Servo expander

PWM signal range expander for servos
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

A standard RC receiver sends a PWM signal in the range of **1000–2000 µs** to the servos. Many servos, however, can work with a wider signal, so with the standard range you do not use their full possible range of motion.

The servo expander extends the classic 1000–2000 µs signal to a range of **500–2500 µs**. Simply connect it between the RC receiver and the servo – no modification of the receiver, transmitter or servo is needed.



Servo expander

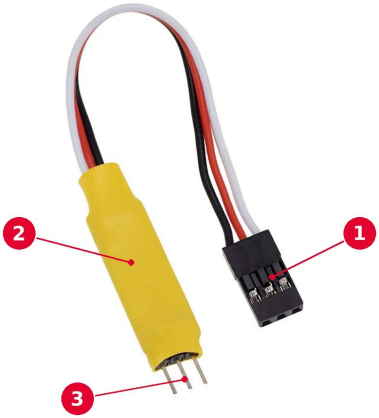
1.2 Specifications and package contents

Input voltage	3.6–16 V
PWM input range	1000–2000 µs
PWM output range	500–2500 µs
PWM frequency	20–500 Hz
Control board size	25 × 9.5 mm
Cable length	8 cm
Weight	2.8 g
Package contents	1× Servo expander
Product designation	Servo expander

Not included in the package: servo, RC receiver, transmitter, power supply and extension cables.

2. Use

2.1 Parts



Parts of the servo expander

① **Cable connector (input)** – plugs onto the channel output of the RC receiver. Wire colours: white – signal, red – plus (+), black – minus (−).

② **Expander body** – control board in a protective heat-shrink sleeve.

③ **Pins on the expander body (output)** – the servo connector plugs onto these.

2.2 Connection

① Switch off the receiver power (disconnect the model's battery).

② Disconnect the servo connector from the receiver.

③ Plug the expander cable connector ① onto the receiver channel output to which the servo was connected. Observe the polarity – black wire (−) on the minus position, white wire (signal) on the signal position of the receiver.

④ Plug the servo connector onto the pins ③ on the expander body. The negative wire of the servo (usually black or brown) must be on the same pin that is connected to the black wire of the expander cable. If you are not sure, check this with a multimeter continuity test.

⑤ Secure the expander (for example with a cable tie or double-sided tape) so that the cables cannot catch on moving parts and are not under tension.

The supply voltage on the receiver servo line must be within 3.6–16 V. Voltage outside this range can damage the expander.

2.3 Setup and first test

The extended 500–2500 µs range only makes sense with a servo that supports it. Check this in your servo manufacturer's specifications. A servo that does not support this range may run into its mechanical stop.

① Before the first test, disconnect the pushrods and control horns (or other mechanism) from the servo so that it can rotate freely.

② Switch on the transmitter first, then the receiver power.

③ Slowly move the corresponding stick or control to both end positions. Watch whether the servo reaches its mechanical stop – this shows as buzzing, jittering or heating of the servo.

④ If the servo runs into the stop, reduce the channel travel in the transmitter (end point setting, e.g. *End points* / *Limits*) until the servo no longer buzzes in the end positions.

⑤ Only then connect the mechanism and check again that the movement does not bind anywhere and the pushrods do not collide.

※ The expander is designed for an input PWM signal with a frequency of 20–500 Hz. Make sure the servo can handle the frequency the receiver outputs on that channel – analog servos in particular usually do not tolerate high frequencies.

2.4 Safety and warnings

- Always connect and disconnect the expander with the power switched off.
- Do not let the servo push against a mechanical stop for a long time – the servo motor overheats and the gearbox and the servo itself can be damaged.
- Always test a change of travel range on the ground, before flying or driving. On an aircraft model, check the direction and size of the deflection of all control surfaces.
- Protect the expander from moisture, dust and mechanical damage, and secure it so that it is not freely exposed to vibration. Do not damage the protective sleeve.
- When operating a model, always follow the regulations of the country in which you operate it – the law of that country is decisive.
- This product is not a toy. Keep it out of the reach of children.

2.5 Troubleshooting

Problem	Possible cause and solution
Servo does not respond	Check the polarity and orientation of both connectors, the receiver power supply and whether the expander is on the correct channel.
Servo buzzes or heats up in an end position	The servo runs into its mechanical stop or does not support the 500–2500 µs range. Reduce the travel in the transmitter (Chapter 2.3).
Servo oscillates or jitters	The receiver PWM frequency is outside the 20–500 Hz range or beyond the servo's capability. Check the receiver output settings.

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 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.