R2TECK

Digital Video Transmission System
DVLC
USER MANUAL

Wuxi R2TECKCo.,Ltd.

Content

1. Easy way to start the device

1.1 Operating steps and instructions

1.1.1 Air system

Ø   Install the antennas.
Ø   Install the MIPI camera.
Ø   Install the OSD cable (optional).
Ø   Install the TF card（Support 4GB-64GB, FAT32 format）, optional.
Ø   Connect air system to the power.
There should be below instructions if the air system works well.
POWERlightturn-on.
CAMlight turn-on.
REClight turn-on if the proper TF card has been inserted, and the recording function is turned on.
LINK light turn-on if the air system connect to ground system.

1.1.2 Ground system

Ø   Install the antennas.
Ø   Install the monitor by HDMI cable. (optional)
Ø   Turn off the ground system power button, then connect to the power (battery of 12V-DC power), turn on the ground system power button again.
Ø   Turn on the power.
There should be below instructions if the ground system works well.
After 15 seconds of power on, the WORK light will display the breathing effect, and the WORK light will loop from on to off on display.
HDMI light turn-on(if installed the HDMI monitor).
LINK light turn-on if the air system connect to air system.
HDMI monitor instruction (if installed the HDMI monitor).
The monitor shows logo "R2TECK" after ground system connect to the power.
After that, the monitor shows progress bar: Start-up / Selfcheck / Link.
Monitor real-time display the camera video and OSD information(if OSD module has been assembled)when the air system connect to the ground system.

1.1.3 Mobile

Ø   The mobile connect the WIFI network whose name is the same as the device number, WIFI password is "12345688".
Ø   Wait for connecting.
Ø   Run the APP (if the APP is already running, turn off it first then run again).
Ø   The mobile real-time display the camera video, the MOBILE light on the ground system turn-on.

Attention: Currently only allow working one mobile, if want to change the mobile, please follow below process:

Disconnect the mobile with ground system wifi network.

Wait ground system MOBILE light turn off.

Repeat the above 4 steps.

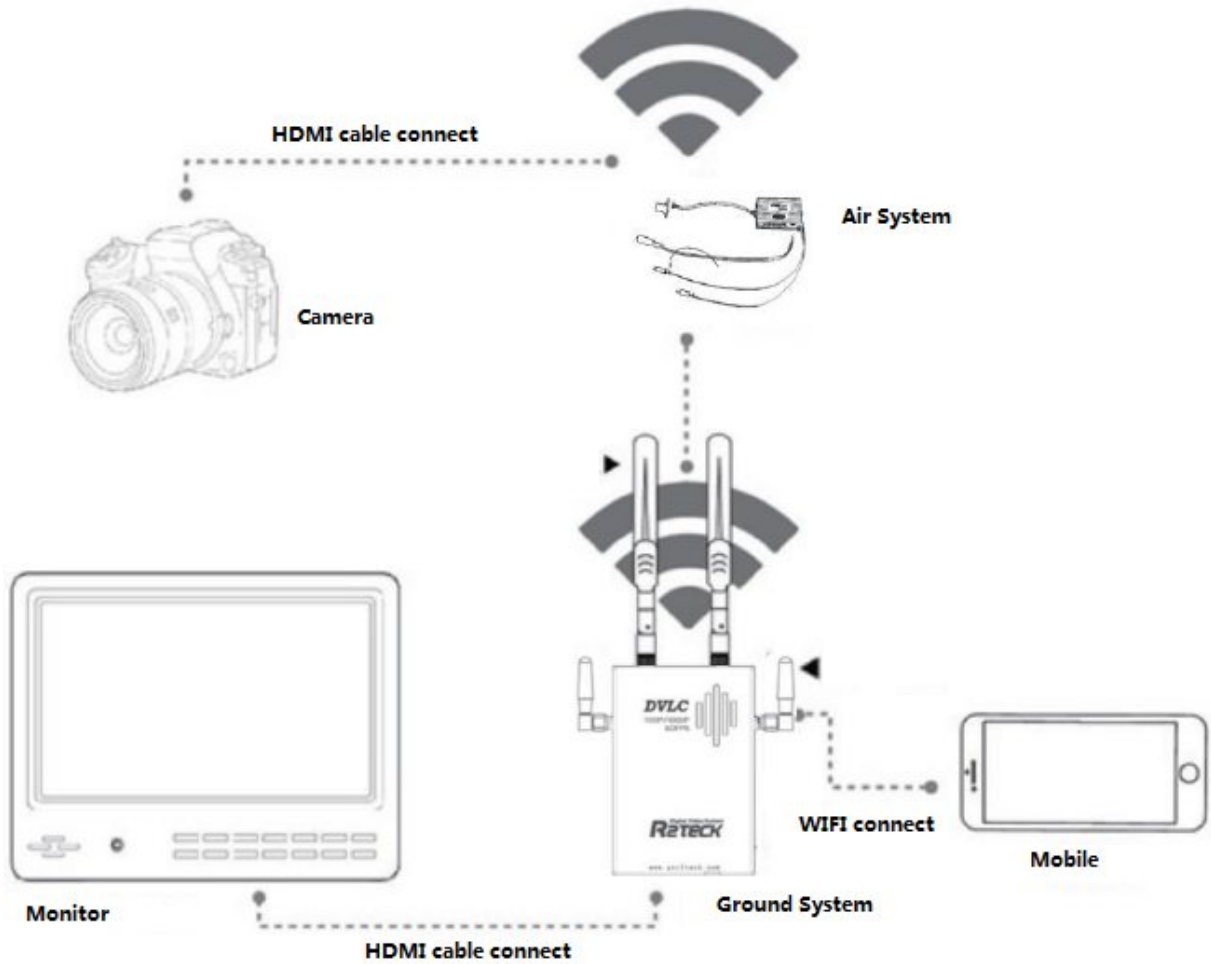IOS App installation: In App store, search the key word "r2teck" and download.

Figure1.1.3.1 Connection diagram

Attention:When used the ground system is fixed on the ground,its not a portable device.

2. Specification

Here list the detailed specification about DVLC , as shown in Table 2.1.1.

Table 2.1.1List of Parameters

Performance Parameter	
Communication distance (outdoor, no obstruction)	100mw ground distance ≥ 800m 500mw ground distance ≥ 3000m (double distance in air) If change to the wide angel directional patch antenna, the distance will be double.
Effective Radiated Power（EIRP）	25mw~800mw adjustable
Receiving sensitivity	-95dbm±2dbm
Operating frequency	5200MHz
Physical Parameter	
Operating Temperature	-10~60℃
Storage Temperature	-20~50℃
Size(Include shell, no antenna)	Air system: L.71mm× W.51 mm× H.19 mm Ground system: L.105 mm × W.74 mm × H.26 mm
Weight (Include shell, no antenna)	Air system: 70g Ground system: 174g
Hardware function support	
Air system Operating Voltage	DC-12V, Compatible with 2S~3S, average power consumption 5W, Max power consumption 12W
Ground system Operating voltage	DC-12V, Compatible with 2S~3S, average power consumption 5W, Max power consumption 12W

3. Introduction

3.1 Disclaimer

Thanks for purchasing the DVLC from Wuxi R2TECK. Everyone need to read and understand this disclaimer before using the DVL1. You are supposed to be accepted the disclaimer once the product is started to use. Please comply with the installation and using process indicated in this use manual. Wuxi R2TECK will not be responsible for the consequence of the improper use, improper install, improper modify.

The product name, brand mentioned here are belong to R2TECK.

3.2 Profile

This user manual as the instruction of Full-HD Digital Video Transmission system DVLC, the components and functions mentioned here may not be the standard spec. please check the enclosed list with the product, please contact with the dealer if you have any question.

The right of the manual write, modify and release only belong to Wuxi R2TECK, Without the authorization of Wuxi R2TECK, this use manual could not be copied or modified or released

The information in this manual is only for DVLC Full-HD Digital Video Transmission System.

This manual is subject to change without prior notice.

Version	
profile code & version	release date
RR.H.0001. 0018. V01	August 2018

3.3 Intended usage

DVLC use for wireless Full-HD Digital Video transmission.

3.4 Caution

The effectiveness of DVLC use is subject to if comply with operate and maintain direction in this manual.

Before operating the product, the staff must make sure the operate process and condition is correct. specially to check the product cables are good or not, if the cable is damaged, please change it before operating the product.

DVLC is intended to use on the UAV and other Full-HD digital video transmission. DVLC may not be reached the defined function if it works in the improper temperature, improper humidity and improver air pressure.

DVLC should not work when it is wet. Have to make sure it is dry when you use it.It should be dried immediately at a ventilated place in case of accidentally wet.

DVLC is the high precise product. NOBEATING, CLASHING OR KNOCKING.

Product life time is 2 years, quality warranty is 1 year.

Manufacture and dealer are responsible for the product maintenance, without the authorization, please don't fix the product and don't modify the product.

4. Product overview

4.1 Brief introduction

DVLC is the 1080p full-HD Digital Video transmission system which including air part and ground part, it transmit the video, image and more information by the wireless communication mode. DVLC is perfect for all fields video transmission because of the light weight, low power, long distance, low latency. Please install the air system on the aircraft, connect the ground system to the monitor or mobile phone to monitoring the video.
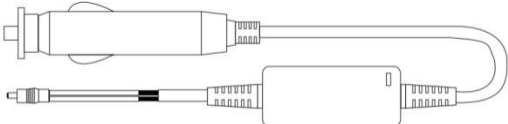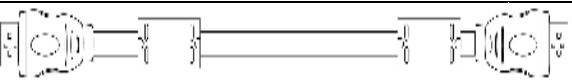
4.2 Standard spec

4.2.1 Product main part

Air system x 1	Ground system x 1
	Ground system antenna x 2
Camera x 1	Ground system mobile antenna x 2

4.2.2 Air system cable

Air system power cable x 1 (standard)	
Air system power cable 12V	

4.2.3 Ground system cable

Power adapter x 1 (optional)	
Vehicle power 12V-DC for ground system	
HDMI cable x 1 (optional)	
Monitor HDMI cabe	
Monitor x 1 (optional)	
For video receive and monitoring	
Ground system tripod x 1 (optional)	
Ground system tripod	
Extension tripod x 1 (standard)	
Extension bar	
Battery bin x 1	
Directly charging the ground system in battery bin..	

5. Port definition

5.1 Air system port

5.1.1 Back side

Figure 5.1.1.1 schematic diagram of back side

[1]: REClight,mp4 video recording status light

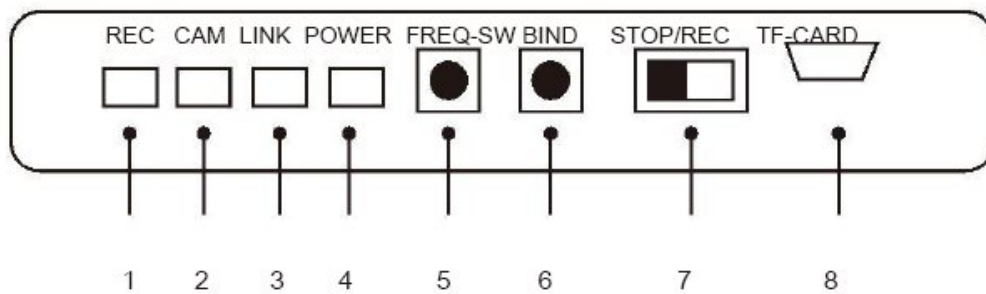| Light status	Description	Operation
Turn-on	The recording function is on and the recording status is normal.	NA
Turn-off	The recording function is off.	NA
Flashing	The recording function is on and the recording state is abnormal.	Check whether the TF card has been inserted, or turn off the recording function toggle switch to reopen.

[2]:CAMlight,The camera is connected and the status of appropriate image data collection.

Light status	Description	Operation
Turn-on	The camera is connected and the image data collection is normal.	NA
Turn-off	The camera is not connected.	Replug the camera cable.

[3]:LINKlight, Indicate the wireless connection status with the ground system.

Light status	Description	Operation
Turn-on	The wireless module is connected to the ground system.	NA
Turn-off	The wireless module is not	1. Please wait for connecting;

	connected to the ground system.	2.Make sure the air system is connected the power; 3.Bind the air system and ground system again; 4. Connect the power again.

[4]: POWERlight, Indicate the power supply state of the air system, and the description of each state is as follows.

Light status	Description	Operation
Turn-on	No power supply.	Check whether the power supply is normal.
Turn-off	The power supply is normal.	NA

[5]: BIND button,For bind the air system and ground system.

Press the button more than 5 seconds, 3 lights (REC, CAM, LINK) are all turn-off, then 3 lights flash one by one, when the LED light works well that means they are well bind.

[6]: FREQ-SW button,Reserved,Not support temporary.

[7]: STOP/REC video recording toggle switch

mp4 format video recording toggle switch: turn off the recording function by toggling left (STOP), then the recording light of video turn off; turn on the recording function by toggling right (REC), which lights up/flashes the recording light.
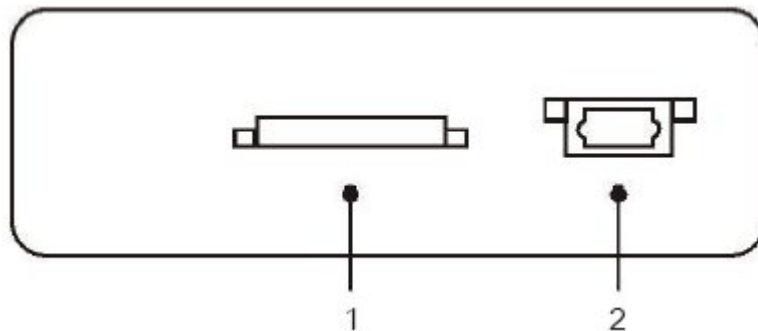
[8]: TF-CARD slot

5.1.2 Left side port

Figure 5.1.2.1Schematic diagram of left side port

[1]: MIPI camera port,Connect with MIPI camera, and get video data of the camera via this port.

[2]: OSD port,When it is necessary to display the OSD information of the flight control system, connect to the data line port of the flight control system for reading OSD information.

5.1.3 Right side port

Figure 5.1.3.1 Schematic diagram of right side port

[1]: OSD port,When it is necessary to display the OSD information of the flight control system, connect to the data line port of the flight control system for reading OSD information.
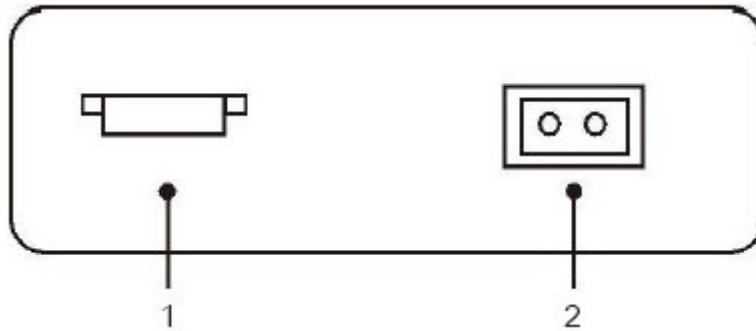[2]: POWER port,For air system get the power DC-12 V or 2S~3S from the aircraft.
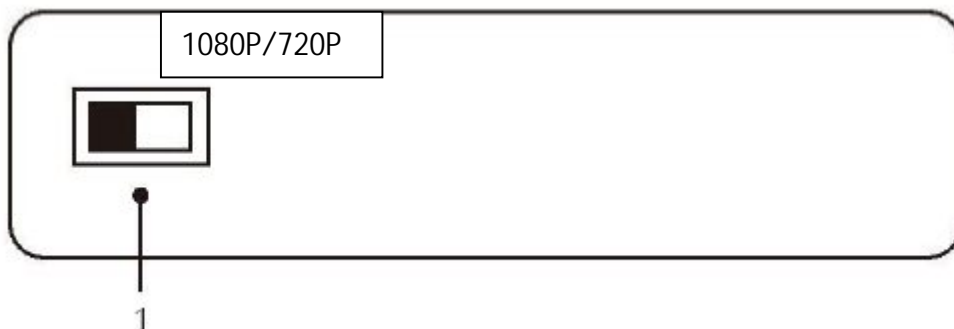
5.1.4 Top side port

Figure 5.1.4.1 Schematic diagram of top side port

[1]: 1080p /720p toggle switch,Toggle left to 1080p and right to 720p.

5.2 Ground system port

5.2.1 Bottom side port
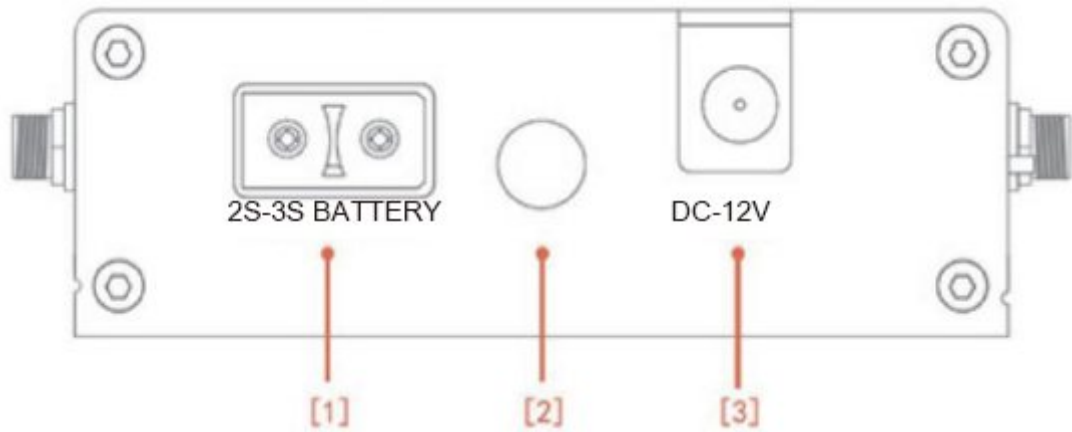
Figure 5.2.1.1 schematic diagram of bottom side port

[1]: Battery port, For connect with 2S/3S battery.
[2]: Fix hole, For fix the ground system on the tripod.
[3]: DC power port, For ground system to connect with the DC power, suggest　output power is more than 1A.

5.2.2 Left side port
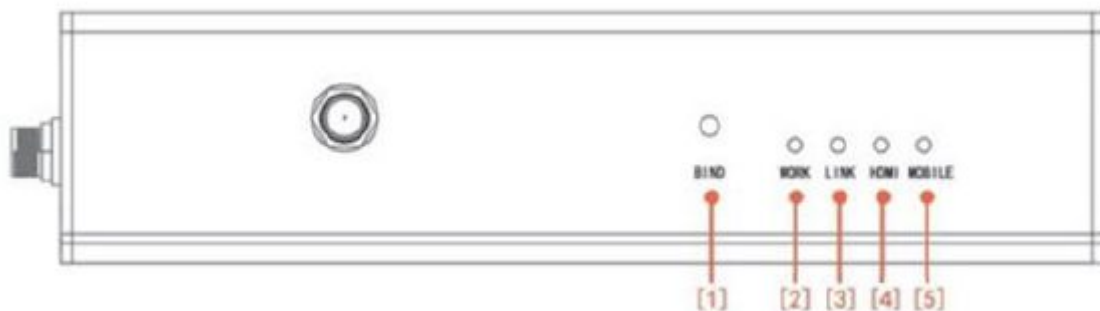
Figure 5.2.1.1 schematic diagram of left side port

[1]: Bind button,For bind the air system and ground system.
Press the button more than 5 seconds, 4 lights (HDMI, LINK, OSD, WORK) are all turn-off, then 4 lights flash one by one, when the LED light works well that means they are well bind.

[2]: Work light,For monitor the ground system working status.

Light status	Description	Action
Flash regularly	The ground system works well.	NA

Other status	The ground system does not work.	Connect the system to the power again, or contact with the customer service.

[3]:Link light,For monitor the status of connect with the air system.

Light status	Description	Action
Turn-on	Connect with air system well	NA
Turn-off	Does not connect with air system	1. Please wait for connecting; 2.Make sure the ground system is connected the power; 3. Bind the air system and ground system again; 4. Connect the power again.

[4]: HDMI light,For monitor the camera status.

Light status	Description	Action
Turn-on	Camera connect well.	NA
Turn-off	Camera does not connect.	Check camera cable position.

[5]: MOBILE light, For monitor the status of connect with the mobile device(iPhone、iPad).

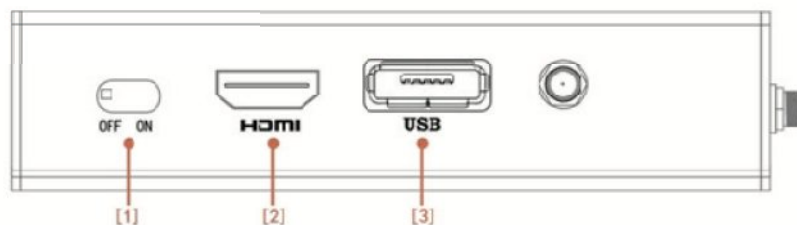| Light status	Description	Action
Turn-on	Connect with mobile device well.	NA
Turn-off	Does not connect with mobile device.	Make sure that the mobile device is connected to the ground system network. Close the background software and reopen it.

5.2.3 Right side port

Figure 5.2.3.1 schematic diagram of right side port

[1]: Power button, ON (the system connect the power), OFF (the system without the power)
[2]: HDMI port, For connect with the monitor.
[3]: USB port, For firmware Update.

5.2.4 Front side port

Figure 5.2.4.1 schematic diagram of front side port

[1]: Air vent: Pay attention to not cover the air vent.

6. Installation

6.1 Air system installation

6.1.1 Antenna installation

Ø   Take out two pcs air system antenna.

Ø   Install them on the air system antenna holes, when you hear a clicking sound indicates completion of installation.

Attention: For better transmit result, please make sure the antenna be away from the metal and carbon fiber frame, avoid being blocked by the main body of the aircraft or batteries, antenna should be vertical to the ground.

Figure 6.1.1.1 schematic diagram of air system antenna installation

6.1.2 MIPI camera installation

Connect one end of the MIPI cable to the camera and the other end to the MIPI port of the air system.

6.1.3 Power cable installation

one end with terminals of the cable connect with air system power port, another end of cable connect with power 12V-DC, the red cable is positive, the black is negative.

6.2 Ground system installation

6.2.1 Antennas installation

Prepared 4pcs ground system antennas, 2pcs of each style, fix them on the ground system according the photo below:
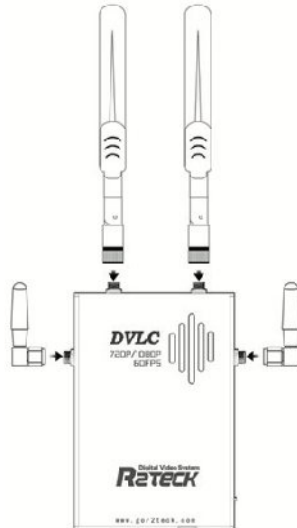
Figure 6.2.1.1 schematic diagram of ground system antenna installation

6.2.2 HDMI cable installation

One end of HDMI connect to the monitor, the other end of HDMI connect to the ground system.

6.2.3 Power cable installation

Both of DC and AC power are supported by the ground system.

Support 2s-3s model battery

Support 12V-DC power, suggest the output power is more than 1A.

Connect to the power according to the requirement.

7. Bind

Function description: Restores the device to factory settings, bind one air system with one ground system and gives the pairthe matching ID code.

    Operation method: the device LED light shows correctly, press two BIND buttons on air system and ground system together and keep more than 5 seconds, all the LED light turn off, release the button. All the LED light flash one by one regularly, means the device start the bind progress. when all the LED lights of both sides shows correctly that means bind progress is finished.

    Attention:When the air system is connecting with the ground system, the video will be paused two times during the bind progress, the video will work correctly when the progress is finished.

8. Troubles solution

Below is the device maintenances about DVLC, to help the users whom don't have professional testing device and technology to solve the simply troubles.

8.1 Trouble symptoms / diagnosis / solution

Table 8.1.1Troublediagnosis and solution

Symptoms	Diagnosis		Solution
No video	Did not follow the process		Follow the process as chapter 1.
	Air system	REC light flash	Insert the TF card first and turn on the video recording function. If you have inserted the TF card, you need to turn off the video recording function and open it again. Make sure the TF card format is FAT32.
		CAM light turn-off	MIPI cable is bad contacted, connect the MIPI cable again.
		POWER light turn-off	Battery is dead. Replace the battery and connect the power again.
		LINK light turn-off	Connect the power again.
	Ground system	HDMI light turn-off	Camera HDMI cable is bad connected, connect the HDMI cable again.
		WORK light is abnormal (not flash regularly)	Connect the power again.
		LINK light turn-off	Connect the power again.
	Bind abnormal	LINK light turn-off	If the above solutions do not work, please restore factory setting Restore factory setting succeed, suggest to process the bind progress. Action and instruction as chapter 7.
Blue screen	Air system HDMI bad contact		Please make sure HDMI cable works and connect with the device well.

Video pause	HDMI cable problem		Change a new HDMI cable.
	Out of allowed distance		Back to the allowed distance.
OSD display abnormal	OSD cable is bad connected.		Reconnect OSD cable of the ground system.
Flight control battery voltage VT not accurate	Power supply is uncalibrated.		Calibrate the flight control power voltage in the ground station software in advance.

If the above solutions do not work, please contact with the customer service.

9. Appendix

9.1 Monitor OSD content

Beside the video, on the top side and bottom side of the monitor display the OSD data.

SP: Video signal intensity

VOLT: Voltage of Transmitter

PW: Transmitting power

FREQ: Frequency

H: Hight of Transmitter

Lat: Latitude of Transmitter

Lng: Longitude of Transmitter

D: The actual flight distance of the drone (unit: m)

📡：Number of satellites

10. Contact info

Thanks for purchasing our device again. If you have any suggestion or need technical support, please visit our website or send us the email, also welcome to call us.

Wuxi R2TECK Co., Ltd
Address：Room307,Building of Cetus,Wuxi software park,111th Linghuavenue,new district ,Wuxi city,Jiangsu Province
P.C.：214000
Tel：0510-81012344
Fax：0510-81012344
Web：http://www.gor2teck.com
Email：sales1@gor2teck.com

FCC Caution：

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-Reorient or relocate the receiving antenna.
-Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.