



ECO II 2807 1700KV

Brushless motor for FPV quadcopters
User manual



Read the entire manual before assembly and first start-up and keep it for future reference.

Manufacturer: EMAX · Importer: Rotorama, s.r.o. · www.rotorama.com

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1. Product description

1.1 Intended use

EMAX ECO II 2807 1700KV is a brushless (three-phase AC) motor from the ECO II series for multirotors, intended primarily for FPV quadcopters with 6"-7" propellers. The manufacturer specifies it for 3S-4S power; Rotorama recommends combining the 1700KV version with a 4S battery. Typical use is long-range quadcopters with 7" propellers.

The motor is never connected directly to a battery — it always runs through an **electronic speed controller (ESC)**, which powers it via three phase wires and controls its speed according to commands from the flight controller (FC). It is fastened to the frame with four M3 screws; the propeller is mounted on the M5 threaded shaft and secured with a self-locking nut.



EMAX ECO II 2807 1700KV motor and supplied accessories

1.2 Specifications and package contents

► Package contents

- 1× ECO II 2807 1700KV motor
- 5× M3 × 10 mm screws and 5× M3 × 8 mm screws for frame mounting
- 1× aluminium M5 self-locking nut for the propeller
- 1× washer and screw for the shaft

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

Parameter	Value
Product designation	ECO II 2807 1700KV
Manufacturer	EMAX
Speed constant (KV)	1700 KV
Configuration	12N14P
Motor dimensions	ø 33.9 × 34 mm
Shaft diameter	4 mm, M5 propeller thread
Mounting	4× M3 on a ø 19 mm bolt circle
Leads	3 wires 18 AWG, length 200 mm
Weight	47.9 g (without wires)
Magnets	N52
Power supply	3S-4S
Recommended propellers	6"-7"
Idle current (10 V)	2.1 A
Internal resistance	41 mΩ
Peak current (4S)	52 A
Max. power (4S)	870 W

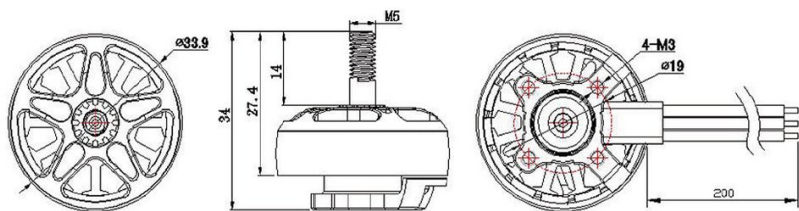
Specifications according to the manufacturer EMAX.

1.3 Parts and dimensions



Motor parts

- ① Shaft with M5 thread for the propeller
- ② Bell (rotor) with magnets
- ③ Base (stator) with M3 screw holes
- ④ 18 AWG phase wires for connection to the ESC
- ⑤ Product marking (size 2807 and KV) and CE, RoHS and WEEE marks



Manufacturer's dimensional drawing (dimensions in mm)

1.4 Manufacturer's performance data

The manufacturer tested the motor at **16.8 V** (fully charged 4S Li-Po) with four types of 7" propellers. The values are a guide for choosing a propeller and ESC; actual values depend on the battery, ESC, temperature and propeller condition.

Propeller	Current (A)	Thrust (g)	Power (W)	Efficiency (g/W)	Speed (RPM)
Gemfan 7042 2-blade	3.3	300	55.44	5.41	8300
	6.2	500	104.16	4.80	11000
	9.8	700	164.64	4.25	12200
	14.3	900	240.24	3.75	13800
	19.7	1100	330.96	3.32	15300
	46.2	1810	776.16	2.33	max
Gemfan 7040 3-blade	3.4	300	57.12	5.25	8900
	6.3	500	105.84	4.72	11100
	9.9	700	166.32	4.21	12900
	14	900	235.20	3.83	14300
	17.9	1100	300.72	3.66	15800
	43.7	1990	734.16	2.71	max
HQ 7×3.5×3 3-blade	3.2	300	53.76	5.58	8000
	5.1	500	85.68	5.84	10900
	9.6	700	161.28	4.34	11700
	13.9	900	233.52	3.85	13300
	18.9	1100	317.52	3.46	14600
	47.1	2060	791.28	2.60	max
HQ 7×4×3 3-blade	3.4	300	57.12	5.25	7600
	6.3	500	105.84	4.72	9100
	10.2	700	171.36	4.08	11100
	14.5	900	243.60	3.69	12600
	20.2	1100	339.36	3.24	13800
	51.2	2100	860.16	2.44	max

"max" = full throttle; the manufacturer does not state the speed at this point.

2. Use

During all assembly, soldering and setup, keep the propellers removed and the battery disconnected.

2.1 What else you need

- a frame with motor mounts for M3 screws on a $\varnothing$ 19 mm bolt circle,
- a 3S–4S ESC rated for the motor currents given in Chapters 1.2 and 1.4,
- 6"–7" propellers for an M5 threaded shaft,
- a 3S or 4S battery (Rotorama recommends 4S),
- a soldering iron, solder, heat-shrink tubing and hex keys for M3 screws.

2.2 Mounting on the frame

- Place the motor on the frame arm so that the holes in the base ③ line up with the holes in the arm and the wires ④ run along the arm towards the centre of the frame.
- Choose the supplied **M3 × 8** or **M3 × 10** screws according to the arm thickness. When tightened, a screw must not reach the motor windings — a screw that is too long damages the windings and causes a short circuit.
- Tighten the screws gradually in a cross pattern, carefully and without excessive force. You may use medium-strength threadlocker.
- After tightening, the bell ② must turn freely by hand without rubbing. If it rubs or scrapes, a screw is too long — replace it with a shorter one.

2.3 Connecting to the ESC

- Solder the three phase wires ④ to the three motor pads of the corresponding ESC output. The wire order only determines the direction of rotation and cannot damage the motor.
- You may shorten the wires to the required length. Strip and tin the ends and solder quickly with a sufficiently hot iron so that the insulation is not damaged.
- The joints must not touch each other or the carbon frame. Route the wires away from the propellers and secure them (heat-shrink tubing, cable ties).
- Never connect the motor directly to a battery.

2.4 Direction of rotation

With the propellers removed, connect the battery and briefly spin the motor at low speed in the configurator (e.g. Betaflight, *Motors* tab). Compare the direction of rotation with the motor layout of your flight controller. If the motor spins the wrong way, change the direction in one of two ways:

- swap any **two** of the three phase wires, or
- reverse the motor direction in the ESC configuration software.

2.5 Mounting the propeller

- Make sure the propeller matches the motor's direction of rotation and has a hole for an M5 shaft.
- Fit the propeller on the shaft ① and secure it with the supplied M5 self-locking nut. Tighten the nut firmly but without excessive force — the propeller must not slip on the shaft.
- A self-locking nut gradually loses its locking effect. If it becomes loose after repeated fitting or turns easily by hand, replace it with a new one.

2.6 First start-up

- First test all motors **without propellers** at low speed. The motor must run smoothly, without stuttering, unusual noise or vibration.
- Before flying, insert a **fully charged** battery: Li-Po 4.20 V/cell (3S 12.6 V, 4S 16.8 V). End the flight at 3.5 V/cell under load at the latest (3S 10.5 V, 4S 14.0 V).
- After the first short flight, check the motor temperature. Very hot motors indicate a propeller that is too large, unsuitable settings or damage — eliminate the cause before the next flight.

3. Safety, maintenance and troubleshooting

3.1 Safety instructions

- Rotating propellers can cause serious injury. Remove the propellers and disconnect the battery before any work on the quadcopter.
- Do not exceed the **4S** supply specified by the manufacturer. A higher voltage can destroy both the motor and the ESC.
- The motor heats up during operation. After flying, do not touch the bell or windings until the motor has cooled down.
- Never stop a spinning motor by hand and do not leave it powered when it is blocked (e.g. tangled in grass) — the motor and ESC may overheat.
- The magnets in the bell strongly attract metal objects and filings. Store the motor in a clean place out of the reach of children.

3.2 Maintenance

- After every crash, check that the shaft ① is not bent — turn the motor and watch whether the propeller wobbles. A bent shaft causes vibration and must be replaced.
- The bell must turn freely and quietly. Scraping or rubbing is usually caused by dirt, sand or metal filings stuck to the magnets — remove them carefully.
- Rough or noisy running that persists after cleaning indicates worn bearings.
- Regularly check the tightness of the motor screws and propeller nut and the condition of the wire insulation.
- If the shaft screw on the underside of the motor comes loose, use the spare washer and shaft screw from the package.

3.3 Troubleshooting

Problem	Possible cause and solution
Motor does not spin or stutters	Cold or broken solder joint, damaged wire, ESC fault. Check the joints and the ESC settings.
Motor spins the wrong way	Swap two phase wires or reverse the direction in the ESC software (Chapter 2.4).
Motor gets very hot after flight	Propeller too large, voltage too high, unsuitable ESC or FC settings, bent shaft or damaged bearing.
Vibration	Bent shaft, damaged or unbalanced propeller, loose nut or motor screws.
Scraping, rubbing	Dirt between bell and stator, mounting screw too long, worn bearings.

4. Information for the EU and Czech Market

4.1 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

4.2 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>.

5. 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 4.1.
- 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.