ROTORAMA

XING2 2506 1850KV

iFlight · brushless motor for FPV drones
User manual



Read the entire manual before installation and first start-up. Always keep the propellers removed during setup and testing.

www.rotorama.com

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1. Safety instructions

1.1 Before you start

The XING2 2506 motor is a high-performance component of an FPV drone. Read the entire manual before installation and keep it for future reference. The product is not a toy and is not intended for children. Installation and setup require experience with soldering and configuring FPV drones.

- Operate the motor only via a suitable electronic speed controller (ESC). Never connect it directly to a battery or power supply.
- Do not exceed the input voltage or the current and power values given in chapter 2.4.
- Do not modify the motor or its wires beyond the procedures described in this manual.

1.2 Rotating propellers and mechanical hazards

- Keep the **propellers removed** during all setup, soldering and bench tests.
- Rotating propellers can cause serious injury. With the battery connected, keep your hands, face and clothing away.
- The motor bell rotates at high speed – do not touch it while running and do not insert any objects into it.
- Do not use a damaged propeller, a bent shaft or a cracked bell.

1.3 Electrical and thermal hazards

- Solder and connect only with the battery disconnected. Insulate the joints with heat-shrink tubing to prevent short circuits.
- The motor may be **hot** during and after operation. Let it cool down before handling.
- An overloaded or blocked motor can overheat and damage the electronic speed controller (ESC) and the battery.

1.4 Strong magnets

- The rotor contains strong neodymium magnets. Keep the motor away from pacemakers, magnetic data carriers and sensitive instruments.
- Magnets attract metal particles. Do not place the motor in metal filings or on sand.

2. Product description

2.1 Intended use

The iFlight XING2 2506 1850KV is a brushless motor for FPV drones powered by a 6S battery. The manufacturer measured it with five-inch propellers (see chapter 2.5) and offers it on its website as a XING2 2506 long-range motor.

The motor has a 7075 aluminium alloy bell, a 5 mm titanium alloy shaft, curved centre-slotted N52H magnets, NSK bearings, an O-ring protecting the bearing gap and a motor wire protector. It is dynamically balanced.

2.2 Package contents

- 1× XING2 2506 1850KV motor
- 4× M3 × 8 mm screw
- 1× M5 flanged nylon insert lock nut



Package contents

Not included: electronic speed controller (ESC), propellers, frame, battery or connectors.

2.3 Parts description



Side view

① Ø 5 mm shaft with M5 thread for propeller mounting

② Bell (rotor) with magnets

③ Mounting base



Bottom view

④ M3 mounting holes, 16 × 16 mm pattern

⑤ Stator with winding

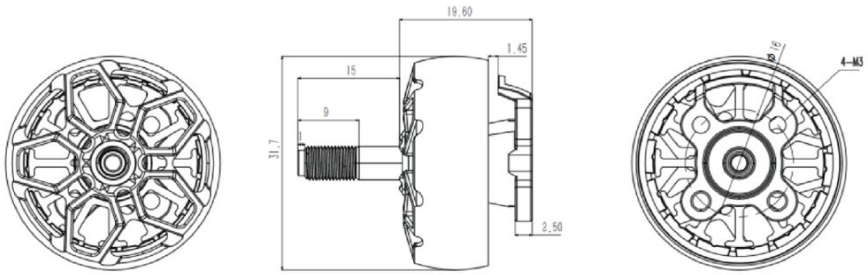
⑥ Three 20 AWG motor wires

2.4 Technical data

Parameter	Value
Model	iFlight XING2 2506, black version
KV	1850 KV
Input voltage (manufacturer's data)	25.2 V (6S Li-Po fully charged)
Peak current	50.33 A
Maximum power	1258.8 W
Interphase resistance	47.6 mΩ
Configuration	12N14P (14 poles)
Weight (including wires)	43.6 g
Dimensions	Φ 31.7 × 34.6 mm (height including shaft)
Mounting holes	16 × 16 mm, 4× M3
Shaft	Ø 5 mm, titanium alloy, protrudes 15 mm
Rotor	Unibell, 7075 aluminium alloy bell
Magnets	N52H, curved, centre-slotted
Bearings	NSK, Φ 10 × Φ 4 × 4 mm
Wires	160 mm, 20 AWG

※ Data taken from the product page and the test report of the manufacturer iFlight.

▶ Dimensional drawing (dimensions in mm)



Manufacturer's dimensional drawing

2.5 Performance data

The manufacturer measured the motor at 6S battery voltage with two types of propellers. The last column gives the temperature according to the manufacturer's test report.

Propeller	Throttle (%)	Voltage (V)	Current (A)	Thrust (g)	Power (W)	Efficiency (g/W)	Temp.
Nazgul 5140	50	25.44	10.11	694	257.2	2.697	76 °C
	60	25.38	15.1	901	383.2	2.351	
	70	25.32	22.89	1132	579.6	1.954	
	80	25.11	30.25	1333	759.6	1.754	
	90	25.03	39.29	1588	983.4	1.615	
	100	24.99	49.05	1844	1225.8	1.505	
GEMFAN 51466	50	25.55	9.44	726	241.2	3.011	77 °C
	60	25.57	14.33	999	366.4	2.727	
	70	25.3	21.53	1283	544.7	2.356	
	80	25.24	28.74	1537	725.4	2.118	
	90	25.19	37.81	1742	952.4	1.829	
	100	25.01	50.33	1993	1258.8	1.583	

※ The values are the manufacturer's laboratory measurements. Actual thrust, current and temperature in flight depend on the propeller, battery, speed controller, settings and flight conditions.

3. Operation in the Czech Republic and the EU

3.1 The law of the country where you fly applies

The motor is a component that you build into a drone. The operation of the finished drone is governed by Regulations (EU) 2019/947 and 2019/945, which 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 transmission power. If you operate the drone in another country, you must follow the regulations of the state in which you fly.

3.2 A drone built with this motor

- The operator of the assembled drone is responsible for ensuring that it complies with the operating rules.
- In the Czech Republic, a drone with a camera requires operator registration with the Civil Aviation Authority (ÚCL); current conditions are available on the ÚCL website.
- Fly in accordance with the rules of the open category, away from assemblies of people and with regard to the safety of others.

4. Installation

4.1 What else you need

- An electronic speed controller (ESC) for a 6S battery, rated at least for the peak current of the motor (50.33 A according to the manufacturer).
- A frame with 16 × 16 mm motor mounting holes for M3 screws.
- Propellers with a hole for a 5 mm shaft.
- A soldering iron, solder, heat-shrink tubing and suitable tools (hex key, wrench for the M5 nut).

4.2 Mounting the motor to the frame

- Attach the motor with the four M3 × 8 mm screws supplied.
- Before tightening, make sure that the screws, after passing through the frame arm, **do not reach the stator winding**. A screw that is too long will damage the winding and cause a short circuit. If the frame arm is thicker or thinner, use screws of a suitable length.
- Tighten the screws evenly in a cross pattern and with care so as not to damage the thread in the base. We recommend securing them with medium-strength threadlocker.
- Route the wires so that they cannot reach the propeller or rub against the edges of the frame.

4.3 Connecting to the speed controller (ESC)

- The motor has three wires. The order in which they are connected to the three ESC pads does not matter – it only changes the direction of rotation.
- Shorten the wires to the required length; leave some slack for arm movement and a possible motor replacement.
- Tin the wire ends and solder them to the ESC pads. The joint must be shiny and firm, with no protruding strands.
- After soldering, check that there is no short circuit between adjacent pads.

4.4 Mounting the propeller

- Fit the propeller only after verifying the direction of rotation (chapter 5.2).
- Fit the propeller on the shaft according to the motor's direction of rotation and secure it with the supplied M5 self-locking nut. Tighten the nut firmly, but do not overtighten.
- A nylon insert lock nut loses its locking effect with repeated use – replace it when worn.

5. Commissioning

5.1 Check without propellers

Before the first flight, check the function of the motor **without propellers**. Connect the battery (preferably via a current limiter – a so-called smoke stopper) and in the flight controller (FC) configurator, e.g. Betaflight on the *Motors* tab, briefly spin the motor at low speed.

- The motor must run smoothly, without twitching or rubbing.
- No irregular sounds may be heard at low speed.

5.2 Direction of rotation

The direction of rotation must match the layout of your frame and the settings of the flight controller (FC). Reverse the direction in the ESC configurator (e.g. BLHeli or Bluejay) or by swapping any two motor wires.

5.3 Flight controller (FC) settings

- The motor has a 12N14P configuration, i.e. **14 magnetic poles**. Enter this value in the flight controller (in Betaflight the *Motor poles* parameter) so that RPM measurement and RPM filtering work correctly.
- Use the DShot digital protocol and bidirectional DShot if the speed controller (ESC) supports it.

5.4 Arm and Disarm

Assign Arm (motors on) and Disarm (motors off) to a switch on your radio. Before the first flight with propellers, verify that Disarm reliably stops the motors and that failsafe is configured.

6. Operation

6.1 Power supply

The manufacturer specifies an input voltage of **25.2 V**, which corresponds to a fully charged 6S Li-Po battery (4.20 V/cell). A fully charged 6S LiHV battery (4.35 V/cell, 26.1 V) exceeds this value.

6S Li-Po battery state	Voltage
fully charged	4.20 V/cell – 25.2 V
end flight	3.5 V/cell – 21.0 V
storage	3.8 V/cell – 22.8 V

Always insert a **fully charged** battery before flight and end the flight at the latest at 3.5 V/cell.

6.2 Load and temperature

- Choose the propeller and battery combination so that the peak current of 50.33 A and the maximum power of 1258.8 W are not exceeded.
- Check the motor temperature after the first flights. If the motor is too hot to touch, reduce the load (smaller propeller, lower pitch) and check the filter settings.
- In a crash, Disarm immediately. A blocked propeller with the motor under power quickly overheats the winding and the speed controller (ESC).

7. Maintenance and troubleshooting

7.1 After every flight

- Check that the bell turns freely by hand without rubbing and has no play.
- Check that the shaft is not bent and the propeller is not damaged.
- Remove dirt, grass, sand and metal particles from the space between the bell and the stator (e.g. with compressed air).
- Check the tightness of the screws and the propeller nut and the condition of the wires.

7.2 Bearings and shaft

The motor uses NSK bearings measuring Φ 10 × Φ 4 × 4 mm. Worn bearings show up as noise, vibration and play. Leave disassembly of the motor and replacement of bearings or the shaft to an experienced technician. Damage caused by improper disassembly is not a product defect.

7.3 Storage

Store the motor in a dry place, away from moisture, dust and metal particles, at room temperature. Protect it from impacts.

7.4 Troubleshooting

Symptom	Possible cause and solution
Motor does not spin or only twitches after Arm	Cold or broken solder joint, short circuit between wires, incorrect ESC settings. Check the soldering and insulation and the protocol settings in the ESC and in the flight controller (FC).
Motor spins in the wrong direction	Change the direction in the ESC configurator or swap any two of the three motor wires.
Motor gets excessively hot	Excessive load (propeller, drone weight), unsuitable filter settings in the flight controller, damaged bearing or winding. Check the load against chapter 2.5 and the condition of the motor.
Vibration, noise, rubbing	Bent shaft, damaged propeller, worn bearings, foreign object (sand, metal filings) between bell and stator. Clean the motor and replace a defective propeller.
Propeller comes loose	The nut is not tightened or its nylon insert is worn. Use a new M5 self-locking nut.

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 conformity

CE

- 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@rotorama.cz.
- **Product identification:** the type designation (XING2 2506 1850KV) is given on the motor bell and on the product packaging.

8.3 Disposal of electrical equipment



- 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 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.

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.