



GTS V2 1202.5 11500KV

RCinpower — brushless motor for small FPV
quadcopters
User manual



Read this entire manual carefully before installation and first use, and keep it for future reference.

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

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1. Safety instructions

1.1 General principles

- The motor is designed to power radio-controlled models, in particular small FPV quadcopters. Do not use it for any other purpose.
- This product is not a toy. It is not intended for children; assembling and operating the model requires basic knowledge of model electronics.
- Never modify or disassemble the motor, and do not use it if it is mechanically damaged (bent shaft, damaged windings, cracked bell, damaged cable insulation).
- Always disconnect the battery first before working on the model.

1.2 Rotating parts and propellers

- The motor reaches very high speeds. The rotating motor bell and the propellers can cause serious injury. During tests with the battery connected, keep hands, face, hair, clothing and loose objects away from the propellers.
- Carry out bench tests of the motor **without propellers**. Fit the propellers only just before flight.
- Do not put fingers or tools into the motor bell and do not stop it by hand.
- The strong magnets in the rotor attract small metal objects (screws, filings). Debris inside the motor can damage the windings and bearings.

1.3 Electrical connection and temperature

- The motor may only be powered via a suitable electronic speed controller (ESC) for three-phase brushless motors. Never connect it directly to a battery.
- Observe the permitted battery cell count: **1-2S LiPo** (see Chapter 2.2). A higher voltage overloads the motor and may destroy it.
- The motor gets very hot under full load. Do not touch it after a flight until it has cooled down.
- Solder the leads with the battery disconnected and always insulate the joints to prevent short circuits.

2. Product description

2.1 What the motor is for

The RCInpower GTS V2 1202.5 11500KV is an outrunner brushless motor designed for small FPV quadcopters — small ducted whoops and lightweight toothpicks. The motor bell is made of 7075 aluminium alloy; the output shaft has a diameter of 1.5 mm.

The motor is designed to be powered by a **1-2S LiPo** battery. Choose a suitable combination of voltage and propeller according to the manufacturer's performance data in Chapter 2.4.



GTS V2 1202.5 series motors on a small FPV quadcopter (illustrative photo by the manufacturer).

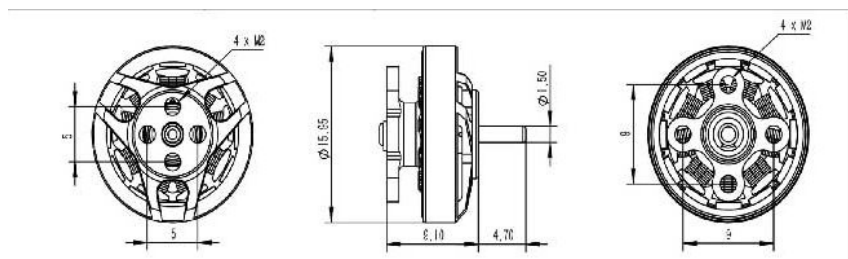
2.2 Technical data

Parameter	Value
Designation	GTS V2 1202.5 11500KV
Manufacturer	RCInpower (RC-IN-POWER Co., Ltd.)
Kv	11500 rpm/V
Configuration	9N12P
Stator diameter	12 mm
Stator height	2.5 mm
Shaft diameter (inner)	2 mm
Output shaft diameter	1.5 mm
Motor dimensions (diameter × length)	Ø 15.95 × 9.1 mm
Weight	3.9 g (with 3 cm cable)
Cell count (LiPo)	1-2S

Parameter	Value
No-load current at 10 V	1.3 A
Internal resistance	135 mΩ
Max. continuous power ※	88 W
Max. current ※	12 A
Peak efficiency current	1-3 A (> 83 %)
Mounting	4× M2, 9 × 9 mm pattern (see Chapter 2.3)
Bell material	7075 aluminium alloy

※ The manufacturer states the max. continuous power and max. current with the note “3S”, but the motor is designed for 1-2S. In the manufacturer's performance data (Chapter 2.4) these values correspond to the measurement at 7.4 V (2S) with the HQ T65R propeller at full throttle. The data in the table are taken from the manufacturer.

2.3 Dimensions



Manufacturer's dimensional drawing (mm). Right: bottom view with 4 M2 mounting threads in a 9 × 9 mm pattern.

2.4 Manufacturer's performance data

The following table contains the manufacturer's measurement results with various propellers. Motor temperature was measured after 3 seconds at full throttle.

Propeller	Volt. (V)	Thr. (%)	Curr. (A)	Thrust (g)	Power (W)	Efficiency (g/W)	Temp.
GF 65R	3.7	50	1.15	44	4.3	10.341	65 °C
		100	4.9	116	18.1	6.398	
	7.4	50	2.4	86	17.8	4.842	75 °C
		100	9.6	223	71.0	3.139	
HQ T65R	3.7	50	1.7	44	6.3	6.995	68 °C
		100	5.9	118	21.8	5.405	
	7.4	50	3.5	89	25.9	3.436	85 °C (hot)
		100	12	227	88.8	2.556	
HQ T3x2R	3.7	50	2.3	61	8.5	7.168	73 °C
		100	8.4	136	31.1	4.376	
GF3108	3.7	50	2.3	59	8.5	6.933	73 °C
		100	8.3	133	30.7	4.331	

✳ According to the manufacturer's measurements, the combination of 2S and the HQ T65R propeller results in a motor temperature of 85 °C after only 3 s at full throttle. Under longer load there is a risk of overheating — see Chapter 4.2.

2.5 Package contents

- 1× RCInpower GTS V2 1202.5 11500KV motor with soldered leads
- 1× set of mounting screws

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

3. Installation and wiring

3.1 What else you need

- a small quadcopter frame with motor mounts for 4 M2 screws in a 9 × 9 mm pattern,
- an ESC or a flight controller with integrated ESC (AIO), rated for the motor current and for 1–2S voltage,
- propellers for a 1.5 mm shaft (the manufacturer tested the propellers listed in Chapter 2.4),

- a 1S or 2S LiPo battery,
- a soldering iron, solder and flux for electronics, and a hex key matching the screws.

3.2 Mounting on the frame

- ① Place the motor at the end of the arm so that the M2 mounting threads on the bottom of the motor line up with the holes in the frame and the leads run along the arm towards the centre of the frame.
- ② Fasten the motor with the four M2 screws from the set. Tighten the screws gradually and gently — the threads in the aluminium base strip easily.
- ③ **Check the screw length.** The screw must not reach into the stator windings. A screw that is too long damages the winding insulation and causes a short circuit that destroys both the motor and the ESC. If a screw goes too deep through the motor base after tightening, use a shorter one.
- ④ After tightening, turn the motor bell by hand. It must rotate freely without rubbing.

3.3 Connecting to the ESC

The motor has three leads (three phases). Solder them to the three solder pads of the corresponding motor output of the ESC. The order of the wires only determines the direction of rotation (Chapter 3.4) and has no other effect on function.

- Shorten the leads to the required length so that they are not under tension and cannot get into the propeller.
- Solder quickly with a sufficiently heated tip; do not overheat the windings or the cable insulation.
- Check that no solder bridge has formed between adjacent pads.
- Secure the leads on the arm (e.g. with heat-shrink tubing or a cable tie) so that they do not move during flight.

3.4 Direction of rotation and first test

- ① Remove the propellers.
- ② Connect the model to a computer and, in the flight controller configurator (e.g. Betaflight, *Motors* tab), spin up each motor individually at low speed.
- ③ Compare the direction of rotation with the frame diagram in the configurator.
- ④ If a motor spins in the wrong direction, change the direction in the ESC settings (e.g. motor direction reversal in the ESC configurator), or swap any two of the three motor leads.
- ⑤ The motor must run smoothly, without stuttering or unusual noise.

3.5 Fitting the propeller

- The motor has a smooth output shaft with a diameter of 1.5 mm. Use propellers with a hole for a 1.5 mm shaft.
- Fit the propeller straight and push it onto the shaft as far as it will go. When fitting, support the motor bell, not the shaft.
- Make sure the propeller is oriented correctly for the direction of rotation of the motor (CW / CCW propellers). After fitting, check that the propeller sits firmly and is not loose on the shaft.

4. Operation

4.1 Power supply and batteries

The motor is designed for **1S and 2S LiPo** batteries (or LiHV). Always insert a **fully charged** battery before flight and observe the following voltage values:

State	LiPo / cell	LiHV / cell	2S LiPo	2S LiHV
Fully charged	4.20 V	4.35 V	8.40 V	8.70 V
End flight	3.5 V	3.5 V	7.0 V	7.0 V
Storage	3.8 V	3.8 V	7.6 V	7.6 V

For a 1S battery the “per cell” values apply. Do not use a battery with more than 2 cells (2S).

4.2 Motor load and temperature

- Choose the combination of voltage and propeller so that the motor current does not exceed the values stated by the manufacturer (Chapters 2.2 and 2.4).
- Larger propellers and higher voltage mean higher current and higher temperature. The manufacturer measured the highest temperature (85 °C after 3 s at full throttle) with the combination of 2S and the HQ T65R propeller.
- After the first flights with a new combination of propeller and battery, check the motor temperature. If the motor is too hot to touch after landing, choose a smaller propeller, a lower voltage, or shorter flights with less throttle.
- Overheating damages the winding insulation and can demagnetise the rotor magnets. Such damage is not a product defect.

5. Maintenance and troubleshooting

5.1 After every flight

- Disconnect the battery and let the motor cool down.
- Check that the motor is firmly screwed on and that the shaft is not bent.
- Remove grass, hair, dust and small metal debris from the motor (e.g. with compressed air). Debris caught between the rotor and the stator can damage the windings.
- Turn the bell by hand: it must rotate freely without rubbing or grinding. Rough running indicates worn or dirty bearings.
- Check the insulation of the leads and the solder joints.

5.2 Storage

Store the motor in a dry place, away from moisture, dust and metal filings. Store the model with the battery disconnected; store the battery at a storage voltage of 3.8 V per cell.

5.3 Troubleshooting

Problem	Possible cause and solution
Motor spins in the wrong direction	Change the direction in the ESC settings or swap two of the three motor leads (Chapter 3.4).
Motor stutters, beeps or does not start	Cold or broken solder joint, solder bridge between pads, broken lead. Check the soldering. Check the ESC protocol settings.
Motor overheats badly after flight	Propeller too large or voltage too high, blocked bell, debris in the motor, damaged bearing. See Chapter 4.2.
Motor rubs or is noisy	Debris between rotor and stator, worn bearing, bent shaft. Clean the motor; replace it if damaged.
Strong vibrations	Damaged or badly fitted propeller, bent shaft, loose motor screws. Replace the propeller and tighten the screws.
Burning smell, smoke	Short circuit in the windings (e.g. a screw that is too long) or overload. 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@rotorاما.cz
Phone	+420 252 252 098
Website	www.rotorاما.com

6.2 Product conformity



- 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@rotorاما.cz.
- **Product identification:** the type designation (GTS V2 1202.5 11500KV) is given on the product packaging and in this manual.

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.