ROTORAMA

1104 4300KV

DarwinFPV

Brushless motor – user manual



Read this entire manual, especially the safety instructions, before installation and first use.

www.rotorama.com

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1. Product description

1.1 Intended use

The DarwinFPV 1104 4300KV is a lightweight brushless motor for micro FPV drones – 2–3" whoops and ultralight toothpicks. The manufacturer specifies it for use with **2–3S LiPo** batteries; the rated voltage is 12 V (3S). The motor was originally made for the DOBBY pocket drone.

The motor connects to the electronic speed controller (ESC) with three wires and mounts to the frame with four screws on an 8.5 × 8.5 mm hole pattern. A propeller with a 1.5 mm bore is pressed directly onto the shaft and is not secured with a screw.



DarwinFPV 1104 4300KV

1.2 Specifications and package contents

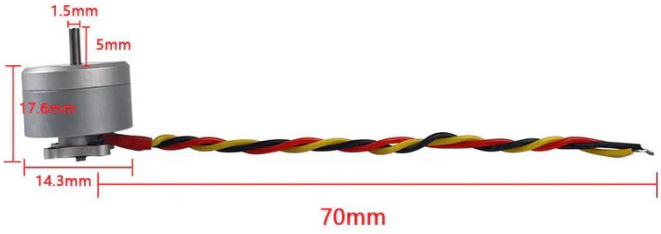
Product designation	DarwinFPV 1104 4300KV
Stator size	Φ11 × 4 mm
KV	4300 KV
Configuration	9N12P
Motor dimensions	Φ14.3 × 17.6 mm
Shaft	Φ1.5 × 5 mm
Bearings	Φ4 × Φ1.5 × 2 mm
Magnets	N45H
Winding	multi-strand copper
Phase-to-phase resistance	470 mΩ
Rated voltage	12 V (3S LiPo)
Recommended battery	2–3S LiPo
No-load current	0.5 A at 12 V
Maximum current	5.2 A
Maximum power	62.4 W
Lead wires	3 × 28 AWG, 70 mm long
Mounting holes	8.5 × 8.5 mm, M1.4
Weight (incl. wires)	5.9 g ± 0.2 g

▶ Package contents

- 1× DarwinFPV 1104 4300KV motor
- 1× set of mounting screws

▶ Not included

Propellers, ESC, flight controller (FC), frame, battery and a connector for the motor wires. The package contains one motor; a quadcopter needs four.



Motor dimensions and wire length

1.3 Manufacturer's performance data

The manufacturer states the following measurements at 12 V. The values are a guide for choosing the propeller and ESC; actual values depend on the battery, the ESC and the condition of the propeller.

▶ Gemfan 3016-3 propeller

Throttle (%)	Speed (RPM)	Current (A)	Thrust (g)	Power (W)	Efficiency (g/W)
30	11800	0.52	29	6.24	4.65
40	14700	0.90	46	10.80	4.26
50	17000	1.32	64	15.84	4.04
60	19000	1.92	81	23.04	3.52
70	21000	2.60	100	31.20	3.21
80	22400	3.45	126	41.40	3.04
90	24000	4.30	143	51.60	2.77
100	25500	5.17	154	62.04	2.48

▶ **Gemfan 3018-2 propeller**

Throttle (%)	Speed (RPM)	Current (A)	Thrust (g)	Power (W)	Efficiency (g/W)
30	12400	0.4	26.7	4.8	5.56
40	15400	0.8	41.6	9.6	4.33
50	18000	1.2	59	14.4	4.1
60	20500	1.7	77	20.4	3.77
70	23100	2.4	98	28.8	3.4
80	25600	3.2	129	38.4	3.36
90	27200	4.1	146	49.2	2.97
100	29700	5.2	168	62.4	2.69

2. Safety instructions

- A motor with a propeller fitted is dangerous at speeds above 20,000 RPM. **Always remove the propellers during assembly, soldering, configuration and bench tests.**
- Connect the battery only after all work on the drone is finished. Disconnect the battery before any intervention.
- Do not exceed the recommended voltage of **2–3S LiPo** or the maximum current of 5.2 A. A higher voltage or an oversized propeller will overload the motor and may destroy it.
- The motor may be hot after a flight. Let it cool down before touching it.
- The strong neodymium magnets in the rotor attract metal filings and small screws. Store the motor in its packaging and away from metal dust.
- This product is not a toy. Keep it out of the reach of children – small parts (screws) may be inhaled or swallowed.
- When flying a drone, comply with the regulations of the country in which you fly.

3. Use

3.1 Mounting on the frame

① Check that the frame has motor holes on an **8.5 × 8.5 mm** pattern for **M1.4** screws.

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

③ Fasten the motor with the screws from the set. Tighten the screws gently and in a cross pattern.

④ A screw must not be longer than the arm thickness plus the thread depth in the motor. A screw that is too long will touch the winding, damage the insulation and cause a short circuit. After tightening, turn the bell by hand – it must rotate freely without rubbing.

3.2 Connecting to the ESC

① Shorten the wires to the required length and tin the ends.

② Solder the three motor wires to the three output pads of the ESC for that motor. The wire order does not affect operation; it only determines the direction of rotation.

③ Check the joints – they must not touch adjacent pads or other components.

④ If the motor needs to spin the other way, swap any two wires or change the direction of rotation in the ESC configuration (e.g. in Betaflight on the *Motors* tab).

※ The ESC must be rated for the battery voltage used, and its current rating must have a margin above the motor's maximum current of 5.2 A.

3.3 Propellers

- Use 2–3" propellers with a **1.5 mm** shaft bore. The manufacturer tested the motor with Gemfan 3016-3 and Gemfan 3018-2 propellers (see Chapter 1.3).
- The propeller is **pressed** onto the shaft; it is not secured by a screw or nut. Fit it square and push it fully home while supporting the shaft so that it does not bend.
- Make sure each propeller has the correct direction of rotation (CW / CCW) for the motor position on the drone.
- Remove the propeller by pulling it straight up; do not twist it sideways. A propeller that sits loosely may come off in flight – replace it.
- A larger propeller or higher pitch increases the current. The motor current must not exceed the maximum of 5.2 A.

3.4 Check before the first flight

① With the propellers removed, connect the drone to a computer and set the correct ESC protocol in the flight controller (FC) configuration.

② On the *Motors* tab, briefly spin up each motor in turn and check its position and direction of rotation.

③ The motor must spin up smoothly, without stuttering or unusual noise.

④ Only then fit the propellers and make a short test flight. After landing, check the motor temperature – a motor must not be so hot that you cannot keep your finger on it.

4. Maintenance and troubleshooting

4.1 Maintenance

- After every flight, remove grass, hair, sand and metal debris from the bell and from the gap between rotor and stator.
- Check that the shaft is straight and the bell turns freely and quietly. Rubbing or noise indicates a damaged bearing or a bent shaft.
- Check the tightness of the mounting screws and the insulation of the wires where they enter the motor.
- Do not lubricate the motor with oil or spray – dirt will then stick to it.
- After flying in damp conditions or snow, let the motor dry thoroughly.

4.2 Troubleshooting

Problem	Possible cause and solution
Motor spins in the wrong direction	Swap two motor wires or change the direction in the ESC configuration (*Motors* tab).
Motor does not spin up, only twitches or beeps	Cold or broken joint, short between wires, screw touching the winding. Check the soldering and screw length.
Motor is very hot after flight	Propeller too large, voltage higher than 3S, unsuitable filter or PID settings, damaged bearing.
Vibration, unusual noise	Damaged or unbalanced propeller, bent shaft, worn bearing, debris between rotor and stator.
Propeller is loose or falls off	Worn propeller bore – replace the propeller.

5. Information for the EU and Czech Market

5.1 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

5.2 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.

6. 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 5.1.
- 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.