Thermal Hybrid & Tribrid PTZ Camera
Quick Start Guide

Version 1.0.0

Table of Contents

Welcome

Thank you for purchasing our thermal Tribrid PTZ camera!

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 tribrid PTZ 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.

3. Power Requirements

- 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.
- Please check if the power supply is correct before device operation.
- The power shall conform to the requirement in the SELV (Safety Extra Low Voltage) and the rated voltage of Limited power source according to IEC60950-1. The power supply requirement is subject to the device label.
- Please install easy-to-use power failure device when installing the cables, 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.
- The power adapter is provided by default.

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. Be sure to use all the accessories (such as power adapter) recommended by manufacturer.
2. Do not connect several thermal tribrid PTZ to one power adapter. It may result in overheat or fire if it exceeds the rated load.
3. 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.
4. Avoid oil stain and kinds of chemicals tarnishing and damaging the lens surface.
5. Store the device in a cool and dry place where there is ventilation but no intense electromagnetic field.
6. Violent vibration or crash is not allowed during transportation and application.
7. Before you connect the cable, install or uninstall, or begin the daily maintenance work, please turn off the power and unplug the power cable.
8. Please make sure the produce is secure firmly on the wall or the ceiling.
9. 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.
10. 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.

Laser Radiation

Please pay attention to the following items if the camera adopts laser device.

- Laser can cause damage to human eyes, so it is prohibited to emit laser to the people within 50m away from the ranging device.
- Laser may cause perpetual damage to the device, so it is prohibited to make laser ranging to the targets within 50m away from the ranging device.
- Laser radiation can cause perpetual damage to human skin and eyes, besides it can ignite flammables, so it should be avoided exposing any goods (scattering terminal or absorber excluded) to the laser beam, do not place some volatile flammables (such as alcohol) in the working area of laser radiation product, which is to avoid laser radiation or fire caused by spark which is generated by high voltage discharge.
- It should remove all the objects which can generate specular reflection in the working area of the laser radiation product, because even if it is the reflected or scattered light of the laser, it is still very intensive, which can cause damage to human eyes. Please take necessary measures to control the reflecting and scattering range of the laser if it has to use such kind of goods.
- If it needs to dismantle or move the ranging device, please wait for 5 minutes after the laser ranging device stops working, which is to make sure the internal accumulated charge has totally released in order to avoid electric shock of accumulated charge.
- It is prohibited to touch circuit of the ranging device in the working state, especially for the laser power supply with high voltage of over 1000V.
- It is prohibited to plug in or out cable when the power is on.

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 tribrid PTZ.
- 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 tribrid PTZ 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 Accessory List

Please check if there is any obvious damage to the device appearance when opening the external packing box, besides, you need to confirm if the accessories are in accordance with the ones on the list. Please refer to Table 1-1 for the accessories; please be aware that the actual config is based on the specific product.

SN	Name	Quantity
1	PTZ Housing	1
	Quick Start Guide	1
	RJ45 network cable waterproof connector	1
	M6*20 Screw	4
2	Hybrid/Tribrid PTZ	1
	M10*35 outer hex screw package	7
	5mm inner hex wrench	1
	Power Adapter	1

Table 1-1

2 Device Structure

2.1 Structure Components

The device structure components are shown in Figure 2-1.

Note

- The following figures are for reference only, which are only used to know each structure component and cable port function.
- Slight difference may exist between different device structure components and cables, please refer to the actual device for more details.

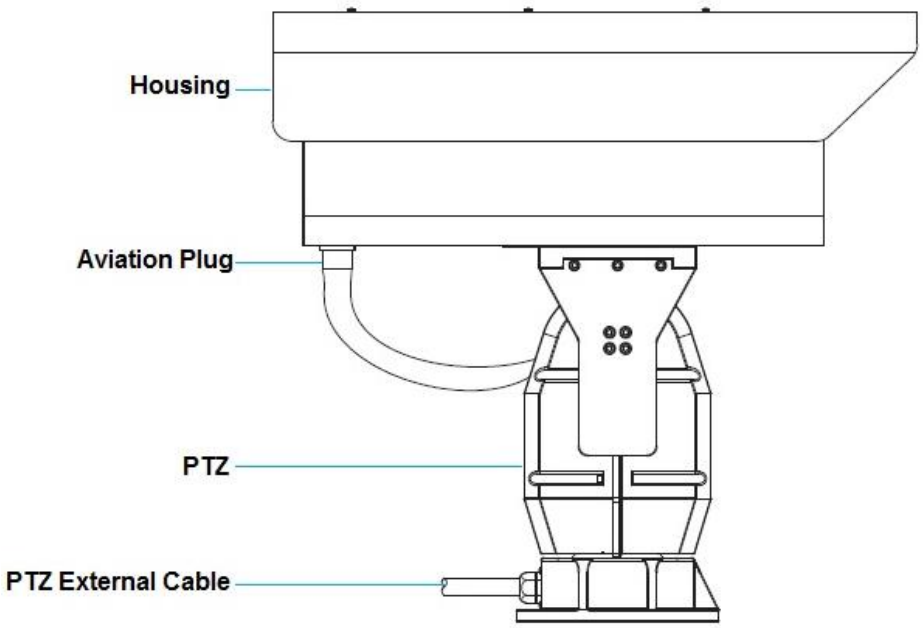

Figure 2-1

Please refer to Figure 2-2 for more details about the cable.

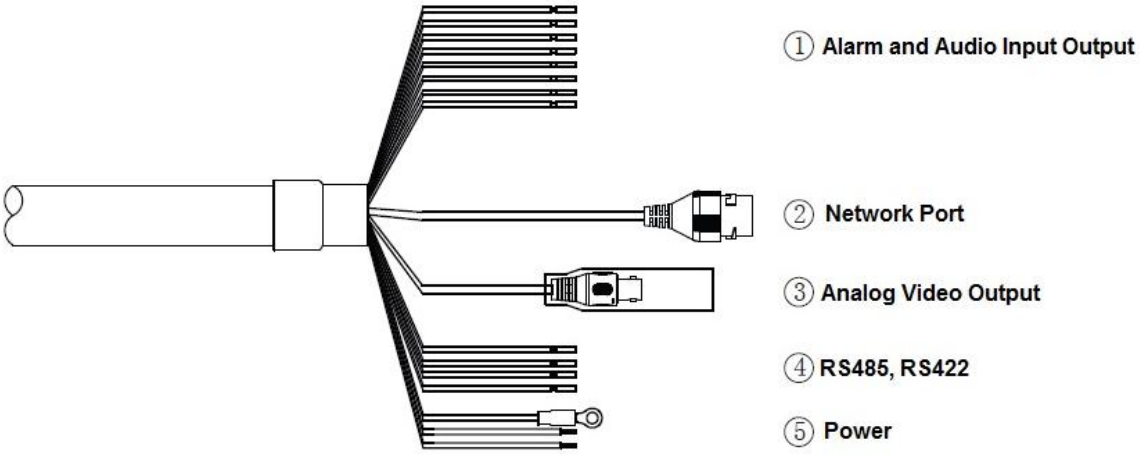

Figure 2-2

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

SN	Port	Port Name	Connector	Note
①	Alarm IN1 (Green)	Alarm input	Various external alarm devices, such as smoke detector etc.	Alarm input port; it is to receive the on-off signal of external alarm source.
	Alarm IN2 （Blue）			
	Alarm OUT NO（Pink）	Alarm output		Alarm output port, it is to output alarm signal to alarm device.
	Alarm OUT C （Brown）			
	Audio IN （White）	Audio input	RCA	Input audio signal, it is to receive analog audio signal of pickup and etc.
	Audio OUT （Red）	Audio output		Output audio signal to speaker and etc.
	GND (Black)	Ground terminal	-	Ground terminal.
②	LAN	Network port	Ethernet port	Connect to standard Ethernet cable **Note** Some devices don't support PoE power supply.
③	video out	Analog video output	BNC	Output analog video signal, it can connect to TV monitor to check image.
④	RS485_A (Orange)	RS485	-	There are two connection modes for RS485 port: ● As a RS485 port, it connects to external keyboard and etc. ● As a RS422_Rx, it is used together with RS422_Tx.
	RS485_B (Yellow)			
	RS422_Y (Gray)	RS422_Tx	-	RS422_Tx and RS485（as RS422_Rx）are used cooperatively, reserve function.
	RS422_Z (Purple)			
⑤	POWER	Power input port	-	Power port, input default DC 24V, AC 24V optional. **Note:** Please use the default adapter, please confirm with the supplier if it is to use other adapters.

Table 2-1

2.2 Device Dimension

Please refer to Figure 2-3 and Figure 2-4 for the device dimension. The unit is mm (inch).

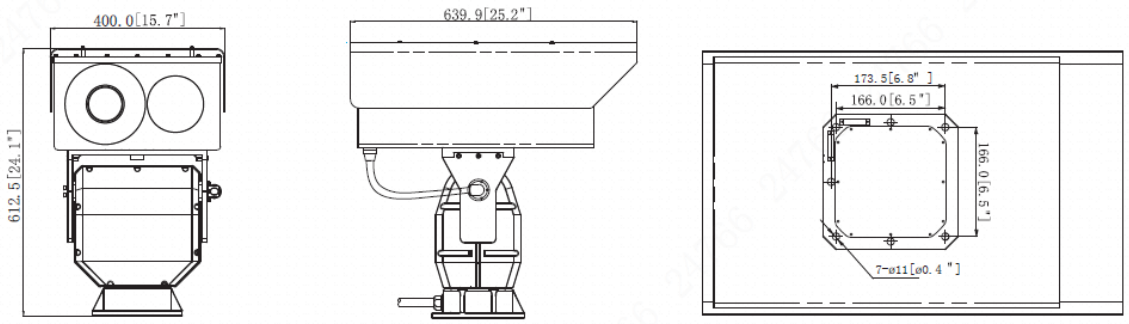

Figure 2-3

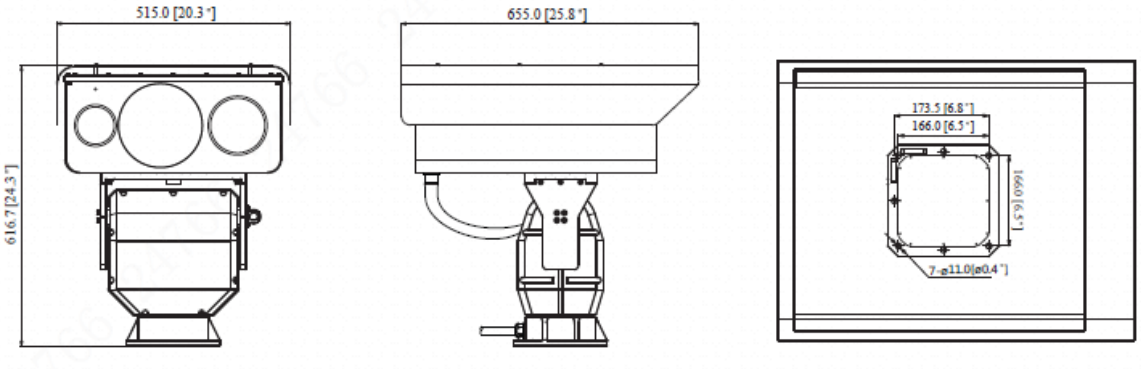

Figure 2-4

3 PTZ 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 PTZ and its mounting components. Please make sure the wall and the bracket can support the total weight of PTZ and its corresponding installation components. It is required to have 8 times of safety factor.

3.1.2 Cable Preparation

- **Select required power cable**

The device provides power adapter by default, it is advised to refer to the following requirements when users need to extend the power cable.

The recommended max transmission distance is shown in Table 3-1 when the wire diameter is fixed and 24V AC (or 24V DC) voltage loss rate is lower than 10%.

Wire diameter（mm）	Max distance（ft/m）
1.000	22ft（6m）
1.250	35ft（10m)
2.000	90ft（27m）

Table 3-1

- **Select required signal cable**

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

- **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 3-2

3.2 Installation Steps

Note

Device installation shall be implemented by users themselves, it has to meet the following installation conditions during device installation:

- The hole sites of the mounting table have to match those of the device pedestal.
- The device is recommended to be installed on a mounting table which can sustain the weight of more than 1T.
- The device can’t be installed in an application environment which is not stable.

- All the installation screws have to be firmly tightened; otherwise, it will affect the rotation accuracy, anti-seismic level, waterproof performance and service life of the PTZ etc.
- It needs more than 3 people to install the device, pay attention to protect the lens during installation.
- It is not allowed to power on the device before fixing the device on the installation desktop, otherwise, the device may fall over and cause damage to the upper component especially the lens during power on self-test of the device.

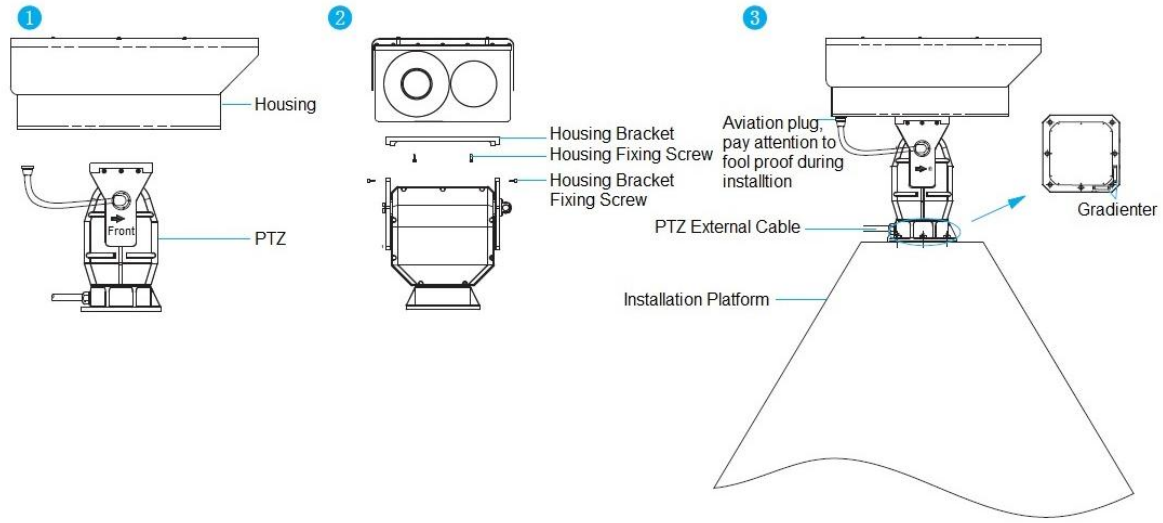

Figure 3-1

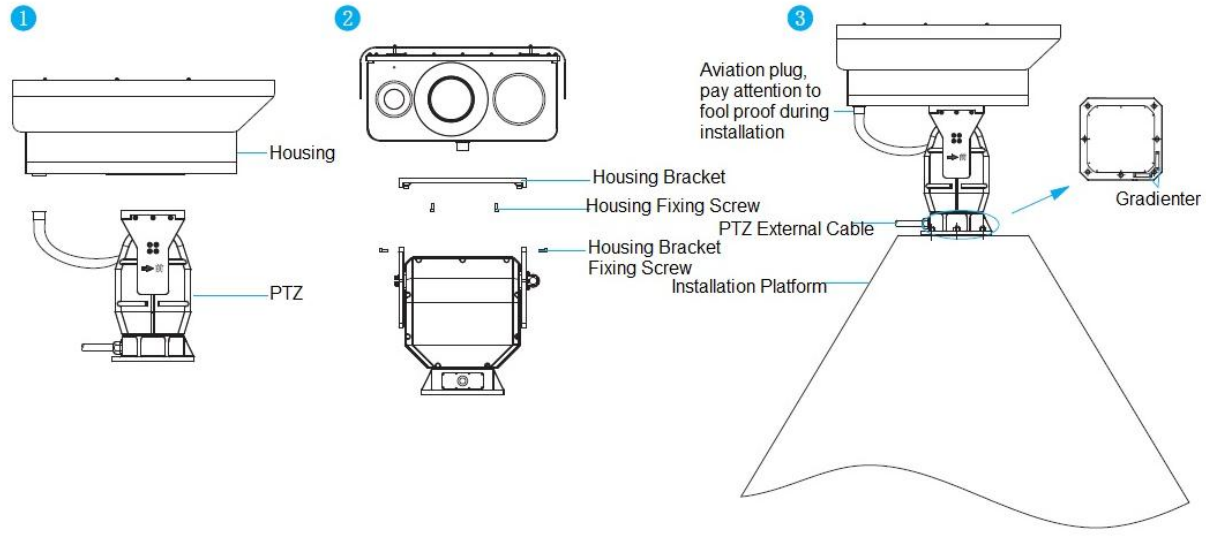

Figure 3-2

Step 1

Install housing onto the PTZ

1. Use the inner hex wrench in the PTZ accessories bag to loosen the set screws on housing bracket and demount the housing bracket.
2. Use the set screws in the housing accessories bag to install the housing bracket on the bottom of the housing.

3. Install the housing onto the PTZ according to the arrow direction of PTZ, and then use inner hex wrench to install the set screw back to housing bracket and tighten them firmly.

Caution

The FRONT logo is printed on the side of the PTZ; make sure the housing installation direction needs to be in accordance with the arrow direction. Do not install it reversely.

4. Connect the PTZ aviation port to the corresponding location of the aviation port of the housing and fix the PTZ on the mounting table.

Step 2

Carry the device onto the installation platform designated by users; use the screws in the PTZ accessories bag to fix the PTZ on the installation platform. Pay attention to observe the horizontal calibrator on the PTZ pedestal when fixing the device, the bubble should stay in the middle of the calibrator after installation is completed.

Step 3

Connect device cable

- Connect the device corresponding power, video output, RS-485 control cable, alarm input and output terminal well (according to requirements), and then use insulated tape to twine the cable connector well to make it waterproof.
- Please install waterproof connector for network port according to step 4, please use waterproof tape to cover other cable connectors to make it waterproof.
- It can extend device cable properly according to actual construction needs, please refer to *3.1.2 Cable Preparation* for more details.
- The device is equipped with power adapter by default; it has to consult the relevant staff of the company if it needs to use other power adapters.

Note

The device is recommended to connect to ground, which is to improve device reliability.

Step 4

(Optional) It is to install waterproof connector for network port, which is shown in Figure 3-3.

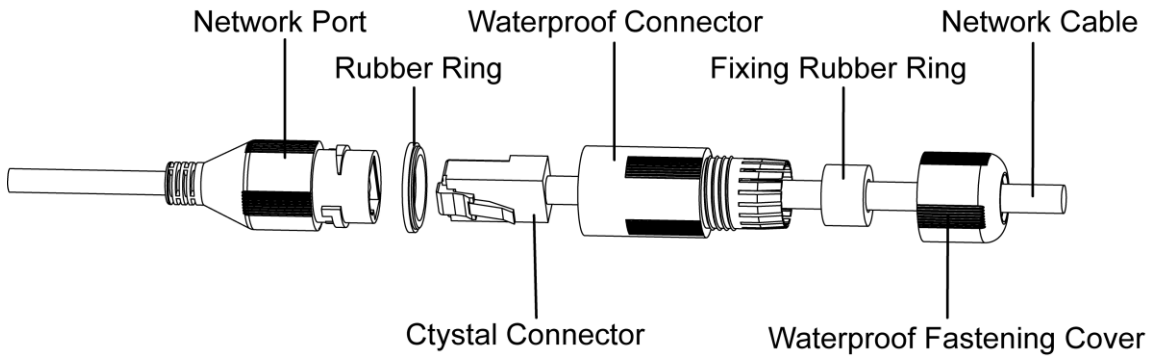

Figure 3-3

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.

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.

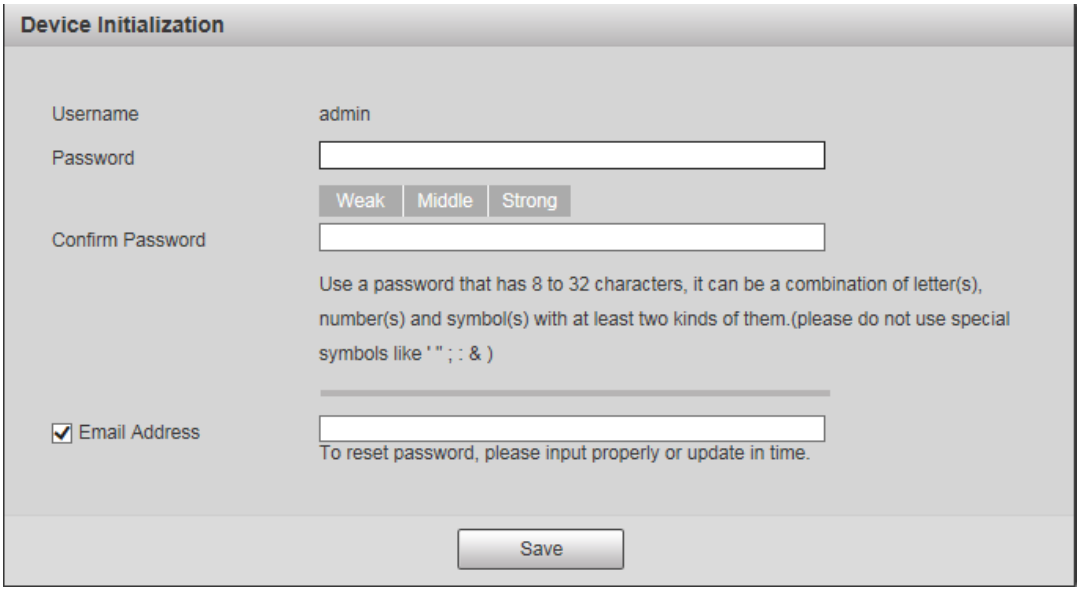

Figure 4-1

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.

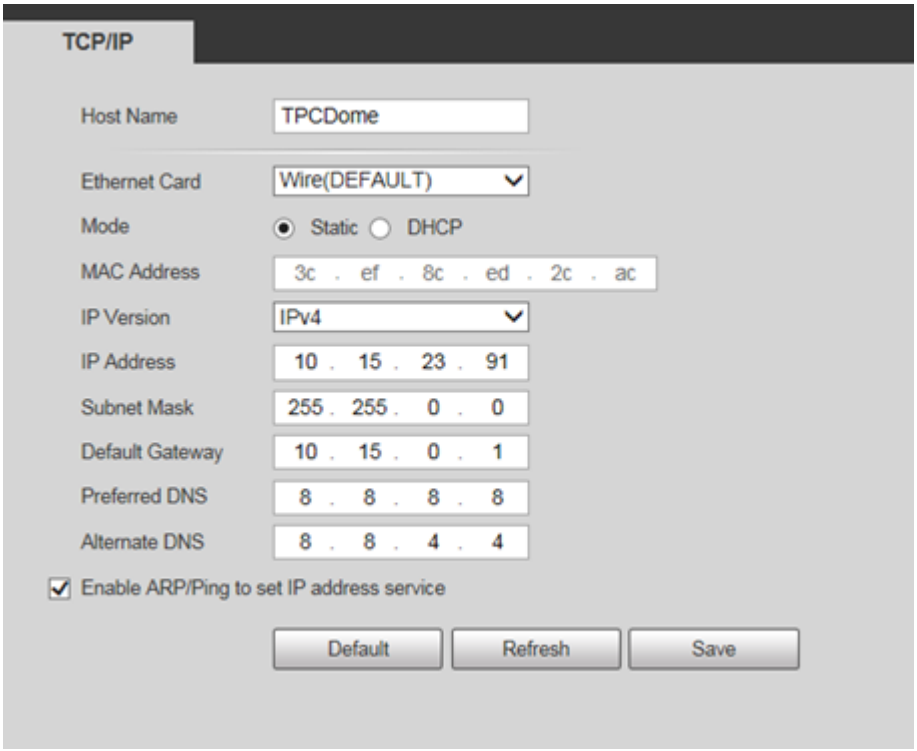

Figure 4-2

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.

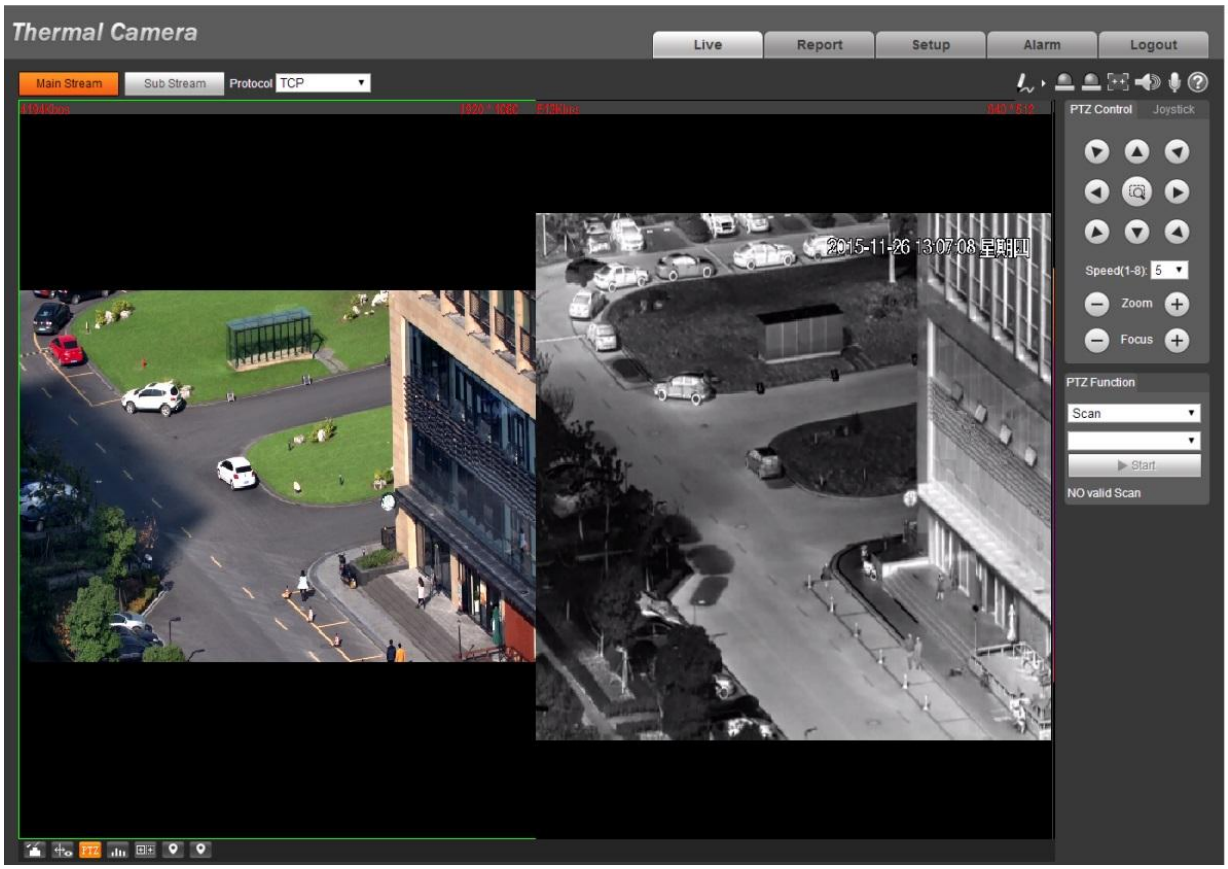

Figure 4-3

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.

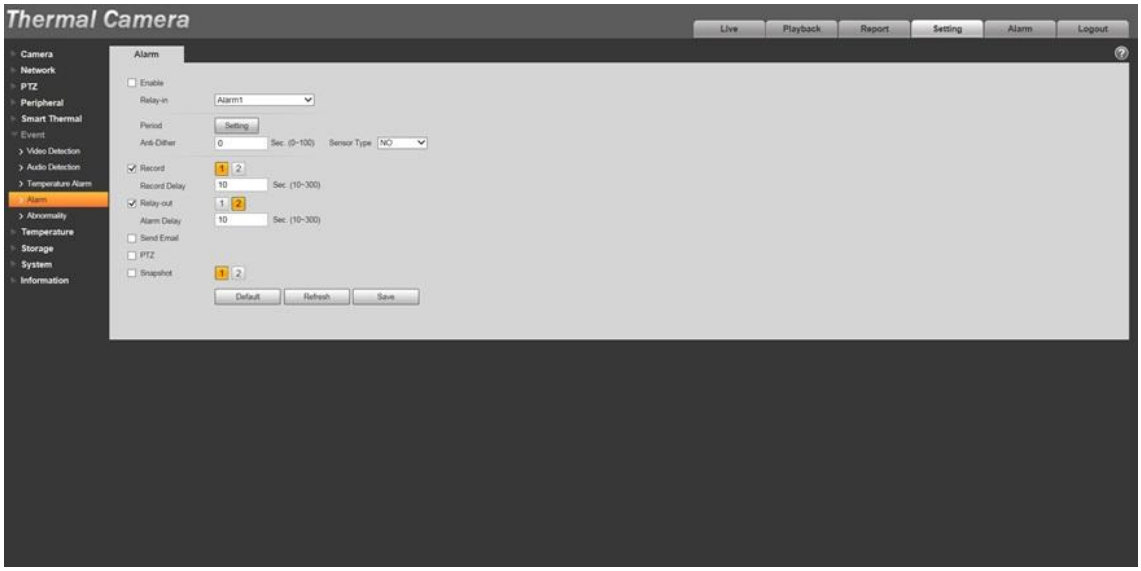

Figure 4-4

Alarm input and output figures

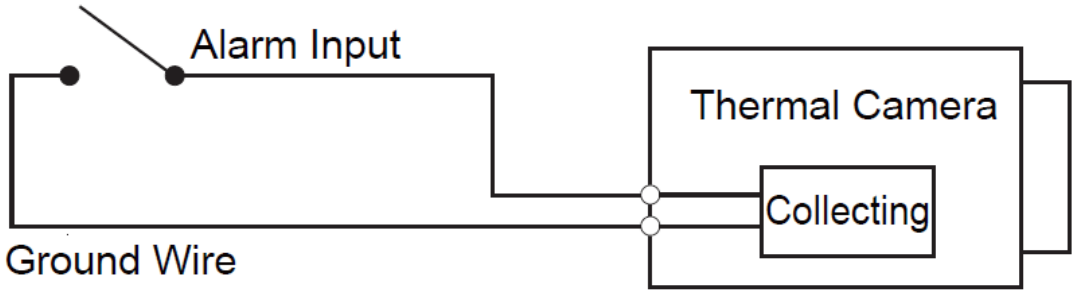

Figure 4-5

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”.

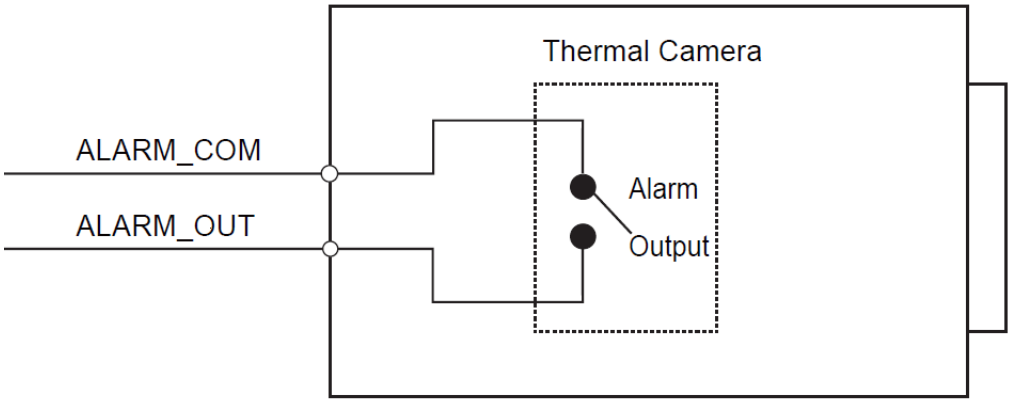

Figure 4-6

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 LIGHTENING PROTECTION AND SURGE PROTECTION

This series thermal tribrid PTZ adopts TVS lighting protection technology. It can effectively prevent damages from various pulse signals below 6000V, 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 tribrid PTZ 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 4Ω and earth cable cross-sectional area shall be no less than 25 mm^2. See Figure 5-1.

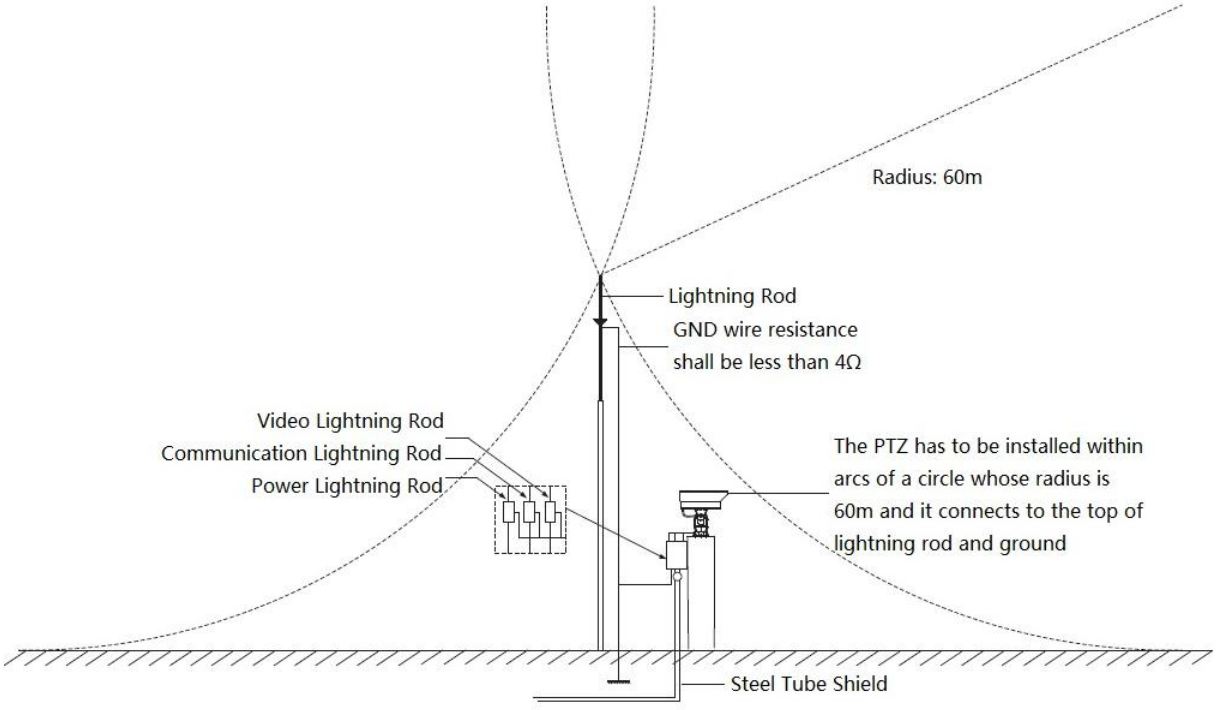

Figure 5-1

6 APPENDIX II PROBLEMS AND SOLUTIONS

SYMPTOM	CAUSE	SOLUTION
No self-diagnosis Or there is noise	Power supplying is inadequate.	Replace power supplying.
	Mechanical malfunction.	Need maintenance.
Video signal loss occurs in high speed rotation.	Power supplying is not sufficient	Replace power supplying.
Video signal is not successive	Circuit connection is too loose.	Connect tightly.
Video is not clear.	Focus is in manual mode.	Control manually.
	PTZ cover is dirty.	Wash PTZ cover
During PTZ switch, there is a tilt movement in the monitor.	Camera power is not in the same Phase.	When several PTZ cameras are connected to one transformer, please connect the transformer output cable to the PTZ cameras' same side.
The PTZ keeps rotating and it is out of control	The supply voltage is too low or the power is insufficient.	Use multimeter to check the PTZ voltage and current, if it is too low, then it needs to improve supply voltage till the device runs normally.

Table 6-1

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.
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- If there is any uncertainty or controversy, please refer to the final explanation of us.
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