Opto-isolated input	Gray cable. Connect to pin 1 of the 8-pin terminal
17	DI_1	Line 1 signal line	Opto-isolated input	White cable. Connect to pin 8 of the 8-pin terminal

### 4.3.2 Device Wiring

You can wire device with the included I/O cable according to the above pin definitions.

### 17-Pin Cable Without 8-Pin Terminal Block

For the 17-pin cable without 8-pin terminal block, you can refer to the following cable side introduction to wire the device.

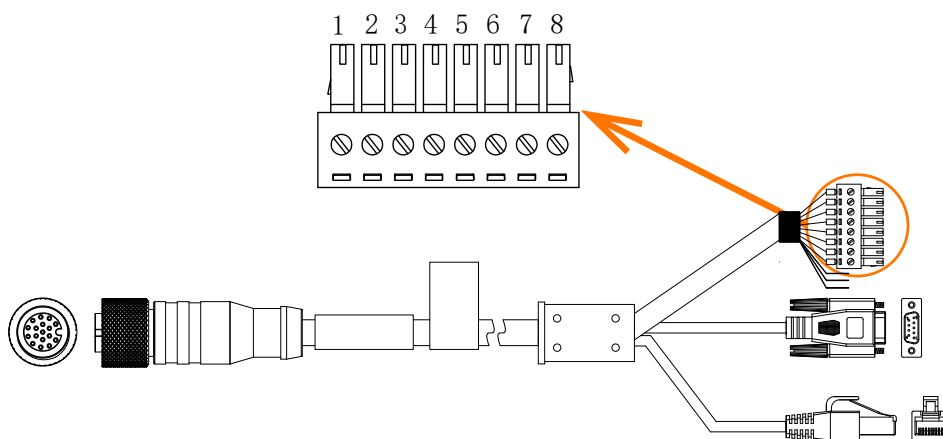


**Figure 4-5 Cable Without 8-Pin Terminal Block**

- 17-Pin Cable Connector Female: Connect it to 17-pin connector male of the device.
- RJ45 Adapter (Right Side): Insert one end of network cable to RJ45 adapter, and insert the other end of network cable to PC or switch.
- For Power Supply: Connect the open black and open red cable to the power adapter or the industrial power supply.
- For RS-232 Communication (Optional): Connect the open green and open green/white cable to the RS-232 serial port. For more details, refer to section **RS-232 Serial Port**.

### 17-Pin Cable with 8-Pin Terminal Block

For the 17-pin cable with 8-pin terminal block, you can refer to the following cable side introduction to wire the device.



**Figure 4-6 Cable with 8-Pin Terminal Block**

- 17-Pin Cable Connector Female: Connect it to 17-pin connector male of the device.

- 8-Pin Terminal Block (Right Side):
    - Power Supply: Connect the pins corresponding to power supply (black cable and red cable) in terminal block to the power adapter or industrial switch.
    - I/O communication (Optional): Connect the other pins of the terminal block to external devices according to actual demand. For more details, refer to section **I/O Wiring**.
  - RJ45 Connector (Right Side): Connect it to the network interface of PC or switch.
  - DB9 Connector (Optional): For more details about RS-232 communication and wiring, refer to section **RS-232 Serial Port**.
- 

### Note

- If the device is powered by a power adapter or industrial switch power supply, ensure that the device is powered independently and does not share the power supply unit with other devices.
  - You can use an industrial power supply to provide DC power supply for the device. When using it, please observe the following precautions:
    - Before carrying out any installation or maintenance work, make sure that the power supply is disconnected from the AC power and that there is no risk of accidental reconnection due to human negligence or wiring issues.
    - Do not install the power supply in places with high moisture or near the water.
    - Do not install the power supply in places with high ambient temperature or near fire source.
    - The industrial power supply has exposed high-voltage terminals. Please install it in an enclosed case or cabinet to prevent accidental contact by personnel.
    - Maintain sufficient insulation distance between the internal components of the power supply and the screws.
    - Fans and ventilation holes must be kept free from any obstructions. Also a 10 cm to 15 cm clearance should be kept when the adjacent device is a heat source.
    - Make sure the power supply is properly grounded before use.
    - When using the power supply, do not exceed the upper limit of its output current and output power. Refer to the power supply's nameplate for specific parameters.
    - Non-standard installations or using the power supply in high-temperature environments will increase the temperature of the internal components, potentially reducing output power.
    - The power supply contains high-voltage circuits that pose a risk. If any abnormalities occur, disconnect the power first and have it inspected by a technician with professional electrical qualifications. Do not attempt to open the casing yourself.
    - Avoid touching the power supply terminals within 5 minutes after the power has been cut off to prevent the risk of electric shock.
-

## Chapter 5 I/O and Serial Port Introduction

This section introduces the electrical feature and wirings of the device's I/O and RS-232 serial port. The device has two input signals (Line 0/1), three output signals (Line 5/6/7), and three bi-directional I/O (Line 2/3/4) signals.

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### Note

The two input signals and three bi-directional I/O signals can also be used as signal sources to switch the device's projects. Refer to the user manual of the SCMVS client software for details.

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## 5.1 I/O Electrical Feature

### 5.1.1 Input Signal

The device's Line 0/1 are input signals, and Line 2/3/4 are bi-directional I/O signals that can be set as input. The internal circuit of input signal is shown below.

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### Note

The maximum input current of input signal is 25 mA.

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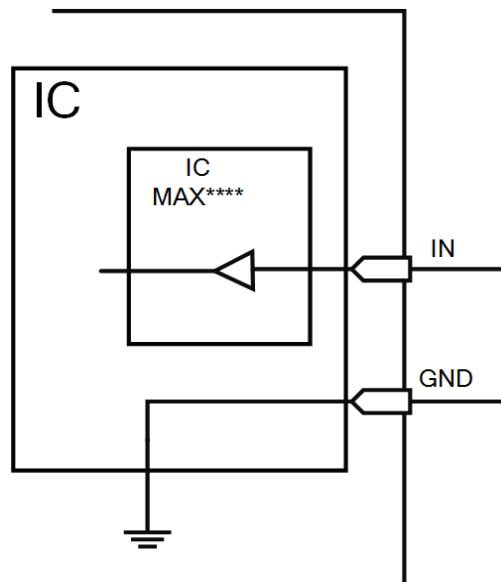
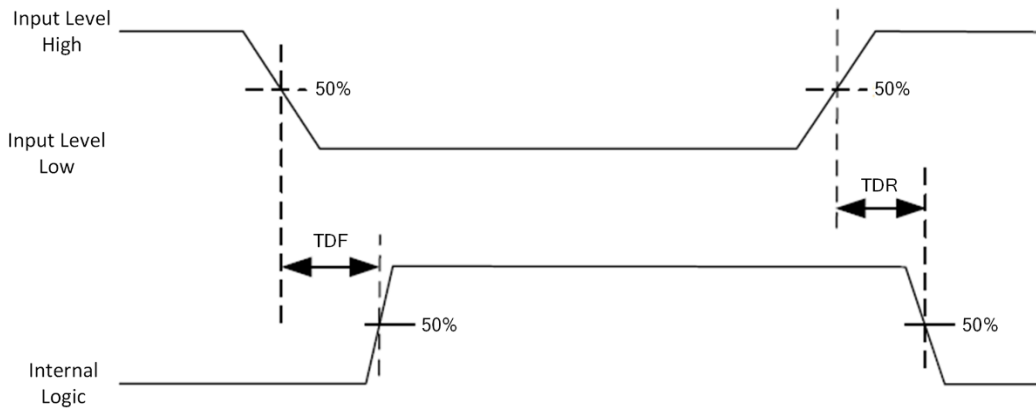


Figure 5-1 Internal Circuit of Input Signal



**Figure 5-2 Input Logic Level**

**Table 5-1 Input Electrical Feature**

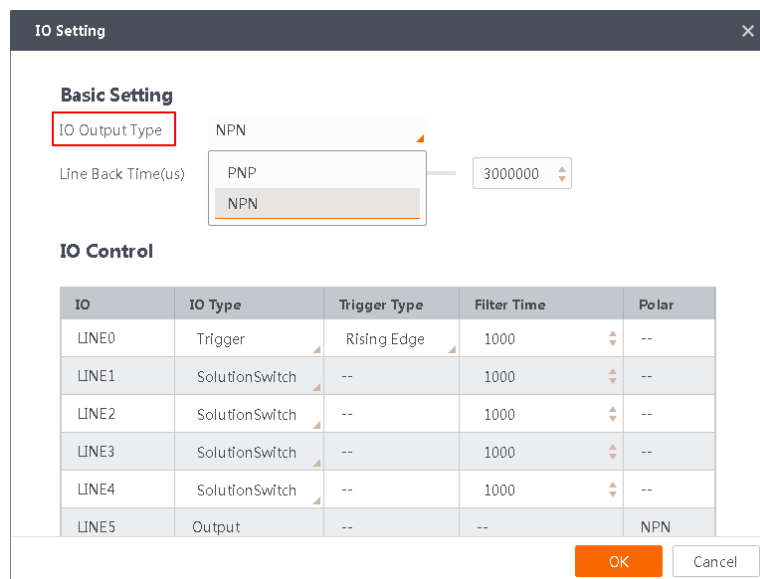
Parameter Name	Parameter Symbol	Value
Input Logic Level Low	VL	0 VDC to 9 VDC (VCC=24 VDC) 0 VDC to 5.4 VDC (VCC=12 VDC)
Input Logic Level High	VH	11 VDC to 24 VDC (VCC=24 VDC) 7.56 VDC to 12 VDC (VCC=12 VDC)
Input Falling Delay	TDF	1.3 $\mu$ s to 3.5 $\mu$ s
Input Rising Delay	TDR	1.3 $\mu$ s to 3.5 $\mu$ s

## Note

- VCC is the device's input voltage.
- The breakdown voltage is 36 VDC, and keep voltage stable.

## 5.1.2 Output Signal

The device's Line 5/6/7 are output signals, and Line 2/3/4 are bi-directional I/O signals that can be set as output. You can go to I/O settings of the client software to set I/O output type as PNP or NPN according to actual demands, as shown below.

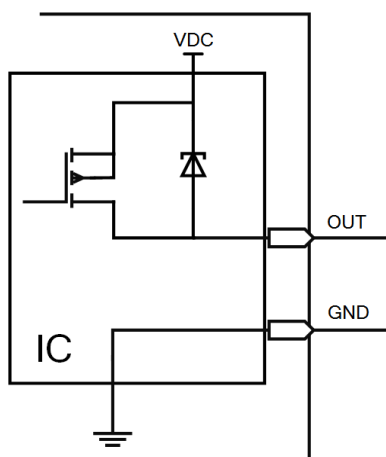


**Figure 5-3 Set I/O Output Type**

## Note

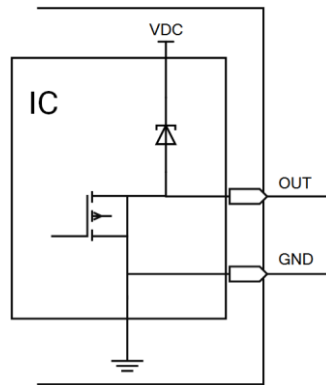
The maximum output current of output signal is 200 mA.

If the output signal is PNP type, its internal circuit is shown below.

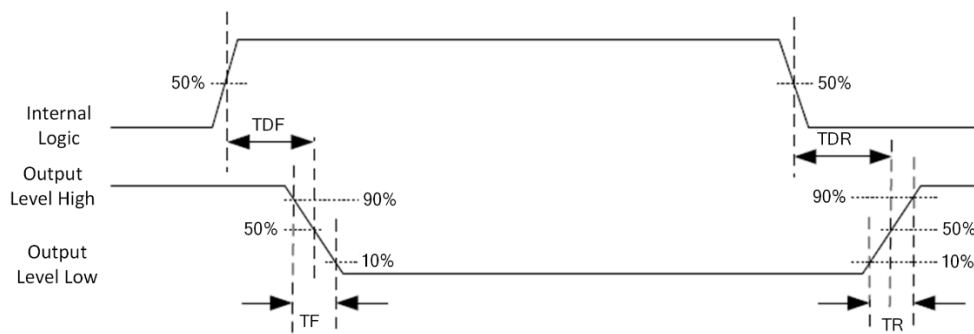


**Figure 5-4 Internal Circuit of PNP Output Signal**

If the output signal is NPN type, its internal circuit is shown below.



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



**Figure 5-6 Output Logic Level**

When the external voltage and resistance is 12 VDC and 1 K $\Omega$  respectively, the electrical feature of output signal is as follows.

## Note

With different external voltage and resistance, the corresponding current and output logic level low may have small change.

**Table 5-2 Output Electrical Feature**

Parameter Name	Parameter Symbol	Value
Output Logic Level Low	VL	212 mV
Output Logic Level High	VH	11.8 VDC
Output Falling Delay	TDF	0.4 $\mu$ s
Output Rising Delay	TDR	0.4 $\mu$ s
Output Falling Time	TF	0.4 $\mu$ s
Output Rising Time	TR	0.4 $\mu$ s

## 5.2 I/O Wiring

The device can receive input signals from external devices and output signals to external devices. This section introduces how to wire the device's I/O.

### Note

- Here we take Line 2 as an example to introduce I/O wiring.
- The device figures below are for reference only, and the actual one you got should prevail.

### 5.2.1 Input Wiring

Two types of input wiring are available, and you can wire the device according to actual demands.

### Note

- Input signal wiring may differ by external device types.
- It is recommended to use the first type of input wiring because this type is applicable to all I/O input signals, including Line 0/1/2/3/4.
- The second type of input wiring is only applicable to Line 2/3/4.

#### First Type of Input Wiring

##### PNP Device

If you have available external resistors, you should use 1 K $\Omega$  pull-down resistor to wire the device as shown below.

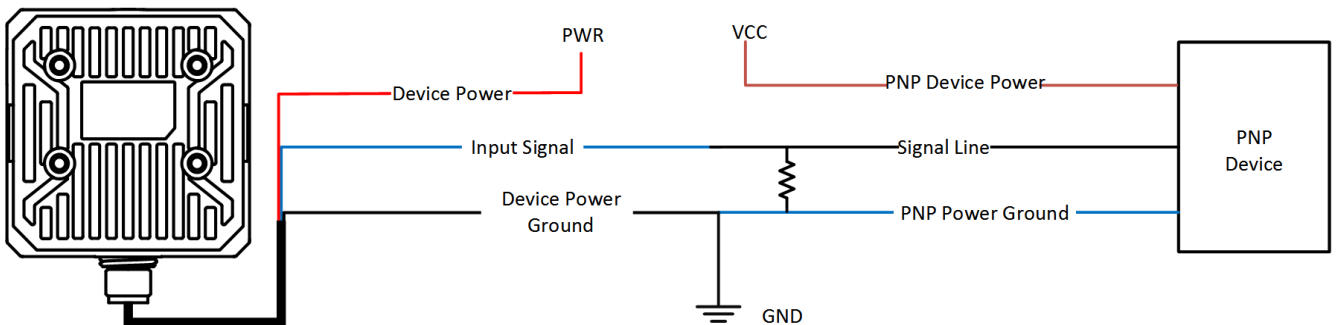


Figure 5-7 Input Signal Connects to PNP Device



## NPN Device

If you have available external resistors, and the VCC is 12 VDC or 24 VDC, you should use 1 K $\Omega$  pull-up resistor to wire the device as shown below.

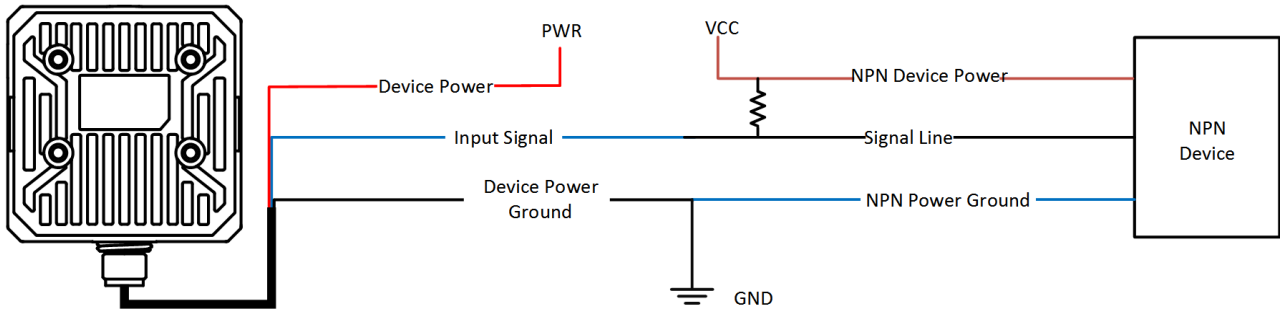


Figure 5-8 Input Signal Connects to NPN Device

## Switch

It is recommended to use 1 K $\Omega$  pull-down resistor.

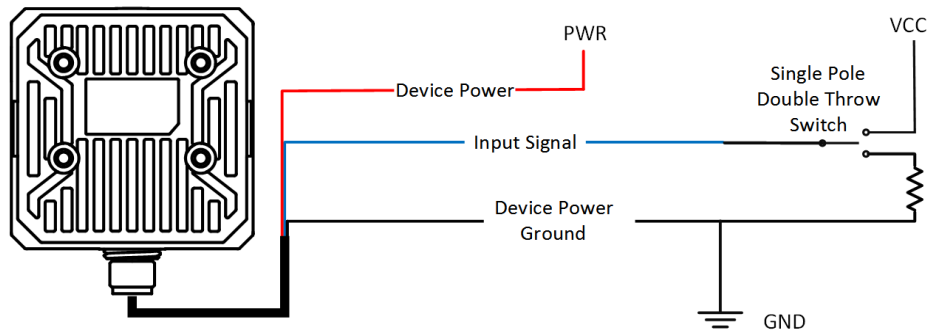


Figure 5-9 Input Signal Connects to a Switch

## Second Type of Input Wiring

### PNP Device

If you do not have available external resistors, you can wire the device as shown below.

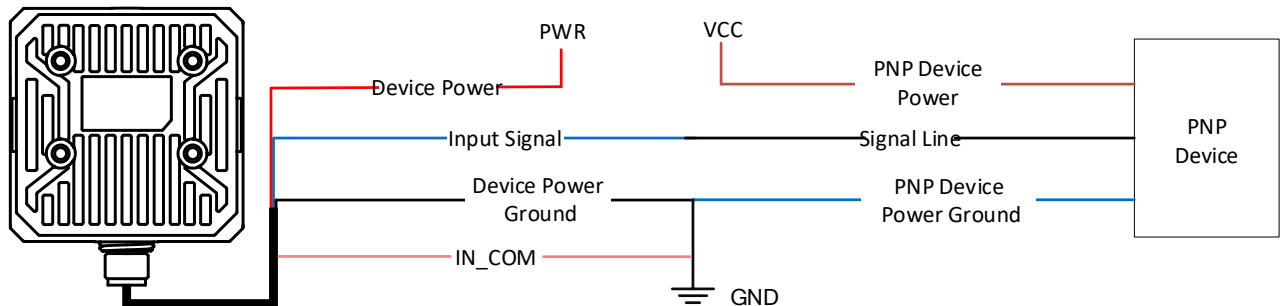


Figure 5-10 Configurable Input Signal Connects to PNP Device

### NPN Device

If you do not have available external resistors, you can wire the device as shown below.

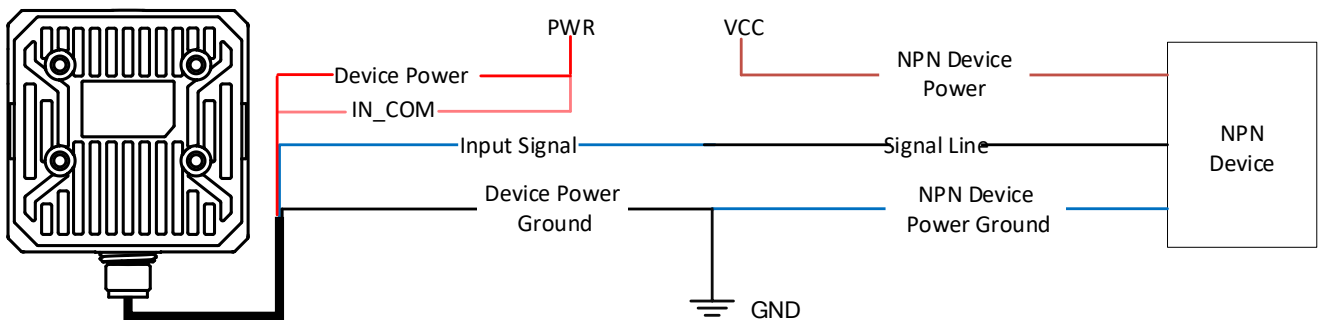


Figure 5-11 Configurable Input Signal Connects to NPN Device

### 5.2.2 Output Wiring

#### Note

- You can set I/O output type as PNP or NPN via the client software.
- If the external device is PNP, you should set the device's output signal polarity as NPN.
- If the external device is NPN, you should set the device's output signal polarity as PNP.

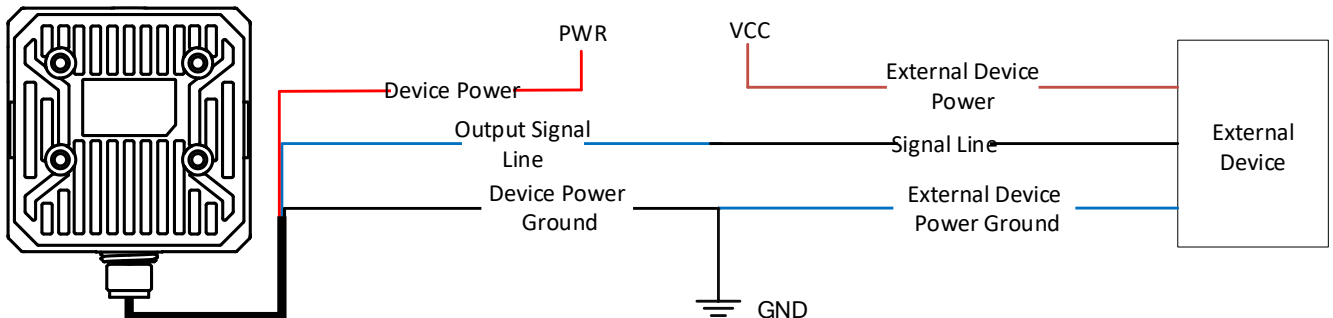


Figure 5-12 Output Wiring

#### Note

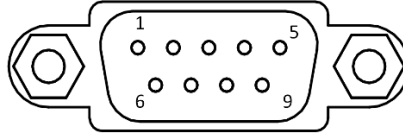
When the device's output signal is set as NPN, the voltage of VCC should not higher than that of PWR. Otherwise, the device's output signal may have exception.

## 5.3 RS-232 Serial Port

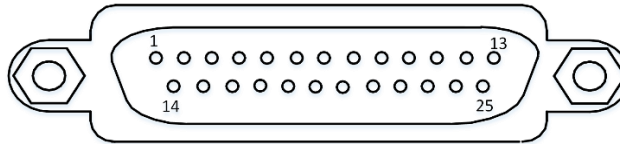
The device can output data via the RS-232 serial port. You can go to the communication settings of the client software to set related parameters.

### 5.3.1 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 5-13 9-Pin Male Connector**



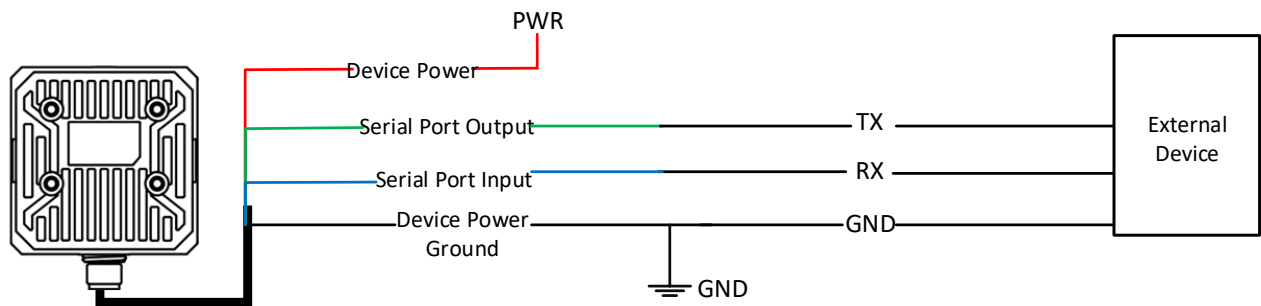
**Figure 5-14 25-Pin Male Connector**

**Table 5-3 RS-232 Pin Description**

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

### 5.3.2 Wiring

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



**Figure 5-15 RS-232 Serial Port Wiring**

## Chapter 6 Device Connection

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



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.

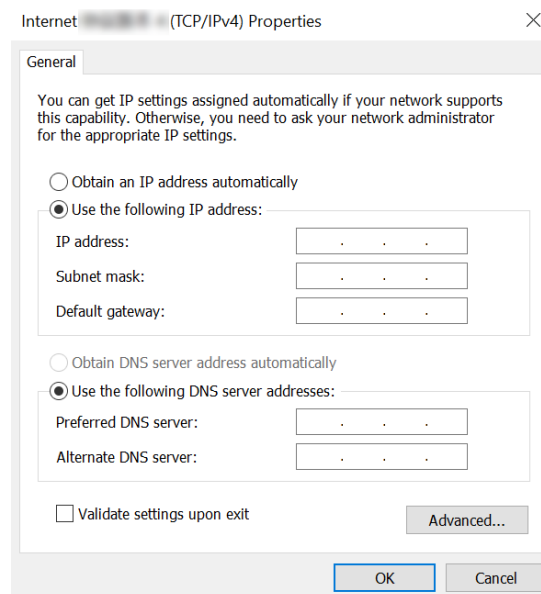


Figure 6-1 Set PC Network



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

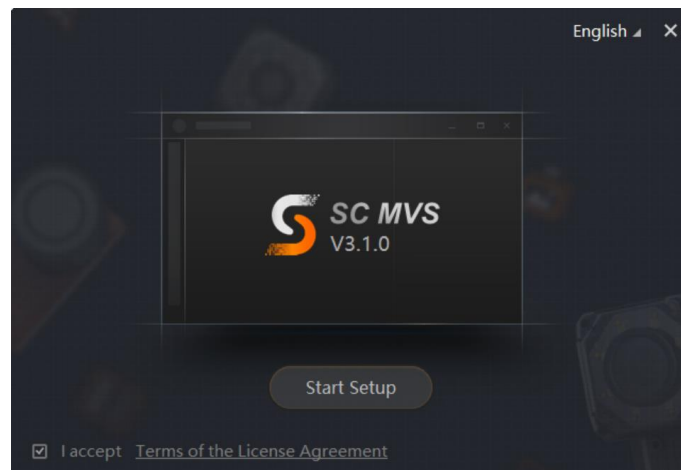
SCMVS is a client software for device configuration and remote operations.

### 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://WWW.MAVENWORKS.NET/>
- The graphic user interface may differ by different versions of client software you use.

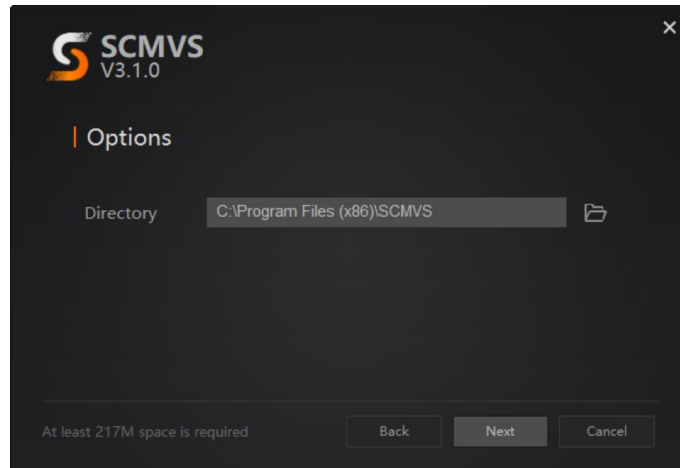
### Steps

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**

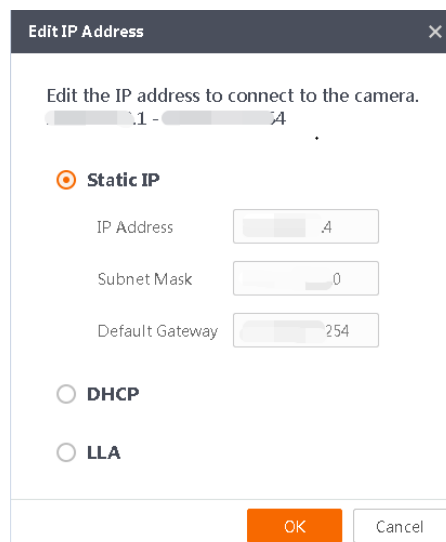
6. Finish the installation according to the interface prompts.

### 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**.

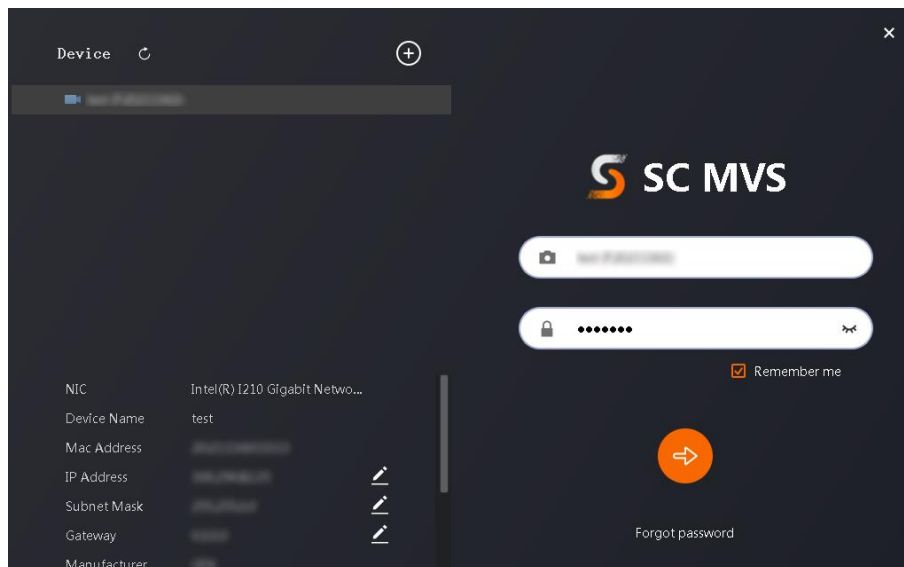
## 6.4 Login

### 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.
- 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 in to the client software, you can see the main window as shown below.

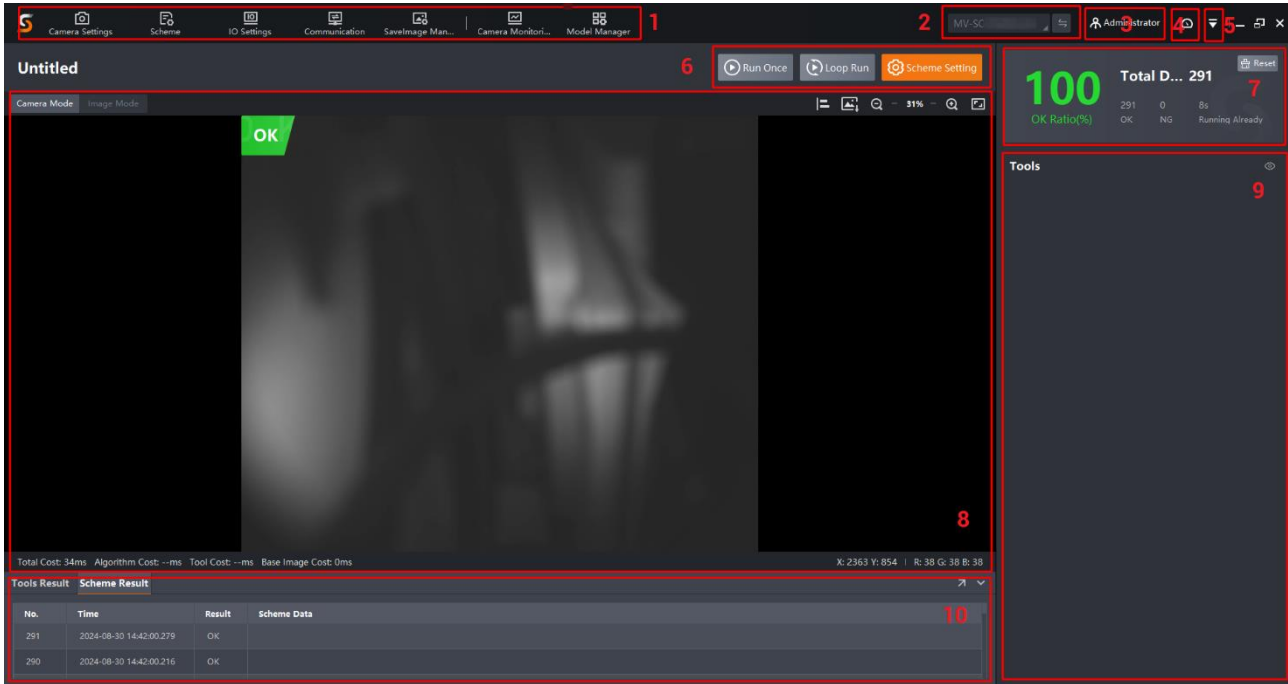


Figure 7-1 Main Window

### 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 camera settings, project, IO settings, communication, image saving management, camera monitoring, and model management.
2	Camera List	You can view the current camera model, or switch to other cameras. Up to 9 cameras can be connected.
3	User Role	You can view, switch, and manage roles. The roles include administrator, technical support, maintenance personnel, and

No.	Name	Description
		operator. Different roles have different permissions. The role management is only available for the administrator.
4	Resource Information	<p>You can view the usage of flash, intelligent memory, and CPU.</p> <ul style="list-style-type: none"> <li>• Flash usage: It refers to the percentage of total memory being used by the system.</li> <li>• Intelligent memory usage: It refers to the percentage of total memory being used by the algorithm.</li> <li>• CPU usage: It refers to the percentage of time that the processor spends executing tasks.</li> </ul>
5	Other Areas	You can switch languages, set system parameters, view the user manual, log, and client version information here.
6	Project Management	You can run (once/loop), stop, or edit projects here.
7	Project Status Display Area	This area displays operation status of current projects in real time.
8	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.
9	Tool Display Area	This area displays operation results of vision tools loaded in projects in real time. You can edit the specific vision tool.
10	Result Area	This area displays operation results of projects or tools.

## 7.2 Operation Flow

### Note

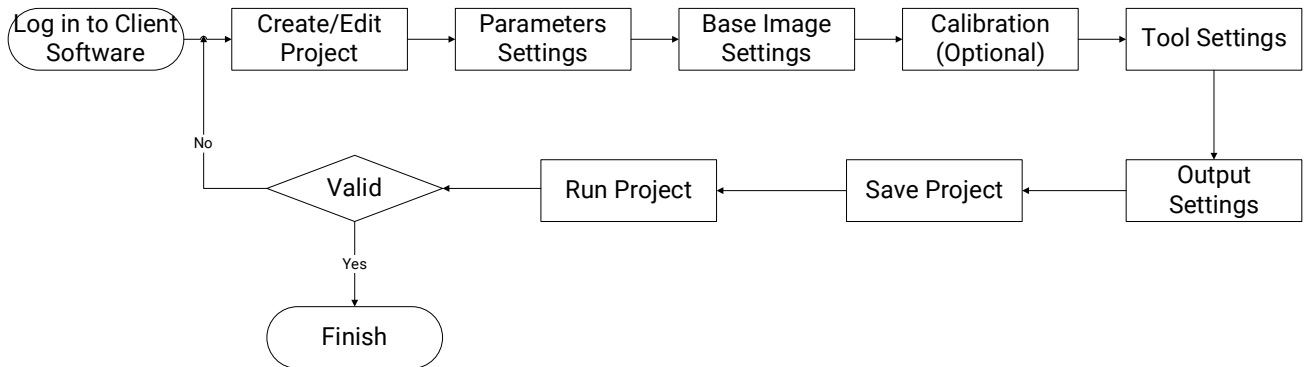
- Refer to the user manual of the SCMVS client software for detailed parameter settings and operations.
- Click **More** on the upper-right corner of the client software, and click **User Manual** to open.

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## MW7001 Series Vision Sensor Quick Start Guide

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You can follow the overall operation flow below to operate the device via the client software.



**Figure 7-2 Operation Flow**

## Chapter 8 FAQ (Frequently Asked Question)

### 8.1 Why the client software cannot list devices?

Table 8-1 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.

### 8.2 Why the image is very dark?

Table 8-2 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.

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


Table 8-3 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.


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


Table 8-4 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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