Servo PDB BEC

Servo PDB with BEC voltage regulator
Matek Systems · SVPDB-8S · 2–8S · 5–8.2 V / 4 A



Read this entire manual before wiring. The board has no reverse polarity protection on its input – swapping + and − will destroy it instantly.

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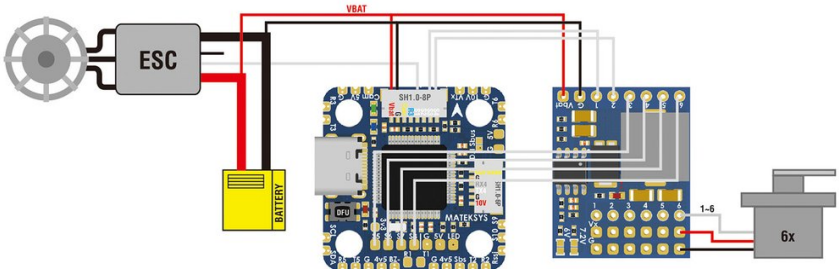
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1. Product description

1.1 What it is for

Matek Servo PDB (part number SVPDB-8S) is a small servo power distribution board with a built-in switching voltage regulator (BEC). It is powered directly from a 2S to 8S flight battery (5.5–36 V) and generates a regulated voltage **Vx** for the servos – 5 V, 6 V, 7.2 V or 8.2 V depending on the setting – with a load capacity of 4 A continuous and 7 A burst.

PWM control signals for up to six servos are also fed into the board. Together with the power supply, the board distributes them to three rows of 2.54 mm pitch pins that accept standard servo connectors. It is suitable for flight controllers (FC) from FPV quadcopters that have neither their own BEC nor servo pins, and for large model airplanes, where the board can be placed close to the servos to shorten the power wires and reduce the voltage drop on them.



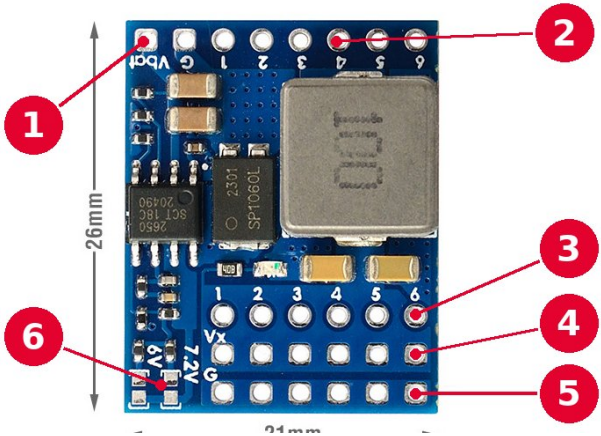
Typical wiring: battery, ESC, flight controller (FC), Servo PDB and up to 6 servos (image source: Matek Systems)

1.2 Specifications and package contents

Product designation	Matek Servo PDB, type **SVPDB-8S**
Manufacturer	Matek Systems (www.mateksys.com)
Input voltage	5.5–36 V (2S–8S battery)
Output voltage Vx	5 V / 6 V / 7.2 V / 8.2 V, selected with jumpers; 5 V from the factory
Output current	4 A continuous, 7 A burst (sum of all servos)
Maximum duty cycle	100 % – if the input voltage is lower than the set value, the output voltage equals the input voltage
Protection	output withstands a short circuit for 3 seconds; input has **no reverse polarity protection**
Number of channels	6 (signal, Vx, G)
Pin pitch	2.54 mm

Dimensions / weight	26 × 21 × 5 mm / 4 g
Package contents	1× SVPDB-8S board, 1× 2.54 mm pin header (Dupont)
Not included	servos, flight controller (FC), battery, power and signal wires, connectors, heat-shrink tubing

1.3 Pinout



Bottom side of the board with pinout (image source: Matek Systems)

① **Vbat and G** – power input from the flight battery (Vbat = +, G = −). The pads are at the far left of the top row.

② **1–6 (top row)** – PWM control signal inputs; connect them to the servo outputs of the flight controller.

③ **1–6 (signal row)** – servo signal pins; signal from the top input with the same number.

④ **Vx** – servo power pins (+) with the set output voltage.

⑤ **G** – servo ground pins (−).

⑥ **6V and 7.2V jumpers** – solder pads for selecting the output voltage, see chapter 2.2.

The top side of the board is printed with *VBAT IN 5.5-36V* and *Vx OUT 5V Default* as a reminder of the input range and the default output voltage.

2. Use

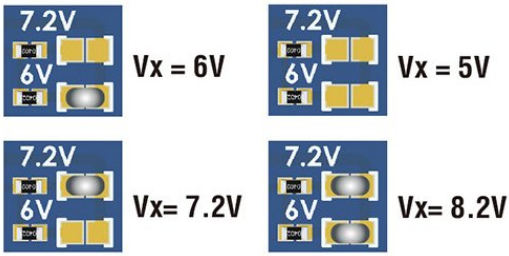
2.1 Safety instructions

- The board has **no reverse polarity protection**. Before connecting the battery for the first time, double-check that + is on the **Vbat** pad and − on the **G** pad.
- Do not exceed the input voltage of 36 V. Before connecting the servos, set an output voltage the servos can withstand – see the servo documentation. Servos designed only for low voltage may be destroyed at 7.2 V or 8.2 V.
- The sum of the currents of all servos must not exceed 4 A continuously. Strong servos draw much more under load or when stalled than at rest.
- The output withstands a short circuit only briefly (3 seconds). Remove a short circuit immediately by disconnecting the battery.
- Carry out all soldering and wiring changes only with the battery disconnected.
- Insulate the board from conductive parts of the model (carbon frame, metal parts, screws), e.g. with heat-shrink tubing. An uninsulated board may short-circuit.
- Protect the board from moisture, water and conductive dust. The regulator heats up under load – do not cover it or stick it to heat-sensitive materials.
- This product is not a toy. Keep it out of the reach of children; small parts may be swallowed.

2.2 Setting the output voltage

The output voltage Vx is selected with two pairs of solder pads marked **6V** and **7.2V** on the bottom side of the board (position ⑥ in chapter 1.3). Bridge a pad with a drop of solder; open it by removing the solder with a desoldering wick or pump. Both jumpers are open from the factory and the output is 5 V.

6V jumper	7.2V jumper	Output Vx
open	open	**5 V** (factory)
bridged	open	**6 V**
open	bridged	**7.2 V**
bridged	bridged	**8.2 V**



Jumper settings – a filled pad means bridged (image source: Matek Systems)

※ If the battery voltage is lower than the set value (e.g. a discharged 2S battery with the 8.2 V setting), the output voltage equals the input voltage and the servos receive less than the set value.

2.3 Soldering wires and pin headers

- Break the pin header from the package to the required lengths and solder it into the servo rows (signal, Vx, G). Fit pins only for the channels you will use, or for all six.
- Solder the power wires from the battery to the **Vbat** (+) and **G** (−) pads. Use wires rated for the current drawn.
- Solder the signal wires from the flight controller to the top inputs **1–6**, or fit pins there and use cables with connectors.
- After soldering, check that no solder bridges have formed between adjacent pads and remove flux residues.
- Insulate the finished board with heat-shrink tubing (leave the connector pins free).

2.4 Wiring with the flight controller (FC)

① Power the board: connect Vbat and G to the battery voltage (in parallel with the supply for the FC and ESC, as shown in the picture in chapter 1.1).

② Ground: G of the board must be connected to the ground of the flight controller – without a common ground the servos cannot read the signal correctly. When wired as in the picture, the ground is common via the negative battery terminal.

③ Signals: connect the servo outputs of the flight controller to inputs 1–6 in the top row.

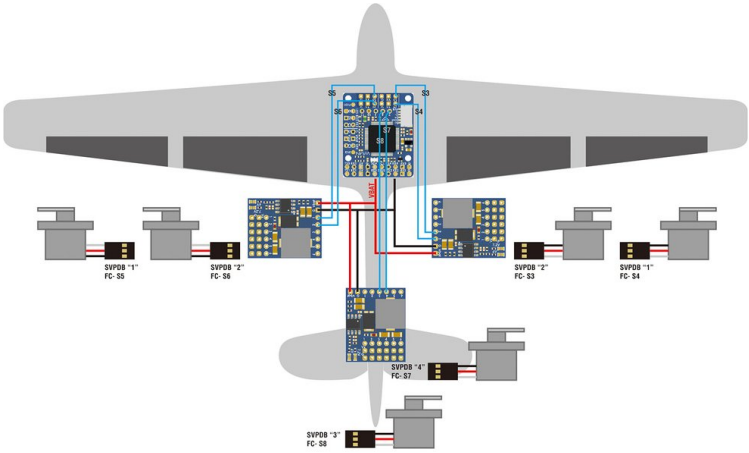
④ Servos: plug the servo connectors into the corresponding positions 1–6 so that the signal wire (usually white, yellow or orange) is in the signal row, the red wire in the **Vx** row and the black or brown wire in the **G** row.

⑤ Do not connect any other voltage source (another BEC, power from an ESC) to the Vx output – outputs of power sources must not be connected in parallel.

Configure the servo outputs and their functions (ailerons, elevator, rudder, flaps…) in the configuration software of the flight controller firmware according to its manual.

2.5 Example installation in an airplane

On a larger model, several Servo PDB boards can be used, each placed close to a group of servos – for example one in each wing and one at the tail surfaces. All of them are powered from the battery (VBAT) and the control signals come from the flight controller. In the picture: the board in the left wing powers the servos on FC outputs S5 and S6, the board in the right wing S3 and S4, and the board at the tail S7 and S8.



Example placement of three Servo PDB boards in an airplane (image source: Matek Systems)

2.6 Check before first use

① Check the power polarity and the output voltage jumpers.

② Connect the battery **without servos** and measure the voltage between the Vx and G rows with a multimeter. It must match the setting according to the table in chapter 2.2.

③ Disconnect the battery, connect the servos and check their movement and direction in the configuration software of the flight controller.

④ Make sure the servos do not bind at their end positions at full deflection – a stalled servo puts unnecessary load on the BEC.

3. Troubleshooting and maintenance

3.1 Troubleshooting

Problem	Possible cause and solution
Servos do not respond at all and do not hold position	The board is not powered – check the connection and polarity of Vbat/G, the solder joints and the battery. Make sure the servo connectors are plugged in the right way round (Vx and G).
Servos hold position but do not respond to control	Missing control signal or common ground – check the wires from the FC to inputs 1–6, the G connection to the FC and the output settings in the flight controller firmware.
Servos jitter or reset under load	The servo current exceeds the BEC load capacity or the battery voltage drops. Reduce the number of servos per board, use thicker power wires or an additional board.
Output voltage is lower than set	The battery voltage is lower than the set value (see chapter 2.2), or a jumper is poorly soldered. Measure the input voltage and check the jumpers.
A servo overheats or has failed	The set voltage is higher than the servo can withstand. Disconnect the battery and set a lower voltage.
The board does not work at all after connection	Possible reverse polarity or overvoltage on the input – the board has no reverse polarity protection and may have been destroyed. Such damage is not a product defect.

3.2 Maintenance and storage

- After flying, especially after a hard landing, check the solder joints, the board insulation and the seating of the servo connectors.
- Remove dirt with a dry brush. Do not wash the board with water.
- Store in a dry place, out of direct sunlight and without a battery connected.

4. Information for the EU and Czech Market

4.1 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

4.2 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.

5. 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 4.1.
- 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.