ROTORAMA

NF16

Sub250 – FPV drone frame for 1.6" (40 mm) propellers
User and assembly manual



Read this entire manual carefully before assembly and the first flight. The frame is supplied as a kit without electronics, motors, propellers or battery.

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1. Product description

1.1 Intended use

The Sub250 NF16 is a frame (kit) for a small toothpick-style FPV drone with 1.6" (40 mm) propellers. The manufacturer Sub250 designed it for its own Nanofly16 drone. A drone of this size is suitable for flying in the garden, in the park and indoors.

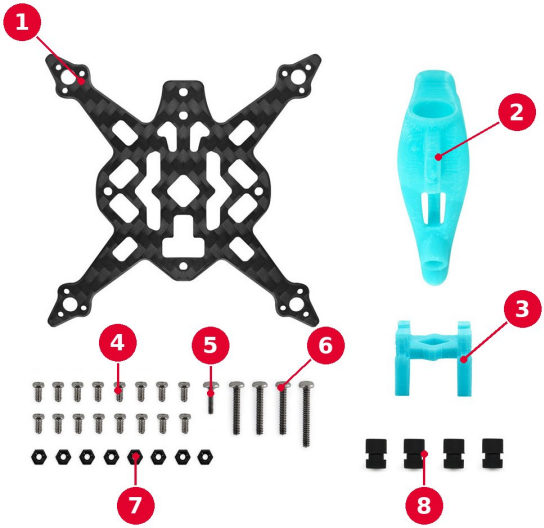
The frame consists of a 1.5 mm carbon fibre bottom plate, a 3D-printed top cover (canopy) that protects the electronics board and the camera, and a 3D-printed battery holder on the underside. The frame accepts standard AIO boards (flight controller and ESCs on one board) with a 25.5 × 25.5 mm mounting hole pattern.



Assembled Sub250 NF16 frame (without electronics and motors)

1.2 Specifications and package contents

Manufacturer	Sub250
Product designation	NF16
Motor-to-motor distance (diagonal)	77 mm
Bottom plate thickness	1.5 mm (carbon fibre)
Flight controller (FC) mounting holes	25.5 × 25.5 mm
Motor mounting holes	3 × M1.4, equally spaced on a Ø 6.6 mm circle
Propellers	40 mm (1.6")
Dimensions	65 × 65 × 41 mm
Weight	8.3 g (including 3D-printed parts)



Package contents (screwdrivers not shown)

Package contents

① 1× 1.5 mm bottom plate (carbon fibre)

② 1× 3D-printed top cover

③ 1× 3D-printed battery holder

④ 16× M1.4 × 3 round-head Phillips screw

⑤ 1× M2 × 6 mm round-head screw

⑥ 3× M2 × 12 and 1× M2 × 14 round-head screw

⑦ 8× M2 × 2 nylon nut

⑧ 4× M2 × 6.6 shock absorber (grommet)

1× 1.5 mm L-shaped screwdriver and 1× Phillips screwdriver (not shown)

NOT included

Flight controller (AIO board), motors, propellers, camera, video transmitter (VTX), receiver, antenna, battery, charger, radio transmitter, FPV goggles, cables and any other tools. The frame is supplied unassembled.

2. Assembly and use

2.1 What you will need

The frame is designed for components with the following parameters:

- an AIO board with a **25.5 × 25.5 mm** mounting hole pattern,
- four motors with a **3 × M1.4 on a Ø 6.6 mm circle** mounting pattern,
- propellers with a diameter of **40 mm**,
- a small FPV camera that fits the opening in the top cover,
- a 1S battery that fits the battery holder (see Chapter 2.3).

For reference: the manufacturer Sub250 uses the NF16 frame in its ready-made Nanofly16 drone with an F411-1S AIO board (with integrated video transmitter and receiver), 0803 19000KV motors, HQ 40mm-2 propellers, an Ant camera and a 1S 380 mAh LiHV battery.

※ The top cover is shaped for a low-profile analogue build – an AIO board with an integrated video transmitter. A taller build (e.g. digital video with a separate transmitter) may not fit under the cover. Check the component dimensions before buying.

For the build you will also need a soldering iron and solder to connect the motors and the battery lead (if the components have no connectors), a computer with Betaflight Configurator to set up the flight controller, and a radio transmitter bound to the receiver.

2.2 Assembly procedure

※ The manufacturer has not published detailed assembly instructions or an assignment of the individual screws for this frame. The procedure below is based on the package contents and the manufacturer's photos.

① **Motors.** Fasten each motor to its arm with three M1.4 × 3 screws (④). Before tightening, make sure the screw does not reach into the motor windings – a screw that is too long will damage them. Tighten the screws gently. Keep the four remaining screws as spares.

② **AIO board.** Insert the shock absorbers (⑧) into the mounting holes of the board and fasten the board to the bottom plate with M2 screws (⑤, ⑥) and nylon nuts (⑦). Choose the screw length according to the height of the stack so that the nut engages its full thread. The arrow on the AIO board must point forward.

③ **Motor and battery wires.** Connect the motors to the AIO board and route the wires so that they do not touch the propellers or sharp carbon edges.

④ **Camera and top cover.** Insert the camera into the opening in the top cover (②). The camera angle is fixed by the shape of the cover. Fit the cover over the AIO board and fasten it to the bottom plate with the M2 screws supplied. Secure the video transmitter antenna so that it cannot come loose in a crash or reach into the propellers.

⑤ **Battery holder.** The holder (③) is mounted on the underside of the bottom plate; the battery slides into it from below the frame.

⑥ **Propellers.** Fit the propellers only after setting up the flight controller and checking the motor direction. The propeller direction must match the motor direction configured in the flight controller.



Bottom view – battery holder

Post-assembly check

- All screws are tight; neither the frame nor the cover wobbles.
- No wire or solder joint touches the carbon plate (carbon fibre is electrically conductive).
- The propellers spin freely and do not touch the cover, wires or antenna.
- When connecting the battery for the first time, use short-circuit protection (a smoke stopper) if you have one.

2.3 Battery

The frame is intended for a **1S** battery. For the Nanofly16 drone built on this frame, Sub250 recommends a 1S 380 mAh LiHV battery. The battery holder is shaped for a specific cell size – compare the dimensions of any other battery with the holder before buying.

1S battery (cell voltage = battery voltage)	Li-Po	LiHV
fully charged	4.20 V	4.35 V
end the flight	3.5 V	3.5 V
storage	3.8 V	3.8 V

- Before each flight, always insert a **fully charged** battery and check that it sits firmly in the holder.
- Charge the battery only with a charger designed for Li-Po / LiHV cells, under supervision and on a non-flammable surface.
- Do not use a damaged, swollen or overheated battery.

3. Safety and maintenance

3.1 Safety during assembly

- **Carbon fibre is electrically conductive.** Contact between a solder joint or a bare wire and the carbon plate can cause a short circuit and damage the electronics or the battery.
- The edges of carbon parts can be sharp and damage wire insulation. Route wires away from the edges.
- Do not drill or sand carbon parts without respiratory and eye protection – carbon composite dust is harmful to health and electrically conductive.
- Do not overtighten screws in 3D-printed parts or the small M1.4 screws – the thread strips easily.
- Keep small parts out of the reach of children – they present a choking hazard.

3.2 Operating the assembled drone

Spinning propellers can cause injury. Connect the battery only with the radio transmitter switched on and in the Disarm state (motors off), and always disconnect it before working on the drone. Fly away from people, animals and obstacles.

The assembled drone 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 transmit power. **The law of the country in which you fly is decisive.**

- If the drone has a camera, the operator must register regardless of the drone's weight; the registration number must be displayed on the drone. In the Czech Republic, registration is managed by the Civil Aviation Authority (ÚCL).
- When flying with FPV goggles, an observer who keeps the drone in direct visual line of sight must stand next to the pilot.
- The user is responsible for setting the transmit power and frequencies of the video transmitter and the receiver.

3.3 Maintenance

- After every crash, inspect the carbon plate – replace it if an arm is cracked or delaminated.
- Check the 3D-printed parts and screw tightness. Nylon nuts lose their locking ability after repeated loosening – replace them.
- Clean the frame with a dry brush or cloth; do not use solvents.

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

Product identification: Sub250 NF16 – FPV drone frame.

4.2 Disposal

- The frame itself contains no electrical or electronic components and is therefore not electrical equipment. Dispose of the carbon, plastic and metal parts in accordance with the waste rules of your municipality.
- Put the packaging into the appropriate container for sorted waste.
- If you have fitted electronics to the frame (AIO board, motors, camera etc.), remove them before disposal and take them to a collection point for electrical equipment. Take the battery to a battery collection point – do not dispose of it with mixed waste or throw it into fire.

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.