Johnny 5" V2

Readytosky – 5" carbon frame for FPV drones
Assembly and user manual



Read this entire manual carefully, especially the safety instructions, before assembly and the first flight. Keep the manual for future reference.

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1. Safety instructions

1.1 Before you start

- The product is a **frame** – the supporting structure of an FPV drone. It does not fly on its own; a flyable drone is only created by fitting motors, electronics and propellers (see Chapter 4).
- Building and operating an FPV drone requires basic knowledge of electronics, soldering and flight controller setup. The product is not intended for children.
- The mounting hardware contains small parts that can be swallowed. Keep them out of the reach of children and animals.
- Follow this manual and the manuals of the components used (motors, flight controller, ESC, camera, video transmitter, receiver).

1.2 Carbon composite and assembly

- The plates and arms are made of carbon composite. **Carbon is electrically conductive** – all electrical parts (receiver, wires, solder joints) must be insulated from the frame, otherwise there is a risk of short circuit and fire.
- The edges of carbon parts may be sharp. Handle them with care.
- Do not sand, drill or cut carbon parts dry and without protection. The resulting dust irritates the skin and airways and is conductive – it can damage electronics.
- Tighten screws with care. A screw that is too long can damage the motor windings, one that is too short will strip the thread (see Chapter 5.2).

1.3 The built drone, propellers and batteries

- Spinning propellers can cause serious injury. When working on the drone with a battery connected, when connected to a computer and when testing the motors, **always remove the propellers**.
- Before every flight check that the propellers can spin freely and that no wire can get caught in them – especially the battery power lead.
- Charge LiPo batteries under supervision, on a non-flammable surface and with a charger designed for the given cell type. Do not use a damaged, swollen or overheated battery.
- Do not fly over people, near airports or where a crash could endanger people or property.

LiPo battery voltage	per cell	example 4S / 6S
Fully charged	4.20 V	16.8 V / 25.2 V
End the flight	3.5 V	14.0 V / 21.0 V
Storage	3.8 V	15.2 V / 22.8 V

Choose the battery cell count according to the motors and ESC used, not according to the frame.

2. Product description

2.1 Purpose of the frame

Johnny 5" V2 is a five-inch carbon frame designed primarily for freestyle flying. The arms are 5 mm thick, the other plates are made of 2 mm carbon, which makes it one of the lighter freestyle frames. The frame offers enough room for components and, thanks to its easy build, it is also suitable for beginner builders.

The frame accepts a standard stack (flight controller + ESC) with a 30.5 × 30.5 mm mounting pattern as well as a 20 × 20 mm mini stack. The FPV camera is clamped between the carbon side plates that are part of the frame.



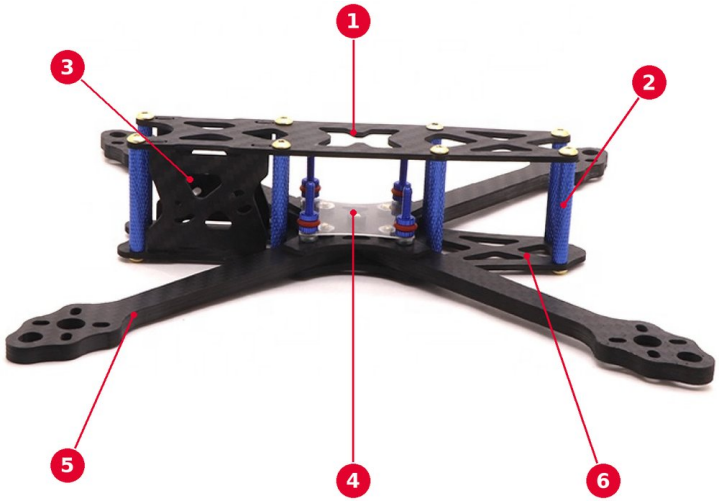
Example of a drone built on the Johnny 5" V2 frame (motors, electronics and propellers are not included)

2.2 Package contents

- 1× Johnny 5" V2 frame – supplied for assembly, including the frame mounting hardware (screws, nuts, standoffs).

Not included: motors, flight controller (FC) and electronic speed controller (ESC), FPV camera, video transmitter (VTX), antenna, RC receiver, propellers, battery and battery strap. The 3D-printed SMA antenna mount, a spare arm and a set of small build parts (heat-shrink tubes, cable ties, capacitor wires) are sold separately.

2.3 Parts description



Johnny 5" V2 frame – side view

① Top plate – carries the battery, screwed to the standoffs.

② Standoff – connects the top and middle plates.

③ Carbon side plates – mount for a Mini size FPV camera.

④ Centre section for the stack (30.5 × 30.5 mm / 20 × 20 mm) with a clear plastic plate.

⑤ Arm (4×, 5 mm thick).

⑥ Middle plate – sits on the arms and clamps them together with the bottom plate.

2.4 Technical data

Manufacturer	Readytosky
Type designation	Johnny 5" V2
Propeller size	5"
Wheelbase (diagonal)	227 mm
Arm thickness	5 mm
Thickness of other plates	2 mm
Material	carbon composite (carbon fibre)
Stack mounting	30.5 × 30.5 mm M3 / 20 × 20 mm M3
FPV camera size	Mini

The manufacturer does not state the frame weight.

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 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 transmit power. 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 state in which you fly.

3.2 Classification of a drone built on the frame

- A drone built from this frame and separately purchased components has no C0–C4 class label and is operated as a **privately built UAS** in the open category.
- Subcategory **A1** requires a maximum take-off mass below 250 g and a maximum operating speed below 19 m/s; otherwise subcategory **A3** applies. Subcategory A2 is not available.
- Always weigh the built drone, including the battery and accessories (e.g. an action camera).

3.3 Registration and operating limits

- **Operator registration** is mandatory from 250 g and for a lighter drone with a camera. In the Czech Republic, registration and the online pilot test are done at dron.caa.cz; display the registration number on the drone.
- Maximum flight height 120 m above the closest point of the surface of the earth.
- In subcategory A3 fly at least 150 m from residential, commercial, industrial and recreational areas and so as not to endanger uninvolved persons.
- FPV goggles may only be used with an **unmanned aircraft observer** next to the pilot who keeps the drone in direct sight and can warn the pilot immediately.
- Respect geographical zones, privacy and personal data protection. We recommend liability insurance even where it is not mandatory.

3.4 Radio frequencies

The frame itself does not transmit. Frequency bands and transmit power depend on the video transmitter and RC receiver used – follow their manuals. In the Czech Republic, the bands 2400–2483.5 MHz and 5725–5875 MHz are limited to 25 mW e.i.r.p. (general authorisations of ČTÚ). The user is responsible for the channel and power settings; outside the Czech Republic, local limits apply.

4. Preparing for the build

4.1 What else you need

- 4× motor for 5" propellers (screws of suitable length are usually included with the motors),
- a stack – flight controller (FC) and ESC with 30.5 × 30.5 mm or 20 × 20 mm mounting holes,
- a Mini size FPV camera, a video transmitter (VTX) and an antenna, or a pigtail and an SMA antenna mount,
- an RC receiver compatible with your radio,
- 5" propellers, a LiPo battery with a connector matching the ESC and a battery strap,
- heat-shrink tubes, cable ties, insulating tape and double-sided adhesive tape.

4.2 Tools and supplies

- 2 mm and 1.5 mm hex drivers,
- side cutters, flat pliers or tweezers,
- a soldering iron with sufficient power and flux-core solder,
- a hot air gun or lighter for heat-shrink tubes.

❊ A detailed photo guide to building a complete drone on this frame, including setup, is available in the Rotorama tutorial Stavba – Johnny 5″ V2 (in Czech).

5. Assembly

5.1 Frame base

① Take the bottom plate and insert the longest screws from the frame package into the centre holes. Slide the four arms onto the screws one by one.

② Fit the carbon middle plate and screw on 4 nuts. Do not tighten them fully yet – the frame only needs to hold together.



Bottom plate with the arms fitted

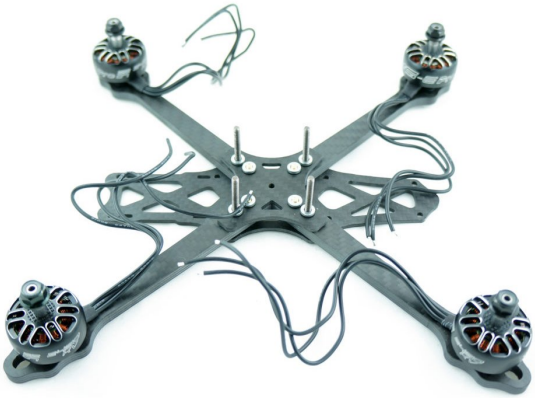
③ Insert the long stack mounting screws into the free outer holes (they are usually included with the flight controller and ESC; use the longer ones) and screw on the nuts. Now tighten all 8 screws firmly.



Frame with the centre screws and the stack screws

5.2 Mounting the motors

Screw the motors to the ends of the arms so that the wires point towards the centre of the frame. Use the screws supplied with the motors: a screw that is too short will strip the thread, one that is too long can reach the windings and destroy the motor. Lay the motor wires side by side and secure them with insulating tape in at least two places – at the motor and at the frame, or along the whole length of the arm.



Motors screwed to the arms, wires pointing to the centre

5.3 Flight controller and ESC (stack)

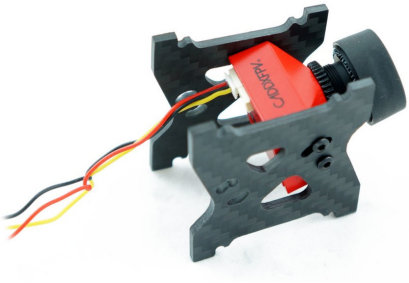
- Place the clear plastic plate on the long centre screws. It protects the ESC and covers the edges of the screws.
- Slide the ESC onto the stack screws so that the battery connection points backwards.
- Check from the side that the ESC does not touch the screw heads or the frame. After soldering the wires, fit the flight controller above the ESC and again check that the boards do not touch each other.
- Shorten the motor wires so that they have some slack but cannot reach the propellers. For soldering and wiring, refer to the stack manual.



Checking the clearance between the ESC and the screws

5.4 FPV camera

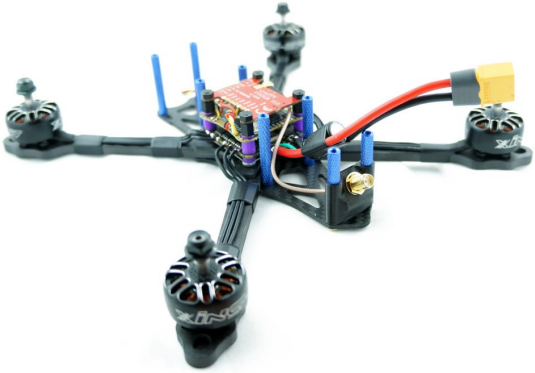
Clamp the Mini size camera between the carbon side plates from the frame package using the shorter screws supplied with the camera. Mount the camera so that its tilt can be adjusted; an angle of 15°–25° suits beginners and freestyle. Then insert the side plates with the camera into the prepared slots in the frame.



Camera clamped between the carbon side plates

5.5 Video transmitter and antenna

- Screw the nylon standoffs from the frame package onto the long screws above the flight controller. Mount the video transmitter on them and secure it with plastic nuts. Trim the protruding threads of the standoffs.
- Fit the standoffs to the frame and secure them with the short screws from the frame package.
- Push the SMA antenna mount (3D print, sold separately) onto the rear standoffs so that the SMA connector points diagonally up and away from the drone. Fit the part from below so that it stays at the bottom.



Standoffs and SMA antenna mount at the rear of the frame

5.6 Closing the frame and battery

- Fit the top plate and screw it to the standoffs in 8 places with short screws. Route the power wires above the SMA antenna connector.
- We recommend sticking a non-slip foam pad on the top plate – it increases friction between the battery and the frame and protects the battery from the

screw heads.

- Thread the battery strap between the top plate and the video transmitter.
- Secure the power lead with its connector under the strap together with the battery so that it cannot get into the propellers.



Finished drone with the battery secured by a strap

6. Setup and flying

6.1 Setup

- Set up the flight controller in *Betaflight Configurator* according to the flight controller manual. Always remove the propellers when connected to a computer and with a battery connected.
- Calibrate the accelerometer (*Setup → Calibrate Accelerometer*) on a level surface, set up the ports and the receiver protocol.
- On the *Motors* tab, check the motor order and direction of rotation against the diagram without propellers. Change any reversed direction in the ESC settings.
- On the *Modes* tab, assign the Arm function (motors on) to a switch and check the failsafe setting.

6.2 Pre-flight check

- All frame, motor and stack screws are tight, the arms are not cracked.
- The propellers are correctly fitted and tightened, spin freely and nothing can get caught in them.
- The battery is **fully charged** (4.20 V/cell), firmly secured with the strap and its lead is under the strap.
- Electrical parts are insulated from the carbon, no wire rubs against the edge of a plate.
- The camera is firmly mounted and the antenna is screwed on – never power the video transmitter without an antenna.

7. Maintenance and troubleshooting

7.1 After every flight

- Disconnect the battery and let it cool down. End the flight at 3.5 V/cell at the latest.
- Inspect the arms and plates – cracks or delamination of the carbon reduce strength and the part must be replaced.
- Check that the screws are tight and the condition of the wires, especially where they run over carbon edges.
- Remove grass, sand and dirt from the motors and the frame.

7.2 Replacing an arm

A spare carbon arm for the Johnny 5" V2 frame is available separately. Before replacing it, disconnect the battery and remove the propellers. Unscrew the motor from the damaged arm, loosen the nuts of the centre screws, replace the arm and proceed according to Chapters 5.1 and 5.2. Finally, tighten all screws again.

7.3 Troubleshooting

Problem	Possible cause and solution
The frame twists or wobbles after tightening	The screws were not tightened evenly – loosen the nuts, align the arms and tighten all 8 screws gradually in a crosswise pattern.
Short circuit, smoke, electronics not working	An electrical part touches the conductive carbon or there is a solder ball on the ESC. Disconnect the battery, insulate the parts, remove solder residue.
ESC or FC touches the screws	Check the screw length and the stack's damping grommets, check the clearance from the side.
A propeller has cut a wire	The battery or motor wire is not secured. Fix it with tape or under the battery strap.
Vibrations, "jello" in the image	Loose screw, cracked arm or damaged propeller. Tighten the screws, replace the faulty part.
The battery shifts in flight	The non-slip pad is missing or the strap is loose.

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 identification and conformity

- **Product identification:** manufacturer Readytosky, type designation Johnny 5" V2.
- The product is a mechanical part with no electrical function. It is not covered by any EU harmonisation legislation requiring the **CE** marking and therefore does not bear this marking. The safety of the product is assessed under Regulation (EU) 2023/988 (GPSR).
- The electrical and radio components you fit to the frame must bear their own CE marking and have their manufacturer's declaration of conformity.

8.3 Disposal

- The frame itself is not electrical equipment and the take-back of electrical equipment does not apply to it.
- Hand in metal screws and nuts for metal recycling, plastic parts for plastics, and dispose of carbon parts according to your local municipal rules (collection yard or mixed waste). Do not burn carbon.
- Electronic components and batteries fitted to the frame are electrical waste. Before disposing of the frame, remove them and hand them in at a take-back point for electrical equipment and batteries according to their manuals – never into mixed waste.

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.