SmooX 1507 Plus 3800KV

RCinPower brushless motor
User manual



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

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1. Safety instructions

1.1 Before you start

- The motor is designed to drive the propeller of a radio-controlled model, typically an FPV drone. It is not a toy and is not intended for children.
- Installation and wiring require basic knowledge of model electronics and soldering. If you are not sure, ask an experienced modeller for help.
- Use the motor only with an electronic speed controller (ESC), battery and propeller that match the technical data in chapter 2.
- Operation of a drone fitted with this motor is subject to the rules on unmanned aircraft. The law of the country in which you operate the model always prevails – in the EU, in particular Regulation (EU) 2019/947 and the national implementing rules of the respective state.

1.2 Rotating parts and propellers

- The rotating motor bell and propeller can cause serious cuts. **Always remove the propellers** during any work on the model, configuration and motor tests.
- Connect the battery only just before the flight and disconnect it immediately after landing. Never hold a model with a connected battery and mounted propellers in your hand.
- Before every flight, check that the propeller nut and the motor screws are tight. A loose propeller may fly off in flight.
- Do not use damaged, cracked or bent propellers, or a motor with a bent shaft.

1.3 Electrical and thermal hazards

- The motor is designed for **3S–4S** Li-Po batteries. A higher voltage overloads the motor and may destroy it.
- The motor leads must not be short-circuited or damaged. Damaged insulation can cause a short circuit and fire of the ESC or battery.
- Under full load the motor gets very hot. After the flight, do not touch the bell or stator until they have cooled down.
- Metal filings, small screws and other small objects must not get into the motor – it contains strong permanent magnets that attract them.
- Strong magnets can affect pacemakers, magnetic cards and sensitive instruments. Do not store the motor in their immediate vicinity.

2. Product description

2.1 What the motor is for

The RCinPower SmooX 1507 Plus 3800KV is an outrunner brushless motor of size 1507 (stator diameter 15 mm, stator height 7 mm). It is intended for small FPV drones with 3–4" propellers and for cinewhoops in combination with a 3S–4S Li-Po battery.

The propeller is mounted on a 5 mm shaft and secured with a nut. The motor is attached to the frame with four M2 screws on a 12 × 12 mm pattern. The bell is made of 7075-T6 aluminium alloy.

2.2 Package contents

- 1× RCinPower SmooX 1507 Plus 3800KV motor
- 1× screw set

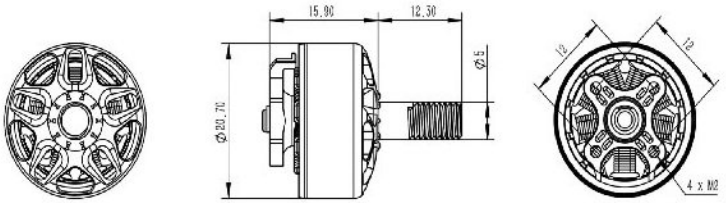
Not included: propellers, electronic speed controller (ESC), frame or battery. A quadcopter needs four motors.

2.3 Technical data

Data provided by the manufacturer RCinPower. The weight varies with the lead length.

Parameter	Value
Designation	SmooX 1507 Plus 3800KV
KV rating	3800 KV
Configuration	9N12P
Stator diameter × height	15 mm × 7 mm
Inner shaft diameter	2 mm
Propeller shaft	Ø 5 mm, threaded, propeller secured with a nut
Motor dimensions (diameter × length)	Ø 20.7 × 28.2 mm
Mounting	4× M2, 12 × 12 mm pattern
Weight	16.8 g (with 3 cm leads)
Battery	Li-Po 3S–4S
No-load current (at 10 V)	1.4 A
Max. continuous power (3S)	430 W
Max. current (3S)	29 A
Internal resistance	65 mΩ
Max. efficiency current	5–8 A (efficiency > 84 %)

2.4 Dimensions and mounting



Dimensional drawing (mm): diameter 20.7 mm, body length 15.9 mm, shaft length 12.3 mm, shaft Ø 5 mm, mounting 4× M2 on a 12 × 12 mm pattern. Source: RCinPower.



Motor base with four M2 threaded holes.

2.5 Manufacturer's performance data

The manufacturer tested the motor with several propellers at 11.1 V (3S) and 14.8 V (4S). The temperature was measured after 3 s at full throttle. The values are a guide for choosing a propeller – actual values depend on the ESC, battery and conditions.

Propeller	Voltage (V)	Thr. (%)	Current (A)	Thrust (g)	Power (W)	Efficiency (g/W)	Temp.
HQ 3×4×3	11.1	50	2.6	153	28.9	5.301	59 °C
		100	10.9	415	121.0	3.430	
	14.8	50	4.5	272	66.6	4.084	73 °C
		100	16	654	236.8	2.762	
GF D75	11.1	50	2.7	171	30.0	5.706	58 °C
		100	10.3	430	114.3	3.761	
	14.8	50	3.6	246	53.3	4.617	70 °C
		100	14.4	634	213.1	2.975	
HQ 4×3×3	11.1	50	4.1	278	45.5	6.109	73 °C
		100	15.5	660	172.1	3.836	
	14.8	50	5.8	412	85.8	4.800	84 °C (hot)
		100	22.2	949	328.6	2.888	
GF5125×3	11.1	50	5	352	55.5	6.342	79 °C
		100	19.3	829	214.2	3.870	
	14.8	50	8	560	118.4	4.730	89 °C (hot)
		100	28.6	1098	423.3	2.594	

※ According to the manufacturer's measurements, the motor gets very hot with HQ 4×3×3 and GF5125×3 propellers on 4S. With this combination, monitor the motor temperature and avoid long stretches at full throttle.

3. Installation and wiring

3.1 What else you need

- a frame with motor mounts for 4× M2 on a 12 × 12 mm pattern,
- an electronic speed controller (ESC) for 3S–4S batteries, rated at least for the maximum motor current (29 A),
- propellers with a 5 mm shaft hole, matching the frame size (see chapter 2.5),
- a 3S or 4S Li-Po battery,
- a soldering iron, solder and flux, a screwdriver or hex key matching the supplied screws, a wrench for the propeller nut.

3.2 Mounting the motor to the frame

① Place the motor on the frame arm so that the M2 holes in the base line up with the holes in the arm. Route the leads towards the centre of the frame.

② Choose screws from the supplied set according to the arm thickness. **The screw must not reach 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.

③ Tighten the screws gradually in a cross pattern and with care – the threads in the motor base strip easily if too much force is used. We recommend securing them with a medium-strength threadlocker.

④ After tightening, turn the bell by hand. It must rotate freely, without rubbing and without catching on a screw.

3.3 Connecting to the electronic speed controller (ESC)

The motor has three phase leads. The order in which you solder them to the three ESC pads only determines the direction of rotation; a wrong order will not damage the motor.

- Shorten the leads to the required length so that they are not under tension and do not touch the propeller or sharp edges of the frame.
- Solder quickly with a sufficiently powerful soldering iron. The joint must be shiny and firm; prolonged heating damages the lead insulation.
- After soldering, check that no solder bridge has formed between adjacent pads.

3.4 Checking and changing the direction of rotation

The direction of rotation of each motor must match the layout in the flight controller (FC) configuration. Always carry out the check **without propellers**, for example in the *Motors* tab of Betaflight Configurator.

- In software – in the ESC configuration (e.g. ESC Configurator) or using the reversed motor direction option in the flight controller.

- In hardware – by swapping any two of the three motor leads.

3.5 Mounting the propeller

① Slide the propeller onto the shaft so that its direction of rotation matches that of the motor (leading edge forward in the direction of rotation).

② Secure the propeller with the nut and tighten it firmly with a wrench, but do not overtighten – excessive force may crack the propeller hub or damage the shaft thread.

③ Replace a self-locking nut with a nylon insert after repeated use if it no longer holds firmly.

4. Operation

4.1 First start-up

① Without propellers, connect the battery and spin up each motor one by one at low speed in the flight controller configurator.

② Check the motor order, the direction of rotation and smooth running without unusual noise or vibration.

③ Disconnect the battery and mount the propellers. Fly the first flight with lower throttle and check the motor temperature after landing.

Spin the motors only for checks or in flight; do not run a motor without a propeller at high speed for long periods.

4.2 Operating limits and temperature

- Do not exceed a 4S Li-Po supply. Use a fully charged battery before the flight (Li-Po 4.20 V/cell, i.e. 12.6 V for 3S and 16.8 V for 4S) and end the flight no later than when the voltage drops to 3.5 V/cell (10.5 V for 3S, 14.0 V for 4S).
- The maximum motor current is 29 A and the maximum continuous power 430 W (manufacturer's data for 3S). Choose the propeller and battery combination so that these values are not exceeded continuously.
- After landing and disconnecting the battery, carefully check the motor temperature. If the motor is so hot that you cannot keep your finger on it, choose a smaller or lower-pitch propeller or adjust your flying style.
- Overheating damages the winding insulation and may weaken the magnets; it shows as a loss of power and a higher current draw.

5. Maintenance and troubleshooting

5.1 After every flight

- Disconnect the battery and visually inspect the motors: loose screws, damaged leads, dirt, grass or sand in the bell.
- Remove dirt with a dry brush or compressed air. Do not wash the motor with water or solvents.
- After a crash, turn the bell by hand and check that the shaft is not bent and the bell does not rub against the stator.
- Let a wet motor dry thoroughly before further use.

5.2 Bearings and shaft

The motor uses MR63ZZ bearings (3 × 6 × 2.5 mm). A worn bearing shows as noise, play in the bell or increased vibration. Leave the replacement of bearings and shaft to an experienced modeller or a service centre; improper disassembly may damage the windings and magnets.

5.3 Troubleshooting

Problem	Possible cause and solution
Motor spins in the wrong direction	Change the direction in software in the ESC or FC configuration, or swap two motor leads (chapter 3.4).
Motor only twitches or does not spin up at start	Cold or broken solder joint, solder bridge between pads, damaged lead. Check the soldering. Check that the bell does not rub against a screw or dirt.
Motor rubs or is noisy	Dirt between bell and stator, screw too long, worn bearing or bent shaft. Clean the motor, check the screws, replace the bearing or shaft.
Strong vibration of the drone	Damaged or unbalanced propeller, loose nut or motor screws, bent shaft. Replace the propeller and tighten the joints.
Motor overheats badly after flight	Propeller too large or too high-pitched for the voltage, damaged winding, unsuitable filter settings in the FC. Choose a smaller propeller, check the winding and settings.
Burning smell, visibly dark winding	Overheated or short-circuited winding. 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

6.2 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 (SmooX 1507 Plus 3800KV) is shown on the motor or on its packaging.

6.3 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.

7. Warranty and rights arising from defective performance

7.1 Rights of the buyer under Czech law

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 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.