Walksnail Avatar VRX

Digital HD ground video receiver
User manual



Install the antennas before powering on for the first time and read Chapter 1 – Safety instructions. In the EU and in the Czech Republic, operate the system in CE mode only (Chapter 5).

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1. Safety instructions

Read the entire manual before first use and keep it for future reference. If you pass the receiver on to another person, include this manual.

- **Always install all antennas before connecting the power supply.** Powering on without antennas may damage the RF circuits of the receiver.
- Power the receiver only with a DC voltage of **7–25.2 V** (2S–6S LiPo battery) via the DC 5.5 × 2.1 mm connector. A higher voltage will destroy the receiver.
- A fully charged **6S LiHV** battery has 26.1 V (4.35 V/cell), which exceeds the maximum input voltage of 25.2 V – **do not use such a battery**.
- The receiver is intended for use in a dry environment. Protect it from water, moisture, dust, impacts and direct sunlight.
- Do not cover the ventilation openings on the bottom of the receiver – the device heats up during operation.
- Do not disassemble or modify the receiver. Tampering with the device may damage it and void your rights arising from defective performance.
- The receiver is not a toy. Keep it out of the reach of children.

▶ LiPo battery rules

- Charge the battery only with a charger designed for LiPo cells, under supervision and on a non-flammable surface.
- A LiPo battery is fully charged at 4.20 V/cell (2S 8.4 V · 3S 12.6 V · 4S 16.8 V · 6S 25.2 V). Disconnect and recharge it at 3.5 V/cell; for storage keep it at 3.8 V/cell.
- Stop using a swollen, mechanically damaged or overheated battery immediately and take it to a recycling point.
- Disconnect the battery from the receiver after use – even a switched-off device may slowly discharge the battery.

▶ Manufacturer's precautions

① Before powering on, install all antennas to avoid damage to components.

② Make sure the monitor or goggles support the set resolution and frame rate, otherwise the display will be abnormal.

③ The transmit power of the VTX and VRX is only 10 mW when Standby Mode is on.

④ If you use other 5.8 GHz devices at the same time, choose a different channel for each of them.

The user is responsible for setting the frequency and transmit power in accordance with the regulations of the country in which the system is operated. See Chapter 5 for details.

2. Product description

2.1 Introduction

The Walksnail Avatar VRX is a standalone digital HD ground video receiver for the **Walksnail Avatar HD** system. It receives video from the air unit (video transmitter, VTX) of the Avatar system and outputs it via HDMI to a connected monitor, TV or FPV goggles with an HDMI input. The received video can be recorded to a microSD card.

The receiver has four antennas – two interchangeable omnidirectional Red Bird antennas on RP-SMA connectors and two built-in directional antennas. It is operated with the buttons on the top side and with the menu displayed in the video image.

2.2 Receiver overview



Top, side and bottom view

No.	Part	Note
1	Record button	starts / stops recording
2	Back button	hold for 5 s to return to 720p / 60 fps
3	Power supply (DC)	5.5 × 2.1 mm, input voltage 7–25.2 V
4	Antenna base	RP-SMA
5	SD card slot	card up to 256 GB
6	Link button	linking and upgrade mode
7	5D button	menu navigation and confirmation
8	Bracket	
9	7.6 dBi antenna	built-in directional antenna
10	HDMI out	video output to monitor / goggles
11	LED	

※ Press and hold the back button ② for 5 seconds to return the HDMI output to 720p / 60 fps. Use this if the connected monitor cannot display the set video format.

2.3 Package contents

Item	Qty
Avatar FPV VRX receiver	1×
Red Bird antenna (LHCP, RP-SMA)	2×
HDMI cable	1×
2-in-1 DC power cable	1×

Not included: battery, microSD card, monitor or goggles, and the Avatar system air unit (video transmitter, VTX).

2.4 Specifications

▶ Avatar FPV VRX receiver

Model	Avatar FPV VRX
System	Avatar HD
Communication frequency	5.725–5.850 GHz
Transmitter power (EIRP)	CE: < 14 dBm · FCC: < 30 dBm · SRRC: < 20 dBm · MIC: < 25 dBm
I/O interface	HDMI, microSD card slot, DC 5.5 × 2.1 mm power connector
HDMI out	1080p 60 fps, 720p 100 fps, 720p 60 fps
Power input	7–25.2 V (2S–6S)
SD card	microSD up to 256 GB
Dimensions	114 × 55 × 22 mm
Weight	83 g
Manufacturer / support	Walksnail (CaddxFPV) · support@walksnail.com

▶ Red Bird antenna (2 pcs included)

Polarization	LHCP
Bandwidth	5.6–6.0 GHz
Average gain	1.9 dBi
Radiation efficiency	≥ 97 %
VSWR	≤ 1.3
Cross-polar rejection	−15 to −30 dB
Connector	RP-SMA
Dimensions	height 24.8 mm, radius 15.3 mm
Weight	4.2 g

▶ Built-in directional antennas

Polarization	LHCP
Bandwidth	5.6–6.0 GHz
Average gain	7.6 dBi
Beamwidth (HPBW)	90° H plane + 90° E plane
VSWR	< 1.5
Input impedance	50 Ω
Dimensions	35 × 35 × 7 mm

※ The FCC, SRRC and MIC transmit power values apply to regulatory regions other than the EU. In the EU, the CE value applies.

3. Getting started

3.1 Antennas and power supply

① Screw both Red Bird antennas onto the RP-SMA connectors ④. Tighten by hand only.

② Insert a microSD card into the slot ⑤ if you want to record video.

③ Use the HDMI cable to connect the output ⑩ to a monitor, TV or goggles with an HDMI input.

④ Connect a 2S–6S battery (7–25.2 V) to the DC connector ③ using the power cable. The receiver switches on when power is connected.

Never switch on the receiver without the antennas installed.

3.2 Button operation

Button	Function
⑦ 5D button	Toggle the button to scroll through the menu. Press the button to confirm.
① Record	Press to start or stop video recording.
② Back	Press to return to the previous menu or exit the current mode. Hold for 5 s to return the output to 720p / 60 fps.
⑥ Link	Short press to enter the linking state, long press for 8 s to enter the upgrade state.

3.3 Linking with the video transmitter (VTX)

① Power on the air unit (VTX) and the VRX.

② Press the link button on the VTX and on the VRX. When the VTX enters the pairing state, its indicator light turns red and the VRX beeps repeatedly (Di... Di... Di...).

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

3.4 Status indication

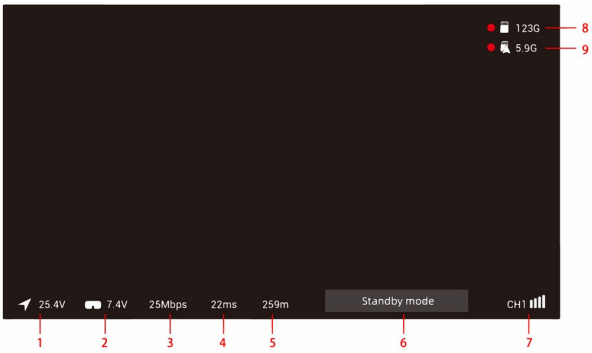
The receiver indicates its status with a buzzer. The notation follows the manufacturer's original: “Di” is a short beep, the number of dots indicates the length of the pause, “Di——” is a long tone.

Status	VRX buzzer
Link state	Di... Di... Di...
Upgrade firmware	Di..... Di..... Di..... Di——
Upgrade failed (no SD card or firmware detected)	Di.. Di.. Di..
Boot failure (reboot or re-upgrade)	Di.. Di..... Di.. Di.....

4. Software interface

The receiver interface is available in English or Chinese (*Language* option). Menu items are therefore given in English, in italics.

4.1 Main interface



Main interface

① **VTX input voltage** – shows the supply voltage of the air unit. Detects 2S, 3S, 4S and 6S LiPo batteries; if the voltage drops below 3.5 V/cell, it is shown in red.

② **VRX input voltage** – shows the supply voltage of the receiver. Detects 2S, 3S, 4S and 6S LiPo batteries; below 3.5 V/cell it is shown in red and the buzzer sounds.

③ **Real-time bit rate** – current transmission bit rate; two display modes, 25.0 Mbps and 50.0 Mbps.

④ **Time delay** – total delay from capturing the image with the VTX camera to the ground end.

⑤ **Ranging mode** – distance between the VRX and the VTX calculated from the wireless transmission delay. Signal interference increases the measurement error.

⑥ **Status prompt** – text information that needs attention in the current state.

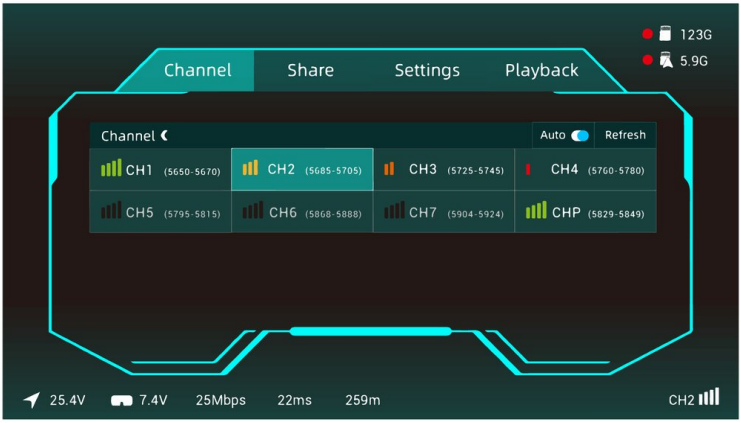
⑦ **Current channel** – the set channel and the signal strength in 5 states: 4, 3, 2, 1 bar or blank.

⑧ **VRX SD card status** – status and remaining capacity of the card. The red dot flashes while recording; a missing card is shown as NO SD, a full card as “–”.

⑨ **VTX storage status** – status and remaining capacity of the air unit storage. The red dot flashes while recording; storage not detected is shown as NO SD, full storage as “–”.

4.2 Channel menu

The menu has the tabs *Channel*, *Share*, *Settings* and *Playback*.



Channel tab (example screenshot in FCC mode)

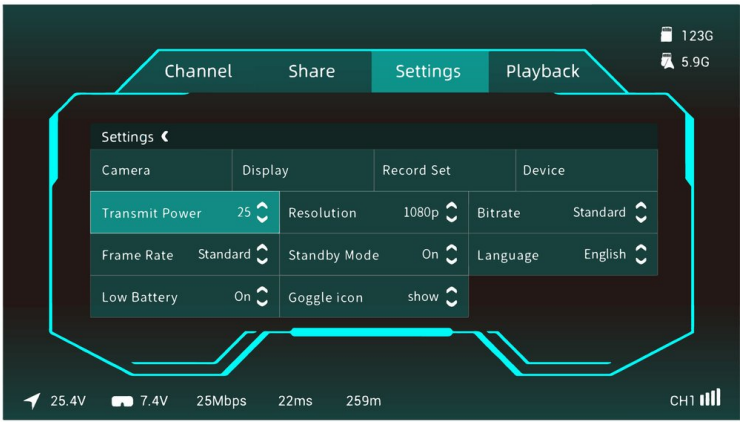
① The tab shows the interference situation of each channel. The signal strength has the states 4, 3, 2, 1 bar and blank. A channel without bars is occupied and cannot be selected. The white frame is the selection box; press the middle button to confirm the channel and highlight it.

② When switching between standard and high bit rate, the current channel is set to **CHP** and the channel needs to be reselected. CHP is a public channel that is prone to interference and is not recommended for flying. *Auto* continuously refreshes the interference situation of all channels, *Refresh* refreshes it manually.

③ Number of channels by regulatory region: FCC – 8 channels (CH1–CH7 and CHP), **CE / SRRC – 4 channels (CH1, CH2, CH3, CHP)**, MIC – 3 channels (CH1, CH2, CHP). The high bit rate mode can only be turned on in FCC mode; the 8 channels then become 4 (CH1, CH2, CH3, CHP).

In the EU and the Czech Republic use CE mode only. FCC mode is not permitted in the EU (Chapter 5.2).

4.3 Settings menu

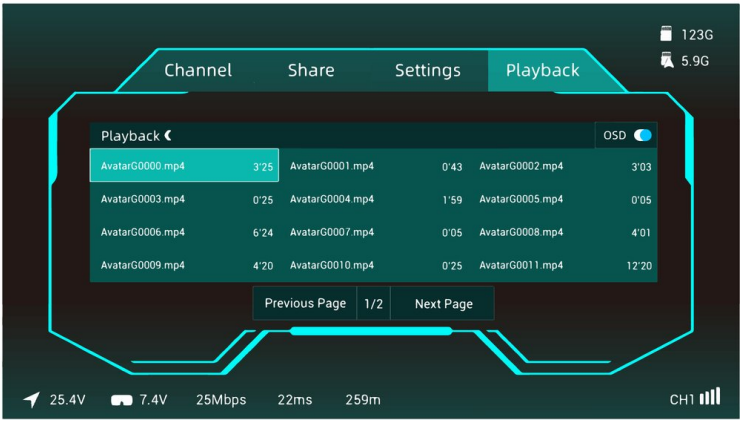


Settings tab

- *Camera* – scene preset, EV value, saturation, sharpness, white balance, rotate and ratio.
- *Display* – zoom out, brightness, focalization mode, custom OSD, OSD position, font upgrade, custom font, viewfinder and viewfinder edit.
- *Record Set* – VTX REC resolution, REC device, takeoff REC, REC loop, format SD card and format VTX.
- *Device* – buzzer volume, ranging mode, weak signal, reset all, device information and instructions.
- *Transmit Power* – transmit power of the air unit: 25 mW, 200 mW, 500 mW or 700 mW; up to 1200 mW in FCC mode, maximum 350 mW in MIC mode. **In the Czech Republic a maximum of 25 mW e.i.r.p. is permitted.**
- *Resolution* – 720p or 1080p. When 1080p is selected, the high frame rate mode cannot be selected.
- *Bitrate* – standard or high bit rate for different image quality. The high bit rate can only be enabled in FCC mode.
- *Frame Rate* – standard or high frame rate for different latency. The high frame rate is only supported in 720p mode.
- *Standby Mode* – in standby mode the transmit power of both the VTX and the VRX is 10 dBm; the set transmit power is output only after exiting standby mode or turning the function off. Standby mode requires the air unit serial port to be correctly connected to the flight controller (FC). When the receiver gets the Arm (motor start) signal, it exits standby mode automatically. Without flight controller support, turn this function off.
- *Language* – interface language: English or Chinese.

- *Low Battery* – VRX voltage monitoring. Detects 2S, 3S, 4S and 6S LiPo batteries; below 3.5 V/cell the voltage is shown in red and the buzzer sounds.
- *Goggle icon* – show or hide the icons on the main interface.

4.4 Playback menu



Playback tab

① *OSD* switch: when on, the flight controller OSD (if recorded) and the flight information of the main interface are superimposed on the played video.

② When the selection box is in the video list, press and hold the confirm button to open multi-selection; the menu shows *Delete*, *Select all* and *Cancel*. Press the back button to exit multi-selection.

③ During playback, press the middle button to pause / play and push it left / right to rewind / fast forward.

5. Frequencies and transmit power

5.1 Operating channels

Channel centre frequencies in MHz by regulatory region (according to the manufacturer's original):

Region	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CHP
CE / SRRC	**5735**	**5770**	**5805**	–	–	–	–	**5839**
FCC	5660	5695	5735	5770	5805	5878	5914	5839
MIC	5660	5700	–	–	–	–	–	5745

Manufacturer's notice: make sure you fully understand and abide by local laws and regulations before using this product. An amateur radio licence may be needed in FCC regions when using channels 1, 2, 6 or 7, as they are amateur frequency bands. Users who use the amateur frequency bands with a modified version or without a licence may be punished for breaking local laws or regulations.

5.2 Operation in the Czech Republic and the EU

Radio equipment in the EU is governed by Directive 2014/53/EU (RED), but the permitted frequency bands and transmit powers are set by national regulations and differ from country to country. The information in this chapter describes the situation in the Czech Republic. If you operate the system in another country, you must comply with the regulations of the country in which you use it.

VRX frequency band	5.725–5.850 GHz
Max. VRX transmit power (CE)	< 14 dBm e.i.r.p.
Permitted limit in the Czech Republic	band 5725–5875 MHz, maximum 25 mW e.i.r.p. (ČTÚ general authorisation VO-R/10)

- Use **CE mode** only, with channels CH1 (5735 MHz), CH2 (5770 MHz), CH3 (5805 MHz) and CHP (5839 MHz).
- Set the air unit transmit power (*Transmit Power*) to **25 mW**. Power levels of 200 mW and higher exceed the limit applicable in the Czech Republic.
- FCC mode – channels 5660, 5695, 5878 and 5914 MHz, power up to 1200 mW and high bit rate – **must not be used** in the Czech Republic without an individual authorisation.
- The user is responsible for the frequency and transmit power settings.

6. Firmware upgrade

Download the firmware file from the manufacturer's official website (Walksnail / CaddxFPV, Download Center section). The file for the VRX is **AvatarSE_Gnd_X.X.X.img** (X.X.X stands for the version). Do not change the file name.

① Copy the firmware file to the root directory of the microSD card (delete the old firmware file first if there is one). Insert the card into the receiver, connect the power supply and wait for the receiver to initialize.

② Press and hold the link button ⑥ for 8 seconds. The receiver restarts automatically and starts beeping (Di..... Di..... Di.....). The upgrade takes about 6 minutes – **do not disconnect the power** during the process.

③ After a successful upgrade, the VRX beeps for 5 seconds and then the beeping stops.

If the “upgrade failed” signal sounds (Di.. Di.. Di..), the receiver did not detect the SD card or the firmware file. Check the card and the file name and repeat the procedure.

7. Maintenance and troubleshooting

▶ Maintenance and storage

- Clean the receiver with a dry soft cloth. Do not use solvents or water.
- Keep the ventilation openings and connectors clean; check the threads of the RP-SMA connectors for damage.
- Store in a dry place, without the battery and without connected cables.

▶ Troubleshooting

Problem	What to do
Monitor shows no image	Check that the monitor supports the set resolution and frame rate. Hold the back button for 5 s to switch the output to 720p / 60 fps.
No image even with the VTX switched on	Link the VTX and the VRX (Chapter 3.3).
Weak or interfered signal	Check the antennas and select the channel with the least interference (*Channel* tab). Do not use channel CHP.
Low VTX power on the ground	Standby Mode is on; it ends with the Arm signal, or turn it off.
Voltage shown in red, buzzer sounds	The battery voltage has dropped below 3.5 V/cell – replace or recharge the battery.
Recording does not work (NO SD)	Insert a microSD card, or format it in the *Record Set* menu.

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 (Avatar FPV VRX) and the serial number are given on the type label of the device; the firmware version can be found in the menu *Settings → Device → Device information*.

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

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.