EMAX ES08MD II

Digital micro servo with metal gears
User manual



Read the entire manual before first use. Power the servo only with a voltage of 4.8-6.0 V.

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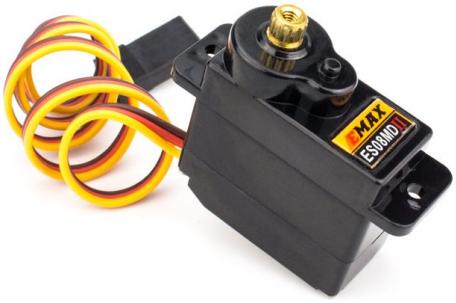
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1. Product description

1.1 Intended use

EMAX ES08MD II is a 13 g digital micro servo with metal gears. It is intended for RC models – typically for operating rudders, flaps and other mechanisms of smaller aircraft – as well as for servo gimbals, robotics and other electronic projects.

The servo receives a control signal from a receiver, a flight controller (FC) or another control circuit and, according to the pulse width, turns its output shaft to the required position, which it then actively holds. The metal gear train withstands impacts better than plastic gears and the digital electronics ensure a fast and precise response.

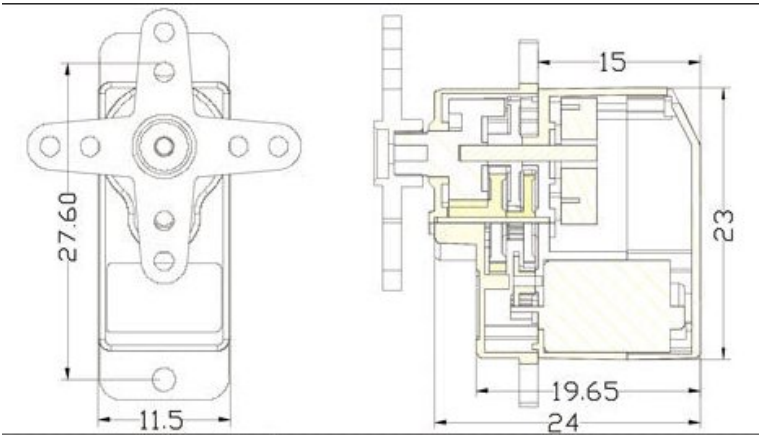


EMAX ES08MD II servo

1.2 Specifications and package contents

Parameter	Value
Product designation	EMAX ES08MD II
Type	digital servo, metal gears
Operating voltage	4.8–6.0 V
Stall torque	1.6 kgf·cm (21.0 oz·in) at 4.8 V 2.0 kgf·cm (28.0 oz·in) at 6.0 V
Operating speed (no load)	0.12 s/60° at 4.8 V 0.10 s/60° at 6.0 V
Direction (STD)	counter-clockwise with pulse width travelling from 1500 to 1900 µs
Dimensions	23 × 11.5 × 24 mm
Weight	13 g
Connector	FUT / JR

Data provided by the manufacturer EMAX.



Manufacturer's dimensional drawing (dimensions in mm)

▶ Package contents

- 1× EMAX ES08MD II servo with lead and connector
- 1× set of servo horns with mounting screws

▶ Not included

- receiver, flight controller (FC) or any other control signal source,
- power supply (BEC, battery),
- pushrods, pushrod connectors and extension leads,
- tools.



Servo and accessories (manufacturer's illustration photo, packaging design may vary)

2. Use

2.1 Safety instructions

- Power the servo **only with a voltage of 4.8–6.0 V**. Do not connect it directly to a multi-cell battery – a higher voltage will permanently damage the servo.
- When power is applied, the servo may suddenly move to the centre or last commanded position. Keep your fingers away from the horn and pushrods while connecting and adjusting.
- Change the wiring only with the power disconnected. Observe the connector polarity.
- Do not force the output shaft by hand and do not leave the servo pushing against a mechanical end stop for a long time – it overheats and the gears and motor wear out.
- Protect the servo from water, moisture, dust and sand. The servo is not waterproof.
- The servo contains small parts. Keep them out of the reach of children and animals.

2.2 Connection

Plug the servo connector into a servo output of the receiver or flight controller (FC). The lead has three wires in the common colour coding:

Wire	Function
brown	power negative (GND, −)
red	power positive (+)
orange	control signal

- Supply power from a BEC (of the electronic speed controller or a separate module) whose output voltage is within the range of 4.8–6.0 V.
- Make sure the BEC can deliver sufficient current for all connected servos at the same time – during fast movements and under load a servo briefly draws considerably more current than at rest.
- If the lead needs to be extended, use a servo extension lead with the same connector and as short as possible.

2.3 Mounting and fitting the horn

① Fix the servo in the model by its mounting lugs using screws of a suitable size. Do not overtighten the screws so that the lugs of the case do not crack.

② Connect the servo, switch on the radio and the receiver and let the servo move to the centre position (1500 µs pulse, 0 % travel in the radio).

③ Choose a suitable horn from the set and fit it onto the splined output shaft so that it is perpendicular to the pushrod in the centre position.

④ Secure the horn with the centre screw.

⑤ Connect the pushrod and move through the full range of travel with the radio. Neither the pushrod nor the horn may hit anything or bind in any position.

2.4 Setup in the radio or flight controller

- The servo centre corresponds to a 1500 µs pulse. Fine-tune the centre in the radio (*Subtrim*) or mechanically by the pushrod length.
- Set the end points (*Endpoints* / *Limits*) so that the servo **does not hit a mechanical end stop** at the extreme positions. A continuous audible buzzing at an end position means that the servo is pushing against a stop – reduce the travel.
- Change the direction of movement with the *Reverse* function in the radio or in the output settings of the flight controller (FC).
- After every change of settings, check the movement of all connected control surfaces.

2.5 Maintenance and troubleshooting

- Regularly check that the horn sits firmly on the shaft, the screws are tight and the gears have no excessive play.
- After a crash or a hard impact, check that the servo moves smoothly through its full range without binding or skipping.
- Store the servo in a dry and clean place.

Problem	Possible cause and solution
Servo does not move	Check the polarity and seating of the connector, the power supply (BEC) and the assignment of the output to the correct channel in the radio or FC.
Servo buzzes or gets hot	The servo is pushing against a stop or is overloaded. Reduce the end points, free a binding pushrod.
Servo jitters or twitches	Check the stability of the power supply and the quality of the connectors, route the lead away from sources of interference and check the play in the pushrods.
Horn slips	Tighten the centre screw; replace the horn if the splines are damaged.
Skipping, grinding	The gears may be damaged. Stop using the servo and contact your retailer.

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 (ES08MD II) is given on the label on the side of the servo and on the packaging.

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.