Thermal + 2MP 30x PTZ Camera

User’s Manual

V1.0.0

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About the manual

- The Manual is for reference only. The actual product shall prevail.
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Document Overview

The manual is to comprehensively introduce function features, structure parameters, operation guide, device upgrade and technical data of the product.

Applied Model

UAV-GA-V-8030T

Symbol Definition

The following symbol may appear in the document. Please refer to the table below for the respective definition.

Symbol	Note
 Danger	It means highly potential danger. It will cause severe injury or casualties if it fails to avoid.
 Warning	It means moderate or low potential danger. It may cause slight or moderate injury if it fails to avoid.
 Caution	It means potential risk. It may cause device damage, data loss, weaker performance or other unpredictable consequences if it fails to avoid.
 Tips	It means that it can help to solve some problems or save time.
 Note	It means the additional information, which is the emphasis and supplement of the main body.

Revision Record

No.	Version No.	Revision Content	Release Date
1	V1.0.0	First Release	2018.6

The following description is the correct application method of the device. Please read the manually carefully before use, in order to prevent danger and property loss. Strictly conform to the manual during application and keep it properly after reading.

Caution

- Don’t touch the lens of PTZ camera directly. Use an air blower to blow away the dust or dirt on the lens surface.
- Don’t drip or splash liquids onto the device; don’t put around the device anything filled with liquids, in order to prevent liquids from flowing into the device.
- Please transport, use and store the device within allowed humidity and temperature range.
- Don’t compress, vibrate violently or immerse the device during transportation, storage and installation.

Warning

- Use the standard components or accessories provided by manufacturer and make sure that the device is installed and fixed by professional engineers.
- Do not provide two or more power supply sources for the device; otherwise it might damage the device.

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1 Product Profile

1.1 Product Overview

As the core of unmanned aircraft system, airborne PTZ adopts oriented vector control technology of permanent magnet motor rotor field, high-precision triaxial servo autostability technology and compact portable design.

With pitch, roll and course triaxial autostability function, this product is mounted on the aircraft to shoot videos. Users can read real-time video data via network, and dismantle SD card to read video files.

This product is mainly applied in multi-rotor drone to effectively prevent the effect of drone posture change and jitter on the video image, so PTZ camera provides clear and stable video images in all cases.

1.2 Product Function

Triaxial Autostability

When pitch, roll and course axes rotate or shake, PTZ base and camera gesture are able to keep stable, so video images are clear, without jittering.

Rotation Mode

- Following mode: when the aircraft moves forward, backward, left and right horizontally, PTZ follows to rotate, so surveillance direction is always consistent with aircraft movement direction.
- Locking mode: PTZ doesn't rotate with the aircraft movement.

3D Positioning

Draw a circle on the remote control or click any zone in the surveillance image, within the allowed rotation angle range, the aircraft will keep this zone at the center of the screen, zoom in or zoom out this zone.

Storage Function

- Support SD card and support to resume transmission after recovering from network outage.
- Cyclic coverage of storage media.

Alarm Function

Through network, give an alarm about camera abnormality, such as memory damages.

OSD Setting

Set OSD info and position of video channel, image and composite image.

Power Supply

Support DC 24V power supply.

White Balance

- Auto white balance: be able to accurately reflect color condition of the target when ray of light changes.
- Partial white balance: adjust color condition of the target by reference to surroundings.

Auto Exposure

According to lighting and scenario, adjust exposure automatically; prevent overexposure or underexposure.

Auto Gain

In case of very low illumination, increase camera sensitivity automatically, enhance image signal output and thus obtain clear and bright images.

Auto Focus

According to the target distance, the camera adjusts lens focus distance automatically, so as to realize the clearest image of the target.

Optical Zoom

This device supports 30x optical zoom and 16x electronic zoom.

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2 Device Structure

2.1 Product Dimensions

Figure 2-1 Front View (unit: mm)

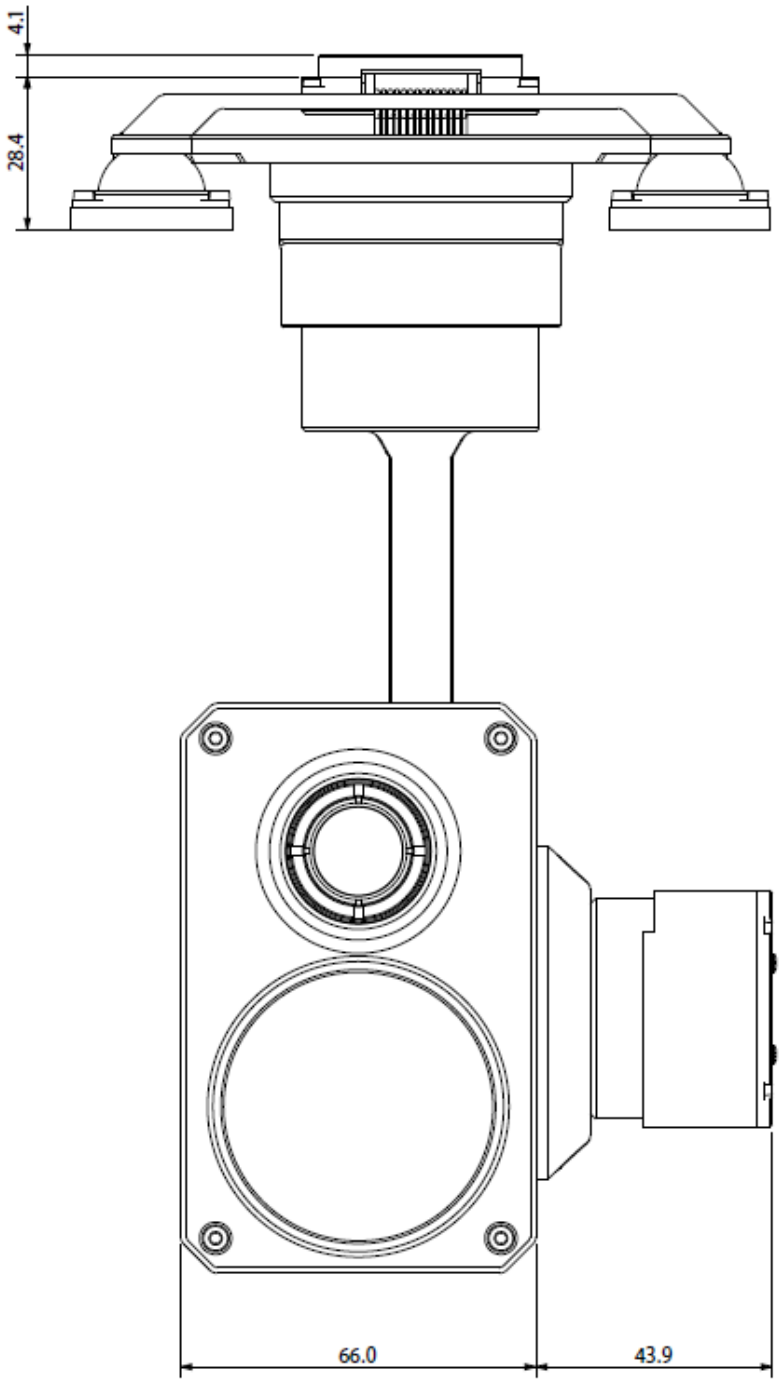
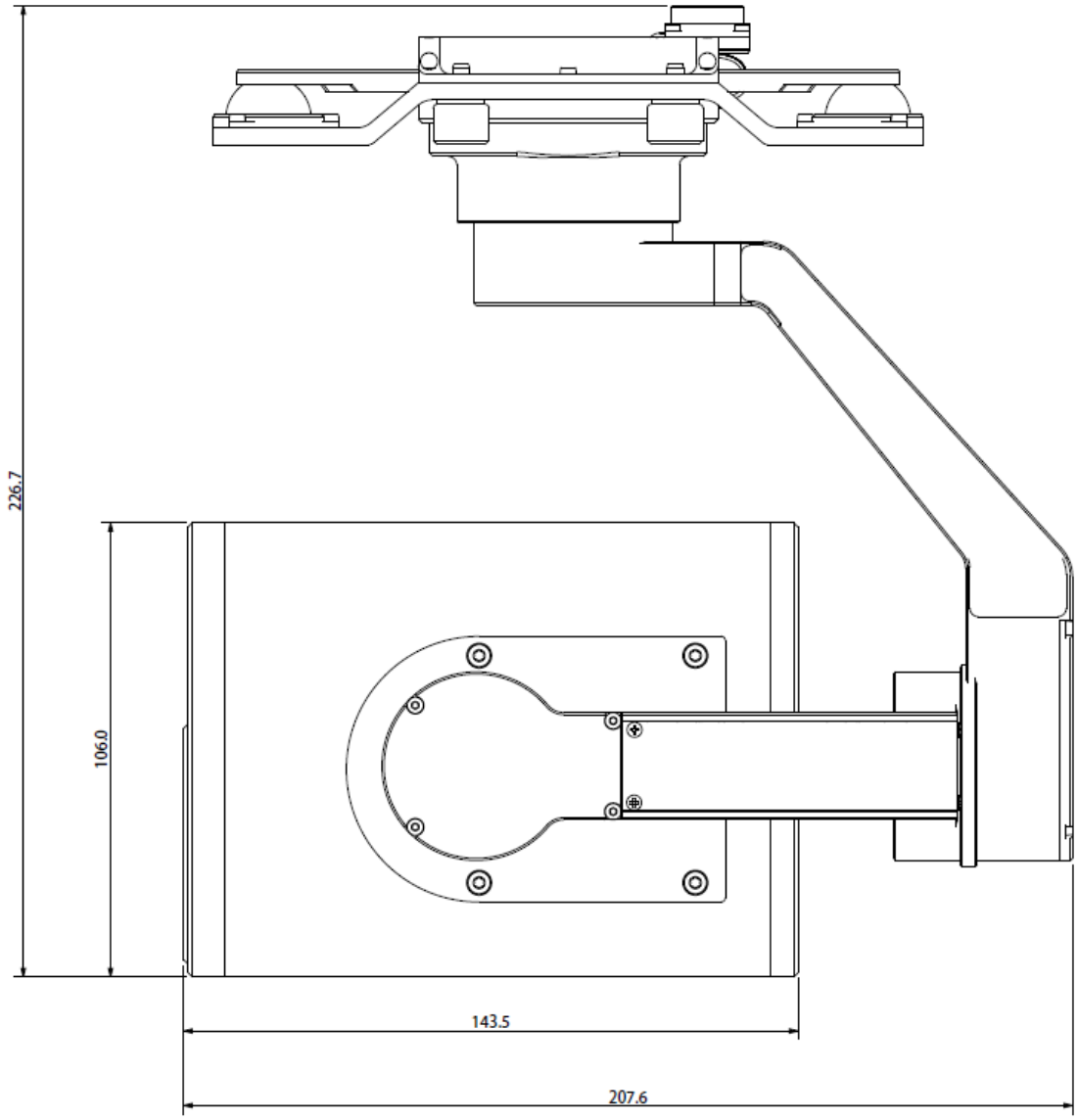


Figure 2-2 Side View (unit: mm)



2.2 Structural Component

Figure 2-1 Device Structure

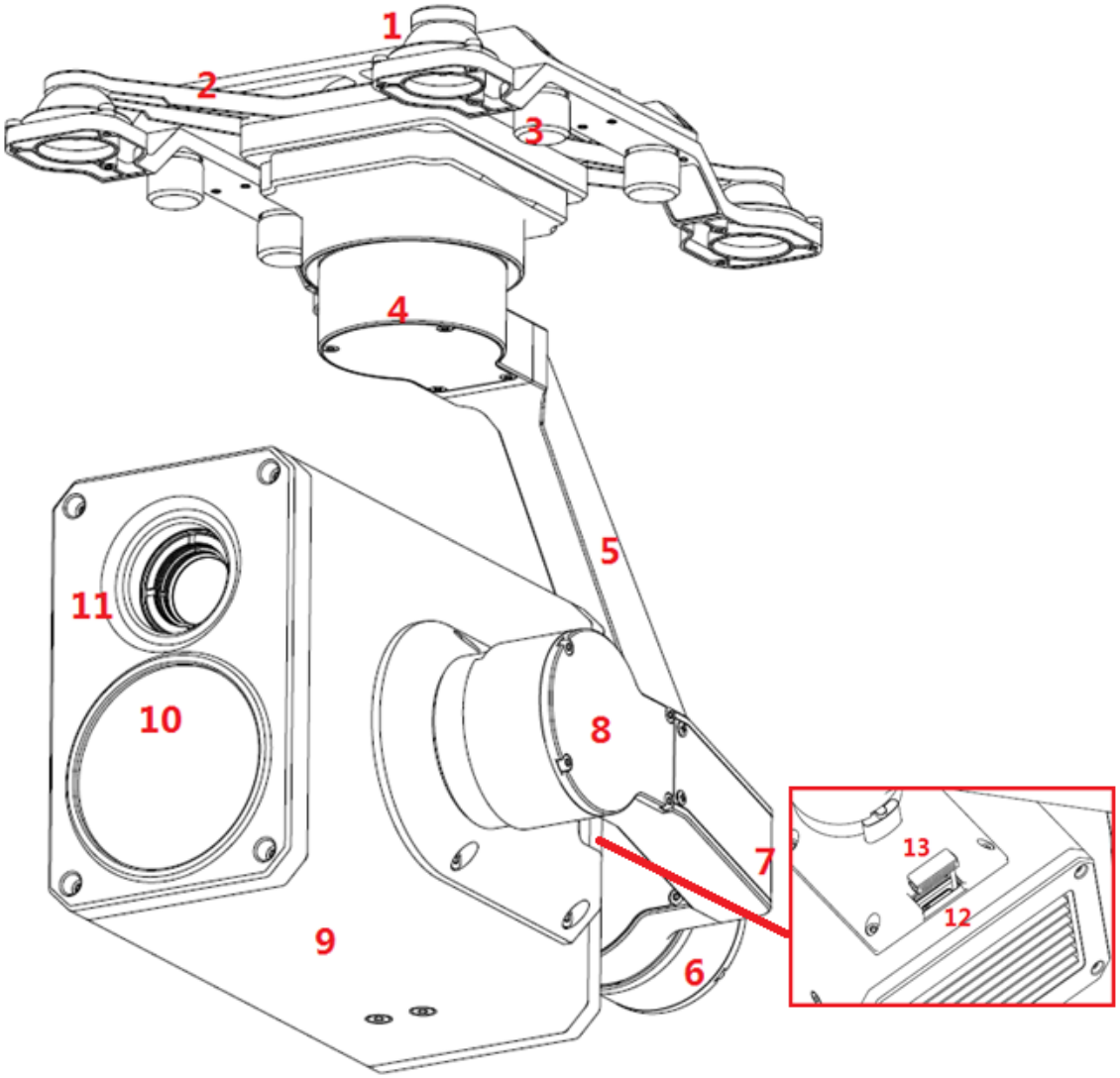


Table 2-1 Device Structure Description

No.	Name	Function
1	Shock absorber ball	Reduce jitter of PTZ camera during flight; obtain clearer pictures.
2	Shock absorber board	
3	Installation screw	Fix PTZ camera onto the aircraft.
4	Yaw motor	Control horizontal rotation direction of the camera.
5	Yaw rotation arm	
6	Roll motor	Control rotation angle of roll axis.
7	Roll rotation arm	
8	Pitch motor	Control rotation angle of pitch axis.
9	Camera	Take pictures.
10	Visible light lens	
11	Thermal lens	
12	SD card slot	Install SD card.
13	SD card plug	Cover outside the SD card slot is used to protect SD card slot.

3 Device Operation

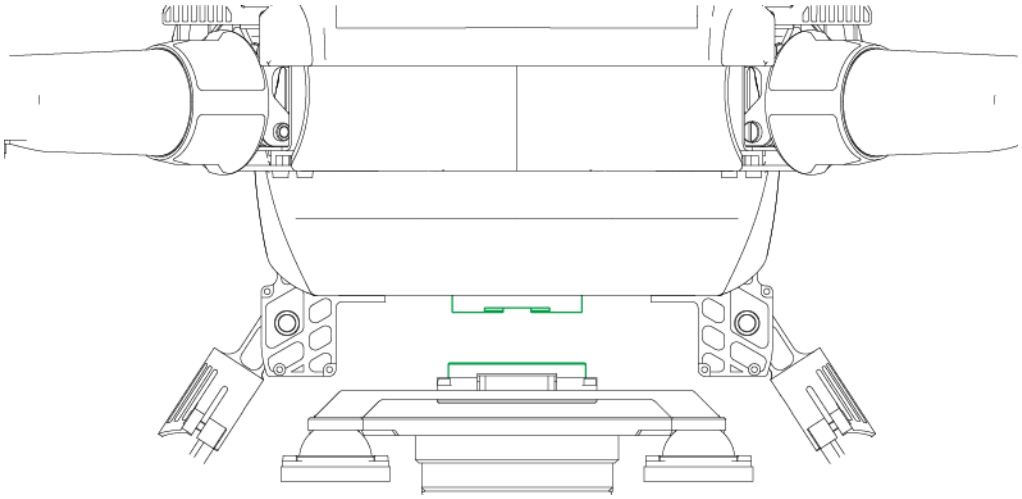
3.1 Device Installation

Note

This chapter explains device installation by taking NAVIGATOR X820 for example. Please refer to actual product.

Step 1: Insert data cable interface at the bottom of aircraft into the interface at the top of shock absorber board, as shown in 错误!未找到引用源。.

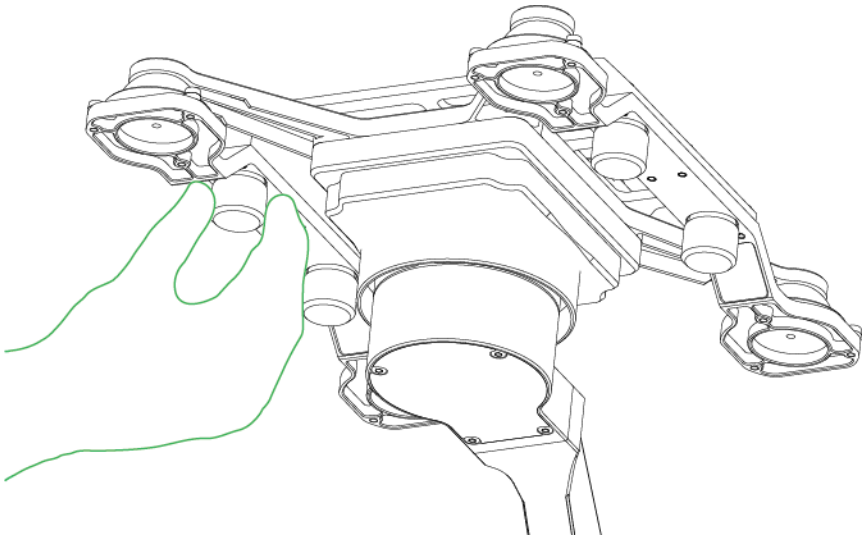
Figure 3-1



Step 2: Align 4 installation screws with bottom holes of the aircraft, and tighten them.

Fix PTZ camera onto the aircraft, as shown in 错误!未找到引用源。.

Figure 3-2



Step 3: Turn on power supply of the aircraft, and wait for IMU (Inertial Measurement Unit) calibration.

After completing IMU calibration, the motor starts working while PTZ returns to the center automatically.

Thus, PTZ camera has been installed completely.

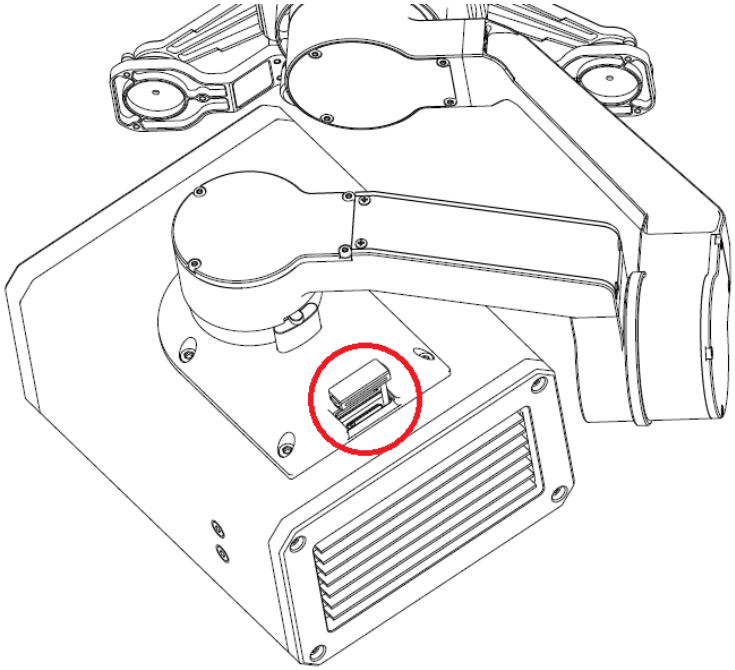
3.2 Picture Acquisition Mode

This chapter mainly introduces how to acquire pictures from SD card and ground control station.

3.2.1 SD Card

Step 1: Open SD card plug with a hand, as shown in 错误!未找到引用源。.

Figure 3-3



Step 2: Press SD card gently, and SD card will pop up. Pull out SD card.

Step 3: Insert SD card into card reader, and connect the card reader with computer.

With the card reader, copy videos in SD card to the computer, and save them.

3.2.2 Ground Control Station

Note

- Ground control station and the device are in the same network segment by default, which need no configuration.
- One set of device has been paired before leaving factory, so the user doesn't need to pair again. If several devices are mixed and cannot be distinguished, please pair them before operation. For details, please refer to drone user's manual.

Step 1: Turn on power supply of ground control station, remote control and aircraft.

Wireless module of the aircraft connects wireless module of ground control station and remote control automatically.

Step 2: During flight, through wireless module of ground control station, view pictures of PTZ camera in a real-time way.

4 Device Upgrade

Caution

- This chapter only applies to camera upgrade.
- Only one device can be upgraded each time.

Note

In case of device disconnection during upgrade, as long as ConfigTool stays at the upgrade interface, the device will continue the last upgrade when it is connected with network again.

Precondition:

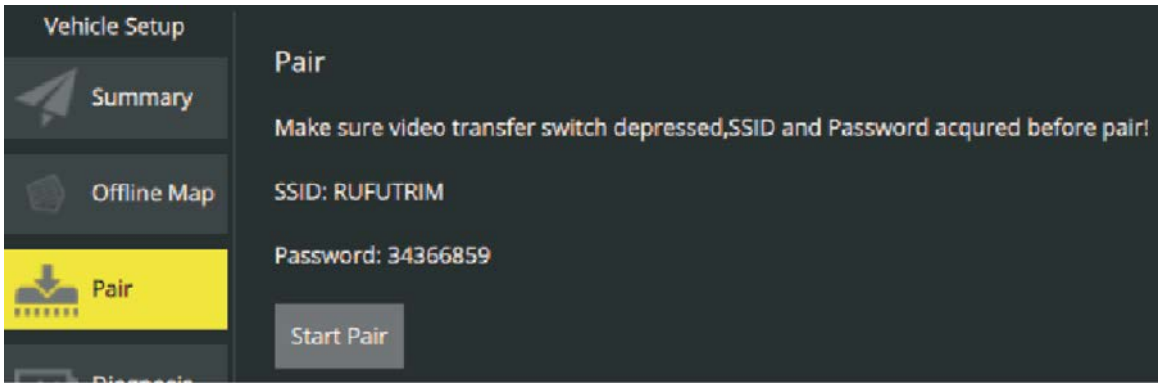
- Upgrade package has been obtained.
- PC has wireless network card.

Step 1: In PC, select “Start > Control Panel > Network and Internet > Connections”.

The system displays “Connections” interface, to search WLAN of ground control station.

Step 2: After finding “Network Name” on the “Pair” interface, enter corresponding “Password”. “Pair” interface of ground control station is shown in 错误!未找到引用源。.

Figure 4-1

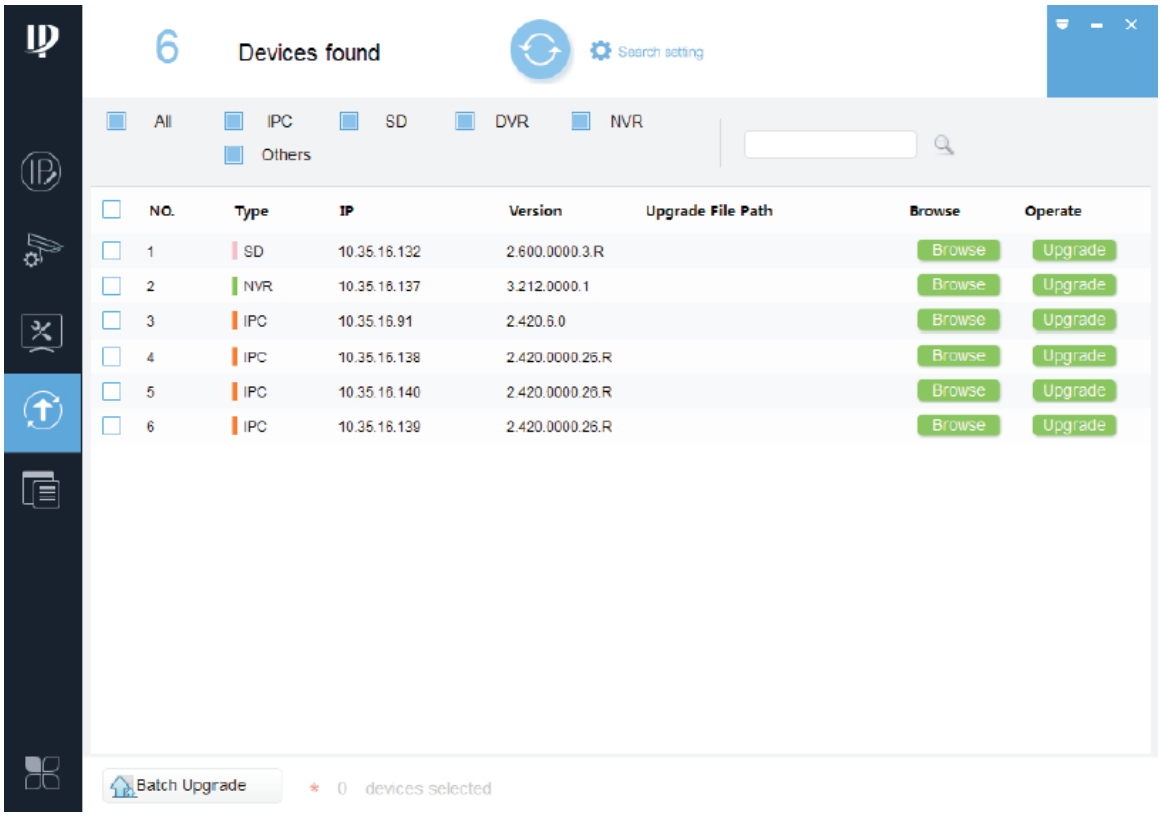


Step 3: Click “Join” to join WLAN of ground control station.

Step 4: In PC, double click “ConfigTool.exe” to open quick configuration tool.

Step 5: Click  and the system displays upgrade interface, as shown in 错误!未找到引用源。.

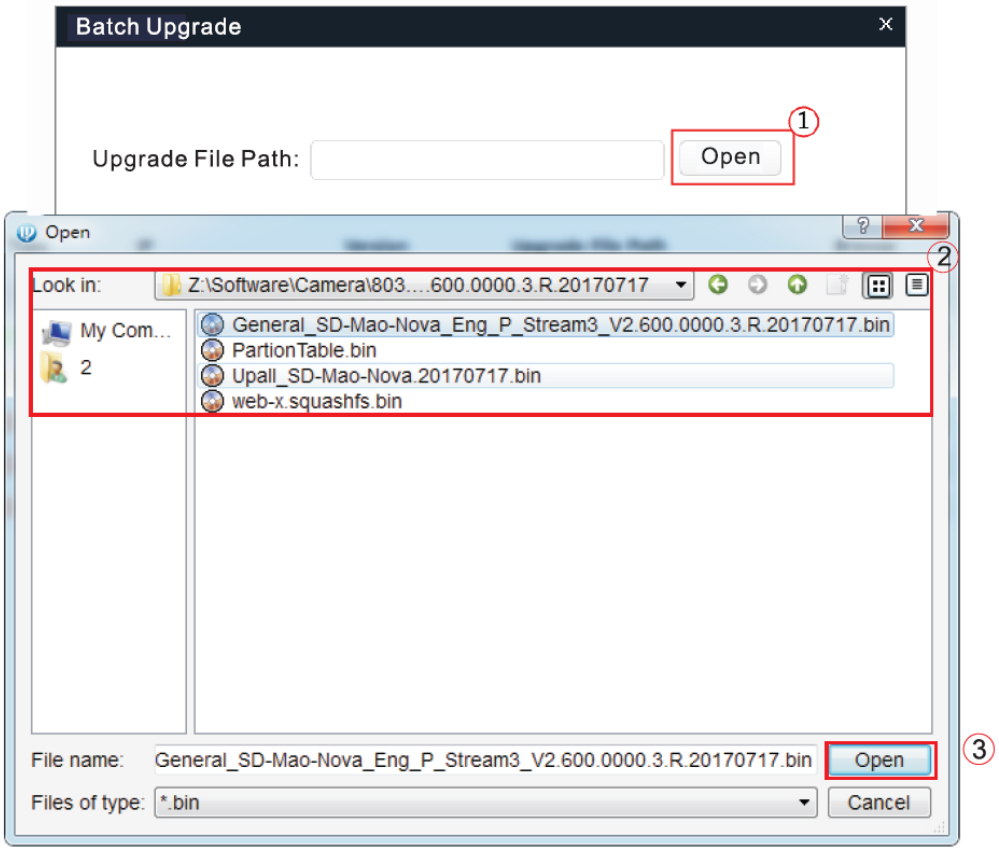
Figure 4-2



Step 6: Click “Open” corresponding to the device that shall be upgraded.

Step 7: Select upgrade file, as shown in 错误!未找到引用源。.

Figure 4-3



Step 8: Click “Upgrade”.

The system starts upgrading and displays the progress.

5 Technical Parameters

Table 5-1

Parameter	Description
Product Model	UAV-GA-T-2030TA
Max. optical zoom of PTZ camera	30x
Max. electronic zoom of PTZ camera	16x
Pixel of PTZ camera	2MP
Max. optical zoom of thermal camera	None
Max. electronic zoom of thermal camera	16x
Pixel of thermal camera	640*512
Field angle of PTZ camera	Horizontal : 67.8°～2.77°
Focal length	4.5mm～135mm
Digital noise reduction	3D
Minimum illumination	● Color:0.05Lux@F1.6 ● Black:0.005Lux@F1.6
Operating ambient temperature	－20℃～+60℃
Total weight	1275g
Angle stabilization precision	±0.01°
Quantity of anti-jittering axis	3 axes
Pitch rotation range	－90°～ + 45°
Roll rotation range	±90°
Course rotation range	±173°
Max. controllable angle speed of pitch axis	±130°/s
Max. controllable angle speed of course axis	±130°/s
PTZ dimension	226.7mm×207.6mm×131.9mm
PTZ function	Yaw following and yaw locking
3D positioning function	Available

6 FAQ

Points for Attention	Countermeasures
Hot plugging of SD card	In order to guarantee data integrity, please stop recording and snapshotting; wait for about 15s before pulling out the SD card. Otherwise, all data in SD card may be lost.
Read-write time limitation of SD card	Please don't set SD card to be storage medium of recording at fixed time. Otherwise, SD card may run out of read-write life and go wrong quickly.
Recommended SD card type	8GB, 16GB, 32GB and 128GB high-speed card.
Fail to pop up installation dialog box of WEB controls webrec.cab	Please set security level of IE browser to be "Low" and "ActiveX Plug-ins and Controls" to "Enable".