ROTORAMA

XING 2806.5 1800KV

iFlight

Brushless motor for 7–8" FPV drones



Read this entire manual carefully before installation and first start-up. A spinning propeller can cause serious injury.

www.rotorama.com

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1. Safety instructions

1.1 Before you start

- The motor is a component for building and repairing FPV drones. Installation and start-up require basic knowledge of electronics, soldering and configuration of the flight controller (FC) and the electronic speed controller (ESC).
- This product is not a toy. Keep it away from children and from persons who are not familiar with the operation of FPV equipment.
- Use the motor only in combination with a suitable speed controller, propeller and power supply (see chapters 2.3 and 2.5).
- Drone operation is governed by the regulations of the country in which you fly. Regulation (EU) 2019/947 applies in the EU, but national implementing rules differ from state to state.

1.2 Rotating parts and propellers

- The motor reaches very high speeds. A spinning propeller can cause **serious cutting injuries** and damage property.
- Always carry out all motor tests after installation, configuration on the computer and checks of the direction of rotation **without propellers**.
- Mount the propeller only shortly before the flight and only with the battery disconnected.
- Keep fingers, tools and cables away from the spinning bell. Never stop the motor by holding the spinning bell.
- Replace a damaged, cracked or bent propeller immediately. Do not use the motor with a bent shaft.

1.3 Power supply, temperature and batteries

- Never connect the motor directly to a battery – always only via a speed controller (ESC).
- The speed controller must be rated for the currents the motor draws with the given propeller (for performance data see chapter 2.5).
- The motor gets very hot during operation. After the flight do not touch the bell or the stator until they have cooled down.
- Charge Li-Po and LiHV batteries only with a suitable charger and under supervision. A fully charged Li-Po cell has 4.20 V, a LiHV cell 4.35 V. End the flight at 3.5 V per cell at the latest; set 3.8 V per cell for storage.
- Do not continue to use a damaged, swollen or overheated battery.

2. Product description

2.1 What the motor is for

The iFlight XING 2806.5 1800KV is a brushless motor of Unibell design which, according to the manufacturer, is intended for bigger drones with frames for 7–8" propellers, typically long-range and cinelifter builds.

The motor has a 5 mm titanium alloy shaft with an M5 thread for the propeller, a bell and base made of 7075 aluminium alloy, NSK bearings and N52H arc magnets. The manufacturer states that the motor is dynamically balanced and its wires are protected.



iFlight XING 2806.5 (illustrative manufacturer photo)

2.2 Package contents

Qty	Item
1	XING 2806.5 1800KV motor
1	M5 flange nut for securing the propeller
4	M3 × 8 mm screw for mounting the motor

※ **Not included:** propellers, speed controller (ESC), flight controller (FC), frame and battery.

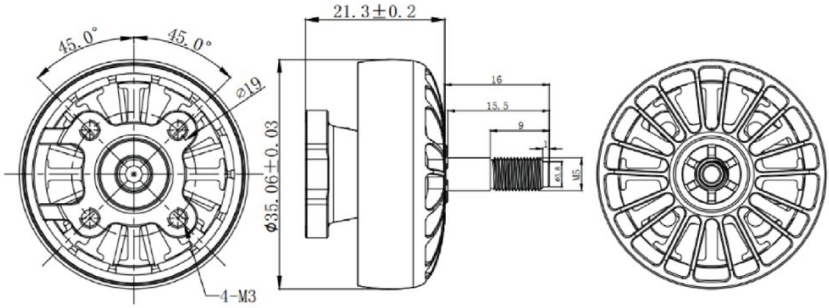
2.3 Specifications

Parameter	Value
Model	XING 2806.5 1800KV
KV	1800 KV
Weight (incl. wires)	53.3 g
Dimensions	φ 35.06 × 36.8 mm
Interphase resistance	48.5 mΩ

Parameter	Value
Input voltage	24 V
Peak current	72.3 A
Max. power	1681.0 W
Mounting holes	19 × 19 mm, M3 thread
Rotor design	Unibell
Shaft diameter	5 mm
Shaft protruding length	15.5 mm
Leads	265 mm, 18 AWG
Magnets	N52H, curved
Configuration	12N14P
Bearings	NSK, φ 11 × φ 5 × 5 mm
Winding	single-strand copper wire

Data provided by the manufacturer iFlight for the 1800KV version.

2.4 Dimensions and mounting holes



Dimensional drawing (mm): left – base with four M3 holes on a φ 19 mm pitch circle, centre – side view with the M5 shaft, right – top view of the bell. Manufacturer's drawing.

The height of the motor body (without shaft) is 21.3 ± 0.2 mm, the bell diameter is 35.06 mm. The shaft protrudes 15.5 mm above the bell; the M5 threaded part is 9 mm long.

2.5 Manufacturer's performance data

The manufacturer tested the motor with two 7-inch propellers at a supply voltage of approximately 23–24 V. The values help you choose the speed controller, battery and propeller; in actual flight they vary with the propeller, battery voltage and temperature.

Propeller	Throttle (%)	Voltage (V)	Current (A)	Thrust (g)	Power (W)	Efficiency (g/W)
GEMFAN 7040	50	23.88	16.5	1100	394.0	2.791
	60	23.73	22.29	1440	528.9	2.721
	70	23.64	31.54	1832	745.6	2.457
	80	23.51	41.04	2180	964.9	2.259
	90	23.32	59.16	2377	1379.6	1.723
	100	23.25	72.3	2607	1681.0	1.551
HQ 7×4×3	50	23.89	21.84	1177	521.8	2.256
	60	23.77	33.18	1499	788.7	1.901
	70	23.62	39.81	1846	940.3	1.963
	80	23.44	50.14	2147	1175.3	1.827
	90	23.35	58.31	2350	1361.5	1.726
	100	23.22	71.11	2640	1651.2	1.599

Motor temperature measured by the manufacturer after the test: **93 °C** with the GEMFAN 7040 propeller, **96 °C** with the HQ 7×4×3 propeller.

❉ At full throttle the motor draws more than 70 A according to the manufacturer's measurement. Choose the speed controller and battery with a sufficient margin.

3. Installation

3.1 What else you need

- a drone frame with 19 × 19 mm (M3) motor holes, propellers with a 5 mm shaft hole,
- a speed controller (ESC) rated for the currents given in chapter 2.5,
- a sufficiently powerful soldering iron, solder, heat-shrink tubing and tools for M3 screws and the M5 nut,
- a computer with the configuration software for the flight controller and the speed controller.

3.2 Mounting the motor on the frame

① Place the motor on the frame arm so that the holes in the base line up with the holes in the frame. Route the wires towards the centre of the drone.

② Fasten the motor with four M3 screws. The supplied screws are 8 mm long; depending on the arm thickness, screws of a different length may be required.

③ Tighten the screws gradually in a crosswise pattern. Do not overtighten them – the threads in the aluminium base can be damaged.

④ After tightening, turn the bell by hand. It must rotate freely, without rubbing and without unusual noise.

※ A screw that is too long will reach the stator winding and cause a short circuit that can destroy the motor and the ESC. After tightening, the screw must not reach into the motor.

3.3 Connecting to the speed controller (ESC)

- The motor has three phase wires. Solder them to the three pads for that motor on the ESC; the wire order only affects the direction of rotation.
- Shorten the wires as needed, but not taut – they must not rub against the frame when vibrating.
- Use a sufficiently powerful soldering iron; the joint must be shiny and solid. A cold joint can fail in flight.
- Check that no joint bridges adjacent pads and that the insulation is intact.
- Secure the wires on the arm (cable tie, heat-shrink) so they cannot get into the propeller.

3.4 Direction of rotation

The motor has no fixed direction of rotation; it is set by the speed controller. The required direction for each motor position is shown in the flight controller software (e.g. Betaflight). If it is reversed, change it in the ESC or flight controller configuration software (recommended), or swap any two of the three phase wires.

4. Start-up

4.1 Test without propeller

During all tests in this chapter the propellers must be removed.

① Connect the battery (we recommend using a short-circuit protection device, a so-called smoke stopper) and connect the drone to the computer.

② In the flight controller configuration software, spin up each motor in turn at low speed and check that the correct motor spins in the correct direction.

③ The motor must start smoothly, without stuttering and without unusual noise.

④ After a short run, disconnect the battery and check by hand that neither the motor nor the speed controller is excessively warm.

4.2 Mounting the propeller

① Disconnect the battery.

② Fit the propeller on the shaft so that its direction matches the direction of rotation of the motor (the leading edge of the blade moves in the direction of rotation).

③ Secure the propeller with the supplied M5 flange nut and tighten it firmly with a wrench while holding the motor bell. Do not overtighten the nut.

④ Check that the propeller sits straight and is firmly clamped between the bell and the nut.

5. Operation

5.1 Pre-flight check

- Motor screws and propeller nuts are tight.
- The bell rotates freely, without play or rubbing; the shaft is not bent.
- Propellers are undamaged and correctly oriented.
- Motor wires are not chafed and do not obstruct the propeller.
- Insert a **fully charged** battery into the drone.

5.2 Motor load and temperature

- A larger propeller, higher pitch or higher voltage increases the motor current and temperature. Use the manufacturer's data in chapter 2.5 as a guide.
- Check the motor temperature after the first flights. If after landing the motor is too hot to keep your hand on it, it is overloaded – choose a smaller propeller, adjust the control settings or shorten aggressive manoeuvres.
- Overheating damages the winding insulation and weakens the magnets; the consequences of overloading are not a product defect.
- After a crash or a fall, check the motor according to chapter 6.1 before the next flight.

6. Maintenance

6.1 After every flight

- Remove dust, grass and sand from the motor. No dirt, especially metal filings, may remain between the magnets and the stator.
- Turn the bell by hand – rubbing or grinding indicates dirt or a damaged bearing.
- Check that the motor screws and the propeller nut are tight and that the wires are in good condition.
- After a crash, check whether the shaft is bent: spin the motor without a propeller and watch for vibrations.

6.2 Bearings, shaft and bell

- The motor uses NSK bearings measuring φ 11 × φ 5 × 5 mm. A worn bearing shows itself by noise, play and increased vibration.
- The manufacturer offers the *XING 2806.5 Replacement Bell* in case the bell or shaft is damaged.
- Do not apply oils or greases to the motor and do not use compressed air containing dirt or moisture.
- When disassembling, do not damage the stator winding and beware of the strong magnets that attract metal objects.

6.3 Storage

- Store in a dry, dust-free place out of the reach of children.
- Protect the motor from moisture, which causes corrosion of the bearings and magnets.
- Store batteries separately, charged to a storage voltage of 3.8 V per cell.

7. Troubleshooting

Problem	Possible cause and solution
The motor does not start, only twitches or beeps	Faulty or cold solder joint, broken phase wire – check and resolder the joints. Check the protocol and output settings in the flight controller.
The motor spins in the wrong direction	Change the direction in the configuration software of the speed controller or flight controller, or swap two phase wires (chapter 3.4).
The bell rubs or turns stiffly	Dirt between the magnets and the stator, mounting screw too long, damaged bearing. Remove the dirt, use shorter screws, have the bearing replaced.
Strong vibration or noise	Damaged or unbalanced propeller, bent shaft, loose nut or motor screws, worn bearings.
The motor overheats	Propeller too large or pitch too high, control settings too aggressive, cold solder joint, damaged bearing. See chapter 5.2.
Burning smell, smoke	Short circuit in the winding or on the speed controller. Disconnect the battery immediately and do not use the motor any further.

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 (XING 2806.5 1800KV) is marked 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.