APEX 5" HD

HSKRC – carbon fibre frame for an FPV drone with 5" propellers

User manual



Read the entire manual before assembly and keep it for future reference.

www.rotorama.com

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1. Product description

1.1 What it is for

HSKRC APEX 5" HD is a carbon fibre frame for building a freestyle FPV drone with 5" propellers. The frame has an X layout with the motors placed symmetrically around the centre. It accepts flight controller (FC) and electronic speed controller (ESC) stacks with 20×20 mm and 30.5×30.5 mm mounting patterns and is suitable for drones with analogue as well as digital video transmission.

The bolts holding the stack are recessed into the carbon and are fixed only in the middle carbon plate – they do not pass through the bottom plate or the arms. When replacing an arm, it is therefore not necessary to remove the stack bolts, which makes servicing much easier. The **HD** version has a slightly extended rear section, so it also accommodates larger video transmitters (VTX).



APEX 5" HD frame with 3D-printed motor pads

1.2 Specifications and package contents

Parameter	Value
Product designation	HSKRC APEX 5" HD
Manufacturer	HSKRC
Frame type	freestyle, X layout
Material	carbon fibre (carbon composite)
Diagonal motor distance	250 mm
Propeller size	5"
Frame weight	140 g
Arm thickness	5.5 mm

Parameter	Value
Top plate thickness	2 mm
Bottom plate thickness	2.5 mm
Stack mounting holes	20×20 mm / 30.5×30.5 mm, M3
Stack height	19 mm
VTX mounting holes	20×20 mm, M2 (rear of the frame)
Motor hole spacing	16 mm and 19 mm
Camera space	22 mm

▶ Package contents

- 1× frame (carbon parts)
- 1× screw set
- 1× set of motor cable covers
- 1× battery pad
- 1× set of 3D-printed parts

※ The composition of the screw set and the shape of the 3D-printed parts may vary slightly between production batches.

▶ Not included

Motors, electronic speed controllers (ESC), flight controller (FC), receiver, video transmitter (VTX), camera, antennas, propellers, battery, battery strap and tools. The frame is supplied **disassembled** and requires assembly.

2. Safety instructions

The frame is a kit intended for experienced model builders. A finished drone with spinning propellers can cause serious injury or property damage. The person who built and operates the drone is responsible for correct assembly, the choice of components and safe operation.

- **Carbon fibre is electrically conductive.** Wires, solder joints and electronic boards must not touch the carbon parts or their edges – there is a risk of a short circuit and a battery fire. Route the cables so that they do not rub against the edges, and protect them with insulation or heat-shrink tubing at points of contact.
- **The edges of carbon parts can be sharp.** Take care not to injure your hands or cut through cable insulation during assembly.
- **Carbon dust is harmful to health.** If you sand the edges, work outdoors or with extraction, wet, wearing a respirator and safety glasses. Do not inhale the dust and wash your hands after work.
- Always **remove the propellers** before connecting the battery. Fit the propellers only just before the flight.
- Charge Li-Po and LiHV batteries under supervision on a non-flammable surface, and do not use damaged, swollen or overheated cells.
- Keep out of the reach of children – small parts and screws can be swallowed.

3. Assembly and use

3.1 Before assembly

- Check the package contents against Chapter 1.2 and inspect the carbon parts – they must not be cracked or delaminated.
- Prepare the components: motors with a 16 mm or 19 mm mounting hole spacing, a stack with a 20×20 mm or 30.5×30.5 mm pattern and a height of no more than 19 mm, a camera that fits a 22 mm wide space, and a video transmitter.
- Check the length of the motor screws: after passing through the arm (5.5 mm), the screw may protrude into the motor only as far as the motor manufacturer allows. A screw that is too long will damage the motor windings.
- We recommend securing the motor screws with medium-strength thread locker. Do not apply thread locker to screws that go into plastic parts.



Top view of the assembled frame

3.2 Assembly procedure

The manufacturer does not publish an assembly guide for this frame. When assembling, follow the photographs of the assembled frame in this manual and on the product page. Recommended procedure:

① Assemble the main structure of the frame: arms, bottom plate and middle plate. Tighten the screws gradually and crosswise so that the parts do not bend.

② Mount the motors on the arms (16 mm or 19 mm spacing). Route the motor cables along the arm towards the centre of the frame and cover them with the motor cable covers from the 3D-print set.

③ Mount the stack (FC and ESC) on the middle plate in the 20×20 mm or 30.5×30.5 mm holes (M3). The stack bolts are recessed in the carbon and are held only in the middle plate. Use the soft mounts supplied with the stack and check that the board does not touch the carbon.

④ Fix the video transmitter (VTX) in the 20×20 mm (M2) mounting holes at the rear of the frame. The extended rear section of the HD version also

accommodates larger digital transmitters.

⑤ Fix the camera between the side plates at the front of the frame (camera space 22 mm). Make sure the propellers will not be visible in the camera image.

⑥ Solder the cables and place the receiver and antennas. Route the antennas out of reach of the propellers.

⑦ Mount the top plate, stick on the battery pad and thread the battery strap through (not included).

⑧ The 3D-printed pads can be fitted to the underside of the arms below the motors; they serve for landing and protect the motors.

3.3 Check after assembly

- Check that all screws are tightened and that no wire touches the carbon or rotating parts.
- Without propellers, check the motor direction and the flight controller settings according to the manual of the electronics used.
- With the drone physically secured, test Arm (motors on) and Disarm (motors off) and the failsafe settings. Fit the propellers only after a successful check.

3.4 Replacing an arm

Because the stack is fixed only in the middle plate, it is not necessary to remove the stack when replacing an arm.

① Disconnect the battery and remove the propellers.

② Disconnect or unsolder the motor cables and remove the motor from the damaged arm.

③ Loosen the screws holding the arm between the plates and remove the arm.

④ Insert the new arm, tighten the screws crosswise and refit the motor. Check the motor direction.



Bottom view of the assembled frame

4. Operating the finished drone and maintenance

4.1 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, mandatory 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.

- A drone built from this frame has no C0–C4 class. It is operated as a **privately built unmanned aircraft system** in the open category, or within a model aircraft club or association. The subcategory is determined by the actual take-off mass of the finished drone including the battery – so weigh the finished drone.
- If the drone has a camera, its **operator must be registered** (in the Czech Republic with the Civil Aviation Authority) and the registration number must be displayed on the drone.
- The pilot must hold a valid certificate corresponding to the category of operation. Flying with FPV goggles is only permitted with an unmanned aircraft observer next to the pilot.
- The user is responsible for setting the frequencies and transmit power of the video transmitter and radio system used; observe the limits applicable in the country of operation.
- Up-to-date information can be found at www.caa.gov.cz and www.easa.europa.eu.

4.2 Inspection and maintenance of the frame

- Before every flight, check that the arms and plates are not cracked, that the screws are tight and that the battery is firmly secured.
- After every crash, inspect the arms around the motors and where they attach to the centre of the frame. Replace a cracked or delaminated arm – do not glue it.
- Check the cable insulation where cables run past carbon edges.
- Replace worn 3D-printed parts (motor pads, cable covers) in good time.
- Clean the frame with a dry or slightly damp cloth without solvents.

5. Information for the EU and Czech Market

5.1 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

5.2 Disposal

The frame contains no electronic components or batteries and **is not electrical equipment** – the take-back of electrical equipment does not apply to it. At the end of its service life, proceed as follows:

- Take the carbon parts and screws to your municipal **collection yard**, or dispose of them with mixed waste according to local waste rules.
- Do **not burn** the carbon composite – burning releases harmful fumes and fine fibres.
- Sort the plastic parts and packaging according to your municipality's rules.
- If you dispose of the frame as part of a finished drone, first remove the electronics and battery and hand them over at a collection point for electrical equipment or batteries.

6. 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 5.1.
- 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.