
Thermal Hybrid Speed Dome Quick Start Guide

Version 1.0.0

Table of Contents

CYBERSECURITY RECOMMENDATIONS	IV
1 PACKING LIST	1
2 DEVICE STRUCTURE.....	2
2.1 Device External Cable	2
2.2 Structure Dimension.....	3
3 DEVICE INSTALLATION	6
3.1 Installation Preparation	6
3.1.1 Check Installation Space and Intension	6
3.1.2 About cable	6
3.2 Install SD Card and Reset Device (Optional)	6
3.3 Installation Steps	7
3.3.1 Wall-mounted Installation	7
3.3.2 Hang-mounted Installation.....	9
3.3.3 Corner-mounted Installation	10
3.3.4 Pole-mounted Installation	11
4 DEVICE CONFIGURATION.....	13
4.1 Device Initialization.....	13
4.2 Modify IP Address	14
4.3 Live Video	14
4.4 Alarm Setup	15

5	APPENDIX I LIGHTENING PROTECTION AND SURGE PROTECTION	18
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Welcome

Thank you for purchasing our thermal hybrid speed dome!

Please read the following safeguards and warnings carefully before you install or use the product!

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

Safety Measures

1. Qualified Engineer Needed

- The installation engineer or maintenance engineer shall have corresponding CCTV system installation certificate or maintenance qualification certificate.
- The installation engineer or maintenance engineer shall have qualification certificate for work at height.
- The installation engineer or maintenance engineer shall have the basic knowledge and operation technique for low-voltage cable layout and low-voltage electronic cable connection.
- Please read the installation manual carefully and keep it well for future reference,
- We are not liable for any problems caused by unauthorized modifications or attempted repair.

2. Lifting Appliance Requirement

- Please select the proper thermal hybrid dome installation mode and use the lifting appliances at the safety environment.
- The lifting appliances shall have the enough capacity to reach the installation height.
- The lifting appliances shall have safe performance.

The precaution measures include two types: Warning and Note.

- **Warning:** It is to alert you there is an optional risk of death or series injury!
- **Note:** It is to alert you there is an optional risk of damage or property loss!

Warning

1. All installation and operation here should conform to your local electrical safety codes. We assume no liability or responsibility for all the fires or electrical shock caused by improper handling or installation.
2. Be sure to use all the accessories (such as power adapter) recommended by manufacturer.
3. Do not connect several thermal hybrid domes to one power adapter. It may result in overheat or fire if it exceeds the rated load.
4. Avoid aiming the lens at the strong radiation source directly (such as sun, laser, molten steel etc); in case it may cause unrecoverable damage to the thermal imaging detector. What's worse, it may cause severe damage to the detector.
5. Avoid oil stain and kinds of chemicals tarnishing and damaging the lens surface.
6. Store the device in a cool and dry place where there is ventilation but no intense

electromagnetic field.

7. Violent vibration or crash is not allowed during transportation and application.
8. Before you connect the cable, install or uninstall, or begin the daily maintenance work, please turn off the power and unplug the power cable.
9. Please make sure the produce is secure firmly on the wall or the ceiling.
10. Please turn off the power and unplug the power cable, If there is any smoke, disgusting smell, or noise. Please contact your local retailer or customer service center for help.
11. All the examination and repair work should be done by the qualified service engineers. We are not liable for any problems caused by unauthorized modifications or attempted repair.

Note

1. Safety Transportation

- Heavy stress, violent vibration or water splash are not allowed during transportation, storage and installation.
- This series product must use split type package during the transportation.
- We are not liable for any damage or problem resulting from the integrated package during the transportation.

2. When device is malfunction

Shut down the device and disconnect the power cable immediately if there is smoke, abnormal smell or abnormal function. Please contact your local retailer ASAP.

3. Do not try to dismantle or modify the device

- There is risk of personal injury or device damage resulting from opening the shell.
- Please contact your local retailer if there is internal setup or maintenance requirement.
- We are not liable for any problems caused by unauthorized modifications or attempted repair.

4. Do not allow other object falling into the device

- Please make sure there is no metal or inflammable, explosive substance in the thermal hybrid dome.
- The above mentioned objects in the device may result in fire, short-circuit or damage.
- Please shut down the device and disconnect the power cable if there is water or liquid falling into the camera. Please contact your local retailer ASAP.
- Please pay attention to the camera. Avoid the sea water or rain to erode the camera.

5. Handle carefully

Do not allow this series product fall down to the ground.
Avoid heavy vibration.

6. Installation Environment Requirement

- This series thermal hybrid dome should be installed in a cool, dry place away from direct sunlight, inflammable, explosive substances and etc.

- This series product shall be away from the strong electromagnetism radiant, please keep it away from wireless power, TV transmitter, transformer and etc.

7. Daily Maintenance

- Please use the soft cloth to clean dust on the shell, or you can use soft cloth with cleaning liquid to clean the shell and then use soft cloth to make it dry.
- Do not use gasoline, dope thinner or other chemical material to clean the shell. It may result in shell transfiguration or paint flake.
- Do not allow the plastic or rubber material to touch the shell for a long time. It may result in paint flake.

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 Hybrid Speed Dome	1
Power Adapter	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.

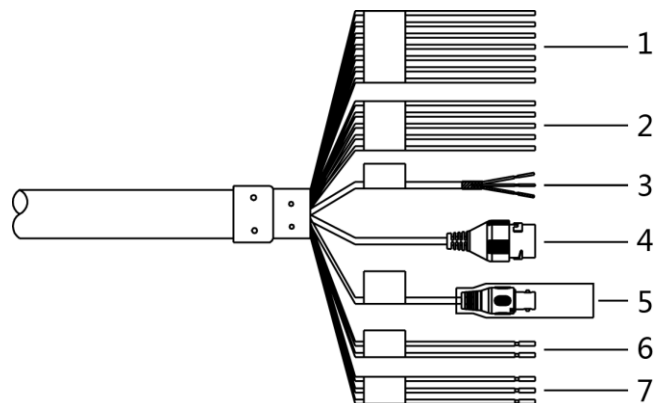


Figure 2-1

Please refer to Table 2-1 for more details.

SN	Port	Port name	Connector	Function description
1	I/O	I/O port	Various external alarm apparatuses	Include alarm input, output. Please refer to Table 2-2 for more details.
2				
3	AUDIO IN	Audio input port	RCA	Input audio signal, receive analog audio signal from sound pick-up and other devices.
	AUDIO OUT	Audio output port	RCA	Output audio signal to speaker and other devices.
	AUDIO GND	Audio ground terminal	-	Grounded terminal.
4	LAN	Network port	Ethernet port	Connect to standard Ethernet cable.
5	VIDEO OUT	Analog video output	BNC	Generally it outputs analog video signal, it can connect to TV monitor to check image.
6	RS485	RS485 Port	-	RS485 port, control PTZ and so on.
7	POWER	Power input port	-	Input AC 24V, please be sure to power the device according to the instruction of device label. Caution It may cause damage to the device if it fails to power the device according to the instruction of device label.

Table 2-1

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

Port	Cable port name	Function description
I/O port	ALARM_OUT1	Alarm output port 1, output alarm signal to alarm device.
	ALARM_COM1	Note ALARM_OUT1 can only be used with ALARM_COM1 when connecting to alarm device.
	ALARM_OUT2	Alarm output port 2, output alarm signal to alarm device.
	ALARM_COM2	Note ALARM_OUT2 can only be used with ALARM_COM 2 when connecting to alarm device.
	ALARM_IN1~ ALARM_IN7	Alarm input port 1~ alarm input port 7; it is to receive on-off signal from external alarm source.
	ALARM_GND	Grounded terminal.

Table 2-2

2.2 Structure Dimension

Note

The figures below are for reference only, which are 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).

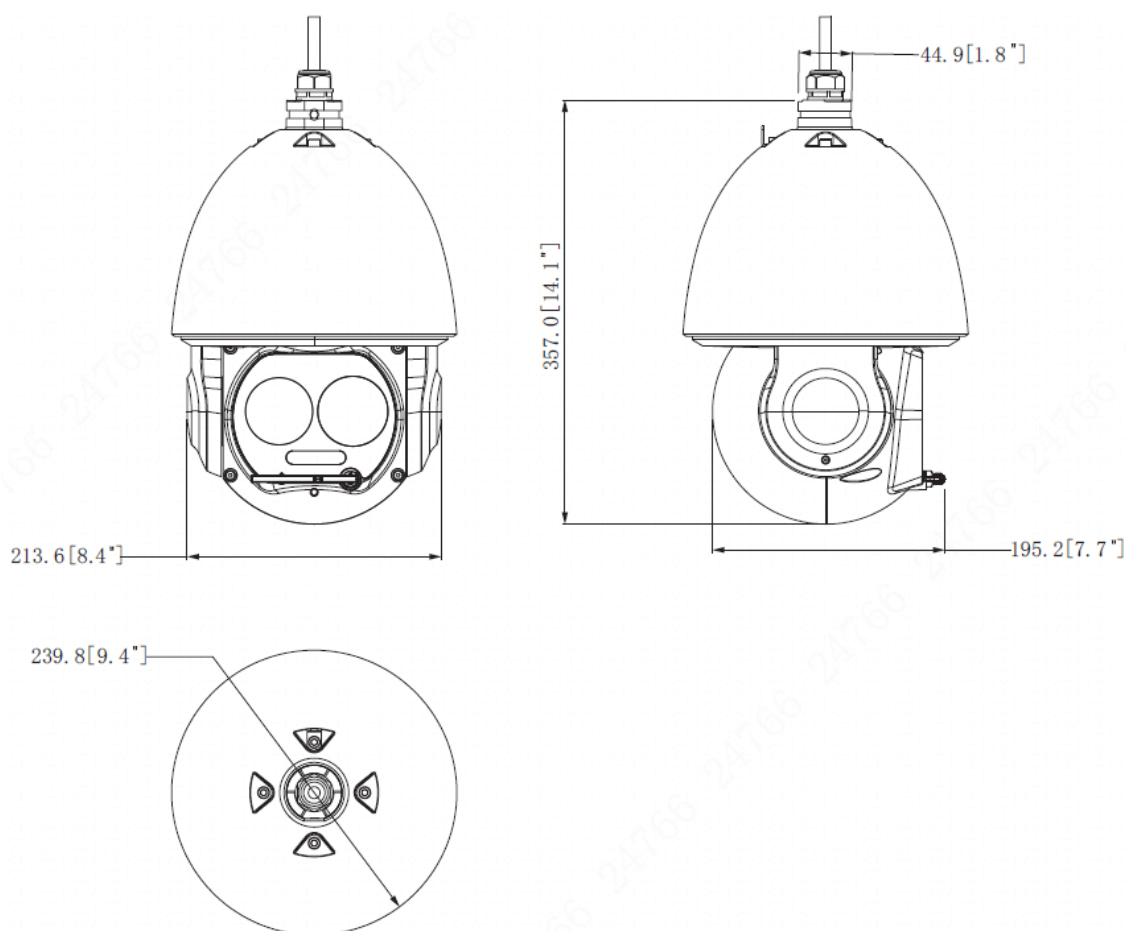


Figure 2-2

Please refer to Figure 2-3 for the dimension of wall-mounted bracket. The unit is mm (inch).

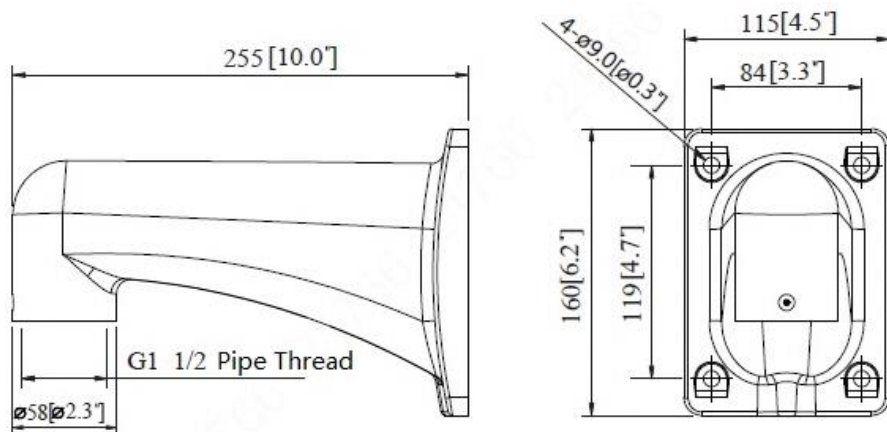


Figure 2-3

Please refer to Figure 2-4 for the dimension of hang-mounted bracket. The unit is mm (inch).

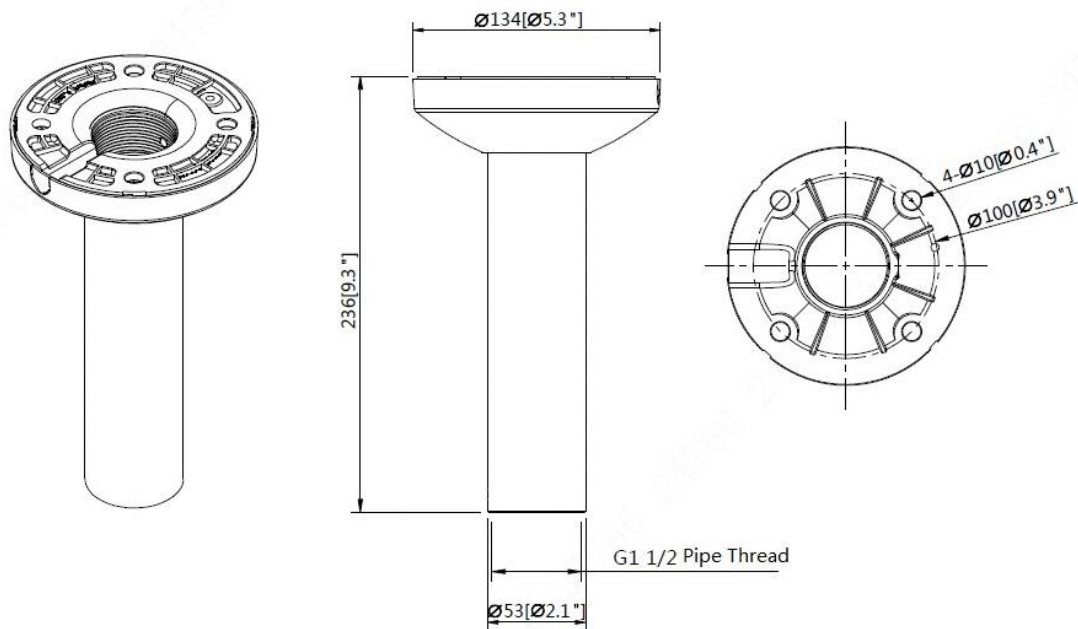


Figure 2-4

Please refer to Figure 2-5 for the dimension of corner-mounted bracket. The unit is mm (inch).

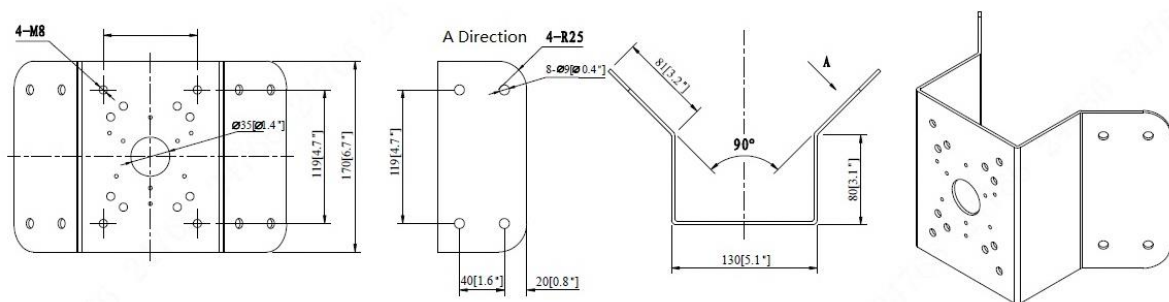


Figure 2-5

Please refer to Figure 2-6 for the dimension of pole-mounted bracket. The unit is mm (inch).

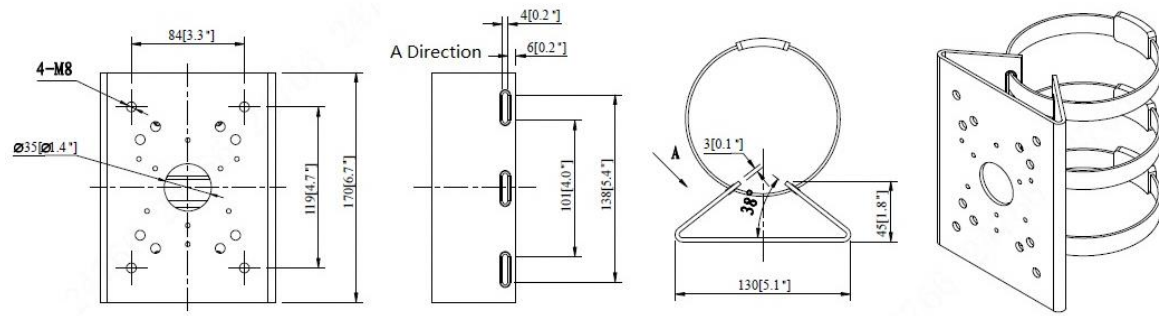


Figure 2-6

3 Device Installation

3.1 Installation Preparation

3.1.1 Check Installation Space and Intension

Please make sure the installation environment has enough space to install the thermal hybrid speed dome and its corresponding bracket.

Please make sure the ceiling and wall where the device is installed can support the thermal hybrid dome and its corresponding installation component. It shall sustain the 8X weight of the thermal hybrid dome and its mounting component.

3.1.2 About cable

Select required video cable

- 75 ohm impedance
- 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 required service cable

Caution

It is recommended to install the matched power within 5m from the device if it is allowed; but if not, then it needs to extend the power supply cable, but it has to guarantee the voltage of the device input port (thermal hybrid dome output cable) is no lower than AC24V±20%.

3.2 Install SD Card and Reset Device (Optional)

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 window cover.

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

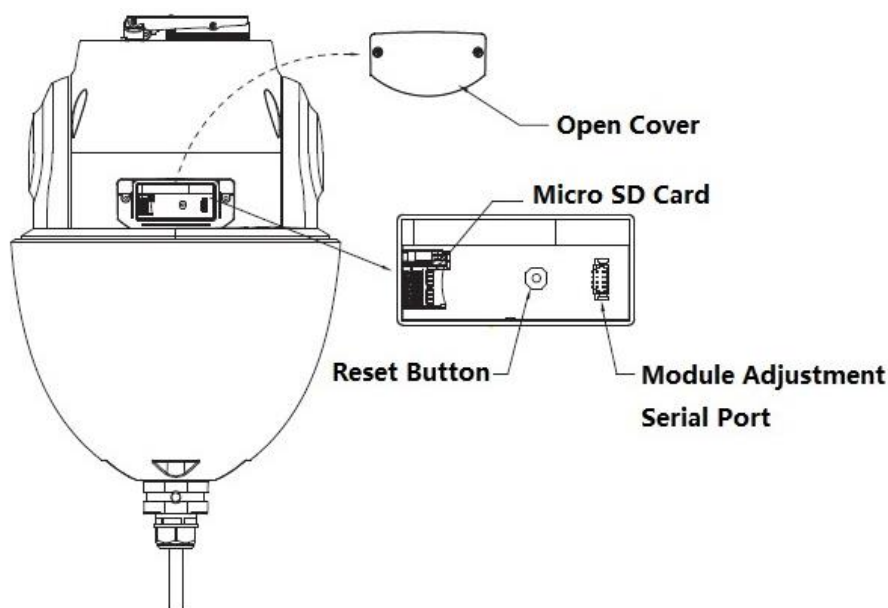


Figure 3-1

Note

Press the reset button for 4s~5s and then it can realize device factory default settings.

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 Installation Steps

The hybrid speed dome supports four installation modes which are wall mount, hang mount, corner mount and pole mount.

Warning

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.

3.3.1 Wall-mounted Installation

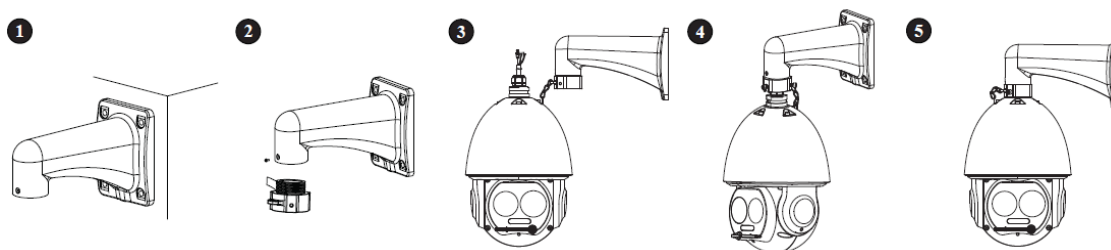


Figure 3-2

Step 1

Fix the device on the wall.

1. Dig holes on the mounting wall, fix the expansion bolt, and tighten the hex nut, as it is shown in Figure 3-2 ①.
2. Twist the quick mounting connector into the wall-mounted bracket and use stainless screws to fix it, which is shown in Figure 3-2 ②.
3. Buckle the safety hook, connect cable and use insulated rubber tape to make the device waterproof, which is shown in Figure 3-2 ③.

Caution

Please make sure the safety hook is installed, otherwise the thermal hybrid dome may fall and cause accident due to instability! Please refer to the safety hook installation instruction in the accessories bag for more details.

4. Put the cable into the wall-mounted bracket and use stainless screws to fix the speed dome on the bracket, which is shown in Figure 3-2 ④.
5. Check if the speed dome is firmly fixed and then device installation is completed, which is shown in Figure 3-2 ⑤.

Step 2

Connect the external cable well according to the requirements.

1. Connect the corresponding power, video output, RS485 control cable, alarm input and 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.

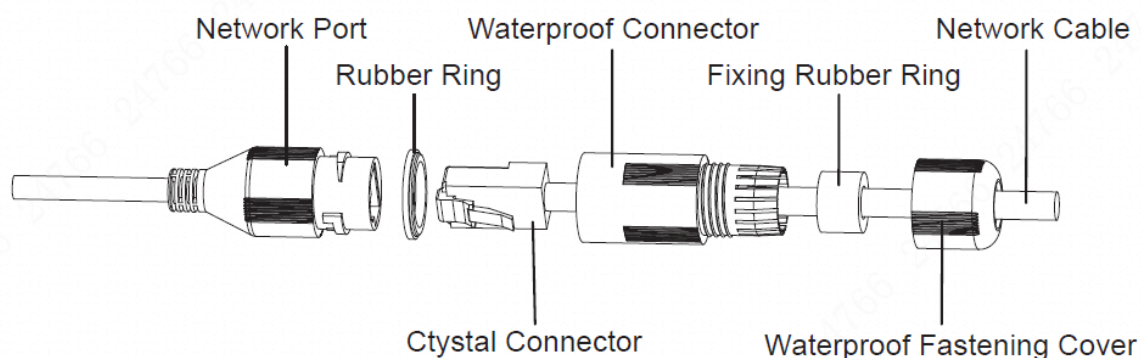


Figure 3-3

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.

3.3.2 Hang-mounted Installation

Note

The adjustable range of hang-mounted bracket length is 200mm (default) and 400mm (optional), it only needs to replace the connection pole.

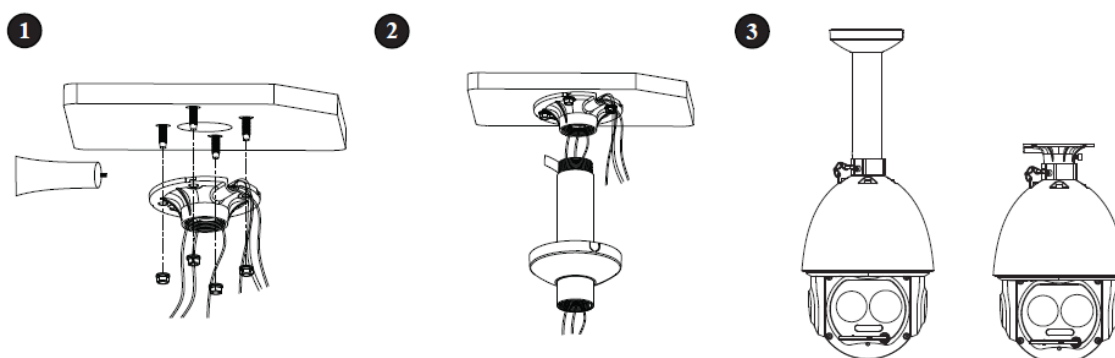


Figure 3-4

Step 1

Fix the device on the mounting surface.

1. Split the connection tray and the connection pole, dig holes on the mounting surface, insert expansion bolts, fix it with nut and paste glass cement on it to make it sealed and waterproof, as it is shown in Figure 3-4 ①.

2. Pull the cable through the connection pole, twine the Teflon tape around the connection pole and fix it on the connection tray, as it is shown in Figure 3-4 ②.
3. Twist the quick mounting connector into the wall-mounted bracket, use stainless screws to fix, buckle the safety hook, connect cable and use insulated tape to make it waterproof, which is shown in Figure 3-4 ③.

Caution

Please make sure the safety hook is installed, otherwise the thermal hybrid dome may fall and cause accident due to instability! Please refer to the safety hook installation instruction in the accessories bag for more details.

4. Check if the speed dome is firmly fixed and then device installation is completed, which is shown in Figure 3-4 ③.

Step 2

Connect the external cable well according to the requirements.

Please refer to step 2 of 3.3.1 Wall-mounted Installation for more details.

Step 3

(Optional) Install waterproof connector for network port.

Please refer to step 3 of 3.3.1 Wall-mounted Installation for more details.

3.3.3 Corner-mounted Installation

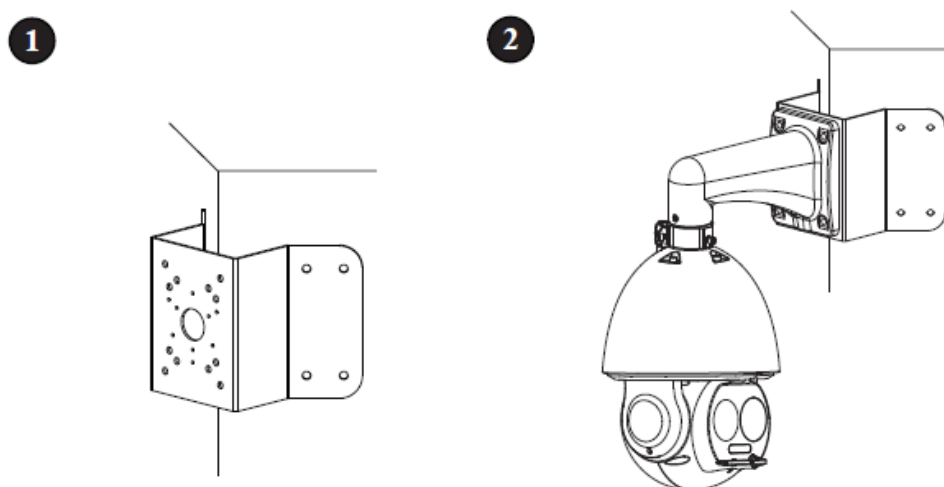


Figure 3-5

Step 1

Fix the device on the mounting surface.

1. Dig holes on the mounting wall, insert expansion bolts, use nut to fix and paste glass cement to make it sealed and waterproof, which is shown in Figure 3-5 ①.
2. Twist the quick mounting connector into the wall-mounted bracket and use stainless screws to fix it.

3. Buckle the safety hook, connect cable and use insulated tape to make it waterproof. Pull the cable into the wall-mounted bracket and use stainless screws to fix the speed dome on the bracket.

Caution

Please make sure the safety hook is installed, otherwise the thermal hybrid dome may fall and cause accident due to instability! Please refer to the safety hook installation instruction in the accessories bag for more details.

4. Pull the cable through corner-mounted bracket and then use screws to fix the device and wall-mounted bracket on the corner-mounted bracket.
5. Check if the speed dome is firmly fixed and then device installation is completed, which is shown in Figure 3-5 ②.

Step 2

Connect the external cable well according to the requirements.

Please refer to step 2 of 3.3.1 Wall-mounted Installation for more details.

Step 3

(Optional) Install waterproof connector for network port.

Please refer to step 3 of 3.3.1 Wall-mounted Installation for more details.

3.3.4 Pole-mounted Installation

Note

It is equipped with 5-inch hose clamp by default (fit for $\phi 80\text{mm} \sim 130\text{mm}$ column), which is used together with the column (pole) mount bracket, the diameter is adjustable, the adjustment range is the clamp specification (there are seven kinds of size for users to select): $\phi 59\text{mm} \sim 82\text{mm}$, $\phi 84\text{mm} \sim 108\text{mm}$, $\phi 80\text{mm} \sim 130\text{mm}$, $\phi 130\text{mm} \sim 152\text{mm}$, $\phi 155\text{mm} \sim 178\text{mm}$, $\phi 180\text{mm} \sim 203\text{mm}$, $\phi 194\text{mm} \sim 216\text{mm}$; It is optional according to the users' requirements; the special size is customizable as well.

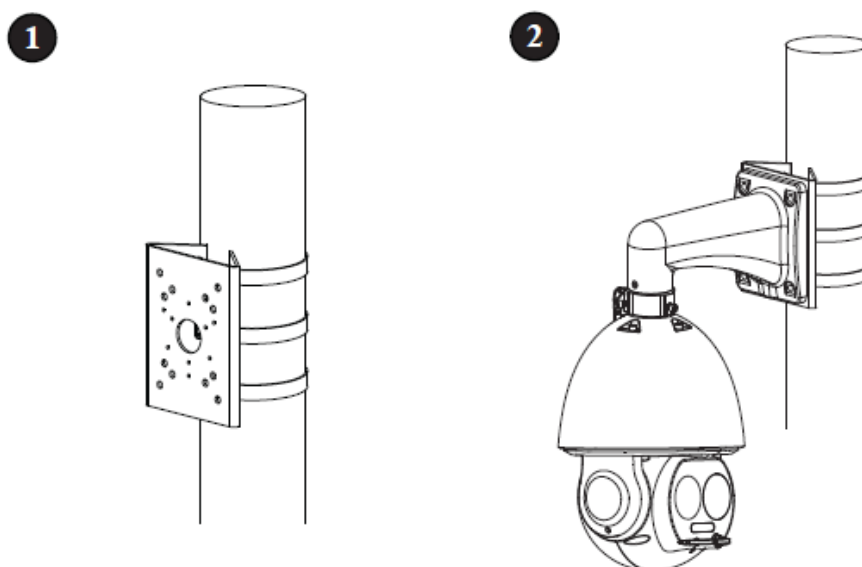


Figure 3-6

Step 1

Fix the device on the mounting pole.

1. Fix the mounting hoop and pole-mounted bracket on the pole, and paste glass cement on it to make it sealed and waterproof, which is shown in Figure 3-6 ①.
2. Twist the quick mounting connector into the wall-mounted bracket and use stainless screws to fix it.
3. Buckle the safety hook, connect cable and use insulated tape to make it waterproof.

Caution

Please make sure the safety hook is installed, otherwise the thermal hybrid dome may fall and cause accident due to instability! Please refer to the safety hook installation instruction in the accessories bag for more details.

4. Put the cable into the wall-mounted bracket, use stainless screws to fix the speed dome on the bracket.
5. Pull the cable through pole-mounted bracket, and then use screws to fix the device and wall-mounted bracket on the pole-mounted bracket.
6. Check if the speed dome is firmly installed, and then device installation is completed, which is shown in Figure 3-6 ②.

Note

Check if the hoop is firmly tightened after installation and make sure it is fixed and stable. Improper installation may break the hoop.

Step 2

Connect the external cable well according to the requirements.

Please refer to step 2 of 3.3.1 Wall-mounted Installation for more details.

Step 3

(Optional) Install waterproof connector for network port.

Please refer to step 3 of 3.3.1 Wall-mounted Installation for more details.

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: 192.168.1.108.

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

Device Initialization

Username: admin

Password:

Weak Middle Strong

Confirm Password:

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 ' ' ; : &)

☒ Email Address

To reset password, please input properly or update in time.

Save

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

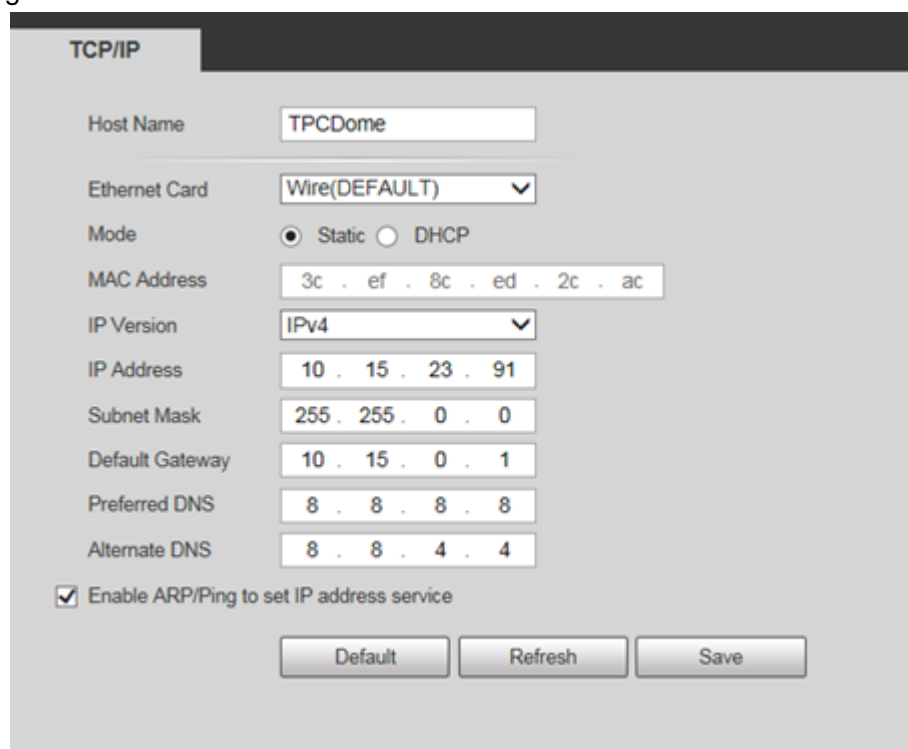
Log in camera WEB interface in the IE browser.

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. It includes fields for Host Name (TPCDome), Ethernet Card (Wire(DEFAULT)), Mode (Static selected, DHCP unselected), 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), and Alternate DNS (8 . 8 . 4 . 4). There is a checkbox for 'Enable ARP/Ping to set IP address service' which is checked. At the bottom are buttons for 'Default', 'Refresh', and '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.

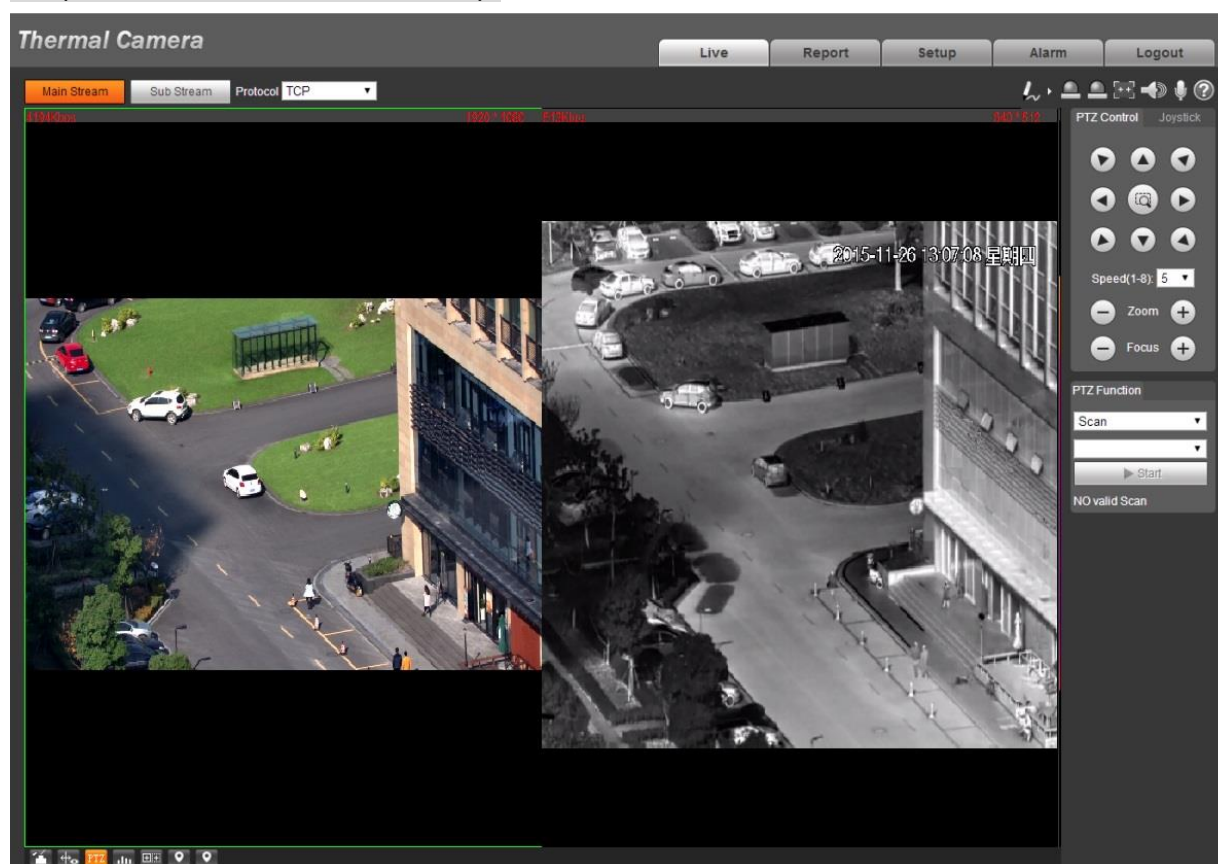


Figure 4-3

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.

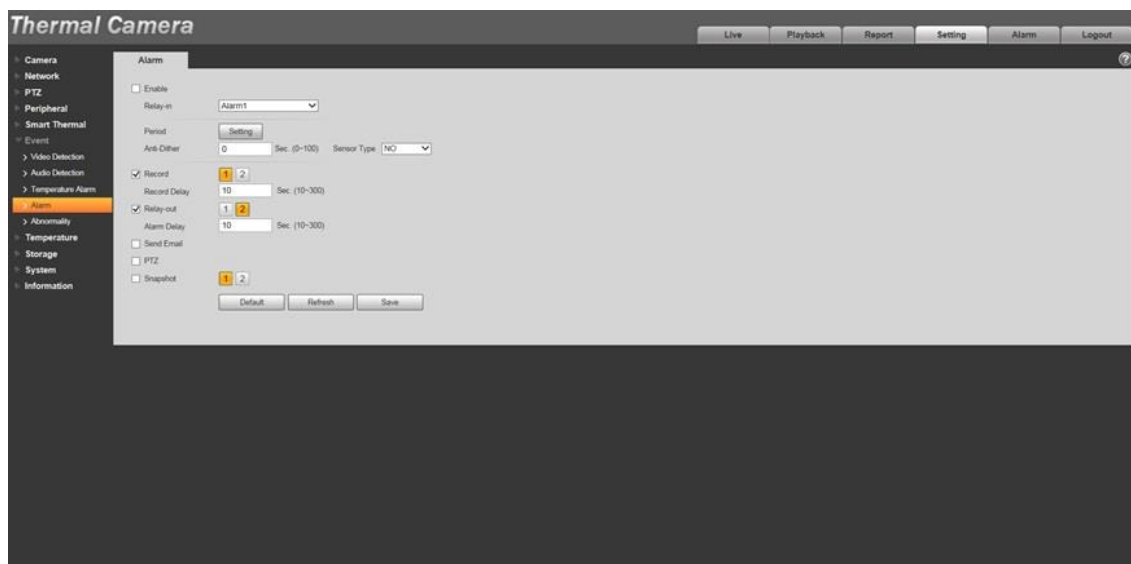


Figure 4-4

Alarm input and output figures

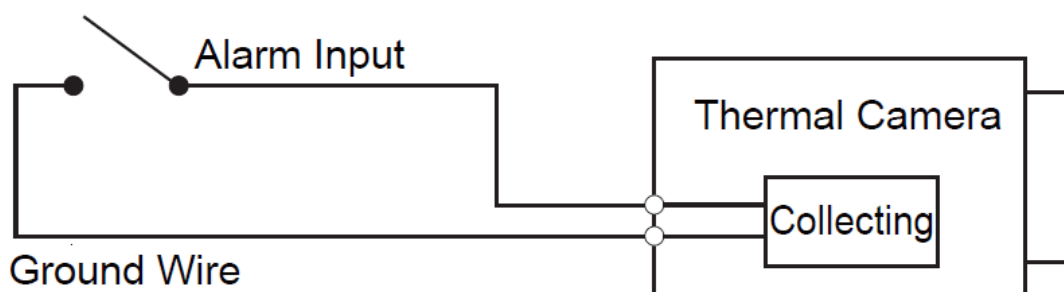


Figure 4-5

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”.

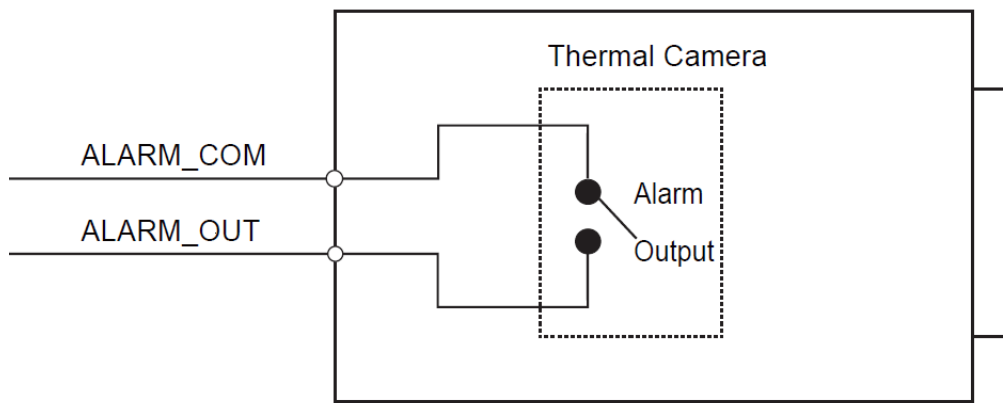


Figure 4-6

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.

Note

ALARM_OUT1 and ALARM_OUT2 can only be used with ALARM_COM1 and ALARM_COM2 respectively when connecting to alarm device.

5 Appendix I Lightning Protection and Surge Protection

This series thermal hybrid dome adopts TVS lighting protection technology. It can effectively prevent damages from various pulse signals below 4000W, such as sudden lighting and surge. While maintaining your local electrical safety code, you still need to take necessary precaution measures when installing the thermal hybrid 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.

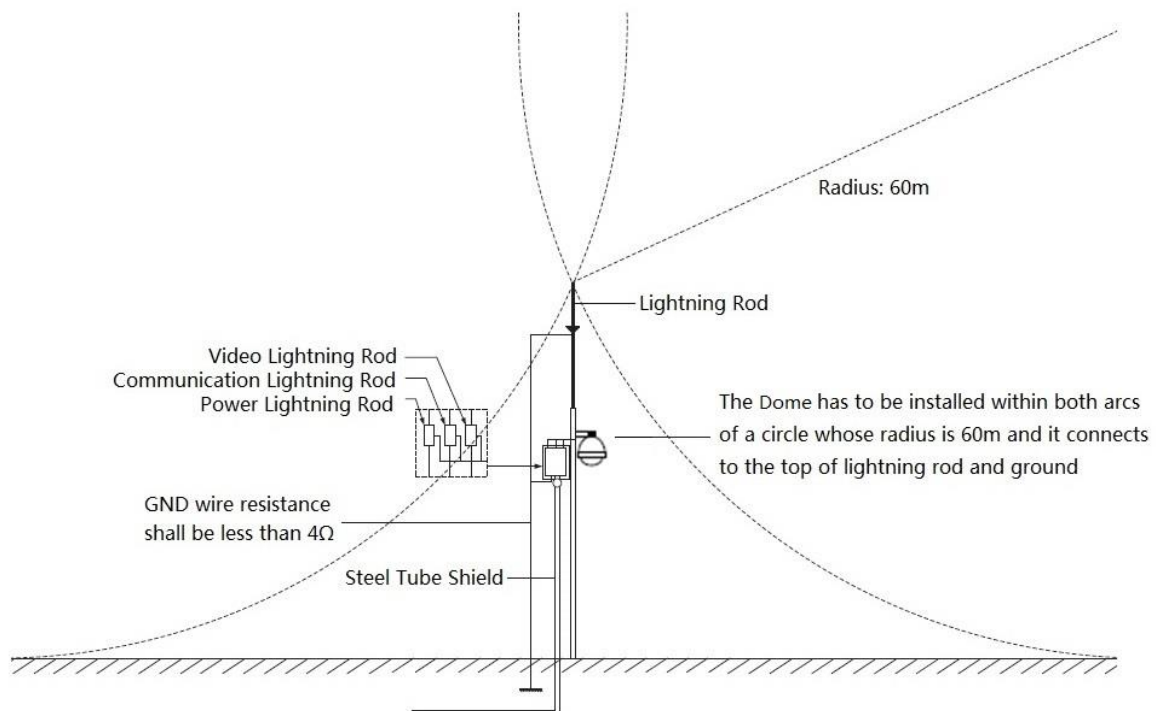


Figure 5-1

Note

- This manual is for reference only. Slight difference may be found in the user interface.
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- 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.
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