
Thermal Network Bullet Camera Quick Start Guide

Version 1.0.2

Table of Contents

| | |
|---|------------|
| CYBERSECURITY RECOMMENDATIONS..... | III |
| 1 PACKING LIST..... | 2 |
| 2 DEVICE STRUCTURE..... | 3 |
| 2.1 Device External Cable..... | 3 |
| 2.2 Dimension..... | 4 |
| 3 DEVICE INSTALLATION..... | 5 |
| 3.1 Preparation before Installation..... | 5 |
| 3.1.1 Check Installation Space and Intensity..... | 5 |
| 3.1.2 Cable Preparation..... | 5 |
| 3.2 Install SD Card..... | 5 |
| 3.3 Install Device..... | 6 |
| 4 DEVICE CONFIGURATION..... | 9 |
| 4.1 Device Initialization..... | 9 |
| 4.2 Modify IP Address..... | 10 |
| 4.3 Live Video..... | 10 |
| 4.4 Alarm Setup..... | 11 |
| 5 APPENDIX I LIGHTENING PROTECTION AND SURGE PROTECTION..... | 13 |

Welcome

Thank you for purchasing our product!

This quick start guide is designed to be a reference tool for the operation of your system.

Here you can find information about this speed dome features and functions, as well as a detailed menu tree.

Please keep it well for future reference!

Before installation and operation, please read the following safeguards and warnings carefully!

Cybersecurity Recommendations

Mandatory actions to be taken towards cybersecurity

1. Change Passwords and Use Strong Passwords:

The number one reason systems get “hacked” is due to having weak or default passwords. It is recommended to change default passwords immediately and choose a strong password whenever possible. A strong password should be made up of at least 8 characters and a combination of special characters, numbers, and upper and lower case letters.

2. Update Firmware

As is standard procedure in the tech-industry, we recommend keeping NVR, DVR, and IP camera firmware up-to-date to ensure the system is current with the latest security patches and fixes.

“Nice to have” recommendations to improve your network security

1. Change Passwords Regularly

Regularly change the credentials to your devices to help ensure that only authorized users are able to access the system.

2. Change Default HTTP and TCP Ports:

- Change default HTTP and TCP ports for systems. These are the two ports used to communicate and to view video feeds remotely.
- These ports can be changed to any set of numbers between 1025-65535. Avoiding the default ports reduces the risk of outsiders being able to guess which ports you are using.

3. Enable HTTPS/SSL:

Set up an SSL Certificate to enable HTTPS. This will encrypt all communication between your devices and recorder.

4. Enable IP Filter:

Enabling your IP filter will prevent everyone, except those with specified IP addresses, from accessing the system.

5. Change ONVIF Password:

On older IP Camera firmware, the ONVIF password does not change when you change the system’s credentials. You will need to either update the camera’s firmware to the latest revision or manually change the ONVIF password.

6. Forward Only Ports You Need:

- Only forward the HTTP and TCP ports that you need to use. Do not forward a huge range of numbers to the device. Do not DMZ the device's IP address.
- You do not need to forward any ports for individual cameras if they are all connected to a recorder on site; just the NVR is needed.

7. Disable Auto-Login on SmartPSS:

Those using SmartPSS to view their system and on a computer that is used by multiple people should disable auto-login. This adds a layer of security to prevent users without the appropriate credentials from accessing the system.

8. Use a Different Username and Password for SmartPSS:

In the event that your social media, bank, email, etc. account is compromised, you would not want someone collecting those passwords and trying them out on your video surveillance system. Using a different username and password for your security system will make it more difficult for someone to guess their way into your system.

9. Limit Features of Guest Accounts:

If your system is set up for multiple users, ensure that each user only has rights to features and functions they need to use to perform their job.

10. UPnP:

- UPnP will automatically try to forward ports in your router or modem. Normally this would be a good thing. However, if your system automatically forwards the ports and you leave the credentials defaulted, you may end up with unwanted visitors.
- If you manually forwarded the HTTP and TCP ports in your router/modem, this feature should be turned off regardless. Disabling UPnP is recommended when the function is not used in real applications.

11. SNMP:

Disable SNMP if you are not using it. If you are using SNMP, you should do so only temporarily, for tracing and testing purposes only.

12. Multicast:

Multicast is used to share video streams between two recorders. Currently there are no known issues involving Multicast, but if you are not using this feature, deactivation can enhance your network security.

13. Check the Log:

If you suspect that someone has gained unauthorized access to your system, you can check the system log. The system log will show you which IP addresses were used to login to your system and what was accessed.

14. Physically Lock Down the Device:

Ideally, you want to prevent any unauthorized physical access to your system. The best way to achieve this is to install the recorder in a lockbox, locking server rack, or in a room that is behind a lock and key.

15. Connect IP Cameras to the PoE Ports on the Back of an NVR:

Cameras connected to the PoE ports on the back of an NVR are isolated from the outside world and cannot be accessed directly.

16. Isolate NVR and IP Camera Network

The network your NVR and IP camera resides on should not be the same network as your public computer network. This will prevent any visitors or unwanted guests from getting access to the same network the security system needs in order to function properly.

Important Safeguards and Warnings

1. Installation and Maintenance Professionals Requirements

All the installation and maintenance professionals must have qualification certificate or experiences of installing and maintaining CCTV system, electric apparatus in the explosive gas environment and working high above the ground. Besides, they have to acquire the following knowledge and operation skills.

- Basic knowledge and installation skills of CCTV system.
- Basic knowledge and operation skills of low voltage wiring and low voltage electronic circuit wire connection.
- Basic knowledge and operation skills of electric apparatus installation and maintenance in hazardous sites.

2. Power Requirements

- All installation and operation should conform to your local electrical safety code.
- Please check if the power supply is correct before operating the device.
- Please install easy-to-use device for power off before installing wiring, which is for emergent power off when necessary.
- Please prevent the line cord from being trampled or pressed, especially the plug, power socket and the junction from the device.

3. Application Environment Requirements

- Please transport, use and store the device within the allowed humidity and temperature, please refer to the technical parameter of corresponding models for the device working temperature and humidity.
- Please don't place the device in the humid, dusty, extremely hot and cold site with strong electromagnetic radiation or unstable illumination.
- Please don't block the ventilation opening near the device, which is to avoid heat accumulation for the device.
- Please don't install the device near the place with heat source, such as radiator, heater, stove or other heating equipment, which is to avoid fire.
- Please don't aim the lens at intense radiation source directly (such as sun, laser and molten steel etc.), which is to avoid causing damage to the thermal detector.
- Please don't let any liquid enter the device, which is to avoid causing damage to the internal components; please stop using the device immediately and cut off the power, plug out all the cables which are connected to the device if there is liquid entering the device, and contact the local customer service center.
- Please don't stuff any foreign matter into the device in case that it may cause device short circuit, which may cause damage to the device or human injury.
- Please use the factory default package or material with equal quality to pack the device when transporting the device.
- Please don't press, vibrate or soak the device during transportation, storage and installation.

4. Operation and Maintenance Requirements

- Please don't touch the heat dissipation component of the device in case you may get burnt.

- Please don't dismantle the device; there is no part which can be repaired by users themselves. It may cause water leakage or bad image for the device if it is dismantled unprofessionally.
- It is recommended to use the device together with a lightning arrester, which is to improve the effect of lightning protection, it needs to conform to the lightning protection regulation for outdoor application.

5. Warning

- Please modify the default password after login, in case it is stolen.
- Please use the accessories regulated by the manufacturer, and the device should be installed and maintained by professionals.
- Internal and external ground connection should be stable.
- Please don't provide two or more power supply modes to the device, otherwise, it may cause damage to the device.
- Around 2.5m long control cable is reserved when the device is delivered out of factory, it should use explosionproof flexible tube or armor cable to protect when the control cable is connected to the explosionproof control cabinet.
- Please cut off power before device maintenance and overhaul. It is prohibited to open the cover with power on in the explosion environment.
- Please make sure all the explosionproof components and parts are complete without any cracks and there is no defect which may affect explosionproof performance.
- Please contact the local dealer or the nearest service center if the device fails to work normally, please don't dismantle or modify the device.

6. Disclaimer

- Please refer to the actual product for more details; the manual is just for reference.
- The manual will be regularly updated according to the product upgrade; the updated content will be added in the manual without prior announcement.
- Please contact the supplier or customer service if there is any problem occurred when using the device.
- Please contact the customer service for the latest procedure and supplementary documentation.
- There might be deviation between the actual value of some data and the value provided in the manual due to the reasons such as the real environment is not stable and so on. Please refer to the final explanation of the company if there is any doubt or dispute.
- The company is not liable for any loss caused by the operation that does not comply with the manual.]

Privacy Protection Notice

As the device user or data controller, you might collect personal data of others' such as face, fingerprints, car plate number, Email address, phone number, GPS and so on. You need to be in compliance with the local privacy protection laws and regulations to protect the legitimate rights and interests of other people by implementing measures include but not limited to: providing clear and visible identification to inform data subject the existence of surveillance area and providing related contact.

About the Guide

- The Guide is for reference only. If there is inconsistency between the Guide and the actual product, the actual product shall prevail.
- We are not liable for any loss caused by the operations that do not comply with the Guide.
- The Guide would be updated according to the latest laws and regulations of related regions. For detailed information, see the paper Quick Start Guide, CD-ROM, QR code or our official website. If there is inconsistency between paper User's Guide and the electronic version, the electronic version shall prevail.
- All the designs and software are subject to change without prior written notice. The product updates might cause some differences between the actual product and the Guide. Please contact the customer service for the latest program and supplementary documentation.
- There still might be deviation in technical data, functions and operations description, or errors in print. If there is any doubt or dispute, please refer to our final explanation.
- Upgrade the reader software or try other mainstream reader software if the Guide (in PDF format) cannot be opened.
- All trademarks, registered trademarks and the company names in the Guide are the properties of their respective owners.
- Please visit our website, contact the supplier or customer service if there is any problem occurred when using the device.
- If there is any uncertainty or controversy, please refer to our final explanation.

FCC Information



CAUTION

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC conditions:

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

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

FCC compliance:

This equipment has been tested and found to comply with the limits for a digital device, pursuant to part 15 of the FCC Rules. This equipment generate, uses and can radiate radio frequency energy and, if not installed and used in accordance with the guide, may cause harmful interference to radio communication.

- For class A device, these limits are designed to provide reasonable protection against harmful interference in a commercial environment. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
- For class B device, these limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is

encouraged to try to correct the interference by one or more of the following measures:

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

1 Packing List

Please check if there is any obvious damage to the device appearance when opening the packing box, and confirm if the accessories in the box are in accordance with those on the list. Please refer to Table 1-1 for more details about the list.

| Accessory Name | Quantity |
|-------------------------------|----------|
| Thermal Network Bullet Camera | 1 |
| Quick Start Guide | 1 |
| Installation Accessory Bag | 1 |

Table 1-1

2 Device Structure

2.1 Device External Cable

Note

- The following figure is for reference only, which is only used to know the function of cable ports.
- The cable structure may be different according to different devices, please refer to the actual device for more details.

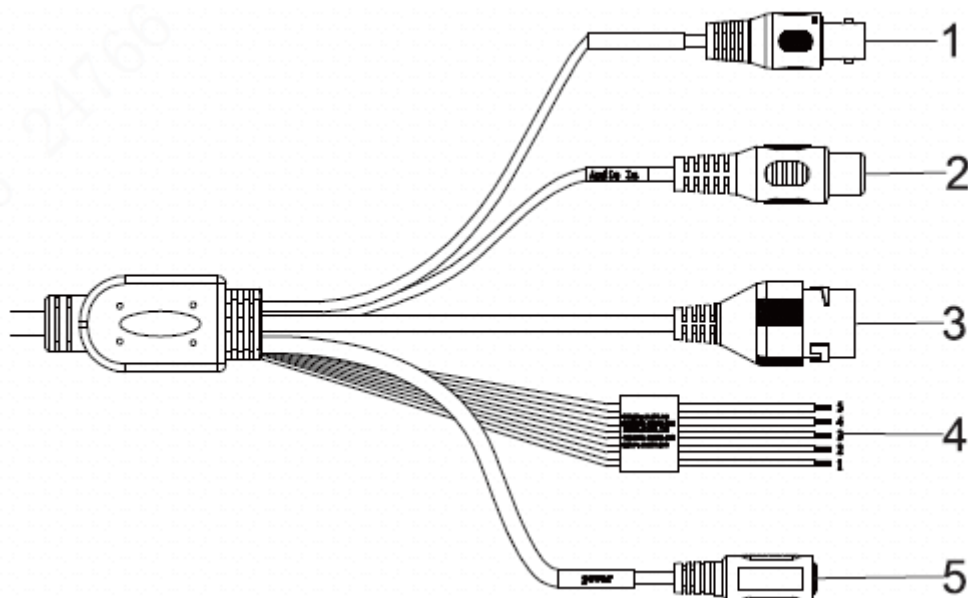


Figure 2-1

Please refer to Table 2-1 for more details about the external cable function.

| SN | Port | Port name | Connector | Function description |
|----|-----------|-------------------|---------------|--|
| 1 | VIDEO OUT | Video output port | BNC | <ul style="list-style-type: none"> ● Generally it outputs analog video signal, it can connect to TV monitor to check image. ● Plug the connector into the network port before powering up the device, then the device is powered on, at this moment, BNC outputs HDCVI signal. |
| 2 | AUDIO IN | Audio input port | RCA | Input audio signal, receive analog audio signal from sound pick-up and so on. |
| 3 | LAN | Network port | Ethernet port | Connect to standard Ethernet cable, support PoE power supply. |
| 4 | I/O | I/O port | - | Alarm signal input/output. |
| 5 | POWER | Power input port | - | Power port, input DC 12V or AV 24V. Caution <ul style="list-style-type: none"> ● It needs default DC 5.5 round port to 2PIN terminal converted cable during AC 24V power supply. ● Actual use shall be in accordance with device label instruction. Otherwise, it may cause damage to the device |

Table 2-1

Please refer to Table 2-2 for introduction of I/O port function.

| Port | Cable sequence | Cable port name | Function description |
|----------|----------------|-----------------|--|
| I/O port | 1 | ALARM_COM | Alarm output common terminal. |
| | 2 | ALARM_NO | Alarm output port, output alarm signal to alarm device. NO: Normally open alarm output port |
| | 3 | ALARM_IN1 | Alarm input port 1; receive the on-off signal of external alarm source. |
| | 4 | ALARM_IN2 | Alarm input port 2; receive the on-off signal of external alarm source. |
| | 5 | ALARM_GND | Grounded terminal. |

Table 2-2

Note

Restore factory default parameters:

After the device is powered on (the connector is not plugged into the network port), plug the connector into the network port when the device starts normally and it has access to visit WEB interface, plug out the connector after waiting for about 5 seconds, the device will reboot automatically and restore factory default setting (including IP, user password and etc.).

2.2 Dimension

Note

The figure below is for reference only, which is used to know the device dimension. Please refer to the real product for more details.

Please refer to Figure 2-2 for the dimension of device structure. The unit is mm (inch).

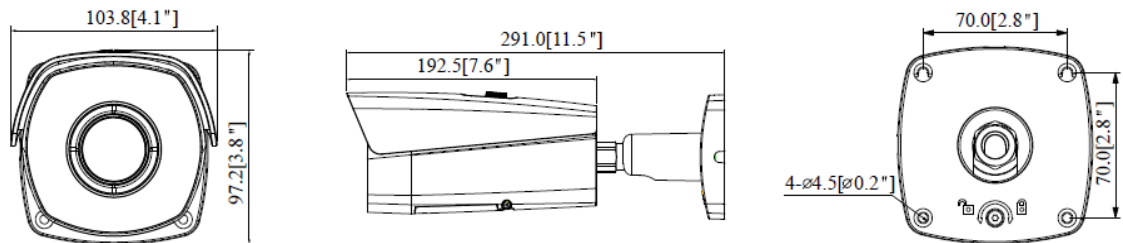


Figure 2-2

3 Device Installation

3.1 Preparation before Installation

3.1.1 Check Installation Space and Intensity

Make sure the installation site has enough space to hold the device and its mounting structural components. Please make sure the ceiling and wall where the bullet is installed can sustain at least 8x weight of bullet and its mounting structural components.

3.1.2 Cable Preparation

Select Needed Video Cable

- 75 ohm.
- Full cable with copper conductor.
- 95% knitted copper shield.

| International Model | Max Transmission Distance (Ft/M) |
|---------------------|----------------------------------|
| RG59/U | 750Ft/229M |
| RG6/U | 1,000Ft/305M |
| RG11/U | 1,500Ft/457M |

Table 3-1

Select Needed Power Cable

It is recommended to implement according to the following requirements when the users need to lengthen the power cable.

Max. Transmission distance is recommended when the size of wire diameter is fixed and DC 12V (or AC 24V) voltage transmission power is 10W. Please refer to the following table for more details.

| Wire Diameter (mm) | Max. Distance (Feet/M) |
|--------------------|------------------------|
| 0.800 | 61.06 (18.61) |
| 1.000 | 95.41 (29.08) |
| 1.250 | 149.08 (45.44) |
| 2.000 | 381.66 (116.33) |

Table 3-2

Select Needed Signal Cable

All signal cables (audio, alarm input and output and RS485 etc.) are recommended to use 0.56mm (24AWG) and above cable as lengthened wire signal cable.

3.2 Install SD Card

Note

- Please implement SD installation when the device is equipped with SD card slot and it needs to use SD card.
- Please cut off the device power before installing SD card.

Step 1

Loosen the screw on the lower cover.

Open the lower cover and you can see the SD card slot and reset button, which is shown in Figure 3-1.

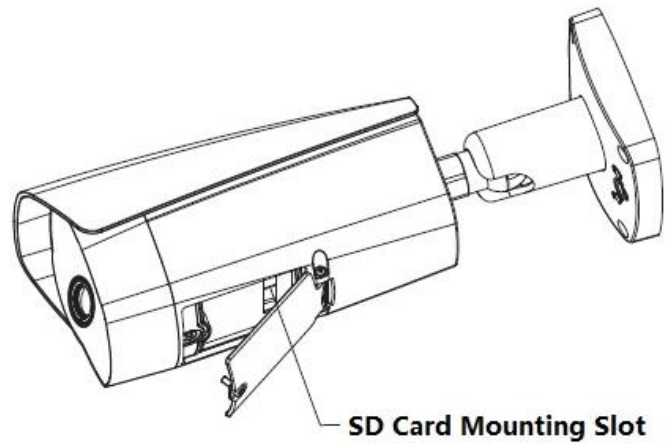


Figure 3-1

Step 2

Insert the SD card into the slot, the card slot is elastic, so you only need to press the SD card slightly to install the SD card.

Step 3

Install the lower cover back to place, twist back the screw and tighten it firmly.

Caution

Please check if the waterproof ring is installed properly before closing the cover, otherwise, it will affect the waterproof performance of the device.

3.3 Install Device

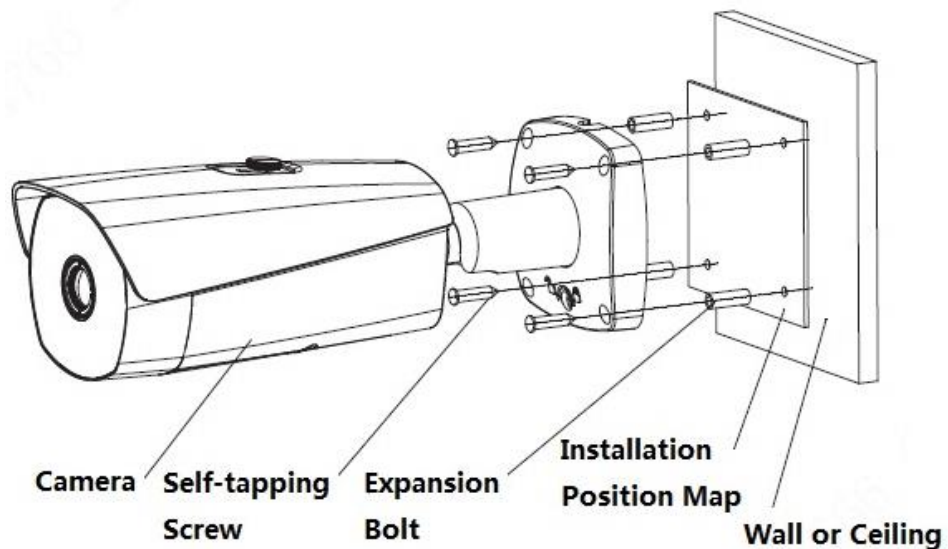


Figure 3-2

Warning

- The mounting surface has to sustain 8X weight of camera, which is to avoid the camera falling.
- It shall avoid device, parts and tools etc. falling from high altitude during installation, in case it may hurt people and damage other objects, destroy device and drop parts.

Step 1

Fix the device on the mounting surface.

1. Select a flat mounting surface (wall or ceiling and so on); stick the installation position map on the proper position.
2. Dig holes according to the four mounting hole sites marked on the installation position map. The size and depth of hole diameter need to be matched with expansion bolts, make sure there is no deviation for the hole sites.
3. Open accessory bag, take out expansion bolts, use the hammer to knock the expansion bolts into the holes which have been well dug, the external part of expansion bolt has to be parallel and level with the mounting surface.
4. Open accessory bag, take out mounting screws, align 4 mounting holes on the camera bracket with 4 mounting holes of expansion bolts, push the mounting screws through bracket hole and insert them into the mounting holes of expansion bolt, lock 4 mounting screws firmly and fix the device on the mounting surface stably (wall or ceiling).

Step 2

Connect the external cable well according to the requirements.

1. Connect the corresponding power, video output and other ports well according to requirements, and then use insulated rubber tape to twine the connection joint well to make it waterproof.

Note

- The video port is covered with heat-shrinkable tube with high shrinkage ratio, it needs to heat and shrink the tubes on both sides after the video port is well connected, which is to make sure the video port is moistureproof and waterproof.
 - The grounding hole is recommended to be grounded, which is to enhance device reliability.
2. It is to install waterproof cover for network port according to actual implementation by referring to step 3 (optional).
 3. Please refer to 4.4 Alarm Setup for alarm input and output cable connection and config.
 4. It can properly lengthen device cable according to actual construction requirements.

Step 3

(Optional) Install waterproof connector for network port.

Note

It needs to implement the following operation when the device is equipped with waterproof connector and it is used outdoors.

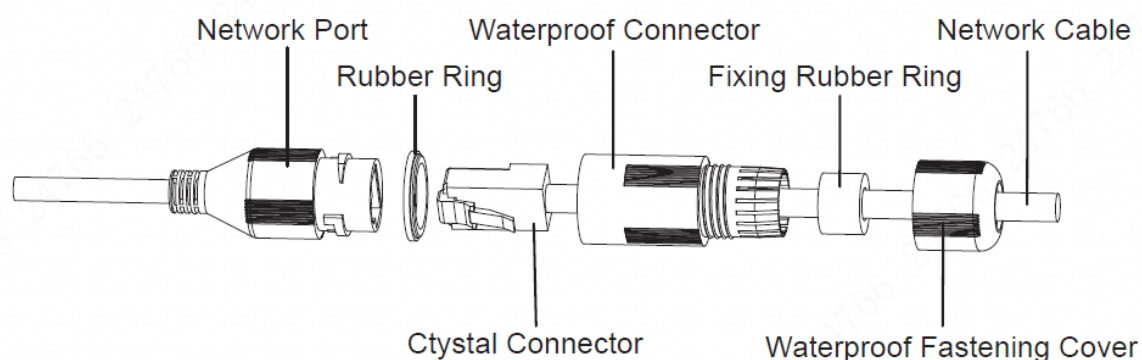


Figure 3-3

1. Keep the convex groove outward and install the rubber ring into the network port, keep the smaller hole of the rubber ring outward and install the fixing rubber ring into the main body of the waterproof connector.
2. Pull the network cable without crystal head through main body of waterproof connector, fixing rubber ring and waterproof locking cover, make the crystal head of network cable, and then insert it into the network cable.
3. Put the main body of waterproof connector on the network port and rotate it clockwise to lock the network port and waterproof connector firmly.
4. Put the waterproof locking cover on the main body of waterproof connector and rotate it clockwise to lock the waterproof connector and waterproof locking cover firmly.

Step 4

Adjust the device.

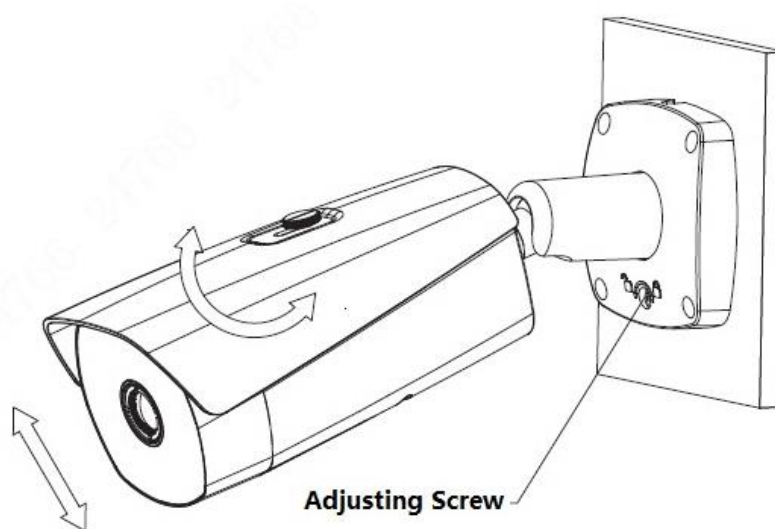


Figure 3-4

Caution

- Please make sure the adjusting screw is loosened when adjusting device direction and monitoring angle. Tighten the adjusting screw firmly after adjustment is completed.
 - Please do not rotate the device body over 360° when the device body and mounting pedestal form an angle of 90° and the adjusting screw is firmly tightened.
1. Open accessory bag, take out wrench and loosen the adjusting screw. Adjust the device in all possible directions (UDLR) and rotate the device within 360° . Use the wrench to tighten the adjusting screw firmly and make sure the bracket cannot be rotated after it meets the monitoring requirements.
 2. The device sun shield can be moved forward and backward, it can be adjusted according to application scenario. It needs to tighten the set screw on the sun shield firmly.

4 Device Configuration

4.1 Device Initialization

It needs to set the user password when logging in for the first time (the username is admin by default). The figures listed in the following chapter are for reference only. There is difference about interface between different devices, please refer to the actual device for more details.

Caution

- It fails to use device if the device is not initialized.
- In order to make sure the device is safe, please keep admin user password well after initialization and modify it regularly.
- It can implement device initialization only when the device IP address (192.168.1.108 by default) and the PC IP address are in the same network segment.

Step 1

Open IE browser, input camera default IP address in the address bar, and then press **Enter**.

Note

The factory default IP address is: 192.168.1.1087.

The system will display the interface of *Device Initialization* after it is successfully connected, which is shown in Figure 4-1.

The screenshot shows a web form titled "Device Initialization". The form includes the following elements:

- Username:** A text field containing the value "admin".
- Password:** A text input field with a strength indicator below it. The indicator has three buttons: "Weak", "Middle", and "Strong".
- Confirm Password:** A text input field.
- Email Address:** A checkbox labeled "Email Address" which is checked, followed by a text input field. Below this field is the text: "To reset password, please input properly or update in time."
- Instructions:** A paragraph of text below the password fields: "Use a password that has 8 to 32 characters, it can be a combination of letter(s), number(s) and symbol(s) with at least two kinds of them.(please do not use special symbols like " " ; : &)".
- Save Button:** A button labeled "Save" at the bottom center of the form.

Figure 4-1

Step 2

Set the login password of admin; please refer to Table 4-1 for more details about the parameters.

| Parameter | Note |
|------------------|--|
| Password | The password can be set as 8 to 32 nonblank characters, which can be made up of number, letter and special character (except “'” , “”” , “,” , “:” and “&”), and it has to contain at least two types of characters. Please set the password with high security according to the password intensity prompt. |
| Confirm Password | |
| Email Address | In order to reset password, please input email address properly or update in time |

Table 4-1

Step 3

Click **Save** to complete initialization.

4.2 Modify IP Address

In order to make the camera get access to network smoothly, please plan IP address reasonably according to the actual network environment.

Step 1

Log in camera WEB interface in the IE browser.

Note

- The factory default IP address is: 192.168.1.108.
- The default user is admin; the password is set during device initialization.

Step 2

Select “Setup > Network > TCP/IP” and the system will display the interface of “TCP/IP”, which is shown in Figure 4-2.

The screenshot shows the 'TCP/IP' configuration page. The fields are as follows:

| Field | Value |
|-----------------|-----------------------------|
| Host Name | TPCDome |
| Ethernet Card | Wire(DEFAULT) |
| Mode | Static (selected) |
| MAC Address | 3c . ef . 8c . ed . 2c . ac |
| IP Version | IPv4 |
| IP Address | 10 . 15 . 23 . 91 |
| Subnet Mask | 255 . 255 . 0 . 0 |
| Default Gateway | 10 . 15 . 0 . 1 |
| Preferred DNS | 8 . 8 . 8 . 8 |
| Alternate DNS | 8 . 8 . 4 . 4 |

Additional options: Enable ARP/Ping to set IP address service

Buttons: Default, Refresh, Save

Figure 4-2

Step 3

Configure relevant info of IP address, click **Save**.

4.3 Live Video

Note

Different devices might have different WEB interfaces, the figure in this document is just for reference, please refer to the document *WEB Operation Manual* in the disk and the actual interface for more details.

Step 1

Log in camera WEB interface in the IE browser.

Note

- IP address is the one which has been modified.
- Default user is admin; the password has been set during device initialization.

Step 2

Click **Login** and the system will display the WEB main interface, which is shown in Figure 4-3.

Note

It will prompt you to install plug-in for the first system login, please save and install plug-in according to prompt. The WEB interface will refresh automatically after plug-in installation is completed, then live video will show up.

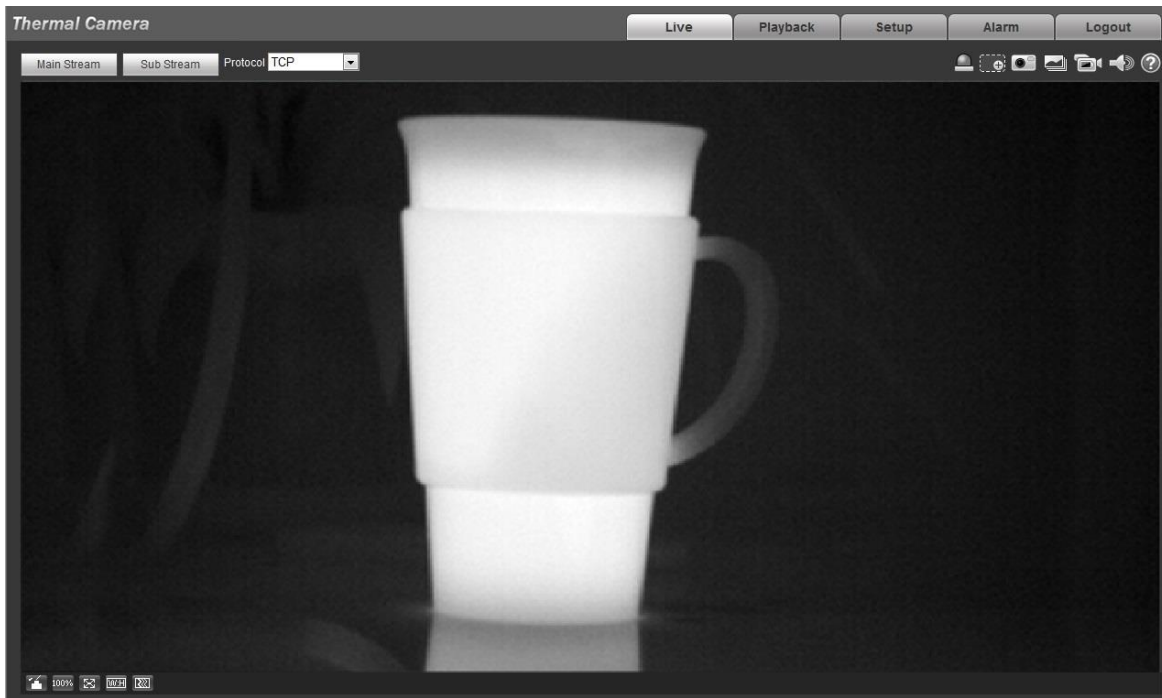


Figure 4-3

4.4 Alarm Setup

Note

- Some devices do not support alarm function, the chapter cannot be applied.
- It has to cut off power first when connecting cables.

Alarm input and output connection description

Step 1

Connect alarm input device to alarm input port of I/O cable.

Step 2

Connect alarm output device to alarm output port of I/O cable, alarm output is relay switch output, the alarm output port can only be connected to NO alarm device.

Step 3

Open WEB interface, select "Setup > Event > Alarm".

Step 4

Make corresponding settings upon alarm input and output in the alarm setup interface, and then click **Save**. The interface of alarm setup is shown in Figure 4-4.

- Alarm input is corresponding to the alarm input port of device I/O cable. It is to set corresponding NO and NC according to the high and low level signal generated by alarm input device when alarm occurs.

- Alarm output is corresponding to the alarm output port of device I/O cable.

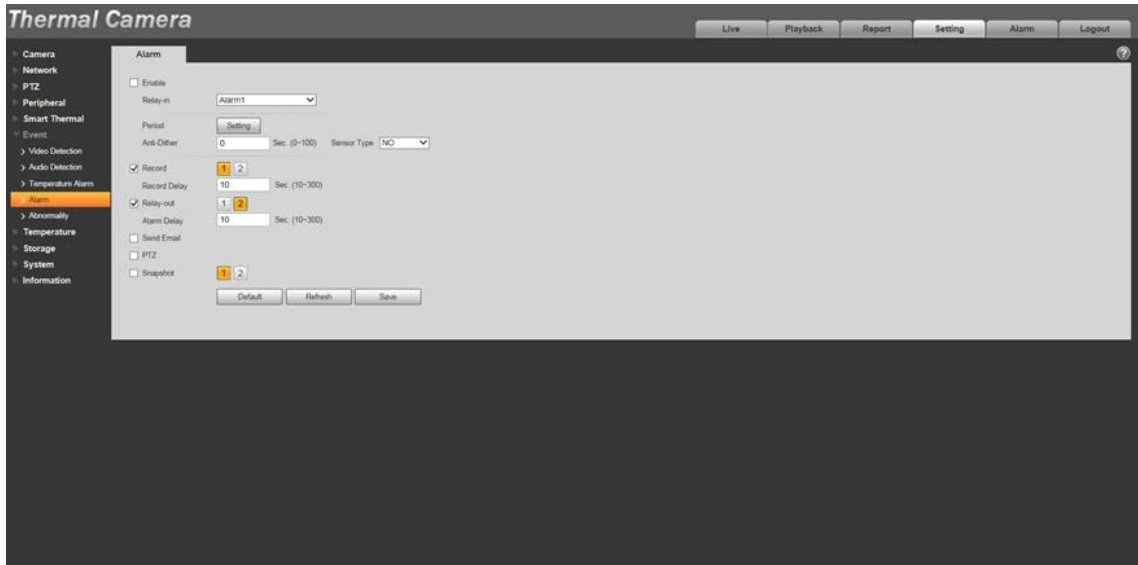


Figure 4-4

Alarm input and output figures

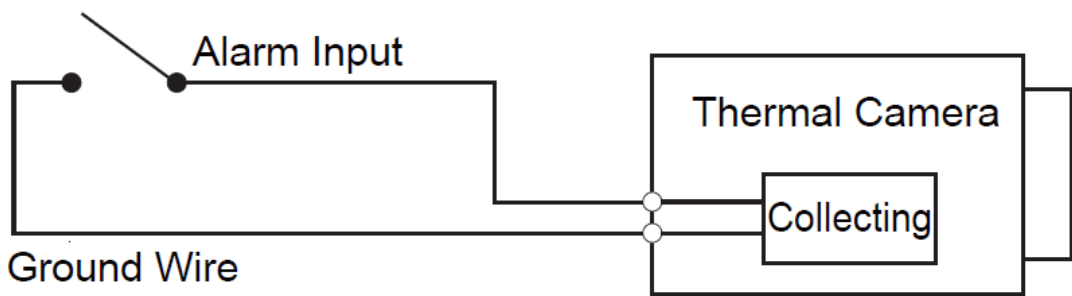


Figure 4-5

Alarm input: input signal is idle or grounded; the device can collect different states of alarm input port. Input signal is connected to 3.3V or idle, device collects logic “1”; input signal is grounded, the device collects logic “0”.

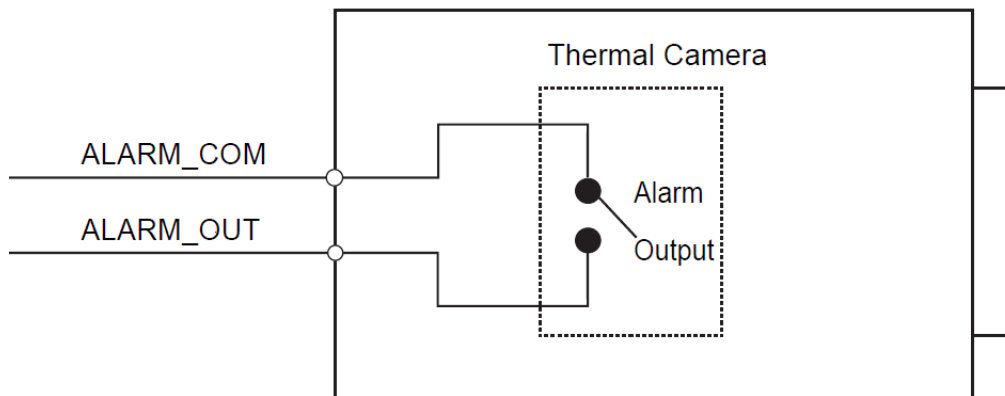


Figure 4-6

Alarm output: port ALARM_OUT and ALARM_COM form a switch, which can be used to provide alarm output. Normally the switch is on, the switch will be off when there is alarm output.

5 Appendix I Lightning Protection and Surge Protection

This series speed dome adopts TVS lightning protection technology. It can effectively prevent damages from various pulse signals below 6000V, such as sudden lightning and surge. While maintaining your local electrical safety code, you still need to take necessary precaution measures when installing the speed dome in the outdoor environment.

- The distance between the signal transmission cable and high-voltage device (or high-voltage cable) shall be at least 50 meters.
- Outdoor cable layout shall go under the penthouse if possible.
- For vast land, please use sealing steel tube under the land to implement cable layout and connects one point to the earth. Open floor cable layout is forbidden.
- In area of strong thunderstorm hit or near high sensitive voltage (such as near high-voltage transformer substation), you need to install additional high-power thunder protection device or lightning rod.
- The thunder protection and earth of the outdoor device and cable shall be considered in the building whole thunder protection and conform to your local national or industry standard.
- System shall adopt equal-potential wiring. The earth device shall meet anti-jamming and at the same time conforms to your local electrical safety code. The earth device shall not short circuit to N (neutral) line of high voltage power grid or mixed with other wires. When connect the system to the earth alone, the earth resistance shall not be more than $4\ \Omega$ and earth cable cross-sectional area shall be no less than $25\ \text{mm}^2$. See Figure 5-1.

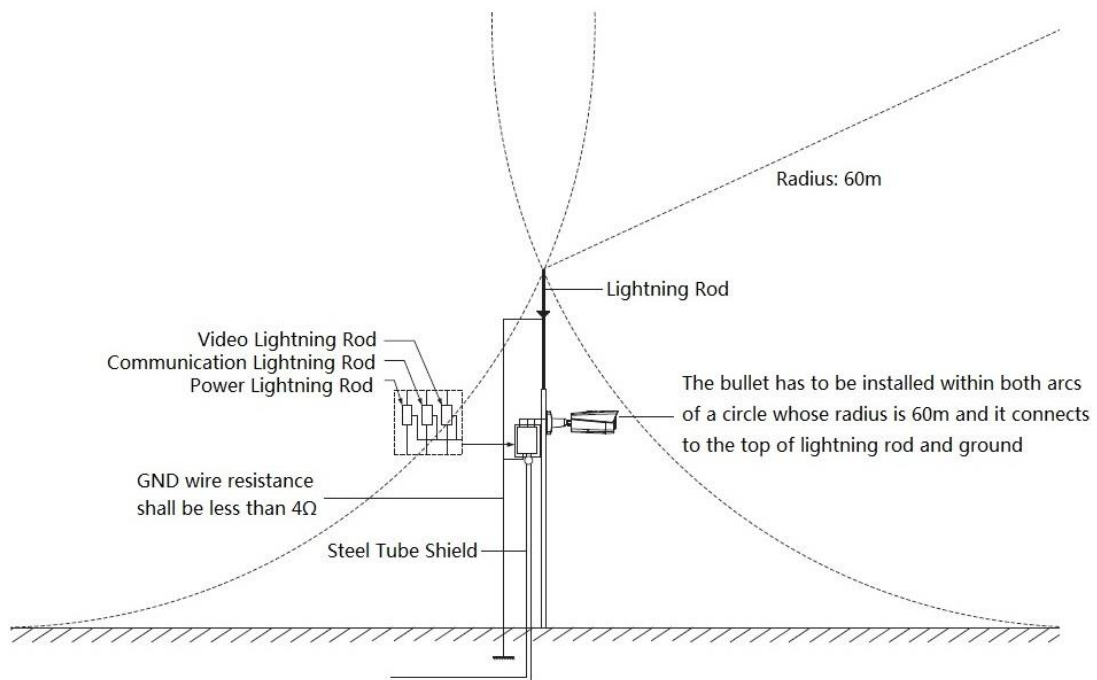


Figure 5-1

Note

- This manual is for reference only. Slight difference may be found in the user interface.
- All the designs and software here are subject to change without prior written notice.
- All trademarks and registered trademarks are the properties of their respective owners.
- If there is any uncertainty or controversy, please refer to the final explanation of us.
- Please visit our website or contact your local service engineer for more information.