DVLC

Digital Video Transmission

USER MANUAL

Content

1. Easy way to start the device

1.1 Operating steps and instructions

1.1.1 Air module

(1) Install the antennas.

(2) Install the MIPI camera.

(3) Install the OSD cable (optional).

(4) Install the TF card（Support 4GB-64GB, FAT32 format）, optional.

(5) Connect air module to the power.

There should be below instructions if the air module works well.

POWER light turn-on.

CAM light turn-on.

REC light turn-on if the proper TF card has been inserted, and the recording function is turned on.

LINK light turn-on if the air module connect to ground module.

1.1.2 Ground module

(1) Install the antennas.

(2) Install the monitor by HDMI cable. (optional)

(3) Turn off the ground module power button, then connect to the power (battery of 12V-DC power), turn on the ground module power button again.

(4) Turn on the power.

There should be below instructions if the ground module 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 ground module connect to air module.

HDMI monitor instruction (if installed the HDMI monitor).

The monitor shows logo "R2TECK" after ground module 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 module connect to the ground module.

1.1.3 Mobile

(1) The mobile connect the WIFI network whose name is the same as the device number, WIFI password is "12345688".

(2) Wait for connecting.

(3) Run the APP (if the APP is already running, turn off it first then run again).

(4) The mobile real-time display the camera video, the MOBILE light on the ground module turn-on.

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

Disconnect the mobile with ground module wifi network.

Wait ground module MOBILE light turn off.

Repeat the above 4 steps.

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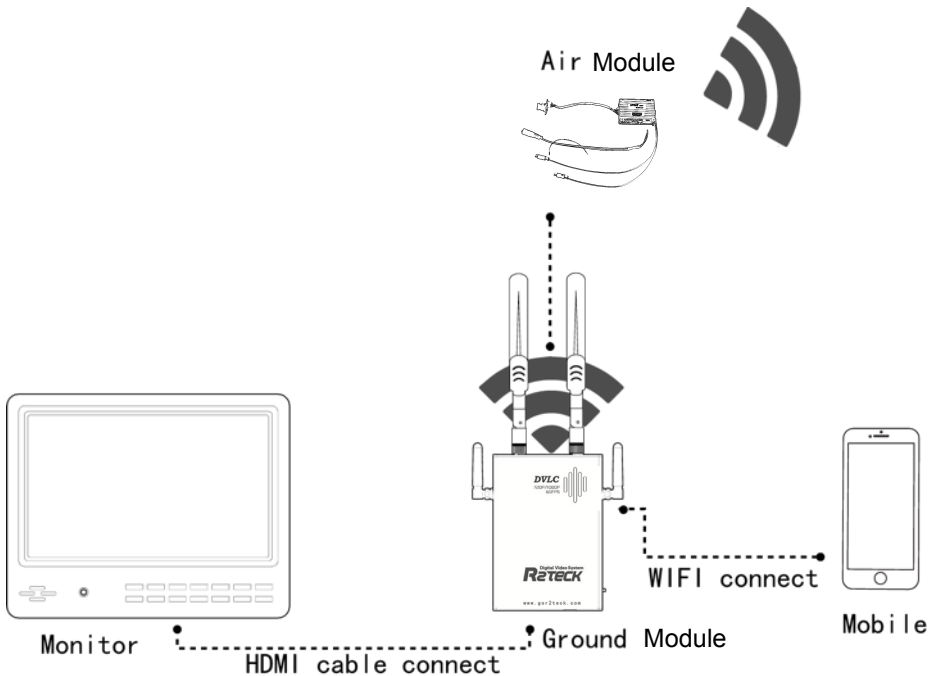

Figure1.1.3.1 Connection diagram

2. Specification

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

Table 2.1.1 List of Parameters

Performance Parameter	
Communication Distance (outdoor, no obstruction)	100mw ground distance ≥ 800m 800mw 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	5G
Physical Parameter	
Operating Temperature	-10~60℃
Storage Temperature	-20~50℃
Size (Include shell, no antenna)	Air module: L.71mm × W.51 mm × H.19 mm Ground module: L.105 mm × W.74 mm × H.26 mm
Weight (Include shell, no antenna)	Air module: 70g Ground module: 174g
Hardware Function Support	
Air module Operating Voltage	DC-12V, Compatible with 2S~3S, average power consumption 5W, Max power consumption 12W
Ground module 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 DVLC. 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. NO BEATING, 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.
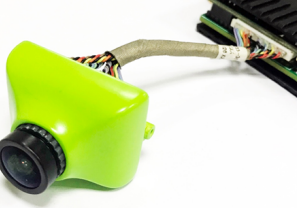
4. Product overview

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 module on the aircraft, connect the ground module to the monitor or mobile phone to monitoring the video.

4.2 Standard spec
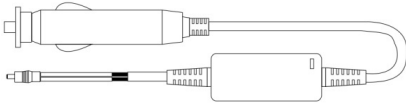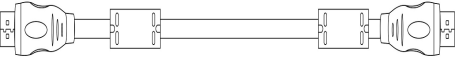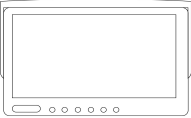
4.2.1 Product main part

Air module × 1	Ground module × 1
Air module antenna × 2	Ground module antenna × 2
Camera × 1	Ground module mobile antenna × 2

4.2.2 Air module cable

Air module power cable × 1 (standard)	
Air module power cable 12V	

4.2.3 Ground module cable

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

5. Port definition

5.1 Air module port

5.1.1 Back side port

REC   CAM   LINK POWER   BIND   FREQ-SW   STOP/REC   TF-CARD

1   2   3   4   5   6   7   8
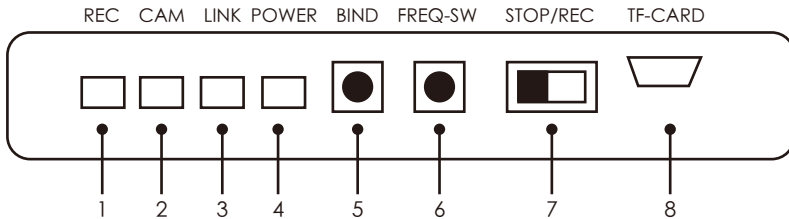
Figure 5.1.1.1 schematic diagram of back side port

[1]: REC light, 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]: CAM light, 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]: LINK light, Indicate the wireless connection status with the ground module.

Light status	Description	Operation
Turn-on	The wireless module is connected to the ground module.	NA
Turn-off	The wireless module is not connected to the ground module.	1. Please wait for connecting; 2. Make sure the air module is connected the power; 3. Bind the air module and ground module again; 4. Connect the power again.

[4]: POWER light, Indicate the power supply state of the air module, and the description of each state is as follows.

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

[5]: BIND button, For bind the air module and ground module.
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, For frequency switch setting.
Press the button more than 5 seconds, 3 lights (REC, CAM, LINK) are all turn-off, release the key, 3 lights flash as 0.5Hz frequency, and then 3 lights back to normal state, that means channel change is finished.

[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
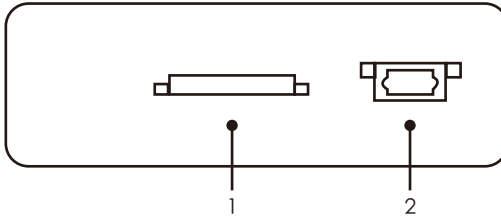
Figure 5.1.2.1 Schematic diagram of left side port

[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
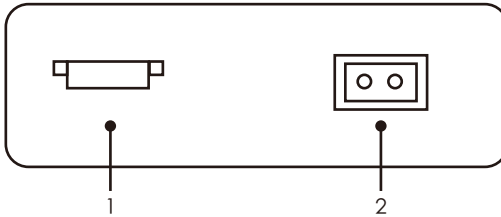
Figure 5.1.3.1 Schematic diagram of right side port

[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 module 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 module 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 module on the tripod.

[3]: DC power port, For ground module 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]: FREQ-SW button, For switch frequency.

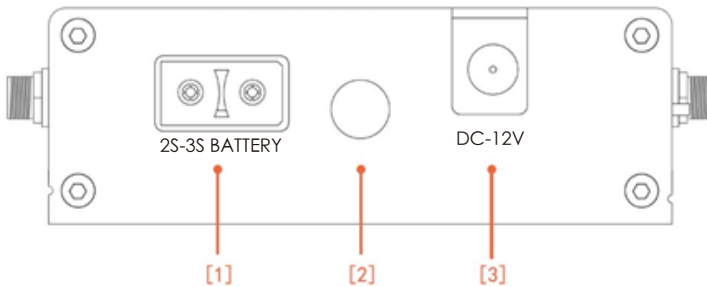Press the button more than 5 seconds, 4 lights (HDMI, LINK, OSD, WORK) are all turn-off, release the key, 4 lights flash as 0.5Hz frequency, and then 4 lights back to normal state, that means the factory setting was restored, and the factory setting was restored successfully.

[2]: Bind button, For bind the air module and ground module.

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.

[3]: Work light, For monitor the ground module operating status.

Light status	Description	Operation
Flash regularly	The ground module works well.	NA
Other status	The ground module does not work.	Connect the system to the power again, or contact with the customer service.

[4]: Link light, For monitor the status of connect with the air module.

Light status	Description	Operation
Turn-on	The wireless module is connected to the air module.	NA
Turn-off	The wireless module is not connected to the air module.	1. Please wait for connecting; 2. Make sure the ground module is connected the power; 3. Bind the air module and ground module again; 4. Connect the power again.

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

Light status	Description	Operation
Turn-on	Camera connect well.	NA
Turn-off	Camera does not connect.	Check whether the monitor is connected correctly.

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

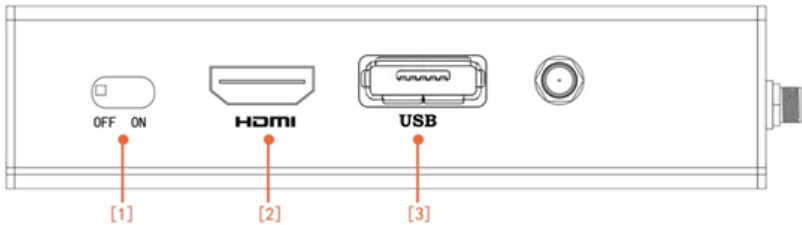| Light status	Description	Operation
Turn-on	Connect with mobile device well.	NA
Turn-off	Does not connect with mobile device.	Make sure that the mobile device is connected to the ground module network. Close the background software and reopen it.

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 module installation

6.1.1 Antenna installation
(1) Take out two pcs air module antenna.
(2) Install them on the air module 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 module 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 module.

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

6.2 Ground module installation

6.2.1 Antennas installation

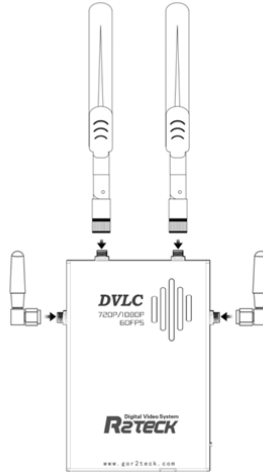Prepared 4pcs ground module antennas, 2pcs of each style, fix them on the ground module according the photo below:

Figure 6.2.1.1 schematic diagram of ground module 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 module.

6.2.3 Power cable installation

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

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.

6.2.4 Mobile APP installation

Currently, only IOS devices are supported, and the system version is required to be IOS8.0 or above. Android devices will open later.

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

(* Please note: IOS users recommend that customers use iPhone for monitoring. Due to the wide variety of iPad screen sizes, the best display effect cannot be achieved.)

7. Bind and Frequency switch

7.1 Frequency switch

Function description: Rematches the device communication module into a new communication frequency band.

Operation method: When the LED of the device is normally displayed, press the FREQ-SW button (air module or ground module) more than 5 seconds, all other lights except POWER light will turn off, and release the button. All lights are flashing as 0.5Hz frequency, means the device is processing the frequency switch setting. When the light is back to normal, it means that the setting of switching frequency is completed. Normally full process will take 5-10 seconds .

* Note: The air module and the ground module can operate independently, there is no need for operate air module and ground module in same time , you can chose air module or ground module do operation to change frequency .

7.2 Bind

Function description: Reset the device to factory settings, bind one air module with one ground module and gives the pair the matching ID code.

Operation method: the device LED light shows correctly, press BIND buttons on air module and ground module in same time and keep more than 5 seconds, all the LED light will turn off, then release the button. All the LED light will 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. The full process will take 1-2 mins .

* Attention: （1）When the air module is connecting with the ground module , the video will be paused two times during the bind progress, the video will work correctly when the progress is finished. （2）Air module can only bind one ground module. When you plan to do bind, pls put air module and ground module close, and ensure there is no other R2TECK system work nearby. （3）All buttons on the air module and ground module not work in 30 seconds since system power on. It means if you want do bind operation you must wait at least 30 seconds after system power on.

8. APP instruction

8.1 OSD setting

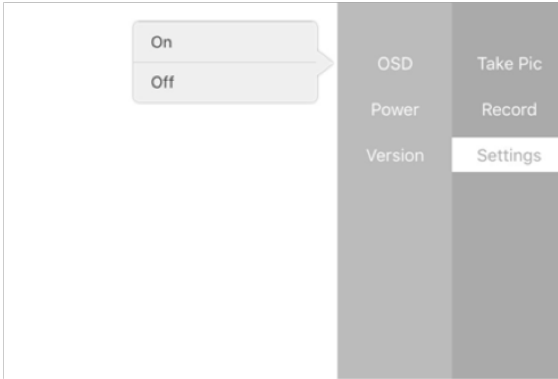Click OSD button, select "Turn on" or "Turn off", match to the "Display" or "Not display".

Figure 8.1.1 schematic diagram of OSD setting of APP software

8.2 Power setting

Click "setting" button to adjust the power, if click 100mw, then the video top right corner shows "PW: 100 OK", means output power setting is succeed.
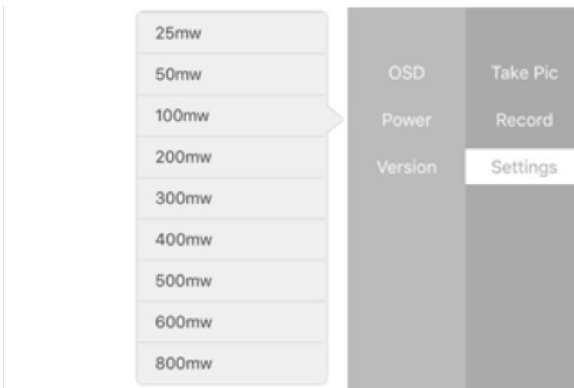

Figure 8.2.1 schematic diagram of APP software power setting

9. 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.

9.1 Trouble symptoms / diagnosis / solution

Table 9.1.1 Trouble diagnosis and solution

Symptoms	Diagnosis		Solution
No video	Did not follow the process		Follow the process as chapter 1.
	Air module	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 module	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 module 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 module.
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.

10. Appendix

10.1 Monitor OSD content

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

SP: RF signal intensity

VOLT: Voltage of air module

PW: Transmitting power

FREQ: Current frequency

H: Hight of air module

Lat: Latitude of air module

Lng: Longitude of air module

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

📡 : Number of satellites

11. 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.

Contact info:

Tel： 022-27989688

Web： http://www.foxtechfpv.com
Email： support1@foxtechfpv.com