FIM-2405 User Manual

RX on Ground   &   TX on Board

Contents

IWAVE COMMUNICATIONS CO., LIMITED

V2.0

1. Disclaimer

IWAVE is the registered trademark of IWAVE COMMUNICATIONS CO., LIMITED. All product names and brands in this manual are trademarks or registered trademarks of the Company. IWAVE COMMUNICATIONS CO., LIMITED reserves all copyrights of the product and the manual. All the information must not be copied or reproduced in any form without permission of IWAVE. There may be semantic differences between disclaimers of different languages. The Chinese version shall prevail in Chinese mainland, while the English version shall prevail in other regions. Thank you for purchasing IWAVE FIM-2405. Please use FIM-2405 according to local radio regulations. Before using, please carefully read this disclaimer. Once the product is used, all the contents of the disclaimer will be regarded recognized and accepted. Please install and operate the product in strictly accordance with the requirements of this manual. IWAVE COMMUNICATIONS CO., LIMITED and its affiliates will not assume any legal responsibility for results or losses caused by improper use, installation, assembly and modification (including the use of non-specified IWAVE parts and accessories, such as the radio power amplifier, antenna and SMA extension cord).

2. Precautions for integration

1) Be sure to use the parts provided by IWAVE.

2) Reverse connecting power line positive and negative will burn the device out.

3) Before powering on please make sure the antenna are in good connection and not install or remove the antennas with power on.

4) Given that the carbon fiber body and metal load may have shielding effects on antenna signals, they should not be installed between the antenna and ground terminal. Keep the antenna on board free from winding or blocking by obstacles. The antenna end should be vertically downward without bending to prevent shortening communication distance and failure communication.

5) Antennas on board should be kept away from other radio antennas(such as GPS antenna) to avoid electromagnetic noise and interference.

6) If using PTZ Camera, please do the PTZ self-testing firstly then connect HDMI cable.

7) HDMI cable and antenna on board may interfere with GPS. Please keep the HDMI cable and antenna away from the GPS module and its cables.

8) Do not disassemble or modify IWAVE FIM-2405. Any problem during installation, contact IWAVE

or　IWAVE local branch office.

9) Keep appropriate distances between different electronic devices during installation to minimize the electromagnetic interference.

10) Before using, please make sure all cables are in good connection and all components can work properly.

11) After starting the product, the self-test indicators of FIM-2405 will continuously blink for 30s and then keep bright. Tx camera's video shown on the monitor connected with Rx means the device works properly.

12) Check the surrounding environment to ensure there is no other 2.4GHz devices to cause interference.

13) If you use the Futaba remote controller, Futaba should be adjusted into the French mode. Otherwise, the video transmission performance will be serious affected.

14) **Adjust the Futaba into French mode as following steps:**
[LINKAGE MENU]→FRQUENCY→ RTN b→ [AREA]→[FRANCE]

15) Before using, please check the power of RX and TX. If the receiver power off, transmitter on board will lose connection.

16) Adjusting RX antenna inclination can improve the signal strength and image quality.

17) The camera should be fully charged to ensure normal video output.

18) FIM-2405 support video and duplex data communication. If the video stuck or stopped for more than 10s. It means the radio signal is weakened or the radio channel is narrowed. In this case, the aircraft need to fly back to short the distance between TX and RX. Otherwise, the TX will lose connection.

Notes: Improper operation of FIM-2405 may cause personal injury or damage to properties. Please pay high attention to operation safety.

3. List of in-box items

On board x1	Ground terminal x1
On board antenna x1	**Ground antenna x1**

Power cable x4

HDMI video cable x2

Network cable x4

S2 Cable: TTL Serial port cable x3(use for S2 port)

Serial TTL to USB serial port x4(use for S1 port)

SMA Cable(Copper wire tinned shield semi-soft line) x4

4. Interface Definition
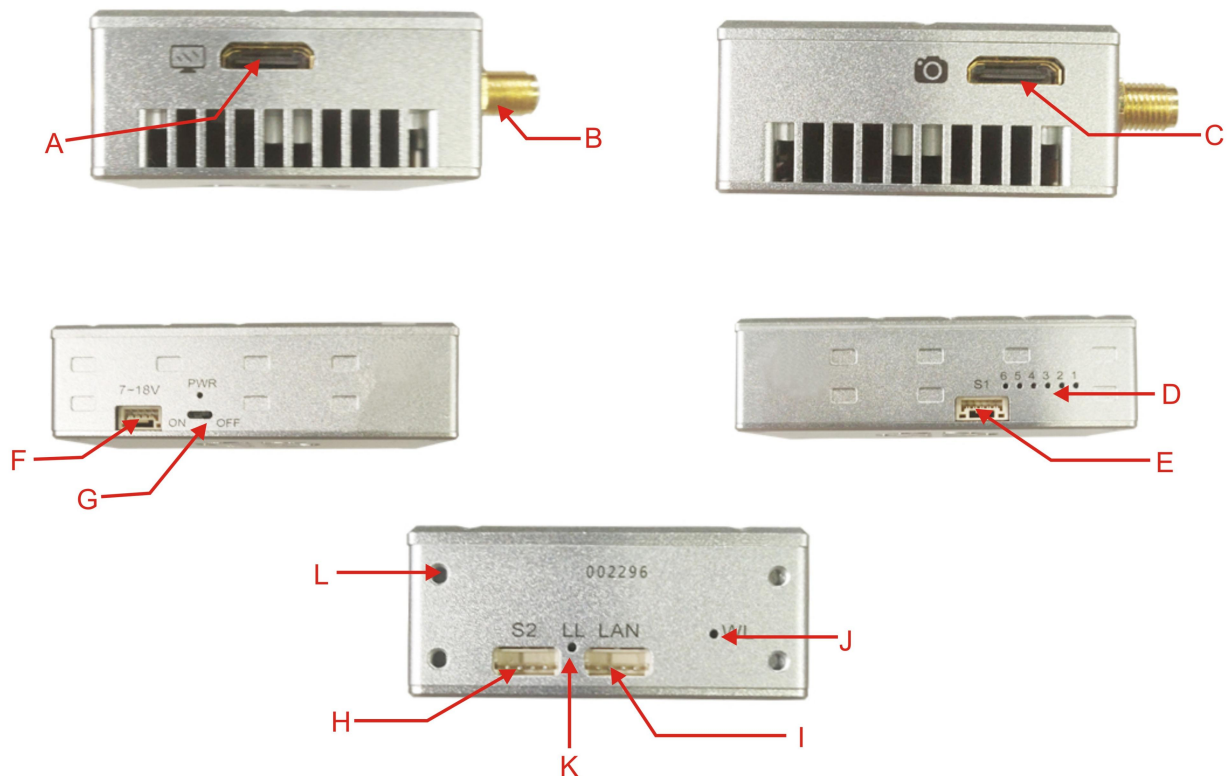
A: HDMI Port on Rx

B: SMA Port

C: HDMI Port on Tx

D: Working Status Indicator

E: S1 TTL Serial Port

F: DC7~18V Input

G: Power On/Off

H: S2 TTL Serial Port

I: Ethernet Port

J: WAN LED

K: LAN LED

L: Mounting Hole

Note: S1 and S2 is same function. If one serial port was broken, the second serial port is standby for use

Note: Working Status Indicator and LED description are as below:

(1) 1, 2, and 3 are signal strength indicators.

① Light 1 on: Signal Weak

② Light 1,2 on: Signal Normal

③ Light 1,2,3 on: Signal Strong

(2) lights of 1, 2, and 3 are flashing repeatedly in sequence which means the device pairing is unsuccessful, and Rx and Tx do not communicate.

(3) No. 4 is a data communicate indicator. When data is transmitting normally, No.4 light will keep red. Or it will not light.

(4) LL: LAN LED
● No Ethernet connection: not bright
● Ethernet connected but no Ethernet data transmission: keep bright
● Ethernet connected and Ethernet data normally transmitted: Fast blink

(5) WL: WAN LED
● Tx and Rx not communicate with each other: not bright
● Tx and Rx wireless communicate with each other but no signal transmitted: keep bright
● Tx and Rx wireless communicate with each other and the signal is normally transmitted: Fast blink

5. TTL Serial Cable Definition

Serial Cable for S1

ZH No.	Color	Signal
1	TXD	White or red
2	RXD	gray or yellow
4	Ground	Black

Serial Cable for S2

ZH No.	Color	Signal
1	Red	TXD
2	Yellow	RXD
3	White	3V3
4	Black	GND

6.Operating Instructions & Steps

5.1. Make TX and RX and accessories ready.

Besides the items we supply in package box: Tx, Rx, Antennas, Power Cables, Antenna Cable, Ethernet Cable, Serial Cable and HDMI Cable, you also need to prepare monitor, battery, camera and PC.

Tx & RX   (TTL)Serial Cable for S1 Port*4   (TTL)Serial Cable for S2 Port*3   Tx HDMI Cable*1   Tx Antenna*1

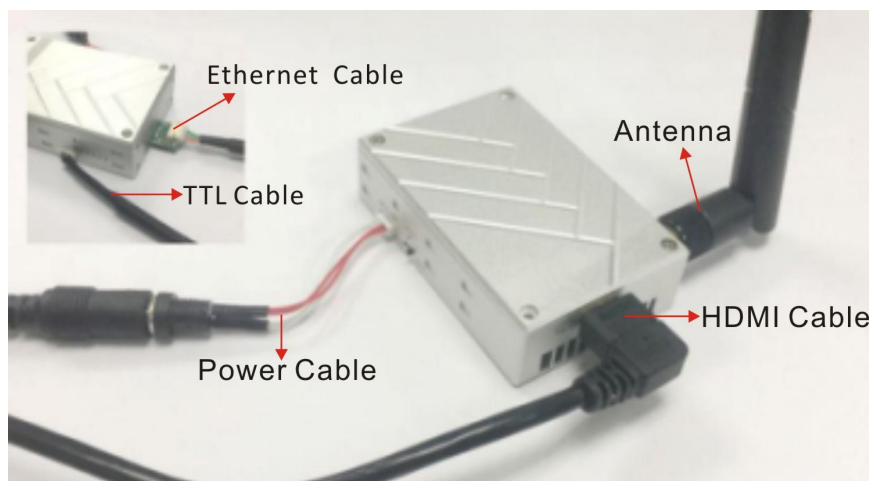Rx HDMI Cable*1   Antenna Cable*4   Power Cable*4   Ethernet Cable*4   Rx Antenna*1
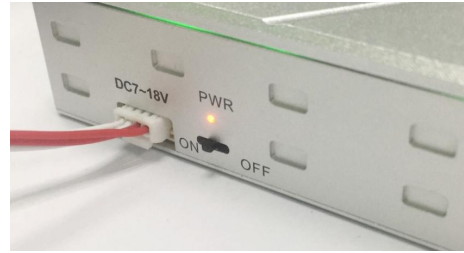
5.2.Connection

Make the power cable, HDMI Cable, Ethernet cable, serial port cable and antenna in good connection.

5.3. Power on

After checking all the connections are in good condition, turn on the the video source, LCD display, transmitter and receiver. The PWR indicator will bright and the whole system starts to work.

5.4. Observe the each indicator's status

When the device begin to normally start work, all indicators status is described as follow:

① After power on, light 1,2,3 turn green, light 6 turns blue.

② After few seconds, light 1,2,3,6 start flashing. And light 5 keep bright in green color.

③ After a few seconds, the device's startup process is completed.

- Light 1, 2, 3 keep bright in green color
- Light 6 keeps bright in blue color
- light 4 keeps bright in red color
- Light 5 begins to fast blink in green

④ If signal between Tx and Rx is normally transmitted, WL light will fast blink in green.

⑤ After the receiver powered, the"POWER ON" letters will be showed on the display bottom

5.5. Boot up successfully

After successfully connection, the display will smoothly show camera's video on Tx.

Remark: In UAV application, please make the Tx with Rx connection successfully and the video show on ground station smoothly then fly the UAV. About how to install the antenna on UAV please refer the following

description.

# 6. Antenna Installation

6.1. Multi-rotor UAV

SMA Feeder Cable

1) Using SMA metal shielded semi-flexible blue feeder cable provided by IWAVE to connect the TX SMA port with antenna.
2) The antenna needs to be mounted vertically downwards.
3) The best installation location is UAV ground bracket. With antenna inside, the bracket can only use fiberglass material.
4) If the ground bracket is automatically retracted, the antenna can be installed in the lower part of the aircraft.
5) If the antenna is intercepted by the PTZ camera, the video on RX will appear image stuck or mosaic. At this you need to adjust the UAV's flying attitude and angle.

6.2. Fixed Wing UAV

1) Using SMA metal shielded semi-flexible blue feeder cable provided by   IWAVE to connect the TX SMA port with antenna.

2) The antenna needs to be mounted vertically downwards.
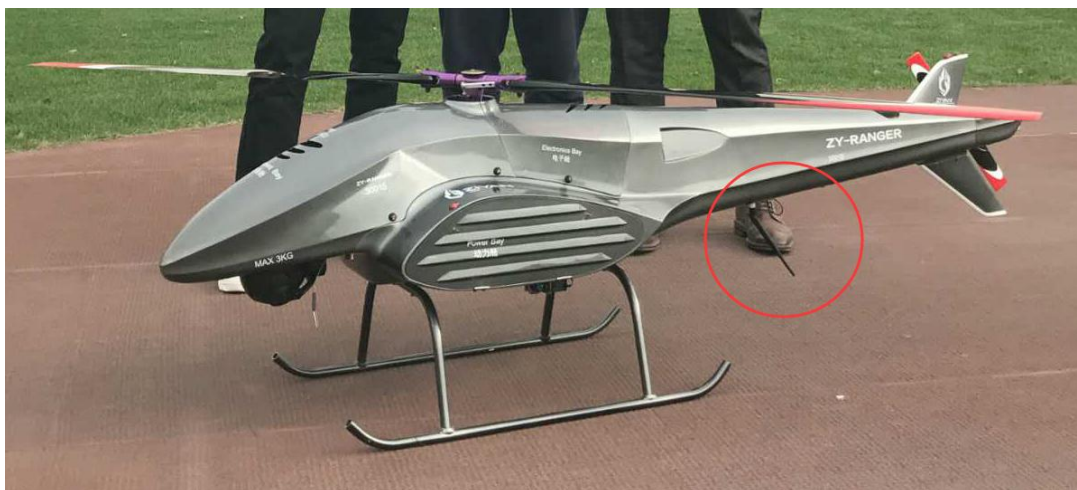
3) The best installation position is center of UAV tail, prominent outside the body and vertical downward.

4) The second optional mounting position is located below the wing and body joints, vertical down, as far as possible away from the wing but near the machine abdomen, protruding below the abdomen level.