Explorer LR 4 HD Walksnail

Flywoo · 4" long-range FPV drone
Walksnail Avatar HD · ExpressLRS 2.4 GHz · GPS



Read the entire manual before the first flight, especially the safety instructions and the chapter on legal operating conditions. Keep this manual.

User manual · www.rotorama.com

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1. Safety instructions

1.1 Before you start

The Explorer LR 4 HD Walksnail is a powerful FPV drone intended for experienced pilots over 16 years of age. It is not a toy. Improper handling can cause serious injury, property damage or fire.

- Before the first flight, read the entire manual and familiarise yourself with the regulations of the country in which you will fly (Chapter 3).
- Do not fly under the influence of alcohol, medication or other substances, or when tired.
- Keep the product out of the reach of children and animals.

1.2 Rotating propellers and mechanical hazards

- The propellers spin at high speed and can cause deep cuts. The drone has no propeller guard (duct).
- With the battery connected, treat the drone as if the motors could start spinning at any moment.
- Always remove the propellers when configuring and testing the motors in Betaflight Configurator.
- Do not fly over or near people and animals. After a crash, first Disarm (switch off the motors) and disconnect the battery.

1.3 Li-Po, LiHV and Li-ion batteries

- Charge batteries only with a suitable balance charger, on a non-flammable surface and under supervision. Never leave batteries charging unattended.
- Do not use swollen, punctured or otherwise damaged batteries. Always inspect the battery after a crash.
- Do not short-circuit batteries or expose them to high temperatures, direct sunlight or moisture.
- Carry and store batteries in a fireproof bag (Li-Po safe bag).
- Let the battery cool down after flight before charging it.

1.4 Operating environment

- Do not fly in rain, snow, fog, strong wind or thunderstorms. The drone is not waterproof.
- Do not fly near airports, high-voltage lines, transmitters or in prohibited or restricted zones.
- Strong interference sources (transmitters, metal structures), terrain and obstacles can disrupt the control link, video and GPS reception.

2. Product description

The Flywoo Explorer LR 4 HD Walksnail is a lightweight 4" FPV drone for relaxed flying (cruise) and longer-distance flights (long range). It is equipped with Walksnail Avatar HD digital video, an ExpressLRS 2.4 GHz receiver and a GPS module that enables return to the take-off point (GPS Rescue in Betaflight). The frame has a deadcat layout – the front arms are moved to the sides so the propellers stay out of the camera view.

2.1 Package contents

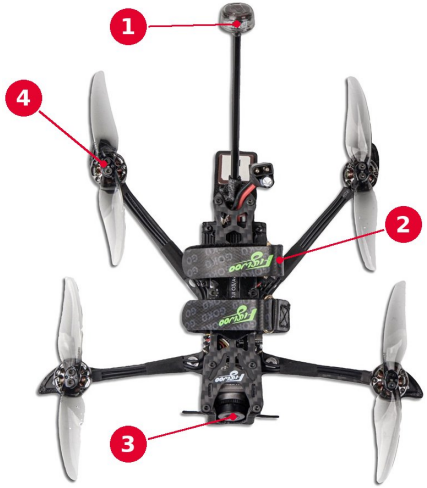
Qty	Item
1×	Explorer LR 4 HD Walksnail drone (ExpressLRS 2.4 GHz receiver, Walksnail WS-M181 GPS module)
8×	Gemfan 4024-2 propellers, black (2 sets)
2×	Battery strap 15 × 180 mm
1×	Set of screws and small accessories
1×	Set of carbon braces

Not included: battery, charger, ExpressLRS 2.4 GHz radio transmitter and Walksnail Avatar goggles. These must be purchased separately.



Package contents (illustrative photo)

2.2 Parts overview



Top view



Bottom view

① Video transmitter antenna – Flywoo 5.8 GHz, circular polarisation LHCP, u.FL connector

② Battery straps

③ Walksnail Avatar camera

④ Flywoo NIN 1404 V2 motor with Gemfan 4024-2 propeller

⑤ Walksnail WS-M181 GPS module

2.3 Technical data

Parameter	Value
Manufacturer / model	Flywoo Explorer LR 4 HD Walksnail
Manufacturer code	FW19002088
Frame	Explorer LR 4 HD Walksnail, deadcat layout
Flight controller (FC) and ESC	Flywoo GOKU F722 Pro Mini V2 45A (stack)
FC firmware	Betaflight
Motors	Flywoo NIN 1404 V2, 2750KV
Propellers	Gemfan Hurricane 4024-2 (4", two-blade)
Video system	Walksnail Avatar HD Kit V2, 32 GB
VTX antenna	Flywoo 5.8 GHz LHCP, u.FL
Receiver	ExpressLRS 2.4 GHz
GPS	Walksnail WS-M181
Weight	168.4 g (without battery)
Power supply	4S battery, XT30 connector
Recommended batteries	Flywoo Explorer 4S 750 mAh HV, Explorer 4S 900 mAh HV (XT30), Explorer Lionpack 18650 3000 mAh
Flight time (manufacturer's data)	up to approx. 30 min with the Explorer Lionpack 18650 3000 mAh battery

※ Flight time depends on the battery, flying style, wind and temperature. The actual weight of the drone with battery depends on the battery used – weigh it (Chapter 3.2).

2.4 Walksnail video transmitter

Data provided by the manufacturer Walksnail (Caddx) for the Avatar V2 transmitter module:

Frequency band	5.725–5.850 GHz
Transmit power (CE)	< 14 dBm
Channels in CE mode	5735, 5770, 5805, 5839 MHz
Recording	1080p / 720p to 32 GB internal memory
Average latency	22 ms
Standby mode	power limited to 10 mW

The user is responsible for ensuring that the set power and channel comply with the regulations of the country of operation (Chapter 3.5).

2.5 GPS module

Data provided by the manufacturer Walksnail for the WS-M181 module:

Chip	M10
Satellite systems	GPS, GLONASS, BeiDou, Galileo, SBAS, QZSS
Compass	IST8310
Supply	5 V
Weight	approx. 4.3 g

After power-up, the module needs some time under open sky to acquire enough satellites. The return function (GPS Rescue) is reliable only once the flight controller has recorded the take-off position. GPS Rescue is a safety fallback, not a permission to fly beyond visual line of sight.

3. Legal conditions of operation in the Czech Republic and the EU

3.1 The law of the country where you fly applies

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

3.2 Drone classification and operating category

The drone **has no C0–C4 class label**. Under Art. 20 of Regulation (EU) 2019/947, drones without a class label may fly in the open category (subcategories A1 and A3) only if they were placed on the market before 1 January 2024. This route does not apply to a product placed on the market later, and subcategory A2 is not available at all.

- Plan to operate within a model aircraft club or association authorised under Art. 16 of Regulation (EU) 2019/947 (in the Czech Republic the Svaz modelářů ČR), or in the specific category under an authorisation from the Civil Aviation Authority (ÚCL). Check the current interpretation and conditions with the ÚCL (www.caa.gov.cz) or with your club before flying.
- The drone weighs 168.4 g without battery. The take-off mass with battery and accessories varies with the battery and may exceed 250 g – always weigh it.

3.3 Operator registration and pilot competency

- The drone is equipped with a camera, so the **operator must register** regardless of the drone's weight. In the Czech Republic, registration is done online on the ÚCL portal (dron.caa.gov.cz). The operator registration number must be displayed on the drone.
- The pilot must hold the certificate of completion of the online training and test for subcategories A1/A3 issued by the ÚCL; it is also a prerequisite for operation in the specific category.
- The minimum pilot age in the Czech Republic is 16 years; exceptions are possible within clubs and associations.

3.4 Operating rules and flying with FPV goggles

- Keep to the maximum height of 120 m above ground, do not fly over assemblies of people and comply with the conditions of the club or authorisation under which you fly.

- When flying with FPV goggles, an **observer** must stand next to the pilot, keep the drone in direct sight without optical aids at all times and warn the pilot of hazards.
- Before flying, check the UAS geographical zones in the DroneMap application (dronemap.gov.cz).

3.5 Radio frequencies and transmit power

Device	Band	Limit in the Czech Republic
ExpressLRS receiver (telemetry)	2400–2483.5 MHz	25 mW e.i.r.p. (VO-R/10), for wideband transmission 100 mW e.i.r.p. (VO-R/12)
Walksnail video transmitter	5725–5875 MHz	25 mW e.i.r.p. (VO-R/10)

The manufacturer Walksnail states the maximum transmit power of the video transmitter in CE mode as < 14 dBm. The maximum telemetry transmit power of the ExpressLRS receiver is not stated by the drone manufacturer; it is given in the EU declaration of conformity (Chapter 8.2). The user is responsible for the power and channel settings. Outside the Czech Republic, the limits of the respective country apply.

3.6 Data protection and insurance

- The drone's camera records video. Respect the privacy of others and data protection rules (GDPR); do not record people without their consent.
- In the Czech Republic, liability insurance is mandatory in the specific category. Even where it is not mandatory, we strongly recommend taking out insurance against liability for damage caused by operating the drone.

4. Preparing for the first flight

4.1 What else you need

- a radio transmitter with an **ExpressLRS 2.4 GHz** module,
- **Walksnail Avatar** goggles,
- a **4S** battery with an **XT30** connector and a suitable charger,
- a computer with Betaflight Configurator and a USB-C cable for connecting the flight controller.

4.2 Choosing and connecting the battery

The manufacturer recommends Flywoo Explorer 4S 750 mAh HV and 900 mAh HV batteries (Li-Po LiHV, XT30) or the Explorer Lionpack 18650 3000 mAh (Li-ion) for long relaxed flights. Always insert a **fully charged** battery before flight.

State	Li-Po 4S	LiHV 4S
Fully charged	4.20 V/cell = 16.8 V	4.35 V/cell = 17.4 V
End the flight	3.5 V/cell = 14.0 V	3.5 V/cell = 14.0 V
Storage	3.8 V/cell = 15.2 V	3.8 V/cell = 15.2 V

※ For Li-ion batteries, follow the charging, end-of-flight and storage voltages specified by the battery manufacturer.

- Fasten the battery to the top of the drone with the supplied straps ② so that it cannot slide off in flight and does not touch the propellers.
- Route the battery lead away from the propellers and connect the XT30 connector only just before the flight, with the drone placed on the ground.

4.3 Mounting the propellers

The drone is supplied with propellers mounted. When replacing them, observe the direction of rotation: each motor has a propeller matching its direction of rotation, and the leading edge of the blade must point in the direction of rotation. Check the motor rotation direction in Betaflight Configurator on the *Motors* tab (without propellers) and compare it with the *Motor direction is reversed* setting on the *Configuration* tab.

- Tighten the propeller lock nuts gently – overtightening can damage the motor shaft.
- After mounting, check that the propellers spin freely and do not touch the frame or cables.

5. Setup

Keep the propellers removed for all steps in this chapter.

5.1 Connecting to a computer

The flight controller (FC) runs Betaflight firmware. Connect the drone to a computer with a USB-C cable and start Betaflight Configurator. On the *Setup* tab, check that the model moves in line with the tilt of the drone. Before changing any settings, save a backup of the configuration (command *diff all* on the *CLI* tab).

5.2 Binding the ExpressLRS receiver

The on-board receiver works in the ExpressLRS 2.4 GHz system. The transmitter module in the radio and the receiver must run a compatible major version of ExpressLRS firmware. General binding methods:

① **Binding phrase:** set the same binding phrase in both the transmitter module and the receiver (ExpressLRS Configurator or the receiver's web interface). The receiver will then connect automatically.

② **Bind mode:** plug and unplug the drone battery three times in quick succession – the receiver enters bind mode. Then select *Bind* in the ExpressLRS Lua script on the radio.

③ A successful connection is indicated by a solid receiver LED and by channel movement on the *Receiver* tab in Betaflight Configurator.

5.3 Pairing the video transmitter with the goggles

Procedure according to the manufacturer Walksnail:

① Switch on the goggles and connect the drone battery.

② Briefly press the pairing button on the video transmitter and on the goggles. The transmitter indicator lights red and the goggles beep.

③ After successful pairing, the transmitter indicator lights solid green, the goggles stop beeping and display the image.

For the OSD, Walksnail specifies the Betaflight setting *VTX (MSP + DisplayPort)* and the CLI commands *set osd_displayport_device = MSP*, *set vcd_video_system = HD* and *save*. In the goggles, select the CE power mode for operation in the EU.

5.4 Checking the motors and GPS

- On the *Motors* tab (without propellers, battery connected), spin up each motor in turn and check their order and direction of rotation against the diagram in the program.
- On the *GPS* tab, check that the GPS module receives satellites. The first position fix under open sky may take several minutes.

- Set up and test the *GPS Rescue* function in a safe area according to the Betaflight documentation (betaflight.com). Adapt the return height and behaviour to the terrain.

5.5 Arm, Disarm and failsafe

- Assign **Arm** (switching the motors on) and **Disarm** (switching the motors off) to a switch on the radio on the *Modes* tab. We recommend a two-position switch that cannot be flipped by accident.
- On the *Failsafe* tab, choose the behaviour on signal loss – for a drone with GPS typically *GPS Rescue*, otherwise *Drop*. Test the failsafe without propellers by switching off the radio.
- After Arm, the motors spin at idle. Throttle must be at minimum before Arm.

5.6 Firmware and further guides

The firmware of the flight controller, receiver and video transmitter can be updated. Update only when it solves a specific problem, and always back up your configuration first. Official documentation: betaflight.com, expresslrs.org, edgetx.org. Video transmitter firmware is available on the Walksnail website.

6. Flying

6.1 Pre-flight check

- The battery is **fully charged**, undamaged and firmly strapped.
- Propellers are intact, correctly mounted and tightened; motors spin freely.
- Receiver and video transmitter antennas are undamaged and properly secured.
- The radio is switched on before the drone, Arm is off and throttle is at minimum.
- The image in the goggles is fine and the OSD shows the battery voltage.
- The GPS module has acquired enough satellites and the take-off position is saved (if you rely on GPS Rescue).
- The area is clear, an observer is present and the flight complies with the regulations (Chapter 3).

6.2 Take-off and basic control

- Place the drone on a level surface, step back to a safe distance and Arm.
- Smoothly increase throttle and take off. Make your first flights in an open area and at low height.
- The drone is designed for relaxed flying; aggressive manoeuvres significantly reduce flight time.
- After landing, Disarm immediately; only then approach the drone and disconnect the battery.

6.3 Voltage monitoring and ending the flight

Monitor the battery voltage in the OSD. End the flight at the latest at **3.5 V/cell, i.e. 14.0 V for 4S Li-Po / LiHV**. For Li-ion batteries, follow their manufacturer's data. On longer flights, keep a reserve for the return and allow for wind.

6.4 Finding the drone after a crash

- Disarm immediately. If the video is still on, memorise the last camera view.
- Note the GPS coordinates shown in the OSD (they can be enabled on the *OSD* tab) during the flight – this makes searching easier.
- The beeper can be activated from the radio via the *BEEPER* mode on the *Modes* tab, as long as the flight controller is powered.

7. Maintenance and troubleshooting

7.1 After every flight

- Disconnect the battery and let it cool down.
- Check the propellers, frame arms, screws and the mounting of the antennas and the GPS module.
- Remove grass, dust and dirt from the motors. Sand and moisture must not get into the motors.
- Check that no cables are pinched or chafed.

7.2 Replacing propellers

Always replace a damaged or bent propeller with a new Gemfan 4024-2. Observe the direction of rotation according to Chapter 4.3. Propeller balance affects vibration and recording quality.

7.3 Storage

- Store the drone in a dry place at room temperature, away from direct sunlight.
- Store Li-Po and LiHV batteries at **3.8 V/cell, i.e. 15.2 V for 4S**, disconnected from the drone and in a fireproof bag. Store Li-ion batteries according to their manufacturer's instructions.

7.4 Troubleshooting

Problem	Possible cause and solution
Drone will not Arm	Throttle is not at minimum, the drone is tilted, there is no receiver signal or USB is connected. The cause is shown on the *Setup* tab (Arming disable flags).
No signal from the radio	The receiver is not bound or has an incompatible ExpressLRS firmware version – repeat the procedure from Chapter 5.2.
No image in the goggles	The video transmitter is not paired with the goggles (Chapter 5.3) or the antenna is damaged.
OSD missing	Check the DisplayPort settings according to Chapter 5.3.
GPS finds no satellites	Fly under open sky, wait longer after power-up, check the cable and mounting of the GPS module.
Drone vibrates or oscillates	Damaged or unbalanced propeller, loose screw or damaged motor – check and replace.
Short flight time	Battery not fully charged, worn out, or the flying style is too aggressive.

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 (Explorer LR 4 HD Walksnail) is given on the product packaging; the flight controller type and firmware version are shown in Betaflight Configurator after connecting the drone to a computer.

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.