XING-E 2809 1250Kv

iFlight – brushless motor for FPV drones
User manual



Read this manual carefully before installation and first use, and keep it for future reference.

Rotorama, s.r.o. · www.rotorama.com

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1. Safety instructions

1.1 Before you start

The XING-E 2809 1250Kv brushless motor is a component designed to be installed in an FPV drone. Installation, wiring and setup require basic knowledge of electronics, soldering and configuring the flight controller (FC) and electronic speed controllers (ESC).

- Before installation and first use, read this entire manual and the manuals for all other drone components.
- This product is not a toy and must be kept away from children.
- Use the motor only within the technical specifications in chapter 2.4 and with a suitable propeller (chapter 3).

1.2 Rotating propellers and mechanical hazards

- A motor with a propeller fitted can cause serious cuts. **Always remove the propellers** whenever you work on the drone, wire it, set it up or test it on the bench.
- Connect the battery only just before flight and disconnect it immediately after landing. While the battery is connected, treat the drone as if the motors could spin up at any moment.
- Replace or repair a damaged propeller, bent shaft or loose motor immediately – at high RPM they can break off.

1.3 Heat, magnets and electrical hazards

- The motor heats up during operation. Do not touch it after flight until it has cooled down.
- The rotor contains strong neodymium magnets. Keep it away from metal filings, screws and other ferromagnetic objects that could get inside and damage the windings.
- A short circuit of the motor wires or a screw touching the stator windings can destroy the electronic speed controller (ESC) and cause a fire. Always insulate the joints.
- Handle Li-Po and LiHV batteries according to their manufacturer’s instructions; never charge them unattended and do not use a damaged or swollen battery.

1.4 The law of the country where you fly applies

Operating the assembled drone is subject to aviation regulations. Regulations (EU) 2019/947 and 2019/945 apply in all EU member states, but national implementing rules vary from country to country (registration, pilot age, zones, insurance, frequencies). If you fly in another country, you must follow the regulations of that country.

2. Product description

2.1 Intended use

The XING-E 2809 1250Kv is a brushless motor from iFlight's budget XING-E series. It has a solid 5 mm steel shaft, high-temperature N52H magnets, a segmented bell and single-strand copper windings. The motor is mounted with four M3 screws on a 19 × 19 mm pattern.

Rotorama recommends the 1250Kv version for 7–8 inch drones with a 6S battery. The manufacturer specifies an input voltage of 24 V and provides test data for HQ 8×4×3 and GF 7040 propellers (chapter 3).

2.2 Package contents

Item	Qty
XING-E 2809 1250Kv brushless motor	1 pc
M3×11 mm screw	4 pcs
M5 flange nut	1 pc

※ According to the manufacturer, M3×11 mm screws have been supplied since 5 May 2024 instead of the previous M3×10 mm.

Not included: propeller, electronic speed controller (ESC), frame, battery or other drone parts. The motor is sold individually.

2.3 Parts description



XING-E 2809 motor – parts description

① Threaded part of the shaft for the M5 flange nut – the propeller goes here

② 5 mm steel shaft

③ Rotor – segmented bell with N52H magnets

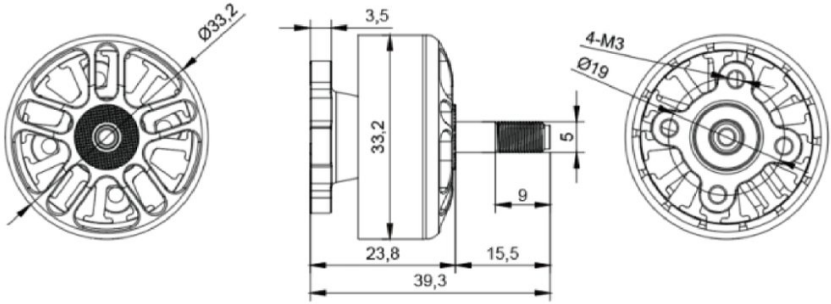
④ Motor base with four M3 mounting holes (19 × 19 mm pattern)

2.4 Technical specifications

Parameter	Value
Model	XING-E 2809 1250Kv
KV	1250Kv
Weight (incl. wires)	60.4 g
Dimensions	⌀ 33.2 × 39.3 mm (total length incl. shaft)
Phase-to-phase resistance	65 mΩ
Input voltage	24 V
Peak current	49.23 A
Maximum power	1147.1 W
Mounting holes	19 × 19 mm, M3 (⌀ 3 mm)
Rotor	segmented bell
Shaft diameter	5 mm
Protruding shaft length	15.5 mm
Wires	260 mm, 18 AWG
Magnets	N52H, curved
Configuration	12N14P
Bearings	⌀ 11 × ⌀ 5 × 5 mm
Windings	single-strand copper wire

※ Peak current and maximum power correspond to the manufacturer’s test with an HQ 8×4×3 propeller at 100 % throttle (chapter 3.2).

2.5 Dimensions



Dimensional drawing (in mm, per manufacturer)

The motor body height without the shaft is 23.8 mm; the protruding shaft is 15.5 mm, of which 9 mm is threaded. The total length is 39.3 mm.

3. Propeller, battery and measured data

3.1 Choosing the propeller and battery

- The manufacturer tested the motor at approx. 24 V (6S battery) with **HQ 8×4×3** and **GF 7040** propellers. Rotorama recommends it for 7–8 inch drones with a 6S battery.
- A larger propeller means higher current and higher motor temperature. With the HQ 8×4×3 propeller at 100 % throttle, the manufacturer measured 49.23 A and 77 °C.
- Choose the electronic speed controller (ESC) and battery so that they can continuously handle the current of all motors with a margin above the values in table 3.2.
- Always connect a **fully charged** battery before each flight.

3.2 Manufacturer’s test data

The table shows iFlight’s test results. Actual values in your drone will vary with the battery, ESC, propeller and ambient temperature.

Prop	Thr. (%)	Volt. (V)	Curr. (A)	Thrust (g)	Power (W)	Effic. (g/W)	Temp.
HQ 8×4×3	50	23.88	9.26	994	221.1	4.50	77 °C
	60	23.78	15.62	1409	371.4	3.79	
	70	23.71	21.45	1726	508.6	3.39	
	80	23.58	29.85	2158	703.9	3.07	
	90	23.44	39.27	2564	920.5	2.79	
	100	23.30	49.23	2933	1147.1	2.56	
GF 7040	50	23.94	5.00	579	119.7	4.84	69 °C
	60	23.89	7.77	794	185.6	4.28	
	70	23.84	11.78	1094	280.8	3.90	
	80	23.76	17.10	1432	406.3	3.52	
	90	23.67	23.22	1722	549.6	3.13	
	100	23.56	30.36	2092	715.3	2.92	

4. Installation

4.1 What else you need

- a frame with motor mounting holes on a 19 × 19 mm pattern (M3),
- an electronic speed controller (ESC) rated for a 6S battery and the motor current (chapter 3),
- propellers with a 5 mm shaft hole,
- solder, heat-shrink tubing, a hex key for M3 screws and a wrench for the M5 nut,
- medium-strength threadlocker recommended (e.g. blue thread-locking compound).

4.2 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 arm and the wires point towards the ESC.

② Check the screw length: the screw may only reach the depth of the thread in the motor base and **must not touch the stator windings**. Use the supplied M3×11 mm screws only if they suit the arm thickness; otherwise use screws of a suitable length.

③ Tighten the screws in a cross pattern, gently – overtightening can strip the threads in the motor base.

④ After tightening, spin the bell by hand. It must turn freely, without rubbing or grinding.

A screw touching the windings damages the wire insulation and can cause a short circuit that destroys the ESC.

4.3 Connecting to the electronic speed controller (ESC)

① The motor has three 260 mm wires (18 AWG). Cut them to the required length so that they are not under tension and cannot reach the propeller.

② Strip and tin the wire ends. Solder them to the three motor pads on the ESC. The wire order only determines the direction of rotation (chapter 5.2).

③ Inspect the joints carefully: they must not be cold or touch neighbouring pads. Insulate them with heat-shrink tubing if needed.

④ Secure the wires on the arm (with a cable tie or tubing) so that they do not rub against the frame edges.

5. Getting started

5.1 First test without propellers

Carry out all motor tests **without propellers**. Connect the drone to a computer and open the *Motors* tab in the flight controller (FC) configurator, e.g. Betaflight. After confirming the safety warning, spin up each motor in turn at low RPM and check that the correct motor spins, smoothly and without unusual noise.

5.2 Direction of rotation

- The direction of rotation of each motor must match the layout set in the flight controller (FC) – default *props in* or reversed *props out*.
- If a motor spins the wrong way, change the direction in the ESC configurator (e.g. BLHeli, Bluejay or AM32), or swap any two of the three motor wires.
- Check the direction again after every change.

5.3 Flight controller (FC) setup

- The motor has a 12N14P configuration, i.e. **14 magnetic poles**. When using bidirectional DShot and the RPM filter, set *Motor poles* to 14 in the *Motors* tab in Betaflight.
- PID and filter tuning depends on the whole drone (frame, propellers, battery), not just the motor. Start with the default settings and adjust gradually.

5.4 Mounting the propeller

① Disconnect the battery before mounting the propeller.

② Fit the propeller onto the ⌀ 5 mm shaft to match the motor’s direction of rotation (leading edge of the blade facing the direction of rotation).

③ Secure the propeller with the supplied M5 flange nut and tighten it firmly. Do not hold the shaft with pliers by its smooth part – you may damage it.

④ Check that the propeller sits straight and does not touch the frame or wires.

6. Operation

6.1 Pre-flight check

- The motor is firmly screwed on; the bell turns freely and has no play.
- The propeller is undamaged, correctly oriented and the M5 nut is tight.
- Wires and solder joints are undamaged and cannot reach the propeller.
- There are no foreign objects in the bell (grass, sand, metal filings).
- The connected battery is **fully charged**.

6.2 6S battery voltage

State	Li-Po	LiHV
Fully charged	4.20 V/cell (25.2 V)	4.35 V/cell (26.1 V)
End flight	3.5 V/cell (21.0 V)	3.5 V/cell (21.0 V)
Storage	3.8 V/cell (22.8 V)	3.8 V/cell (22.8 V)

Monitor the voltage in the OSD or telemetry and end the flight at 3.5 V per cell at the latest.

6.3 Motor temperature

After the first flights, check the motor temperature (carefully, they may be hot). If one motor is noticeably warmer than the others, find the cause (chapter 7.4) before continuing. Let the motors cool down between flights.

7. Maintenance and troubleshooting

7.1 After every flight

- Disconnect the battery and let the motors cool down.
- Remove dirt from the bell – grass, sand, dust. Remove metal particles carefully, as the magnets attract them.
- Spin the bell by hand: rubbing, grinding or play indicate a damaged bearing or bent shaft.
- After a crash, check whether the shaft is bent and whether the motor screws have come loose.

7.2 Bearings and shaft

The motor uses ⌀ 11 × ⌀ 5 × 5 mm bearings. A worn bearing shows up as noise, vibration and higher temperature. Do not straighten a bent shaft – you can tell it is bent by propeller wobble and vibration; in that case replace the motor or the shaft. Only work on the motor (disassembly, bearing replacement) if you have the proper tools and experience.

7.3 Storage

Store in a dry place, away from dust and metal filings. Store batteries separately at a storage voltage of 3.8 V per cell.

7.4 Troubleshooting

Problem	Possible cause and solution
Motor does not spin up or only twitches	Broken or cold solder joint, shorted wires, damaged windings. Check the joints and wire insulation.
Motor spins the wrong way	Change the direction in the ESC configuration or swap two motor wires (chapter 5.2).
Vibration, noise, grinding	Damaged or unbalanced propeller, bent shaft, worn bearing, dirt in the bell. Replace the propeller, check the shaft and bearings.
Motor overheats	Propeller too large, damaged bearing, oscillations due to poor tuning. Check the propeller per chapter 3, check the bearings and FC tuning.
Bell rubs against the stator	Screw too long reaching the windings, bent shaft or foreign object. Disconnect the motor immediately and remove the cause.
Propeller comes loose	M5 nut not tightened. Tighten the nut and check it before every flight.

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 series and size designation (XING-E 2809) is marked on the motor housing; the full type designation is **XING-E 2809 1250Kv**.

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.