GEPRC EM2812

Brushless motor 2812 · 900 Kv
User manual



Read the entire manual before installation. Always bench-test the motor without a propeller.

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

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1. Product description

1.1 Intended use

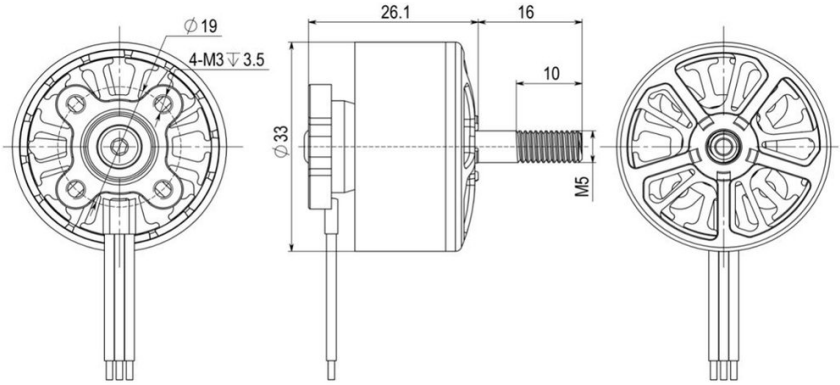
GEPRC EM2812 900KV is a 2812 size brushless motor from the EM series, which the manufacturer designed mainly for long-range FPV drones. It is intended for 7–9 inch propellers and for power from a 6S LiPo battery.

The motor has a 5 mm diameter steel shaft, N52H magnets, NSK/NMB bearings and a single-strand copper winding. It is sold as a single motor – a quadcopter needs four motors.



GEPRC EM2812 900KV

1.2 Dimensions



Manufacturer's dimensional drawing, dimensions in mm. The 4× M3 mounting holes with a thread depth of 3.5 mm lie on a Ø 19 mm circle. The shaft protrudes 16 mm, of which 10 mm is the M5 thread.

1.3 Specifications and package contents

Product designation	GEPRC EM2812 900KV
Manufacturer's code (SKU)	GP106081
Motor size	2812
Kv	900
Configuration	12N14P
Power supply	6S LiPo (max. 25.2 V)
Recommended ESC	50–60 A
Maximum power	1010 W
Peak current	46 A
Phase-to-phase resistance	43 mΩ
Recommended propellers	7–9"
Shaft	Ø 5 mm, steel; protrudes 16 mm, of which 10 mm is the M5 thread
Motor dimensions	Ø 33 × 26.1 mm
Mounting holes	4× M3, 19 mm spacing, thread depth 3.5 mm
Bearings	NSK/NMB
Magnets	N52H
Winding	single-strand, copper
Leads	18 AWG, length 260 mm
Weight	76 g (including leads)

Package contents

- 1× GEPRC EM2812 900KV motor
- 4× M3×9 round-head screw
- 1× M5 flange nut (anti-slip)

Not included

- propellers,
- electronic speed controller (ESC), flight controller (FC), frame or battery.

1.4 Manufacturer's performance data

The manufacturer states the following values, measured on a test stand with a 6S battery (voltage during the measurement 23.6–24.1 V). Selection from the table for 50 % and 100 % throttle:

Propeller	Throttle	Voltage (V)	Current (A)	Thrust (g)	Power (W)	Efficiency (g/W)
Gemfan 8040	50 %	24.1	7.01	872	170.43	5.12
	100 %	23.66	28.43	2318	678.34	3.42
Hoprop MQ9X4.5	50 %	23.99	8.06	1011	194.85	5.19
	100 %	23.6	36.26	2710	855.73	3.16

Motor temperature during the test according to the manufacturer: 68 °C with the Gemfan 8040 propeller and 74 °C with the Hoprop MQ9X4.5 propeller.

※ These are the manufacturer's laboratory data. Actual values depend on the propeller, battery, ESC and flying style.

2. Use

2.1 What else you need

- a frame for 7–9" propellers with motor holes at 19 mm spacing for M3 screws,
- an electronic speed controller (ESC) for 6S batteries rated at 50–60 A,
- 7–9" propellers for a Ø 5 mm shaft and a nut with an M5 thread,
- a soldering iron, solder and flux, heat-shrink tubing and a hex key,
- a computer with Betaflight Configurator or with your ESC configurator.

2.2 Mounting to the frame

① Place the motor on the frame arm so that the leads point towards the centre of the drone, towards the ESC.

② Fasten the motor with four M3 screws. Tighten the screws gradually in a cross pattern.

③ **Screw length:** the thread in the motor base is 3.5 mm deep. A screw may reach into the motor no deeper than this – a screw that is too long will damage the winding insulation and cause a short circuit. Choose the screw length according to the thickness of the frame arm.

④ After mounting, turn the bell by hand. It must rotate freely, without rubbing or clicking.



Motor base with four M3 mounting holes

※ We recommend using medium-strength threadlocker on the motor screws. Do not apply threadlocker to the bearings or inside the motor.

2.3 Connecting to the electronic speed controller (ESC)

- The motor has three leads. The order in which they are connected to the ESC pads does not matter – it only determines the direction of rotation, which can be changed at any time (chapter 2.4).
- Cut the leads to the required length, strip, tin and solder them to the ESC pads. The joint must be shiny and solid.
- The leads must not touch the propeller, sharp edges of the frame or each other. Insulate the joints if necessary and secure the leads to the arm.

- Before connecting the battery for the first time, check that no solder bridge has formed between the pads. We recommend using a smoke stopper.

2.4 Checking and changing the direction of rotation

① Remove all propellers.

② Connect the drone to the computer, open the *Motors* tab in Betaflight Configurator, confirm the safety warning and spin up each motor in turn at low throttle.

③ Compare the direction of rotation with the motor layout shown on the *Motors* tab.

④ If a motor spins the wrong way, change the direction in the ESC configurator (*Motor Direction* / *Reversed* option) or swap any two of the three motor leads.

2.5 Fitting the propeller

- Fit the propellers only after checking the direction of rotation.
- The propeller orientation (CW / CCW) must match the motor's direction of rotation – the leading edge of the blade moves in the direction of rotation.
- Fit the propeller on the Ø 5 mm shaft and tighten it firmly with the M5 nut. Hold the motor bell while tightening, not the propeller.
- Check that the propeller does not touch the frame or the leads and that the nut sits flat.

2.6 First start-up

- Carry out the first test without propellers: the motors must run smoothly, without stuttering and without unusual noise.
- Before flying, insert a **fully charged** 6S LiPo battery: 4.20 V/cell, i.e. 25.2 V.
- After the first short flight, carefully feel the motors. A motor that is noticeably hotter than the others indicates a problem (chapter 4.3).
- End the flight at the latest at 3.5 V/cell, i.e. 21.0 V for a 6S battery.

3. Safety instructions

- **A motor with a propeller is dangerous.** A spinning 7–9" propeller can cause serious injury. Always remove the propellers when working on the drone, connecting it to a computer and testing on the bench.
- Connect the battery only just before flying and disconnect it immediately after landing.
- The motor gets very hot during operation. Do not touch it after flying until it has cooled down.
- The motor contains strong magnets. Protect it from metal filings and small metal objects that could get inside the bell.
- Do not exceed a 6S LiPo power supply (max. 25.2 V) and use the 7–9" propellers recommended by the manufacturer.
- Do not use a motor with damaged windings, a bent shaft, a damaged bell or damaged leads.
- The product is not a toy. Keep it out of the reach of children.
- Drone operation is governed by the regulations of the country in which you fly. Regulation (EU) 2019/947 applies in all EU member states, but national implementing rules differ from country to country. If you operate the drone outside the Czech Republic, follow the regulations of the country in which you fly.

4. Maintenance and troubleshooting

4.1 After every flight

- Turn each motor by hand – the bell must rotate freely, without rubbing and without play.
- Remove grass, sand and dirt from the motor. Do not clean the motor with water or solvents.
- Check that the motor screws and the propeller nut are tight.
- Check the motor leads and solder joints.

4.2 Storage

Store the motors in a dry place, away from dust, metal filings and direct sunlight.

4.3 Troubleshooting

Problem	Possible cause and solution
Motor does not spin or only stutters	Cold or broken joint, short circuit between ESC pads, damaged windings. Check the soldering and leads.
Motor spins the wrong way	Change the direction in the ESC configuration or swap two leads (chapter 2.4).
Vibration, unusual noise	Damaged propeller, dirt in the bell, bent shaft or worn bearings. Replace the propeller, clean the motor and check it by turning it by hand.
Motor overheats	Unsuitable propeller, loose propeller nut, damaged windings or a short circuit caused by a screw that is too long. Check the screw length (chapter 2.2).
Bell rubs	Dirt between the magnets and the stator, or a damaged bell. Clean the motor.

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.