ROTORAMA

GTS V4 2207 2040Kv

Brushless motor for FPV drones
User manual



Read this manual carefully before mounting and first start-up. Always remove the propellers when working on the drone.

Rotorama, s.r.o. · www.rotorama.com · info@rotorama.cz

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1. Safety instructions

1.1 Before you start

The RCinPower GTS V4 2207 2040Kv motor is a high-performance component for building FPV drones. Read the entire manual before assembly and first start-up and keep it for future reference. The product is not a toy and is not intended for children.

- Mounting and wiring the motor requires experience in building multicopters, soldering and configuring the flight controller (FC) and the electronic speed controller (ESC). If you lack this experience, ask an experienced modeller for help.
- Only use the motor together with a suitable ESC for brushless motors. The motor cannot be connected directly to a battery.
- Never exceed the ratings given in Chapter 2.3 – in particular the battery cell count and the maximum current.

1.2 Rotating parts and propellers

The motor rotor (bell) and the mounted propeller spin at very high speed and can cause serious cuts.

- **Always remove the propellers** when mounting, wiring, configuring on a computer and testing the motors.
- Connect the battery only after checking that nobody is within reach of the propellers, and disconnect it before any work on the drone.
- Do not touch the spinning motor bell and do not try to stop it by hand.
- Do not continue to use a damaged propeller, a bent shaft or a motor with a damaged bell – parts may fly off at high speed.

1.3 Power supply and Li-Po batteries

According to the manufacturer, the motor is designed to be powered from **5S to 6S** Li-Po batteries (via an ESC). When handling batteries, follow their manufacturer's instructions and these values:

State	Li-Po per cell	LiHV per cell	5S Li-Po / LiHV	6S Li-Po / LiHV
Fully charged	4.20 V	4.35 V	21.0 V / 21.75 V	25.2 V / 26.1 V
End the flight	3.5 V	3.5 V	17.5 V	21.0 V
Storage	3.8 V	3.8 V	19.0 V	22.8 V

- Always connect a **fully charged** battery before the flight and land at the latest when the voltage drops to 3.5 V per cell.

- Charge Li-Po batteries only under supervision, on a non-flammable surface and with a suitable charger. Do not use a damaged or swollen battery.

1.4 Heat and magnets

- Under full load the motor gets very hot. Do not touch it after the flight until it has cooled down.
- The motor contains strong permanent magnets. Keep it away from magnetic cards, electronic medical implants and sensitive instruments. Small metal objects (screws, filings) are attracted to the bell – keep the motor in a clean environment.
- Operate the motor in a dry environment. Water, sand and metal debris must not get into the motor.

2. Product description

2.1 Intended use

The RCinPower GTS V4 2207 2040Kv is a brushless motor of size 2207 (stator diameter 22 mm, height 7 mm) designed for racing and freestyle FPV drones with 5-inch propellers and 5S–6S batteries. It features a 7075-T6 aluminium alloy bell, curved N52H magnets and a hollow titanium shaft.



RCinPower GTS V4 2207 2040Kv

2.2 Package contents

- 1× RCinPower GTS V4 2207 2040Kv motor
- 1× screw set

Not included: ESC, propellers, battery, frame or flight controller (FC).



Motor in the original packaging with the screw set

2.3 Technical data

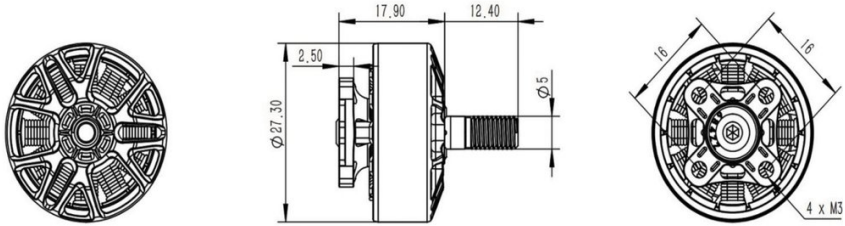
Model	RCinPower GTS V4 2207
Kv	2040 rpm/V
Configuration	12N14P
Stator diameter × height	22 mm × 7 mm
Motor dimensions (diameter × length)	Ø 27.3 × 30.3 mm
Shaft	Ø 4 mm, hollow, titanium
Propeller thread	Ø 5 mm (see drawing in Chapter 2.4)
Mounting	16 × 16 mm, 4× M3
Bearings	684ZZ (4 × 9 × 4 mm)
Magnets	N52H, curved (ARC)
Bell material	7075-T6 aluminium alloy
Winding	single-strand oxygen-free copper wire, 260 °C class
Leads	20 AWG, length 15 cm
Power supply (Li-Po)	5S–6S
Idle current (10 V)	1.1 A
Internal resistance	56 mΩ

Max. current (5S)	54 A
Max. continuous power (5S)	1300 W
Max. efficiency current	7–10 A (efficiency > 86 %)
Weight	29.9 g with leads shortened to 2 cm (manufacturer's data); 32.8 g with leads as supplied (weighed by Rotorama)

Data provided by the manufacturer RCinPower; lead length, shaft material and weight with leads as supplied according to Rotorama.

2.4 Dimensions and mounting

Manufacturer's drawing (dimensions in mm): view of the bell, side view and view of the base with the mounting holes. The M3 threaded holes are arranged in a 16 × 16 mm square.



Manufacturer's dimensional drawing – dimensions in mm

2.5 Manufacturer's performance data

Test bench results according to the manufacturer at 21 V and 24 V. The temperature was measured after 5 s at full throttle. The data are intended to help you choose a propeller; actual values in your drone may differ.

Propeller	Volt. (V)	Thr.	Curr. (A)	Thrust (g)	Power (W)	Efficiency (g/W)	Temp.
GF5136R	21	50 %	9.0	748	189.0	3.958	74 °C
		100 %	44.2	1948	928.2	2.099	
	24	50 %	10.7	898	256.8	3.497	84 °C
		100 %	53.0	2248	1272.0	1.767	
GF51466R	21	50 %	9.1	768	191.1	4.019	75 °C
		100 %	45.2	1978	949.2	2.084	
	24	50 %	10.9	928	261.6	3.547	85 °C
		100 %	53.9	2281	1293.6	1.763	
HQ R36	21	50 %	8.4	724	176.4	4.104	68 °C
		100 %	40.2	1805	844.2	2.138	
	24	50 %	10.5	890	252.0	3.532	77 °C
		100 %	48.4	1994	1161.6	1.717	
HQ R38	21	50 %	8.9	719	186.9	3.847	73 °C
		100 %	41.9	1731	879.9	1.967	
	24	50 %	11.0	875	264.0	3.314	81 °C
		100 %	51.3	2032	1231.2	1.650	
DAL T5148.5	21	50 %	8.0	677	168.0	4.030	70 °C
		100 %	38.7	1754	812.7	2.158	
	24	50 %	9.3	821	223.2	3.678	78 °C
		100 %	48.1	2060	1154.4	1.784	

※ At full throttle the current approaches the maximum value of 54 A. Both the ESC and the battery must be able to deliver this current safely.

3. Mounting and wiring

3.1 What else you need

- a frame for motors with 16 × 16 mm (M3) mounting and 5-inch propellers,
- an ESC for brushless motors rated for the motor current and 6S voltage,
- a flight controller (FC) with multicopter firmware (e.g. Betaflight),
- a 5S or 6S Li-Po battery and tools for soldering and assembly.

3.2 Mounting the motor on the frame

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

② Use the M3 screws from the set. Choose the screw length according to the arm thickness: the screw must engage the thread sufficiently, but its tip **must not touch the stator winding**. A screw that is too long will damage the winding and cause a short circuit.

③ Tighten the screws evenly in a cross pattern with moderate force; we recommend a medium-strength threadlocker.

④ After tightening, turn the bell by hand – it must rotate freely, without rubbing and without touching the screws.

3.3 Connecting to the ESC

① Shorten the motor leads (3 × 20 AWG) to the required length and tin the ends.

② Solder them to the three motor pads on the ESC. The order of the wires only determines the direction of rotation – it can be corrected later.

③ Check the joints for cold solder joints and make sure that adjacent wires do not touch. Route the leads so that they cannot get into the propeller or chafe against the edges of the frame.

3.4 Checking the direction of rotation

Check the direction of rotation **without propellers**, for example in Betaflight Configurator on the *Motors* tab. Make sure that each motor spins in the direction that corresponds to the motor layout selected in the FC settings.

- If a motor spins the wrong way, change the direction in the ESC settings (e.g. in the ESC configuration software) or swap any two of the three motor wires.
- During the test, listen to make sure the motor runs smoothly, without rattling or vibration.

3.5 Mounting the propeller

- Make sure the propeller direction (CW / CCW) matches the motor position and the set direction of rotation. Secure the propeller with the nut and tighten it firmly – a loose propeller can fly off in flight.

4. Operation

4.1 Pre-flight check

- All motor screws are tight, the bell rotates freely and without play.
- The propellers are undamaged, correctly oriented and firmly tightened.
- The motor leads are not damaged or exposed and cannot get into the propeller.
- The connected battery is **fully charged** and within the 5S–6S range.

4.2 Motor temperature and ending the flight

- After the first flights, check the motor temperature. If the motors are too hot after a short flight, check the choice of propeller, the FC and ESC settings and the mechanical condition of the motor.
- End the flight at the latest when the voltage reaches 3.5 V per cell (5S: 17.5 V, 6S: 21.0 V).
- After a crash, Disarm (switch off the motors) immediately and check the motors according to Chapter 5.

5. Maintenance and troubleshooting

5.1 After every flight

- Disconnect the battery and let the motors cool down.
- Remove grass, sand and other debris from the motor. Use compressed air or a soft brush for cleaning.
- Turn the bell by hand and check that it rotates smoothly and that the shaft is not bent.
- Check that the motor screws and propeller nuts are tight.

5.2 Bearings and storage

- A rough, noisy or loose bearing is worn and should be replaced with a bearing of the same type (684ZZ).
- Store the motor in a dry and clean place, out of the reach of children, at room temperature.

5.3 Troubleshooting

Problem	Possible cause and solution
Motor does not spin, only twitches or beeps	Broken or cold solder joint, damaged winding or faulty ESC output. Check the solder joints and the winding.
Motor spins the wrong way	Change the direction in the ESC settings or swap two motor wires (Chapter 3.4).
Motor rubs or is noisy	Debris in the motor, worn bearing or a screw touching the winding. Clean the motor, check the screw length and the bearings.
Strong vibrations	Damaged or unbalanced propeller, bent shaft, loose screws. Replace the propeller, check the shaft and tightness.
Motor is very hot after the flight	Propeller too large, unsuitable FC/ESC settings or a mechanical fault. Check the propeller choice according to Chapter 2.5 and the condition of the motor.

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 identification

- **Type designation:** RCinPower GTS V4 2207 2040Kv. This designation is given in this manual and on the proof of purchase.
- Please address any questions concerning product safety and conformity to the importer at the address given in Chapter 6.1 or by e-mail at info@rotorama.cz.

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

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.