

2.4G DATALINK USER MANUAL



V1.1

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Thank you for purchasing SIYI Technology's product.

SIYI 2.4G Datalink is designed to be a professional transmitting and receiving station for drones on industrial application, such as aerial mapping. It is applied with a brand new RF modulation technology which supports an anti-interference long communication distance at very low transmitting power.

To maintain a safe and orderly public space and to ensure you a good using experience of AK28 transmitter, please read this manual carefully. If you have any issue using the product, please consult the manual or check online pages of AK28 on SIYI Technology's official website (<http://www.siyi.biz>). You can also inquire our after-sale service coordinator (support@siyi.biz).


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1 READ TIPS

1.1 Icon Definition

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**  **Mark**


1.2 Flight Safety


2.4G Datalink is designed for professional application in specific industries, users who approaches to the device should have at least the basic ability to manipulate it. Any irregular or irresponsible manipulations of the device may cause damages or lead to property loss or human injuries. Non-adult users must follow their trainer's guidance or the supervision of an adult. Disassembling or modification on the 2.4G Datalink system is prohibited without permission from its manufacturer, SIYI Technology.


To maintain a safe and orderly public space and to ensure you a good using experience of SIYI's products, please read the prohibited and mandatory terms carefully.


 Do not use 2.4G Datalink system to control your aircraft/vehicle at places with intensive crowd (a square, a park), or at places with many obstructions (a street, a parking lot), or in fields with strong magnetic or interference (an electricity plant, a radar station, railways), or in any other fields where an irregular flight/operation may cause property loss or human injuries.


 Do not hold or cover the ground station antenna or obstruct its transmission by any means in a flight or an operation.


 Never point your ground station antenna's upper ends straightly to your aircraft/vehicle while it is working, they are the weakest part for transmission.

 Do not start your aircraft/vehicle when you are tired, drunk, in sickness or any circumstances you are not feeling good.

 Do not take off your aircraft when it is rainy, windy or at night.

 Do not power off your transmitter while your aircraft's/vehicle's engines and motors are still working.

 Please always try to control your aircraft/vehicle within sight range.

 Make sure that your monitor display the FC control center and you can read their status before starting your aircraft/vehicle.

- ❗ Do not forget to check battery level of the transmitter and the receiver before starting your aircraft/vehicle.
- ❗ Always power off your aircraft/vehicle first, ground station the second.
- ❗ Before changing any settings for the ground station, make sure your aircraft's/vehicle's engines are powered off and their motor wires are off connection, in case of a sudden switch on.
- ❗ When you start your aircraft/vehicle for the first time, make sure that the fail-safe settings in your transmitter is activated.
- ❗ Always switch on the transmitter first and hold the throttle joystick at its bottom position, then power on your aircraft/vehicle.

1.3 Precautions on Storage/Carrying/Recycling

CAUTION

Always place your 2.4G Datalink system at places where babies or kids do not reach.

DANGER

2.4G Datalink system should be placed as below:

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 of solid supports or may cause vibration;

Not nearby steam or other heat sources.

2 PRODUCT INTRODUCTION

2.1 Product Features

Long Transmission Distance

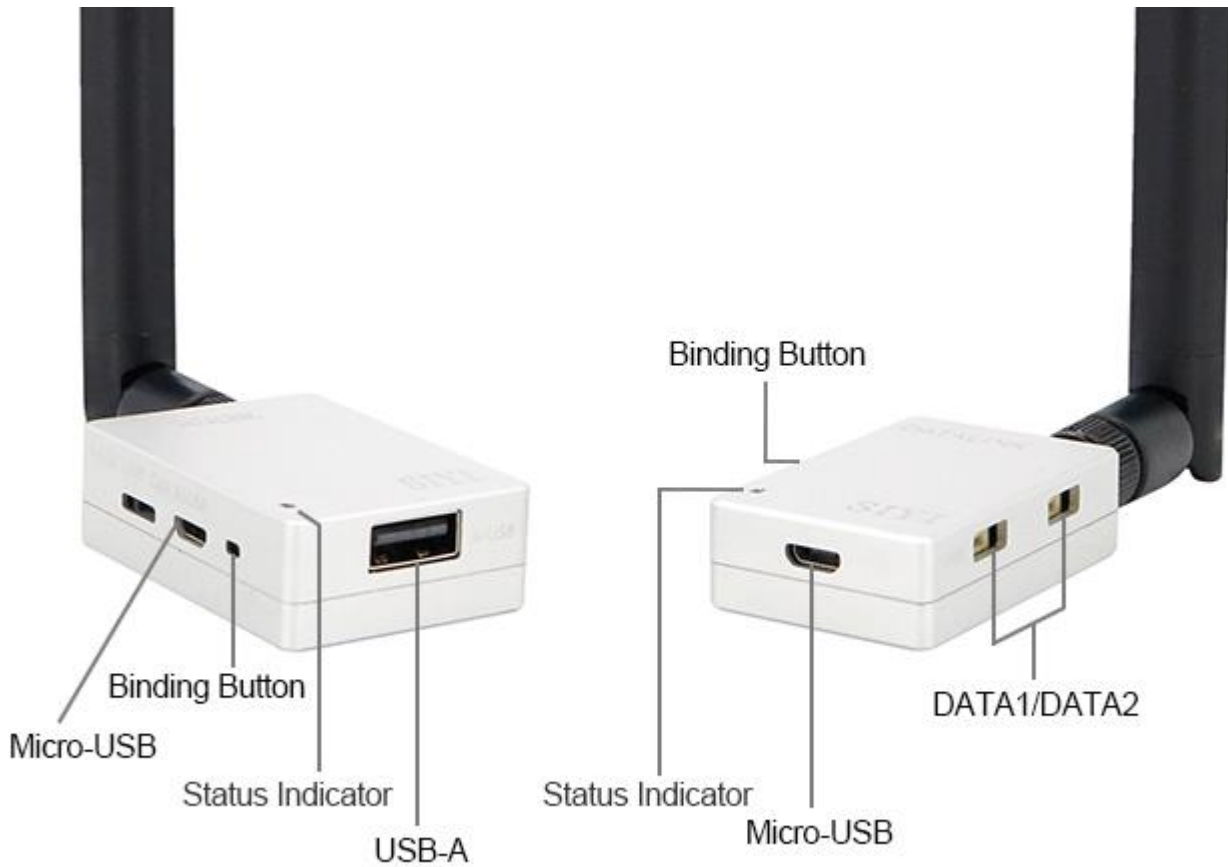
The low-power RF solution which includes the advanced frequency hopping algorithm and the remarkable anti-interference technology makes the communication distance up to 15 kilometers.

Various Ports

The 2.4G Datalink supports UART/CAN (optional) data input and is equipped with a USB port by which users can upgrade the device through PC easily.

2.2 Parts

2.2.1 At a Glance



2.2.2 Ports on 2.4G Datalink System

Ground Unit

Micro-USB: Firmware upgrading.

Binding Button: Press and hold for two seconds to bind the ground unit with the air unit.

Status Indicator: RF connection status.

USB-A: Telemetry data output to smartphone/tablet/PC.

DATA1/DATA2: Reserved

Air Unit

Binding Button: Press and hold for 2 seconds to bind the air unit with the ground unit.

Status Indicator: RF connection status.

Micro-USB: Firmware upgrading.

DATA1/DATA2(+ - Tx Rx): Flight controller data input.

2.3 Technical Specification

Overall

Compatible FC	Open Source Flight Controllers: PIX/APM, etc. BOYING PALADIN V2 TOPXGUN T1-A WOOZOOM THEONE-A EFY FINIX200M JIYI K3A/K++ CFUAS C1-A
Frequency Band	2400 MHz – 2483 MHz
Transmitting Power	100 mW (20 dBm) E.I.R.P
Transmitting Speed	325kbps*default
Receiving Sensibility	-101 dBm
Transmitting Distance	15 km / 9.3 miles (unobstructed, free of interference)
UART Baud Rate	115200*default
Working Current	Ground Unit: 200 mA Air Unit: 80 mA Idle: 60 mA
Power Input Port	Micro-USB
Wireless Type & Function	2.4G ISM

Packing Size	8.5x7.5x5 cm
Packing Weight	150 g

Ground Unit

Power Input Port	Micro-USB; 5V/2A
Data Output Port	USB-A
Antenna Gain	5 dBi
Antenna Connector	SMA 180° Female Base
Working Voltage	5V
Operating Temperature	-10 to 55°C
Dimensions	50 x 35 x 16 mm
Net Weight	35 g

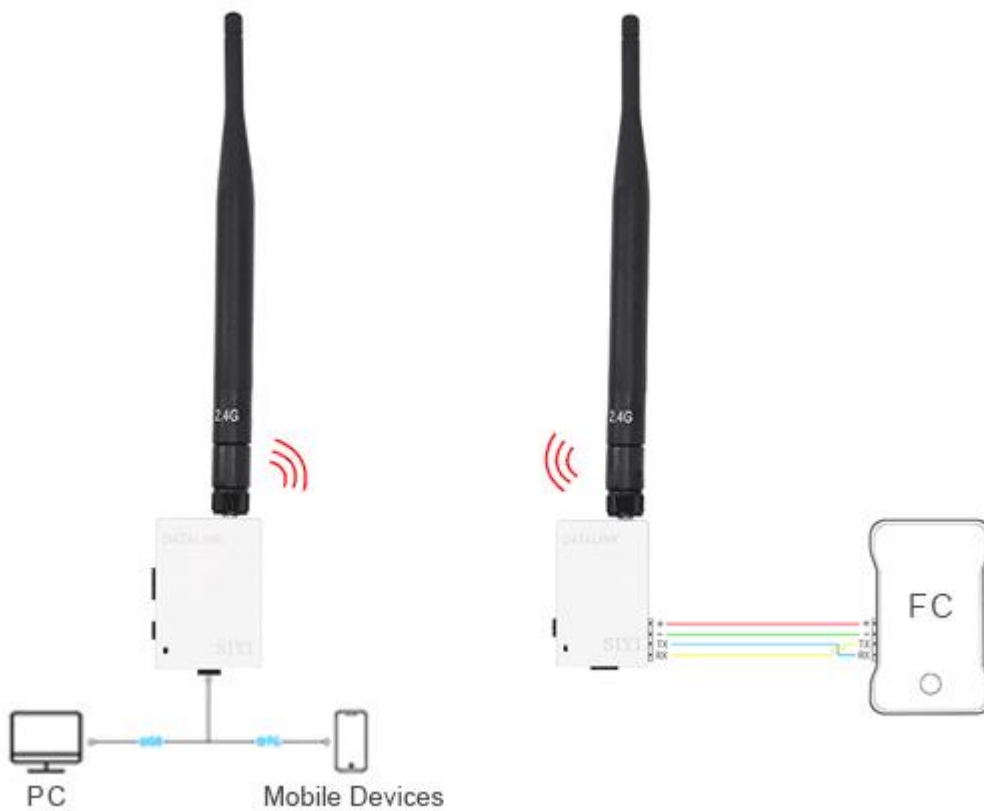
Air Unit

Datalink Ports (to FC)	UART, CAN (optional)
Antenna Gain	5 dBi
Antenna Connector	SMA 180° Female Base
Working Voltage	5V
Telemetry Voltage	15 – 50V
Operating Temperature	-10 to 55°C
Dimensions	49 x 31 x 13.5 mm
Net Weight	28g

2.4 Packing List

- 1 x Ground Unit
- 1 x Air Unit
- 1 x OTG Micro-USB Cable
- 1 x OTG Type-C Cable
- 1 x Telemetry Cable

2.5 AK28 Common Diagram



2.6 LED Indicator Definitions

The LED indicator on the ground unit and the air unit has three colors. The blinking frequencies indicates 2.4G Datalink system's different working status.

- Solid Green: Good communication.
- Green Blinks: Blinking frequency indicates AK28 transmitter's RF signal strength. The faster it blinks, the worse the signal is.
- Solid Red: Lost of communication.
- Slow Red Blinks: Ground unit firmware does not match.
- Fast Red Blinks: Transmitter is linking/binding with receiver.
- ● ● Fast Red-Green-Yellow Blinks: Firmware upgrading mode.

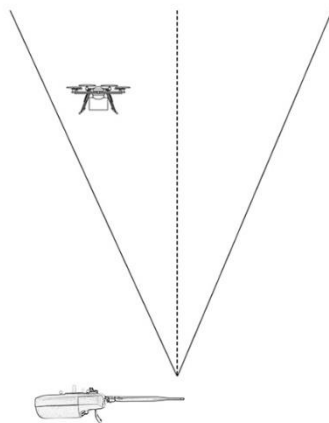
3 GET READY TO USE 2.4G DATALINK

3.1 How to Place Antennas Right

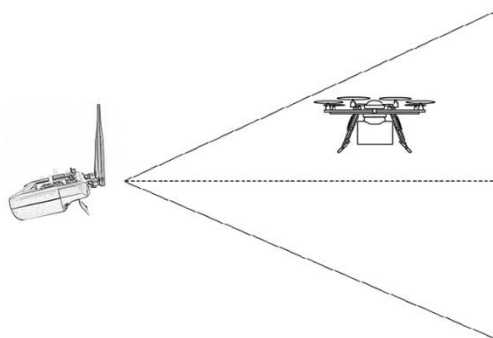


- Mark: 2.4G Datalink has the best signal strength when the antennas are placed horizontally. Thus, please avoid pointing antennas' upper end straightly to your aircraft and do not fold the antennas.

3.1.1 Good Antenna Angle of Transmitter

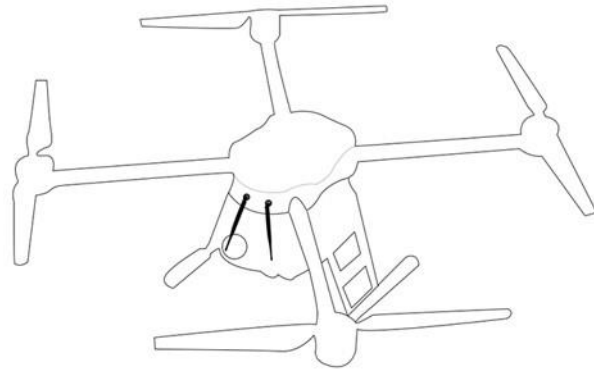


Aircraft in front of the transmitter



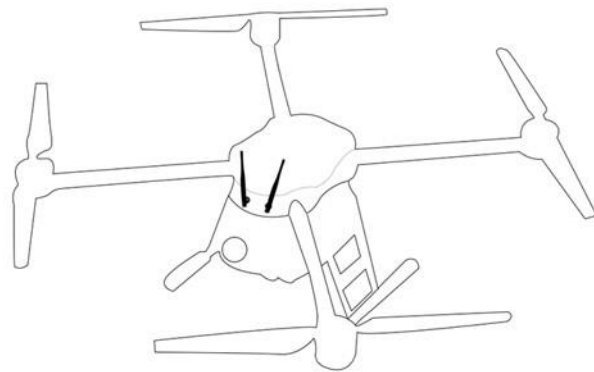
Aircraft up from the transmitter

3.1.2 Good Antenna Angle of Sky Station



Flying high

(Altitude higher than 10 meters, **antennas should be placed downwards**)



Flying low

(Altitude lower than 10 meters, **antennas should be placed upwards**)

 **WARNING**

Do not fold or cover antennas and avoid any obstruction between the transmitter and the aircraft in flight, otherwise there will be an obvious decrease to transmission signal quality.

3.2 How to Link/Bind 2.4G Datalink Ground Unit to Air Unit

Each unit of 2.4G Datalink is assigned with a unique ID code. Before linking the ground unit to the air unit, the receiver identifies the transmitter ID (**Linking/Binding**) first. After the first linking process between the transmitter and the receiver is done, the transmitter ID will be memorized in the receiver so that you don't have to repeat the process before the next flight/operation (except when your transmitter has to be linked with a different receiver).

Linking/Binding Steps

1. Please keep the ground unit one meter away from the air unit and power on them;
2. On the ground unit, stick a pin or needle to the linking button inside the linking hole, press and hold the button for 3 seconds till the status indicator blinks red which means the transmitter is ready for linking

3. Turn to the air unit, stick a pin or needle to the linking button inside the linking hole, press and hold the button for 3 seconds till the status indicator blinks red which means the receiver is ready for linking;
4. If the transmitter indicator and the receiver both blink green, linking is finished.

 **WARNING**

Before linking the transmitter to the receiver, please make sure your aircraft motors have no power connected (E.S.C are off connection).

Reboot the receiver when linking steps are finished, and try to manipulate on the transmitter to confirm if it works well.

4 Firmware and Baud Rate

4.1 Firmware Upgrading

2.4G Datalink system supports firmware upgrading through PC.

Before upgrading 2.4G Datalink system, it is necessary to download the software “SIYI Assistant v1.2.0” and connect the ground unit and the air unit to your PC in turns using the original OTG USB cable.

Steps

1. Please visit the 2.4G Datalink system download page on SIYI Tech’s official website to download all necessary software, application, and firmware one by one.

Link: <http://www.siyi.biz/cn/datalink/DATALINK/xiazai/>

2. Release the “.zip” files and install “SIYI Assistant v1.2.0” on your PC.
3. Then use the original OTG USB cable with the upgrading tool to connect the ground to your computer.
4. Run “SIYI Assistant v1.2.0” to check ground unit’s current firmware version. If they are not the latest versions, then tap on “Upgrade” to enter firmware upgrading menu.

5. Load the latest firmware files and tap on “Upgrade” and wait till the process is finished.
6. Repeat step 3 to 5 for upgrading the air unit.

4.2 Baud Rate Switching

2.4G Datalink system also supports different firmware version to match different baud rate. Please use the firmware with the baud rate according to your requirement.

5 TELEMETRY OUTPUT (TO GCS)

The ground unit of 2.4G Datalink system can connect to the ground control software running on different devices.

5.1 Connect to Smartphones/Tablets

By connecting to smartphones and tablets, 2.4G Datalink system can work with Android ground control software such as QGroundControl.

Steps

1. Check baud rate settings of the flight controller in the ground control software.
2. Upgrade the correct firmware to the ground unit and the air unit according to the given baud rate.
3. Connect the air unit with the flight controller following the right cable sequence.
4. Use the OTG cable to connect the ground unit with your smartphone/tablet.
5. Open your GCS, tap on “USB Connection – Connection Succeed”. (Please approve if it reminds you acquire USB permission.)

5.2 Connect to PC

By connecting to smartphones and tablets, 2.4G Datalink system can work with Android ground control software such as Mission Planner.

Steps

1. Check baud rate settings of the flight controller in the ground control software.

2. Upgrade the correct firmware to the ground unit and the air unit according to the given baud rate.
3. Connect the air unit with the flight controller following the right cable sequence.
4. Use the OTG cable to connect the ground unit with your PC.
5. Open your GCS and select the correct serial port device. (Please check if drivers are installed if your PC does not recognize the serial port device.)

6 AFTER-SALE SERVICE

6.1 To-be-repair Procedure

If you meet any difficulties using SIYI Technology's product, please send your email to support@siyi.biz or consult your sales manager directly.

If it was a confirmed product defect or damage which requires returning or replacement or repairing, SIYI engineers will guide you for the process.

6.2 After-sale Policy

SIYI Technology guarantees that, subject to the following conditions, Return & Refund Service, Replacement Service and Warranty Repair Service can be requested. Please contact SIYI directly (support@siyi.biz or your sales manager) or your authorized SIYI dealer for more detail.

6.2.1 7-Day Return & Refund

You can request Return & Refund Service:

Within seven (7) days of receiving a product if the product has no manufacturing defect, has not been activated and is still in new or like-new condition.

Within seven (7) days of receiving a product if the product has a manufacturing defect.

Return & Refund Service will not be provided where:

It is requested beyond seven (7) calendar days of receiving a product.

A product sent to SIYI for Return & Refund Service does not include all original accessories, attachments or packaging, or any item is not in new or like-new condition, i.e. with cracks, dents or scratches.

A legal proof of purchase, receipt or invoice is not provided or is reasonably believed to have been forged or tampered with.

Any fault or damage of the product is caused by unauthorized use or modification of the product, including exposure to moisture, entry of foreign bodies (water, oil, sand, etc.) or improper installation or operation.

Product labels, serial numbers, waterproof marks, etc. show signs of tampering or alteration.

Damage is caused to the product by uncontrollable external factors, including fire, floods, high winds or lightning strikes.

A product is not delivered to SIYI within seven (7) calendar days after Return & Refund Service confirmation is sent from SIYI.

Other circumstances stated in this policy.

6.2.2 15-Day Replacement

You can request Replacement Service:

Within fifteen (15) calendar days of receiving the product if the product has sustained a substantial damage in transit, provided always that the damage proof issued by the carrier can be provided to SIYI.

Within fifteen (15) calendar days of receiving the product if the product does not match the original description of the product in one or more significant respects.

Within fifteen (15) calendar days of receiving the product if the product suffers performance failure.

Replacement Service will not be provided where:

Service is requested more than fifteen (15) calendars days after receiving a product.

Legal proof-of-purchase, receipts, or invoices are not provided, or are reasonably believed to have been forged or tampered with.

A product sent to SIYI for replacement does not include all original accessories, attachments and packaging, or contains items damaged by user error.

A product is found to have no defects after all appropriate tests are conducted by SIYI.

Any fault or damage of the product is caused by unauthorized use or modification of the product, including exposure to moisture, entry of foreign bodies (water, oil, sand, etc.) or improper installation or operation.

Damage is caused by uncontrollable external factors, including fires, floods, high winds, or lightning strikes.

Received product has not been sent back to DJI seven (7) calendar days after replacement confirmation from DJI.

Proof of damage during transit issued by the carrier cannot be provided.

Other circumstances stated in this policy.

6.2.3 1-Year Warranty Repair

You can request warranty repair service:

If a product does not function as warranted during the warranty period, you may obtain after-sales service by contacting SIYI's service center. You will need to provide a valid proof-of-purchase, receipt or order number for the warranty service.

Charges may apply for services not covered by this Limited Warranty. Please contact SIYI for information specific to your location.

Please note that the warranty service is only available in the respective SIYI service regions where you purchased your SIYI product.

Warranty Repair service will not be provided where:

Crashes or fire damage caused by non-manufacturing factors, including but not limited to pilot errors.

Damage caused by unauthorized modification, disassembly, or shell opening not in accordance with official instructions or manuals.

Damage caused by improper installation, in correct use, or operation not in accordance with official instructions or manuals.

Damage caused by non-authorized service provider.

Damage caused by unauthorized modification of circuits and mismatch or misuse of the battery and charger.

Damage caused by operation in bad weather (i.e. strong winds, rain, sand/dust storms, etc.)

Damage caused by operating the product in an environment with electromagnetic interference (i.e. in mining areas or close to radio transmission towers, high-voltage wires, substations, etc.)

Damage caused by operating the product in an environment suffering from interference from other wireless devices (i.e. transmitter, video-downlink, Wi-Fi signals, etc.)

Damage caused by reliability or compatibility issues when using unauthorized third-party parts.

Damage caused by operating the unit with a low-charged or defective battery.

Products or parts with an altered identification label or from which the identification label has been removed.

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