Cub2 O4

AlfaRC · carbon frame for a 2" FPV quadcopter
User manual



Read this entire manual before building and before the first flight, and keep it for future reference.

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1. Product description

1.1 Intended use

AlfaRC Cub2 O4 is a small carbon frame for building an FPV quadcopter with 2" propellers. It is designed for builds with analog or digital video transmission, including the **DJI O4** system. The motor diagonal distance is 88 mm, the bottom plate is CNC-cut from 2.5 mm thick carbon, the top plate from 1.5 mm thick carbon, and the frame weighs approximately 15 g.

The FPV camera is mounted in a 3D printed front section that also includes a fin. The fin helps to flip a crashed, upside-down drone back over (turtle mode) and also protects the battery. The frame is supplied empty, without any electronics. To build a flyable quadcopter you need to purchase the electronics, motors, propellers, camera and battery separately – see Chapter 2.1.



The AlfaRC Cub2 O4 frame with the 3D printed front section and fin. Electronics, motors and camera are not included.

1.2 Technical data and package contents

Product designation	AlfaRC Cub2 O4
Manufacturer	AlfaRC
Product type	FPV quadcopter frame (without electronics)
Motor diagonal distance	88 mm
Max. propeller size	2"
Bottom plate	carbon fibre, 2.5 mm thick
Top plate	carbon fibre, 1.5 mm thick
Front section	3D printed, with camera mount and fin
FC / stack mounting holes	16 × 16 / 20 × 20 / 25.5 × 25.5 mm
Motor mounting holes	9 mm pattern, M2 screws
Camera	Nano size (14 mm)
Video transmission	analog or digital, including DJI O4
Frame weight	approx. 15 g
Package contents	1× frame
Not included	flight controller (FC), ESCs, motors, propellers, FPV camera, video transmitter (VTX), receiver, battery, radio transmitter, FPV goggles, charger

2. Use

2.1 What else you need

- Flight controller (FC) and ESCs – an AIO board or a stack with a 16 × 16 mm, 20 × 20 mm or 25.5 × 25.5 mm mounting hole pattern. The electronics must fit into the space between the frame plates.
- Four brushless motors with a 9 mm mounting hole pattern for M2 screws.
- Propellers with a maximum diameter of 2" – two counter-clockwise and two clockwise, matching the motor shafts.
- An FPV camera in Nano size (14 mm) and a video transmitter (VTX) with antenna, or a digital video system (e.g. DJI O4), and a receiver for your radio.
- A Li-Po or LiHV battery suitable for the chosen electronics and motors, and a means of securing it (e.g. a strap).
- M2 screws of suitable length for the motors and electronics, if they are not supplied with those parts.
- A radio transmitter (RC system), FPV goggles, a charger and basic tools: hex keys or screwdrivers, a soldering iron, insulating material.

※ The frame manufacturer does not prescribe a specific combination of electronics, motors and battery. Follow the specifications of the manufacturers of the components used, in particular the permitted supply voltage, and check the dimensions of the video system before purchase.

2.2 Building the quadcopter

The following procedure is general. The exact wiring depends on the manuals of the flight controller, motors and video system used.

① Inspect the frame before assembly. The plates must not be cracked or delaminated. Carefully smooth any sharp edges around holes and wire passages.

② Screw the motors to the ends of the arms using M2 screws. The screws must not be so long that they touch the motor windings – after tightening, check that the motor bell rotates freely.

③ Mount the flight controller (AIO board or stack) on the corresponding mounting holes, using the rubber damping grommets supplied with the FC if applicable. The arrow on the FC must point forward, in the direction of the camera.

④ Solder the motor wires and the power lead with the battery connector. Solder joints and bare wires must not touch the carbon frame.

⑤ Mount the camera in the 3D printed front section. Position the video transmitter, receiver and antennas so that they do not reach into the path of the propellers.

⑥ Close the frame with the top plate and tighten the screws.

⑦ Configure the flight controller in the configuration software (e.g. Betaflight): board orientation, receiver, flight modes, failsafe and motor direction. Always test the motors without propellers.

⑧ Fit the propellers last, according to the direction of rotation of each motor.

⑨ Secure the battery so that it cannot shift or come loose in flight.



3D printed front section with fin and a mounted Nano size camera.

2.3 Safety during building and operation

- Carbon fibre is electrically conductive. Insulate solder joints and wires wherever they could touch the frame. A short circuit through the frame can destroy the electronics or cause a battery fire.
- The edges of carbon plates can be sharp. Sanding or drilling produces fine carbon dust – work wet or wear respiratory protection and do not inhale the dust.
- Rotating propellers can cause injury. Remove the propellers during setup and repairs. Arm (switching on the motors) only in a safe place, away from people and animals.
- Charge Li-Po and LiHV batteries under supervision, on a non-flammable surface and only with a suitable charger. Do not use a damaged or swollen battery.
- Always insert a fully charged battery before flight (4.20 V/cell for Li-Po, 4.35 V/cell for LiHV). End the flight at the latest at 3.5 V/cell.
- This product is not a toy. Keep it out of the reach of children.

2.4 Operating the finished quadcopter and regulations

The finished quadcopter is an unmanned aircraft. 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 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 country in which you fly.

- If the drone has a camera, the operator must register (in the Czech Republic with the Civil Aviation Authority) and display the registration number on the drone – regardless of weight.
- Fly only within visual line of sight, up to 120 m above ground, away from assemblies of people and outside prohibited or restricted zones.
- When flying with FPV goggles, an observer must stand next to the pilot and keep the drone within visual line of sight.
- The operator is responsible for setting the frequency and power of the video transmitter and RC system; observe the limits applicable in the country of operation.
- We recommend taking out liability insurance for damage caused by operating the drone.

3. Maintenance and storage

- After every flight, and especially after a crash, inspect the arms and plates of the frame and the 3D printed front section. Do not continue to use a frame with a cracked or delaminated arm.
- Regularly check that the motor and frame screws are tight and that the wire insulation is intact where wires touch the frame.
- Remove dirt with a dry brush or compressed air. Do not wash the electronics with water.
- Protect the 3D printed front section from high temperatures – do not leave the drone in a hot car or in direct sunlight.
- Store the quadcopter in a dry place, away from direct sunlight and heat sources. Disconnect the battery and store it at 3.8 V/cell.

4. Information for the EU and Czech Market

4.1 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

4.2 Disposal

- The frame itself contains no electronics or batteries. Dispose of an unwanted frame in accordance with the waste management rules applicable at your place of residence; sort the packaging.
- Before disposal, remove the electronics, motors and batteries from the finished quadcopter and hand them in separately at a collection point for electrical equipment and batteries. They must not be disposed of with mixed household waste.
- Collection points in the Czech Republic can be found at www.asekol.cz and www.ecobat.cz.

5. 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 4.1.
- 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.