

# **Positioning System**

## **Installation Manual**






# Foreword

## General

This manual introduces the structure, installation and operations of the Positioning System (hereinafter referred to as "the Camera").

## Safety Instructions

The following categorized signal words with defined meaning might appear in the manual.

Signal Words	Meaning
 <b>WARNING</b>	Indicates a medium or low potential hazard which, if not avoided, could result in slight or moderate injury.
 <b>CAUTION</b>	Indicates a potential risk which, if not avoided, could result in property damage, data loss, lower performance, or unpredictable result.
 <b>NOTE</b>	Provides additional information as the emphasis and supplement to the text.

## Revision History

Version	Revision Content	Release Time
V1.0.0	First release.	February 2021

## About the Manual

- The manual is for reference only. If there is inconsistency between the manual 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 manual.
- The manual would be updated according to the latest laws and regulations of related jurisdictions. For detailed information, refer to the paper manual, CD-ROM, QR code or our official website. If there is inconsistency between paper manual 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 manual. 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, we reserve the right of final explanation.
- Upgrade the reader software or try other mainstream reader software if the manual (in PDF format) cannot be opened.
- All trademarks, registered trademarks and the company names in the manual are the properties of their respective owners.
- Please visit our website, contact the supplier or customer service if there is any problem occurring when using the device.
- If there is any uncertainty or controversy, we reserve the right of final explanation.

# Important Safeguards and Warnings

The manual will help you to use the Camera properly. Read the manual carefully before using the Camera, and keep it well for future reference.

## Operating Requirements

- Do not aim the lens at intense radiation source directly (such as sun, laser and molten steel), which is to avoid damage to the image sensor.
- Install the Camera on a stable place to prevent it from falling.
- Operate the Camera within the rated range of power input and output.
- Transport, use and store the Camera under the allowed humidity and temperature conditions.
- Disassemble the Camera in strict accordance with the manual. Water leakage or bad image might be caused to the Camera if it is dismantled unprofessionally.
- There is magnet on the pedestal of the Camera. It can be installed by absorption. Do not use the Camera in a moving vehicle.
- If the Camera is not used for a long time, charge it regularly (for example, every three months) to avoid failure of the Camera.

## Power Requirements

- Improper battery use might result in fire or explosion.
- When replacing battery, make sure that the same model is used.
- Use locally recommended power cord in the limit of rated specifications.
- Use the power adapter coming with the Camera; otherwise you will be liable for possible personal injuries or device damages.
- The power source shall conform to the requirements of the Safety Extra Low Voltage (SELV) standard, and supply power with rated voltage which conforms to Limited Power Source requirements according to IEC60950-1. Note that the power supply requirement is subject to device label.

## Maintenance Requirements

- Outdoor use must comply with lightning protection requirements.
- Clean the Camera with a soft and dry cloth. If the dirt is difficult to remove, use a clean and soft cloth dipped in neutral detergent to gently wipe off the dirt, and then dry the Camera. Do not use volatile solvents such as alcohol, benzene or thinner, or strong abrasive detergents to clean the Camera; otherwise the surface coating will be damaged or the performance will be compromised.
- The dome cover is an optical component. Do not directly touch or wipe it when installing and using the Camera. If it is contaminated with dust, oil or fingerprints, use defatted cotton with a little ether or use a soft cloth with water to gently wipe it. If it is only contaminated with dust, use an air blow gun to blow dust away.



Enhance the protection for network data, device data, and personal information. We recommend that you take necessary actions to enhance the security of your devices and network, such as changing password regularly, using strong password, updating firmware to the latest version, and isolating networks.

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# 1 Unpacking the Box

After opening the trolley case, check whether there is obvious damage to the appearance of the Camera, and whether the components are complete against the packing list.

Table 1-1 Packing list

<b>Name</b>	<b>Quantity</b>
Aluminum Trolley Case	1
Positioning System	1
Installation Tray	1
Power Adapter	1
Power Cord	1
Steel Wire Rope	1
Main Aviation Connector Cable	1
Screwdriver	1
Legal and Regulatory Information	1
QR Code	1
Installation Manual	1

Some optional accessories are available for you to choose from.

Table 1-2 Optional accessories

<b>Name</b>	<b>Quantity</b>
Backup Battery	1
8-Wire Aviation Connector Cable	1
Bluetooth Earphones	1
Tripod	1
Base Charger	1

# 2 Device Structure

## 2.1 Appearance

The supported ports vary with device model, and the actual product shall prevail.

Figure 2-1 Appearance

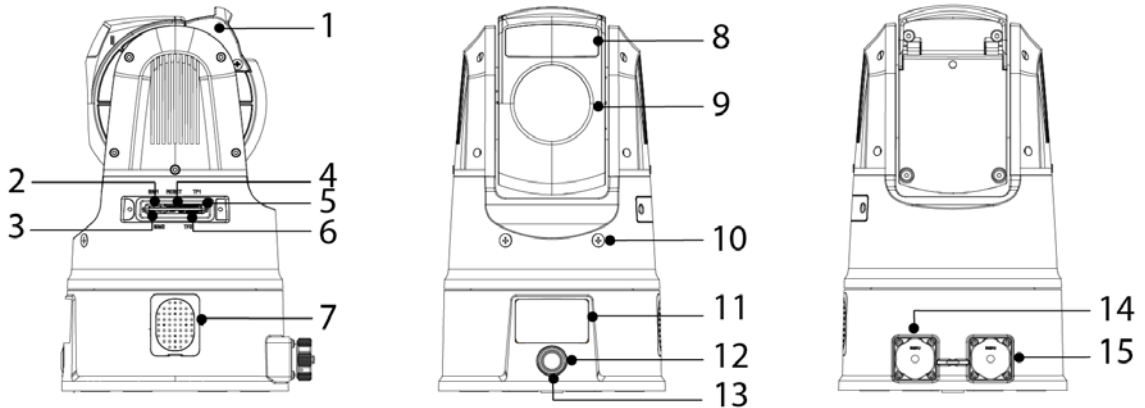


















Table 2-1 Structure description





































No.	Name	Description
1	Handle	Carry the Camera through the handle.
2	SIM1	Install Micro SIM card to connect to network.
3	SIM2	 Dual SIM cards are supported by select models.
4	Reset button	Press and hold the button for at least 5 seconds when the Camera is working, and then release to restore the Camera to factory settings.
5	TF1	Install Micro SD card to store data.
6	TF2	 Dual TF cards are supported by select models.
7	Speaker	Plays voice prompt.
8	IR illuminator	For illumination when the Camera is working in low lighting condition.
9	Lens	Captures video images.
10	Microphone	Sound pickup.
11	Display	Displays device information including powering on or off, IP address, time, network connection status, Wi-Fi hotspot connection, Bluetooth connection, satellite positioning status, battery level, TF card status, recording status and more. For description of icons, see Table 2-2.

No.	Name	Description
12	Power button	<ul style="list-style-type: none"> <li>When the Camera is shut down, press and hold the button for 3–4 seconds until the indicator is on, which means the device is being started.</li> <li>When the Camera is powered on, press and hold the button for 3 seconds until "Shutdown now!" is displayed, which means the Camera is being shut down.</li> </ul>
13	Indicator	Displays the device status. For detailed description, see Table 2-3.
14	Main aviation connector	Connects to aviation connector cable. For details, see "2.2 Cables".
15	Sub aviation connector	

Table 2-2 Display content description

Content	Meaning	
Starting...	When the Camera is connected to power supply or battery level is high, press and hold the power button until " <b>Starting...</b> " is displayed on the screen, which means the device is powered on.	
Shutdown now!	When the device is powered on, press and hold the power button until " <b>Shutdown now!</b> " is displayed on the screen, which means the device is powered off.	
	4G signal connection status and signal strength	<ul style="list-style-type: none"> <li>1 at the lower-left corner represents the signal of SIM card 1, and 2 represents the signal of SIM card 2. x at the lower-right corner means no signal for the SIM card.</li> <li>Bars at the lower-right corner represent signals. The more bars, the stronger the signal.</li> <li> Both 4G and 5G are available. The supported SIM modes vary with device models, and the actual interface shall prevail.</li> <li>Dual SIM cards are supported by select models.</li> </ul>
		
		
		
	Hotspot connection status.	
		<ul style="list-style-type: none"> <li>: Hotspot disabled.</li> </ul>
		<ul style="list-style-type: none"> <li>: Hotspot is enabled, but the Camera is not connected to any wireless device (such as mobile phone).</li> <li>: Hotspot is enabled, and the Camera is connected to a wireless device.</li> </ul>
	Bluetooth connection status.	
		<ul style="list-style-type: none"> <li>: Bluetooth disabled.</li> </ul>



Content	Meaning
	<ul style="list-style-type: none"> <li>: Bluetooth is enabled, but not paired.</li> <li>: Bluetooth is enabled and paired with another Bluetooth device.</li> </ul> <p> The function is available on select models.</p>
	<p>Satellite positioning status and signal strength.</p> <ul style="list-style-type: none"> <li>: Satellite positioning failed.</li> </ul>
	<ul style="list-style-type: none"> <li>: Satellite positioning succeeded. The more bars, the stronger the signal.</li> </ul>
	<p>Battery level and charging status.</p> <ul style="list-style-type: none"> <li>: Full battery under discharge status.</li> </ul>
	<ul style="list-style-type: none"> <li>: Charging in progress.</li> </ul>
	<ul style="list-style-type: none"> <li>: Charging in progress when the Camera is shut down.</li> </ul>
	<ul style="list-style-type: none"> <li>: Battery exception or no battery is detected.</li> </ul>
Low Power!	<ul style="list-style-type: none"> <li>Low Power!: Battery level too low (less than 3%) and the Camera cannot be powered on.</li> </ul>
	<p>The status of TF1 and TF2.</p>
	<ul style="list-style-type: none"> <li>: TF card 1 has been inserted; : TF card 1 has not been inserted.</li> </ul>
	<ul style="list-style-type: none"> <li>: TF card 2 has been inserted; : TF card 2 has not been inserted.</li> </ul>
	<p> Dual TF cards are supported by select models.</p>
	<p>Recording status.</p> <ul style="list-style-type: none"> <li>: Recording in progress.</li> </ul>
	<ul style="list-style-type: none"> <li>: Recording not started or has been stopped.</li> </ul>
	<p>Speaker status.</p> <ul style="list-style-type: none"> <li>: Speaker turned on.</li> </ul>
	<ul style="list-style-type: none"> <li>: Speaker turned off.</li> </ul>
	<p>Microphone status.</p>
	<ul style="list-style-type: none"> <li>: Microphone turned on.</li> </ul>



Content	Meaning
	<ul style="list-style-type: none"> <li>: Microphone turned off.</li> </ul>

Table 2-3 Indicator description

Status	Meaning
Orange	The Camera is being started or shut down.
Flashes orange quickly	Low battery (less than 20%).
Flashes blue slowly	Camera started and PTZ self-check completed, but not connected to network.
Solid green	The Camera is connected to network and working normally.
Flashes red quickly	<p>Overtemperature.</p>  <p>The priority is like this: Overtemperature alarm &gt; low battery &gt; network disconnection. When these three exceptions occur at the same time, the indicator flashes red quickly.</p>

## 2.2 Cables

Main aviation connector cable (including power cable, RS-485 cable, network cable and serial cable), power cord and power adapter come with the Camera.



- The cables vary with device models, and the actual product shall prevail. The section introduces the cables as complete as possible.
- Sub aviation connector cable is not included with the Camera, and is sold separately.

Figure 2-2 Main aviation connector cable

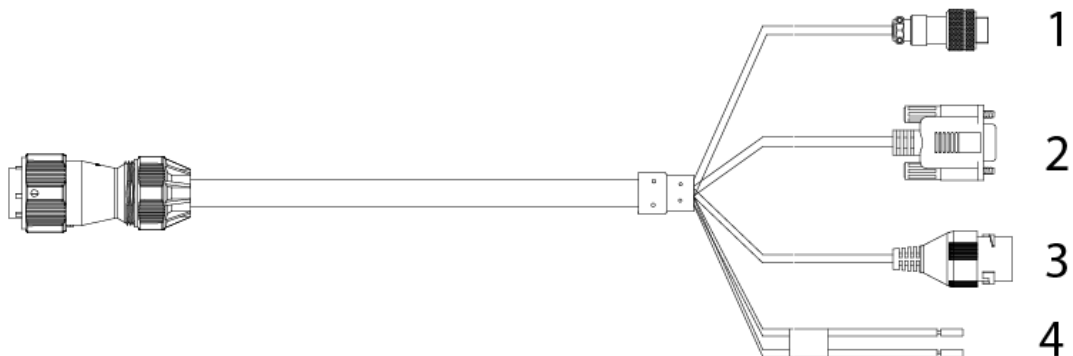



Table 2-4 Main aviation connector cable description

No.	Name	Description
1	12 V power input	<p>Inputs 12 V DC power.</p> 

No.	Name	Description
		Make sure that you supply power as instructed on device label; otherwise the Camera might be damaged.
2	Serial port	Connects to PC for debugging.
3	Network port	Connects to standard Ethernet cable for network connection.
4	RS-485 port	Connects to PTZ for controlling external PTZ.

Figure 2-3 Sub aviation connector cable

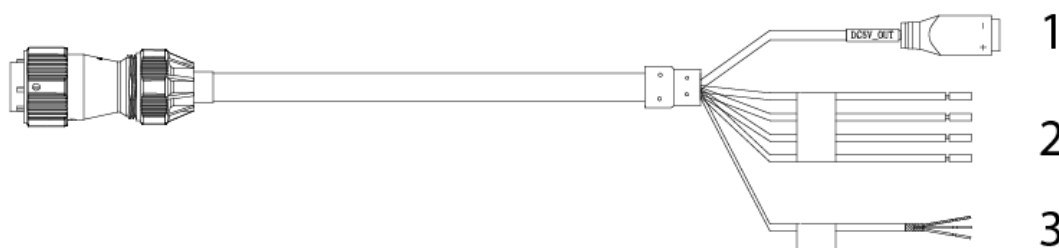


Table 2-5 Sub aviation connector cable description

No.	Name	Description
1	5 V output	Outputs 5 V DC power to supply power for peripheral device.
2	Alarm input and output	Connects to alarm input and output device.
3	Audio input and output	Connects to audio device.

## 2.2.1 Alarm Cable Connection

Here are the alarm cable connection and configuring procedure.

**Step 1** Connect the alarm input device to alarm input cable of the Camera.

**Step 2** Connect the alarm output device to alarm output cable of the Camera.



The alarm output is relay switch output.

**Step 3** Go to the web interface of the Camera to complete settings for alarm input and output devices. The alarm input on the web interface is corresponding to the alarm input of the camera cable. Set the corresponding NO and NC output according to the high and low level signal generated by alarm input devices when alarms are triggered.

**Step 4** Set the alarm output of camera cable on the web interface.

## 2.2.2 Video Cable Requirements

- 75  $\Omega$  impedance.
- Pure copper cored cables.
- 95% braided copper shielding.

Table 2-6 Cables and maximum transmission distance

Model	Maximum Transmission Distance
RG59/U	750 ft/229 m

Model	Maximum Transmission Distance
RG6/U	1,000 ft/305 m
RG11/U	1,500 ft/457 m

## 2.2.3 RS-485 Cable Requirements

When using 0.56 mm (24AWG) twisted-pair line, depending on different baud rates, the theoretical maximum transmission distance is different.

Table 2-7 Theoretical maximum transmission distance

Baud Rate	Maximum Transmission Distance
2400 bps	1800 m
4800 bps	1200 m
9600 bps	800 m

The maximum transmission distance will be reduced in the following conditions: When thinner communication cables are used; the Camera is used in places with intense electromagnetic interference; too many devices are connected to the bus. Otherwise, maximum transmission distance will be increased.

## 2.2.4 Selecting Power Cable

For 12V DC power supply, see "Appendix 2 Cable Diameter (12V DC) and Transmission Distance".

## 2.3 Dimensions

Figure 2-4 Camera dimensions

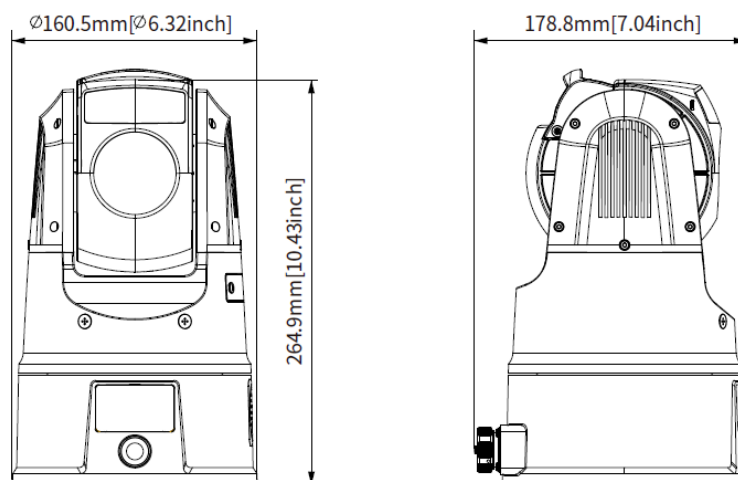
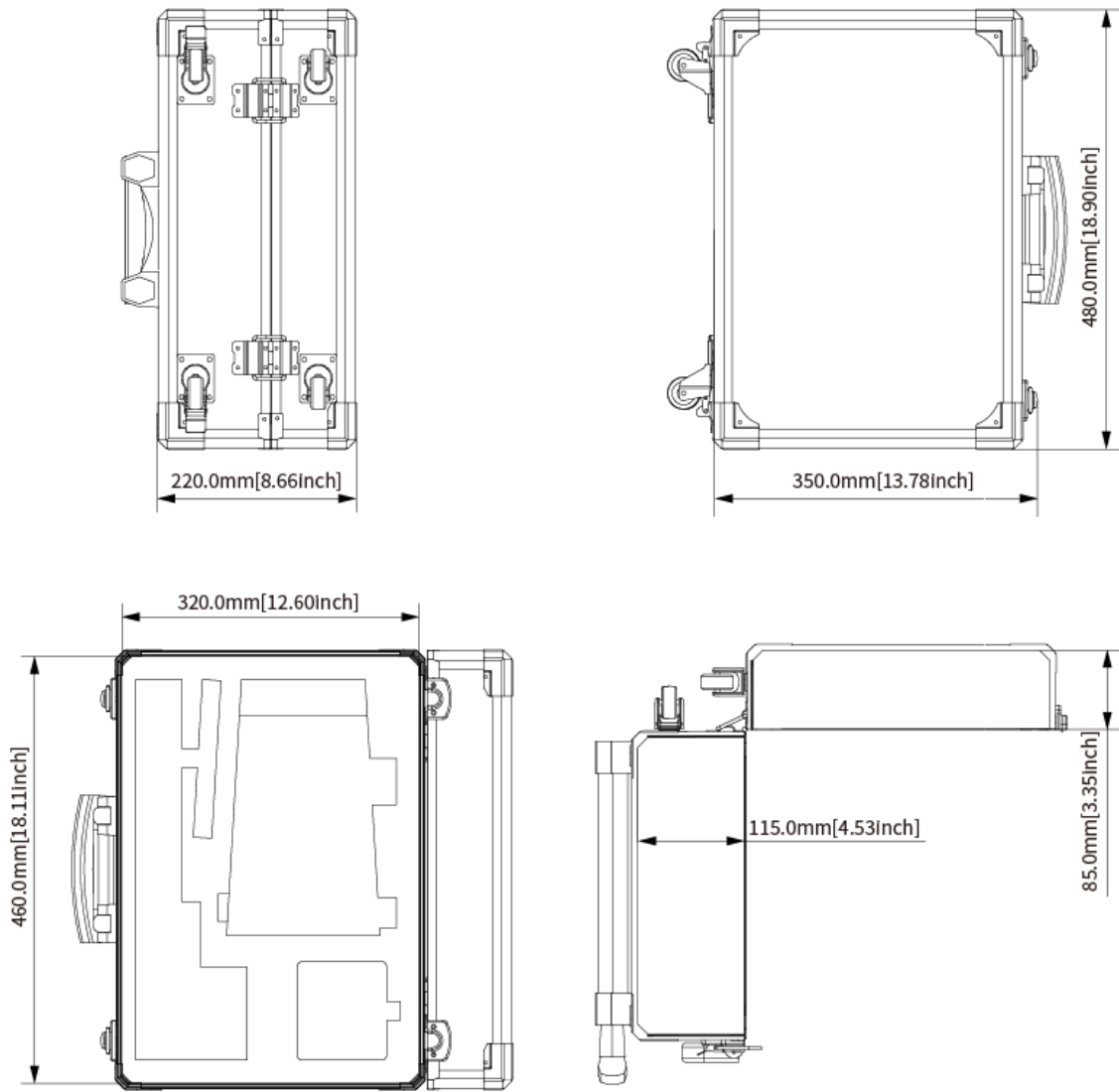


Figure 2-5 Trolley case dimensions



# 3 Device Installation

## 3.1 Preparation

### 3.1.1 Basic Requirements

- All installation and operations shall conform to your local electrical safety regulations, fire protection regulations, and other relevant regulations.
- Make sure that the application scenario conforms to installation requirements. Contact your local retailer or customer service center if there is any problem.
- Use the Camera according to the operating environment.
- Keep the original packing material well because you might need it to pack the Camera and send it back for repair.

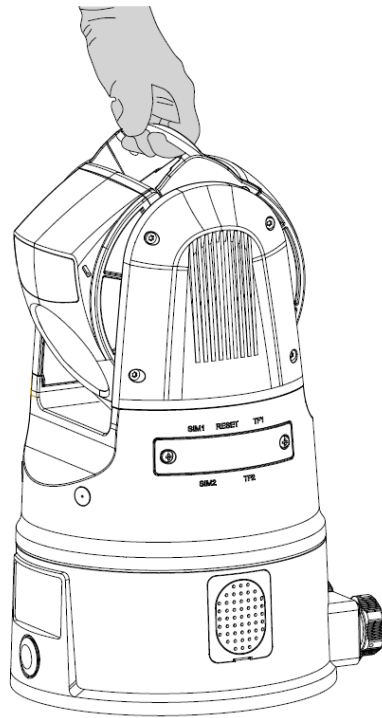
### 3.1.2 Installation Check

- Make sure that the installation location has enough space to hold the Camera and its mounting accessories.
- Make sure that the installation surface can sustain 8 times the weight of the Camera and its mounting accessories.
- Make sure that the installation surface is thick enough to install expansion bolts (Users need to buy expansion bolts separately).

## 3.2 Precautions

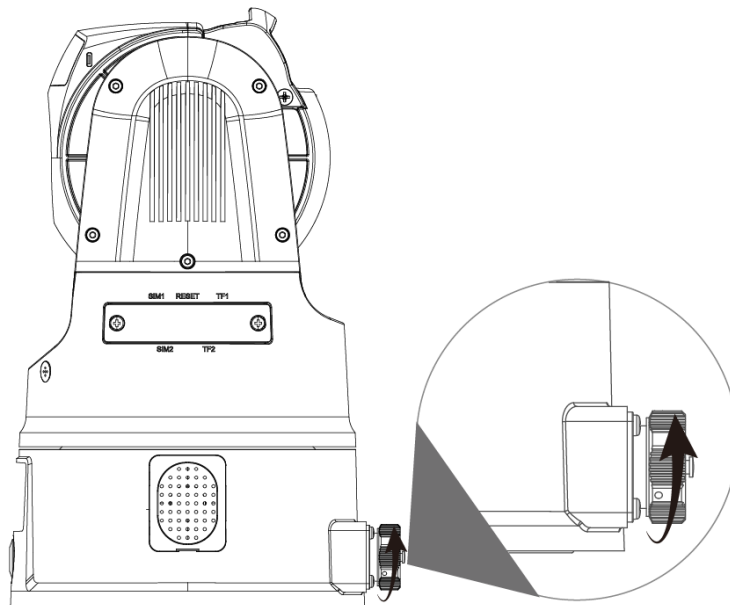
- Lift the Camera with the handle. Do not carry it by pulling the cable.

Figure 3-1 Lift through the handle



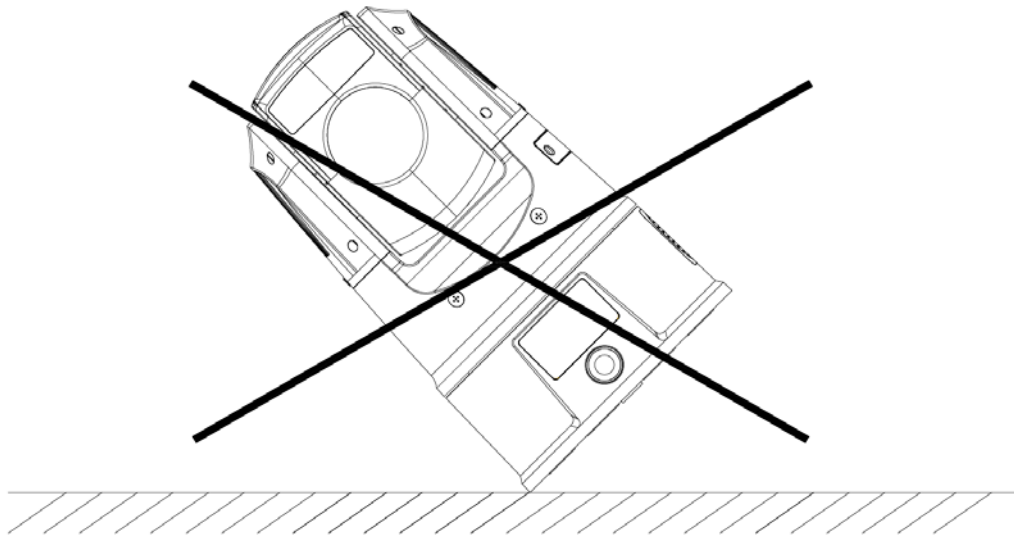
- When the aviation connector is not in use, tighten the cover of the connector to avoid water entering into it.

Figure 3-2 Tighten aviation connector



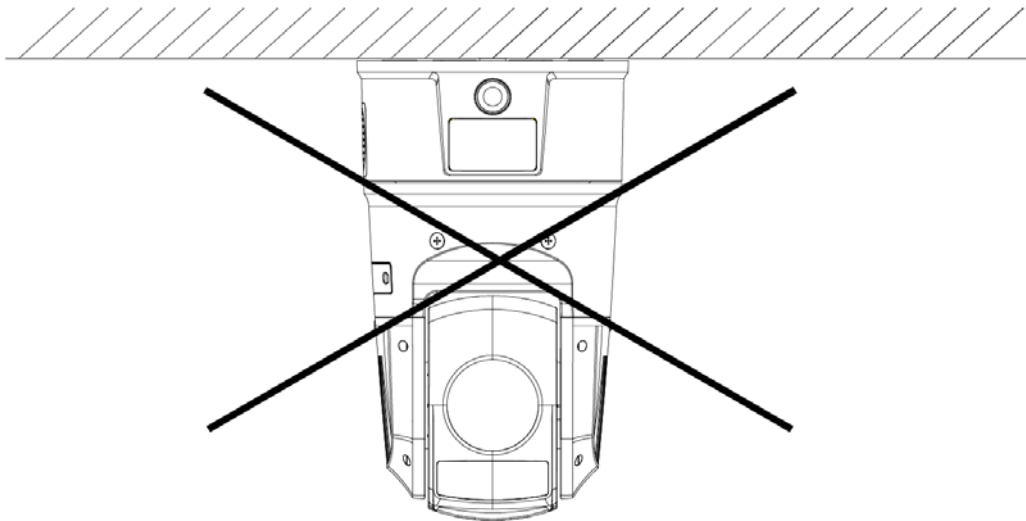
- When using the Camera, place it in a stable place to avoid falling.

Figure 3-3 Avoid falling



- Do not put the Camera upside down.

Figure 3-4 Avoid putting upside down



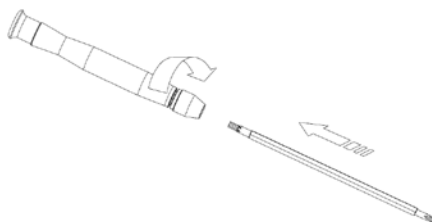
### 3.3 Installing SIM Card and Memory Card



Dual TF cards and SIM cards are supported by select models, and the actual product shall prevail.

Step 1 Connect the screwdriver handle and head.

Figure 3-5 Assemble screwdriver





- Step 2** Remove the protective cover from the Camera.  
You can see TF1 and TF2 card slots and SIM1 and SIM2 card slots.

Figure 3-6 Remove protective cover

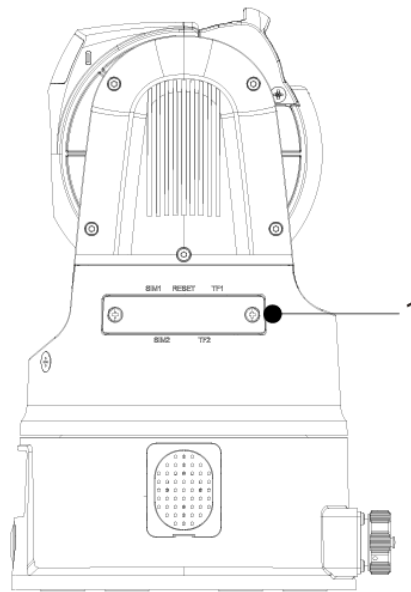


Table 3-1 Protective cover

No.	Name
1	Protective cover

- Step 3** Install TF card and SIM card as needed.

When installing devices supporting dual TF cards and dual SIM cards, pay attention to the following points.

- Insert the SIM card into the SIM1 card slot or SIM2 card slot with the gold contacts facing down and facing up respectively.
- Insert the TF card into the TF1 card slot or TF2 card slot with the gold contacts facing down and facing up respectively.



If you want to replace the TF card or SIM card, press the inserted card to allow it to pop out.

- Step 4** Install the protective cover back and tighten the screws.



After inserting the SIM card, you need to restart the Camera for the card to take effect.

## 3.4 Installing Camera

After assembling the tripod, install the Camera onto the tripod for easy operation and capture.



The tripod is not included in the packing box. You can buy it separately.

- Step 1** Assemble the tripod.

- 1) Take out the tripod, press the leg button, and then rotate the three legs by 150° in the direction indicated by the arrow.

Figure 3-7 Extend tripod

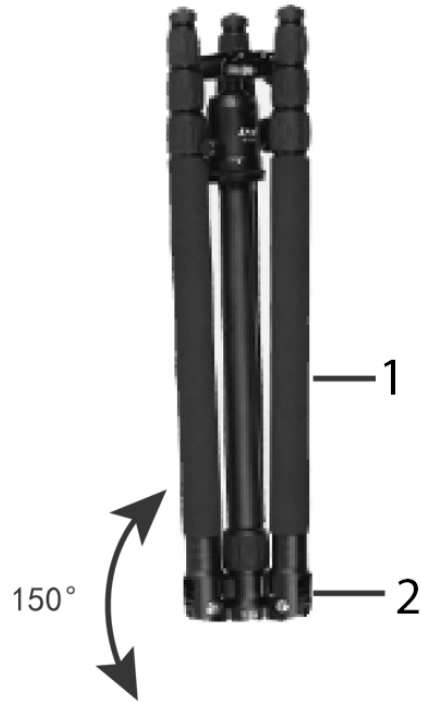


Table 3-2 Extend tripod

No.	Name	No.	Name
1	Leg	2	Leg button

2) Adjust the tripod to a proper height through the knob.

Figure 3-8 Adjust tripod height

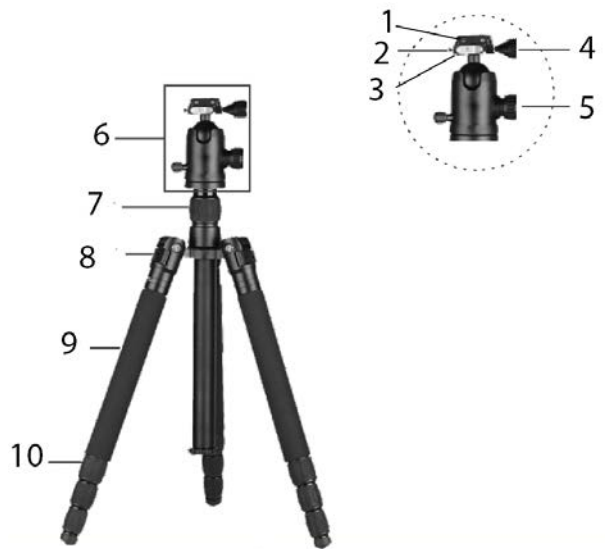


Table 3-3 Tripod description

No.	Component	Description
1	Mounting plate	For fixing the Camera to the tripod. You can adjust the angle of the external level by rotating the button next to it.
2	Retractable button	
3	External level	
4	Fastening knob	Locks external level.
5	Locking knob	Locks tripod head to prevent it from rotating.

No.	Component	Description
6	Tripod head	—
7	Central axis fastening knob	Adjust the tripod head to a proper height for capturing images.
8	Leg button	Press the button to flexibly adjust the expansion angle of the legs to adapt to different environments.
9	Leg	—
10	Leg adjusting knob	Adjust the leg length.

**Step 2** Install the Camera.

- 1) Press and hold the retractable button next to the external level to detach the mounting plate on the level.



Only after detaching the mounting plate, can you install the tray coming with the Camera onto the PTZ.

- 2) Install the tray onto the tripod head, adjust it to a proper height, and then tight the fastening knob to fix the mounting tray.

Figure 3-9 Fix mounting tray



Table 3-4 Fix mounting tray

No.	Name	No.	Name
1	Mounting tray	2	Fastening knob

3) Magnetically attach the Camera to the mounting tray.

Figure 3-10 Installation complete



## 3.5 Charging Battery



Transport, use, and store the Camera under the allowed temperature conditions. Due to the physical characteristics of the battery, when the ambient temperature is above or below a certain value, the Camera may be slow to charge, unable to charge or have abnormal discharge.

When battery level is low, you can charge it in three ways.

- Direct charging: Connect the Camera to a socket through the power adapter. The socket supplies power to the battery through the Camera. Charging status is displayed on the screen.

Figure 3-11 Direct charging

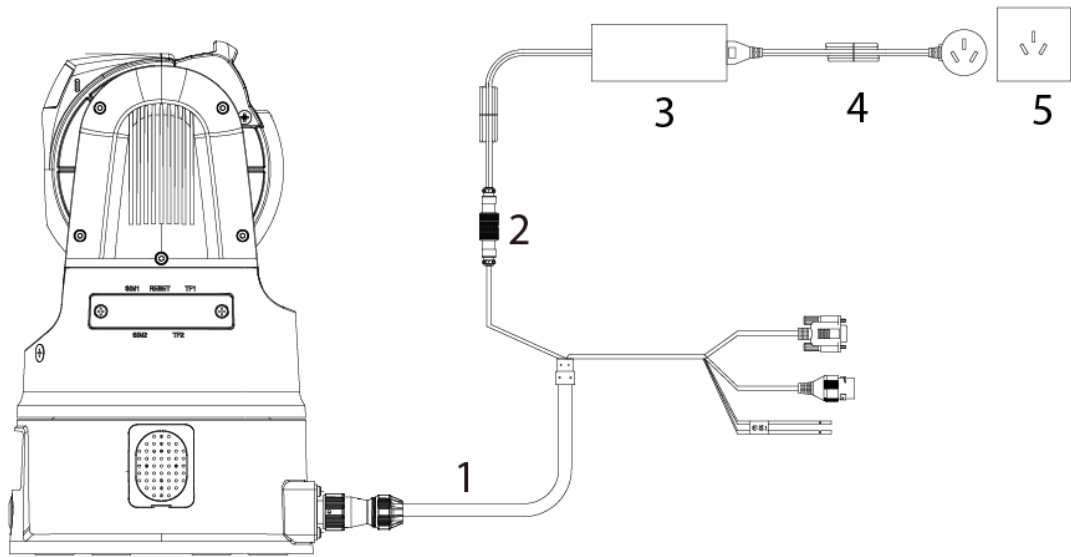


Table 3-5 Direct charging description

No.	Name	No.	Name
1	Main aviation connector cable	2	12 V power input port
3	Power adapter	4	Power cord
5	Socket	—	—

- Connect battery to socket: Press the retractable sheet on two sides of the battery, and then lift to take out the battery. Charge the battery through the base charger which is not included in the packing box. You can buy it separately.

Figure 3-12 Take out the battery

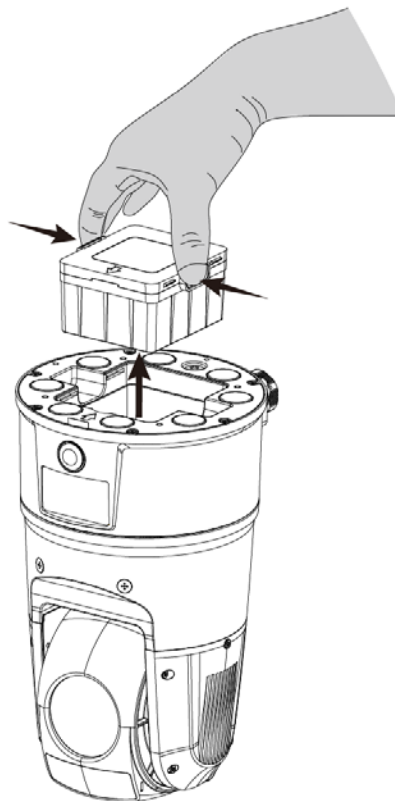


Figure 3-13 Connect battery to socket

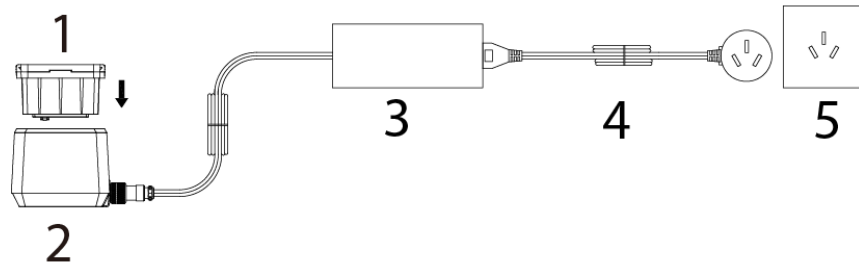


Table 3-6 Connect battery to socket

No.	Name	No.	Name
1	Battery	2	Base charger
3	Power adapter	4	Power cord
5	Socket	—	—

- Powered by cigarette lighter: Press the retractable sheet on two sides of the battery, and then lift to take out the battery. See Figure 3-12. Charge the battery through the cigarette lighter. Vehicle power adapter is not included in the packing box. You can buy it separately.

Figure 3-14 Powered by cigarette lighter

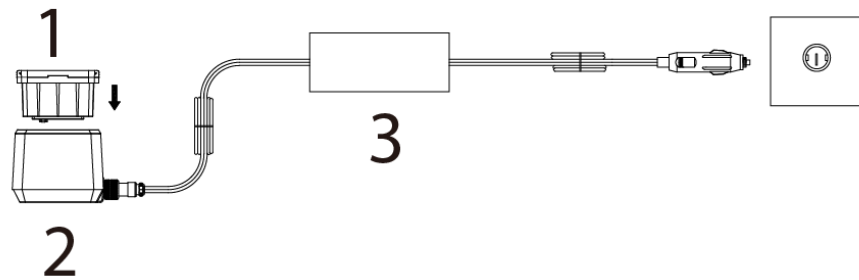


Table 3-7 Powered by cigarette lighter

No.	Name	No.	Name
1	Battery	2	Base charger
3	Vehicle power adapter	—	—



When installing the battery, make sure that your force goes to the buckles. Press the buckles on one side, press the buckles on another side, and then press the battery with both hands until you hear a snap, which means the buckle clamps in place. Repeatedly press the battery to make sure all 4 buckles are in place; otherwise it may cause poor battery contact or reduce water resistance of the Camera.

Figure 3-15 Install battery

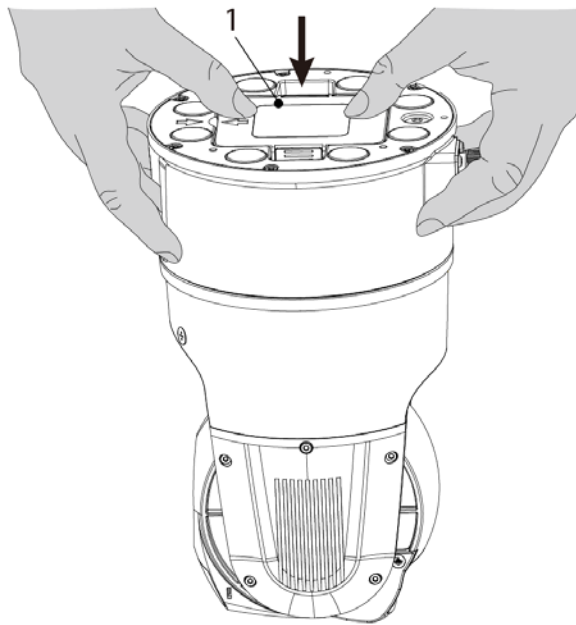


Table 3-8 Install battery

No.	Name
1	Battery

# 4 Device Operations



The following interfaces are for reference only, and the actual interface shall prevail.

## 4.1 Initializing Camera

You need to initialize the Camera for first-time usage or after it is restored to factory settings, including setting password of admin user, selecting upgrade method and more. The section introduces how to initialize the Camera on web interface. You can also initialize it through ConfigTool, NVR (Network Video Recorder) and platform.



- For device safety, keep your login password of admin well after initialization, and change the password regularly.
- When initializing the Camera, keep the PC IP and device IP in the same network.

**Step 1** Open IE browser, enter the IP address of the Camera (192.168.1.108 by default) in the address bar, and then press the Enter key.

**Step 2** Set the login password and email address (optional) of the admin account, and then click **Save**.



The email address is for password reset, and it is selected by default. When you need to reset the admin password by scanning the QR code, you need an email address to receive the security code.

Figure 4-1 Device initialization

**Device Initialization**

Username: admin

Password: [masked] **Strong**

Confirm Password: [masked]

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

**Save**

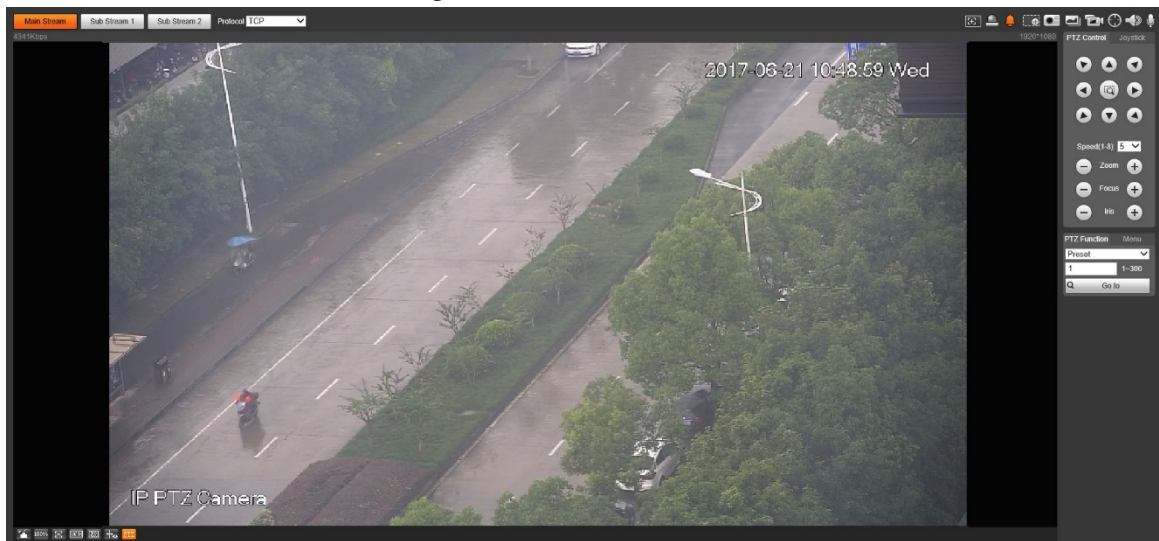
**Step 3** Complete the rest of the configuration by following on-screen instructions, and then click **OK**.



## 4.2 Logging in to the Camera

- Step 1** Open IE browser, enter the IP address of the Camera (192.168.1.108 by default) in the address bar, and then press Enter.
- Step 2** Enter the username and password, and then click **Login**.  
The username is admin by default.
- Step 3** Download and install the plug-in according to the on-screen instructions.  
After the plug-in is installed, the web interface is refreshed automatically, and the video is displayed on the **Live** interface.

Figure 4-2 Live view



## 4.3 Changing IP Address


Configure IP address, DNS (Domain Name System) server and more according to network planning. Make sure that the Camera can connect to other devices in the network.

- Step 1** Select **Setting > Network > TCP/IP**.
- Step 2** Enter the IP address, subnet mask, default gateway, and other parameters.

Figure 4-3 TCP/IP

Table 4-1 TCP/IP parameter description

Parameter	Description
Host Name	The name of the Camera, 15 characters at most.
Ethernet Card	Select the network adapter to be set. Both wired and wireless are supported, and <b>Wire(Default)</b> is set by default.
Set as Default Card	Set <b>Wireless</b> or <b>Wire(Default)</b> as default network adapter according to the actual network connection. When the Camera is connected to network through both wired and wireless mode, and the user accesses the Camera across network segments, the Camera transmits data with the default network adapter.
Mode	Set the method with which the Camera obtains IP address. <ul style="list-style-type: none"> <li>• Static: Configure <b>IP Address</b>, <b>Subnet Mask</b>, and <b>Default Gateway</b> manually, and then click <b>Save</b>. The login interface with the configured IP address is displayed.</li> <li>• DHCP (Dynamic Host Configuration Protocol): If there is a DHCP server in the network, select <b>DHCP</b>, and the Camera can automatically obtain dynamic IP address. You do not need to manually configure the IP address.</li> </ul>
MAC Address	Displays the MAC (Media Access Control) address of the Camera.


Parameter	Description
IP Version	Select address format from <b>IPv4</b> or <b>IPv6</b> .
IP Address	When selecting <b>Static</b> as the mode, you need to enter the IP address, subnet mask, and default gateway according to network planning.
Subnet Mask	
Default Gateway	 <ul style="list-style-type: none"> <li>• No subnet mask for IPv6.</li> <li>• IP address and default gateway must be in the same network segment.</li> </ul>
Preferred DNS	IP address of the DNS server.
Alternate DNS	Alternate IP address of the DNS server.
MTU	<p>Adjust MTU value of the network adapter according to the network environment and communication conditions to achieve great transmission. 1500 byte is selected by default. Changing MTU will restart the network adapter, resulting network disconnection and affecting running network services.</p> <p>Here are the recommended MTU values.</p> <ul style="list-style-type: none"> <li>• 1500: The maximum value of Ethernet information package. It is the default value. This is the typical setting without PPPoE or VPN in connection, and it is also the default value of some routers, network adapters, and switches.</li> <li>• 1492: Optimized value for PPPoE.</li> <li>• 1468: Optimized value for DHCP.</li> <li>• 1450: Optimized value for VPN.</li> </ul>
Enable ARP/Ping to set IP address service	<p>Select the check box, and if you know the MAC address of the Camera, you can change and configure the IP address with ARP/ping command.</p> <p>After the function is enabled, you can set the device IP address by using a ping packet of a specific length within 2 minutes. The service is closed after 2 minutes or after the IP address is set successfully.</p>

Step 3 Click **Save**.

## 4.4 Connecting to DMSS App

DMSS App is a mobile monitoring software that is designed for professional security surveillance. It has functions such as live view, video playback, alarm notification push, and cloud storage. The Camera can be used with the app for easy monitoring and management.

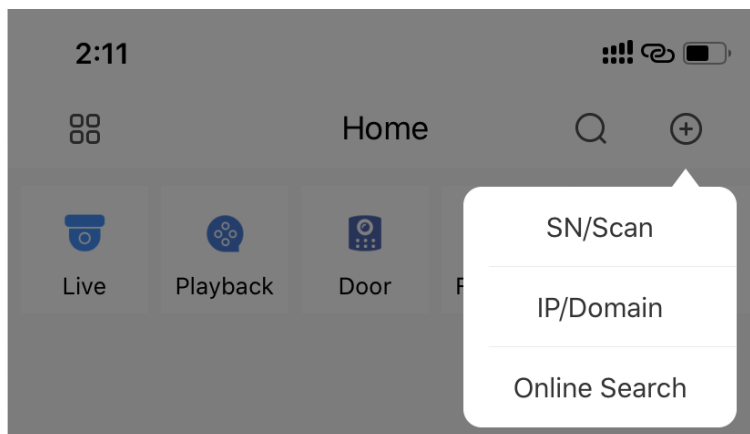
Step 1 Download DMSS APP on app stores such as Google Play, and then install the app on the mobile phone.

Step 2 Open the app, go to the **Home** interface, tap , and then select **SN/Scan**.



Before adding the Camera, make sure that it is powered on.

Figure 4-4 Home



**Step 3** Scan the QR code on the Camera, or manually enter SN, and then tap **Next**.

Figure 4-5 Scan QR code



**Step 4** Select **Wireless Camera**, tap **⋮** at the upper right corner, select **Switch to AP configuration**, and then tap **Next**.

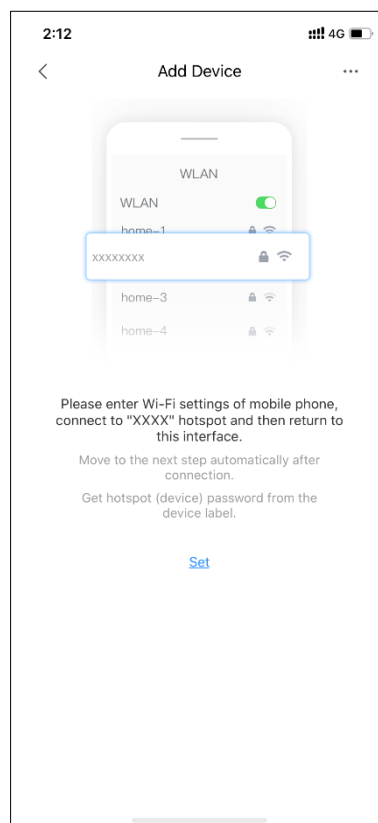
Figure 4-6 Switch network configuration



**Step 5** Connect the mobile phone to the hotspot of the Camera.

- 1) Tap **Set** on the following interface to enter Wi-Fi settings of the mobile phone.

Figure 4-7 Set Wi-Fi



- 2) Select the network (named "DAP-device SN") of the Camera, enter the password, and then tap **Join**.



The safety code on the device is the initial password.

Figure 4-8 Enter password

Enter the password for "DAP- [redacted]"

Cancel      Enter Password      Join

Password

## 4.5 Basic Operations

### 4.5.1 Configuring 4G or 5G

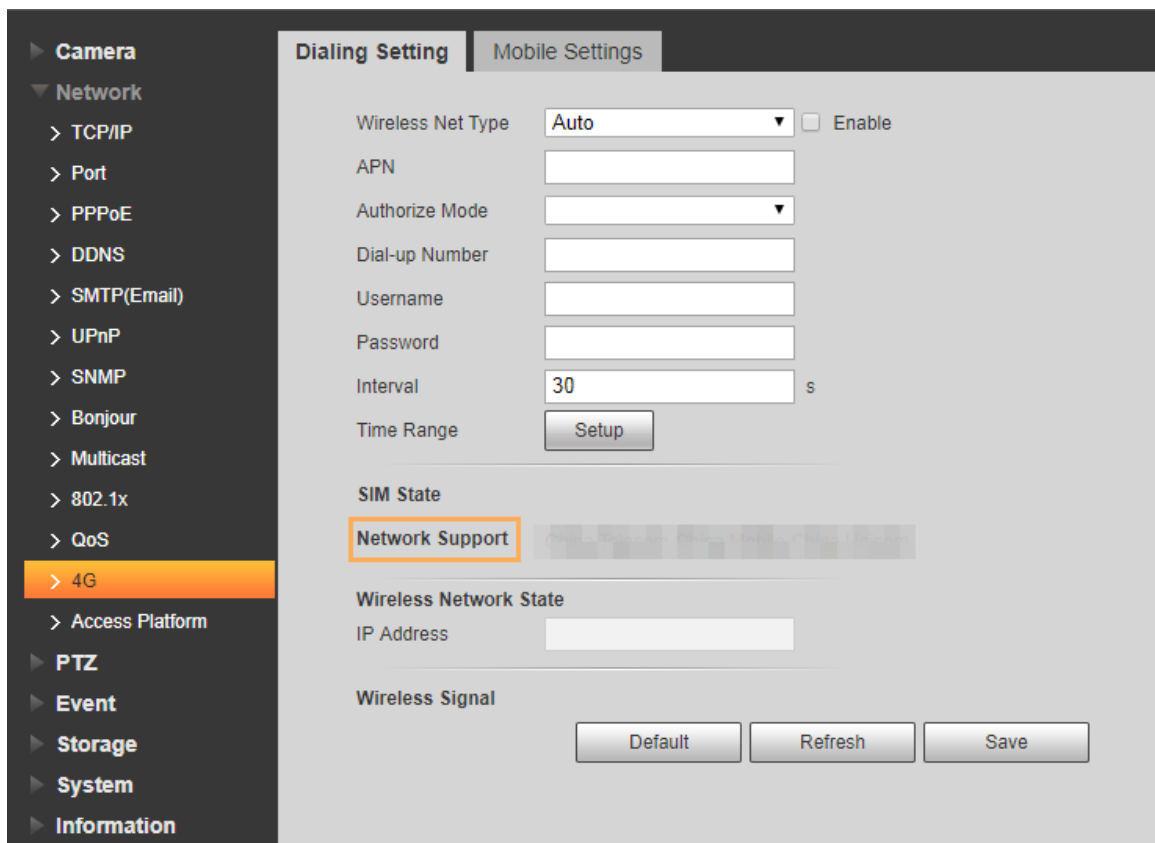


- 5G is available on select models, and this section takes 4G as an example.
- Dual network adapters are supported by select models, and the actual interface shall prevail.

#### 4.5.1.1 Dialing Setting

Step 1 Log in to web interface, select **Setting > Network > 4G > Dialing Setting**.

Figure 4-9 Dialing setting interface



Some devices only support certain mobile carriers, and only the supported carriers are displayed in **Network Support**.

**Step 2** Select the **Enable** check box.

**Step 3** Enter **APN**, **Authorize Mode**, **Dial-up Number**, **Username**, and **Password** according to the SIM card inserted.



These parameters might vary by countries. Contact local carrier or customer service for details.

**Step 4** Set the period to use 4G.



- If the current time is in the period you set, 4G network connection will be enabled. The IP address of the SIM card will be displayed in IP Address. And you can access the device through 4G after finishing the rest steps.
- If the current time is not in the period you set, 4G network connection will not be enabled. Only the corresponding **Wireless Signal** is displayed on the interface. And you cannot access the device through 4G.

Figure 4-10 Period setting

The screenshot shows a 'Period' configuration window. At the top, there is a 24-hour grid for each day of the week (Sun-Sat). A red bar highlights the entire 24-hour period for each day. Below the grid, there are checkboxes for 'All', 'Sun', 'Mon', 'Tue', 'Wed', 'Thu', 'Fri', and 'Sat'. The 'Sun' checkbox is checked. Below that, there are six 'Period' settings (Period1 to Period6). Each period has a checkbox and a time range field. Period1 is checked and has a time range of '00 : 00 : 00 - 23 : 59 : 59'. The other periods are unchecked and have the same time range. At the bottom, there are 'Save' and 'Cancel' buttons.

**Step 5** Set the interval to enable 4G through message or phone call if you want to use 4G outside the period set in Step 3.



The value range is 0–7200 s and it is 30 s by default. If the interval is 30 s, after activating 4G, you can use it for 30 s. After 30 s, you need to activate 4G again. If you set the interval to 0 s, you can use 4G without disconnection and you do not need to activate it again. For the method to activate 4G through message or phone call, see "4.2.12.2 Mobile Setting."

**Step 6** Click **Save**.

### 4.5.1.2 Mobile Setting

Log in to web interface, select **Setting > Network > 4G > Mobile Settings**, and the **Mobile Setting** interface is displayed.

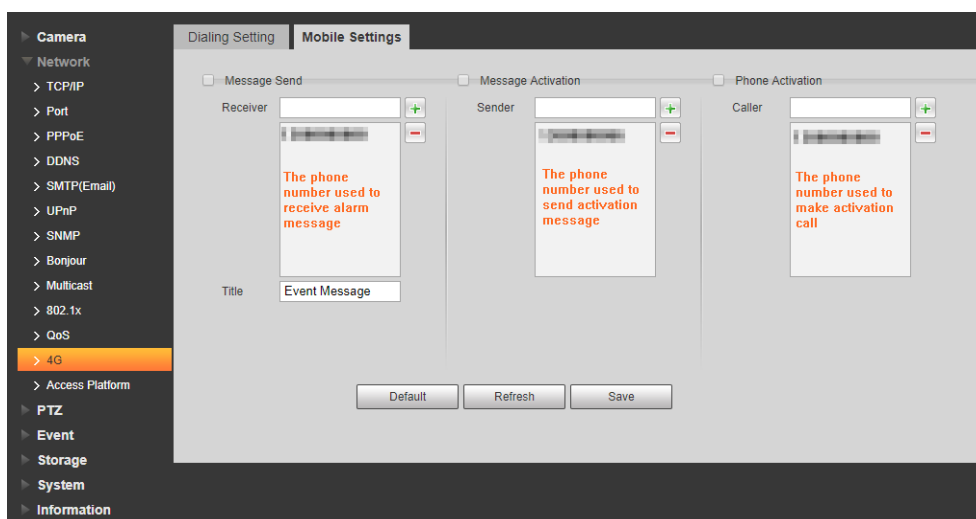
You can add the phone number to receive alarms. You also can add phone number used to activate 4G through message or phone call if you want to use 4G outside the period set in Step 3 of "4.5.1.1 Dialing Setting."



Make sure that you add international calling codes before the phone number to avoid unnecessary charges caused by phone calls or messages to other countries or regions.



Figure 4-11 Mobile setting interface



- **Message Send:** When alarms are triggered, the phone number added will receive message.
- **Message Activation:** You can enable 4G through message outside the period you set to use 4G. You need to send "ON" or "OFF" to phone number of the SIM card in the Device. "ON" indicates enabling, and "OFF" indicates disabling.
- **Phone Activation:** You can enable 4G through phone calls outside the period you set to use 4G. You need to call the phone number of the SIM card in the Device. If the call gets through, it means 4G has been enabled.



- Make sure that your SIM card supports making phone calls and sending messages, and it can be used normally.
- Make sure that you use activation function outside the time range you set; otherwise it does not work.

**Step 1** Select the check box of the service you need to enable. You can select one or more services.

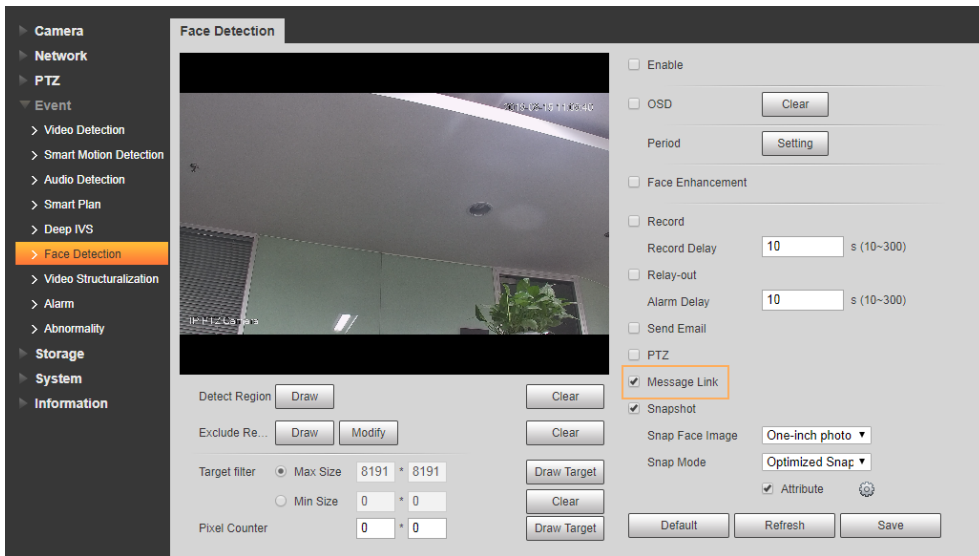
**Step 2** Enter the phone number and click  to add it.

**Step 3** Click **Save**.

**Step 4** Select the **Message Link** check box on the interface of the event for which you want to receive message.

Take Face Detection for example. Click **Setting > Event > Face Detection** and select the **Message Link** check box.

Figure 4-12 Message link



**Step 5** Click **Save** on the interface of the corresponding event.  
You will receive message if an alarm is triggered.

## 4.5.2 Configuring SD Card Storage

### 4.5.2.1 Configuring Storage Path

**Step 1** Select **Setting > Storage > Destination > Path**.

**Step 2** Set **Local** as the destination, which means data will be stored in SD card.

Figure 4-13 Path



**Step 3** Click **Save**.

### 4.5.2.2 Configuring Local Storage

SD card information is displayed in the local storage list. You can set it as read only or read & write. You can also hot swap or refresh it.



Dual SD cards are supported by some devices. For such devices, the SD card first inserted is called Local Disk 1, and the SD card inserted later is called Local Disk 2. If no recordings in both cards, the recording will be saved to Local Disk 1, and then saved to Local Disk 2 when Disk 1 is full. If there are recordings in both cards, the recording will be saved to the card with latest recordings, and then saved to the other card when this card is full.

**Step 1** Select **Setting > Storage > Destination > Local**.

**Step 2** Select the SD card to be set, and then perform the following operations as needed.

- Click **Read Only** to set the SD card to be read only.
- Click **Read & Write** to set the SD card to be read and write.
- Click **Hot Swap** to remove or insert the SD card when the Camera is running.
- Click **Format** to format the SD card.



After formatting the SD card, all data on it will be cleared. Be cautious.

Figure 4-14 Local storage



### 4.5.2.3 Configuring General Recording

After enabling general recording, the system will record videos in the configured period.

**Step 1** Select **Setting > Storage > Schedule > Record**.

**Step 2** Select **General** as the recording type, and then press and hold the left mouse button and drag to set the recording period.

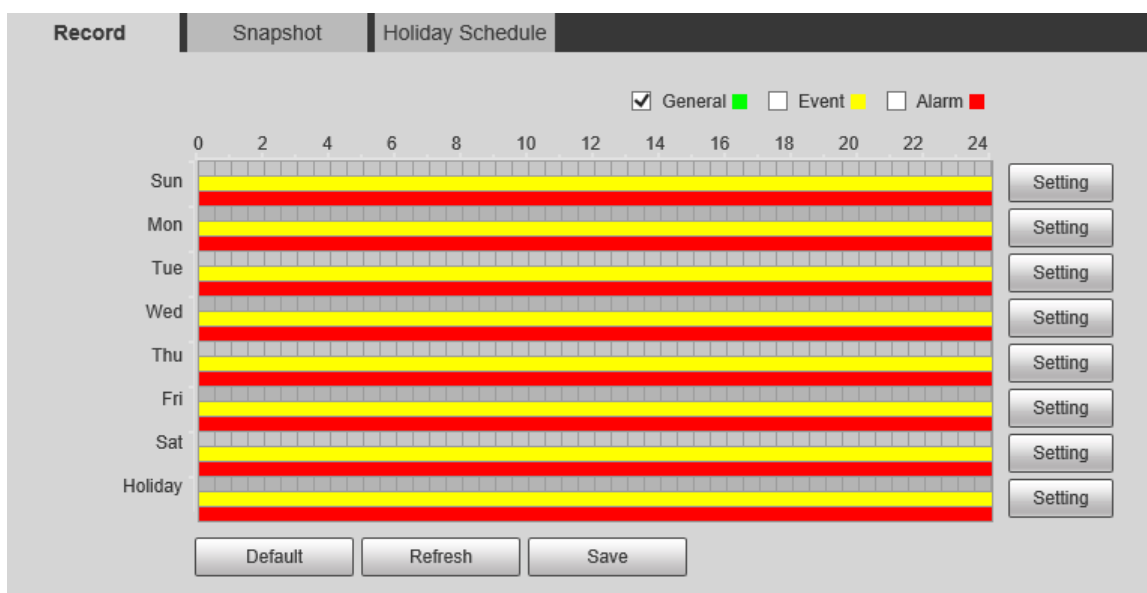
You can also click **Setting**, and then set general recording period on the interface displayed.



You can also select **Event** or **Alarm** as the recording type, and then set the recording plan.

When smart events occur or alarms are triggered, the system will record videos.

Figure 4-15 General recording



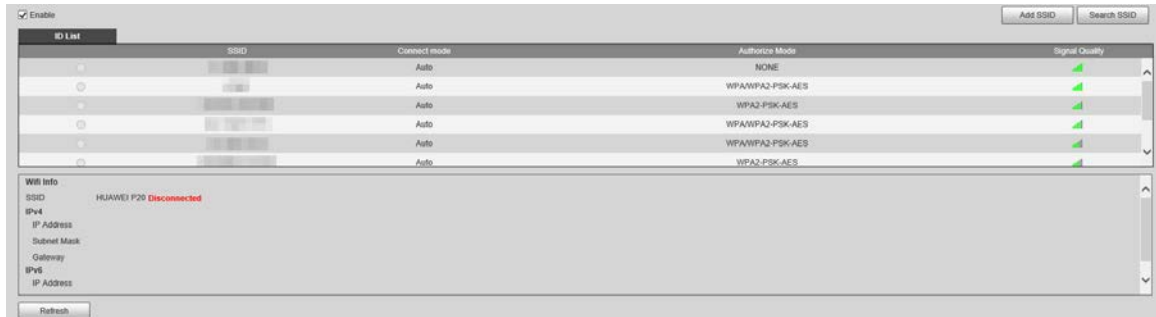
**Step 3** Click **Save**.

## 4.5.3 Configuring Wi-Fi

**Step 1** Select **Setting > Network > WIFI > WIFI**.

**Step 2** Select **Enable**.

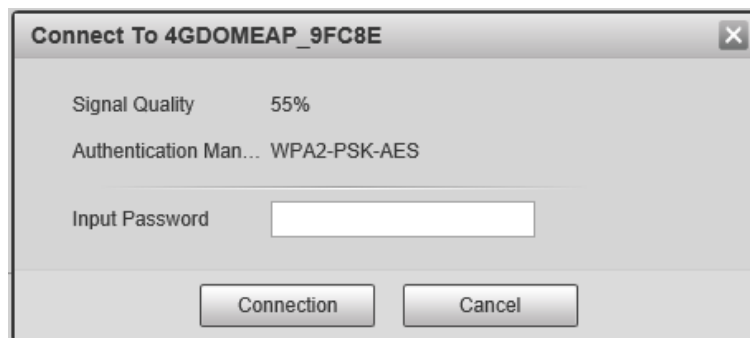
Figure 4-16 Wi-Fi



**Step 3** Connect to Wi-Fi network.

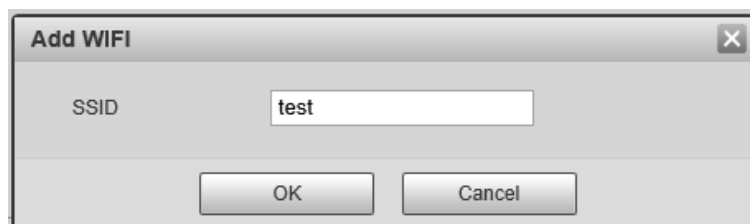
- By searching
  1. Click **Search SSID**.  
The Wi-Fi hotspots in the current environment are displayed in the list.
  2. Click the Wi-Fi network to be connected.
  3. Enter the password.  
If password is not required, click **Connection**.

Figure 4-17 Connect to Wi-Fi by searching



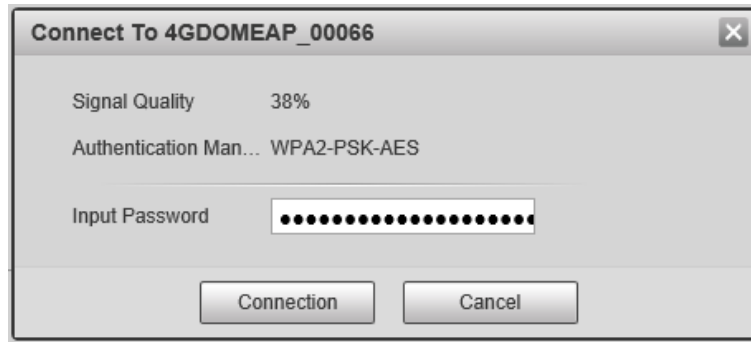
4. Click **Connection**.
- Manually add Wi-Fi network (When no Wi-Fi can be searched because SSID broadcast is disabled or other reasons, you can select this method.)
    1. Click **Add SSID**.
    2. Enter the SSID, and then click **OK**.

Figure 4-18 Manually add Wi-Fi (1)



3. Enter the password.  
If password is not required, click **Connection**.

Figure 4-19 Manually add Wi-Fi (2)



4. Click **Connection**.

Step 4 Click **Refresh** to display connection status.

## 4.5.4 Configuring AP

You can use the Camera as wireless AP (Access Point), and other devices such as mobile phones can connect to the Camera by searching for the network name. You can then log in to the Camera through the browser on your device. At most 5 accounts can log in to the Camera at the same time. AP and Wi-Fi cannot be both enabled at the same time, and AP is disabled by default.

### Procedure

Step 1 Select **Setting > Network > WIFI > AP**.

Step 2 Select **Enable**, and then set AP information.

Figure 4-20 AP settings

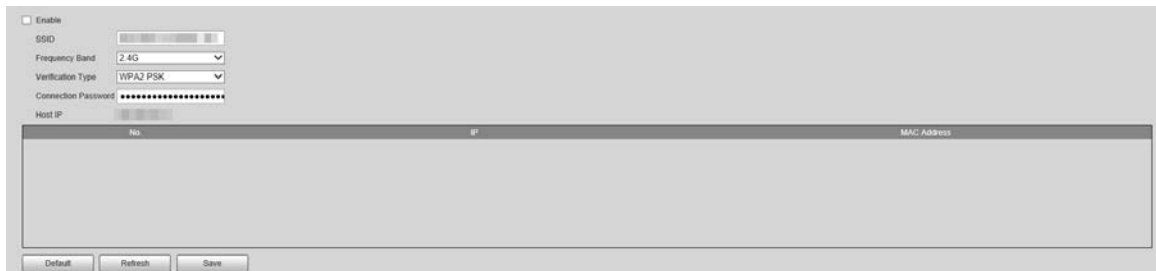


Table 4-2 AP parameter description

Parameter	Description
SSID	The default name is "device serial number_SD".
Frequency Band	Both 2.4G and 5G are available.
Verification Type	It is <b>WPA2 PSK</b> by default, and cannot be changed.
Connection Password	Set the connection password which is required when other devices connect to the Camera. It is 12345678 by default.
Host IP	Displays the IP address of AP.

Step 3 Click **Save**.

## Result

**Step 1** Open your device such as mobile phone, search for the network name of the AP in the wireless signal list, and then connect to the network.

After it is successfully connected, the IP address and MAC address of the device is displayed on the **AP** interface.

**Step 2** Open a browser on your device, enter the host IP on the **AP** interface or IP address on the **TCP/IP** interface, and then you can go to the login interface of the Camera.

**Step 3** Enter the username and password, and then log in to the Camera.



Live view is available on select devices.

## 4.5.5 Configuring Bluetooth

You can connect the Camera to Bluetooth devices such as Bluetooth headset for voice broadcast of alarms and voice intercom with the platform.



The function is available on select models.

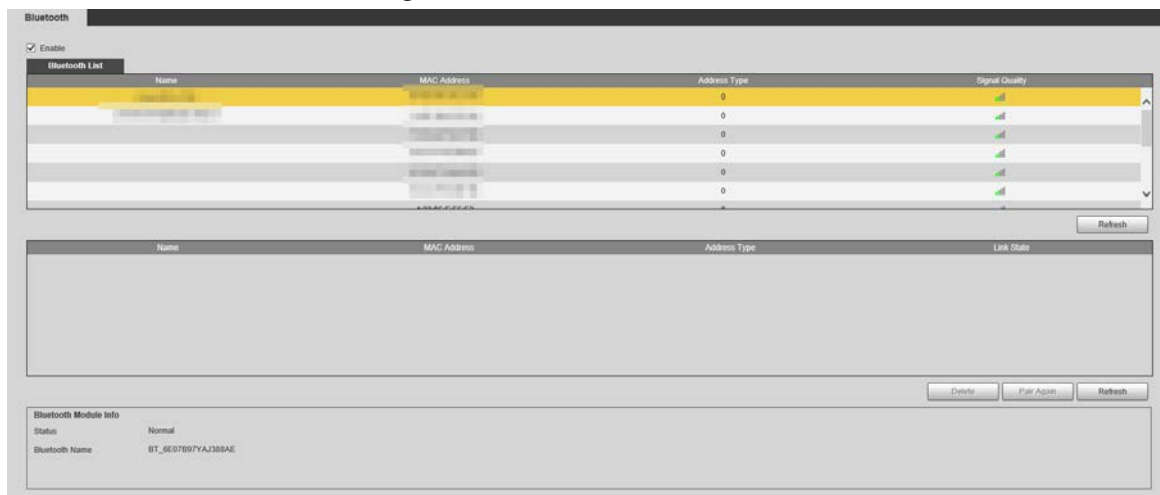
## Procedure

**Step 1** Select **Setting > Connection Settings > Bluetooth**.

**Step 2** Select **Enable**.

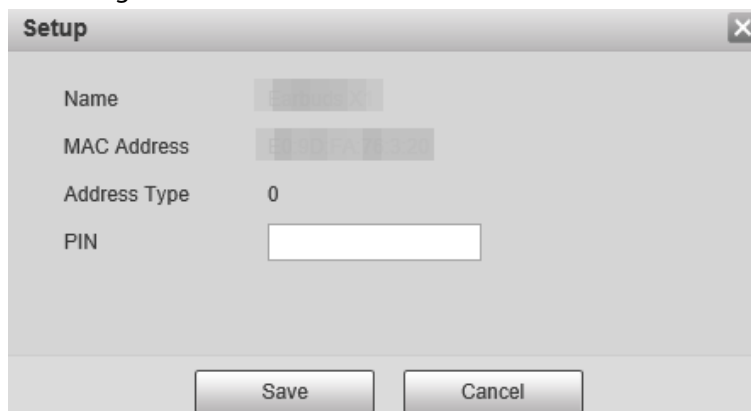
The searched Bluetooth devices are displayed in the **Bluetooth List**. Click **Refresh** at the lower-right corner of the list to search for **Bluetooth** devices again.

Figure 4-21 Bluetooth list



**Step 3** Double-click the name of Bluetooth device, and then set PIN on the **Setup** interface. For the PIN of the Bluetooth device, see the corresponding user's manual.

Figure 4-22 Connect to Bluetooth device



The screenshot shows a 'Setup' dialog box with the following fields and buttons:

- Name: [Redacted]
- MAC Address: [Redacted]
- Address Type: 0
- PIN: [Empty text box]
- Buttons: Save, Cancel

**Step 4** Click **Save**.

The connected Bluetooth device is displayed in the list below.

Figure 4-23 Paired Bluetooth devices



Name	MAC Address	Address Type	Link State
Earbuds X1	[Redacted]	0	Unconnected

Buttons: Delete, Pair Again, Refresh

Bluetooth Module Info:  
Status: Normal  
Bluetooth Name: [Redacted]

**Step 5** Select **Setting > Camera > Audio > Audio**, and then set audio input and audio output types to **Bluetooth**.

Figure 4-24 Audio

The screenshot shows the 'Audio' configuration page with a sub-tab for 'Alarm Audio'. It is divided into two main sections: 'Encode' and 'Attribute'.  
Under 'Encode', there are two sub-sections: 'Main Stream' and 'Sub Stream'. Each sub-section has an 'Enable' checkbox (checked), an 'Encode Mode' dropdown menu (set to 'G.711A'), and a 'Sampling Frequency' dropdown menu (set to '8000').  
Under 'Attribute', there are five settings: 'AudioIn Type' (Bluetooth), 'Audio Output Type' (Bluetooth), 'Noise Filter' (Disable), 'Microphone Volume' (slider), and 'Speaker Volume' (slider).  
At the bottom, there are three buttons: 'Default', 'Refresh', and 'Save'.

## Related Operations

- Click **Refresh** at the lower-right corner of the list to get information of paired Bluetooth devices again.
- Click **Pair Again** to quickly connect to Bluetooth devices paired before.
- Click **Delete** to delete the Bluetooth device.

## 4.5.6 Configuring Audio

You can set the audio input type, volume and more. After you enable main stream or sub stream, the network stream contains both audio and video; otherwise it is only video stream.



Before enabling sub stream audio, go to **Setting > Camera > Video > Video** to enable video in sub stream.

**Step 1** **Setting > Camera > Audio > Audio.**




**Step 2** Enable audio in main stream or sub stream.


**Step 3** Configure parameters.



Figure 4-25 Audio

Table 4-3 Audio parameter description

Parameter	Description
Enable	<p>Enable audio in main stream or sub stream.</p>  <p>Audio can be enabled only when video has been enabled.</p>
Encode Mode	The audio encoding mode selected here applies to both audio streams and voice talks. We recommend you to keep the default value.
Sampling Frequency	The number of audio signals sampled per second. The higher the sampling frequency, the more samples obtained per unit time, and the more accurate the restored audio signals.
AudioIn Type	<p>Set the audio input type.</p> <ul style="list-style-type: none"> <li>● <b>LineIn:</b> The Camera collects audio signals through an external audio device.</li> <li>● <b>Mic:</b> The Camera collects audio signals through the built-in microphone.</li> <li>● <b>Bluetooth:</b> The Camera collects audio signals through a Bluetooth device.</li> </ul>  <p>Bluetooth is available on select models.</p>
Audio Output Type	<ul style="list-style-type: none"> <li>● <b>LineOut:</b> The Camera outputs audio signals through an external audio device.</li> <li>● <b>Speaker:</b> The Camera outputs audio signals through the built-in speaker.</li> <li>● <b>Bluetooth:</b> The Camera outputs audio signals through a Bluetooth device.</li> </ul>  <p>Bluetooth is available on select models.</p>
Noise Filter	After the function is enabled, noise in the environment will be filtered.

Parameter	Description
NR (Noise Reduction) Level	Adjust the noise reduction level.  This parameter takes effect when noise filter is enabled.
Microphone Volume	Adjust the microphone volume.
Speaker Volume	Adjust the speaker volume.

Step 4 Click **Save**.

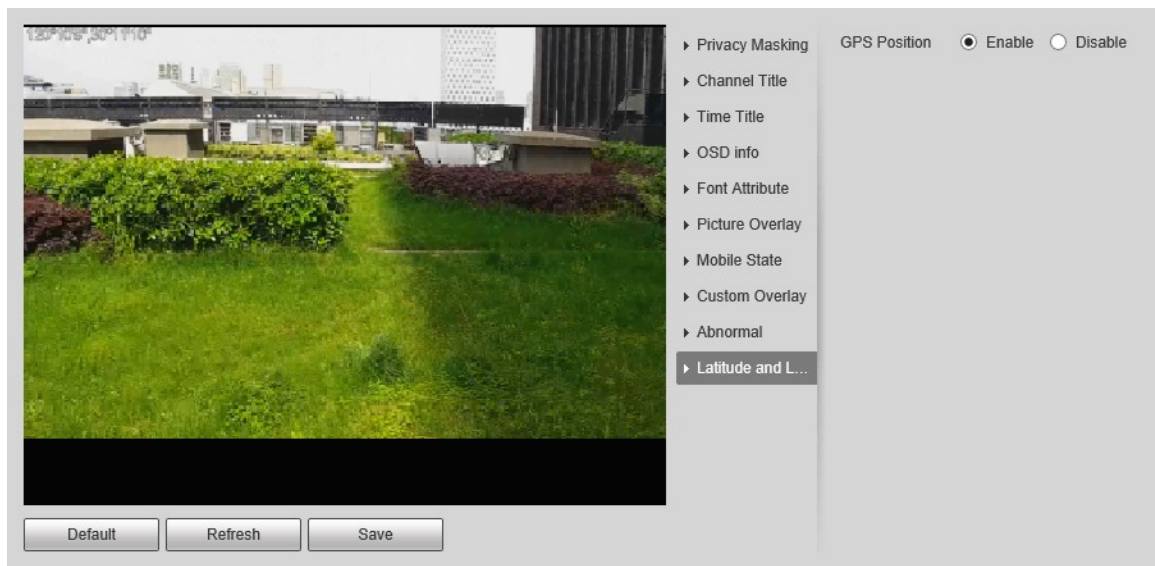
## 4.5.7 Configuring Longitude and Latitude Overlay

You can overlay longitude and latitude on the monitoring image.

Step 1 Select **Setting > Camera > Video > Overlay > Latitude and Longitude**.

Step 2 Select **Enable**.

Figure 4-26 Latitude and longitude



Step 3 Click **Save**.

Longitude and latitude is displayed at the upper-left corner of the monitoring image.

## 4.5.8 Enabling Smart Plan

Smart plan includes face detection, construction monitoring, IVS and video metadata. Only after you enable and configure the smart plan, can it become effective.



The supported smart plans vary with device model.

Step 1 Select **Setting > Event > Smart Plan > Smart Plan**.

Step 2 Enable the smart plan as needed.

- Enable global plan: In **Global** section, click the icon of smart plan that you want to enable, and then click **Save**.

- The selected icon is highlighted; click the icon again to cancel selection.
- Enable smart plan by preset: Select a preset in **Add Plan** drop-down list, click the smart plan that you want to enable, and then click **Save**.  
The selected icon is highlighted; click the icon again to cancel selection.

Figure 4-27 Enable smart plan

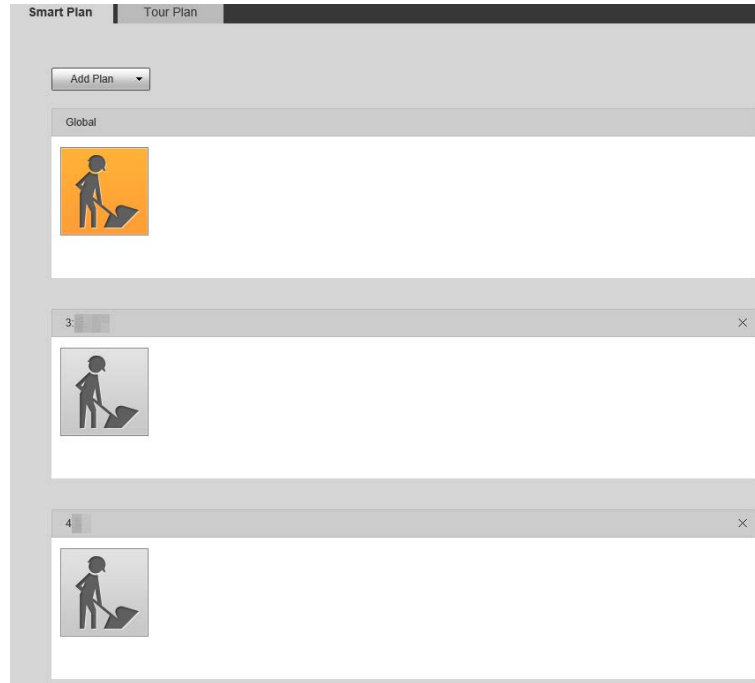


Table 4-4 Icon description

Icon	Description	Icon	Description
	Face Detection		IVS
	Video Metadata		Construction Monitoring

# Appendix 1 RS-485 Cable

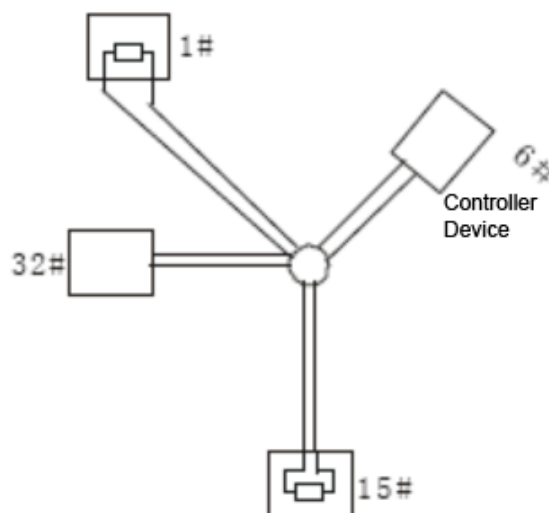
## Appendix 1.1 Basic Features

RS-485 industrial buses are half-duplex communication buses whose characteristic impedance is  $120\Omega$ . Its maximum load is 32 payloads (including controller devices and controlled devices).

## Appendix 1.2 Common Issues in Use

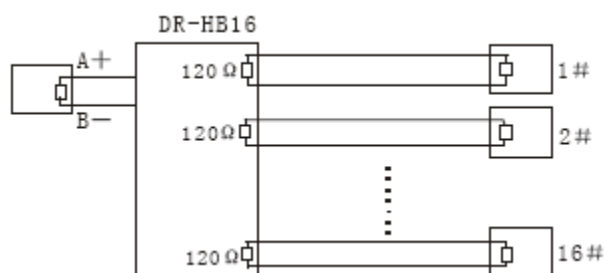
Users tend to connect devices as the way displayed in Appendix Figure 1-1. In this case, the terminal resistance must be connected to the two devices whose cable length is the longest among all the devices (in Appendix Figure 1-1, cable length between 1# and 15# is the longest). However, this connection manner does not comply with the RS-485 industrial standard. As a result, common issues like signal reflection and anti-interference capability reduction will occur. And the Device is out of control or cannot stop.

Appendix Figure 1-1 Common method to connect devices



To fix the issues, it is recommended to use RS-485 distributors. The RS-485 distributor can help avoid the common connection issues so as to improve transmission quality.

Appendix Figure 1-2 Connecting method with RS-485 distributors



## Appendix 1.3 FAQ on RS-485 Cable

Malfunction	Possible Reason	Solution
The Device can perform self-check, but is out of control.	Baud rate/address of the host and Device are not matched.	Modify the baud rate/address of the host or Device to be matched.
	Positive electrode and negative electrode of RS-485 cable are misconnected.	Connect cables to the positive electrode and negative electrode correctly.
	Loose connection.	Connect the cables firmly.
	RS-485 cable is broken.	Replace RS-485 cable.
The Device can be controlled, but the operation is not smooth.	RS-485 cable is in poor contact.	Connect the RS-485 cable firmly.
	RS-485 cable is broken.	Replace RS-485 cable.
	The distance between the host and the Device is too long.	Install terminal resistance.
	Too many cameras are connected parallelly.	Install RS-485 distributors.

# Appendix 2 Cable Diameter (12V DC) and Transmission Distance

The recommended transmission distances are for reference only, and the actual conditions shall prevail. The following table shows the maximum transmission distance of cables with certain diameter when the 12V DC power source voltage loss rate is below 10%.

For devices powered by direct current, the maximum voltage loss rate allowed is 10%. The cables mentioned in the following table are all copper cables with electrical resistivity  $\rho = 0.0175\Omega \times \text{mm}^2/\text{m}$ .



In the following table, the unit for diameter is mm, and the unit for transmission distance is foot (m).

Appendix Table 2-1 Cable diameter (12 V DC) and transmission distance

Transmission Power (W)	Transmission Distance (Diameter: 0.80)	Transmission Distance (Diameter: 1.00)	Transmission Distance (Diameter: 1.25)	Transmission Distance (Diameter: 2.00)
5	122.13 (37.23)	190.83 (58.16)	298.17 (90.88)	763.31 (232.66)
10	61.06 (18.61)	95.41 (29.08)	149.08 (45.44)	381.66 (116.33)
15	40.71 (12.41)	63.61 (19.39)	99.39 (30.29)	254.44 (77.55)
20	30.53 (9.31)	47.71 (14.54)	74.54 (22.72)	190.83 (58.16)
25	24.43 (7.45)	38.17 (11.63)	59.63 (18.18)	152.66 (46.53)
30	20.35 (6.20)	31.80 ( 9.69)	49.69 (15.15)	127.22 (38.78)
35	17.45 (5.32)	27.26 (8.31)	42.60 (12.98)	109.04 (33.24)
40	15.27 (4.65)	23.85 (7.27)	37.27 (11.36)	95.41 (29.08)
45	13.57 (4.14)	21.20 (6.46)	33.13 (10.10)	84.81 (28.85)
50	12.21 (3.72)	19.08 (5.82)	29.82 (9.09)	76.33 (23.27)
55	11.10 (3.38)	17.35 (5.29)	27.11 (8.26)	69.39 (21.15)
60	10.18 (3.10)	15.90 (4.85)	24.85 (7.57)	63.61 (19.39)
65	9.39 (2.86)	14.68 (4.47)	22.94 (6.99)	58.72 (17.90)
70	8.72 (2.66)	13.63 (4.15)	21.30 (6.49)	54.52 (16.62)
75	8.14 (2.48)	12.72 (3.88)	19.88 (6.06)	50.89 (15.51)
80	7.63 (2.33)	11.93 (3.64)	18.64 (5.68)	47.71 (14.54)
85	7.18 (2.19)	11.23 (3.42)	17.54 (5.35)	44.90 (13.69)
90	6.78 ( 2.07)	10.60 (3.23)	16.56 (5.05)	42.41 (12.93)
95	6.43 ( 1.96)	10.04 (3.06)	15.69 (4.78)	40.17 (12.25)
100	6.11 (1.86)	9.54 (2.91)	14.91 (4.54)	38.17 (11.63)

## Appendix 3 Wire Gauge Reference Sheet

Metric Bare Wire Diameter (mm)	AWG	SWG	Bare Wire Cross Section Area (mm <sup>2</sup> )
0.050	43	47	0.00196
0.060	42	46	0.00283
0.070	41	45	0.00385
0.080	40	44	0.00503
0.090	39	43	0.00636
0.100	38	42	0.00785
0.110	37	41	0.00950
0.130	36	39	0.01327
0.140	35	/	0.01539
0.160	34	37	0.02011
0.180	33	/	0.02545
0.200	32	35	0.03142
0.230	31	/	0.04115
0.250	30	33	0.04909
0.290	29	31	0.06605
0.330	28	30	0.08553
0.350	27	29	0.09621
0.400	26	28	0.1257
0.450	25	/	0.1602
0.560	24	24	0.2463
0.600	23	23	0.2827
0.710	22	22	0.3958
0.750	21	/	0.4417
0.800	20	21	0.5027
0.900	19	20	0.6362
1.000	18	19	0.7854
1.250	16	18	1.2266
1.500	15	/	1.7663
2.000	12	14	3.1420

<b>Metric Bare Wire Diameter (mm)</b>	<b>AWG</b>	<b>SWG</b>	<b>Bare Wire Cross Section Area (mm<sup>2</sup>)</b>
2.500	/	/	4.9080
3.000	/	/	7.0683



# Appendix 4 Cybersecurity Recommendations

Cybersecurity is more than just a buzzword: it's something that pertains to every device that is connected to the internet. IP video surveillance is not immune to cyber risks, but taking basic steps toward protecting and strengthening networks and networked appliances will make them less susceptible to attacks. Below are some tips and recommendations on how to create a more secured security system.

## **Mandatory actions to be taken for basic device network security:**

### **1. Use Strong Passwords**

Please refer to the following suggestions to set passwords:

- The length should not be less than 8 characters;
- Include at least two types of characters; character types include upper and lower case letters, numbers and symbols;
- Do not contain the account name or the account name in reverse order;
- Do not use continuous characters, such as 123, abc, etc.;
- Do not use overlapped characters, such as 111, aaa, etc.;

### **2. Update Firmware and Client Software in Time**

- According to the standard procedure in Tech-industry, we recommend to keep your device (such as NVR, DVR, IP camera, etc.) firmware up-to-date to ensure the system is equipped with the latest security patches and fixes. When the device is connected to the public network, it is recommended to enable the "auto-check for updates" function to obtain timely information of firmware updates released by the manufacturer.
- We suggest that you download and use the latest version of client software.

## **"Nice to have" recommendations to improve your device network security:**

### **3. Physical Protection**

We suggest that you perform physical protection to device, especially storage devices. For example, place the device in a special computer room and cabinet, and implement well-done access control permission and key management to prevent unauthorized personnel from carrying out physical contacts such as damaging hardware, unauthorized connection of removable device (such as USB flash disk, serial port), etc.

### **4. Change Passwords Regularly**

We suggest that you change passwords regularly to reduce the risk of being guessed or cracked.

### **5. Set and Update Passwords Reset Information Timely**

The device supports password reset function. Please set up related information for password reset in time, including the end user's mailbox and password protection questions. If the information changes, please modify it in time. When setting password protection questions, it is suggested not to use those that can be easily guessed.

### **6. Enable Account Lock**

The account lock feature is enabled by default, and we recommend you to keep it on to guarantee the account security. If an attacker attempts to log in with the wrong password several times, the corresponding account and the source IP address will be locked.

### **7. Change Default HTTP and Other Service Ports**

We suggest you to change default HTTP and other service ports into any set of numbers between 1024~65535, reducing the risk of outsiders being able to guess which ports you are using.

## **8. Enable HTTPS**

We suggest you to enable HTTPS, so that you visit Web service through a secure communication channel.

## **9. MAC Address Binding**

We recommend you to bind the IP and MAC address of the gateway to the device, thus reducing the risk of ARP spoofing.

## **10. Assign Accounts and Privileges Reasonably**

According to business and management requirements, reasonably add users and assign a minimum set of permissions to them.

## **11. Disable Unnecessary Services and Choose Secure Modes**

If not needed, it is recommended to turn off some services such as SNMP, SMTP, UPnP, etc., to reduce risks.

If necessary, it is highly recommended that you use safe modes, including but not limited to the following services:

- SNMP: Choose SNMP v3, and set up strong encryption passwords and authentication passwords.
- SMTP: Choose TLS to access mailbox server.
- FTP: Choose SFTP, and set up strong passwords.
- AP hotspot: Choose WPA2-PSK encryption mode, and set up strong passwords.

## **12. Audio and Video Encrypted Transmission**

If your audio and video data contents are very important or sensitive, we recommend that you use encrypted transmission function, to reduce the risk of audio and video data being stolen during transmission.

Reminder: encrypted transmission will cause some loss in transmission efficiency.

## **13. Secure Auditing**

- Check online users: we suggest that you check online users regularly to see if the device is logged in without authorization.
- Check device log: By viewing the logs, you can know the IP addresses that were used to log in to your devices and their key operations.

## **14. Network Log**

Due to the limited storage capacity of the device, the stored log is limited. If you need to save the log for a long time, it is recommended that you enable the network log function to ensure that the critical logs are synchronized to the network log server for tracing.

## **15. Construct a Safe Network Environment**

In order to better ensure the safety of device and reduce potential cyber risks, we recommend:

- Disable the port mapping function of the router to avoid direct access to the intranet devices from external network.
- The network should be partitioned and isolated according to the actual network needs. If there are no communication requirements between two sub networks, it is suggested to use VLAN, network GAP and other technologies to partition the network, so as to achieve the network isolation effect.
- Establish the 802.1x access authentication system to reduce the risk of unauthorized access to private networks.
- Enable IP/MAC address filtering function to limit the range of hosts allowed to access the device.