GTS V3 1003 18000Kv

Brushless motor for FPV drones powered by a 1S battery
RCinpower · User manual



The motor is designed for 1S batteries only. Before any work on the drone, disconnect the battery and remove the propellers.

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

Contents

1. Product description

1.1 Intended use

1.2 Specifications and package contents

2. Safety instructions

3. Mounting and connection

3.1 Mounting the motor

3.2 Connecting to the speed controller

3.3 Direction of rotation

3.4 Fitting the propeller

4. Operation

4.1 Power supply

4.2 Propeller selection and performance data

4.3 Checks before the first flight

5. Maintenance and troubleshooting

5.1 Maintenance

5.2 Troubleshooting

6. Information for the EU and Czech Market

6.1 Importer and responsible person in the EU

6.2 Product conformity

6.3 Disposal of electrical equipment

7. Warranty and rights arising from defective performance

7.1 Rights of the buyer under Czech law

1. Product description

1.1 Intended use

RCinpower GTS V3 1003 18000Kv is a brushless motor of size 1003 (stator diameter 10 mm, stator height 3 mm) for small FPV drones such as Tinywhoops and Toothpicks powered by a **1S** battery. The motor has a unibell and a pair of bearings. The base can be mounted in two ways: with three M1.4 screws on a Ø 6.6 mm bolt circle, as is common on smaller Tinywhoops, or with two M2 screws at 9 mm spacing, as used on 2" drones.

The motor is connected via three phase wires terminated with a connector to an electronic speed controller (ESC) – either a separate one or one integrated in the flight controller (FC). The ESC controls the motor speed according to commands from the flight controller. We recommend combining the motor with 1.6" (40 mm) to 2" propellers and a 1S battery. A quadcopter needs four motors; the product is sold as a single piece.



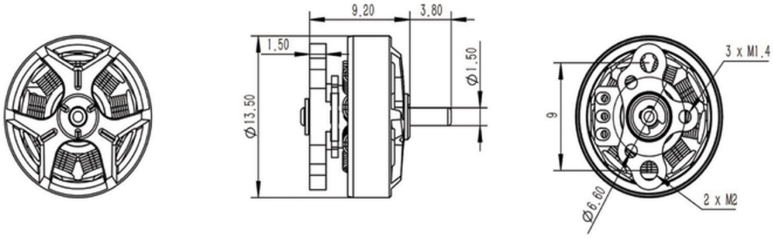
GTS V3 1003 motor with wires terminated with a connector

1.2 Specifications and package contents

Manufacturer	RCinpower (RC-IN-POWER Co., Ltd)
Product designation	GTS V3 1003 18000Kv
Kv	18000
Configuration	9N12P
Stator – diameter / height	10 mm / 3 mm
Shaft diameter	1.5 mm
Motor dimensions	Ø 13.5 × 9.2 mm
Weight	3.45 g (with 5 cm wires)
Cell count (LiPo)	1S
Idle current (at 5 V)	1.3 A

Internal resistance	68 mΩ
Max. continuous power	54 W
Max. current	14.6 A
Peak efficiency range	1–3 A (efficiency > 85 %)
Mounting	3× M1.4 on Ø 6.6 mm or 2× M2 at 9 mm spacing
Recommended propellers	1.6" (40 mm) to 2"

Data according to the manufacturer's datasheet; propeller recommendation by Rotorama.



Dimensional drawing according to the manufacturer's datasheet (dimensions in mm)

▶ Package contents

- 1× GTS V3 1003 18000Kv motor
- 1× screw set

▶ Not included

- propellers, speed controller (ESC) or flight controller (FC), battery, charger and tools

2. Safety instructions

- The motor is designed **exclusively for 1S batteries** (a single LiPo or LiHV cell). A higher voltage overloads the motor and may destroy it.
- Before mounting, wiring or configuring the drone, **disconnect the battery and remove the propellers**. Always test motors without propellers.
- Spinning propellers can cause injury. Keep away from the drone with a connected battery and never hold the drone in your hand when you Arm it (switch the motors on).
- The motor heats up during operation. In the manufacturer's measurements it reached 63–82 °C after 3 s at full throttle, depending on the propeller. Do not touch it after flight until it has cooled down.
- Do not overload the motor with an oversized or heavy propeller. Overloading leads to overheating and damage to the windings.
- The motor contains strong permanent magnets. Protect it from metal filings, small screws and dust, which can get caught inside the bell.
- Do not expose the motor to water or moisture. Dry the motor after landing in wet grass or snow.
- The product contains small parts (screws) that can be swallowed. Keep it out of the reach of children.
- When soldering wires, follow the rules for safe work with a soldering iron and work in a well-ventilated area.

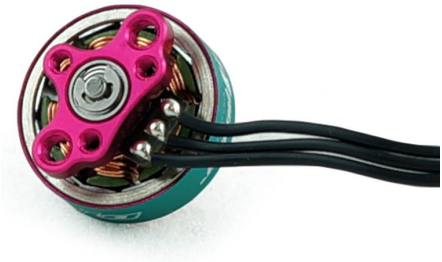
3. Mounting and connection

3.1 Mounting the motor

The motor base allows two mounting methods – choose the one that matches your frame:

① **3× M1.4 on a Ø 6.6 mm bolt circle** – common on smaller Tinywhoops.

② **2× M2 at 9 mm spacing** – common on 2" drone frames.



Underside of the motor – base with mounting holes and wire outlets

- Use the screws from the package. A screw must not be so long that, when tightened, it reaches into the stator winding – a damaged winding causes a short circuit and destroys the motor and the ESC.
- After tightening, turn the bell by hand. It must rotate freely, without rubbing and without unusual noises.
- Tighten the screws gently – the threads in the base and in the frame are small and strip easily.
- Route the wires so that they cannot get into the propeller and are neither taut nor pinched by the frame.

3.2 Connecting to the speed controller

The motor is fitted with a connector for easy connection to the flight controller. Plug the connector into the corresponding motor socket on the flight controller (FC) or ESC. Before connecting, check that the connector matches the socket on your board, and insert it straight, without force.

- If your board has no motor sockets, the connector can be cut off and the wires soldered to the motor solder pads. Solder quickly so that neither the board nor the wire insulation overheats.
- The order of the three phase wires does not affect function; it only determines the direction of rotation (see 3.3).
- Which position (M1–M4) the motor belongs to is determined by the flight controller configuration – follow its manual.

3.3 Direction of rotation

Each motor of a quadcopter must spin in the prescribed direction. Check the direction **without propellers** in the flight controller configurator (e.g. Betaflight, *Motors* tab). If a motor spins the wrong way, change the direction:

- in software, in the ESC configurator (for ESCs with BLHeli_S, Bluejay, AM32 firmware, etc.) – the simplest way for a motor with a connector,
- or by swapping any two of the three phase wires (soldered wires only).

3.4 Fitting the propeller

The motor has a shaft diameter of **1.5 mm**. Use only propellers designed for a 1.5 mm shaft within the recommended range of 1.6" (40 mm) to 2".

- Fit the propeller straight and support the motor from below while doing so, so that the shaft does not bend and the bearings are not damaged.
- Observe the propeller orientation (direction of rotation of each propeller) according to the drone configuration.
- Remove the propeller with a prop removal tool or by pulling it straight off; never lever it off sideways.

4. Operation

4.1 Power supply

The motor is designed for a **1S** battery. Always insert a **fully charged** battery before flight and monitor its voltage during flight.

1S battery state	LiPo	LiHV
Fully charged	4.20 V	4.35 V
End flight	3.5 V	3.5 V
Storage	3.8 V	3.8 V

4.2 Propeller selection and performance data

The manufacturer measured the motor with the propellers listed below at 3.7 V. The table helps you choose a propeller according to the required thrust, current draw and motor temperature. Propeller designations are taken from the manufacturer's datasheet.

Propeller	Volt. (V)	Thr. (%)	Curr. (A)	Thrust (g)	Power (W)	Efficiency (g/W)	Motor temp.*
GF1608R*3	3.7	50	2.5	36	9.3	3.892	63 °C
		100	8.7	87	32.2	2.703	
GF1609R*4	3.7	50	2.3	41	8.5	4.818	67 °C
		100	9.7	94	35.9	2.619	
GF1635R*3	3.7	50	2.3	37	8.5	4.348	63 °C
		100	8.7	87	32.2	2.703	
GF1635R*4	3.7	50	2.6	43	9.6	4.470	67 °C
		100	9.7	95	35.9	2.647	
GF2015R*2	3.7	50	3	50	11.1	4.505	70 °C
		100	10.8	107	40.0	2.678	
GF2023R*3	3.7	50	3.9	53	14.4	3.673	82 °C
		100	14.6	98	54.0	1.814	
GF45mm*2	3.7	50	2.5	40	9.3	4.324	64 °C
		100	8.9	95	32.9	2.885	
GF45mm*3	3.7	50	2.9	47	10.7	4.380	70 °C
		100	10.8	104	40.0	2.603	

** Motor temperature after 3 s at full throttle. The data are indicative – actual values depend on the battery, ESC, propeller and flight conditions.*

4.3 Checks before the first flight

- All motors are firmly screwed on, the wires are secured and do not touch the propellers.
- In the configurator, **without propellers**, check that each motor is in the correct position and spins in the correct direction, smoothly and without unusual noises.
- The propellers are undamaged, correctly oriented and firmly fitted.
- The 1S battery is fully charged.
- After the first short flight, check the motor temperature. If the motors are very hot, use a smaller or lighter propeller and check the flight controller settings.

5. Maintenance and troubleshooting

5.1 Maintenance

- After each flight, remove hair, grass and fibres wound around the shaft and check that the bell rotates freely.
- After a crash, check whether the shaft is bent (the propeller visibly wobbles when spinning) and whether the bell rubs against the stator.
- Carefully remove dirt and metal particles from the motor with a dry brush or by blowing air.
- Regularly check the tightness of the screws and the condition of the wire insulation.
- Store the motor in a dry, dust-free environment.

5.2 Troubleshooting

Problem	Possible cause and solution
Motor does not spin or only twitches	The connector is not fully inserted, a wire is broken or a joint is faulty. Check the wiring and test the motor in the configurator without a propeller.
Motor spins in the wrong direction	Change the direction of rotation in the ESC configurator (Chapter 3.3).
Vibration or noisy running	Damaged propeller, dirt in the motor or a bent shaft. Replace the propeller and clean the motor; a bent shaft requires replacing the motor.
Motor is very hot after flight	Propeller too large or heavy, dirt in the motor or unsuitable flight controller settings. Use a smaller propeller and check the settings.
Bell rubs or does not turn freely	Foreign object in the motor or a mounting screw that is too long. Clean the motor and use the screws from the package.
Drone has weak thrust	Discharged battery or incorrect propeller orientation. Charge the battery and check the propeller orientation.

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 (RCinpower GTS V3 1003 18000Kv) is given in this manual and on the product packaging; the size and Kv value (1003, 18000 KV) are marked on the motor bell. The product has no firmware.

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.