



XING-E Pro 2207 2450KV

Brushless motor for FPV drones
User manual



Read the safety instructions before installation. Fit the propeller only after checking the direction of rotation and always with the battery disconnected.

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1. Safety instructions

Read these instructions carefully before installation and first start-up and keep them for future reference. The motor is intended for building an FPV drone by an experienced user or under their supervision. Incorrect wiring or operation may cause injury, fire or damage to property.

1.1 Rotating parts and propellers

- The motor reaches very high speeds. A spinning propeller can cause serious cuts.
- Keep the **propellers removed** while soldering, configuring on a computer, checking the direction of rotation and during any other work on the drone.
- **Disconnect the battery** before every handling of the motor or propeller.
- Never hold the motor or the drone in your hand while the motors are armed (*Arm*). Keep hands, hair and loose clothing away from the propellers.
- Do not use damaged, cracked or bent propellers, or a motor with a bent shaft.

1.2 Electrical and thermal hazards

- The motor is a three-phase brushless motor. Power it **only through an electronic speed controller (ESC)**, never directly from a battery.
- Size the ESC with a sufficient margin over the peak current of the motor (see Chapter 2.4).
- Prevent short circuits between the motor wires and to the frame. Always insulate soldered joints.
- The motor heats up during operation. Do not touch it after a flight until it has cooled down.
- In case of obvious overheating, a smell of burnt insulation or smoke, disconnect the battery immediately.

1.3 Li-Po and LiHV batteries

- Charge the Li-Po or LiHV battery (not included) under supervision, on a non-flammable surface and according to its manufacturer's instructions. Do not use a damaged or swollen battery.
- The binding voltage values for a 4S battery (recommended for this motor variant, see Chapter 4.3) are given in the table below.

State	Li-Po	LiHV
Fully charged	4.20 V/cell 16.8 V (4S)	4.35 V/cell 17.4 V (4S)
End the flight	3.5 V/cell 14.0 V (4S)	3.5 V/cell 14.0 V (4S)
Storage	3.8 V/cell 15.2 V (4S)	3.8 V/cell 15.2 V (4S)

1.4 Magnets and environment

- The motor bell contains strong neodymium magnets that attract metal filings, small screws and small iron parts. Keep the motor away from metal debris while working.
- Protect the motor from water, moisture, sand and dust. Dirt in the gap between the bell and the stator increases wear and can block the motor.
- Keep the motor and small parts (screws, nut) out of the reach of children.

2. Product description

2.1 What the motor is for

The iFlight **XING-E Pro 2207 2450KV** is a 2207-size brushless motor for FPV drones. The manufacturer presents the XING-E series as powerful and durable motors for FPV racing. The motor has a unibell design, a 5 mm hollow steel shaft, curved N52H magnets, single-strand copper windings and NSK 9×4×4 mm bearings.

2.2 Parts description



XING-E Pro 2207 – main parts of the motor

- ① **Shaft** – 5 mm hollow steel shaft with an M5 thread for securing the propeller with a nut.
- ② **Bell (unibell)** – the rotating part of the motor with N52H magnets.
- ③ **Base** – mounted to the frame with four M3 screws on a 16 × 16 mm pattern. Three 20AWG phase wires, 160 mm long, lead out of the base.

2.3 Package contents

- 1× XING-E Pro 2207 2450KV motor
- 4× M3 × 7 mm screw
- 1× M5 flange nut (for securing the propeller)



M5 nut and M3 × 7 mm screws included

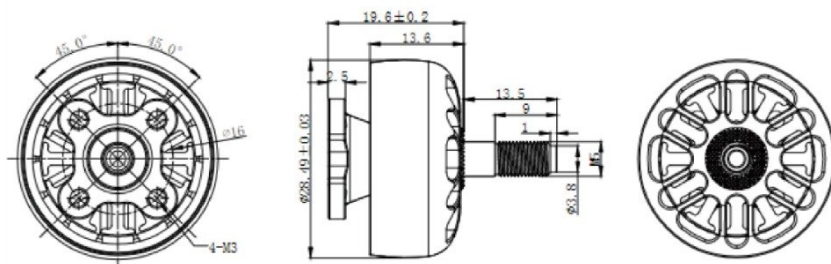
The package contains one motor; a quadcopter needs four. **Not included:** propellers, electronic speed controller (ESC), frame, battery, connectors and tools.

2.4 Technical data

Parameter	Value
Model	XING-E Pro 2207 2450KV
Manufacturer	iFlight, e-mail support@iflight.com
KV	2450 KV
Configuration	12N14P
Weight (including wires)	33.8 g
Dimensions	ø 28.5 × 33.1 mm
Interphase resistance	46.8 mΩ
Voltage in manufacturer's test	16 V
Peak current	42.63 A
Maximum power	682.1 W
Mounting holes	16 × 16 mm, 4× M3
Bell	unibell
Shaft	ø 5 mm, hollow steel, M5 thread
Shaft protruding length	13.5 mm
Wires	160 mm, 20AWG
Magnets	N52H, curved
Bearings	NSK, ø 9 × ø 4 × 4 mm
Winding	single-strand copper wire

※ Peak current and maximum power correspond to the manufacturer's measurement at 16 V with a 6045 propeller at full throttle (see Chapter 2.6).

2.5 Dimensions



Dimensional drawing according to the manufacturer (dimensions in mm). From left: base with four M3 holes on a $\varnothing 16$ mm pitch circle, side view (body height 19.6 mm, shaft protruding 13.5 mm, M5 thread), top view of the bell.

2.6 Performance data (manufacturer's measurement)

The manufacturer measured the motor on a test stand at 16 V with five types of propellers. The values are intended for comparing propellers; in flight, the actual current, thrust and temperature differ depending on the propeller, battery, frame and flying style.

Propeller	Throttle	Current (A)	Thrust (g)	Power (W)	Efficiency (g/W)	Temp.
5050	50%	7.93	495	126.9	3.901	60 °C
	60%	12.33	655	197.3	3.320	
	70%	17.08	821	273.3	3.004	
	80%	24.22	1036	387.5	2.673	
	90%	31.48	1223	503.7	2.428	
	100%	39.56	1498	633.0	2.367	
5.1×3.1×3	50%	7.33	483	117.3	4.118	57 °C
	60%	10.93	622	174.9	3.557	
	70%	15.35	799	245.6	3.253	
	80%	21.35	1051	341.6	3.077	
	90%	27.75	1189	444.0	2.678	
	100%	36.68	1391	570.9	2.437	

Propeller	Throttle	Current (A)	Thrust (g)	Power (W)	Efficiency (g/W)	Temp.
5045	50%	6.8	476	108.8	4.375	55 °C
	60%	10.27	636	164.3	3.870	
	70%	14.47	792	231.5	3.421	
	80%	19.55	1008	312.8	3.223	
	90%	25.22	1207	403.5	2.991	
	100%	32.02	1465	512.3	2.860	
5043	50%	7.67	457	122.7	3.724	58 °C
	60%	10.93	619	174.9	3.540	
	70%	15.28	765	244.5	3.129	
	80%	21.35	982	341.6	2.875	
	90%	27.68	1195	442.9	2.698	
	100%	35.48	1398	567.7	2.463	
6045	50%	9.33	648	149.3	4.341	63 °C
	60%	13.87	798	221.9	3.596	
	70%	19.42	1042	310.7	3.354	
	80%	26.08	1315	417.3	3.151	
	90%	34.15	1496	546.4	2.738	
	100%	42.63	1679	682.1	2.462	

※ Voltage in all measurements: 16 V. Temperature is the highest motor temperature measured by the manufacturer with the given propeller.

3. Mounting on the frame

3.1 What you will need

- a frame with motor mounting holes on a 16 × 16 mm pattern for M3 screws,
- M3 screws – 4× M3 × 7 mm are included; for a different arm thickness use screws of a suitable length,
- a hex key matching the screws, a soldering iron and solder,
- an electronic speed controller (ESC) rated for this motor and heat-shrink tubing or other insulation.

3.2 Mounting the motor

- ① Place the motor on the arm so that the wires point towards the centre of the frame and are protected as well as possible.
- ② Before tightening, check the **screw length**: the screw may engage the thread in the base but **must not touch the stator windings**. Check the length whenever you change the frame or the screws.
- ③ Tighten the screws gradually in a cross pattern and with feeling. Excessive force can strip the thread in the base.
- ④ Use a medium-strength threadlocker to keep the screws from loosening due to vibration.
- ⑤ Turn the bell by hand. It must rotate freely, without rubbing or resistance – otherwise a screw is touching the windings or dirt has got between the bell and the stator.

A screw that touches the windings damages the wire insulation and can destroy both the motor and the ESC.

3.3 Connecting to the electronic speed controller (ESC)

- The motor has three phase wires. Connect them to the three outputs of the ESC for that motor. The order of the wires only determines the direction of rotation (see Chapter 4.1).
- Shorten the wires to the required length so that they are not under tension and cannot get into the propeller. Tin the ends before soldering.
- Solder quickly with a sufficiently hot iron so that neither the wire insulation nor the ESC board overheats. The joint must be shiny and firm.
- After soldering, check that no solder bridge has formed between adjacent pads, and secure the wires against chafing on the frame edges.

4. Configuration and checks

4.1 Checking the direction of rotation

Check the direction of rotation **without propellers**, e.g. in Betaflight Configurator on the *Motors* tab. Each motor must spin in the direction that matches the propeller layout selected in the flight controller (FC) – *Props in* or *Props out*.

- If the motor spins the wrong way, swap any two of the three phase wires,
- or change the direction in software in an ESC configurator (e.g. ESC Configurator for BLHeli_S / Bluejay / AM32 firmware), without re-soldering.

4.2 Betaflight settings

The motor has a 12N14P configuration, i.e. **14 magnetic poles**. When using bidirectional DShot and the RPM filter, set *Motor poles* to **14** on the *Motors* tab. An incorrect pole count invalidates the RPM filter and the RPM telemetry.

4.3 Power supply and propeller choice

- The manufacturer specifies the XING-E Pro 2207 series for **2-6S**. The manufacturer's measurement data for the 2450KV variant are given at 16 V (4S).
- Rotorama recommends the 2450KV variant for common 5" quads with a **4S** battery.
- Always insert a **fully charged** battery before flight (Li-Po 4.20 V/cell, 16.8 V for 4S; LiHV 4.35 V/cell, 17.4 V for 4S).
- Motor current and temperature increase with propeller size and pitch. Of the propellers measured by the manufacturer, the 6045 propeller had the highest current and temperature (see Chapter 2.6). When using a different propeller or a higher voltage, check the motor temperature after the first flights.

5. Propeller mounting and operation

5.1 Mounting the propeller

- ① Fit the propeller only after all settings are complete and the direction of rotation has been checked, with the **battery disconnected**.
- ② Use a propeller with a 5 mm shaft hole and a pitch direction that matches the direction of rotation of that motor.
- ③ Slide the propeller all the way onto the bell and secure it with the included M5 flange nut. Tighten the nut firmly but with feeling – overtightening may damage the propeller hub or the shaft thread.
- ④ Make sure the propeller sits straight and has no play.

5.2 Operation

- Before every flight, check that the motor screws and the propeller nut are tight and inspect the propellers.
- Check the motor temperature after the first flights and after every change of propellers or settings. A motor that is very hot after a short flight indicates an overly demanding propeller, unsuitable filter settings or a mechanical fault.
- In the manufacturer's tests, the motor reached 55–63 °C (depending on the propeller). Do not touch a motor this hot.
- After a crash, inspect the motor according to Chapter 6.1 before the next flight. A bent shaft causes vibration and overheating.

6. Maintenance

6.1 After every flight

- Disconnect the battery and let the motors cool down.
- Turn each bell by hand – it must spin freely and quietly, without rubbing, grinding or clicking.
- Remove grass, sand and metal debris from the gap between the bell and the stator (e.g. with compressed air or a soft brush).
- Check that the shaft is not bent, the bell has no play and the wires are not chafed or cut.
- Check that the motor screws are tight.

6.2 Bearings, shaft and bell

- The motor uses NSK $\varnothing 9 \times \varnothing 4 \times 4$ mm bearings. Rough running, noise or play of the bell indicate a worn bearing.
- The shaft is secured with an M3 hex screw (the manufacturer states "M3 shaft screw" and "hex bolt shaft set screw"). If the bell starts to move up and down, check that this screw is tight.
- The manufacturer offers a spare bell for this motor, the **XING-E Pro 2207 Replacement Bell**. Mind the strong magnets when replacing the bell – the bell is pulled sharply onto the stator.

6.3 Storage

- Store the motor in a dry place at room temperature, protected from dust and metal filings.
- Do not store a drone with mounted motors with the battery connected.

7. Troubleshooting

Problem	Possible cause and solution
The motor does not spin or only twitches after Arm	Cold or broken solder joint – re-solder the joints. Short circuit of the wires or a faulty ESC output. A screw touching the windings – check the screw length (Chapter 3.2).
The motor spins in the wrong direction	Swap two phase wires or change the direction in the ESC configurator (Chapter 4.1).
The motor rubs, is noisy or hard to turn	Dirt between the bell and the stator, a worn bearing or a bent shaft. Clean the motor; replace the bearing or the bell (Chapter 6.2).
The motor overheats	Propeller too large or too steep, higher voltage, unsuitable filter settings in the FC, a damaged propeller or a screw touching the windings.
The drone vibrates, the video jitters	Damaged or unbalanced propeller, bent shaft, loose motor screws or propeller nut.
The motor cuts out on sharp throttle input (desync)	The ESC settings (timing, demag) do not suit the motor; check the ESC settings and firmware.
The bell has axial play	Loose M3 shaft screw (Chapter 6.2).

If the fault cannot be eliminated, contact the retailer (contact details in Chapter 8.1).

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@rotorاما.cz
Phone	+420 252 252 098
Website	www.rotorاما.com

8.2 Product conformity



- 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@rotorاما.cz.
- **Product identification:** the type designation (XING-E Pro 2207 2450KV) is marked on the motor bell. The manufacturer is iFlight (e-mail support@iflight.com).

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.