MG996R

Digital servo with metal gears
User manual



Read the entire manual before first use and keep it for future reference.

www.rotorama.com

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1. Product description

1.1 What it is for

MG996R is a powerful digital servo with metal gears. It converts the control signal from a receiver or flight controller (FC) into rotation of the output shaft. A servo arm (horn) is fitted to the shaft and, directly or via a pushrod, operates control surfaces, steering, landing gear, a latch or any other mechanism of the model.

The servo is versatile and suits a wide range of RC models – aircraft, cars, boats and robotics. On drones it is suitable for a **drop mechanism (airdrop)** that releases a suspended payload on command from the radio transmitter.



MG996R servo with cable and connector

1.2 Specifications and package contents

Product designation	MG996R
Type	digital servo
Gears	metal
Dimensions	40 × 19 × 43 mm
Weight	57 g
Supply voltage	4.8–7.2 V
Torque	10 kg·cm (at 5 V)
Speed	≤ 0.2 s / 60° (at 5 V)
Travel	90° (control signal 1000–2000 µs)
Cable length	28 cm
Package contents	1× servo 1× set of servo arms
Not included	receiver, flight controller (FC), power supply (BEC), battery, pushrods and the drop or other mechanism



Servo with set of arms and mounting hardware (illustrative photo)

The product designation **MG996R** is given on the label on the side of the servo.

2. Use

2.1 Safety instructions

- Connect and disconnect the servo only with the **power switched off**.
- Do not exceed the supply voltage range of **4.8–7.2 V**. Never connect the servo directly to a multi-cell LiPo battery – always use a suitable power supply (BEC) with a voltage within the permitted range.
- The servo develops considerable force. Keep your fingers away from the arm and the operated mechanism when switching on and adjusting.
- Do not let the servo push against a mechanical end stop for a long time. A stalled servo draws a high current, heats up and may damage the servo, the gears and the power supply.
- Protect the servo from water, moisture, dust, sand and direct heat.
- Keep small parts (screws, grommets) out of the reach of children.
- Operation of the model in which the servo is used is governed by the regulations of **the country in which you operate the model**.

2.2 Connection

The servo has a three-wire cable terminated with a connector. The wires use standard colour coding:

Wire	Colour	Function
–	brown	ground (GND)
+	red	power 4.8–7.2 V
S	orange	control signal (PWM)

※ Before connecting, check the polarity of the receiver or flight controller output. Reversing + and − may damage the servo.

- **Receiver:** plug the connector into the output of the selected channel so that the orange wire is on the signal pin (S) and the brown wire on ground (−).
- **Flight controller (FC):** connect the signal wire to the output or solder pad intended for a servo and assign the servo function to that output in the firmware (e.g. Betaflight, INAV, ArduPilot).
- **Power:** a powerful servo draws much more current than a receiver when starting and under load. Power it from a supply (BEC) with sufficient current reserve. A voltage drop may cause the receiver or FC to reboot – dangerous on a model in flight.
- The ground (−) of the servo, the power supply and the control electronics must be connected together.

2.3 Control signal and travel

The servo position corresponds to the length of the control pulse: pulses of **1000 µs** and **2000 µs** correspond to the end positions, 1500 µs to the centre position. The total travel is **90°**.

- Set the end points in the transmitter or firmware so that the mechanism does not hit the end stop in the extreme positions.
- Reverse the direction of movement if necessary with the *Reverse* function.
- When switching on for the first time, check the servo movement without the pushrod attached.

2.4 Fitting the arm and mounting the servo

① Switch on the power, set the servo to the centre position (1500 µs) and switch the power off.

② Fit the arm onto the splined output shaft in the required position and secure it with the centre screw.

③ Mount the servo by its mounting lugs with screws. The rubber grommets with brass eyelets dampen vibration – do not overtighten the screws so that the grommets can work.

④ Attach the pushrod to a hole in the arm. A hole closer to the centre gives less travel and more force, a hole further out gives more travel and less force.

⑤ Run through the full range of movement and check that nothing binds and the mechanism does not hit an end stop.

2.5 Drop mechanism (airdrop)

In one end position the servo arm holds a hook or pin with the payload; switching the channel on the transmitter turns the servo to the other position and releases the payload.

- Assign the drop function to a dedicated switch on the transmitter to prevent unintended release.
- Test the mechanism and the drop on the ground before flight.
- The payload weight must not exceed the carrying capacity of the drone or the mechanism.

※ In the open category of operation, Article 4(1)(f) of Regulation (EU) 2019/947 prohibits an unmanned aircraft from dropping any material during flight. Only drop payloads where the regulations of the country of operation allow it, and never where it could endanger people, animals or property.

2.6 Maintenance and troubleshooting

- Regularly check the tightness of the arm and mounting screws and any play in the gears and pushrods.

- Route the cable so that it is not pinched and does not rub against sharp edges.
- Store the servo in a dry place and protect it from impacts.

Problem	Cause and solution
Servo does not move	Check the power supply, connector polarity and channel or output assignment.
Servo jitters or twitches	Unstable power supply, signal interference, binding mechanism or play in the pushrod.
Servo hums and gets warm at rest	It is pushing against an end stop – adjust the end points. A faint sound while holding position is normal for digital servos.
Receiver or FC reboots when the servo moves	The power supply cannot handle the servo's current draw – use a more powerful BEC.

3. Information for the EU and Czech Market

3.1 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

3.2 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 (MG996R) is given on the label on the side of the servo.

3.3 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.

4. 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 3.1.
- 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.