SPEEDX2 1804 2450KV

GEPRC – brushless motor for FPV drones
User manual



Read the entire manual before installation and first start-up, in particular the safety instructions in Chapter 2. Keep this manual for future reference.

Rotorama, s.r.o. · www.rotorama.com

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1. Product description

1.1 Intended use

The **GEPRC SPEEDX2 1804 2450KV** is a second-generation brushless motor of the SPEEDX2 series designed for building FPV drones. The manufacturer recommends it for 3" whoops (drones with a propeller guard – duct), 3–4" toothpicks and 3–4" Long Range drones. The motor is intended to be powered from a 4S–6S Li-Po battery.

The rotor (bell) is made of 7075-T aluminium alloy and has large lightening cut-outs that reduce weight and improve cooling. The rounded shape of the top of the rotor also suits drones with a pusher propeller layout, so that high-pitch propellers do not touch the top edge of the rotor. The motor is connected to the drone's electronic speed controller (ESC) – a standalone or a 4-in-1 unit; the motor itself contains no electronics.

1.2 Parts overview



Bottom view (left) and top view (right)

① Mounting base – four M2 threaded holes in a 12 × 12 mm pattern for attaching the motor to the frame.

② Shaft – 1.5 mm diameter at the output, used to mount the propeller.

③ Lead wires – three 24 AWG phase wires to the electronic speed controller (ESC).

④ Rotor (bell) with magnets – rotates during operation and must not touch anything.

1.3 Specifications and package contents

Data as stated by the manufacturer GEPRC for the 2450KV version.

Parameter	Value
Product designation	GEPRC SPEEDX2 1804-2450KV
KV rating	2450 KV
Configuration	12N14P
Magnets	N52H, arc-shaped (ARC)
Stator diameter / height	18 mm / 4 mm
Shaft diameter	2 mm inside the motor, 1.5 mm at the output
Motor dimensions	Φ 22.74 × 13.2 mm
Lead wires	24 AWG, length 150 mm
Number of cells (Li-Po)	4S–6S
Max. continuous power	452.2 W (manufacturer's figure for 3S)
Max. current	18.8 A (manufacturer's figure for 5S)
Mounting	12 × 12 mm, M2 screws
Rotor material	7075-T aluminium alloy
Weight	13.2 g (with wires cut to 13 cm)
Colour	black or black + cyan (depending on version)
Recommended use	3" whoop, 3–4" toothpick and Long Range

▶ **Package contents (1 motor)**

- 1× SPEEDX2 1804 motor
- 5× M2 × 6 mm screw
- 5× M2 × 8 mm screw

Not included: propellers, electronic speed controller (ESC), flight controller (FC), frame, battery or connectors. The motor is sold individually; a quadcopter requires four.

2. Safety instructions

- **A spinning propeller can cause serious injury.** Whenever you work on the drone (soldering, configuring, checking the direction of rotation), keep the propellers removed and the battery disconnected unless the step explicitly requires it.
- Always connect the motor via an electronic speed controller (ESC) only. Never connect it directly to a battery or power supply – this risks a short circuit, damage to the motor and fire.

- Use only a power supply within the range permitted by the manufacturer (4S–6S Li-Po) and an ESC rated for the motor current.
- The motor may be hot during and shortly after operation. Let it cool down before touching it.
- Keep hair, clothing and fingers away from a spinning motor and do not touch the bell while it is running.
- The magnets in the rotor strongly attract metal objects and filings. Protect the motor from metal dust and do not store it next to magnetically sensitive items (payment cards, compass).
- After a crash or impact, inspect the motor (Chapter 5). Do not continue to use a motor with a bent shaft, a damaged bearing or chafed windings.
- This product is not a toy. Keep it out of the reach of children; small parts (screws) can be swallowed.
- When soldering, follow the safety rules for working with a soldering iron and work in a well-ventilated area.

3. Installation and wiring

3.1 Mounting the motor to the frame

The motor is attached to the frame with four M2 screws in the 12 × 12 mm hole pattern of the mounting base ①. M2 × 6 mm and M2 × 8 mm screws are included; use the length that matches the thickness of the frame arm.

※ The screw must not protrude through the base into the stator windings. A screw that is too long damages the winding insulation and causes a short circuit that can destroy both the motor and the ESC.

- Always test-fit the screw first, or measure how far it protrudes beyond the frame arm, and choose the shorter option if in doubt.
- Tighten the screws gently into the metal base; overtightening easily strips the thread. We recommend securing the screws with medium-strength threadlocker.
- After tightening, turn the rotor by hand – it must spin freely, without rubbing and without touching the frame.

3.2 Connecting to the ESC

- The motor has three phase wires ③. They connect to the three pads for that motor on the ESC; the order of the wires only affects the direction of rotation (see 3.3).
- The wires can be shortened to the required length. Strip and tin the ends and solder them with a good joint – no cold joints and no excess solder that could bridge adjacent pads.

- Route the wires so that they cannot get into the propeller and do not chafe on the edges of the frame; secure them with a cable tie or heat-shrink tubing.
- Before connecting the battery for the first time, check that no wire is shorted to the frame (especially with a carbon frame, which is electrically conductive).

3.3 Checking and changing the direction of rotation

The direction of rotation of each motor must match the motor layout in the flight controller (FC) firmware, e.g. in Betaflight (*Motors* tab). Perform the check **without propellers**, with the battery connected and the drone secured on a table.

- Spin up the individual motors at low speed (e.g. using the sliders in the *Motors* tab after confirming the safety notice) and watch the direction of rotation.
- If a motor spins the wrong way, change the direction in the ESC configuration (e.g. in the ESC configurator or with the reverse motor direction function in Betaflight), or swap any two of the three motor wires.
- Repeat the check after every change.

3.4 Mounting the propeller

- The manufacturer recommends the motor for 3" and 3–4" propellers. Use a propeller with a mount designed for a 1.5 mm shaft and follow the propeller manufacturer's instructions.
- Fit the propellers only after checking the direction of rotation and make sure each propeller has the correct direction (CW / CCW) for its motor position.
- Propellers must be undamaged and balanced. An unbalanced or bent propeller increases vibration and bearing wear.

4. Operation

4.1 Power supply

The manufacturer specifies the motor for **4S–6S Li-Po** batteries. The battery is not connected directly to the motor but to the drone's ESC. Observe the following values when using Li-Po batteries:

State	Per cell	4S	5S	6S
Fully charged	4.20 V	16.8 V	21.0 V	25.2 V
End the 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

- Always insert a **fully charged** battery before flying.
- The ESC, flight controller and other electronics of the drone must also be rated for the selected number of cells.

4.2 First start-up and pre-flight check

- Perform the first start-up **without propellers**: check the direction of rotation (3.3) and listen for smooth running.
- Before every flight, check that the screws are tight, the rotor turns freely and the wires are undamaged.
- After the first short flight, carefully check the motor temperature. If a motor is extremely hot, stop flying and look for the cause (5.2).
- Arm (motor activation) only in a safe place where no one else is within reach of the propellers. After landing, Disarm (motor deactivation) before approaching the drone.

5. Maintenance and troubleshooting

5.1 Maintenance

- After every flight, remove grass, dust and sand. Remove metal debris stuck to the magnets, e.g. with adhesive tape.
- Check regularly that the rotor turns freely and without play; rough running or rattling indicates worn bearings.
- Check that the shaft is straight – a bent shaft causes vibration and must be replaced.
- Check the insulation of the windings and wires; chafed insulation can cause a short circuit.
- Do not clean the motor with water or solvents; after flying in damp conditions, let it dry thoroughly.
- Store in a dry place at room temperature, protected from metal dust.

5.2 Troubleshooting

Problem	Possible cause and solution
Motor does not spin, only beeps or twitches	A broken or cold solder joint on one of the wires – check and resolder. Damaged winding or ESC.
Motor spins the wrong way	Change the direction in the ESC configuration or swap two wires (Chapter 3.3).
Rubbing, rattling	Debris between rotor and stator, worn bearing or bent shaft – clean, or replace the motor.
Strong vibration	Damaged or unbalanced propeller, bent shaft, loose motor screws.
Motor gets very hot	Propeller too large for the voltage, mechanical rubbing or unsuitable ESC / FC filter settings. Use the recommended propeller size and check for free running.
Burning smell, smoke	Short circuit in the winding (e.g. a screw that is too long). Disconnect the battery immediately; do not use the motor any further.

6. Information for the EU and Czech Market

6.1 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

Manufacturer: GEPRC, www.geprc.com. **Product designation:** GEPRC SPEEDX2 1804-2450KV.

6.2 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.

7. 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. If you use the product in another country, the law of the country in which the product is operated is decisive for its operation.

- 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 6.1.
- 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.

Damage caused by a crash, mechanical damage, incorrect installation (e.g. screws that are too long), operation outside the permitted supply range or use contrary to this manual is not considered a defect of the product.