

Digital Video Transmission System



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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 HDMI camera cable.
- Ø Connect camera to the power, select the correct video format.
- Ø Connect air system to the power.

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

WORK light flash regularly.

HDMI light turn-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.

WORK light flash regularly

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 when the air system connect to the ground system.

1.1.3 Mobile

- Ø The mobile connect the wifi network "R2TECK_DVL1", WIFI password "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.



1.1.3.1

2. Specification

Here list the detailed specification about DVL1

Function specification		
	200mw ground distance \geq 1500m	
	500mw ground distance \geqslant 2000m (double distance	
Communication distance	in air)	
(outdoor, no obstruction)	If change to the wide angel directional patch antenna,	
	the distance will be double.	
Output Power	25mw-800mw adjustable	
Sensitivity	-95dbm±2dbm	
Frequency	5G	
Physics specification		
working temperature	-10~60°C	
storage temperature	-20~50 ℃	
dimension (including the shell, not	Air system: L.75.5mm x W. 54.5mm x H. 22mm	
including the antennas)	Ground system: L.105mm x W. 74mm x H. 26mm	
Weight (including the shell, not	Air system: 102g	
including the antennas)	Ground system: 174g	
Hardware function support		
Air system working voltage	2S~3S, 12V-DC	
Ground system working voltage	2S~3S, 12V-DC	

3 Introduction

3.1 Disclaimer

Thanks for purchasing the DVL1 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 use manual as the instruction of Full-HD Digital Video Transmission system DVL-1, 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 DVL1 Full-HD Digital Video Transmission System.

This manual is subject to change without prior notice.

Version	
profile code & version	release date
RR.H.0001. 0017. V02	2017.6

3.3 Intended usage

DVL-1 use for wireless Full-HD Digital Video transmission

3.4 Caution

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



Before start 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 start the product.



DVL is intended to use on the UAV and other Full-HD digital video transmission. DVL1 may not be reached the defined function if it works in the improper temperature, improper humidity and improver air pressure.

DVL1 should not work when it is wet. Have to make sure it is dry when you use it.



DVL1 is the high precise product, it is forbid to beat and clash.

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

DVL-1 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. DVL-1 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



4.2.2 Air system cable





Camera HDMI cable		
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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





[1]: For frequency switch setting

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 channel change is finished. If devices not connected yet after 10 seconds of frequency switch process, please switch again. The frequency supported by device as below:

5180	5220	5260	5320	5520	5540	5560
5580	560	5620	5640	5660	5680	5700

[2]: 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. This may takes 2 minutes. If the connection has not been resumed after 2 minutes, repower on both ends, and donnot need rebind.

5.1.2 Right side port





[1]:HDMI port, for connecting with the camera.

[2]:Power port, for air system get the power DC-12 V or 2S~3S from the aircraft.

[3]: Work light, for monitoring the air system working status.

Light status	Description	Action	
Flash	air system works well	NA	
regularly		NA	
		Connect the system to the	
other status air system do	air system does not work	power again, or contact with	
		the customer service.	

[4]:Link light, for monitoring the status of connect with the ground system.

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

[5]: HDMI light, for monitoring the camera status.

Light status	Description	Action
Turn-on	Camera connect well	NA
Turn-off	Camera does not connect	check camera cable position
Floch	Camera output format is not	check camera output format
FIASII	correct	setting

5.1.3 Front side port





Cooling fan: Pay attention to not cover the cooling fan.

5.2 Ground system port

5.2.1 Bottom side port



[1]: Battery port, for connect with 2s/3s battery.

[2]: fix hole, for fixing 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





[1]:For bind the air part and ground part.

Press the button more than 5 seconds, 4 lights (HDMI, LINK, OSD, WORK) are all turn-off, then stop press the button, 4 lights flash one by one, when the LED light works well that means they are well binded. This may takes 2 minutes. If the connection has not been resumed after 2 minutes, repower on both ends, and do not need to rebind.

[2]: Monitor the ground system work status.

Light status	Description	Action
Flash	Ground system works well	NA
regularly	Glound system works well	NA
		Connect the power again or
Other status	Ground system does not work well	contact with the customer
		service

[3]: Monitor air system and ground system connect status.

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

[4]: monitor the display device status.

Light status	Description	Action
Turn-on	Display device connect well NA	
Turn-off	Display device does not connect	Check Display device cable position

[5]: Monitor mobile connect status.

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Light status	Description	Action
Turn-on	Mobile connect well NA	
		Make sure the mobile connect
Turn-off	No mobile connect	with the network, turn off the
		software then turn on again.

5.2.3 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.

5.2.4 Front side port



5.2.4.1

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.

Attention: For better transmit result, please make sure one of the antennas perpendicular to the ground, another antenna perpendicular to to the sky.



6.1.2 HDMI cable installation

There are two types HDMI cable (D-D / D-C), select the correct HDMI cable according to the camera HDMI port, one end of cable connect to the camera, another end of cable connect to 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 negtive.

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:

Attention:

The receiver antenna is not a full direction antenna,

Pls put receiver antenna wide side face to transmitter , don't put receiver antenna narrow side face to transmitter . otherwise , the work distance will be reduce to 50%.

Please operate refer to blow pictures .



6.2.2 HDMI cable installation

One end of HDMI connect to the monitor, another 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.

6.2.4 Mobile APP installation

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

7. Bind and Frequency switch

7.1 Frequency switch

This feature is implemented at the air system

For channel switch setting

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 channel change is finished.

7.2 Bind

Function explanation: bind function bind one air system with one ground system.

Process: 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 side 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. one air system only work together with the bind ground system after processed the bind function. Bind progress should be worked on the air system and ground system at same time, please turn off other devices during bind progress in order to avoid mismatching errors.

All the buttons on the air system and ground system will be worked after the device started 30 seconds later, the LED lights flash high speed means the buttons are not available now.

8. APP instruction

8.1 OSD setting

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



8.1.1

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.





9. Troubles solution

Below is the device maintenances about DVL-1, to help the users whom don't have professional testing equipments and technology to solve the simply troubles.

9.1 Trouble symptoms / diagnosis / solution

Symptoms	Diagnosis		Solution	
	Did not follow	w the process	Follow the process as chapter 1	
	Air system	HDMI light flash	 video format does not correct, check if the camera is supported by DVL1 and select the correct video format, the camera list as appendix Camera HDMI cable bad contacted, connect the HDMI cable again. 	
		HDMI light turn-off	Camera HDMI cable is bad contacted, connect the HDMI cable again.	
		WORK light is abnormal (not flash regularly)	Connect the power again.	
No video		LINK light turn-off	Connect the power again	
	Ground system	HDMI light turn-off	Camera HDMI cable is bad contacted, 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	

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

10. Appendix

10.1 Video input format requirement

Signal type	Video format	Resolution	Remark
HDMI	PAL, NTSC	1080p@60fps 1080p@50fps 1080p@25fps 1080i@60fps 1080i@50fps 720p@60fps 720p@50fps 720p@25fps	IF want to change the resolution, you have to re-start the both of the air system and ground system.

10.2 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 Transmittor

PW: Transmitting power

FREQ: Current frequency

H: Hight of Transmittor

Lat: Latitude of Transmittor

Lng: Longitude of Transmittor

D: Distance of Transmittor moved(unit: m)

S. 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.

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