



ECHO

Fat Shark · FPV goggles with 5.8 GHz receiver
User Manual · model FSV1131-04



Read this entire manual carefully before first use, especially the safety instructions in Chapter 1, and keep it for future reference.

Importer: Rotorama, s.r.o. · www.rotorama.cz

Contents

1. Safety instructions

2. Product description

2.2 Package contents

2.3 Specifications

2.4 Controls

3. Using FPV goggles in the Czech Republic and the EU

4. Getting started

5. Operation

6. Maintenance and storage

7. Troubleshooting

8. Information for the EU and Czech Market

9. Warranty and rights arising from defective performance

1. Safety instructions

1.1 Before you start

- Read this entire manual carefully before first use. Keep it and pass it on together with the goggles if you hand them over to another person.
- This product is not a toy. The manufacturer recommends it for users **aged 14+**.
- Do not use the goggles if the housing, a connector or the charging cable is damaged. Do not disassemble or modify the goggles – tampering with the device may cause fire, injury or loss of your rights arising from defective performance.

1.2 Eyes and health

- While wearing the goggles you cannot see your surroundings. Do not walk or drive with them on; use them only while seated or in a safe place free of obstacles.
- Take regular breaks. If you experience eye strain, headache, dizziness or nausea, remove the goggles immediately.
- When flying with FPV goggles, an observer must stand next to the pilot and maintain direct visual contact with the drone – see Chapter 3.2.

1.3 Li-ion battery

The goggles are powered by a replaceable **18650 Li-ion cell with a capacity of 2600 mAh**, housed in the battery compartment of the goggles.

- Charge only through the charging port of the goggles, under supervision and on a non-flammable surface. Never leave the goggles unattended while charging.
- Do not use a cell with a damaged wrapper or a dented or deformed cell. Do not short-circuit the cell or insert it the wrong way round when replacing it.
- Do not expose the goggles to high temperatures (e.g. in a car in the sun), fire, water or strong impacts.
- If the goggles become excessively hot, deform or give off an odour during charging or use, disconnect the charger immediately, switch them off and stop using them.

1.4 Display, optics and operating environment

Do not leave the goggles with the lenses facing direct sunlight. The lenses focus sunlight onto the display and may damage it permanently. Store the goggles in the shade or in their packaging.

- Protect the goggles from moisture, rain, dust and drops.
- Clean the lenses only with a dry, soft microfibre cloth, without solvents or cleaning agents.

2. Product description

2.1 Introduction

The Fat Shark ECHO are analog FPV goggles with a single 4.3" display and a built-in 5.8 GHz video receiver with 40 channels including RaceBand. The receiver can automatically find the strongest channel. The goggles feature a video recorder (DVR) on a microSD card, an AV input, an on-screen display (OSD) and a replaceable 18650 Li-ion cell charged via USB-C. The goggles have no diopter correction, no interpupillary distance (IPD) adjustment, no HDMI input and no head tracking.

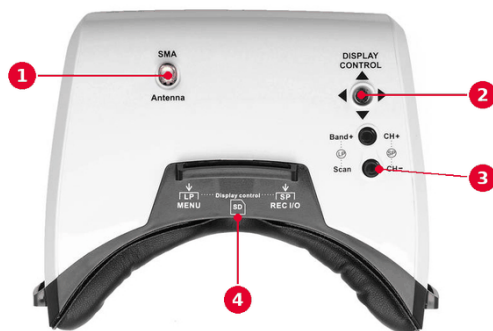
2.2 Package contents

- 1× Fat Shark ECHO FPV goggles
- 1× 5.8 GHz dipole antenna with SMA connector
- 1× 18650 Li-ion cell, 2600 mAh (inserted in the goggles)
- ※ A microSD card and a USB-C charging cable are not included.

2.3 Specifications

Parameter	Value
Display	4.3" WQVGA TFT
Resolution	800 × 480
Field of view (FOV)	55°
Aspect ratio	16:9
Diopter / IPD	no correction / single shared display
Video receiver	5.8 GHz, 40 channels including RaceBand; single receiver with one antenna (no diversity); automatic scan for the strongest channel
Antenna connector	SMA
Recording (DVR)	analog video on microSD up to 32 GB (AVI), playback in the goggles; firmware upgrade via SD card
AV input	3.5 mm jack
HDMI input / head tracking	no / no
OSD	channel, signal strength (RSSI), battery status
Power supply	replaceable 18650 Li-ion cell, 2600 mAh
Charging	USB-C
Weight	354 g including cell, without antenna

2.4 Controls



Top view



Bottom view

- ① SMA antenna connector
- ② 5-way button (*Display Control*) – brightness, contrast, recording and DVR menu
- ③ Channel buttons **CH+** (long press: *Band+*) and **CH–** (long press: *Scan*)
- ④ microSD card slot (DVR)
- ⑤ Power switch
- ⑥ Battery compartment cover with label (18650 Li-ion cell, 2600 mAh)



Side view – charging port



Side view – AV input

⑦ USB-C charging port

⑧ Charging indicator

⑨ 3.5 mm AV input

※ Markings on the housing: **SP** = short press, **LP** = long press. On the 5-way button, a short press (**SP** – **REC I/O**) starts and stops recording, a long press (**LP** – **MENU**) opens the DVR menu.

3. Using FPV goggles 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 member states of the European Union, but national implementing rules differ from country to country – registration portals, minimum pilot age, geographical zones, mandatory insurance, permitted frequency bands and maximum transmit power. The information in this chapter describes the situation in the Czech Republic. If you operate a drone in another country, you must follow the regulations of the country in which you fly.

3.2 Flying with FPV goggles

- A pilot wearing FPV goggles does not maintain direct visual contact with the drone. In the open category, an **unmanned aircraft observer** must therefore stand next to the pilot and watch the drone with the naked eye, without optical aids (GM1 UAS.OPEN.060).
- Fly only in open space with adequate visibility, away from power lines, other aircraft and people. Do not fly in adverse weather conditions.
- The obligations of the operator and the pilot – registration, competency test, operational limits – depend on the drone used and are described in its manual. Up-to-date information for the Czech Republic is available from the Civil Aviation Authority at www.caa.gov.cz.

3.3 Radio frequencies

The ECHO goggles only **receive** video in the 5.8 GHz band; they do not transmit any radio signal. The receiver covers 40 channels including RaceBand, i.e. also channels on which a video transmitter (VTX) must not be operated in the Czech Republic.

Band	Transmitter limit	Regulation
5725–5875 MHz	25 mW e.i.r.p.	VO-R/10, Art. 3(k)

- Set the video transmitter on the drone only to a channel within the permitted band and to the permitted power. The user is responsible for the transmitter settings.
- Outside the Czech Republic, the frequencies and limits of the respective country apply.

4. Getting started

4.1 Attaching the antenna

Screw the supplied dipole antenna onto the SMA connector ① and tighten it by hand. Do not use tools. Without the antenna, image quality and reception range drop significantly.

※ The receiver is not a diversity receiver. For better reception, we recommend replacing the dipole antenna with a 5.8 GHz antenna with SMA connector and **circular polarization** matching the antenna on the drone.

4.2 Charging the battery

Fully charge the battery before first use. Connect the USB-C cable to the charging port ⑦ and the other end to a standard phone charger or a power bank. The charging indicator ⑧ shows the charging status. Disconnect the cable after charging.

4.3 Inserting a microSD card

To record video, insert a microSD card of **up to 32 GB** into the slot ④. Insert and remove the card only while the goggles are switched off.

4.4 Switching on and off

Turn the goggles on and off by **pressing and holding** the power switch ⑤.

4.5 Putting on the goggles

Adjust the length of the head strap so that the goggles fit firmly but comfortably and the image is sharp across the whole display.

5. Operation

5.1 Channel and band selection

- ① **Short press CH+ / CH–** – switches to the next / previous channel.
- ② **Long press and release CH+** – changes the band (*Band+*).
- ③ **Long press and release CH–** – starts the automatic scan for an active channel (*Scan*); the receiver sets the strongest channel found.

5.2 Brightness and contrast

Slide the 5-way button ② left and right or forward and back to adjust contrast and brightness.

5.3 OSD

The display shows the channel, the received signal strength (RSSI) and the battery status. The information disappears after 4 seconds; press any button to show it again.

5.4 AV input

Switch on the goggles and connect the AV cable to the AV input ⑨. Briefly press the power switch ⑤ to switch from RF reception mode to AV input mode (*AV IN*).

5.5 Video recording (DVR)

Press the 5-way button ② vertically down. A short beep confirms that recording of the live feed has started; the same press stops recording.

The DVR has no auto-save function. A recording is saved only when you stop recording manually. Therefore always stop recording before switching off the goggles.

5.6 Playback

Long-press the 5-way button ② (*LP – MENU*) to enter the DVR menu, where you can browse and play recorded files.

5.7 Firmware upgrade

The firmware of the goggles can be upgraded via an SD card. Use only firmware and procedures released by the manufacturer for the ECHO model. For questions about upgrading, contact the importer (Chapter 8.1).

6. Maintenance and storage

- After use, wipe the housing and the foam padding with a dry or slightly damp cloth. Clean the lenses only with a dry microfibre cloth.
- Store the goggles in a dry place, away from direct sunlight and heat sources, with the antenna removed or protected.
- During long-term storage, do not fully discharge the battery and recharge it from time to time.
- **Replacing the cell:** the 18650 cell is housed in the battery compartment with a cover on the underside of the goggles ⑥. Switch off the goggles before replacement, open the cover and replace the cell with a spare 18650 Li-ion cell. Observe the correct polarity and close the cover again.
- Protect the connectors and the microSD card slot from dust and moisture.

7. Troubleshooting

Problem	Possible cause and solution
Goggles cannot be switched on	Battery discharged – charge it. Press and hold the power switch.
No image, only noise	The video transmitter on the drone is not switched on or transmits on a different channel. Check the channel and band, or start the automatic scan (long press CH–).
Image interference, short range	Check that the antenna is correctly screwed on and undamaged and that there are no obstacles between you and the drone. Consider a circularly polarized antenna matching the drone's antenna.
No image from the AV input	The goggles are not in AV IN mode – briefly press the power switch. Check the AV cable.
Recording not saved	Recording was not stopped manually. Make sure a microSD card of up to 32 GB is inserted.
Dark or washed-out image	Adjust brightness and contrast with the 5-way button.

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@rotorاما.cz
Phone	+420 252 252 098
Website	www.rotorاما.cz

8.2 Product conformity



- 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@rotorاما.cz.
- **Product identification:** the type designation (Fat Shark ECHO, FSV1131-04), the EAN 840630113042 and the production code on the QR code label are given on the back of the packaging; the label on the underside of the goggles states the cell type and the CE marking. Country of origin: China.

8.3 Disposal of electrical equipment and batteries



- 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 product contains a built-in rechargeable battery. Where possible, hand it over together with the device – do not dispose of the battery in mixed waste or in fire.
- 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.