Dual-spectrum Network Speed Dome

Quick Start Guide

V1.0.0

Preface

The following is about the correct use of the camera. In order to prevent danger and loss of property, please read this manual carefully before using the camera and strictly follow it during use. Please keep the manual properly after reading.

Symbol Description

For the symbols that appear in the document, the description is as follows.

Instruction	The instructions are an emphasis and supplement to the main text.
Caution	Cautions indicates potential risks. If ignored, it may lead to product damage, data loss, product performance degradation, or unpredictable results.
Warning	Warnings indicates that low or medium potential risk is existing. The ignorance of the warnings may lead to light or medium damage for people.
Danger	Dangerous text indicates that there is a high potential risk. If it is not avoided, a major risk of personal injury or even death may be caused.

Important Safety Notice

Warnings

The local electrical safety standards should be rigorously followed in the process of installation and usage.

Please use power adapter which is produced by regular companies. Please check whether the power is normal or not before starting the camera. (Power supply requirements should comply with that on the product labels.)

In order to make emergency power off when necessary, please install power-off equipment which is easy to use when installing the wires.

Please protect power lines from being treaded or pressed, especially the connecting points which are led from the plug, power socket or other unit.

Please make sure the camera is fixed firmly in case of being installed on walls or ceilings.

If the camera does not work normally, please contact the purchased shops or factories. Do not disassemble or revise the camera in any way (The manufacturing company is

not responsible for problems that are caused by unauthorized modification or maintenance.)

 **Cautions**

Please do not put the camera in damp, dusty, extremely hot or cold places, or places with corrosive gas or unstable light.

Please transport, use and store the camera within the allowable humidity and temperature range.

Avoid making the lens aiming at strong light (e.g. sun or laser), otherwise the imaging sensor would be damaged.

Please do not block the vents near the camera in case of heat accumulated.

Please use the factory packaging or materials of the same quality when shipping the device.

Please do not press, vibrate violently or soak the camera during transportation, storage or installation.

It is advised to use the camera with lighting protector.

Soft dry cloth can be used to clean the camera. For the dirt difficult to clean, please use soft cloth with little neutral detergent and then wipe dry. Do not use volatile detergent like alcohol, benzene or diluent, or strong and abrasive detergent, otherwise the camera coating would be damaged and also the camera performance could be degraded.

The lens cover is optical device, so please do not touch directly or wipe the cover. Soft brush or hairdryer can be used to blow the dust away. For the grease or fingerprint, soft cloth can be used to wipe it away. Cotton cloth or lens cleaning paper with cleaning solution can be used to wipe repeatedly until it’s clean.

Please revise the password promptly after logging in.

 **Instruction**

Please use the accessories or parts specified by the manufacturer and have them installed and repaired by professional service personnel.

Quality requirements for installation and maintenance personnel:

Personnel should have the qualification certificate or experience to engage in the installation and maintenance of video surveillance systems, and have the qualification to engage in related jobs (such as high-altitude operations, etc.), in addition to the following knowledge and operating skills.

Equipped with basic knowledge and installation skills of video surveillance system and its components.

Equipped with basic knowledge and operating skills of low-voltage wiring and low-voltage electronic circuit wiring.

Equipped with basic network security knowledge and skills, and have good acknowledge of this manual.

Requirements for lifting equipment:

Safe lifting equipment suitable for site and method of camera installation.

The lifting equipment is able to reach enough height of installation position.

The lifting equipment has good safety performance.

Table of Contents

1 Camera Introduction

1.1 Camera Description

The dual-spectrum network speed dome is a new-type thermal imaging net camera integrated with the functions of infrared imaging and high-definition visible light, including dual-spectrum network camera and thermal imaging network camera. Equipped with advanced passive infrared imaging detectors, industrial thermographic analysis tools, smoke & fire detecting algorithm, dual spectrum behavior analysis algorithm and multi linkage alarm function, it can realize 24/7 safety surveillance and fire alarm. It can also be widely used in the intelligent safety surveillance fields of indoor and outdoor scenarios monitoring, such as perimeter prevention, industrial temperature measurement and fire alarm.

1.2 Camera Appearance

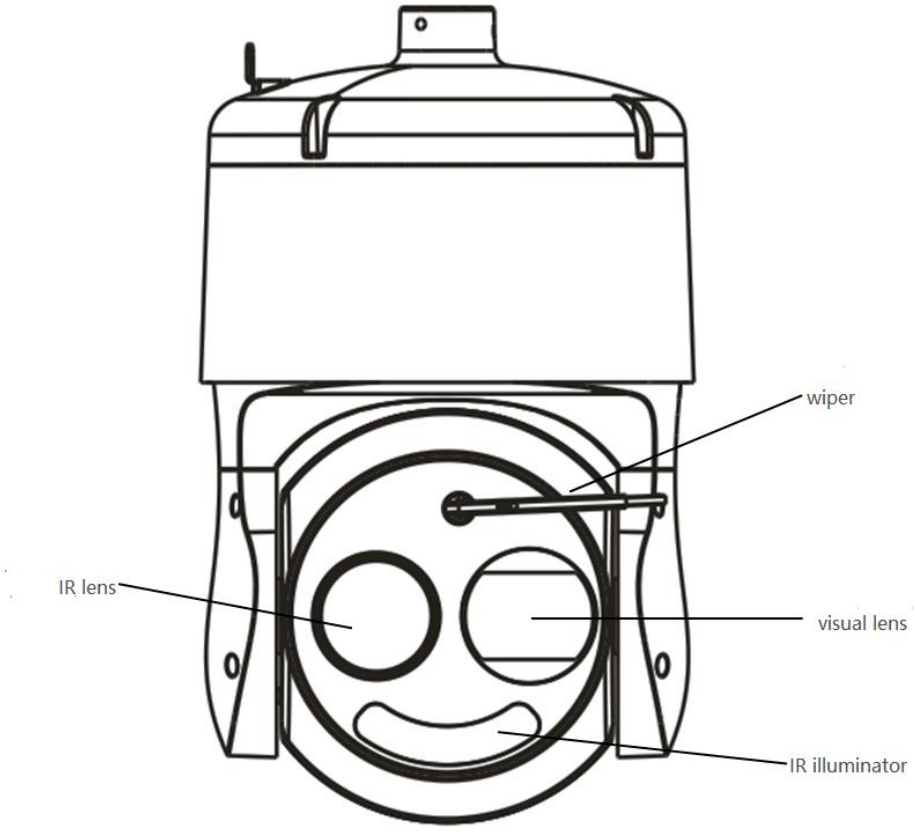


Figure 1.1 Appearance and Interface of Dual-spectrum Network Speed Dome

1.3 Cable Introductions

The cable includes interfaces for RJ-45 network, power, audio, alarm, and RS-485, etc. Please see the following figure for interface instructions.

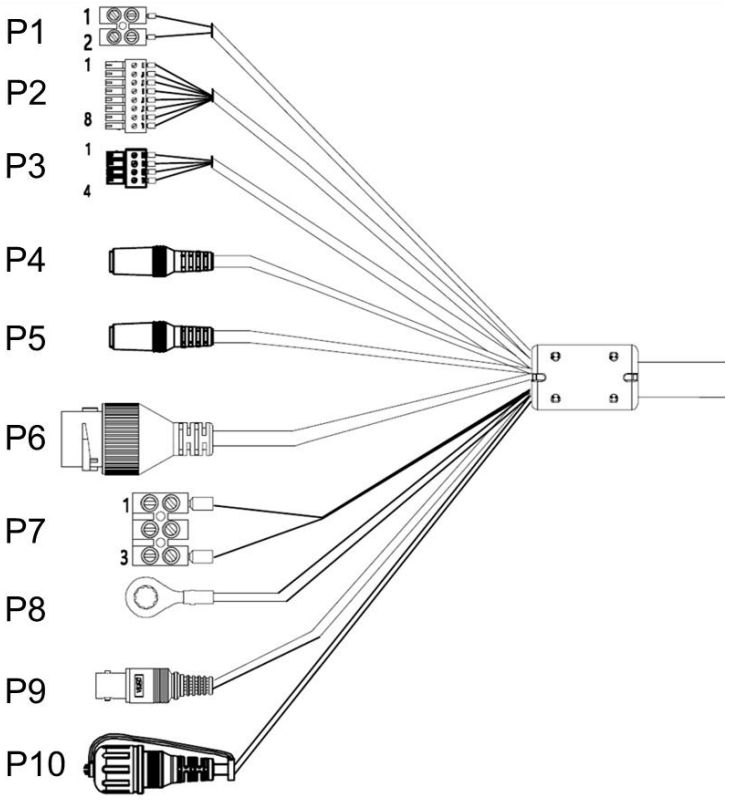


Figure 1.2 Cable Introductions

- P1 RS-485 interface (RS485) :connect with RS-485 peripherals.
- P2 alarm input (ALARM IN) :receive external alarm signals, ALARM IN combined with GND (Ground) constitutes one-channel alarm input.
- P3 alarm output (ALARM OUT) :output alarm signals, ALARM OUT combined with ALARM COM constitutes one-channel alarm output.
- P4 Audio Output (AUDIO OUT) : output audio signal to speakers and other equipment for sound output.
- P5 Audio Input (AUDIO IN) : input audio signals, able to connect with sound pick-up to collect sound.
- P6 network interface (LAN) : output network signal and connect to standard Ethernet cable.
- P7 power interface(POWER): AC 24V or DC 24V, please connect the positive and negative poles correctly if it's DC 24V.
- P8 Ground (GND) : used for grounding protection.
- P9 Video Interface(VIDEO): output analog video signals(optional).

- P10 Reset button (RESET) : restore to factory default settings.

1.4 Alarm Interface Connection

The camera can be connected to alarm switch signal input (0 ~ DC5V) and switch output. An external power supply is required when connecting the alarm. The specific wiring method is shown in the figure below.

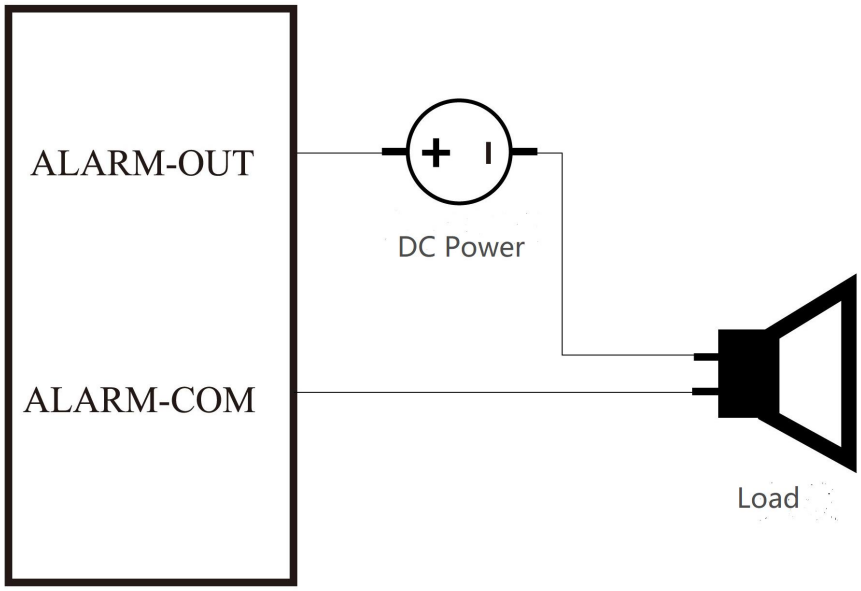


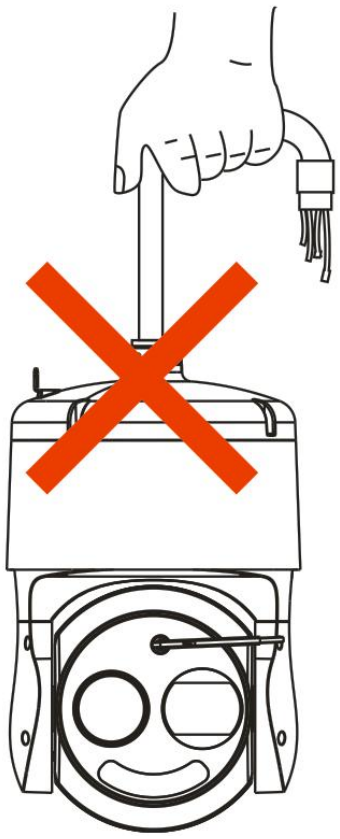
Figure 1.3 Alarm Output Wiring Method

2 Camera Installation

2.1 Instructions before Installation

Before installation, please confirm that the camera in the package is in good condition and all parts are complete.

- The installation wall should have a certain thickness, and can bear at least 4 times the weight of the camera and installation accessories.
- If it is a concrete wall or ceiling, first install the expansion screws (the installation holes of the expansion screws need to be the same with the bracket), and then install the bracket.
- If it is a wooden wall, use self-tapping screws to install the bracket directly.
- When transporting the camera, do not directly pull the cable at the end of the camera, otherwise it may affect the waterproof performance of the camera or cause wiring problems, as shown in the figure below.



Lifting the camera by cable is forbidden

Figure 2.1 Incorrect Handling of the Camera

2.2 Recommended Monitoring Distance

Since the thermal imaging channel of the camera adopts a fixed-focus athermalized lens, the remote motorized focusing function is unavailable. Therefore, before installing the camera, please

select the corresponding installation position and lens focal length according to the monitoring requirements to achieve the purpose of monitoring.

The reference table of lens focal length and monitoring distance is shown in the following table.

Table 2.1 Recommended Monitoring Distance（12μm Pixel）

Equipped Lens	DD (Vehicles)	DD (Human)	RD (Vehicles)	RD (Human)	ID (Vehicles)	ID (Vehicles)
9.1mm	1163m	379m	291m	85m	145m	47m
13mm	1661m	542m	415m	135m	208m	68m
25mm	3194m	1042m	799m	260m	399m	130m
50mm	6389m	2083m	1597m	521m	799m	260m

- If the weather is clear and the visibility is normal, without visible fog or haze, there is a 50% chance of reading the target at the specified distance.
- Assume that the width of the people is 0.5m, the height is 1.8m, and the critical distance is 0.75m. In case of the width of the vehicle is 4.0m, the height is 1.4m, and the critical distance is 2.3m.
- According to the Johnson criterion of infrared images, suppose:

  The detection target needs to be imaged at least 1.5 pixels in the critical direction.
- Recognizing the target needs to image no less than 6 pixels in the critical direction.
- Recognizing the target requires imaging no less than 12 pixels in the critical direction.
- The actual detection distance varies with the settings of the thermal camera, environmental conditions, user experience, monitoring or displaying type.

2.3 Installation Guide

Either wall mounting is supported, and the camera can be installed in different ways according to different installation environment.Depending on different factors such as the installation environment,the camera can adopt various installation methods. The most common types of brackets include wall-mounted brackets, corner-mounted brackets, pole-mounted brackets, and ceiling-mounted brackets. Taking wall-mounted and ceiling-mounted brackets as examples, the installation steps for the cameras are explained below. Other installation methods are similar, so they are not detailed here.

2. 3. 1 Wall Mounting

Step 1 Drilling Holes

Drill four Φ12 expansion screw holes on the wall according to the mounting holes of the camera bracket and insert the M8 expansion screws into the holes.Route the power cable, Ethernet cable, and other signal cables that need to be connected to the camera through the wall hole.

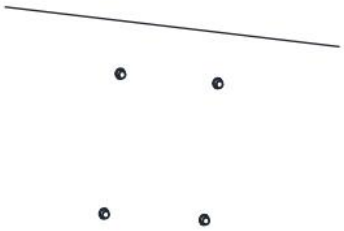


Figure 2.2 Drill holes and insert the expansion bolt

Step 2 Fix bracket

Insert the included adapter into the threaded hole of the wall-mounted bracket and secure it in place using M4×8 screws. Next, guide the necessary connecting cables out through the bracket's cavity. Finally, use four M8 hex nuts to pad flat washers and lock the expansion screws through the support.The bracket is fixed as shown below.

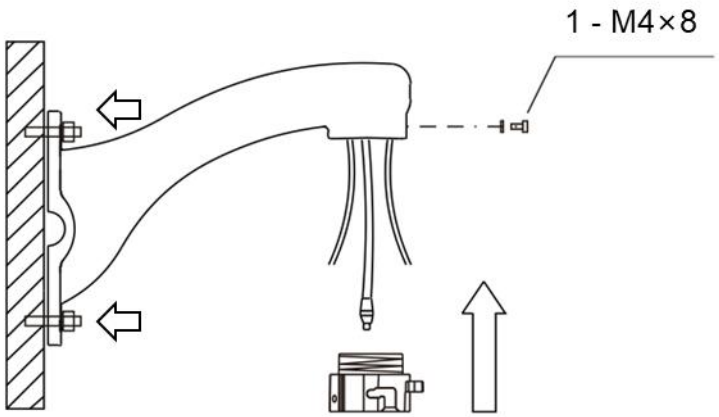


Figure 2.3 Fix bracket

Note: If the speed dome is used for outdoor environment, it should be sealed and waterproofed in the gap between the wall bracket and the wall and the wall outlet hole.

Step 3 Fix the Speed Dome

Install the provided two M6×12 hex screws into the threaded holes of the device connection head, and one M6×18 hex screw into the threaded hole on the bracket adapter head. The three screws

should not be tightened fully. Next, attach one end of the provided safety rope hook to the hanging ring on the speed dome. Refer to the diagram below.

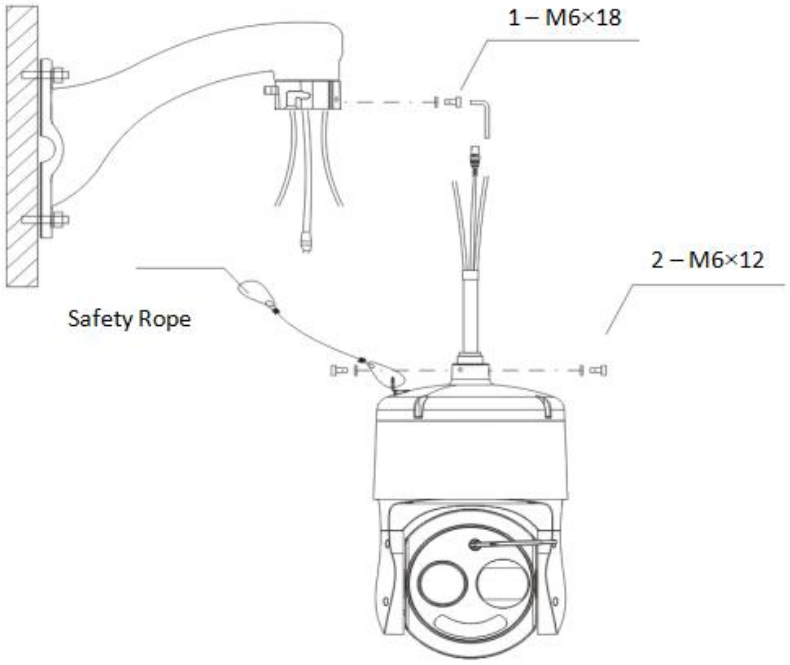


Figure 2.4 Mounting Screws and Safety Rope

Tie the safety rope hook of the device to the safety hole on the bracket, and then connect the cables in the bracket with the respective breakout cables of the device, as shown in the following figure.

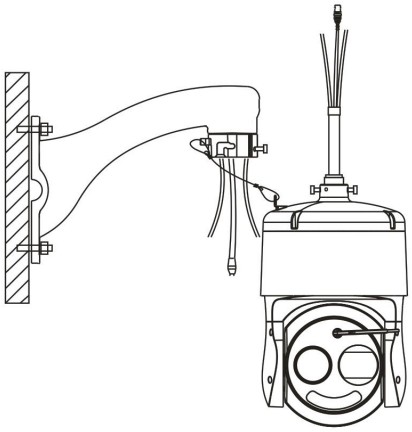


Figure 2.5 Safety Rope Mounting and Cable Connection

Note: For sockets without waterproof features, please apply waterproof tape for proper waterproofing.

Hang the securing screws at the devices connection head onto the two notches of the wall-mounted bracket. Then, tighten these 2 securing screws along with the 1 securing screw on

the bracket. This will ensure the device is stably mounted on the bracket, as illustrated in the diagram below.

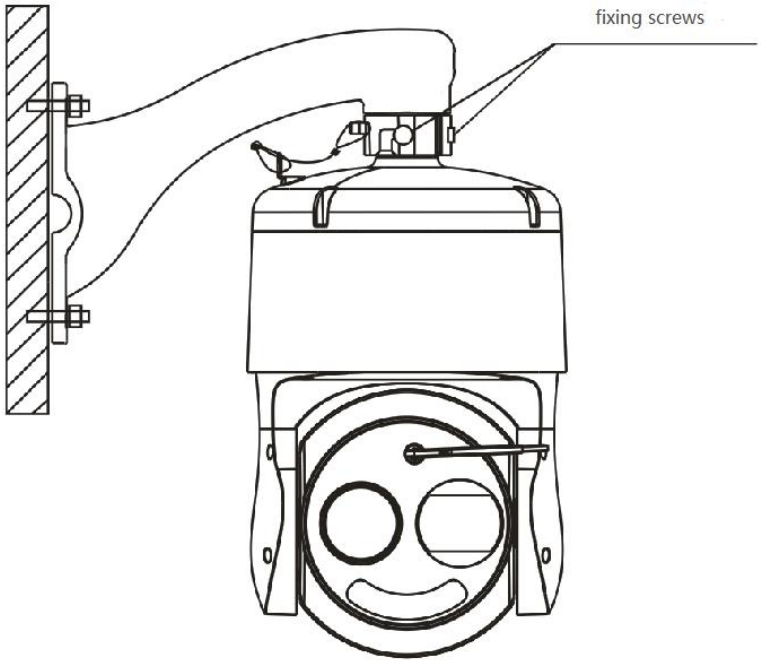


Figure 2.6 Fixing Speed Dome

2.3.2 Ceiling Mounting

Step 1 Drill Holes and Fix Bracket

Based on the mounting holes of the device bracket, drill four Φ12 installation holes on the wall. Insert the M8 expansion screws into the prepared holes. Secure the flange plate of the bracket to the wall top by placing flat washers on four M8 hex nuts and tighten the expansion screws. Next, insert the provided adapter into the threaded hole of the hanger rod and secure it using M4×8 screws. Wires such as power and network cables that need to be connected to the speed dome should be threaded out from the wall holes, hanger rod, and adapter in sequence.

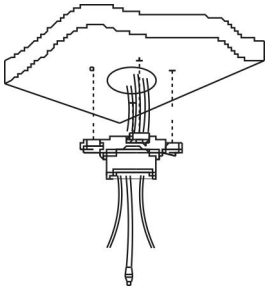


Figure 2.7 Drill Holes and Fix Bracket

Step 2 Fix Speed Dome

The connection method between the device and the suspension rod bracket via the adapter is the same as the wall-mounted bracket connection. For details, please refer to the installation method mentioned for wall mounting. The ceiling mounting effect is illustrated in the figure below.

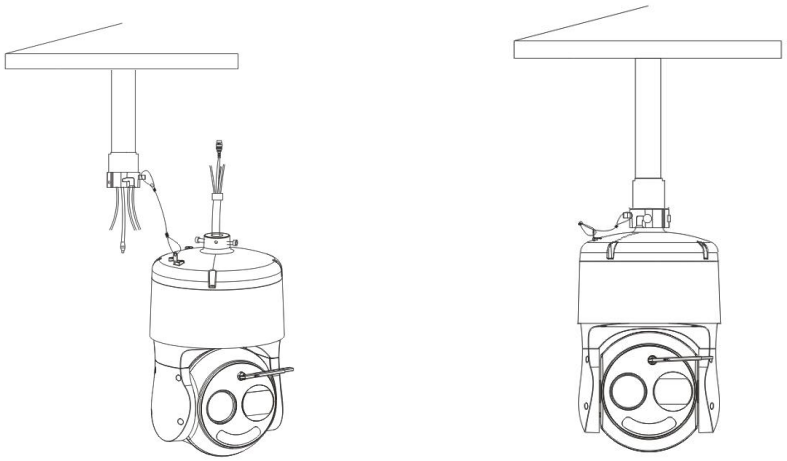


Figure 2.8 Fix Speed Dome

2.4 Waterproofing Wire Terminals

When using the device, prolonged exposure of wire terminals can lead to corrosion and rust. It is recommended to waterproof the wire terminals. Please use waterproof tape to tightly wrap around the wire terminals and nearby cables in a half-lapped manner. Continue wrapping until both the wire terminals and nearby cables are completely covered by the waterproof tape. During the wrapping process, ensure that the waterproof tape remains taut at all times.

2.5 Mounting Ethernet Port Jacket

When using the camera, install the matching network port waterproof jacket to prevent water from entering the network cable. Please install it if necessary. The installation steps are as follows:

Step 1 Pass the network cable through the fastening nut and the main body of the waterproof jacket in turn.

Step 2 Scissor the waterproof rubber ring and put it on the network cable between the main body of the waterproof jacket and the fastening nut.

Step 3 Put the O-shaped rubber ring into the network port, and insert the network cable into the network port.

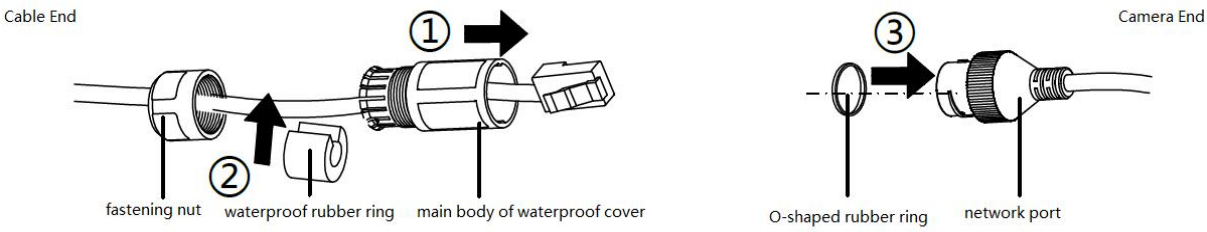


Figure 2.4 Network Cable Installation

Step 4 Align the notch of the network port with the buckle of the main body of the waterproof jacket, put the main body of the waterproof jacket into the end of the network port, and tighten it clockwise.

Step 5 Insert the waterproof rubber ring into the main body of the waterproof jacket.

Step 6Turn the fastening nut clockwise and press the waterproof rubber ring tightly.

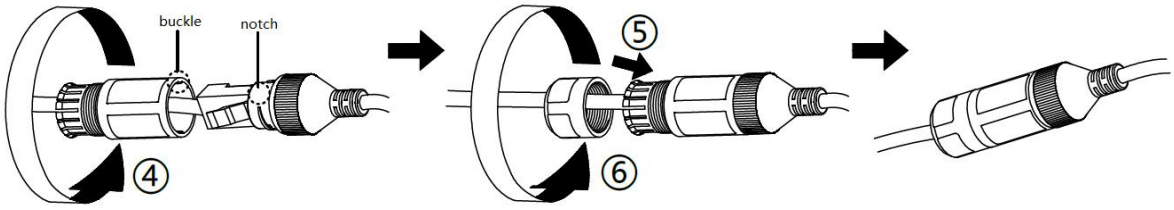


Figure 2.5 Finishing Installation

2.6 Use of Corrosion-resistant Coating

When the camera is exposed to a corrosive environment for an extended period, it's prone to corrosion and rust on screws and nuts. After completing the camera installation, apply corrosion-resistant coating to all fixed screws and nuts. The screw through-holes should be coated until they are filled to the point of overflowing, and the coating should completely cover the screw heads.

2.7 Power-On Self-Test

After ensuring correct device installation, connect the power supply to perform a power-on self-test on the device.

If the device powers on properly and displays an image, and the pan-tilt orientation is controllable, the equipment installation is complete.

If the device fails to power on properly, check the cables connections. If the cables are connected correctly and the device still doesn't power on, you should investigate cable routing and other related issues.

3 Operation Guide

3.1 Preparations

1. The default IP address of the device：192.168.1.123.
2. The subnet mask is 255.255.255.0, and the IP address of the camera can be modified. If you change the device address to 192.168.1.194, change your computer's IP address to the same network segment with the network video server, and the same subnet mask. Such as: 192.168.1.120
3. Test whether the device starts normally. Under WINDOWS, follow the <Start→run→cmd> operation, open the command line window, and enter Ping 192.168.1.123 in the command line window. If "Request time out" is not displayed, it means the startup is normal.
4. The speed dome supports browsers such as Chrome, Mozilla Firefox or Edge.

3.2 Login System

5. Enter the IP address of the camera in the address bar of the IE browser to log in, and the login page is as shown below, you can change the language between simplified Chinese and English on the interface.

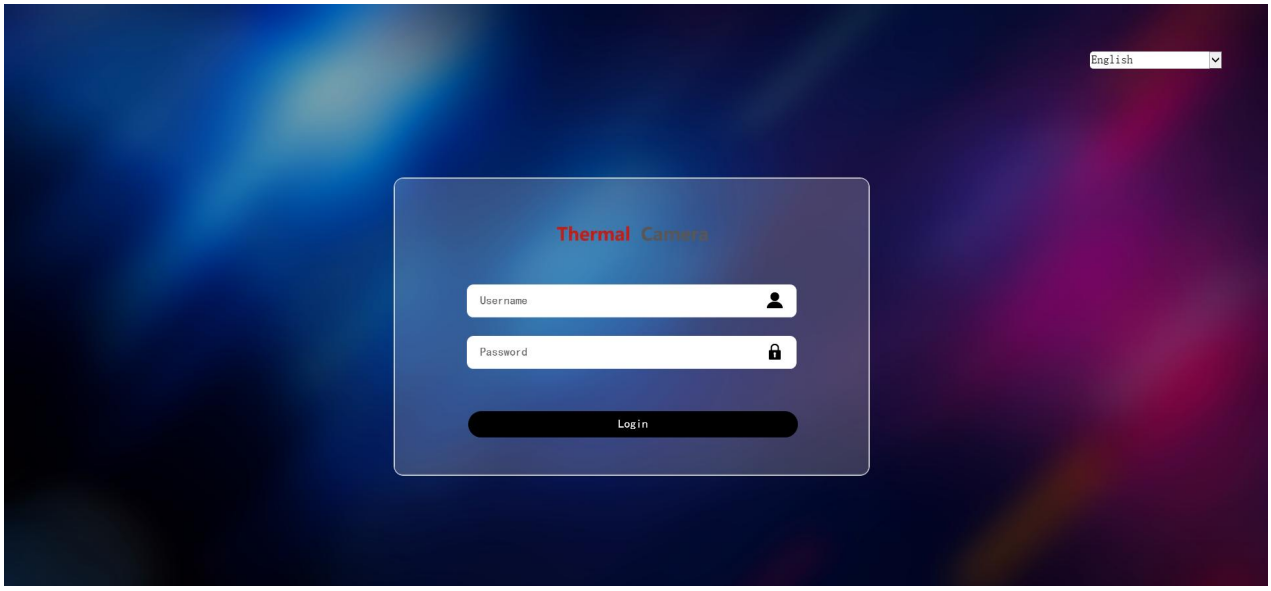


Figure 3.1 Login Interface

6. For the first login, the admin user/password by default: （admin/admin）, the system will prompt you to change the password, you can change or cancel.

7. User login: admin (defaulted, administrator), operator or user (ordinary user), to login after typing in the password.

8. Click [OK] button to enter the Web preview interface. As shown below:

Figure 3.2 Preview Interface

3.3 Main Interface Description

On the Web interface of the camera, you can perform operations and configurations such as preview, video playback, temperature measurement analysis, intelligent analysis, and parameter setting.

Preview: Used to preview and control the monitoring screen of the camera.

Playback: Search, replay and download videos stored in TF card or in local storage by time.

Temperature measurement: above/below alarm, support temperature measurement tools (spot, line, region), linkage alarm and link schedule;

Intelligent analysis: tripwire, area intrusion, pre-alert, linkage and fire detection;

Settings: enter the configuring interface to perform system configuration and function configuration.

Appendix A Camera Maintenance

Lens Maintenance

The lens surface is coated with anti-reflective coating. When contaminated with dust, grease, and fingerprints, harmful substances will be produced, therefore the degraded performance, cratches or mold will be caused. Once dirt is found, please follow the following methods.

Dust stained: Use an oil-free soft brush or a blower ball to gently flick the dust off.

Grease stained: Gently wipe away water or oil with a soft cloth and dry it, then rub it outward from the center of the lens using an oil-free cotton cloth or lens cleaner coated with alcohol or lens cleaner. If it is still not clean, you can change the cloth and wipe it several times.

Network Safety Maintenance

In order to ensure the network security of the camera, it is recommended that you conduct regular network security assessment and maintenance of the network system. Corresponding professional technical service can be offered.

Appendix B Emissivity of Common Materials

Materials	Temperature (℃)	Emissivity
Water	0 ~ 100	0.95 ~ 0.98
Soil(dry)	20	0.92
Soil(wet)	20	0.95
Woods	17	0.962
Sand	20	0.9
Sandstone	19	0.909 ~ 0.935
PVC plastic	70	0.93
Asphalt	20	0.967
Paint	70	0.92 ~ 0.94
Wallpaper	20	0.85 ~ 0.90
Cloth	20	0.98
Concrete	20	0.92
Pavement surface	5	0.974
Smooth china	20	0.92
Ceramic tile	17	0.94
Gypsum	17	0.86
Bricks	35	0.94
Hard rubber	0 ~ 100	0.89
Carbon	20 ~ 400	0.95 ~ 0.97
Granite(rough)	20	0.879
Cold rolled steel	70	0.09
Oxidized steel	50	0.88
Copper	20	0.07
Oxidized copper	50	0.6 ~ 0.7

Appendix C: Anti-Static, Interference Protection, Lightning Protection, Surge Protection

The camera employs TVS diode lightning protection technology, effectively preventing damage caused by various pulse signals, such as instantaneous lightning strikes and surges below 4000V.

For outdoor installations, it is important to take necessary protective measures based on the actual circumstances while ensuring electrical safety.

The signal transmission lines must maintain a distance of at least 50 meters from high-voltage equipment or high-voltage cables.

Outdoor wiring should preferably be routed under the eaves.

Sealed steel pipes buried underground should be used for wiring in open areas, and apply grounding at a single point to the steel pipes. Overhead wiring is prohibited.

In areas with strong thunderstorms or high inductive voltage zones (such as high-voltage substations), additional high-power lightning protection equipment and lightning rods must be installed.

The lightning protection and grounding design of outdoor devices and circuits must be unified with the building's lightning protection requirements and comply with relevant national or regional standards and industry requirements.

This product must be equipotentially grounded. The grounding device must meet the dual requirements of system anti-interference and electrical safety, and must not be short-circuited or mixed with the zero line of the strong power grid. When the system is grounded separately, the grounding impedance should not exceed 4 Ω, and the cross-sectional area of the grounding wire must be no less than 25 mm². The resistance of the grounding wire should be measured when it is driven into the ground to a depth of 1.5 meters. If the measurement does not meet the standard, the grounding wire should be driven deeper or an additional grounding electrode should be installed.