AOS Supernova 2807 1400KV

Brushless motor for 7" FPV drones
User manual



Read this entire manual carefully before installation and first use, especially the safety instructions. Keep this manual for future reference.

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1. Safety instructions

1.1 Before you start

The AOS Supernova 2807 1400KV motor is a high-performance component intended for installation in an FPV drone. Incorrect installation or operation can cause serious injury or damage to property. This product is not a toy and is not intended for children.

- Installation and wiring should only be carried out by a person experienced in building FPV drones.
- Always disconnect the battery before doing any work on the drone.
- Never use a damaged motor – bent shaft, cracked bell, damaged wire insulation or windings.

1.2 Rotating propellers and mechanical hazards

- At full throttle the propeller spins at very high speed and can cause deep cuts. **Always remove the propellers** for ground tests and when configuring on a computer.
- With the battery connected, the motor may start unexpectedly, e.g. after a configuration error or a loss of signal. Never keep your hands or fingers within reach of the propeller while the battery is connected.
- Do not use cracked, bent or otherwise damaged propellers – they can break apart at high speed.
- Do not touch the shaft or the propeller until it has come to a complete stop.

1.3 Batteries and electrical connection

- The motor is designed to be powered through an electronic speed controller (ESC) from a **4S to 6S** Li-Po battery. Never connect it directly to a battery or power supply.
- Li-Po batteries can catch fire if short-circuited, overcharged or mechanically damaged. Charge them only under supervision, on a non-flammable surface and with a suitable charger.
- Solder only with the battery disconnected. Insulate the joints so that they cannot touch the frame or other wires.

1.4 Motor temperature

Under full load the motor gets very hot. Do not touch it after a flight until it has cooled down. Do not overload the motor with an oversized propeller or long full-throttle flights – overheating can damage the winding insulation and demagnetise the magnets.

2. Product description

2.1 What the motor is for

The AOS Supernova 2807 1400KV is a brushless motor designed by the British company AOS RC (designer Chris Rosser) and manufactured by RCinPower. The manufacturer intends it as the power unit for **7" FPV drones**; Rotorama recommends it for long-range drones and cinelifters.

The bell and base are made of 7075 aluminium alloy; the motor has Japanese bearings, N52H arc magnets and single-strand windings with insulation rated up to 260 °C. The bell is retained on the shaft by an M3 screw.



AOS Supernova 2807 (manufacturer's illustrative render)

2.2 Package contents

Qty	Item
1×	AOS Supernova 2807 1400KV motor
1×	screw set

Not included: propellers, electronic speed controller (ESC), frame and battery. The motor is sold individually; a quadcopter needs four motors.

2.3 Parts description



Motor parts (the propeller nut in the photo is for illustration only)

① Threaded shaft for mounting the propeller

② Bell (rotor) with magnets and type designation

③ Base with four M3 mounting holes

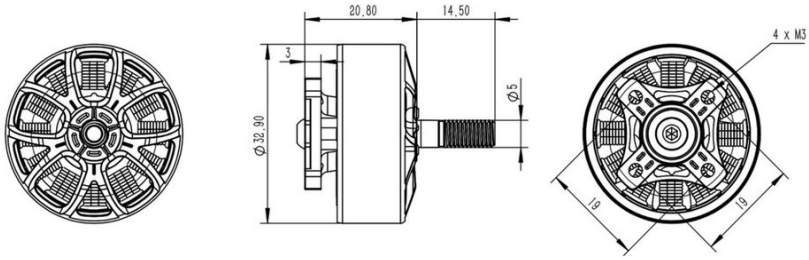
④ Three lead wires for connection to the ESC

2.4 Technical data

Parameter	Value
KV	1400 KV
Configuration	12N14P
Stator diameter	28 mm
Stator height	7 mm
Shaft diameter	4 mm (hollow)
Propeller shaft thread diameter	5 mm
Motor dimensions (diameter × length)	Ø 32.9 × 35.3 mm
Weight	47 g (with 3 cm wires)
Mounting holes	4 × M3, 19 × 19 mm pattern
Battery	Li-Po 4S–6S (6S recommended)
Idle current at 10 V	1.4 A
Max. continuous power (5S)	960 W
Max. current (5S)	40 A
Internal resistance	58 mΩ
Max. efficiency current	2–6 A (efficiency > 87 %)
Magnets	N52H, arc
Bell and base material	7075 aluminium alloy

Data according to the manufacturer's datasheet and the Rotorama product page.

2.5 Dimensions



Manufacturer's dimensional drawing (dimensions in mm)

The motor body is 20.8 mm high and the shaft protrudes 14.5 mm, giving an overall length of 35.3 mm. The four M3 mounting holes are on a 19 × 19 mm pattern.

2.6 Manufacturer's performance data

The manufacturer tested the motor with the propellers listed below. Temperature was measured after 5 s at full throttle. The data are intended for an approximate comparison of propellers; actual values depend on the battery, ESC, frame and ambient temperature.

Propeller	U (V)	Thr.	I (A)	Thrust (g)	Power (W)	Effic. (g/W)	Temp.
GF6042	24	50 %	4.5	691	108.0	6.398	60 °C
		100 %	24.5	2074	588.0	3.527	
GF7042	24	50 %	6.7	965	160.8	6.001	82 °C
		100 %	39.4	2413	945.6	2.552	
GF6042×3	24	50 %	6.2	841	148.8	5.652	67 °C
		100 %	29.9	2290	717.6	3.191	
GF7040×3	21	50 %	5.4	818	113.4	7.213	66 °C
		100 %	29.1	2365	611.1	3.870	
	24	50 %	7.1	1030	170.4	6.045	76 °C
		100 %	34.8	2736	835.2	3.276	
DAL7056×3	21	50 %	5.9	821	123.9	6.626	67 °C
		100 %	30.1	2363	632.1	3.738	
	24	50 %	7.8	1061	187.2	5.668	79 °C
		100 %	37.7	2810	904.8	3.106	

GF = Gemfan, DAL = DALPROP; ×3 = tri-blade propeller; Thr. = throttle, I = current, Effic. = efficiency.

3. Choosing the battery, propeller and ESC

3.1 Battery

The manufacturer specifies **4S to 6S Li-Po** batteries for this motor; Rotorama recommends 6S. Always fit a **fully charged** battery before flight and end the flight no later than at the voltage given in the table.

State (Li-Po)	Per cell	4S	5S	6S
Fully charged	4.20 V	16.8 V	21.0 V	25.2 V
End flight	3.5 V	14.0 V	17.5 V	21.0 V
Storage	3.8 V	15.2 V	19.0 V	22.8 V

3.2 Propeller

The motor is designed for 7" propellers. The manufacturer tested it with the propellers listed in chapter 2.6. Current draw and motor temperature increase with propeller diameter, pitch and number of blades.

- Choose a propeller so that the motor current does not exceed 40 A (manufacturer's max. current at 5S).
- On a 6S battery the voltage is higher than in the manufacturer's test, so current and temperature may also be higher. Check the motor temperature after the first flights (chapter 6.2).
- The propeller must have a hole matching the 5 mm shaft.

3.3 Electronic speed controller (ESC)

- Use an ESC rated for the battery voltage you will be using (4S–6S).
- Choose an ESC whose continuous current per motor is comfortably above the current the motor draws with your propeller (see chapter 2.6).
- The motor is three-phase; it is connected to the ESC output with three wires.

4. Installation

4.1 Mounting the motor to the frame

① Make sure the frame has motor mounting holes on a 19 × 19 mm pattern for M3 screws.

② Place the motor on the frame arm with the wires pointing towards the centre of the drone.

③ Fasten the motor with four M3 screws. Tighten the screws gradually in a cross pattern.

④ Choose the screw length according to the arm thickness: the screw must have sufficient thread engagement in the motor base but **must not touch the stator windings**.

A screw that is too long will damage the winding insulation and cause a short circuit, which can destroy both the motor and the ESC. Before connecting the battery for the first time, make sure the motor turns freely by hand and nothing rubs. Damage to the windings caused by an overly long screw is not a product defect.

4.2 Connecting the wires to the ESC

- Cut the wires to the required length, strip and tin them. Do not shorten them so much that they are under tension – they could tear off in a crash.
- Solder the three motor wires to the three output pads of the ESC. The order does not matter; the direction of rotation is set later (chapter 5.1).
- Joints must be shiny and solid. A cold joint can cause a motor failure in flight.
- Route the wires along the arm and secure them so that they cannot get into the propeller or chafe on carbon edges.

4.3 Fitting the propeller

- Fit the propeller only after checking the direction of rotation of the motors (chapter 5.1).
- Pay attention to the correct propeller orientation (CW / CCW) according to the motor position and the direction of rotation set in your flight controller (FC).
- Secure the propeller with a self-locking nut with a suitable thread. Tighten the nut firmly but do not overtighten – you could damage the propeller hub or the shaft thread.

5. Setup

5.1 Checking the direction of rotation

① Remove all propellers.

② Connect the drone to a computer and open the *Motors* tab in Betaflight Configurator.

③ Connect the battery, confirm the safety warning and briefly spin each motor at low speed.

④ Compare the direction of rotation with the diagram in the *Motors* tab. If it is reversed, change the direction of rotation in the ESC settings (e.g. in the ESC configurator) or swap any two motor wires.

The motor must spin up smoothly, without jerking or unusual noises. If it does not spin up, jerks or squeals, disconnect the battery and check the soldering and ESC settings.

5.2 Recommended throttle settings in Betaflight

For precise low-throttle control together with full top-end power, AOS RC recommends using throttle expo with these motors. Use the following as a starting point:

Parameter (Rates tab)	Starting value
Throttle MID	0
Throttle EXPO	0.20

Increase EXPO for more precision at low throttle, decrease it for a sharper throttle response.

6. Operation

6.1 Pre-flight check

- Fit a **fully charged** battery (Li-Po 4.20 V/cell, 6S = 25.2 V).
- Check that the motors are firmly screwed on and the propellers are tight and undamaged.
- Turn each motor by hand – it must rotate freely, without rubbing and without play in the bell.
- Check the motor wires: they must not be chafed or within reach of the propeller.
- Before take-off, Arm (switch on the motors) and listen briefly to check that all motors run evenly.

6.2 Motor temperature and load

- After the first flights with a new propeller or battery, check the motor temperature immediately after landing (carefully, the motor may be hot).
- If the motors are too hot to hold your hand on after a normal flight, the propeller and battery combination is too demanding for your drone, or the tuning (filters, PID) needs adjusting.
- Avoid long full-throttle flights. End the flight at 3.5 V/cell (6S = 21.0 V).

7. Maintenance and troubleshooting

7.1 After every flight

- Disconnect the battery and let the motors cool down.
- Remove grass, sand and dirt from the motors. Small metal particles stick to the magnets – remove them carefully, e.g. with adhesive tape.
- Check that the bell is not bent or cracked and that the motor turns freely.
- After a crash, check the shaft – a bent shaft causes vibrations and must be replaced.

7.2 Bearings and screws

- Bearings wear out. A rough, noisy or loose bearing shows up as vibrations and a higher motor temperature.
- Regularly check that the motor mounting screws are tight.
- Do not loosen the M3 screw that holds the bell on the shaft unnecessarily. If you loosen it during servicing, secure it when reassembling.

7.3 Storage

Store the motor in a dry place at room temperature, out of the reach of children and away from small metal objects that could stick to the magnets. Store the drone's batteries at 3.8 V/cell (6S = 22.8 V).

7.4 Troubleshooting

Problem	Possible cause and solution
Motor does not spin up, only jerks or squeals	Cold joint or broken wire – check the soldering. Short circuit in the windings (e.g. an overly long mounting screw) – check the screws. Incorrect ESC settings.
Motor spins the wrong way	Change the direction of rotation in the ESC settings or swap two motor wires (chapter 5.1).
Strong vibrations, jello in the video	Bent shaft, damaged propeller, worn bearings or loose screws. Replace the damaged part.
Motor overheats	Propeller too large for the voltage, poor tuning or a damaged bearing. Choose a smaller propeller, check the tuning and bearings.
Motor rubs when turned by hand	Dirt or a metal particle between the bell and the stator, damaged bearing. Clean the motor; replace the bearing if necessary.

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 (SUPERNOVA 2807-1400KV) is printed on the motor 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.