



Aquila16 FPV Kit

BETA FPV kit – quadcopter, radio transmitter and goggles
User Manual



Before first use, read this manual carefully, in particular the safety instructions in Chapter 1 and the information on drone operation and transmitting power in Chapter 8. This product is not a toy.

Translated and adapted from the original BETA FPV manual · Importer: Rotorama, s.r.o.

Contents

1. Safety Instructions

1.1 Operating Safety

1.2 Batteries – Use and Charging

2. Package Contents and Preflight Checks

2.1 Package Contents

2.2 Preflight Checks

3. Quick Start Guide

3.1 Quick Start

3.2 Flight Operations

3.3 First Person View (FPV)

3.4 On Screen Display (OSD)

3.5 Flight Modes

3.6 Charging the Quadcopter Batteries

4. LiteRadio 2 SE Radio Transmitter

4.1 Switch Functions

4.2 Joystick Functions

4.3 Button Functions

4.4 Charging the Radio Transmitter

5. VR03 FPV Goggles

5.1 Button Operation

5.2 Frequency Selection

5.3 DVR Functions

5.4 Charging the FPV Goggles

6. Settings and Advanced Functions

6.1 Accessing and Operating the OSD Menu

6.2 Quadcopter RGB LED ON/OFF

6.3 Quadcopter Level Calibration

6.4 Optical Flow Positioning Function

6.5 Laser Altitude Determination (TOF)

6.6 Turtle Mode

6.7 Re-Binding the Quadcopter

6.8 Radio Transmitter Joystick Calibration

7. Status Codes and Troubleshooting

7.1 Quadcopter Status LEDs

7.2 Radio Transmitter LED and Beep Codes

7.3 FPV Goggles LEDs

7.4 How to Replace Propellers

7.5 How to Fix Quadcopter Drift in Normal Mode

7.6 How to Use an FPV Simulator

7.7 How to Stop After a Collision

8. Information for the EU and Czech Market

8.1 Importer and responsible person in the EU

8.2 Product conformity

8.3 Disposal of electrical equipment and batteries

8.4 Drone Operation

8.5 Radio Equipment and Frequencies

9. Warranty and rights arising from defective performance

9.1 Rights of the buyer under Czech law

9.2 Manufacturer's warranty terms

1. Safety Instructions

The Aquila16 FPV Kit contains a quadcopter with fast-spinning propellers, lithium batteries and radio equipment. Read the entire manual before your first flight and keep it for future reference. This product is not a toy and is not intended for children.

1.1 Operating Safety

- Move the throttle joystick as gently as possible to avoid the quadcopter ascending and descending too suddenly.
- If the quadcopter collides with any object, immediately push switch **SA** on the radio transmitter down – the motors will stop (Disarm).
- Keep the motors perpendicular to the frame. Otherwise, flight performance will be degraded.
- Learn to control the quadcopter proficiently before flying in a large outdoor area or in wind.
- Do not fly in rain. Humidity may cause unstable flight or loss of control.
- Keep the quadcopter and the battery away from water. Contact with water may cause a short circuit and burn out the flight controller (FC).
- Do not fly in inclement weather, thunderstorms or lightning.
- Do not fly in areas where it is not permitted by local regulations (see Chapter 8.4).
- Always keep a safe distance of at least 1 m in all directions around the quadcopter during a test flight. Operate the quadcopter carefully and only in open space.
- Never reach into the propeller area while a battery is connected to the quadcopter. Disconnect the battery before any handling.
- Do not fly over people or animals, or close to obstacles you cannot see.

1.2 Batteries - Use and Charging

The quadcopter uses single-cell (1S) Aquila16 batteries. For safe operation, observe the following voltages:

Battery state	Voltage (1S = 1 cell)
Fully charged	4.35 V
End the flight at the latest at	3.5 V
Storage	3.8 V

- Always install a **fully charged** battery before flying.
- Battery life can be significantly reduced if you continue to fly after the low voltage warning (LOW VOL) is shown.

- Do not immerse the battery in water. Store it in a dry area if it is not used for a long time.
- Keep away from children. If swallowed, seek medical attention immediately.
- Do not use or store the battery near heat sources, microwave ovens or open flame.
- Only use a battery charger that meets the specifications – the BT2.0 charger included in the kit.
- Do not throw the battery into fire or heat it. Do not throw the battery or hit it with hard objects.
- Do not use or store the battery in an extremely hot environment, such as in a car under direct sunlight. Overheating affects the performance and shortens the service life of the battery; overheated batteries can catch fire.
- If the battery has a peculiar smell, is hot, deformed, discoloured or shows any other abnormal phenomenon, stop using it and hand it over for recycling.
- If the battery connector gets dirty, wipe it with a dry cloth before use. Dirty contacts can cause energy loss or failure to charge.
- Do not dispose of the battery randomly – it may cause a fire. Before disposal, discharge the battery and cover the output connector with insulating tape. Take-back information is given in Chapter 8.3.

2. Package Contents and Preflight Checks

2.1 Package Contents

Qty	Item
1×	Aquila16 Brushless Quadcopter
1×	LiteRadio 2 SE Radio Transmitter
1×	BETA FPV VR03 FPV Goggles
2×	Aquila16 Exclusive Battery 1100 mAh
1×	BT2.0 Battery Charger and Voltage Tester
2×	Charging Adapter Cable
4×	Beta 45 mm 3-Blade Props (spare set)
1×	USB Charging Cable (Type-C)
1×	Prop Removal Tool
1×	Goggles Headband
1×	Special Screw Package (spare set)
1×	Phillips Screwdriver
1×	4Pin Adapter Cable
1×	Type-C to FC Adapter (used with the 4Pin Adapter Cable to configure the quadcopter in BETA FPV Configurator)
1×	Portable Storage Bag
1×	User Manual



Kit contents (manufacturer's illustrative photo)

2.2 Preflight Checks

- ① Verify that all components are included, without damage, and that the airframe is not deformed.
- ② Verify that propellers and motors are installed correctly and securely.
- ③ Ensure that the propellers do not scratch against the frame ducts and that the motors spin smoothly.
- ④ Verify that the batteries of the quadcopter, radio transmitter and FPV goggles are **fully charged**.
- ⑤ Make sure the pilot is familiar with all flight controls (see Chapter 4).
- ⑥ Keep a distance of at least 1 m in all directions around the quadcopter during a test flight and operate it carefully in open space.
- ⑦ Check that the video transmitter power complies with the regulations of the country where you fly (25 mW in the Czech Republic, see Chapter 8.5).
- ⑧ The manufacturer's instruction video shows how to install and remove the battery and how to bind the radio transmitter to the quadcopter:
<https://www.youtube.com/watch?v=sVDAzZaIUrg>

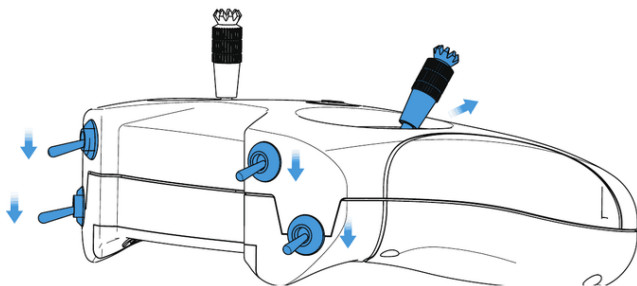
3. Quick Start Guide

3.1 Quick Start

Before flying, verify that the radio transmitter is successfully connected with the quadcopter, all basic controls are functional and the quadcopter can take off normally.

► Step 1 - power on the radio transmitter

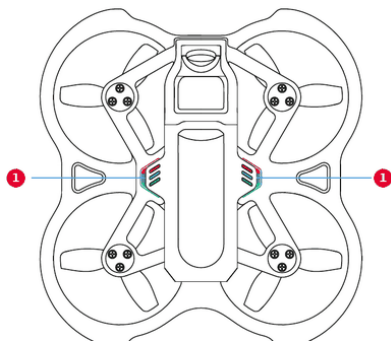
On the radio transmitter, set the throttle joystick and the four switches on the top to the lowest position. Hold the power button for about 5 seconds until it beeps three times, then release it. When the power indicator turns from flashing red to solid blue, the transmitter is powered on.



Throttle joystick and all four switches in the lowest position

► Step 2 - connect the battery

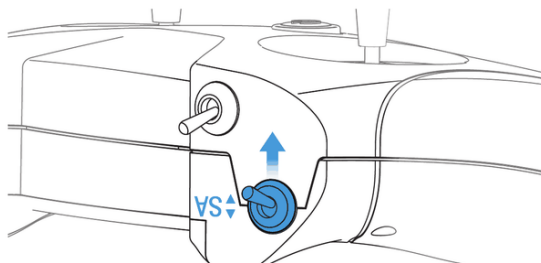
Install the battery into the battery slot on the top of the quadcopter and connect it. Place the quadcopter on a horizontal surface. Wait 3-5 seconds until the status LEDs change from flashing blue to solid blue. The quadcopter initialization is complete and the quadcopter is connected with the radio transmitter.



① Status LEDs on the bottom of the quadcopter

► Step 3 - Arm and Disarm

Push switch **SA** up to arm the quadcopter (Arm - motors on). The throttle joystick must be at the lowest position, otherwise the quadcopter will not arm. After a successful Arm, the motors spin slowly. Push switch SA down to disarm the quadcopter (Disarm - motors off) and the motors will stop.



Switch SA up - Arm

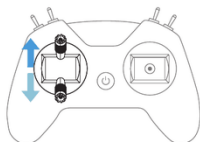
If steps 1-3 are successful, the radio transmitter and the quadcopter work normally and you can continue with the flight.

3.2 Flight Operations

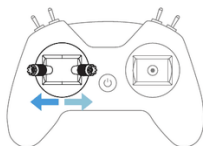
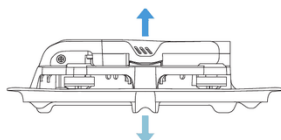
► Step 4 - flight

Re-arm the quadcopter (step 3). The motors will spin at a low speed.

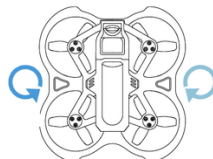
Throttle (left) joystick - up/down controls the rate of ascent/descent; left/right controls counterclockwise/clockwise rotation.



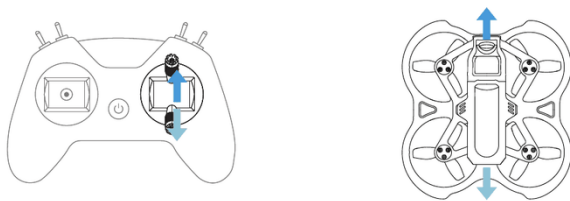
Left joystick up / down - the quadcopter ascends / descends



Left joystick left / right - counterclockwise / clockwise rotation



Direction (right) joystick - up/down controls forward/backward flight; left/right controls left/right flight.



Right joystick up / down - forward / backward



Right joystick left / right - left / right

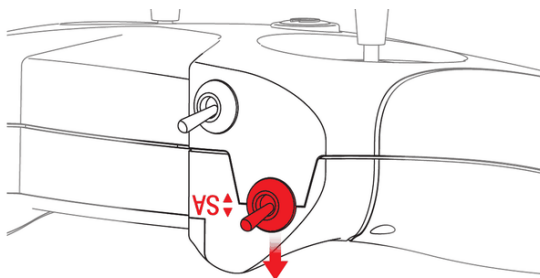
Before flying with goggles, we recommend practising the controls and the sensitivity of the joysticks by sight.

Caution:

- ① Find a suitable open space for the first flight.
- ② Move the joysticks slowly, especially the throttle joystick.
- ③ If the quadcopter gets out of control or collides with an object, disarm it quickly (switch SA down) - the motors will stop.

► Step 5 - landing

Land the quadcopter steadily and disarm it (switch SA down).



Switch SA down - Disarm

► Step 6 - finishing

Disconnect and remove the battery from the quadcopter. A long press of the power button turns the radio transmitter off after three beeps.

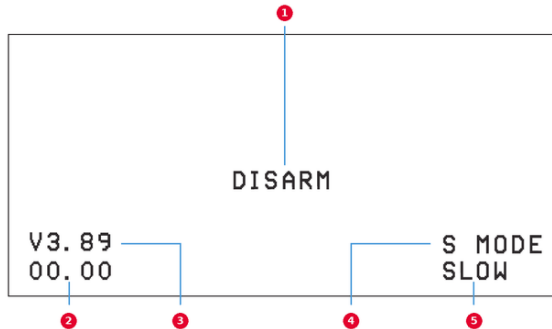
3.3 First Person View (FPV)

In FPV flight you pilot the quadcopter using the real-time image from its camera, which is transmitted to the FPV goggles. To start the goggles:

- Take out the goggles, attach the headband and rotate the antenna to the vertical position.
- Slide the power switch to the right – the screen lights up and the VR03 goggles are on.
- Hold the **S** button (see Chapter 5.1) for 2–3 seconds to start the fast frequency search. After about 3 seconds the goggles beep and display the image from the quadcopter; the search is complete.

3.4 On Screen Display (OSD)

After the frequency search, the camera image and flight information are shown in the goggles. This information is called the On Screen Display (OSD).



① Quadcopter status ② Flight time ③ Quadcopter battery voltage ④ Flight mode ⑤ Speed threshold

- The flight status is displayed in the centre of the screen: **DISARM** – motors are off; **TURTLE** – Turtle Mode is activated; **LOW VOL** – the quadcopter battery voltage is low; **RX LOSS** – the quadcopter has lost connection with the radio transmitter.
- The bottom of the screen shows the receiver protocol, quadcopter battery voltage, flight time, flight mode and speed threshold.

3.5 Flight Modes

The active flight mode is shown in the lower right corner of the screen. Choose the mode according to the flight environment and your piloting skills. The mode is selected with switch SB on the radio transmitter (see Chapter 4.1).

- ① **Normal (N MODE)** – when you centre both joysticks after take-off, the quadcopter levels out and holds its position. The position of the direction joystick controls the tilt direction and tilt angle. The auxiliary flight function

assists in holding altitude and horizontal position, which makes control the easiest.

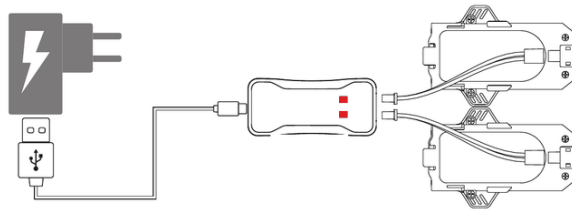
- ② **Sport (S MODE)** - the pilot controls the altitude with the throttle joystick. The position of the direction joystick controls the tilt direction and tilt angle; when the direction joystick returns to the centre, the quadcopter returns to a horizontal attitude. No auxiliary flight function; control is more difficult.
- ③ **Manual (M MODE)** - the pilot controls the altitude with the throttle joystick; the direction joystick controls the roll direction and roll speed. When the direction joystick returns to the centre, the quadcopter keeps its current attitude. No auxiliary flight function; attitude and altitude depend entirely on the pilot - control is very difficult.
- ④ **Turtle (TURTLE)** - when the quadcopter lands upside down, the motors spin in reverse to flip it back. The motor rotation is controlled with the direction joystick. See Chapter 6.6 for details.

Caution: In Normal Mode keep the flight altitude within 0.3-3 m - the quadcopter then flies stably. Outdoors, do not fly higher than 3 m where possible.

3.6 Charging the Quadcopter Batteries

Each battery provides about 8 minutes of smooth flight. When **LOW VOL** is displayed in the OSD, the battery is low and needs to be charged.

- Connect the charger to a 5 V power source via the USB-C cable.
- Connect one or two batteries to the port on the right side of the charger. The charger LED lights solid red while charging.
- When the LED turns solid green, charging is complete.



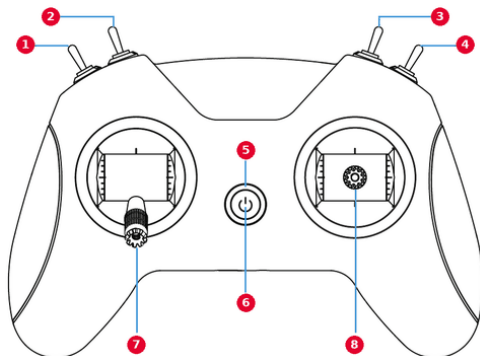
Battery charging - 5 V source (USB-C), BT2.0 charger, two batteries

Two batteries can be charged at the same time. Charging a fully discharged battery takes approximately 60 minutes.

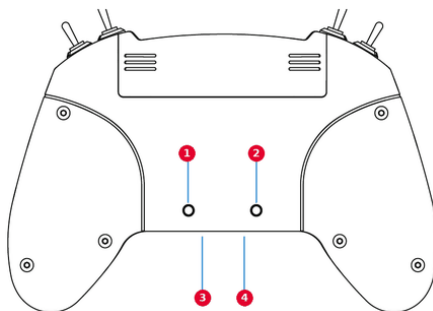
Voltage tester: when a battery is inserted into the **TEST** port and the charger is not connected via the USB cable, the current battery voltage is displayed. 4.25-4.35 V indicates a fully charged battery. A battery at 3.5 V or lower is discharged and needs to be charged.

4. LiteRadio 2 SE Radio Transmitter

The radio transmitter included in this kit is the LiteRadio 2 SE (ELRS version).



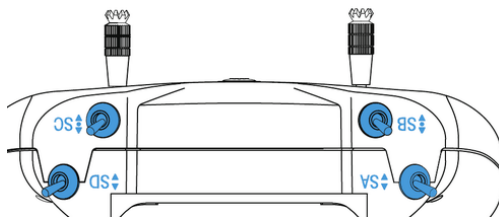
Front: ① switch SA ② switch SB ③ switch SC ④ switch SD ⑤ LED ring ⑥ power button ⑦ throttle (left) joystick ⑧ direction (right) joystick



Back: ① SETUP button ② BIND button ③ audio port ④ Type-C port

4.1 Switch Functions

Four switches – SA, SB, SC and SD – on the front of the radio transmitter change the modes and parameters of the quadcopter. The switches only work after the radio transmitter and the quadcopter have been bound successfully.



Switches SA, SB, SC and SD (top view)

Switch	Position	Function
SA Arm/Disarm	down	Disarm – motors off
	up	Arm – motors on
SB flight mode	down	Normal (N MODE)
	middle	Sport (S MODE)
	up	Manual (M MODE)
SC speed threshold	down	low gear (SLOW)
	middle	middle gear (MID)
	up	high gear (FAST)

► Switch SD - video transmitter (VTX) frequency

Each time switch SD is toggled, the quadcopter's video transmitter switches to the next frequency. 8 frequencies are available; after the last one (5866 MHz) it cycles back to the first one (5733 MHz). The factory default frequencies are, in sequence, 5733 / 5752 / 5771 / 5790 / 5809 / 5828 / 5847 / 5866 MHz.

► Switch SD - Turtle Mode (quadcopter upside down)

- Toggle switch SD from down to up to turn Turtle Mode on.
- Move switch SD down after the quadcopter is back in the normal position to turn Turtle Mode off.

4.2 Joystick Functions

The two joysticks on the front of the radio transmitter control ascent/descent (throttle), forward/backward tilt (pitch), left/right tilt (roll) and rotation of the flight direction (yaw).

- **Throttle (left) joystick** – ascent/descent (throttle) and rotation (yaw).
- **Direction (right) joystick** – forward/backward tilt (pitch) and left/right tilt (roll).

The joystick movements and the corresponding quadcopter responses are shown in Chapter 3.2.

4.3 Button Functions

- **Power button** - a long press turns the radio transmitter on or off.
- **BIND button** - a short press enters binding mode (when the transmitter is on).
- **SETUP button** - a short press enters joystick calibration mode (when the transmitter is on).

Binding and joystick calibration are described in Chapter 6.

4.4 Charging the Radio Transmitter

The radio transmitter has a built-in 1000 mAh battery and needs no external power. When the red light flashes twice and the buzzer beeps twice, the battery is low and needs to be recharged.

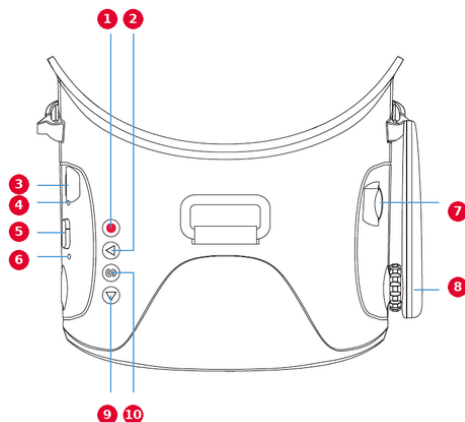
- Turn off the radio transmitter.
- Connect the radio transmitter to an adapter with 5 V output using the Type-C cable (e.g. a mobile phone charger).
- The LED ring breathing in red indicates charging; green indicates fully charged.

Note: Fast charging protocols are not supported, so the radio transmitter cannot be quick-charged.

5. VR03 FPV Goggles

The kit includes the VR03 FPV goggles with an external antenna and DVR recording.

5.1 Button Operation



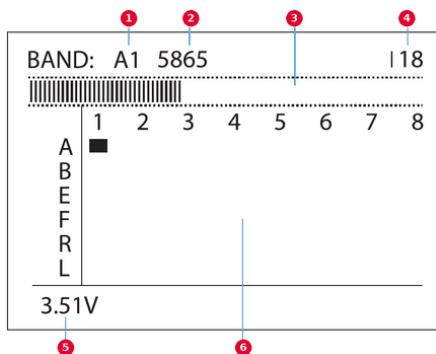
- ① record button ② channel button ③ Type-C port
④ charging indicator LED ⑤ power switch ⑥
recording indicator LED ⑦ micro SD card slot ⑧
antenna ⑨ band button ⑩ search button (S)

► Power switch

Slide the power switch left or right to turn the goggles off or on. When facing the switch, the left position is off and the right position is on.

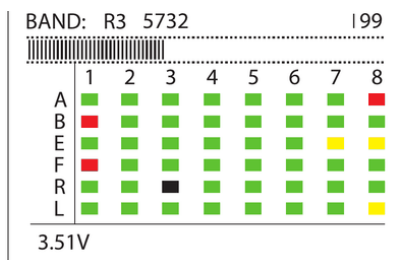
► Search button (S)

- **Quick frequency search:** press and hold the S button for 2–3 seconds. After about 3 seconds the goggles beep and select the best available frequency.
- **Frequency scan:** a short press of the S button opens the frequency scan screen. The result is displayed after about 3 seconds.



① frequency position (band and channel) ② frequency ③ RSSI display bar ④ RSSI value ⑤ goggles voltage ⑥ frequency scanning results table

The colours in the results table indicate the status of each frequency:



Example of a scan result

Colour	RSSI	Meaning
green	0-20	frequency is available
yellow	20-70	frequency has moderate interference from another transmitter
red	70-90	frequency is completely in use by a transmitter
white	—	strongest signal received in this scan

► Band and Channel buttons

In the frequency scan screen, the Band button cycles through the bands (down) and the Channel button cycles through the channels (right), so you can set the goggles frequency manually. For example, select a green frequency - it is not occupied and interference is weak. Then set the quadcopter to the same frequency (switch SD) and set the goggles to match.

► Record button

A short press of the record button turns on the red recording LED and the goggles start recording. Another short press turns the LED off and recording stops.

5.2 Frequency Selection

The goggles can receive 48 frequencies in the 5.8 GHz spectrum, distributed across 6 bands (A, B, E, F, R and L) of 8 channels (CH1-CH8).

The quadcopter included in this kit only uses the 8 frequencies of band B (bold, second row of the table).

	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
A	5865	5845	5825	5805	5785	5765	5745	5725
B	5733	5752	5771	5790	5809	5828	5847	5866
E	5705	5685	5665	5645	5885	5905	5925	5945
F	5740	5760	5780	5800	5820	5840	5860	5880
R	5658	5695	5732	5769	5806	5843	5880	5917
L	5362	5399	5436	5473	5510	5547	5584	5621

Frequencies are given in MHz.

Press and hold the S button to automatically search for the frequency with the strongest signal and obtain the FPV image of the quadcopter. Short presses of the Band and Channel buttons set the goggles to a specific band and channel.

5.3 DVR Functions

The VR03 goggles support video recording. A short press of the record button starts or stops recording.

- Insert a micro SD card into the slot. The card must be formatted as FAT32; maximum capacity is 64 GB.
- After a short press of the record button, a red dot appears in the upper left corner of the screen and the goggles beep twice.
- After about 8 seconds the red dot starts flashing, a red timer appears and the recording LED starts flashing – recording is in progress.
- Another short press of the record button stops recording: after 2-3 seconds the dot stops flashing, the timer disappears and the LED turns off.



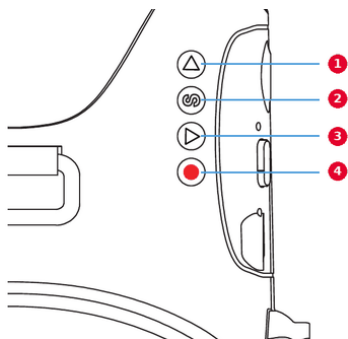
① recording ② recorded time ③ frequency position ④ frequency ⑤ RSSI

Caution:

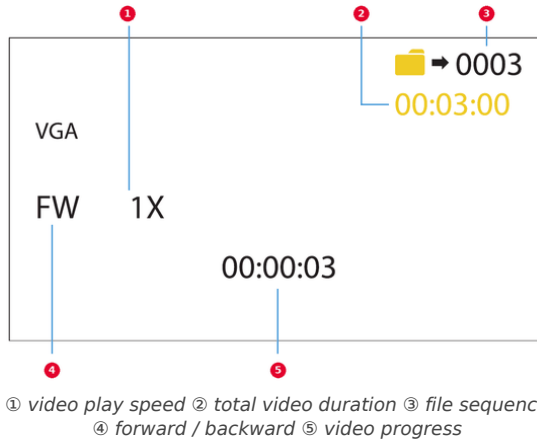
- ① After pressing the record button, the DVR function takes about 8-10 seconds to activate. Please be patient.
- ② The maximum duration of each recording is 10 minutes. When a recording exceeds 10 minutes, a new file is created automatically.

► DVR playback

- Make sure a micro SD card with recordings is inserted in the slot.
- Press and hold the record button for 2-3 seconds – you will hear three beeps and “LOADING DVR...” appears on the screen.
- Wait about 8-10 seconds (depending on file size) until the player interface opens.
- In the player, the goggles buttons have different functions – see the figure.
- Press and hold the record button for 2-3 seconds again to exit the player.



① next video / fast forward while playing ② start / pause / confirm ③ previous video / fast backward while playing ④ enter / switch menu



5.4 Charging the FPV Goggles

The goggles have a built-in 2000 mAh battery and need no external battery. When the voltage drops below 3.4 V, the goggles beep every 10 seconds – the battery needs to be recharged. You can also check the voltage by pressing the S button.

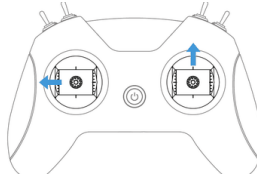
- Switch off the FPV goggles.
- Connect the goggles to an adapter with 5 V output using the Type-C cable (e.g. a mobile phone charger).
- The charging LED lights blue while charging and turns off when charging is complete.

6. Settings and Advanced Functions

The OSD menu is used to change the quadcopter configuration, e.g. to turn the RGB LEDs on/off, turn sensors on/off, or add/remove information on the flight screen.

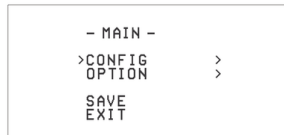
6.1 Accessing and Operating the OSD Menu

Disarm the quadcopter before accessing the menu. To enter the menu, move the throttle joystick to the left-centre and the direction joystick to the upper centre.



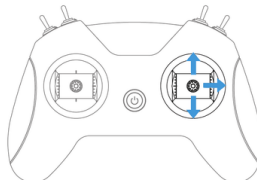
*Entering the OSD menu:
throttle joystick left,
direction joystick up*

The MAIN menu with the items CONFIG, OPTION, SAVE and EXIT appears in the goggles.



OSD MAIN menu

The cursor is controlled with the direction (right) joystick: **up** - move the cursor up, **down** - move the cursor down, **right** - confirm or modify the selection.



*Menu navigation with the
right joystick: up, down,
right*

The CONFIG menu contains the following items:

```

- CONFIG -
TOF      OFF
OPF      ON
>LED     OFF
CALI     OK
VTX      FCC
POWER    350MW
BACK

```

CONFIG menu

Item	Meaning	Default
TOF	laser altitude determination (Chapter 6.5)	OFF
OPF	optical flow positioning function (Chapter 6.4)	ON
LED	RGB LED colour cycling (Chapter 6.2)	OFF
CALI	level calibration (Chapter 6.3)	—
VTX	video transmitter setting	FCC
POWER	video transmitter power (Chapter 8.5)	350MW
BACK	return to the MAIN menu	—

The video transmitter is factory-set to 350 mW. Before operating in the Czech Republic, set the power to 25 mW in the POWER item; otherwise the conditions of the Czech Telecommunication Office (ČTÚ) are breached (see Chapter 8.5).

6.2 Quadcopter RGB LED ON/OFF

The quadcopter status LEDs are normally solid blue during flight. You can switch them to colour cycling:

- In the MAIN menu, select CONFIG.
- Select LED and set OFF (solid blue) or ON (RGB colour cycling).
- Select BACK to exit the CONFIG sub-menu.
- Select SAVE in the MAIN menu to save the changes and exit the OSD menu.

6.3 Quadcopter Level Calibration

After several take-offs and landings, the quadcopter gyroscope may become offset and the quadcopter will then always tilt in the same direction during flight. In this case, recalibrate the gyroscope:

- Turn on the quadcopter and the radio transmitter and make sure they are connected.
- Place the quadcopter on a horizontal surface and do not move it during calibration.
- Enter the OSD menu (Chapter 6.1).
- In the MAIN menu, select CONFIG, then CALI.

- Push the direction joystick to the right to start the level calibration. The quadcopter LEDs flash blue.
- When OK appears and the LEDs return to solid blue, calibration is complete and you can exit the menu.

6.4 Optical Flow Positioning Function

In Normal Mode, the optical flow positioning function is turned on by default and helps the quadcopter hold its horizontal position. It works best over surfaces with obvious ground features and in sufficient light. To turn it off or on:

- Enter the OSD menu and select CONFIG in the MAIN menu.
- Select OPF and set OFF (positioning off) or ON (positioning on). Select BACK to exit the CONFIG sub-menu.
- Select SAVE in the MAIN menu to exit the OSD menu.

6.5 Laser Altitude Determination (TOF)

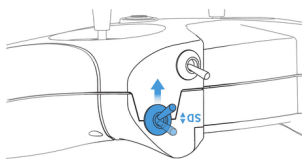
In Normal Mode, the laser altitude determination function is turned off by default. When turned on, the quadcopter hovers more accurately and keeps a fixed height above objects below it, so it climbs and descends over them automatically. To turn it off or on:

- Enter the OSD menu and select CONFIG in the MAIN menu.
- Select TOF and set OFF (function off) or ON (function on). Select BACK to exit the CONFIG sub-menu.
- Select SAVE in the MAIN menu to exit the OSD menu.

6.6 Turtle Mode

When the quadcopter falls and lies upside down, you can flip it back over with the radio transmitter:

- Toggle switch SD from down to up - Turtle Mode is activated and TURTLE is displayed in the OSD.
- Move the direction joystick in any direction - the motors spin and the quadcopter flips over.
- Move switch SD down to turn Turtle Mode off.
- Arm the quadcopter and continue flying.



Switch SD from down to up -
Turtle Mode

Caution:

- ① Turtle Mode is suitable for flat ground. It is not recommended on grass or fabric – the motors may be obstructed, resulting in damage to the motors and ESC.
- ② When the battery voltage is low (3.5 V or less), Turtle Mode may not work. In that case, turn the quadcopter over manually.

6.7 Re-Binding the Quadcopter

If the quadcopter and the radio transmitter cannot connect, they need to be re-bound. This can happen, for example, after replacing electronic parts of the quadcopter or after upgrading the radio transmitter.

- Power the quadcopter on three times in quick succession. The status LEDs start flashing green – the quadcopter is in binding mode.
- Turn on the radio transmitter and wait for it to initialize.
- Lightly press the BIND button on the back of the radio transmitter with a screwdriver. The power indicator flashes red quickly.
- When binding is successful, the quadcopter status LEDs turn solid blue.

Caution:

- ① Binding may not succeed after the first press of the BIND button. In that case, press it a second time.
- ② The manufacturer's instruction video listed in Chapter 2.2 shows the binding procedure.

6.8 Radio Transmitter Joystick Calibration

After repeated use or a physical impact, the joysticks may no longer read correctly and need to be recalibrated.

- ① Power on the radio transmitter and press the SETUP button on its back. The transmitter beeps twice and the LED flashes red twice quickly – calibration mode is active.
- ② Move both joysticks to the middle position. Press SETUP again and wait until the transmitter beeps three times and the red LED flashes twice quickly – the joystick centre data has been acquired.
- ③ Move both joysticks to the top, bottom, left and right limits in turn (do not press hard – the joystick only needs to touch the limit) and hold each position for 1–2 seconds. Then press SETUP once more. A long beep (about 3 seconds) sounds and the red LED stops flashing – calibration is complete.

7. Status Codes and Troubleshooting

7.1 Quadcopter Status LEDs

There are two RGB status LEDs on the bottom of the quadcopter (see the figure in Chapter 3.1).

Colour	Status	Meaning	Solution
—	off	quadcopter power is abnormal or off	replace the battery and power on again
red	flashing slowly	quadcopter battery is low	replace the battery
blue	solid	quadcopter is connected with the radio transmitter	—
blue	flashing fast	level calibration in progress	place the quadcopter on a horizontal surface and wait
purple	solid	quadcopter is in the OSD menu	—
green	flashing	quadcopter is in binding mode	—
white	flashing fast	arming failed - throttle joystick was not at the lowest position	disarm and move the throttle joystick to the lowest position
brown	flashing slowly	loss of radio transmitter signal	re-establish the connection with the radio transmitter

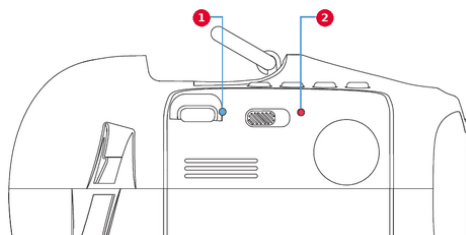
7.2 Radio Transmitter LED and Beep Codes

The status of the radio transmitter is indicated by the blue and red LED around the power button and by the built-in buzzer.

LED	Status	Meaning	Solution
red	solid	throttle joystick not at the lowest position when switching on	move the throttle joystick to the lowest position
red	flashing fast	radio transmitter is in binding mode	wait for binding
red	flashing slowly	battery voltage is too low	charge the radio transmitter
Beep		Meaning	
two beeps (di-di)		radio transmitter battery low	

7.3 FPV Goggles LEDs

The goggles have a blue LED indicating the charging status and a red LED indicating DVR recording.



① charging indicator LED (blue) ② recording indicator LED (red)

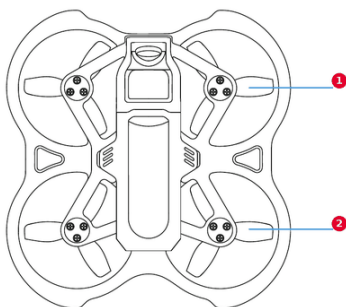
LED	Status	Meaning
blue	solid	charging
	off	not charging or charging complete
red	flashing	recording
	solid	DVR recording has not started

7.4 How to Replace Propellers

Propellers can be deformed or fall off when the quadcopter collides with an object. Replace bent or missing propellers.

Remove the propellers from the motor with the included prop removal tool. Hold the motor, not the frame duct, to avoid deforming the frame by overexertion.

4 spare propellers are included: 2 clockwise (CW) and 2 counterclockwise (CCW). Install them as shown in the figure.



① CCW propeller ② CW propeller

Tip: Take photos of the quadcopter before replacing the propellers. After removing them, the photos help you see where each propeller belongs.

7.5 How to Fix Quadcopter Drift in Normal Mode

In Normal Mode, the optical flow positioning function is turned on by default. If the quadcopter starts to drift, check the following causes:

► **Motors or propellers are blocked or damaged**

Remove hair and other foreign objects wrapped around the motors, or replace damaged propellers so they do not rub against the frame when rotating.

► **Environment too dark or flying over water - the optical flow sensor does not work**

Fly in sufficient light over surfaces with obvious ground features. Avoid environments where ground features are hard to identify (darkness, water surfaces) - otherwise the quadcopter may drift or be difficult to control. If you have to fly in such an environment, turn off the optical flow positioning function (Chapter 6.4). The quadcopter then loses the horizontal auxiliary flight function and good piloting skills are required.

► **Gyroscope offset after a collision or fall**

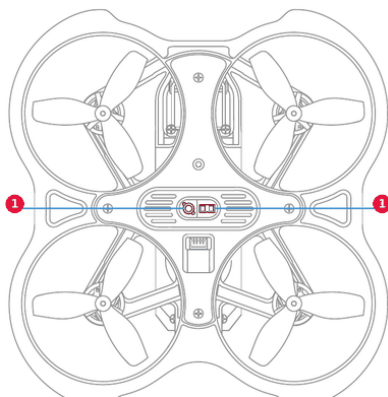
Strong vibrations during a collision can offset the gyro sensor data, which cannot be repaired automatically. Calibrate the gyroscope manually according to Chapter 6.3: in the CONFIG menu select CALI and push the direction joystick to the right. The blue LED flashes quickly; when calibration is complete it stays on and OK is displayed in the menu. Keep the quadcopter on a horizontal surface and do not move it during calibration.

► **Strong wind (above level 3) - unstable hovering**

In strong wind, we recommend flying in S or M mode, or turning off the optical flow positioning function and controlling the horizontal position manually (Chapter 6.4).

► **Dirty sensors - unstable auto-hover**

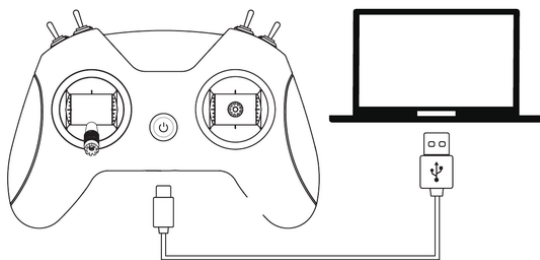
The sensors must not be covered and their surface must be free of dirt and dust. If the auxiliary flight function is abnormal, wipe the sensors clean before the next flight.



① sensors on the bottom of the quadcopter

7.6 How to Use an FPV Simulator

The safest and quickest way to get started is an FPV simulator. The LiteRadio 2 SE radio transmitter supports most FPV simulators on the market.



Connecting the radio transmitter to a computer with a USB cable (Type-C port on the transmitter)

- Turn off the radio transmitter.
- Connect the radio transmitter to the computer with a USB data cable and wait until the LED ring breathes red or green.
- The computer installs the driver automatically and shows a notification. The radio transmitter then works as a joystick (HID device) named "BETA FPV JoyStick".

⚙️ Setting up a device

We're setting up 'BETA FPV JoyStick'.

Bluetooth & other devices

Other devices

 BETA FPV JoyStick

*Windows notification about connecting the
BETA FPV JoyStick device*

If the computer does not install the driver automatically or installs it incorrectly, install it manually.

Caution: Do NOT power on the radio transmitter first and then connect it to the computer - the USB port does not work in this situation.

7.7 How to Stop After a Collision

- As soon as the quadcopter collides with an object, immediately push switch SA down. All motors stop immediately.
- If the quadcopter climbs too high in Normal Mode and is difficult to control, immediately push switch SA down to stop the motors.

Caution: Push switch SA down immediately when the quadcopter is hit or the propellers scratch against the frame duct.

8. Information for the EU and Czech Market

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 transmitting power. The information in this chapter describes the situation in the Czech Republic. If you operate the drone in another country, you must comply with the regulations of the state in which you fly.

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 (Aquila16) and the class identification label C0 are given on the label on the top of the quadcopter under the battery; the kit designation (Aquila16 FPV Kit) is given on the packaging.
- **Manufacturer:** Shenzhen Baida Moxing Co., Ltd. (BETA FPV brand), Room 2005-2, Building 6, Phase II (Lot 02-07), Tian'an Cloud Park, Gangtou Community, Bantian Street, Longgang District, Shenzhen, Guangdong, China; e-mail support@betafpv.com.

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 radio transmitter and the FPV goggles contain a built-in rechargeable battery; the quadcopter uses removable batteries. Where possible, hand the batteries over together with the devices – do not dispose of them 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>.

8.4 Drone operation

The Aquila16 bears the class identification label **C0** according to Regulation (EU) 2019/945 (label on the quadcopter). Class C0 drones have a maximum take-off mass (MTOM) of less than 250 g and are operated in the open category, subcategory **A1**. The quadcopter weighs 47.1 g without battery and 72.5 g with the supplied 1100 mAh battery (manufacturer's data). Do not attach any additional payload or accessories to the quadcopter.

- **Pilot:** no pilot training or examination is required for a class C0 drone. However, you must read this manual before the first flight.
- **Control:** the quadcopter is controlled with the LiteRadio 2 SE radio transmitter (Chapter 4) and configured in the OSD menu (Chapter 6) or in BETA FPV Configurator.

- **Loss of data link:** when the radio transmitter signal is lost, RX LOSS is shown in the OSD and the status LEDs flash brown slowly (Chapter 7.1). According to the manufacturer, in case of lost control or low battery the quadcopter hovers and performs an emergency landing.
- **Operational limitations:** fly in daylight or in a sufficiently lit area; do not fly in rain, thunderstorms or strong wind (Chapters 1.1 and 7.5).
- **Operator registration:** the drone is equipped with a camera, so the operator must register regardless of the drone's mass. In the Czech Republic, registration is done with the Civil Aviation Authority (ÚCL). The registration number must be visibly displayed on the drone.
- **Height and line of sight:** do not fly higher than 120 m above ground and keep the drone in visual line of sight (VLOS).
- **Flying with FPV goggles:** a pilot wearing goggles cannot see the drone directly and must therefore be accompanied by an **observer** who watches the drone with the naked eye and warns of hazards.
- **People:** never fly over assemblies of people.
- **Geographical zones:** before flying, check whether the flight location lies in a restricted zone (airports, protected areas, etc.). An up-to-date overview of zones is published by ÚCL and Air Navigation Services of the Czech Republic (ŘLP ČR).
- **Insurance:** not compulsory in the Czech Republic for a small drone in subcategory A1, but we recommend taking out liability insurance.
- **EASA information notice:** the rules for operating class C0 drones are summarised in the information notice of the European Union Aviation Safety Agency (EASA), available in all EU languages at www.easa.europa.eu.

8.5 Radio equipment and frequencies

The kit contains the following radio equipment (manufacturer's data):

Device	Band	Power
Quadcopter video transmitter (VTX)	5733–5866 MHz (band B)	25 mW / 350 mW
LiteRadio 2 SE radio transmitter (ELRS)	2.4 GHz	100 mW
ELRS receiver in the quadcopter	2.4 GHz	not specified by the manufacturer
VR03 FPV Goggles	5.8 GHz - receive only	—

In the Czech Republic, the following limits apply to operating this equipment without an individual authorisation:

Band	Max. radiated power	Regulation
2400-2483,5 MHz	25 mW e.i.r.p.; 100 mW e.i.r.p. for spread-spectrum systems (FHSS, DSSS, OFDM) according to ČSN ETSI EN 300 328	VO-R/10/05.2025-5, Art. 3, letter j); VO-R/12/11.2021-11, letter a)
5725-5875 MHz	25 mW e.i.r.p.	VO-R/10/05.2025-5, Art. 3, letter k)

The video transmitter is factory-set to 350 mW. This power exceeds the permitted limit in the Czech Republic. Before operation, set the power to 25 mW in the POWER item of the OSD menu (Chapter 6.1).

- The user is responsible for setting the transmitting power and selecting the channel.
- Outside the Czech Republic, the frequency bands and power limits of the respective country apply.
- The equipment must not be modified electrically or mechanically and may only be operated with the antenna specified by the manufacturer.

9. Warranty and rights arising from defective performance

9.1 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 manufacturer's warranty terms set out below (Chapter 9.2) **do not in any way limit** the buyer's rights arising from these regulations.

- 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.

9.2 Manufacturer's warranty terms

❖ **The following text is the manufacturer's original warranty statement.**

Warranty: all defective merchandise, unless otherwise indicated, may be returned for a replacement within 30 days from the date the goods were received. Refunds or replacements cannot be provided beyond 30 days. If the product is confirmed to have a quality problem (product design or quality issues), it will be covered by a replacement or refund.

Conditions and exclusions:

- All warranty replacements require photos or videos and a detailed description. The warranty does not cover physically damaged merchandise.
- For after-sale service, contact support@betafpv.com. This clause only applies to products manufactured by BETA FPV and sold by BETA FPV authorised dealers; the interpretation rights of this clause belong to BETA FPV.