# SC6000 Series Smart Camera

Quick Start Guide

**HIKROBOT**

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

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

# Available Model

This manual is applicable to the SC6000 series smart camera.

# Contact Information

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Website: ***https://en.hikrobotics.com/***

# Contents

# 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.

[i] **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.

## 1.4 Light Source Prevention

● This device has a retinal blue light hazard that belongs to the class II hazard. Do not observe the light source during the operation.
  ○ The safety distance of the light source is 0.4 m.
  ○ Protective measures like wearing safety goggles are required when installing, maintaining and debugging the device.
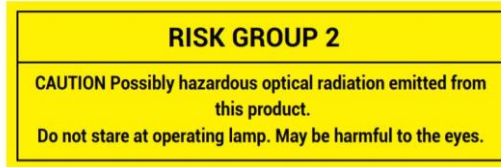


**RISK GROUP 2**

CAUTION Possibly hazardous optical radiation emitted from this product.
Do not stare at operating lamp. May be harmful to the eyes.

**Figure 1-1 Blue Light Hazard**

● 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 and maintenance.

# Chapter 2 Overview

## 2.1 Introduction

The SC6000 series smart camera is developed based on a high-performance embedded platform with built-in AI deep learning algorithms and powerful computing performance. The device integrates interfaces like GigE, USB, VGA, serial port and light source, which is convenient to build a complex vision system.

The device also has a built-in embedded VM software server and VMClient operation interface, which supports the establishment of connection with the device through the VM client on the Windows system PC to complete the solution building. The device has many functions, supports a variety of ways of use, meets the diverse visual detection needs of OCR, object recognition, object sorting, etc., and can be widely used in industrial fields.

## 2.2 Key Feature

- Adopts AI deep learning algorithm to achieve OCR, object recognition, object sorting, etc.
- Integrates VM functions and supports more than 140 algorithms.
- Adopts multiple interfaces and supports multiple-channel I/O, light source, display, etc.
- Adopts high-performance CPU with faster calculation performance and high efficiency.
- Supports multiple communication protocols.
- Supports indicators displaying device status for easy debugging and maintenance.
- Supports ingress protection IP67.

📖**Note**

Refer to the device's specifications for specific parameters.

# Chapter 3 Appearance and Connector

## 3.1 Appearance

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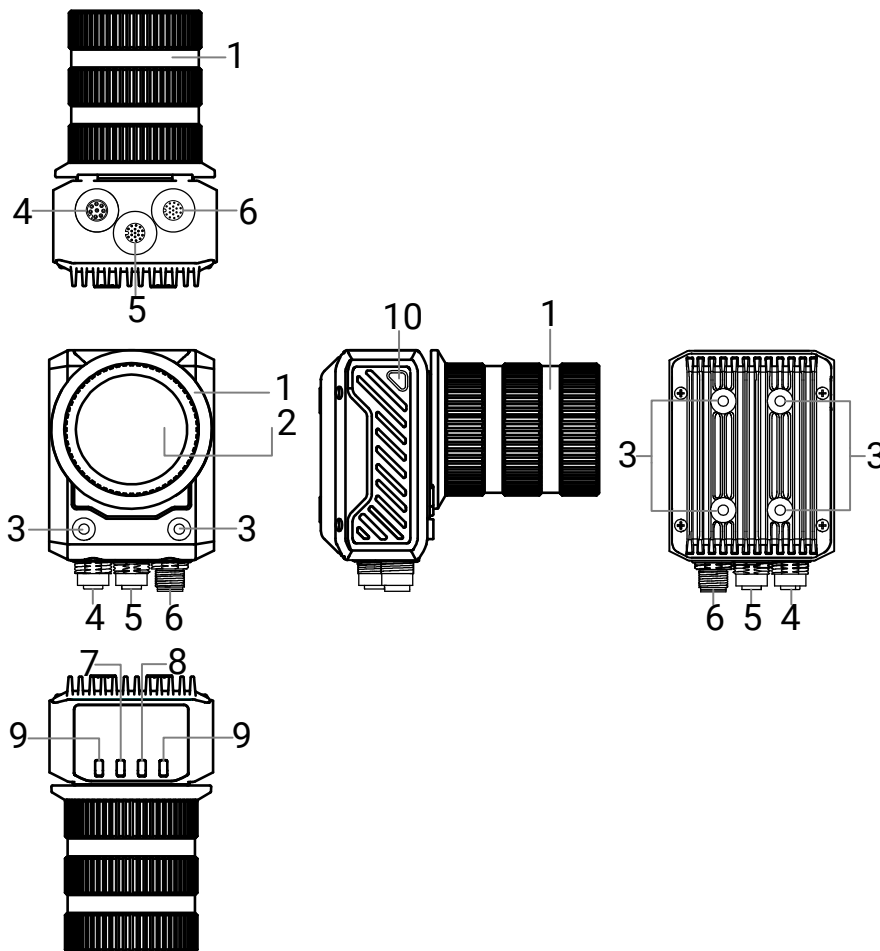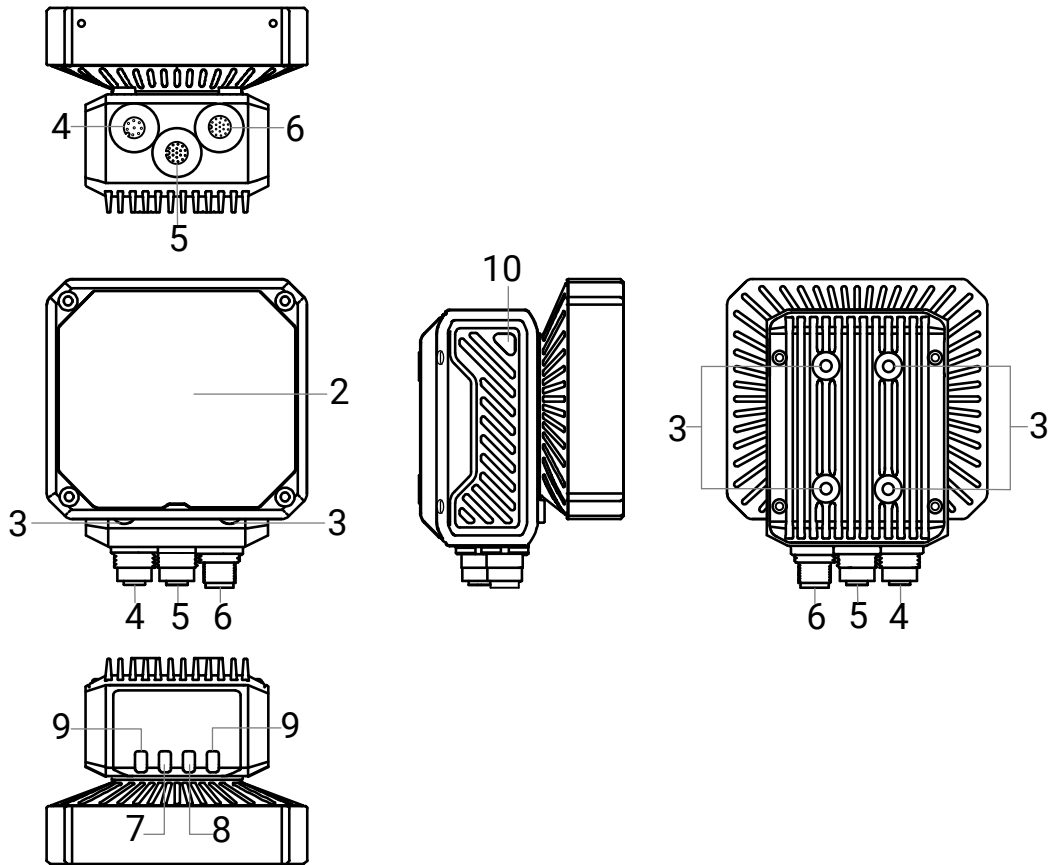


**Figure 3-1 Appearance of C-Mount Device**
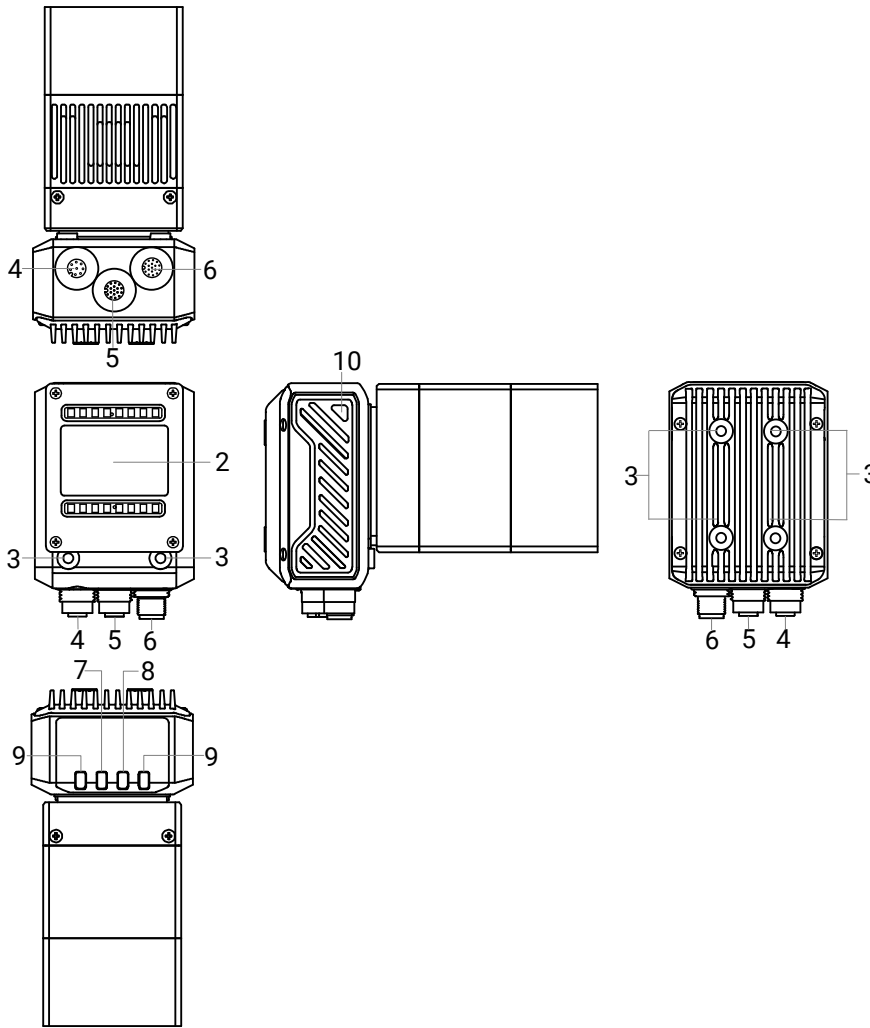
**Figure 3-2 Appearance of M12-Mount Device**

**Figure 3-3 Appearance of Wafer Device**

**Table 3-1 Component Description**

| No. | Name | Description |
|---|---|---|
| 1 | Lens Cap | The device adopts a transparent lens cap by default. |
| 2 | Acquisition Module | It is used to acquire images.<br><br>⬚ⓘ**Note**<br><br>For M12-mount device, it supports four-color light source (red/green/blue/white). You can switch the color by software as needed. |
| 3 | Screw Hole | There are mounting screw holes on the front and rear of the device (2 on the front and 4 on the rear) to fix the device to the bracket. It is recommended to use M4 screws in the device package. |

| No. | Name | Description |
|---|---|---|
| | | **[i] Note**<br><br>If other screws are used, it is recommended to choose metric M4 screws, and the screw length should be less than the sum of the thickness of the mounting plate and the depth of the screw hole. |
| 4 | Network Interface | It is GigE interface for transmitting data.<br><br>**[i] Note**<br><br>The interface has threads, and it is recommended to tighten the interface when using the device to reduce looseness due to the vibration on-site. |
| 5 | Extended Interface | It is a 17-pin M12 female connector providing VGA × 1 and USB host × 1. |
| 6 | Power and I/O Connector | It is a 17-pin M12 male connector providing power supply, I/O signals, and RS-232 communication.<br><br>**[i] Note**<br><br>The interface has threads, and it is recommended to tighten the interface when using the device to reduce looseness due to the vibration on-site. |
| 7 | PWR Indicator | It is a power indicator, and is solid blue when the device's power supply is normal. |
| 8 | LNK Indicator | It is a network indicator, and is solid green when the device's network is normal. |
| 9 | U1/U2 Indicator | They are user-defined indicators. U1 and U2 can display red or blue color. |
| 10 | STS Indicator | It is a status indicator for indicating the VM service status. It is solid green when the VM service is normal. Otherwise, the indicator is solid red. |

## 3.2 Connector

The device's main connector includes power and I/O connector, and extended interface. Refer to the information below for details.

### 3.2.1 Power and I/O Connector

The device's power and I/O connector is a 17-pin M12 male connector that provides opto-

isolated input × 2 (Line 0/1), opto-isolated output × 2 (Line 4/5), configurable non-isolated input/output × 2 (Line 2/3), RS-232 × 1, and light source output (max. 30 W) × 1. The pin definition of the connector is shown below.
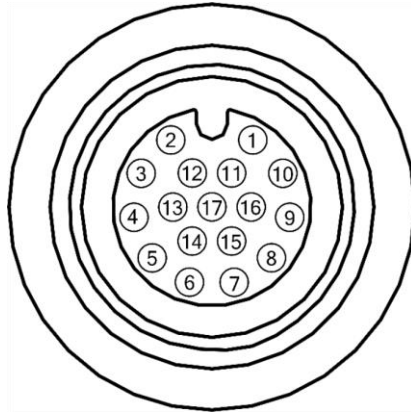


**Figure 3-4 Power and I/O Connector**

**Table 3-2 Pin Definition**

| No. | Signal | I/O Signal Source | Description | | Cable Color |
|---|---|---|---|---|---|
| 1 | VCC+ | -- | DC Power Supply+ | When an external light source is not required, use either of the two pairs "1 and 3" or "2 and 4". If an external light source is required, these 4 pins need to be wired, and power supply of 24 V, 2A or more is recommended. | White |
| 2 | | | | | |
| 3 | VCC- | -- | Power Supply Ground | | Brown |
| 4 | | | | | |
| 5 | LED+ | -- | External Light Source+ | | Green/White |
| 6 | LED- | -- | External Light Source- | | Blue/White |
| 7 | RS232_T | -- | RS-232 Output | | Red/Blue |
| 8 | RS232_R | -- | RS-232 Input | | Gray/Pink |
| 9 | OPTO_IN0 | Line 0 Signal Line | Opto-isolated Input 0 | | Blue |
| 10 | OPTO_IN1 | Line 1 Signal Line | Opto-isolated Input 1 | | Red |
| 11 | IN_COM | Line 0/1 Signal Ground | Input Signal Ground | | Purple |
| 12 | OPTO_OUT0 | Line 4 Signal Line | Opto-isolated Output 0 | | Green |

| No. | Signal | I/O Signal Source | Description | Cable Color |
|---|---|---|---|---|
| 13 | OPTO_OUT1 | Line 5 Signal Line | Opto-isolated Output 1 | Yellow |
| 14 | OUT_COM | Line 4/5 Signal Ground | Output Signal Ground | Pink |
| 15 | GPIO0 | Line 2 Signal Line | Configurable Input/Output, Output by Default | Black |
| 16 | GPIO1 | Line 3 Signal Line | Configurable Input/Output, Output by Default | Orange |
| 17 | GND | Line 2/3 Signal Ground | Configurable Input/Output Signal Ground | Gray |

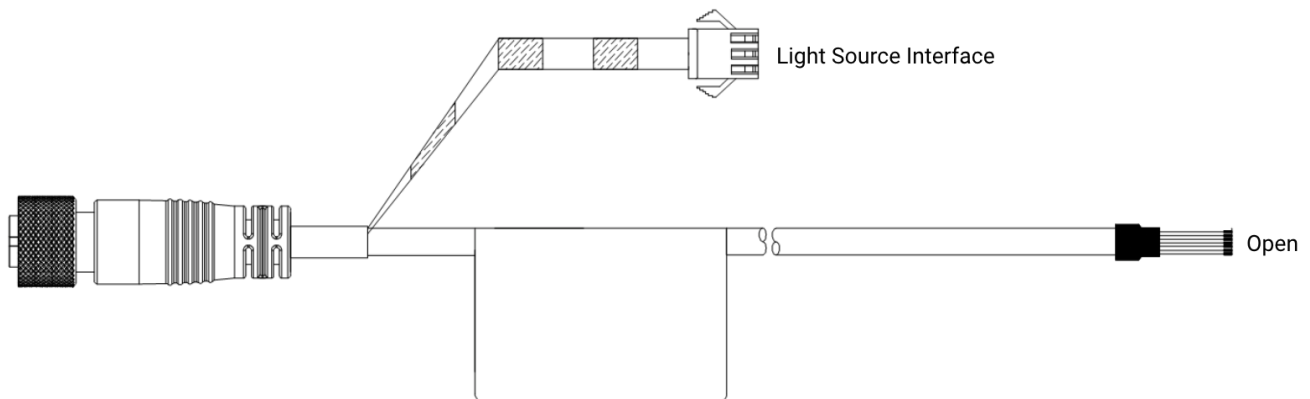The supplied power and I/O cable in the device's package is shown below.



**Figure 3-5 Power and I/O Cable**

☐**i**Note

● The light source output corresponding to $5^{th}$ pin and $6^{th}$ pin in the cable has been made into a SMR-03V-B type of light source interface by default. The light source device can be directly connected without wiring.
● For the open part of the cable corresponding to other pins, please wire according to the description of each pin in the table above.

## 3.2.2 Extended Interface

The extended interface of the device is a 17-pin M12 female connector providing VGA × 1 and USB host × 1. It is recommended to use the supplied USB/VGA cable in the device's
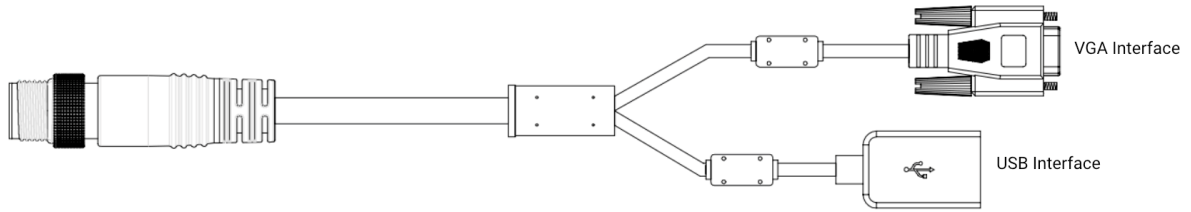
package, as shown below.



**Figure 3-6 USB/VGA Cable**

# Chapter 4 Device Installation and Wiring

## 4.1 Installation Preparation

You need to prepare following accessories before installation.

**Table 4-1 Accessories**

| No. | Name | Quantity | Description |
|---|---|---|---|
| 1 | Lens* | 1 | It refers to a C-mount lens. |
| 2 | Lens Cap | 1 | It is included in the device and is removable. |
| 3 | Light Source | 1 | It is used to provide the light and is optional.<br>**ⓘNote**<br>The light source should support SMR-03V-B interface and it must be a constant voltage one. |
| 4 | Power and I/O Cable | 1 | It is a supplied 17-pin to open cable that is included in the device's packaged. |
| 5 | GigE Network Cable | 1 | It is a supplied aviation plug to RJ45 network cable that is included in the device's packaged. |
| 6 | USB/VGA Cable | 1 | It is a supplied 17-pin cable that is included in the device's packaged. |
| 7 | DC Switch Power Supply* | 1 | It should meet the device's power supply requirements. |
| 8 | Installation Bracket* | 1 | It is used to fix the device. |

**ⓘNote**

Accessories with * mark mean that these items are not included in the device's package, and you should purchase them separately in order to use the device normally.

## 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.
- 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.
2. Install the device to other mechanical parts via the installation bracket.

⊡ **Note**

● Front installation and rear installation are both available, as shown below.
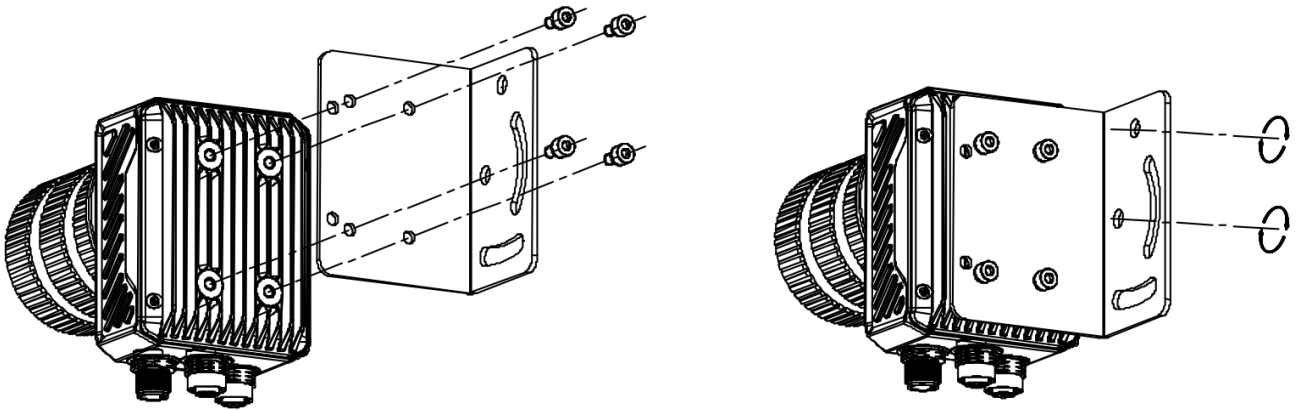● The diagrams here are for reference only. Please refer to the actual one.
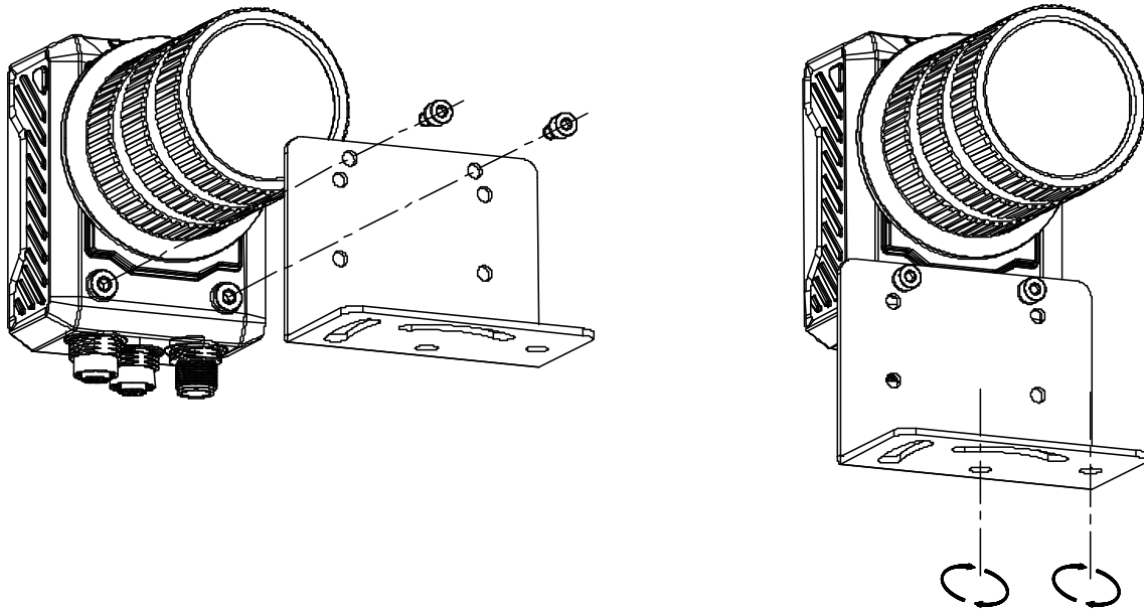


**Figure 4-1 Rear Installation**



**Figure 4-2 Front Installation**

3. (Optional) Adjust the device's installation angle according to actual demands.
4. Use the GigE network cable to connect the device to a switch or a NIC.
5. Use the power and I/O cable to connect the device to a DC switch power supply.

# 4.3 Wire Device

After installing the device, you should wire it to external devices via different cables. The typical topological graph is shown below, and you can wire the device according to actual demands.
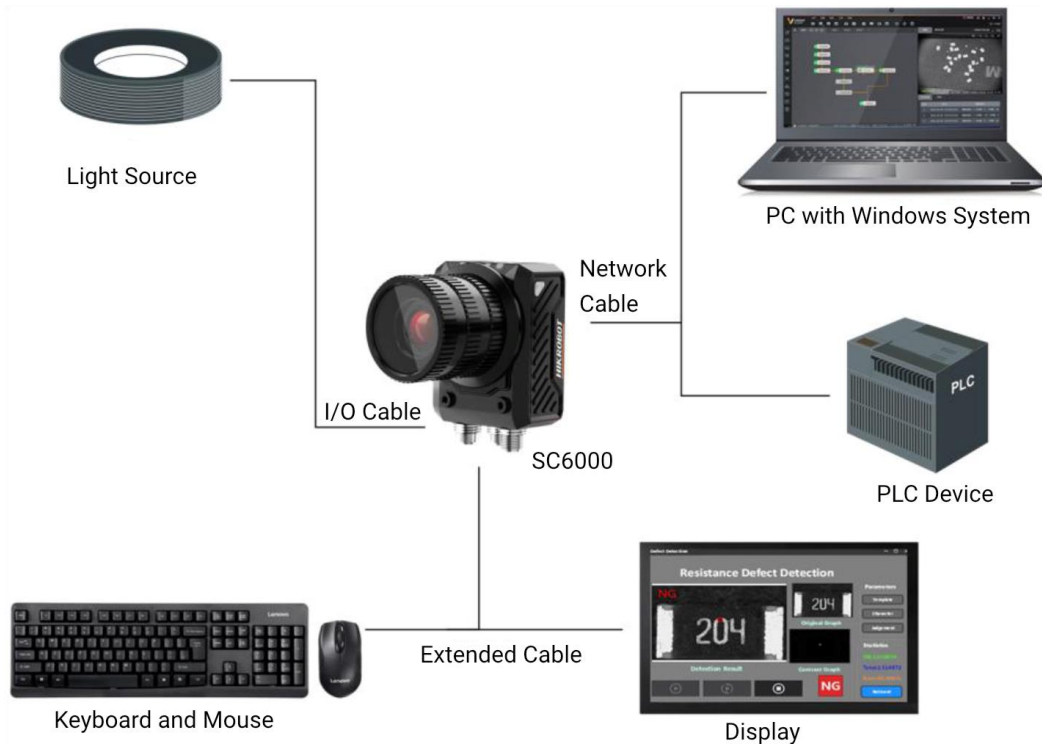


**Figure 4-3 Topological Graph**

ⓘ**Note**
- Run the VM software on the PC of Windows system. VMClient.exe is used to connect the device and build the solution.
- The display shows the VMClient operated by the device, and VMClient loads and runs visual solutions. The device is connected to the display via its VGA interface.

# Chapter 5 Basic Operation

## 5.1 Install VM Software

Follow steps below to install the VM software.

***Steps***

---

**⌷i Note**

- The VM software is compatible with 32/64-bit Windows 7/10.
- You can contact the technical support to get the software installation package.
- The graphic user interface may differ by different versions of the software you use.

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1. Double-click the installation package, and click **Start Install**.



**Figure 5-1 Click Start Install**

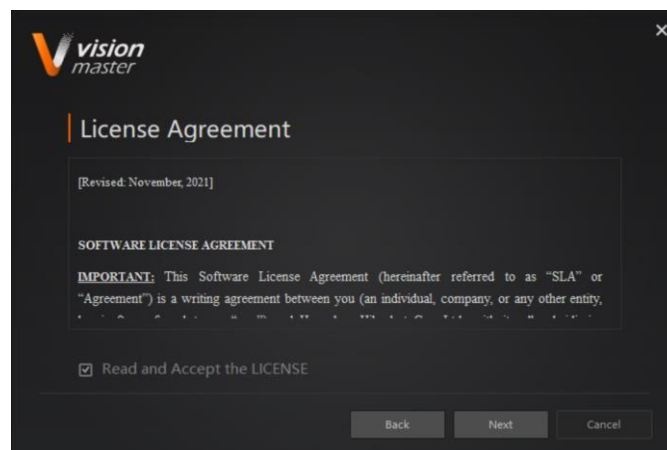2. Check **Read and Accept the LICENSE**, and click **Next** to continue.



**Figure 5-2 Read License Agreement**

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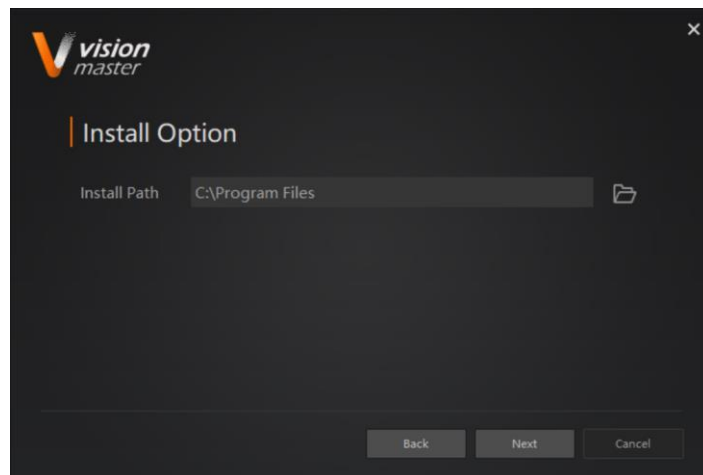3. Select installation directory, and click **Next**.



**Figure 5-3 Select Installation Directory**

4. Finish the installation according to the interface prompts.

# 5.2 Debug Device

After installing the VM software, you can use it to connect the device and build solutions.

**ⓘNote**

Refer to the user manual of the VM software for detailed operations.

*Steps*

1. Double click the software to run it.
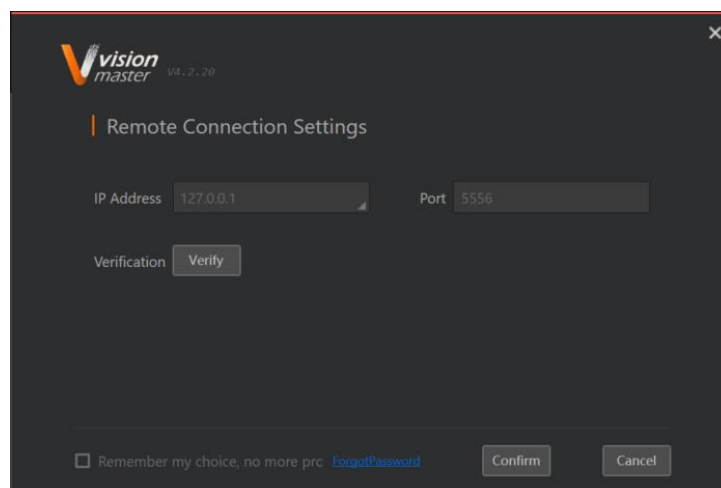2. Enter **IP Address** and **Port** of the device, and click **Verify**.



**Figure 5-4 Remote Connection Settings**

> ### Note
> You need to set and confirm password when logging in to the device for the first time.

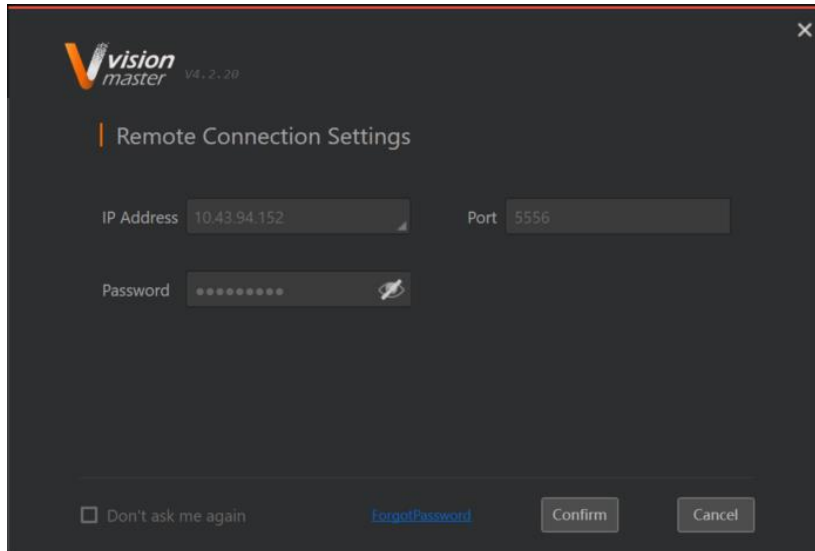3. Enter **Password**, and click **Confirm**.



**Figure 5-5 Enter Password**

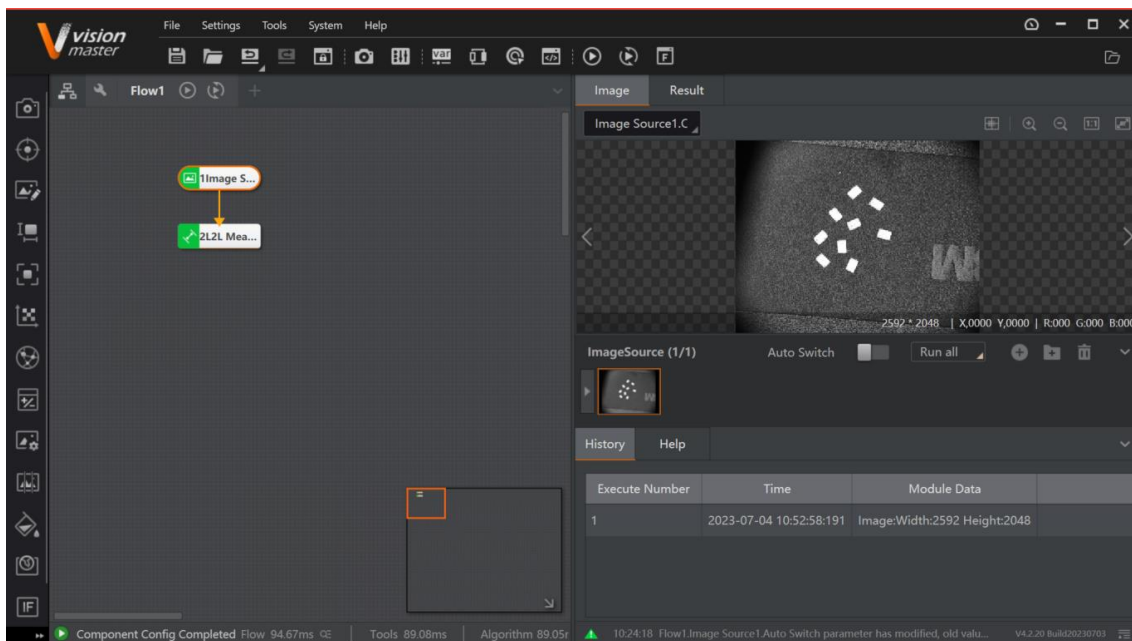4. Build and save a solution according to actual demands.



**Figure 5-6 Build Solution**

5. Close the VM software and run the VMClient that is the device's operation interface.
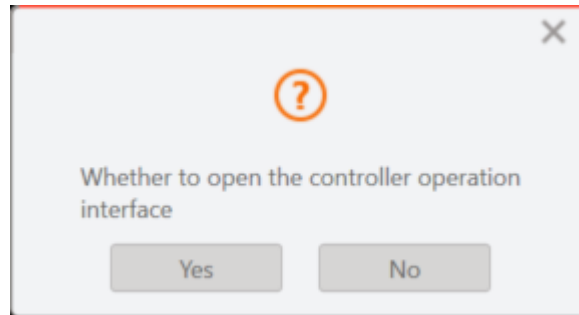
**Figure 5-7 Run VMClient**

6. Load and run the solution via VMClient.

---

i **Note**

VMClient is displayed via the device's external display via its VGA interface.

---

# 5.3 Reset Password

You can use the reset file to reset the password if you forget it. Contact the technical support to get the file.

***Steps***

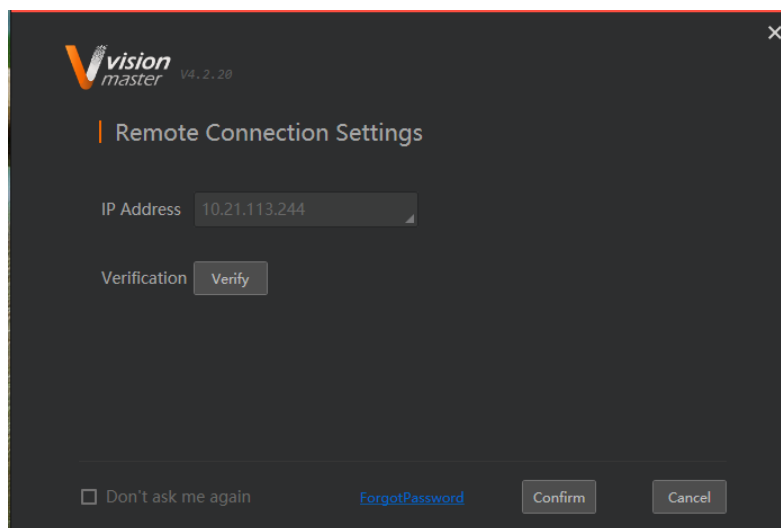1. Enter the window of remote connection settings, and click **Forgot Password**.



**Figure 5-8 Click Forgot Password**

2. View the device's serial number and send it to the technical support via Email.
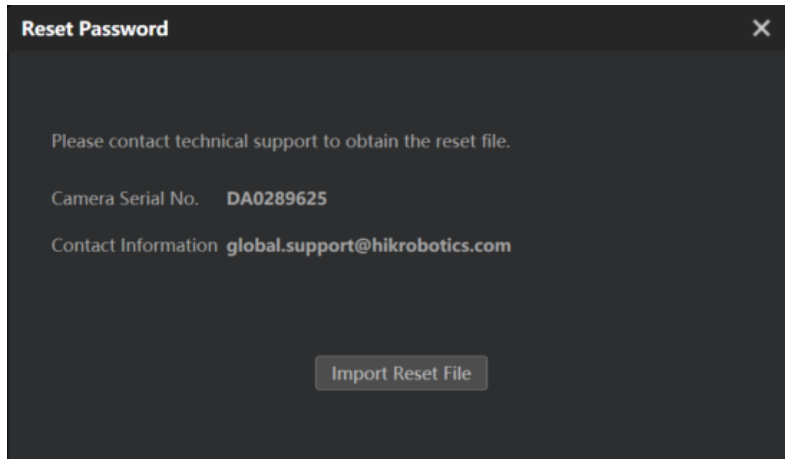
**Figure 5-9 View Serial Number**

3. After receiving the reset file, click **Import Reset File** to import the file from local PC.
4. Enter a new password after resetting the old one.

# 5.4 Upgrade Device

The VM software supports upgrade the device's VM service, VMClient, etc. Contact the technical support to get the upgrading file.

*Steps*

1. Double click the software to run it.
2. Go to **Tools** → **Remote Upgrade Tool** in the menu.

> **ⅰNote**
>
> You can also go to the installation directory of the VM software and use **RemotedUpgradeTool.exe** to upgrade: \Applications\Tools\RemotedUpgradeTool.

3. Select or enter the IP address of the device that needs to be upgraded.
4. Click **Browse** to select the upgrading file in DAT format from local PC.
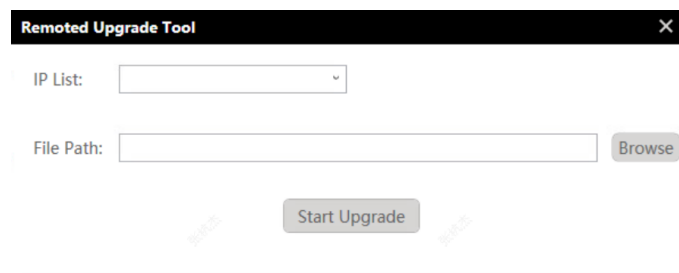5. Click **Start Upgrade** to upgrade.


**Figure 5-10 Upgrade Device**

**Note**

Do not disconnect the device during upgrading.

# Chapter 6 I/O and Serial Port Introduction

The device's 17-pin M12 male connector has opto-isolated input × 2 (Line 0/1), opto-isolated output × 2 (Line 4/5), configurable non-isolated input/output × 2 (Line 2/3), and RS-232 × 1. This section introduces the I/O electrical feature, I/O wiring, and RS-232 wiring.

## 6.1 I/O Electrical Feature

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

### 6.1.1 Input Signal

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

⊡**Note**
- The input voltage ranges from 12 VDC to 24 VDC.
- The breakdown voltage is 33 VDC. Keep voltage stable.



**Figure 6-1 Internal Circuit of Input Signal**



**Figure 6-2 Input Logic Level**

**Table 6-1 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 |

## 6.1.2 Output Signal

The device's Line 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 25 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.
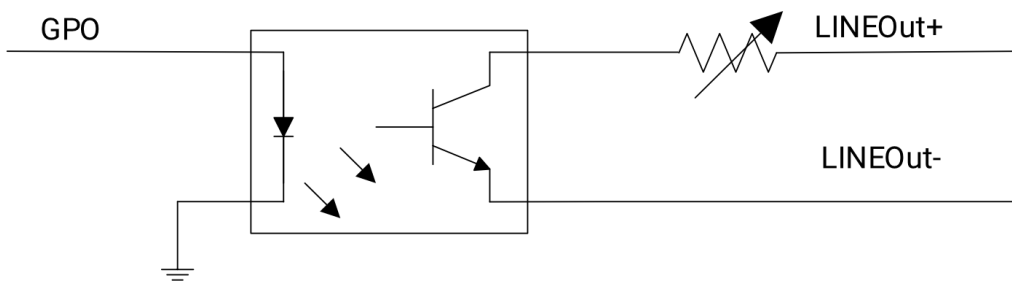


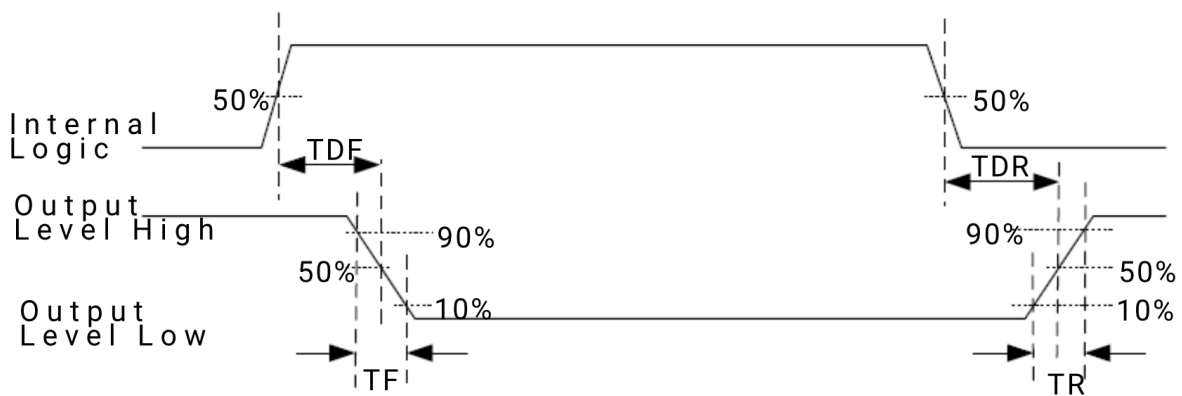**Figure 6-3 Internal Circuit of Output Signal**



**Figure 6-4 Output Logic Level**

**Table 6-2 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 |

# 6.1.3 Configurable Input/Output Signal

The device's Line 2/3 can be configured to input or output signals via the VM software, and their internal circuit is as follows.
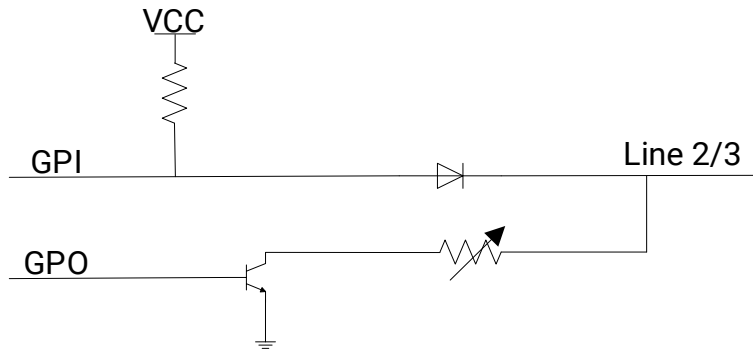


**Figure 6-5 Internal Circuit of Bi-Directional Signal**
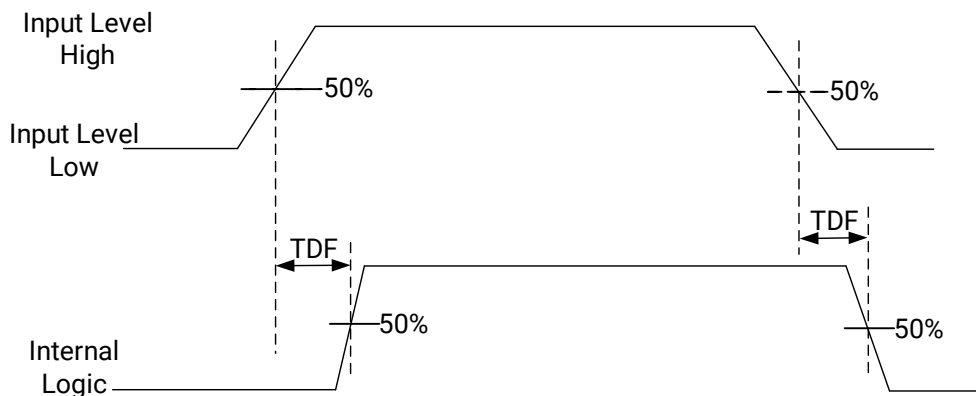
## Configured as Input Signal



**Figure 6-6 Input Logic Level**

### Table 6-3 Input Electrical Feature

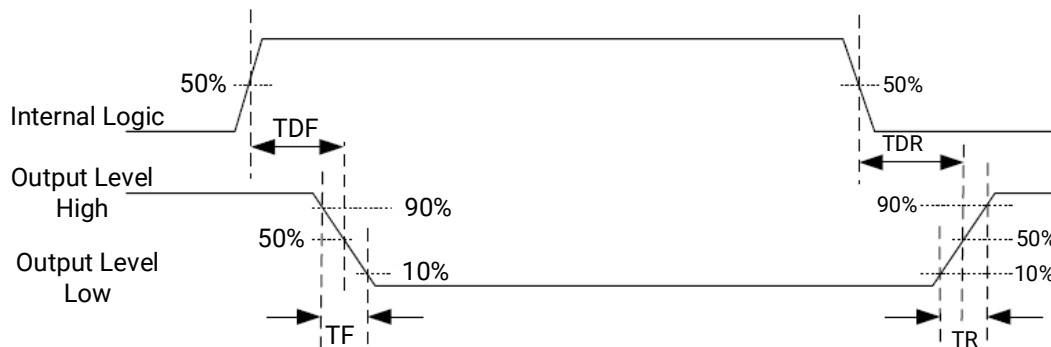| Parameter Name | Symbol | Value |
|---|---|---|
| Input Logic Level Low | VL | 1 VDC |
| Input Logic Level High | VH | 2 VDC |
| Input Falling Delay | TDF | 2 µs |
| Input Rising Delay | TDR | 62 µs |

## Configured as Output Signal



### Figure 6-7 Output Logic Level

When the external voltage is 12 VDC and pull-up resistor is 1 KΩ, the output electric feature is shown below.

### Table 6-4 Output Electrical Feature

| Parameter Name | Symbol | Value |
|---|---|---|
| Output Logic Level Low | VL | 500 mV |
| Output Logic Level High | VH | 12 VDC (external pull-up resistor) |
| Output Falling Delay | TDF | 330 ns |
| Output Rising Delay | TDR | 4.4 µs |
| Output Falling Time | TF | 116 ns |
| Output Rising Time | TR | 3.8 µs |

Relation between different external voltages and output logic level low is shown below.

### Table 6-5 Parameters of Output Logic Level Low

| External Voltage | VL |
|---|---|
| 3.3 VDC | 180 mV |
| 5 VDC | 260 mV |

| External Voltage | VL |
|---|---|
| 12 VDC | 500 mV |
| 24 VDC | 900 mV |

# 6.2 I/O Wiring

The device receives an externally input signal or output a signal to an external device through its 17-pin M12 male connector. This section introduces how to wire the I/O parts.

[i]**Note**

Here we take Line 0 as an example to introduce input signal wiring, and take Line 4 as an example to introduce output signal wiring.

## 6.2.1 Input Signal Wiring

[i]**Note**
- Input 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.
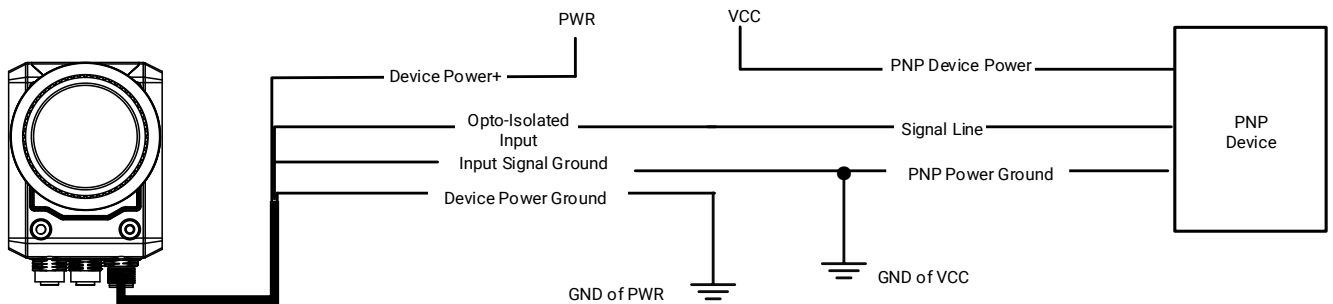
### Input Signal from PNP Device



**Figure 6-8 Input Signal Connecting to PNP Device**

## Input Signal from NPN Device

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.
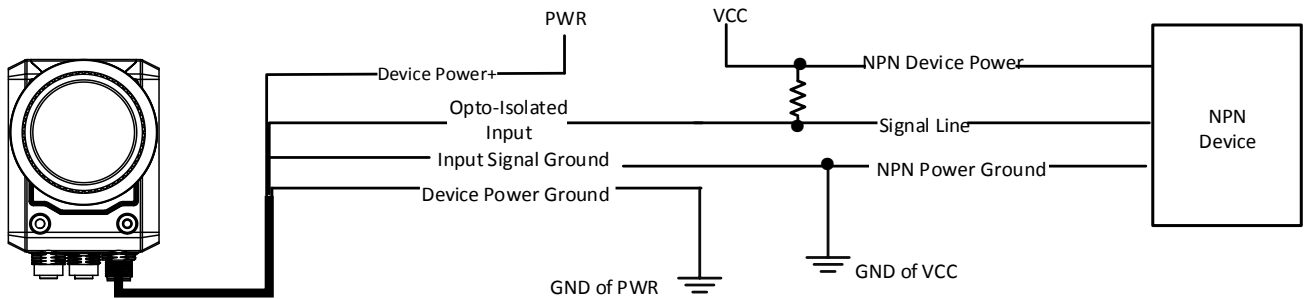


**Figure 6-9 Input Signal Connecting to NPN Device**

# 6.2.2 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.
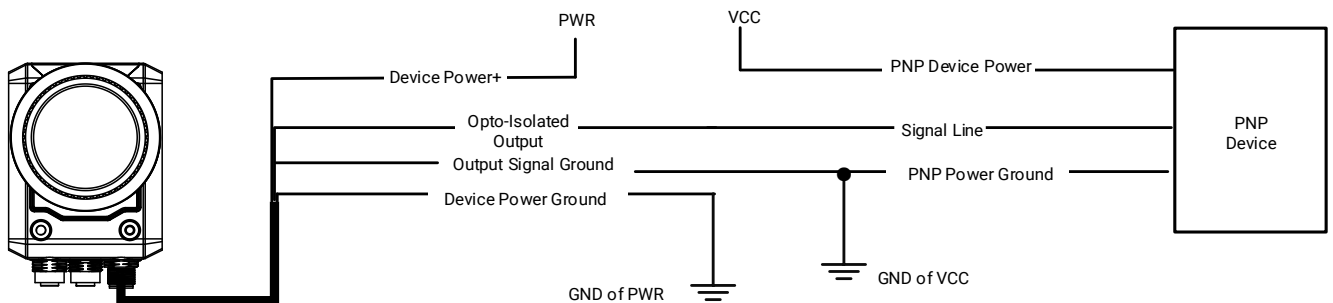
## PNP Device as External Device



**Figure 6-10 Output Signal Connecting to PNP Device**

## NPN Device as External Device

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.
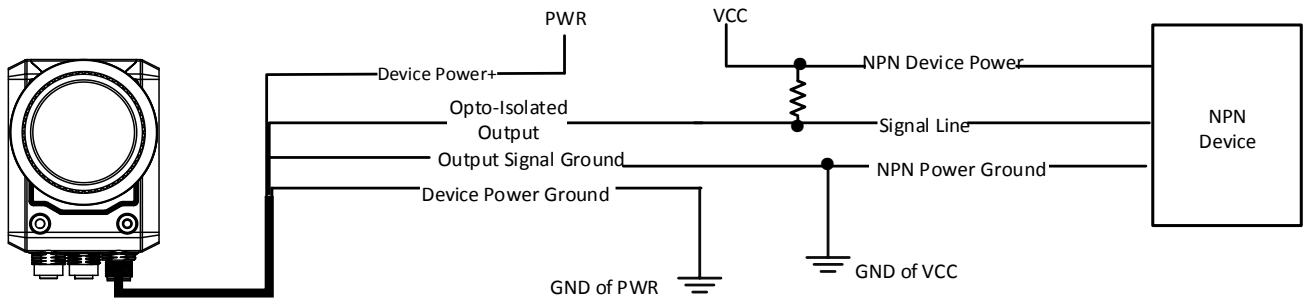


**Figure 6-11 Output Signal Connecting to NPN Device**

# 6.2.3 Configurable Input/Output Wiring

The device's Line 2/3 can be configured to input or output signals via the VM software, and their wiring is shown below.

📖**Note**

● Input/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.

## Input Signal from PNP Device

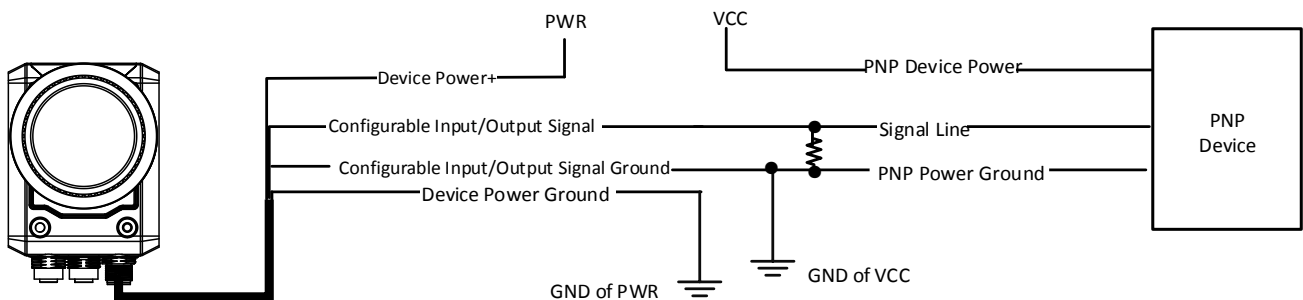If 1 KΩ pull-down resistor is used, its wiring is as follows.



**Figure 6-12 Input Signal Connecting to PNP Device**

## Input Signal from NPN Device

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.
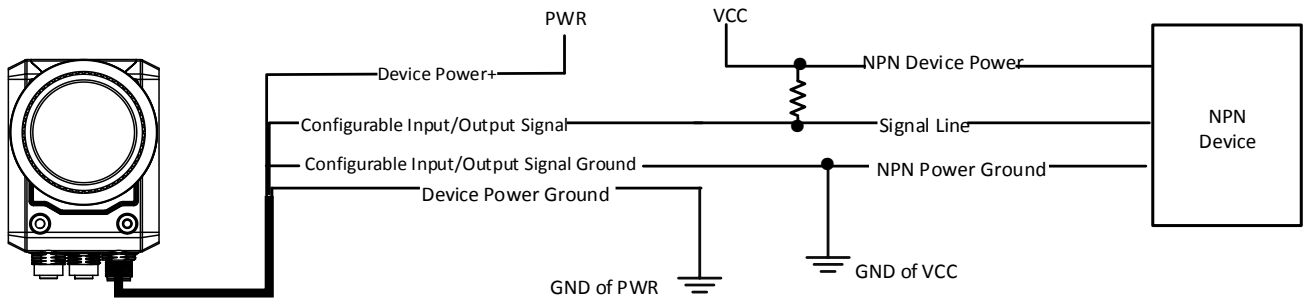
**Figure 6-13 Input Signal Connecting to NPN Device**

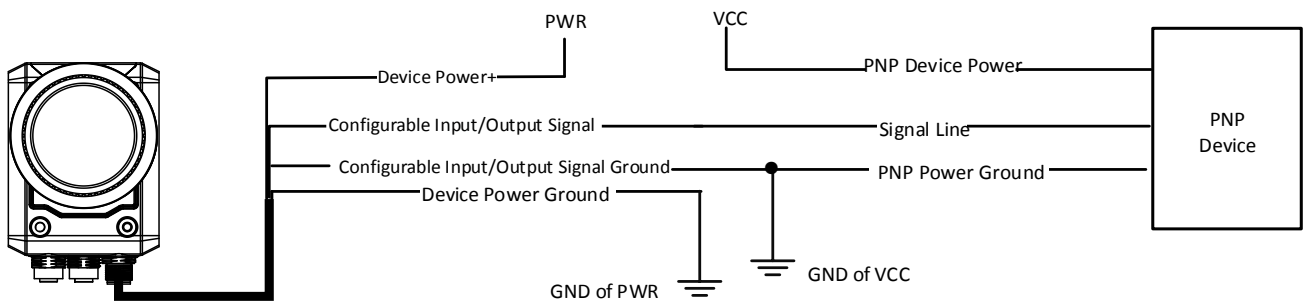## Output Signal to PNP Device

**Figure 6-14 Output Signal Connecting to PNP Device**

## Output Signal to NPN Device

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.
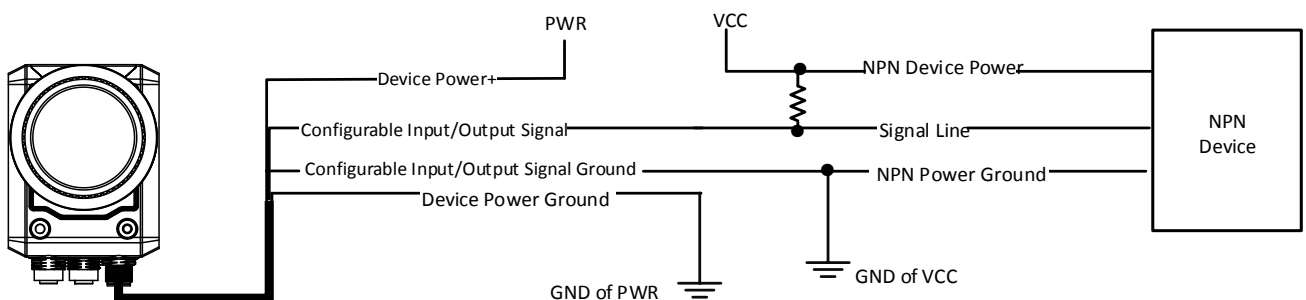
**Figure 6-15 Output Signal Connecting to NPN Device**

# 6.3 RS-232 Serial Port

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

⓵**Note**

Refer to the user manual of the VM software for details.

## 6.3.1 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.
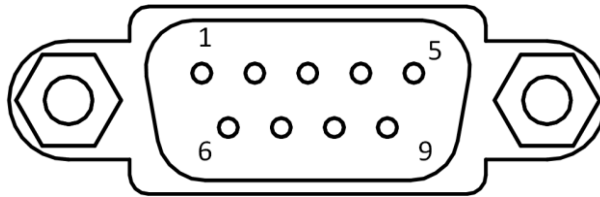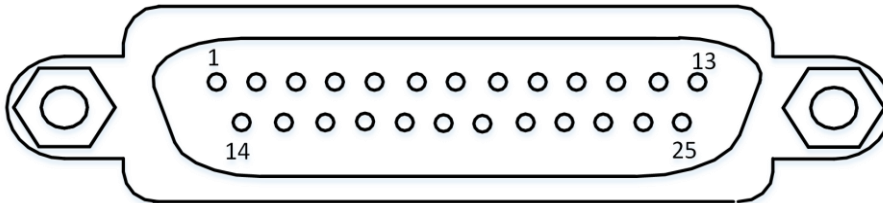
**Figure 6-16 9-Pin Connector**

**Figure 6-17 25-Pin Connector**

**Table 6-6 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 |

## 6.3.2 RS-232 Serial Port Wiring

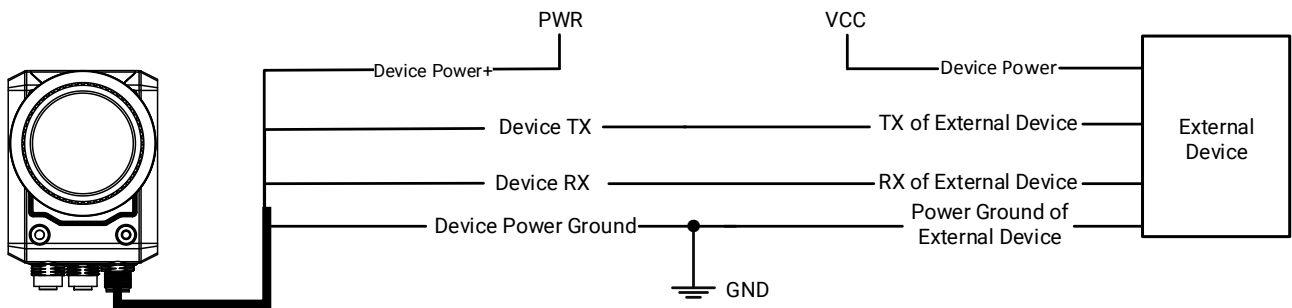You can refer to the serial port wiring below to connect the device with an external device.



**Figure 6-18 RS-232 Serial Port Wiring**

# Chapter 7 FAQ (Frequently Asked Question)

## 7.1 Why the device cannot be connected to the VM software?

**Reason**
- The device is powered off.
- Network exception.

**Solution**
- Check the device's power connection (observe whether the PWR indicator is solid blue or not) to make sure the device is powered up normally.
- Check the network connection (observe whether the LNK indicator is solid green or not) to make sure the device can be connected to the network normally, and make sure that the PC and the device are in the same network segment.

## 7.2 Why the image is very dark?

**Reason**
- Insufficient brightness of light source.
- Too small value of exposure and gain.

**Solution**
- Increase the brightness of light source appropriately, or change to a brighter one.
- Increase exposure and gain appropriately.

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

**Reason**
Network circuitry speed is not 1000 Mbps.

**Solution**
Check whether the network transit speed is 1000 Mbps or not.

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

**Reason**

Enabled trigger mode, but there is no trigger signal.

**Solution**

Sent the trigger signal to the device, or disable the trigger mode.

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