ES3054HV

EMAX ES3054HV
Digital metal gear servo 6.0–8.4 V



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

Rotorama, s.r.o. · www.rotorama.com

Contents

1. Product description

1.1 What it is for

1.2 Technical data and package contents

2. Safety instructions

3. Use

3.1 Connection

3.2 Power supply

3.3 Control signal and travel

3.4 Installation in the model

4. Maintenance and troubleshooting

4.1 Maintenance and storage

4.2 Troubleshooting

5. Information for the EU and Czech Market

5.1 Importer and responsible person in the EU

5.2 Product conformity

5.3 Disposal of electrical equipment

6. Warranty and rights arising from defective performance

1. Product description

1.1 What it is for

The **EMAX ES3054HV** is a digital servo with metal gears, designed for a higher supply voltage of **6.0–8.4 V** – including direct power from a two-cell 2S LiPo battery. The servo converts the control signal from the receiver or flight controller (FC) into precise rotation of the output shaft, onto which the servo horn is fitted.

It is suitable for larger model aircraft (control surfaces, flaps and landing gear), for FPV camera head trackers and for other modelling applications where a small, light, yet fast and strong servo is needed.



EMAX ES3054HV servo

1.2 Technical data and package contents

Parameter	Value
Product designation	EMAX ES3054HV
Manufacturer code	0102004013
Servo type	digital
Gears	metal
Bearings	2 ball bearings (2BB)
Supply voltage	6.0–8.4 V (2S LiPo)
Torque	3.4 kg·cm (47.2 oz·in) at 6.0 V 4.7 kg·cm (65.3 oz·in) at 8.4 V
Speed	≤ 0.13 s/60° at 6.0 V ≤ 0.09 s/60° at 8.4 V
Travel	90° with a 1000–2000 µs signal 180° with a 500–2500 µs signal
Dimensions	26.7 × 13 × 28.5 mm
Weight	20 g
Connector	JR
Cable length	240 mm

▶ Package contents

- 1× EMAX ES3054HV servo
- 1× set of servo horns (in the manufacturer's photo: cross, star and round horn)
- small mounting hardware (screws and washers) – according to the manufacturer's photo

Not included: receiver, flight controller (FC), battery or power supply (BEC), pushrods, extension cables or radio transmitter.



Servo and accessories in the package (manufacturer's photo)

2. Safety instructions

- Power the servo only within the range of **6.0–8.4 V**. A higher voltage may destroy the servo; at a lower voltage the manufacturer does not specify any parameters and the servo may not work reliably.
- A fully charged 2S LiPo battery has 8.4 V (4.20 V/cell). **Do not connect a LiHV battery (2S = 8.7 V) directly** – it exceeds the permitted voltage.
- Check the orientation of the connector before connecting. Reversed polarity may damage the servo and the receiver.
- When switching on for the first time, keep the model secured and the horn free. After power-up the servo may move abruptly to its initial position.
- Do not leave the servo loaded against a mechanical end stop for a long time – it overheats, draws a high current and damages both the gear train and the electronics.
- Make sure the power source (BEC, battery) can supply enough current for all servos in the model at the same time. A voltage drop can cause a receiver brownout and loss of control of the model.
- Protect the servo from water, moisture, dust and dirt. The manufacturer does not state that the servo is waterproof.
- The servo is not a toy. Keep small parts (screws, horns) out of the reach of children.

3. Use

3.1 Connection

The servo has a three-wire cable terminated with a **JR** connector. Connect it to a receiver channel, to an output of the flight controller (FC) or to a servo tester. The wires on the cable are colour-coded:

Wire	Function
black	negative supply (−, GND)
red	positive supply (+)
white	control signal

The negative wire must be on the side of the connector marked on the receiver as −, GND or B. If in doubt, refer to the receiver manual.

3.2 Power supply

The servo is powered through the connector from the receiver, which must be supplied with a voltage within the servo's range. A BEC set to 6.0–8.4 V or a 2S LiPo battery directly is suitable. Remember that the receiver will also receive 6.0–8.4 V – make sure it can withstand it.

- At 6.0 V the torque is 3.4 kg·cm and the speed is ≤ 0.13 s/60°.
- At 8.4 V the torque is 4.7 kg·cm and the speed is ≤ 0.09 s/60°.

3.3 Control signal and travel

The servo is controlled by a standard pulse signal (PWM). The travel range depends on the pulse width sent by the radio transmitter or the flight controller (FC):

Pulse width	Servo travel
1000–2000 µs	90°
500–2500 µs	180°

- The middle of the range corresponds to the centre (neutral) position of the servo.
- Set the extended range of 500–2500 µs in the radio transmitter (channel limits / range) or in the flight controller (FC).
- Extend the range carefully and check that neither the pushrod nor the horn hits an end stop in the extreme positions.

3.4 Installation in the model

① Fasten the servo in its mount in the model by the mounting lugs using the screws from the package. Do not overtighten the screws.

② Switch on the radio transmitter and then the receiver with the servo. In the transmitter, set the controlled channel to centre (trim and subtrim at zero).

③ Only with the servo in the centre position, fit the horn onto the shaft so that it is as close to perpendicular to the pushrod as possible, and secure it with the screw.

④ Connect the pushrod to the control surface or mechanism. Adjust the mechanical centre with the pushrod length; make fine adjustments with subtrim.

⑤ Move through the full travel range and check that nothing binds and that the servo does not run against an end stop in the extreme positions. If necessary, reduce the travel in the transmitter.

⑥ Route the cable so that it cannot come into contact with the propeller, sharp edges or moving parts, and secure it.

※ A servo that buzzes and gets warm at rest is under load – usually it is running against an end stop or the pushrod is under tension. Adjust the travel or the pushrod.

4. Maintenance and troubleshooting

4.1 Maintenance and storage

- Before every flight, check the mounting of the servo, horn and pushrod and the play in the gear train.
- After a crash, check the servo – move it through the full range and listen for binding or slipping gears.
- Store the servo in a dry, clean place, away from direct sunlight and heat sources.
- Do not disassemble the servo. Tampering with the gear train or electronics may result in the loss of rights arising from defective performance.

4.2 Troubleshooting

Problem	Possible cause and solution
Servo does not respond	Check the connector orientation, the receiver power supply (6.0–8.4 V), receiver binding and channel assignment in the transmitter.
Servo buzzes and gets warm	It is running against an end stop or the pushrod is under tension – adjust the travel or the pushrod length.
Travel is only 90°	The transmitter sends 1000–2000 µs. For 180°, extend the channel range to 500–2500 µs.
Servo jitters / twitches	Insufficient or fluctuating power supply, interference on the signal wire, damaged cable. Check the power source (BEC) and cable routing.
Receiver restarts when servos move	The power source cannot supply enough current – use a more powerful BEC.
Gears slip or bind	Mechanical damage to the gear train (e.g. after an impact). Stop using the servo and contact the retailer.

5. Information for the EU and Czech Market

5.1 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

5.2 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 (ES3054HV) is given on the label on the side of the servo.

5.3 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.

6. 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 5.1.
- 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.