



InfiRay PT4 Dual-Spectrum Network Thermal Camera User Guide

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Preface

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

after reading.





Overviews

This manual is suitable for dual-spectrum PT4 network thermal cameras.

This manual describes the installation steps, installation precautions and basic operations of dual-spectrum PT4 network thermal cameras.

Symbol Description

The description of the symbols that appear in the document is as follows

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

Important Safety Notice



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

- Please use power adapter which is produced by regular companies. Please check whether the power is normal or not before starting the camera. (Power supply requirements should comply with that on the product labels.)
- In order to make emergency power off when necessary, please install power-off equipment which is easy to use when installing the wires.

- Please protect power lines from being treaded or pressed, especially the connecting points which are led from the plug, power socket or other unit.
- Please make sure the camera is fixed firmly in case of being installed on walls or ceilings.
- If the camera does not work normally, please contact the purchased shops or factories. Do not disassemble or revise the camera in any way (The manufacturing company is not responsible for problems that are caused by unauthorized modification or maintenance.)



Cautions

- Please do not put the camera in damp, dusty, extremely hot or cold places, or places with corrosive gas or unstable light.
- Please transport, use and store the camera within the allowable humidity and temperature range.
- Avoid making the lens aiming at strong light (e.g. sun or laser), otherwise the imaging sensor would be damaged.
- Please do not block the vents near the camera in case of heat accumulated.
- Please use the factory packaging or materials of the same quality when shipping the device.
- Please do not press, vibrate violently or soak the camera during transportation, storage or installation.
- It is advised to use the camera with lighting protector.
- Soft dry cloth can be used to clean the camera. For the dirt difficult to clean, please use soft cloth with little neutral detergent and then wipe dry. Do not use volatile detergent like alcohol, benzene or diluent, or strong and abrasive detergent, otherwise the camera coating would be damaged and also the camera performance could be degraded.
- The lens cover is optical device, so please do not touch directly or wipe the cover. Soft brush or hairdryer can be used to blow the dust away. For the grease or fingerprint, soft cloth can be used to wipe it away. Cotton cloth or lens cleaning paper with cleaning solution can be used to wipe repeatedly until it's clean.
- Please revise the password promptly after logging in.



Instruction

- Please use the accessories or parts specified by the manufacturer and have them installed and repaired by professional service personnel.
- Quality requirements for installation and maintenance personnel: Personnel should have the qualification certificate or experience to engage in the installation and maintenance of video surveillance systems, and have the qualification to engage in related jobs (such as high-altitude operations, etc.), in addition to the following knowledge and operating skills. Equipped with basic knowledge and installation skills of video surveillance system and its components. Equipped with basic knowledge and operating skills of low-voltage wiring and low-voltage electronic circuit wiring. Equipped with basic network security knowledge and skills, and have good knowledge of this manual.
- **Requirements for lifting equipment:**
Safe lifting equipment suitable for site and method of camera installation. The lifting equipment is able to reach

enough height of installation position. The lifting equipment has good safety performance.

Preparation

Basic Requirement

- All the electronic operation should be strictly compliance with the electrical safety regulations, fire prevention regulations and other related regulations in your local region.
- Check the package contents and make sure that the device in the package is in good condition and all the assembly parts are included. Check whether the application place and mounting type is consistent with the requirements, if not, please contact the distributor.
- Use the product according to the working environment requirement.

Check Installing Environment

- Be sure that there is enough space to install the product and accessories.
- Make sure that the wall is strong enough to withstand at least 8 times the weight of the product and the mount.

Prepare Cables

Choose the video cable according to the transmission length. The video should meet the least demands as:

- Coaxial cable: 75Ω resistance; 100% copper core conducting wire; 95% weaving copper shield.
- RS-485 communication cables
- According to the actual network bandwidth, the Cat5 (in 100M) or Cat6 (100M above) is needed.
- DC 24V power cable.

Prepare Tools

Before installation, please prepare the tools needed, such as the expansion screws, electric hammer, electric drill, wrench, screwdriver, electro probe and network cable.

Original Packaging

When you unpack the product, please keep the original package properly, in case of returning or repairing the product, you can pack the product with the package.

Camera Installation

Instructions before Installation

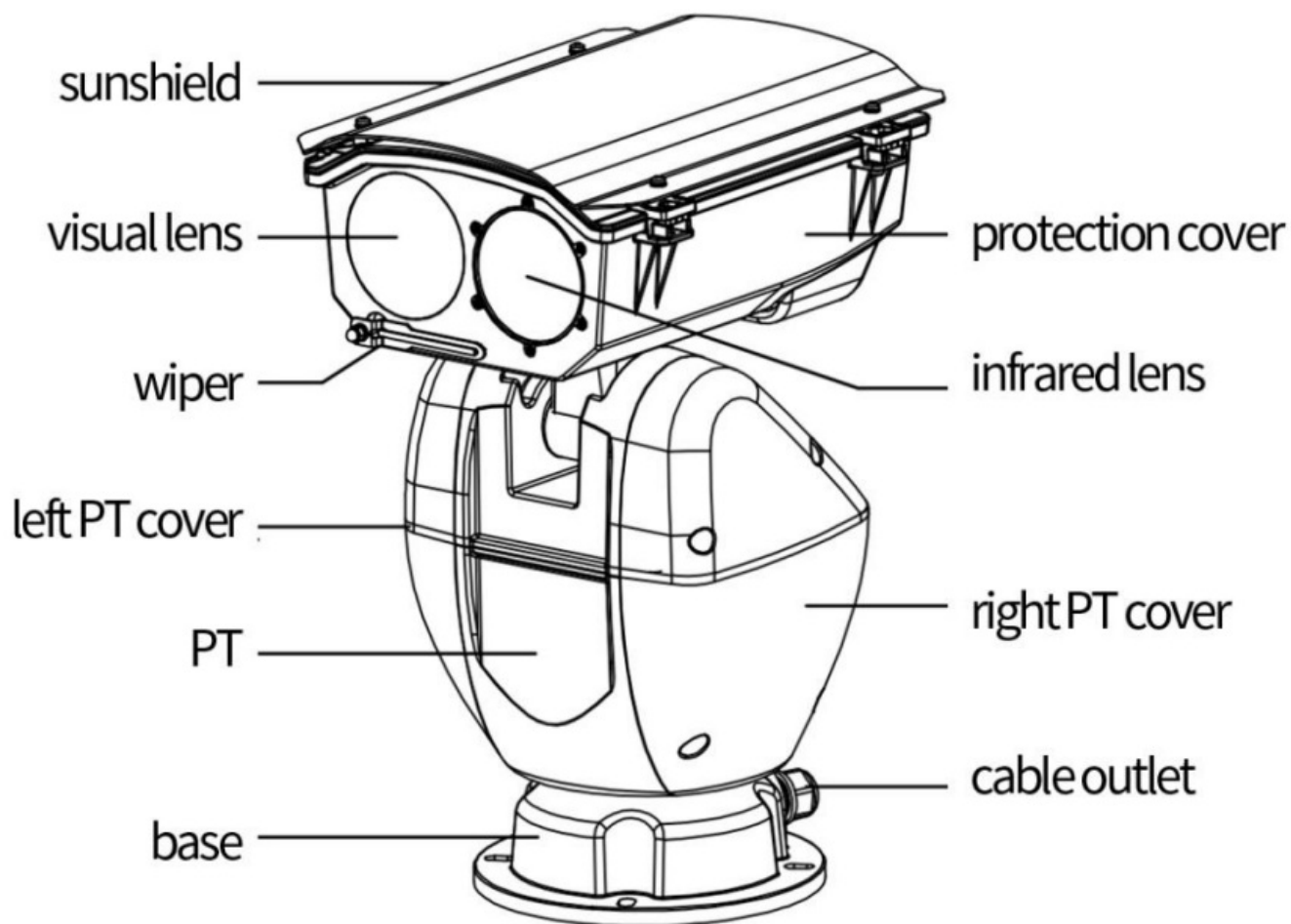
Package List and Accessories

- Before installation, please make sure that the camera in the package is in good condition and all parts are complete.
- The PTZ is heavy, so you must check whether the PTZ can be powered on and the self-check and PTZ control is normal or not. Start installing after all the tests are normal.

Product Appearance

Refer to **figure 2.1** for PTZ structure.

Figure 2.1 Appearance of Dual-spectral PT Network Camera



Cable Introductions

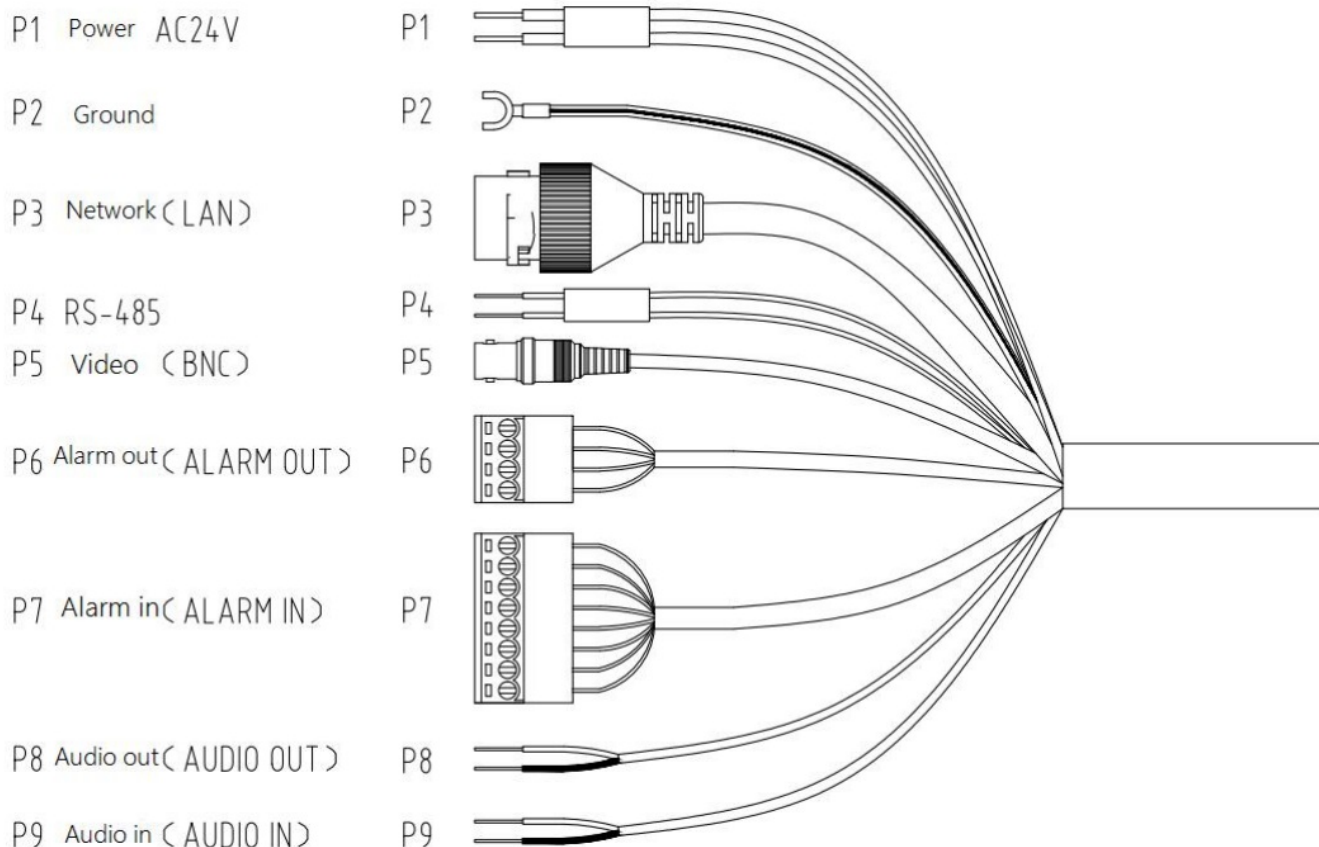
The cable includes interfaces for power, alarm, audio, RS-485, and network, etc. Please see the following figure for interface instructions.



Notice

The pigtail cables are different depending on the product models, the cable interfaces here are complete, the actual product shall prevail.

Figure 2.2 Cable Introduction

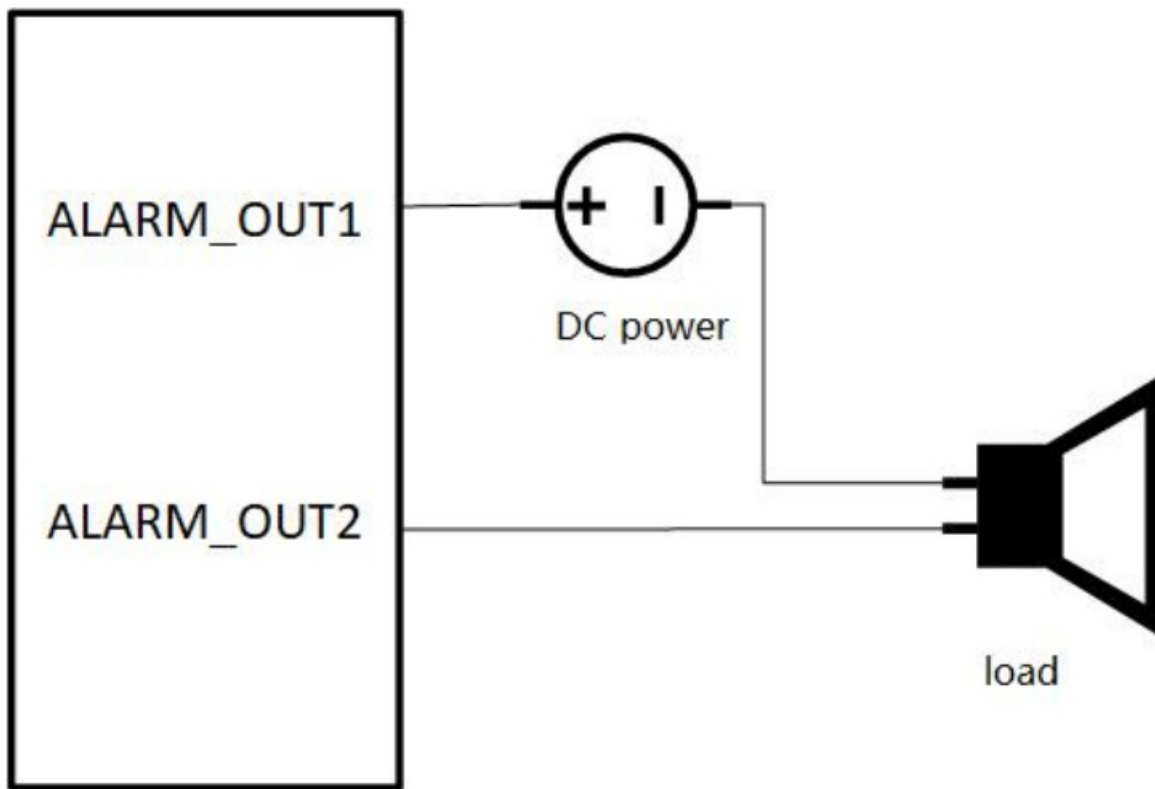


- P1 power interface (AC24V): Support AC 24V power supply.
- P2 ground interface (GND): Ground interface.
- P3 network interface (LAN): Output network signal and connect to standard Ethernet cable.
- P4 RS-485 interface (485):RS485 interface for PT control.
- P5 video interface (BNC): Output standard PAL analog videos.
- P6 alarm output (ALARM OUT): Output alarm switch signal to alarm equipment.
- P7 alarm input (ALARM IN): Receive the switch signal from the external alarm source.
- P8 audio output (AUDIO OUT): Output audio signal to speakers and other equipment for sound output.
- P9 audio input (AUDIO IN): Input audio signal and connect microphone for receiving linear analog audio signal to collect sounds.

Wiring Introduction on Alarm Interface

The camera can be connected with alarm signal (0 ~ DC5V) input and switch output (no voltage). An external power supply is required when connecting the alarm apparatus. The specific wiring method is shown in the figure below.

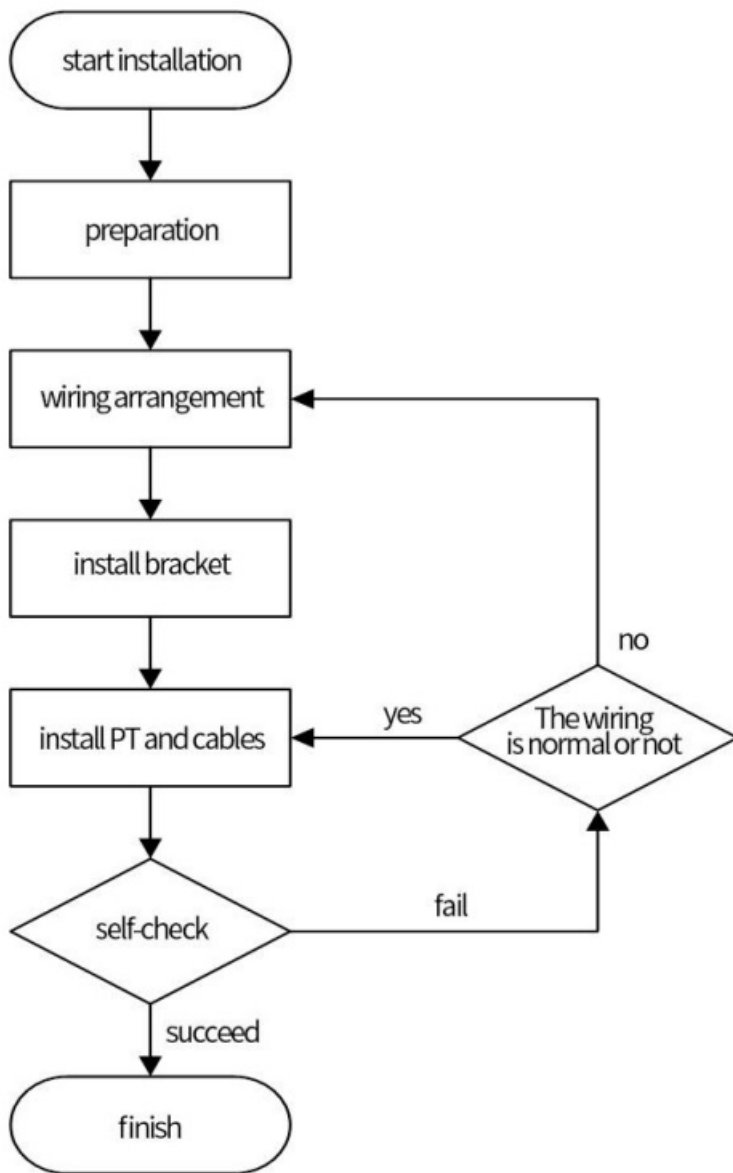
Figure 2.3 Wiring Method of Alarm Output



Installation Process

The installation procedures are as shown in **figure 2.4**, please finish the mounting according to the following installation procedures.

Figure 2.4 Mounting Process



Cable Planning and Wiring

It is necessary to survey and plan the lines in advance since the environment and location of the PT installation is different, and then to arrange the lines precisely so as to provide safe and stable power and wiring for the PT. In the process of cable planning and wiring, you need to follow the below suggestions:

- Before performing cable wiring operations, familiarize yourself with the installation environment, including wiring distance, wiring environment, and whether it is far away from magnetic field interference and other factors.
- Please select a wire with a rated voltage greater than the actual line voltage for the PT to ensure the normal operation of the PT under the condition of unstable voltage.
- To avoid disconnection, the connection of the PT should be done independently with one wire; if the conditions are limited, it is also necessary to protect the connection and take reinforcement measures to prevent the equipment from malfunctioning due to circuit aging.
- Strengthen the protection for power lines and signal transmission lines. Pay special attention to the reinforcement and protection of the line during the wiring process, so as to avoid abnormal monitoring due to wiring damage.
- During the wire deployment process, do not make the wires too long or too short.

The cable wiring of the PT should be operated by personnel with professional skills. When the PT fails to work normally, you can investigate the cause in the above-mentioned aspects.

Mounting Bracket

The PT is different from other cameras. The overall quality is heavy, which has high requirements for the load-bearing and stability of the support. It is generally recommended to install it directly on the base to avoid potential safety hazards.

If mounting a bracket is necessary, you can design the corresponding bracket according to the base map of the PT. The bracket design must consider factors such as load-bearing and anti-shake to ensure the firmness of the bracket and the smoothness of the image.

Installing PT

Monitoring Distance Range

Electric lens is adopted for the thermal channel of positioning system. It supports auto-focus function and remote focus function. For different lens focal length, the monitoring range is shown in the table 2-1. Please select the appropriate mounting position and lens before PT installation.

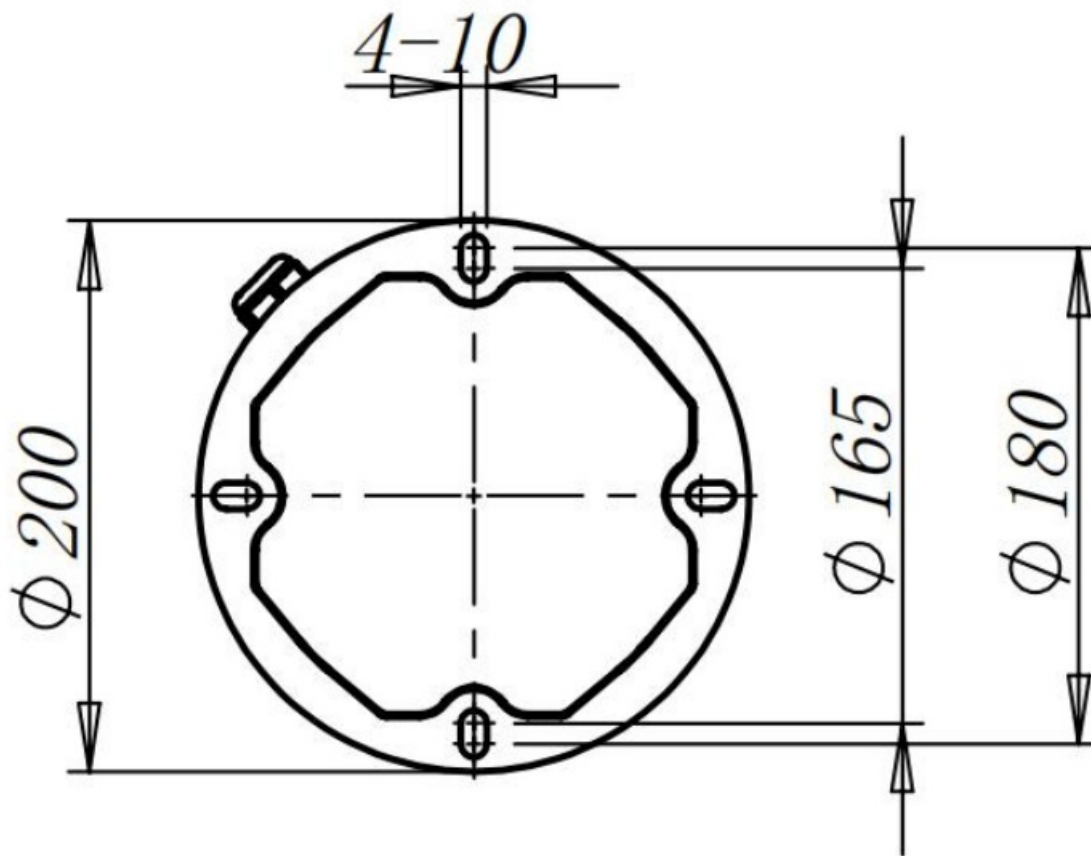
Table 2-1 Detection/Recognition/Identification Range

Focal Length/m	Detection Range /m (Vehicle)	Detection Range/m (Human)	Recognition Range /m (Vehicle)	Recognition Range /m/m (Human)	Identification Range /m (Vehicle)	Identification Range/m (Human)
50	6389	2083	1597	521	799	260
75	9583	3125	2396	781	1198	391
100	12778	4167	3194	1042	1597	521

- Suppose it is clear and the atmosphere visibility is normal, no obvious fog or haze, the probability of reading the target at the specified distance is 50%
- Take human as 0.5 m (width) x 1.8 m (height), and limit length is 0.75 m. The vehicle limit length is 2.3 m.
- **According to Johnson criteria, we suppose:**
 - Detect target: The target should be at least 1.5 pixels on the image.
 - Recognize target: The target should be at least 6 pixels on the image.
 - Identify target: The target should be at least 12 pixels on the image.
 - The actual detection range may vary according to different camera settings, mounting condition, monitor, and so on.

Installing Procedures

- Step 1** Open the package and take out the PT camera and the accessories.
- Step 2** Drill four mounting holes on the mounting surface according to the instructions as shown in **figure 2-5**.





Step 4: Please make sure that the PT camera is in horizontal status, settle the cables and put them in the waterproof distribution box.

Waterproof Measures

Connect the PT according to the wiring instructions in **Figure 2.2**. The terminals are exposed for a long time after connection, which may cause corrosion and rust, therefore it is recommended to waterproof the terminals. Use the waterproof tape to tightly wrap the wiring terminal and nearby cables in half mode until the wiring terminal and nearby cables are wrapped in the waterproof tape. Ensure that the waterproof tape is always in tightened status.

Install Network Port Protective Cover

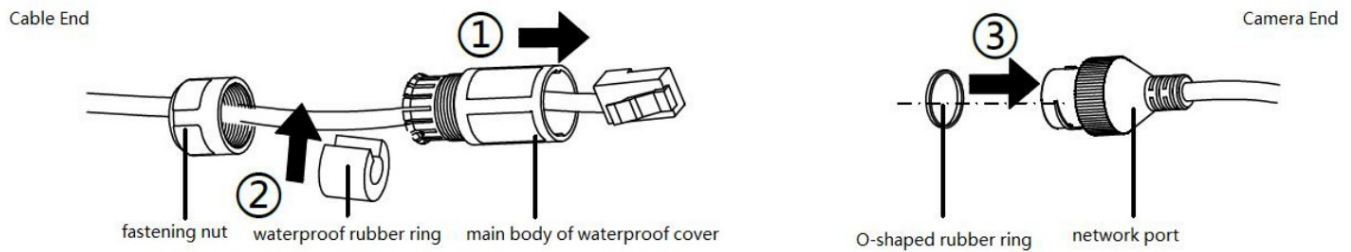
When using the camera, install the matching network port waterproof cover to prevent water from entering the network cable. Please install it if necessary. The installation steps are as follows:

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

Step 2 Break off the waterproof rubber ring and put it on the network cable between the main body of the waterproof cover and the fastening nut.

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

Figure 2.7 Network Cable Installation

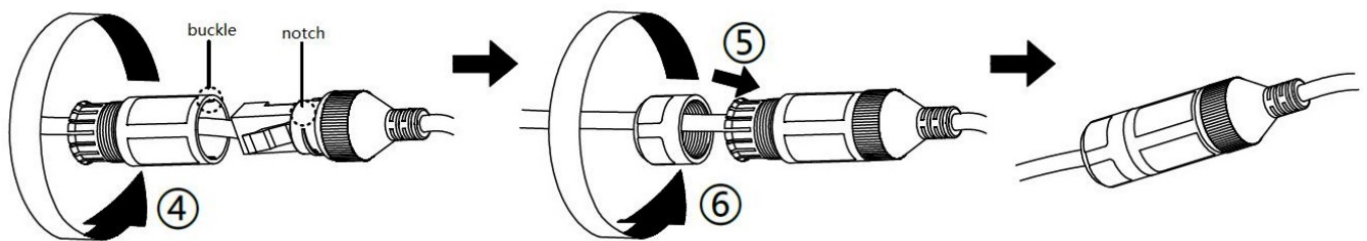


Step 4 Align the notch of the network port with the buckle of the main body of the waterproof cover, put the main body of the waterproof cover into the end of the network port, and tighten it clockwise.

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

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

Figure 2.8 Finishing Installation



Use of anti-corrosion coatings

The equipment is exposed in the corrosive environment for a long time, which is easy to cause corrosion and rust of screws and nuts. In order to ensure the anti-corrosion effect, you should apply anti-corrosion paint to all fixed screws and nuts, and cover the holes of screws until they overflow after installation, and cover the screw head completely.

Power-on Self-test

After ensuring that the PT is correctly installed, power on the PT to perform self-check.

- If the PT powers on properly and the preview image is displayed, the PT orientation is normally controlled, then the installation of the PT finishes.
- If the PT fails to power on, check whether the cable port of the PT is properly connected. If the connection is normal, check the cable wiring.

Operation Guide

Preparations

1. The default IP address of the device: 192.168.1.123;
2. The subnet mask is 255.255.255.0, and the IP address of the PT can be modified. If you change the device address to 192.168.1.194, change your computer's IP address to the same network segment with the network video server, and the same subnet mask. Such as: 192.168.1.120;
3. Test whether the PT can start normally. Under WINDOWS, follow the <Start → run → cmd> operation, open the

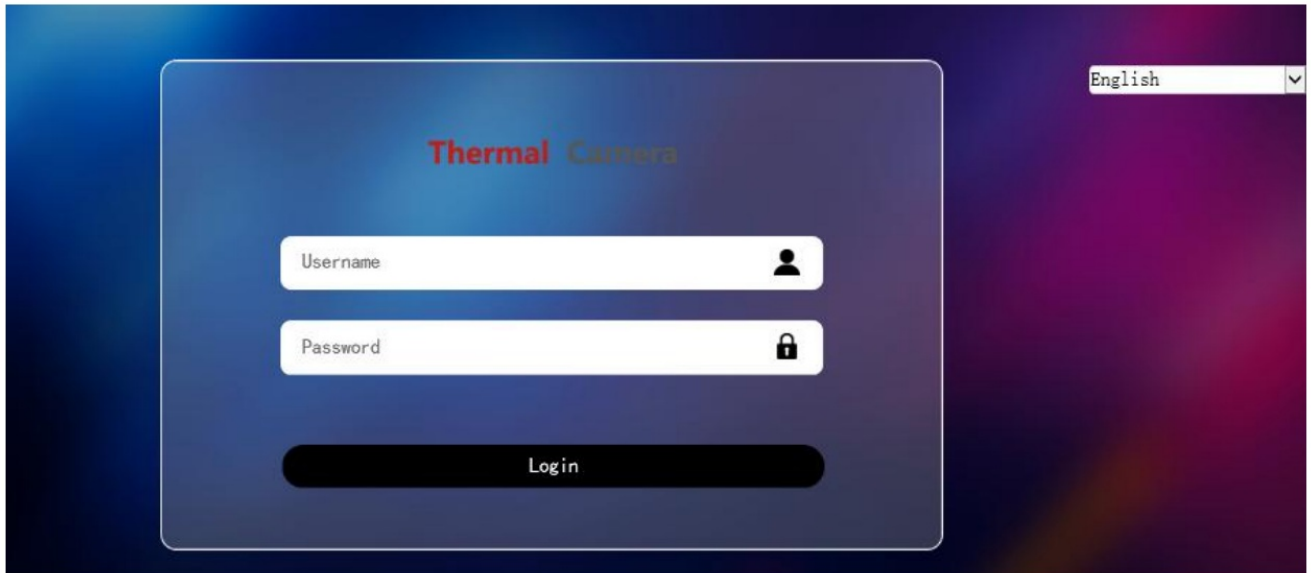
command line window, and enter Ping 192.168.1.123 in the command line window. If “Request time out” is not displayed, it means the startup is normal

4. Support browsers such as IE.

Login System

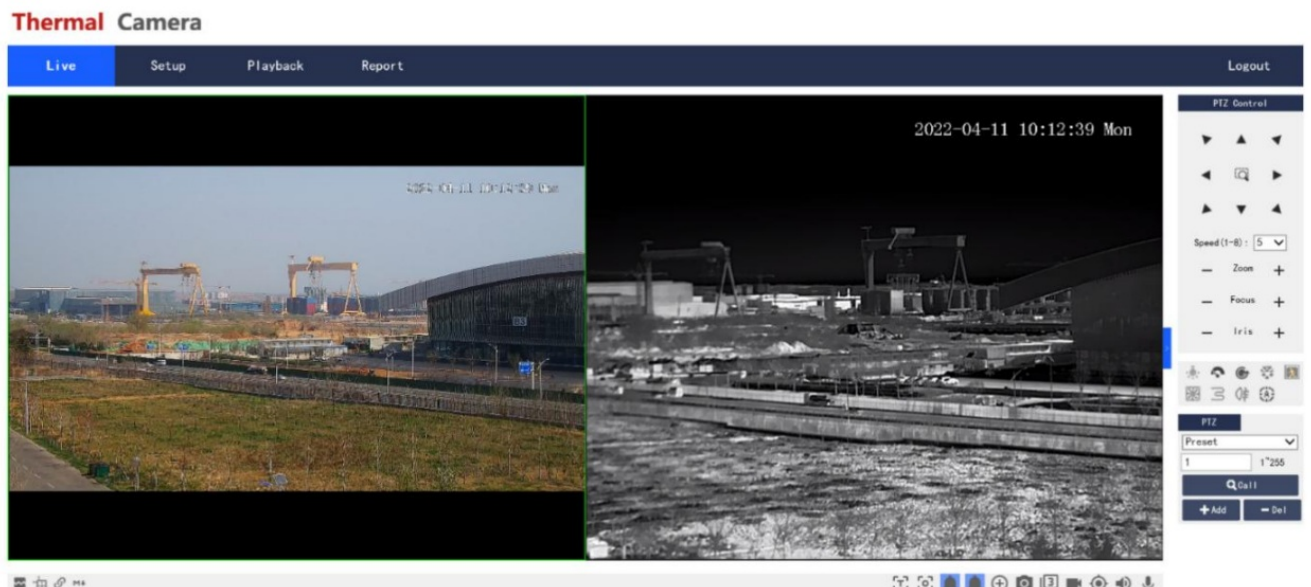
1. Enter the IP address of the PT in the address bar of IE browser to log in, and the login page is as shown below.

Figure 3.1 Login Interface



2. Enter the user name: admin (defaulted, administrator user).
3. Enter the password: admin (defaulted, administrator password).
4. Click [OK] button to enter the preview screen of the video server. As shown below:

Figure 3.2 Preview Interface



Main Interface Description

There are preview, settings, replay and other functions on the main interface. Please refer to the Dual-spectral PT Network Camera User Manual V2.0.0 for details.

Appendix A Camera Maintenance

Lens Maintenance

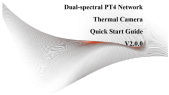
The lens surface is coated with anti-reflective coating. When contaminated with dust, grease, and fingerprints, harmful substances will be produced and the degraded performance, crutches, or mold will be caused. Once dirt is found, please follow the following methods.

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

Network Safety Maintenance

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

Documents / Resources

	<p>InfiRay PT4 Dual-Spectrum Network Thermal Camera [pdf] User Guide</p> <p>PT4-Dual-spectrum, PT, PT4 Dual-Spectrum Network Thermal Camera, PT4, Dual-Spectrum Network Thermal Camera, Network Thermal Camera, Thermal Camera, Camera</p>
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