ROTORAMA

XING-E Pro 2207 1800KV

iFlight · brushless motor for FPV drones
User Manual



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

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1. Safety Instructions

1.1 Before you start

The XING-E Pro 2207 1800KV brushless motor is a power component for building FPV drones. Installation, wiring and configuration require basic experience with soldering, electronics and flight controller (FC) configuration. If you are unsure, ask an experienced pilot or modeller for help.

- Read the entire manual before installation and keep it for future reference.
- This product is not a toy. Keep it away from children and from persons who are not familiar with FPV equipment.
- Use the motor only with an electronic speed controller (ESC) designed for brushless motors and with a power supply that matches the specifications in chapter 2.3.
- Do not modify the motor and do not use a damaged motor (bent shaft, cracked bell, damaged wire or winding insulation).

1.2 Rotating parts and propellers

With a propeller fitted, the motor reaches very high speeds. A rotating propeller can cause serious cuts and damage surrounding objects.

- During all bench tests, while configuring on a computer and while soldering, keep the **propellers removed**.
- Connect the battery only just before the flight and disconnect it immediately after landing. Do not handle the propellers while the battery is connected.
- Do not touch the rotating motor bell. Keep fingers, hair, loose clothing and cables away from the motor.
- Before every flight, check that the propeller nut is firmly tightened and the propeller is not damaged.

1.3 Electrical and thermal hazards

- The motor heats up during operation. Touch it carefully after a flight, it may be hot.
- A short circuit between the motor wires or a damaged winding can destroy the ESC and lead to a battery fire. Always insulate the joints properly.
- Charge Li-Po and LiHV batteries under supervision, on a non-flammable surface and with a suitable charger. Do not use a damaged, swollen or overheated battery.
- Do not operate the motor in rain, in a humid environment or in the presence of flammable gases or dust.

2. Product Description

2.1 Intended use

The XING-E Pro 2207 1800KV is a 2207-size brushless motor (BLDC) made by iFlight for FPV drones; the manufacturer tested it with 5 to 6 inch propellers. The manufacturer specifies it for 2–6S power; the 1800KV version is particularly suitable for quads running 6S batteries. The motor has a unibell design, a 5 mm hollow steel shaft with M5 thread, N52H magnets, NSK bearings and single-strand copper windings.

The motor is not connected to the flight controller directly – its three wires are connected to an ESC, which powers and controls it.



XING-E Pro 2207 1800KV with the included accessories (manufacturer's illustrative photo)

2.2 Package contents

Qty	Item
1×	XING-E Pro 2207 1800KV motor with wires
4×	M3 × 8 mm motor mounting screw
1×	M5 flange nut for propeller mounting

Not included: ESC, propellers, battery, flight controller (FC), frame or tools.

2.3 Specifications

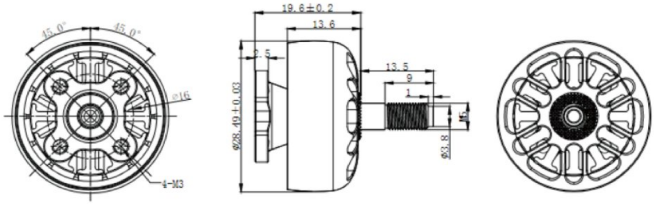
All data are provided by the manufacturer iFlight. The electrical values were measured by the manufacturer at 24 V.

Parameter	Value
Model	XING-E Pro 2207 1800KV
Manufacturer	iFlight
KV	1800 KV
Power supply (per manufacturer)	2–6S Li-Po
Configuration	12N14P (12 stator slots, 14 magnet poles)
Dimensions	⌀ 28.5 × 33.1 mm (height including shaft)
Weight	33.8 g (including wires)
Interphase resistance	81.5 mΩ
Peak current	35.22 A
Max. power	845.3 W
Shaft	steel, hollow, ⌀ 5 mm, M5 thread; protruding length 13.5 mm
Rotor	Unibell
Magnets	N52H, curved
Bearings	NSK, ⌀ 9 × ⌀ 4 × 4 mm
Winding	single-strand copper
Shaft retention	M3 hex bolt
Mounting holes	16 × 16 mm, 4× M3
Leads	160 mm, 20 AWG

※ Peak current and max. power correspond to the manufacturer's measurement with a 6045 propeller at full throttle and 24 V (see chapter 2.5). With a different propeller and voltage, the actual values differ.

2.4 Dimensions

The motor base has four M3 threaded holes. The side view shows the overall motor body height of 19.6 ± 0.2 mm and the protruding shaft length of 13.5 mm, of which 9 mm is the M5 thread for the propeller nut.



Manufacturer's dimensional drawing (dimensions in mm): base, side and top view

2.5 Manufacturer's test data

The manufacturer tested the motor at 24 V with five propeller types. The table shows current draw, thrust, input power and efficiency at 50–100 % throttle and the motor temperature recorded during the test. The data help you choose the propeller and ESC; actual in-flight values depend on the battery, propeller, temperature and settings.

Prop	Throttle	Current (A)	Thrust (g)	Power (W)	Efficiency (g/W)	Temp.
5050	50 %	6.53	617	156.7	3.937	53 °C
	60 %	10.2	797	244.8	3.256	
	70 %	14.81	1094	355.4	3.078	
	80 %	20.62	1286	494.9	2.599	
	90 %	26.62	1422	638.9	2.226	
	100 %	33.28	1613	798.7	2.020	
5.1×3.1×3	50 %	6	593	144.0	4.118	47 °C
	60 %	9.2	767	220.8	3.474	
	70 %	13.33	1069	319.9	3.342	
	80 %	18.55	1262	445.2	2.835	
	90 %	23.88	1405	573.1	2.452	
	100 %	29.88	1603	717.1	2.235	

Prop	Throttle	Current (A)	Thrust (g)	Power (W)	Efficiency (g/W)	Temp.
5045	50 %	5.6	602	134.4	4.479	45 °C
	60 %	8.2	773	196.8	3.928	
	70 %	12.27	1084	294.5	3.681	
	80 %	16.55	1253	397.2	3.155	
	90 %	21.42	1399	514.1	2.721	
	100 %	27.48	1598	659.5	2.423	
5043	50 %	6.2	589	148.8	3.958	49 °C
	60 %	9.33	753	223.9	3.363	
	70 %	13.73	1058	329.5	3.211	
	80 %	18.35	1231	440.4	2.795	
	90 %	23.48	1372	563.5	2.435	
	100 %	29.95	1567	718.8	2.180	
6045	50 %	7.73	801	185.5	4.318	56 °C
	60 %	11.8	1005	283.2	3.549	
	70 %	16.68	1256	400.3	3.138	
	80 %	22.42	1495	538.1	2.778	
	90 %	29.08	1685	697.9	2.414	
	100 %	35.22	1899	845.3	2.247	

※ Propeller designations follow the manufacturer's notation (e.g. 5045 = 5" diameter, 4.5" pitch; 5.1×3.1×3 = 5.1" diameter, 3.1" pitch, three blades).

3. Legal Requirements for Operation

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 country to country – 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 a drone in another country, you must comply with the regulations of the country in which you fly.

3.2 A drone built with this motor

The motor is a separate component. A drone you build with it yourself is a **privately built unmanned aircraft system** under Regulation (EU) 2019/945, without a C0–C4 class label. Its operation is governed by Regulation (EU) 2019/947:

- Weigh the actual maximum take-off mass (MTOM) of the finished drone including battery and accessories. Below 250 g you may fly in subcategory A1; above that only in subcategory A3 – at least 150 m from residential, commercial, industrial and recreational areas.
- If the drone has a camera, the operator must register (in the Czech Republic with the Civil Aviation Authority) and display the registration number on the drone. The pilot of a drone above 250 g needs a certificate of completed online training and test.
- Fly no higher than 120 m above ground, within visual line of sight and never over assemblies of people. When flying with FPV goggles, an observer must stand next to the pilot and keep the drone in direct sight.
- Liability insurance is not mandatory for small drones in the open category in the Czech Republic, but we strongly recommend it.

4. Installation

4.1 What else you need

- a drone frame with a 16 × 16 mm (M3) motor mounting pattern,
- an ESC for brushless motors, rated for the voltage of your battery and for the current the motor draws with your propeller (see chapter 2.5 for guidance),
- propellers with a 5 mm shaft hole,
- a sufficiently powerful soldering iron, solder and flux, heat-shrink tubing,
- a screwdriver or hex key for M3 screws, a wrench for the M5 nut,
- medium-strength (removable) threadlocker.

4.2 Mounting the motor on the frame

The motor is fixed to the frame arm with the four M3 screws included. Route the motor wires along the arm towards the ESC.

① Place the motor on the arm so that the holes in the arm line up with the M3 threaded holes in the motor base.

② Apply a small amount of medium-strength threadlocker to the screw threads and tighten the screws in a cross pattern.

③ Tighten the screws with care – overtightening can strip the threads in the motor base.

④ After tightening, spin the motor bell by hand. It must rotate completely freely, without rubbing or unusual noise.

The screw must not reach the stator windings. Before installation, check that the length of the included M3 × 8 mm screws suits the thickness of your frame arm; if the arm is thinner, use shorter screws. A screw that is too long damages the winding insulation and causes a short circuit that can destroy both the motor and the ESC.

Such damage caused during installation is not a product defect.

4.3 Connecting to the ESC

The motor has three wires that are soldered to the three output pads of the ESC for that motor. The order of the wires does not affect function, it only determines the direction of rotation (chapter 4.4).

- Shorten the wires to the required length so that they are neither taut nor hanging into the propeller path.
- Strip and tin the wire ends and solder them to the ESC pads. The joint must be shiny and solid; a cold joint will come loose under vibration.
- Protect the motor windings from heat and solder drops while soldering. Always solder with the battery disconnected.

- After soldering, check that adjacent pads do not touch each other. Insulate exposed wire sections with heat-shrink tubing or conformal coating.
- Secure the wires to the arm (with a cable tie or tubing) so that they cannot reach the propeller or chafe on the frame edges.

4.4 Direction of rotation

Each motor of the drone must spin in the correct direction according to the layout set in the flight controller (FC) – in Betaflight you will find it on the *Motors* tab. If a motor spins the wrong way, you have two options:

- **ESC setting** – reverse the direction in the ESC configuration software (depending on the ESC firmware used) or in Betaflight on the *Motors* tab, if your ESC supports it. No soldering required.
- **Swapping wires** – swap any two of the three motor wires on the ESC pads.

4.5 Fitting the propeller

Fit the propellers only after checking the direction of rotation of all motors and after disconnecting the battery.

① Check that the propeller matches the direction of rotation of that motor (propellers for counter-clockwise and clockwise motors differ).

② Fit the propeller on the shaft so that it sits flat on the motor bell.

③ Screw on the included M5 flange nut and tighten it firmly with a wrench. While tightening, hold the propeller hub or the bell, not the blade tip.

④ Always replace a damaged nut, a nut with a worn thread or a damaged propeller.

5. Commissioning

5.1 Power supply and propeller choice

The manufacturer specifies **2–6S** power for the motor. We recommend the 1800KV version for faster quads in combination with a **6S** battery. The manufacturer tested the motor with 5050, 5.1×3.1×3, 5045, 5043 and 6045 propellers (chapter 2.5); the 6045 propeller put the highest load on both the motor and the ESC.

Battery state	Li-Po per cell	LiHV per cell	6S Li-Po	6S LiHV
fully charged	4.20 V	4.35 V	25.2 V	26.1 V
end flight	3.5 V	3.5 V	21.0 V	21.0 V
storage	3.8 V	3.8 V	22.8 V	22.8 V

Always insert a **fully charged** battery before flying. Monitor the voltage in the OSD and end the flight at 3.5 V per cell at the latest.

5.2 Betaflight settings

- The motor has 14 magnet poles (12N14P configuration). For the RPM filter and RPM telemetry to work correctly, set *Motor poles* to **14** on the *Configuration* tab.
- Set the protocol between the flight controller (FC) and the ESC (e.g. DShot) and, if used, bidirectional DShot for the RPM filter according to the capabilities of your flight controller and ESC.
- On the *Motors* tab, verify that each motor matches its position and spins in the correct direction.

5.3 First test without propellers

① Remove all propellers.

② Connect the drone to a computer and in Betaflight, on the *Motors* tab, confirm that the propellers are removed.

③ Connect the battery and spin up each motor in turn at low throttle. The motor must start smoothly, without stuttering or unusual noise.

④ Check the position and direction of rotation of each motor and correct the direction if necessary (chapter 4.4).

⑤ Disconnect the battery and only then fit the propellers (chapter 4.5).

Always test motors in Betaflight without propellers. A motor may start spinning unexpectedly.

6. Operation

6.1 Before every flight

- Insert a fully charged battery.
- Check that the propeller nuts are firmly tightened and the propellers are not damaged.
- Spin each motor by hand – it must turn freely and quietly, without rubbing.
- Check that the motor screws are tight and the wires are neither chafed nor within reach of the propellers.
- Make sure the bell is firmly seated and the shaft is not bent.

6.2 Arm, Disarm and failsafe

The motors start spinning only after the **Arm** command (motors on) from the radio transmitter and stop after the **Disarm** command (motors off). Assign Arm and Disarm to a switch on the transmitter and verify the failsafe function before the first flight – the motors must stop when the signal is lost. In any crash, Disarm immediately so that the motors and the ESC are not overloaded.

6.3 Motor temperature

After landing and disconnecting the battery, carefully touch the motors. If some motors are noticeably warmer than the others or so hot that you cannot hold them, the motor is overloaded or damaged. Possible causes: a propeller that is too large or has too much pitch, unsuitable PID or filter settings, damaged bearings, a bent shaft or a damaged winding. Eliminate the cause before the next flight.

7. Maintenance and Troubleshooting

7.1 After every flight

- Remove grass, dust and dirt from the motor. Watch out for small metal particles – they are attracted by the magnets and can damage the windings and bearings.
- Do not wash the motor with water. After flying in damp conditions, let it dry thoroughly.
- After a crash, check for a bent shaft, a damaged bell or a loose shaft screw.

7.2 Replacing the bell and bearings

The manufacturer offers a separate **XING-E Pro 2207 Replacement Bell** as a spare part. The bell with shaft is retained in the stator by an M3 screw. The NSK bearings measure ⌀ 9 × ⌀ 4 × 4 mm. We recommend leaving bearing replacement to a service centre – improper disassembly may damage the windings or magnets.

7.3 Storage

Store the motor in a dry place, in its original packaging or a closed bag, away from metal filings and small steel parts that would stick to the magnets.

7.4 Troubleshooting

Problem	Possible cause and solution
Motor does not spin after Arm or only stutters	Cold or broken joint, short between wires. Check the soldering on the ESC and the wire insulation. Verify the ESC protocol setting in the flight controller (FC).
Motor spins the wrong way	Reverse the direction in the ESC settings or swap two motor wires (chapter 4.4).
Motor is too hot after flight	Propeller too large, unsuitable PID or filter settings, damaged bearings, short in the winding (e.g. mounting screw too long).
Motor rubs or is noisy when turned by hand	Dirt or metal particles between bell and stator, worn bearings, bent shaft.
Vibrations, jello in the video	Damaged or unbalanced propeller, loose propeller nut, bent shaft, loose motor screws.
Propeller comes loose in flight	M5 nut not tightened or worn – tighten or replace the 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 (XING-E Pro 2207 1800KV) is printed on the motor housing (bell).

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.