

SIYI

A2 mini

ULTRA WIDE ANGLE FPV GIMBAL USER MANUAL



SIYI Technology (Shenzhen) Co., Ltd.

SIYI.biz/en

Thank you for purchasing SIYI product.

A2 mini is a lightweight and ultra-wide-angle FPV gimbal, built with industrial protection class, the 160-degree horizontal FOV makes camera view wide and broad. Pitch angle control can be widely used for agriculture spraying drones. Ethernet output can be used with some third-party links. Upside-down mode makes it also a great option for UGV, USV, robotics, RC hobby planes.

To ensure you a good experience of the product, please read this manual carefully. If you encounter any issue using the product, please consult the manual or check the online pages of this product on SIYI official store (<https://shop.siyi.biz>). You can also write an email to SIYI official A/S center (support@siyi.biz).

Contact Us: **SIYI Official Website** (<https://SIYI.biz/en>)

SIYI User Group - Facebook	
Facebook	
LinkedIn	
YouTube	

User Manual Update Log

Version	Date	Updates
1.0	——	Original version
1.1	Jun. 2023	1.Update technical parameters 2.Remove the SDK command section
1.2	Feb. 2026	1.Update technical parameters 2.Updated technical specifications.
1.3	Jun.2026	1. Remove SDK Command 2. Added Note

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READ TIPS

Icons

Please pay more attention to content indicated with the following marks:



DANGER Dangerous manipulation probably leads to human injuries.



WARNING Warnings on manipulation possibly leads to human injuries.



CAUTION Cautions on what manipulation may lead to property loss.



Prohibited



Mandatory



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Safety

A2 mini FPV gimbal is designed for professional application in specific scenes, which has been done necessary configuration before delivery, it is forbidden to disassemble the gimbal or to change its mechanical structure. And don't add more payload to the gimbal other than its own camera. Gimbal camera is designed with very precise structure, users who approach to the equipment should have the basic knowledge of how to operate it. Irregular or irresponsible manipulations to the device may cause damage, property loss, or human injuries, and SIYI Technology is not obliged to any of the damage, loss, or injury. It is prohibited to use SIYI products for military purpose. Users under 14 years' old should

follow an experienced trainer's guide. Disassembling or modification to the system is prohibited without permission from its manufacturer, SIYI Technology.

Storage/Carrying/Recycling

When your SIYI products are stand idle, or you are bringing it outdoors, or the system reached service life, then please do read the precautions below.



CAUTION

Always place your SIYI products at places where babies or kids do not reach.

Hot-plugging the device is strictly prohibited. SIYI Technology assumes no responsibility for any device malfunction or damage caused by hot-plugging.



DANGER

SIYI products should be placed in places with below conditions:

Not too hot (above 60°C) or too cold (under -20°C).

Not under direct sunshine or too dusty or too wet.

Not on an unstable holder which lacks solid supports or may cause vibration.

Not nearby steam or other heat sources.

1 INTRODUCTION

1.1 Product Features

Ultra-Wide Angle FOV, Distortion Correction

A2 mini comes with a horizontal 160-degree ultra-wide-angle lens, providing an extensive view of the operation field that operator has clear sight during flight without adjusting drone attitude too much. Quick decisions can be made to ensure security to drone operation.

Powerful distortion correction algorithm makes A2 mini's image smooth and natural.

**SIYI FPV app is suggested for checking FPV image and SDK is available for developers and manufacturers.*

1080P Full HD Starlight FPV

A2 mini FPV gimbal's ultra-sensitive starlight CMOS can keep image bright even in low light environment.

Upside Down Mode

A2 mini FPV gimbal automatically activates upside down mode when it is placed upside down, very convenient to be mounted on multiple kinds of vehicles like UGV, USV, robot dog, and robotics.

Gimbal Stabilizing Control Algorithms

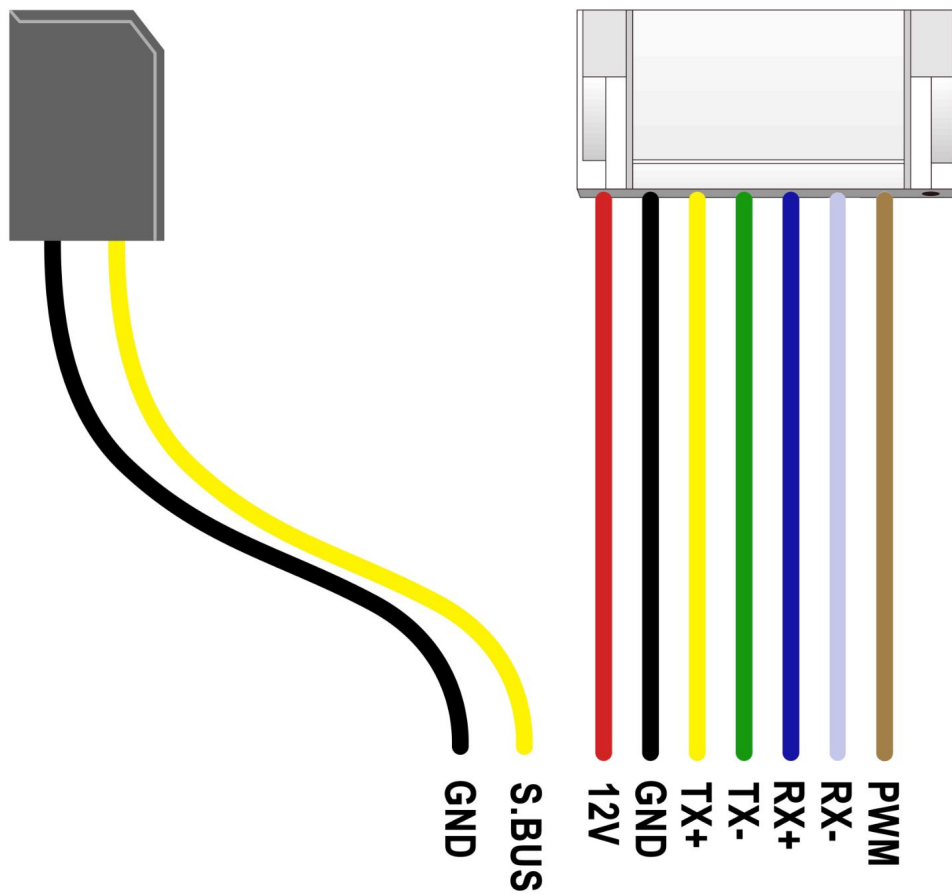
A2 mini FPV gimbal is applied with industry-level stabilizing technology and high-precision FOC control algorithms. Operator can control the tilt angle.

1.2 Parts

1.2.1 At a Glance



1.2.2 Connector and Pinouts



1.3 Technical Specification

Overall

Video Output Port	Ethernet
Control Signal Input Port	S.Bus, PWM, Ethernet UDP
Working Voltage	12 V
Power Consumption	Average 2 W Summit 12 W
Working Temperature	-10 ~ 50 °C
Dimension	65*43*50 mm
Weight	85 g

Gimbal

Controllable Pitch Angle	-90° ~ 25°
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Camera

FOV	Horizontal 160°
Image Sensor	1/2.7-inch, 2 MP effective resolution

1.4 Packing List

1 x A2 mini FPV Gimbal

1 x A8 mini Screw Pack

(Using with the fixing board to mount the gimbal, including 6 x Hex Socket Cap Screw M2.5*5, 10 x Cross Recessed Flat Head Screw M2.5*10, 8 x M2.5 Nut Black)

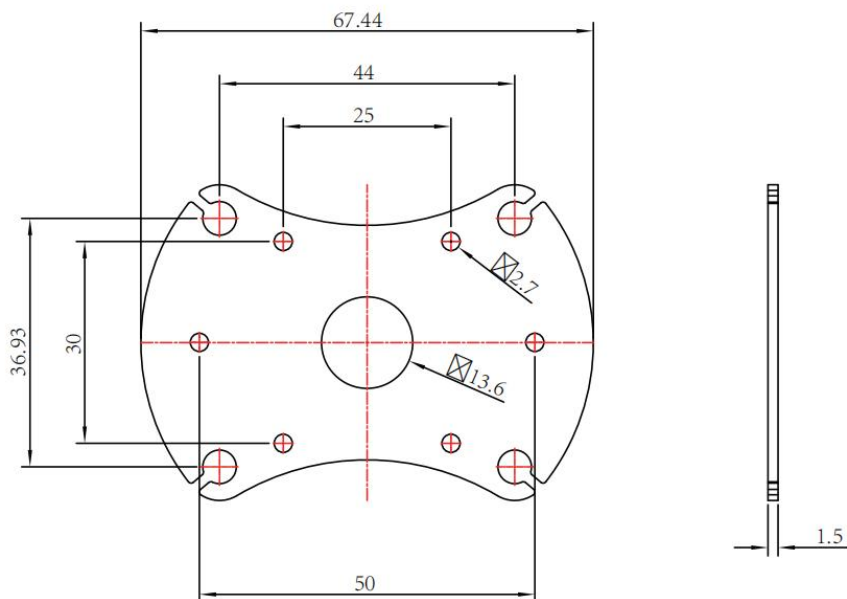
1 x A8 mini Mounting Board & Damper Pack

(For mounting and fixing gimbal and stabilization)

2. GET READY TO USE A2 MINI

2.1 Installation

Screw Holes' Position and Distance



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The specs of the screws for fixing the four tube screws are M.25*8 mm. Quantity: 4.

Welcome to contact SIYI to get the SIYI Gimbal 3D Model for pre-installation.

3. GIMBAL CONTROL

A2 mini gimbal can be controlled in multiple ways.

3.1 Control through SIYI FPV App or SIYI QGC App on SIYI Handheld Ground Station

Gimbal connects to air unit directly to control gimbal rotation, gimbal functions, and video display in SIYI FPV app or SIYI QGC app when the air unit is communicating with the ground station.

3.1.1 Preparation

It is necessary to prepare the tools, firmware, and software below before controlling gimbal camera in this way.

- SIYI Handheld Ground Station (MK32 Standard Combo / MK15 Enterprise Standard Combo is suggested for excellent compatibility with SIYI gimbal cameras)
- A2 mini FPV Gimbal



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Above products can be purchased from SIYI directly or from SIYI authorized dealers.

- SIYI FPV App (v2.5.12.572 or latest version)
- SIYI QGC App

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Above software can be downloaded from relevant product page on SIYI official website.

SIYI FPV App Steps

1. Power air unit and bind it with ground station.
2. Connect the air unit's Ethernet port to the gimbal.
3. Update SIYI FPV app to the latest.
4. Run SIYI FPV app, go to "Settings" and select the relevant SIYI camera type with main / sub stream, video stream will display. Gimbal motion and camera functions can be controlled by ground station touchscreen.

SIYI QGC App Steps

1. Power air unit and bind it with ground station.
2. Connect the air unit's Ethernet port to the gimbal.
3. Run SIYI QGC app, go to "Comm Links – Video Settings", and select "RTSP Video Stream" for "Source", then enter the default RTSP addresses of SIYI gimbal camera, video stream will display. Gimbal motion and camera functions can be controlled by ground station touchscreen.

3.1.2 Gimbal Pitch Rotation

While SIYI FPV App or SIYI QGC app is running,

Sliding on touchscreen can control gimbal rotation. Sliding up and down is gimbal pitch rotation.

Double tap touchscreen, gimbal will automatically center.



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Slide on touchscreen and hold it, gimbal will continue rotating till it reaches physical limit.

Farther that you hold it from the center of the screen, faster the gimbal rotates.

3.2 Control through PWM / S.Bus Signal (Taking an Example of MK15)

PWM signal is already connected when A2 mini gimbal is connected to air unit Ethernet port. S.Bus signal is an optional connection to air unit S.Bus port. Both ways are for gimbal control through joysticks / dials / switches / buttons on MK15 remote controller when it is communicating to the air unit.

3.2.1 Preparation

It is necessary to prepare the below tools, firmware, and software before controlling gimbal camera in this way.

- MK15 Mini HD Smart Controller (MK15 Agriculture x A2 Mini FPV Combo or MK15
- 2026 SIYI Technology Copyright

Enterprise Standard Combo is suggested for excellent compatibility with SIYI gimbals)

- A2 mini FPV Gimbal

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Above products can be purchased from SIYI directly or from SIYI authorized dealers.

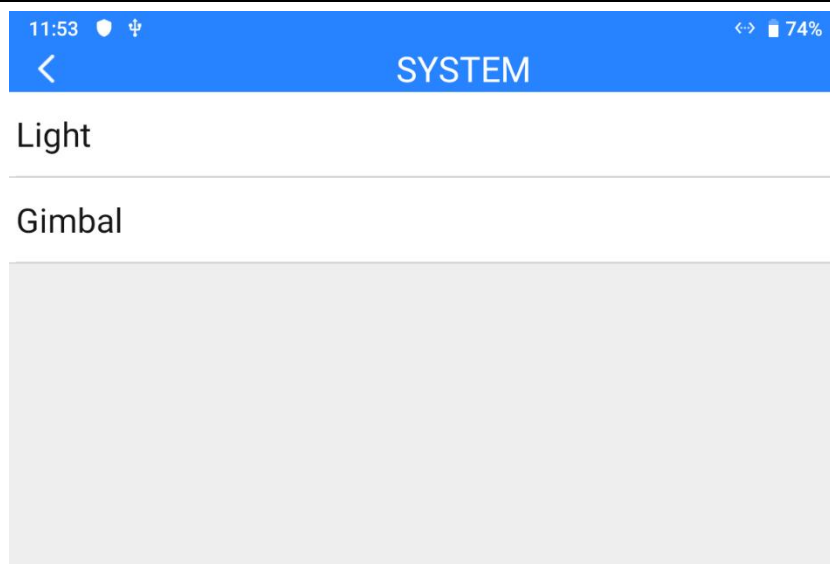
- SIYI TX App (v1.1.235 or latest version)

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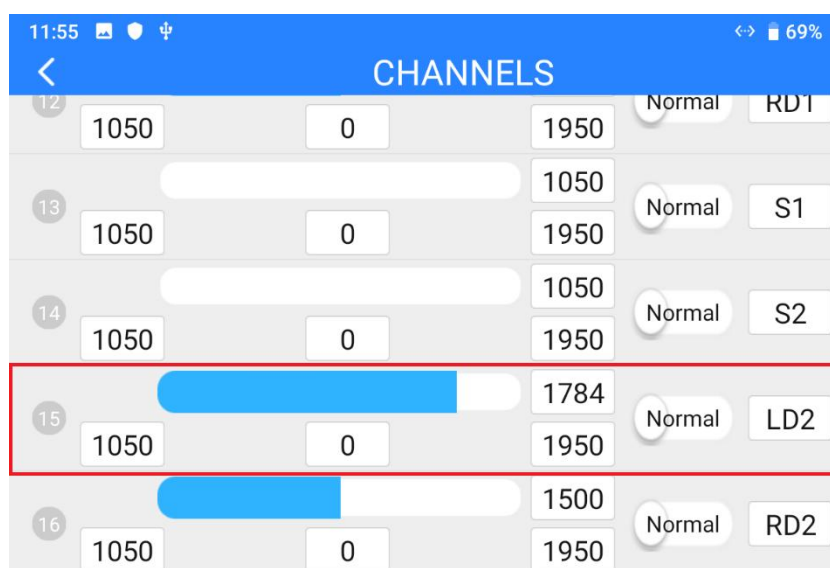
Above app can be downloaded from relevant product page on SIYI official website.

Steps for PWM Control

1. Power the air unit and bind it with the remote controller.
2. Connect A2 mini gimbal to the air unit's Ethernet port.
3. Run SIYI TX app on the remote controller.
4. Go to "System Settings – Channel 15" and switch the control of channel 15 to the gimbal for pitch control of A2 mini gimbal.



- Go to “Channel Settings” and assign a joystick, a dial, a switch, or a button to channel 15.

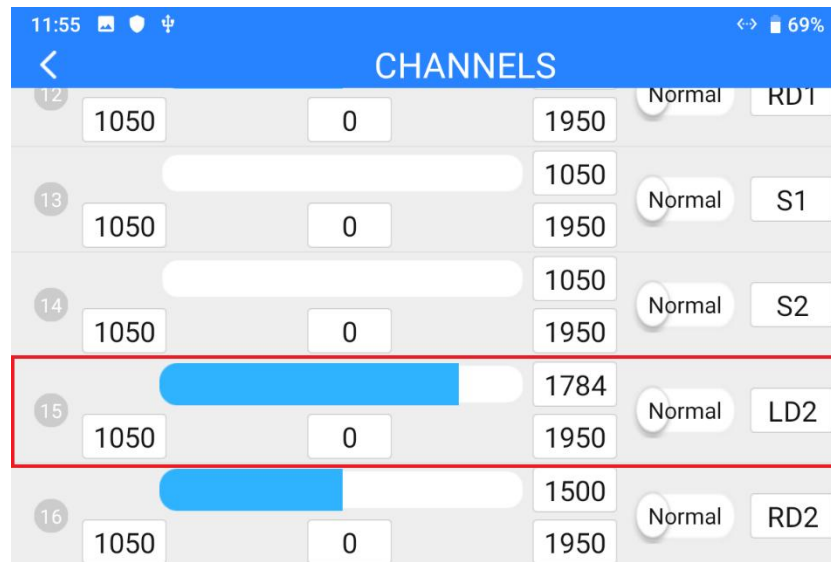


- For the assigned channel, operate the relevant joystick, dial, switch, or button to confirm if it is working normally.

Steps for SBUS Control

- Power the air unit and bind it with the remote controller.
- Connect A2 mini gimbal to the air unit’s Ethernet port.
- Run SIYI TX app on the remote controller.

4. Go to “Channel Settings” and assign a joystick, a dial, a switch, or a button to channel 15.



5. For the assigned channel, operate the relevant joystick, dial, switch, or button to confirm if it is working normally.

3.3 Control in SIYI QGC Windows Software through HM30 Image Transmission System

Gimbal connects to air unit directly to control gimbal rotation, gimbal functions, and video display in SIYI QGC Windows software when the air unit is communicating with the ground unit.

3.3.1 Preparation

It is necessary to prepare tools, firmware, and software below before controlling gimbal camera in this way.

- SIYI HM30 Full HD Image Transmission System
- A2 mini FPV Gimbal

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Above products can be purchased from SIYI directly or from SIYI authorized dealers.

- HM30 Ground Unit LAN to RJ45 Cable

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Above tools come with product package.

- SIYI QGC Windows Software



Above software can be downloaded from relevant product page on SIYI official website.

Steps for SIYI QGC Windows

1. Power air unit and bind it with ground unit.
2. Connect the air unit's Ethernet port to the gimbal.
3. Then use HM30 Ground Unit LAN to RJ45 cable to connect the ground unit's LAN port with the computer's RJ45 port.
4. Modify the computer's Ethernet settings to have the same gateway with SIYI link and avoid IP addresses conflict.

For example, let's assign "192.168.144.30" for the computer IP addresses.



5. Run SIYI QGC Windows software, go to “Comm Links – Video Settings”, and select “RTSP Video Stream” for “Source”, then enter the default RTSP addresses of SIYI gimbal camera, video stream will display. Gimbal motion and camera functions can be controlled by mouse in QGroundControl.

3.3.2 Gimbal Pitch Rotation

While SIYI QGC Windows software is running,

Drag the mouse on screen can control gimbal rotation. Dragging the mouse up and down are pitch rotation.

Double click the mouse on screen, gimbal will automatically center.

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Drag the mouse on screen and hold it, gimbal will continue rotating unless there is a physical limit. Farther you hold it from the center of the screen, faster the gimbal rotates.

4. VIDEO OUTPUT

A2 mini gimbal can only output video through Ethernet port.

4.1 Output and Display Video Stream on SIYI Ground Station

Gimbal camera can connect to the air unit directly, then video will be displayed in SIYI FPV app or SIYI QGC app or other app that are compatible with SIYI link and SIYI gimbal camera when the air unit is communicating with the ground station.

Please refer to chapter 3.1 of this manual for more detail.

4.2 Output Video Stream to Android Device through HM30 Full HD Image Transmission System

Gimbal connects to HM30 air unit directly, then video will be displayed in SIYI FPV app or SIYI QGC app or other app that are compatible with SIYI link and SIYI gimbal camera when the air unit is communicating with the ground unit.

Preparation

It is necessary to prepare the tools, firmware, and software below before outputting video stream in this way.

- HM30 Full HD Image Transmission System
- A2 mini FPV Gimbal

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Above products can be purchased from SIYI directly or from SIYI authorized dealers.

- SIYI FPV App (v2.5.12.572 or latest version)
- SIYI QGC App

Mark

Above software can be downloaded from relevant product page on SIYI official website.

SIYI FPV App Steps

1. Power air unit and bind it with ground unit.
2. Connect the air unit's Ethernet port with the gimbal.
3. Update SIYI FPV app to the latest.
4. Run SIYI FPV app, go to "Settings" and select the relevant SIYI camera type with main / sub stream, video stream will display. Gimbal motion and camera functions can be controlled by app touchscreen.

SIYI QGC App Steps

1. Power air unit and bind it with ground unit.
2. Connect the air unit's Ethernet port with the gimbal.

3. Run SIYI QGC app, go to “Comm Links – Video Settings”, and select “RTSP Video Stream” for “Source”, then enter the default RTSP addresses of SIYI gimbal camera, video stream will display. Gimbal motion and camera functions can be controlled by ground station touchscreen.

4.3 Output Video Stream to Windows Device through HM30 Full HD Image Transmission System

Gimbal connects to HM30 air unit directly, then video will be displayed in SIYI QGC Windows software when the air unit is communicating with the ground unit.

Please refer to chapter 3.4 of this manual for details.

4.4 Output to Third-Party Links

A2 mini gimbal can output video stream to third-party image transmission systems which provide Ethernet port and are compatible with RTSP video stream.

In this way, it is necessary to prepare a customized link cable for connection between SIYI gimbal camera and the third-party image transmission system.



CAUTION

The “RX-” pinout on SIYI gimbal’s video port should connect to the image transmission system video port’s “RX-” pinout, and “RX+” pinout to “RX+” pinout. Do not cross the pinouts, otherwise it will cause damage to the device.

Steps

1. Power the air unit of the image transmission system and bind it with the ground unit.
2. Connect gimbal's Ethernet port to the third-party link's Ethernet port.
3. Open RTSP video player and input SIYI gimbal's default RTSP addresses (rtsp://192.168.144.25:8554/main.264), if video displays normally, connection is successful.



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The default RTSP addresses of A2 mini gimbal is (rtsp://192.168.144.25:8554/main.264) and it is available to modify the IP address via an external SDK.

4.5 Solutions to No Image

If gimbal camera failed to output video or the video cannot be displayed properly, please follow the steps below for trouble shooting.

1. Confirm if the link's ground unit is communicating with the air unit and if the camera is connected to the air unit.
2. Check Camera IP addresses and RTSP addresses.
3. If you are using SIYI FPV app, check the connection status, app version, video stream settings.

4. If you are using SIYI handheld ground stations, check the Ethernet switch in Android system.
5. Please double check if the gimbal camera's IP addresses was modified accidentally.

If video still does not show up, please follow the steps below and make a deep investigation according to the video output mode, the video display device, and the application / software you are using.

4.5.1 Video Output to Android Device

1. Input SIYI gimbal's default IP addresses "192.168.144.25" in the "Ping Tools" app and check if the network communication is successful. If the tool responds, then check if the RTSP address in the application / software is correct.



Successful Network Communication



Network Communication Failed

2. If the network communication is failed, then check the communication between the link's ground unit and the air unit. If the communication is good, then check if the video cable between the camera and the link's air unit is good, and if the voltage input is in normal range.

4.5.2 Video Output to Windows Device

1. Use the “Win + R” key combo to wake up the “Run” program and input the command “cmd”.

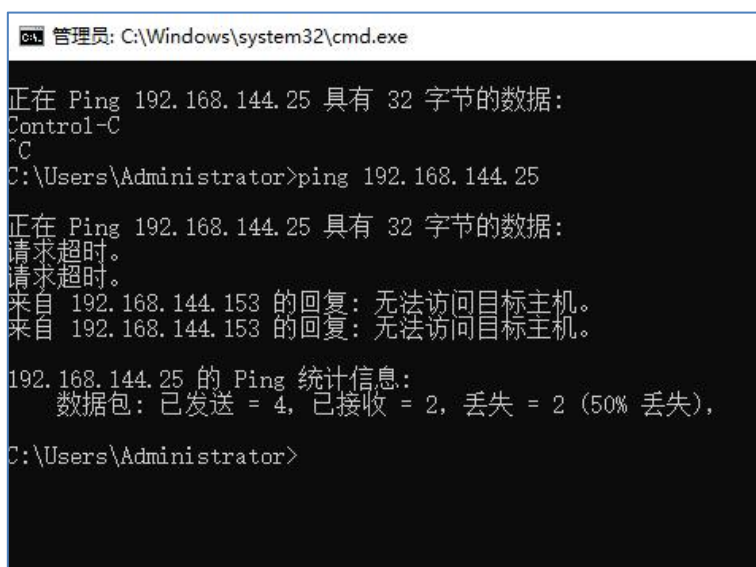
```
CA 管理员: C:\Windows\system32\cmd.exe
Microsoft Windows [版本 10.0.19042.804]
(c) 2020 Microsoft Corporation. 保留所有权利。

C:\Users\Administrator>ping 192.168.144

正在 Ping 192.168.0.144 具有 32 字节的数据:
Control-C
^C
C:\Users\Administrator>ping 192.168.144.25

正在 Ping 192.168.144.25 具有 32 字节的数据:
来自 192.168.144.25 的回复: 字节=32 时间=9ms TTL=64
来自 192.168.144.25 的回复: 字节=32 时间=3ms TTL=64
来自 192.168.144.25 的回复: 字节=32 时间=4ms TTL=64
来自 192.168.144.25 的回复: 字节=32 时间=3ms TTL=64
```

Successful Network Communication



```
管理员: C:\Windows\system32\cmd.exe
正在 Ping 192.168.144.25 具有 32 字节的数据:
Control-C
^C
C:\Users\Administrator>ping 192.168.144.25

正在 Ping 192.168.144.25 具有 32 字节的数据:
请求超时。
请求超时。
来自 192.168.144.153 的回复: 无法访问目标主机。
来自 192.168.144.153 的回复: 无法访问目标主机。

192.168.144.25 的 Ping 统计信息:
    数据包: 已发送 = 4, 已接收 = 2, 丢失 = 2 (50% 丢失),
C:\Users\Administrator>
```

Network Communication Failed

2. Input SIYI gimbal camera's default IP addresses "192.168.144.25" and press the "Enter" key to check if the communication is successful. If it is, please check the RTSP addresses in the software or try to switch to another software.
3. If the network didn't connect, then check the communication between the link's ground unit and the air unit. If the communication is successful, then check if the video cable between the camera and the link's air unit is good, and if the voltage input is in normal range.

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If you have done all trouble shooting by following the steps above and still didn't solve the problem, then please contact your dealer, or contact SIYI Support directly.

4.6 Common IP Addresses

SIYI Optical Pod / Gimbal Camera's Default IP Addresses: 192.168.144.25

(OLD) SIYI Optical Pod / Gimbal Camera's Default RTSP Addresses:

rtsp://192.168.144.25:8554/main.264

(NEW) SIYI FPV App's Private Video Stream Protocol's Addresses:

- SIYI Camera 1 Main Stream: 192.168.144.25: 37256
- SIYI Camera 1 Sub Stream: 192.168.144.25: 37255
- SIYI Camera 2 Main Stream: 192.168.144.26: 37256
- SIYI Camera 2 Sub Stream: 192.168.144.26: 37255

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SIYI cameras released after ZT30 (including ZT30) start to use the new addresses.

SIYI cameras released before ZT30 still use the old addresses, including ZR30, A2 mini, A8 mini, ZR10, R1M Recording FPV Camera, etc.

5. SIYI FPV APP

SIYI FPV is an Android application developed by SIYI to configure many SIYI products for video display, camera stream settings, and communication link status monitoring.



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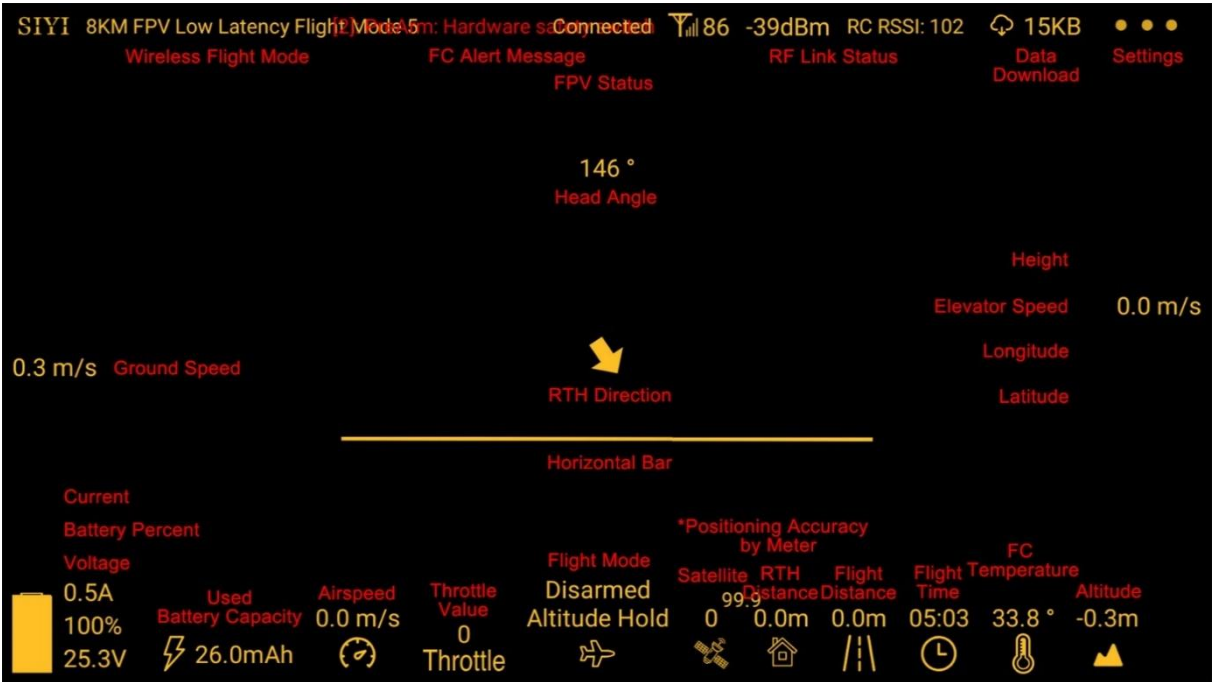
This chapter is edited based on SIYI FPV App v2.5.12.572.

SIYI FPV App can be download from the relevant product pages on SIYI official website.

SIYI FPV App compatible SIYI devices.

- ZT30 Four-Sensor Optical Pod
- ZR30 4K AI 180X Hybrid Zoom Optical Pod
- A2 mini Ultra-Wide-Angle FPV Gimbal
- MK32 / MK32E Enterprise Handheld Ground Station
- A8 mini AI Zoom Gimbal Camera
- ZR10 2K 30X Hybrid Zoom Optical Pod
- R1M HD Recording FPV Camera
- Air Unit HDMI Input Converter
- HM30 Full HD Image Transmission System
- MK15 / MK15E Mini Handheld Ground Station

SIYI FPV App OSD Information Definition

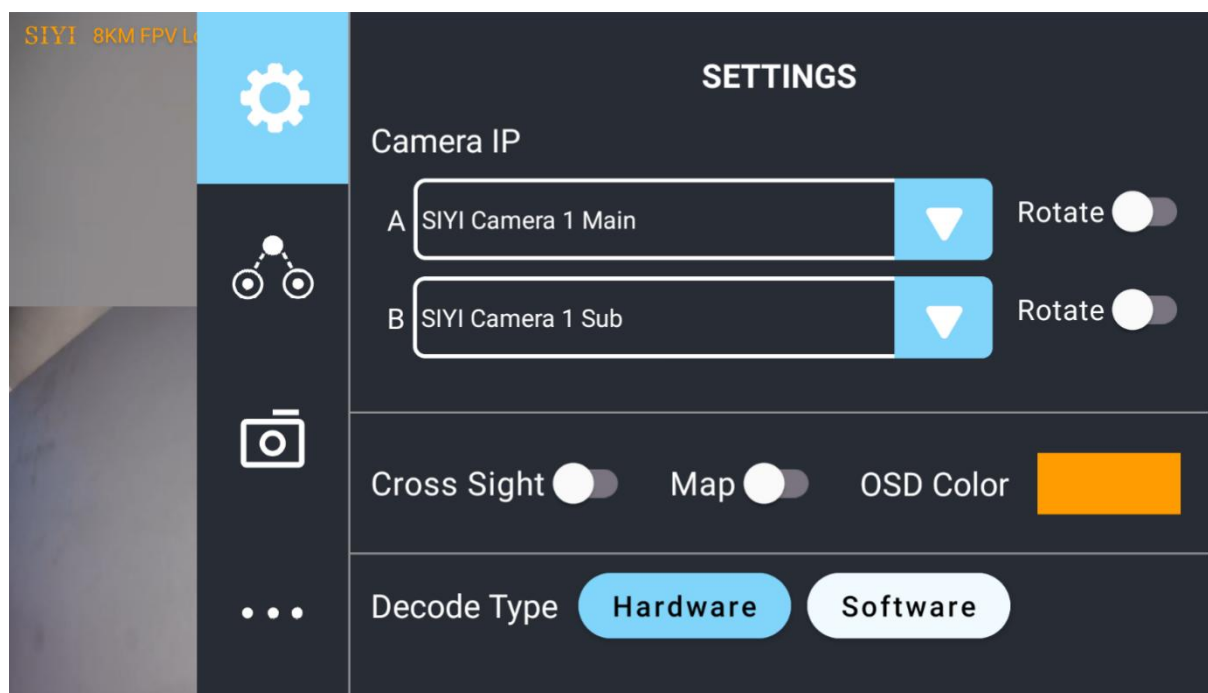


SIYI FPV Camera Function Icon Definition



5.1 Settings

In “Settings” page, you can select camera type with stream type, select or input video stream IP addresses, custom app interface, and switch video decoding type.



About Settings

Camera IP: Select between SIYI Camera 1 and SIYI Camera 2, between main stream and sub stream, select or input video stream RTSP addresses, disable image, or rotate the relevant image in 180 degrees.

Cross Sight: Enable / disable a cross sight in the center of the image.

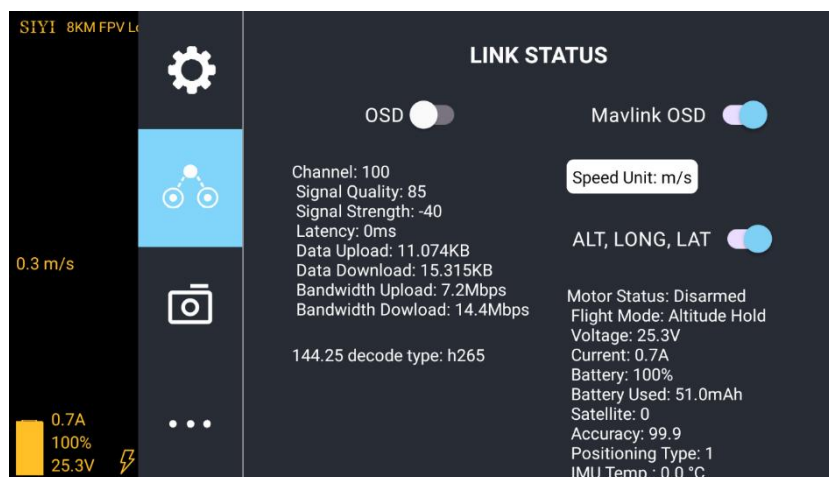
Map: Enable / disable the map box over the left-bottom corner of the image.

OSD Color: Custom the color of all OSD information.

Decoding Type: Switch between “Hardware Decoding” and “Software Decoding”. Please refer to your camera and your device to display video for the best decoding type.

5.2 Link Status

Display the link status directly over the FPV image.



About Link Status

OSD: Enable / disable standard OSD information.

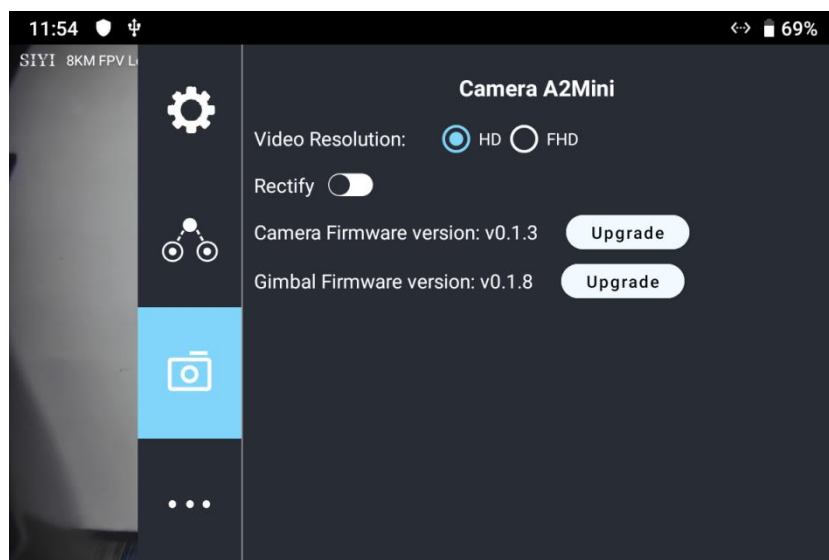
Mavlink OSD: Enable / disable Mavlink OSD information.

Speed Unit: Switch speed unit between meter per seconds and kilometer per hour.

Longitude and Latitude: Enable / disable information.

5.3 Gimbal Camera

Configure the basic functions for SIYI gimbal cameras and cameras.



About Gimbal Camera

Video Resolution: Switch camera real-time streaming resolution between HD (720p) and Full HD (1080p).

Distortion Correction: Turn on/off A2 mini gimbal's distortion correction function.

Camera Firmware Version: Display the current camera firmware version.

Gimbal Firmware Version: Display the current gimbal firmware version.

Firmware Upgrade

A2 mini gimbal supports firmware upgrade through “SIYI FPV” app.

Before upgrade, it is necessary to prepare the tools, software, and firmware below.

- MK15 Mini Handheld Smart Controller



You can also use MK32 Enterprise Ground Station, HM30 Full HD Image Transmission System, or compatible third-party links for A2 mini gimbal's firmware upgrade.

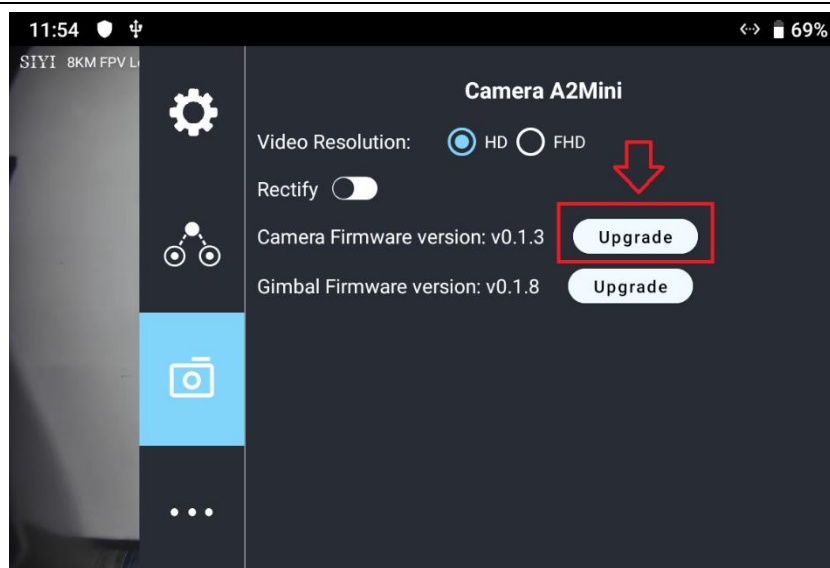
- SIYI FPV App (v2.5.12.572 or latest version)
- Camera Firmware
- Gimbal Firmware

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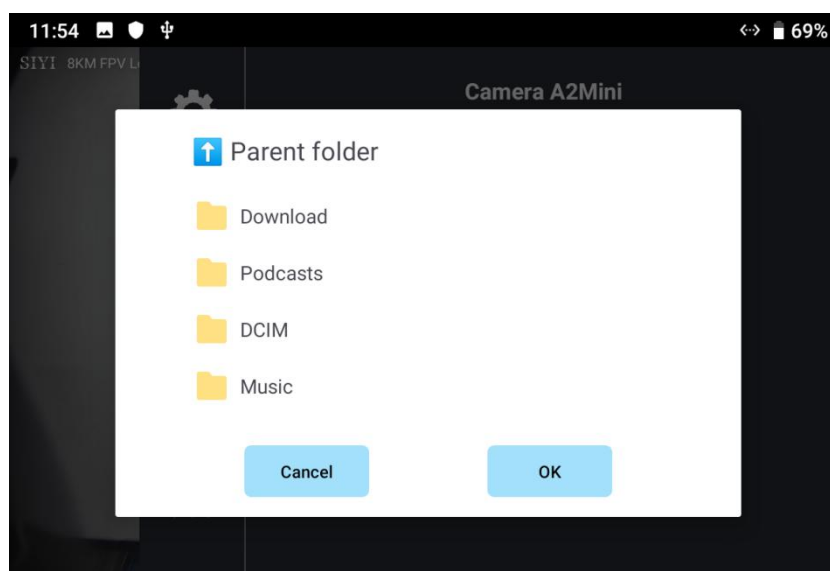
About tools and firmware can be downloaded from the relevant product pages on SIYI official website.

Firmware Upgrade Steps

1. Install the latest SIYI FPV app on your MK15 remote controller and save the firmware files into MK15 Android system storage in advance.
2. Make sure that MK15 remote controller is communicating with the air unit and A2 mini gimbal is already connected to the air unit.
3. Run SIYI FPV app, go to “Camera A2 mini” page.



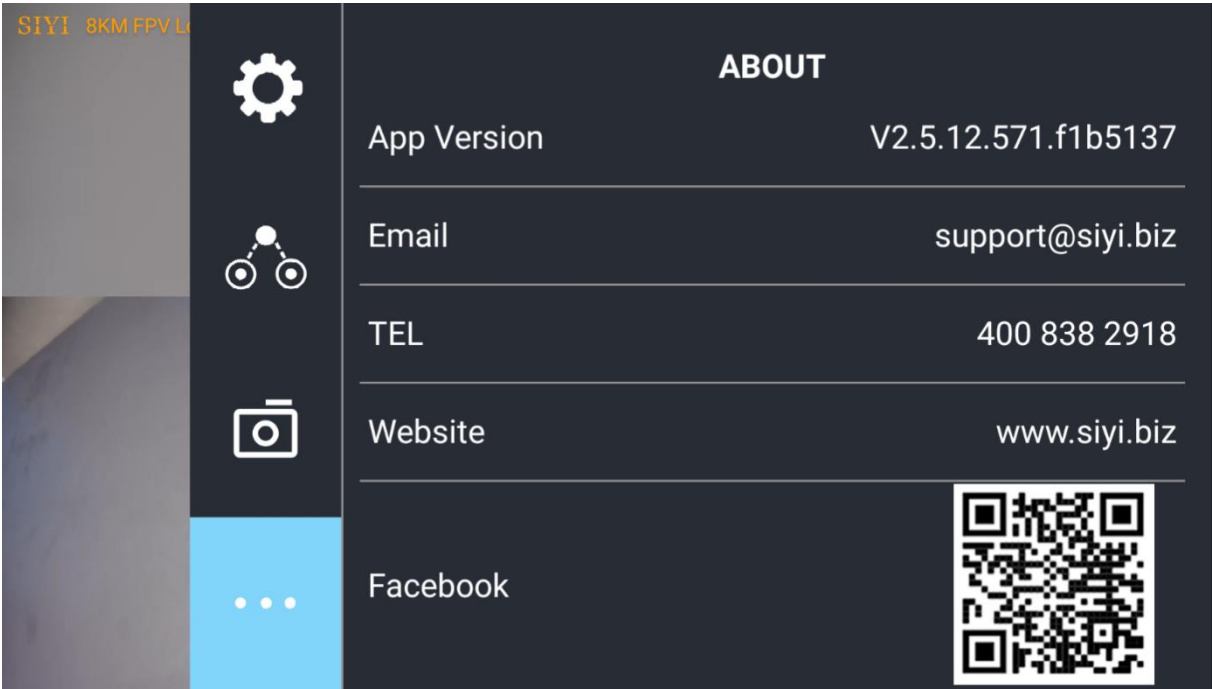
4. Tap the “Upgrade” button after the firmware upgrade option and find the relevant firmware.



5. Select the firmware and tap “OK”, and wait for “Upgrade Successful”. Then restart SIYI FPV app to confirm if the firmware is already the latest.

5.4 About SIYI FPV

Displays the software version of SIYI FPV and common contact information of SIYI Technology.



6. After-sale Service

Please visit the SIYI Technology support page at [Service and Support - SIYI Technology | Empowering and Building an Intelligent Robot Ecology](#) for the latest after-sales and warranty information.