Avatar HD Pro Kit

Walksnail Avatar HD Pro Kit 32GB (Dual antenna)
Digital FPV camera with 5.8 GHz video transmitter



Before first use, read this entire manual carefully, especially the safety instructions and the information on permitted frequencies. Keep this manual for future reference.

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1. Safety instructions

This product is intended for installation in radio-controlled models and FPV drones. It is intended for persons with basic experience in electronics and soldering. Incorrect installation or operation may damage the product or cause damage to property or injury.

- **Always install both antennas before connecting power.** Operating the transmitter without antennas may damage its components.
- Observe the supply voltage range of **6–25.2 V**. A higher voltage or reversed polarity will permanently damage the product.
- The video transmitter gets very hot during operation. Do not touch its housing shortly after switching off and ensure air flow around it. Keep operation on the ground without air flow as short as possible.
- Solder in a ventilated area, on a non-flammable surface and with the battery disconnected. After soldering, check that there is no short circuit between adjacent pads.
- Always remove the propellers when working on a drone with a battery connected.
- Use only the channels and transmit power permitted in the country of operation (see chapter 5.2). The user is responsible for the settings.
- Charge the Li-Po batteries that power the product only under supervision, on a non-flammable surface and with a suitable charger. Do not use a damaged, swollen or overheated battery.
- Protect the product from moisture, dust, impacts and operating temperatures outside the range of −20 °C to 40 °C.
- This product is not a toy. Keep it out of the reach of children – small parts (screws, antennas) may be swallowed.
- Do not open or modify the product. Unprofessional interference with the device is not a product defect.

2. Product description

2.1 Introduction

The Walksnail Avatar HD Pro Kit (Dual) is a set consisting of the **Avatar HD Pro** digital FPV camera and the **Avatar Dual V2** video transmitter (VTX) with two antennas for the Walksnail Avatar digital video transmission system. The camera uses a 1/1.8" Sony Starvis II sensor; the transmitter records video to 32 GB of built-in storage and operates in the 5.8 GHz band.

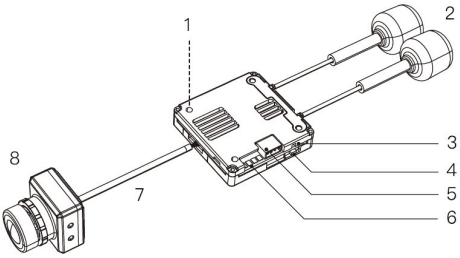
To view the video you need compatible goggles or a receiver of the Walksnail Avatar system – **not included**. The transmitter connects to the drone's flight controller (FC) via a serial port (UART), through which it receives the data for the OSD display in Canvas mode.

2.2 Package contents

Qty	Item
1	Avatar HD Pro Kit (Dual) – Avatar HD Pro camera with coaxial cable, Avatar Dual V2 transmitter, 2 antennas
1	4-pin power and data cable
1	USB extension cable
1	Screw set
1	Printed manufacturer's guide

※ Goggles, video receiver, flight controller and battery are not included.

2.3 Parts overview



Parts of the kit (illustrative drawing by the manufacturer)

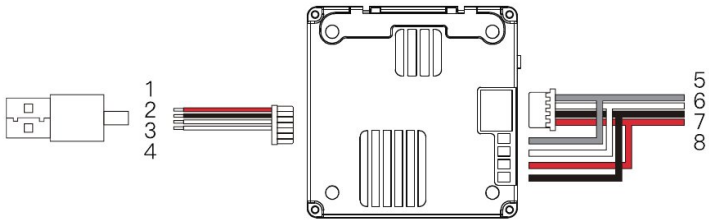
①	25×25 mm M2 holes	⑤	Power port
②	Antenna	⑥	Power pad
③	LED indicator	⑦	Coaxial cable
④	Link button	⑧	Camera

3. Installation and connection

3.1 Mounting in the drone

- The transmitter has mounting holes for M2 screws with **25.5 × 25.5 mm** and **20 × 20 mm** spacing.
- Place the transmitter where it receives air flow, and route the antennas as far as possible from carbon frame parts, propellers and other antennas.
- Do not bend the coaxial camera cable (140 mm) at sharp angles and secure it against contact with the propellers.
- If you use the camera's **Gyroflow** function, please provide shock absorption for the camera mount. Without vibration damping the stabilisation may fail.

3.2 Connection



USB cable (left) and 4-pin cable (right) connection

No.	USB cable	No.	4-pin cable
1	USB-5V (red)	5	UART TX – connects to flight controller RX (grey)
2	USB-GND (black)	6	UART RX – connects to flight controller TX (white)
3	USB-DM (white)	7	GND (black)
4	USB-DP (white)	8	Power input 6–25.2 V (red)

3.3 Power supply

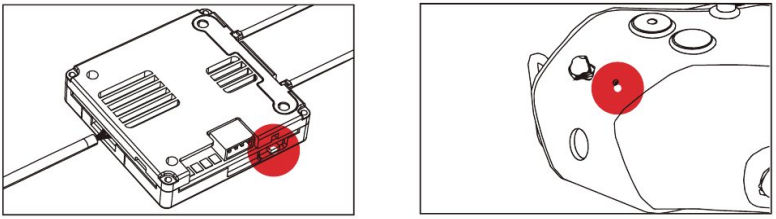
Power the transmitter from the drone battery or from a flight controller output supplying a voltage in the range of **6–25.2 V**. The 4-pin cable ⑤ or the backup power pads ⑥ can be used for the power supply.

When using 6S batteries, the manufacturer recommends soldering a capacitor at the power input.

Always insert a **fully charged** battery before flight (Li-Po 4.20 V/cell, LiHV 4.35 V/cell) and land at 3.5 V/cell at the latest.

4. Linking and flight controller setup

4.1 Linking with the goggles



Link button on the transmitter (left) and on the goggles (right)

① Connect the power of the VTX and the goggles.

② Short press the VTX and goggles link buttons respectively (as shown in the picture). When the VTX enters the pairing state, its indicator turns red and the goggles beep repeatedly: “beep... beep... beep...”.

③ After the link is successful, the indicator on the VTX turns solid green, the beeping of the goggles stops and the image is displayed.

4.2 UART setup in Betaflight

The UART function enables the VTX to communicate with the flight controller, allowing the VTX to obtain information from the flight controller (e.g. for the OSD). Betaflight Configurator is used as an example; the transmitter supports flight controllers running Betaflight, INAV, FETtec, KISS and ArduPilot.

① Solder the white and grey wires of the 4-pin cable to the flight controller (see chapter 3.2).



Ports tab – enabling MSP on the selected UART

② Connect the flight controller to Betaflight Configurator, on the *Ports* tab open the corresponding UART port (UART1 in the figure), enable the *MSP* switch and click *Save*.



CLI tab – entering the commands

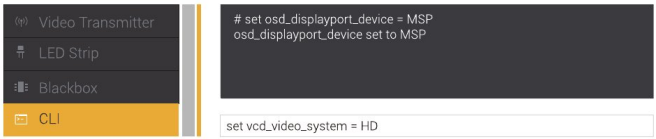
③ Open the *CLI* tab and enter the commands:
set osd_displayport_device = MSP
set displayport_msp_serial = Y (where Y is one less than the number of the serial port, e.g. Y = 2 for UART3)
save

4.3 Setup in Betaflight 4.4 and later



Ports tab – MSP and VTX (MSP+Displayport) peripheral

① On the *Ports* tab open the corresponding UART port (UART1 in the figure), enable the *MSP* switch, select *VTX (MSP+Displayport)* in the *Peripherals* column and click *Save*.



CLI tab – entering the commands

② Open the *CLI* tab and enter the commands:
set osd_displayport_device = MSP
set vcd_video_system = HD
save

5. Operation

5.1 Status indication

Goggles buzzer status	Signal
Link state	beep... beep... beep...
Upgrading firmware	beep..... beep..... beep..... beeeep
Upgrade failed	beep.. beep.. beep..

VTX indicator status	LED
Link state	steady red light
Upgrading firmware	red light rapidly flashes
Wireless connection, image output is normal	steady green light
Wireless not connected	green light rapidly flashes
Wireless connection is normal, but the image is abnormal	green light slowly flashes

5.2 Operating channels and permitted frequencies

The transmitter operates in the **5725–5850 MHz** band. In CE mode, which is the only mode permitted in the countries of the European Union, it offers the following channels:

CE mode	Channel 1	Channel 2	Channel 3	Channel 8
Central frequency	5735 MHz	5770 MHz	5805 MHz	5839 MHz

Frequency band	5725–5850 MHz
Max. transmit power (CE)	< 14 dBm e.i.r.p.
Limit in the Czech Republic	25 mW e.i.r.p. in the 5725–5875 MHz band (ČTÚ general authorisation VO-R/10)

The other channels and higher transmit powers are intended for other regions (FCC, MIC) and must not be used in the Czech Republic or in other EU countries. Do not unlock them with a modified or unofficial firmware version – such operation breaches the regulations and may be punished.

Make sure you fully understand and abide by the regulations of the country in which you operate the product. The information above describes the situation in the Czech Republic; in another country, the frequency bands and power limits of that country apply. The user is responsible for the channel and power settings.

5.3 Precautions

- Before powering on, please install all antennas to avoid damage to components.

- When the standby mode is turned on, the power is limited to 10 mW. Before taking off, Arm the flight controller or turn off the standby mode.
- If you use it with other 5.8 GHz devices at the same time, please choose a different channel.
- If you use the Gyroflow function of the camera, please provide shock absorption for the camera mount to avoid failure of the stabilisation.

5.4 Flying with a camera and regulations

Regulations (EU) 2019/947 and 2019/945 apply in all member states of the European Union, but national implementing rules differ from state to state – registration portals, minimum pilot age, geographical zones, compulsory insurance, permitted frequency bands and maximum transmit powers. The information in this chapter describes the situation in the Czech Republic. If you operate a drone in another country, you must comply with the regulations of the state in which you fly.

- A drone equipped with a camera requires **operator registration** (in the Czech Republic with the Civil Aviation Authority) regardless of its weight. Display the registration number on the drone.
- When flying with goggles (FPV), an **observer** must stand next to the pilot and keep the drone in direct visual line of sight.
- When filming, respect the privacy and personal data of other people.

6. Firmware upgrade

Please go to the manufacturer's official website www.caddxfpv.com to download the upgrade firmware. **Avatar_Sky_X.X.X.img** is the VTX file. Copy it to the VTX USB disk (the VTX needs power supply) and be careful not to change the file name.

① Copy the upgrade file to the root directory of the VTX USB disk, connect the power supply and wait for the device to start up. If there are old firmware files, please delete them.

② Press and hold the VTX link button for 8 seconds and release it after the indicator goes out. The VTX will automatically restart and enter the upgrade state; the indicator will change from blinking red to solid red and then turn off. The upgrade takes about 20 seconds – **do not power off during the upgrade process!**

③ After the upgrade is successful, the VTX indicator turns green and blinks.

If the VTX indicator continues to light up red, the firmware cannot be detected or is wrong. Please check the firmware file.

7. Specifications

7.1 Video transmitter (VTX)

Model	Avatar Dual V2 module
Communication frequency	5.725–5.850 GHz
Transmitter power (EIRP)	CE: < 14 dBm
Channels	8 (4 in CE mode, see chapter 5.2)
I/O interface	JST 1.0 – 4-pin (power cable), JST 0.8 – 6-pin (USB)
Mounting holes	25.5 × 25.5 mm; 20 × 20 mm (M2)
Dimensions	33 × 33 × 10.5 mm
Storage	32 GB
Recording	1080p / 720p
Weight	17.6 g
Operating temperature	−20 °C to 40 °C
Wide power input	6–25.2 V
Supported FC systems	Betaflight, INAV, FETtec, KISS, ArduPilot
OSD	Canvas mode
Latency	average delay 22 ms
Antenna	2 (IPEX connector)

7.2 Camera

Model	Avatar HD Pro camera
Image sensor	1/1.8" Sony Starvis II
Resolution	1080p/60 fps; 720p/100 fps; 720p/60 fps
Ratio	4:3 / 16:9
Lens	8 MP
FOV	160°
Aperture	F1.6
Shutter	rolling shutter
Weight	9.5 g
Dimensions	19 × 19 × 24 mm
Min. illumination	0.0001 lx
Coaxial cable	140 mm

7.3 Antennas

Model	Avatar V2 antenna
Polarization	LHCP
Frequency range	5600–6000 MHz
Average gain	1.9 dBi
VSWR	≤ 1.5
Interface	IPEX-1
Dimensions	R15 × 45 mm (without cable)
Weight	2 g

※ Manufacturer: CADDXFPV (Walksnail), support e-mail support@caddxfpv.com, www.caddxfpv.com. This content is subject to change.

8. Information for the EU and Czech Market

8.1 Importer and responsible person in the EU

The product is placed on the European Union market by the importer stated below, who is at the same time the responsible person within the meaning of Article 16 of Regulation (EU) 2023/988 of the European Parliament and of the Council on general product safety (GPSR).

Importer / responsible person in the EU	Rotorama, s.r.o.
Company ID (IČO)	051 57 692
VAT ID (DIČ)	CZ05157692
Registered office	Okrajová 1351, 674 01 Třebíč, Czech Republic
E-mail	info@rotorama.cz
Phone	+420 252 252 098
Website	www.rotorama.com

8.2 Product conformity

CE

- The product bears the **CE** marking and complies with the requirements of the applicable European Union harmonisation legislation.
- A copy of the **EU Declaration of Conformity** is available from the importer at the address stated above or at the e-mail address info@rotorama.cz.
- **Product identification:** the type designation (Walksnail Avatar HD Pro Kit (Dual)) is given on the product packaging. When contacting the importer, please quote the type designation and any serial or batch number shown on the product or its packaging.

8.3 Disposal of electrical equipment



- The crossed-out wheeled bin symbol on the product, its packaging or in the documentation means that at the end of its service life the product **must not be disposed of together with mixed municipal waste**.
- Hand it over at a take-back point for electrical equipment – at a collection yard, at a take-back point of a collective system, or at the retailer when purchasing a new equivalent product. Take-back is free of charge for the end user.
- The obligations under Act No. 542/2020 Coll., on end-of-life products, are fulfilled by the importer through a collective take-back system.
- Proper disposal helps prevent negative impacts on the environment and human health and contributes to the reuse of secondary raw materials.

Through its contractual partner **ASEKOL a.s.**, the company ensures the take-back of waste electrical equipment from households and the separate collection of waste electrical equipment, batteries and accumulators in accordance with the applicable legislation. The customer is entitled to hand over old electrical equipment or a battery or accumulator at any collection point of the above contractual partner. The addresses of these take-back points are listed at www.asekol.cz, www.ecobat.cz and also https://visoh2.mzp.cz/RegistrMistZO/RegistrMistZOPublic/MapaMistZpetOdberu.

9. Warranty and rights arising from defective performance

Rights of the buyer under Czech law

The rights and obligations of the contracting parties are governed by Czech law, in particular by Act No. 89/2012 Coll., the Civil Code, and Act No. 634/1992 Coll., on consumer protection.

- The seller is liable to the buyer for the product being free of defects on receipt. If the buyer is a consumer, a defect may be notified **within two years of receipt** of the product (Section 2165 of the Civil Code).
- If a defect appears within **one year** of receipt, the product is deemed to have been defective already at the time of receipt (Section 2161(5) of the Civil Code).
- When purchasing online, a consumer has the right to **withdraw from the contract within 14 days** of receiving the goods without giving a reason (Section 1829 of the Civil Code).
- Claims should be made with the retailer from whom you purchased the product. The importer's contact details are given in Chapter 8.1.
- The competent body for out-of-court settlement of consumer disputes is the **Czech Trade Inspection Authority**, Štěpánská 796/44, 110 00 Prague 1, www.coi.cz.