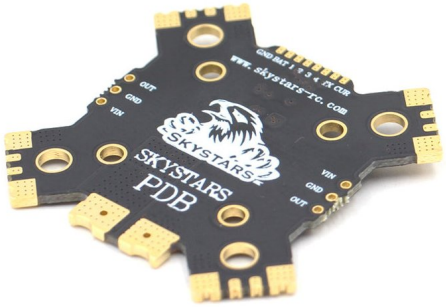
Skystars PDB

Power distribution board with current sensor
User manual



Read this manual carefully before installation and keep it for future reference.

Rotorama, s.r.o. · www.rotorama.com

Contents

1. Product description

1.1 Purpose

1.2 Parts overview

1.3 Specifications and package contents

2. Safety instructions

3. Installation and wiring

3.1 Before you start

3.2 Mounting in the frame

3.3 XT60 power lead and capacitor

3.4 Connecting the ESCs

3.5 Connecting to the flight controller

3.6 VIN / GND / OUT pads for a BEC module

4. Betaflight and INAV setup

4.1 Current sensor

4.2 Voltage measurement

4.3 ESC telemetry

4.4 First power-up and check

5. Troubleshooting

6. Information for the EU and Czech Market

6.1 Importer and responsible person in the EU

6.2 Disposal of electrical equipment

7. Warranty and rights arising from defective performance

1. Product description

1.1 Purpose

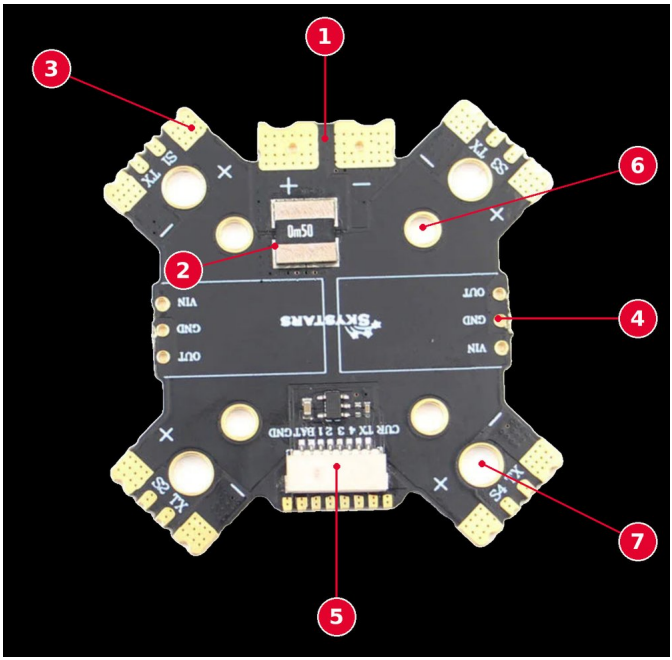
Skystars PDB (power distribution board) is a power distribution board for multirotors with **four separate electronic speed controllers (ESC)**. It distributes the voltage from the flight battery to the solder pads in the corners of the board, to which the individual ESCs are connected. The board is suitable for X and H frames and has mounting holes for both 30.5 × 30.5 mm and 20 × 20 mm patterns.

The board has a **current sensor**. The ESC signals (S1–S4), ESC telemetry, battery voltage, current sensor signal and ground are routed to a single 8-pin **JST-SH** connector, so the flight controller (FC) is connected with one cable without soldering. The board **has no voltage regulator (BEC) of its own** – it only has two groups of pads for connecting a separate BEC module, which is not included.



Skystars PDB with the included accessories

1.2 Parts overview



Top side of the board

① **+** and **−** pads for the battery power lead (XT60) and the capacitor.

② Current sensor shunt.

③ ESC pads in each corner of the board: power **+** and **−**, signal **S1**–**S4** and telemetry **TX**.

④ **VIN** / **GND** / **OUT** pads for a separate BEC module (two groups on the board).

⑤ 8-pin JST-SH connector for the flight controller (FC).

⑥ Mounting hole for the 20 × 20 mm pattern (Φ 3 mm).

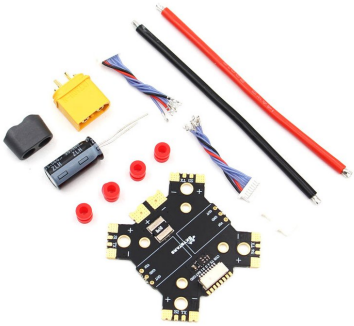
⑦ Mounting hole for the 30.5 × 30.5 mm pattern (Φ 4 mm).

1.3 Specifications and package contents

Parameter	Value
Product designation	Skystars PDB
Input voltage	6–33.6 V (2–8S LiPo)
ESC pad current	4× 25 A continuous, 120 A burst
Current sensor	yes, scale 290 (Betaflight / INAV)
Mounting holes	30.5 × 30.5 mm (Φ 4 mm), 20 × 20 mm (Φ 3 mm)
FC connector	JST-SH 1.0 mm, 8 pins
Printed circuit board	4 layers, 3 oz copper
Dimensions	48 × 48 mm
Weight	8.9 g

Package contents

- 1× Skystars PDB power distribution board
- 1× Rubycon 35 V 560 µF capacitor
- 2× JST-SH 1.0 mm 8-pin cable, 4 cm
- 2× JST-SH 1.0 mm 8-pin connector
- 1× XT60 connector with lead
- 4× silicone grommet (M4 to M3 reduction)



Package contents

※ ESCs, flight controller (FC), BEC module, screws and battery are not included.

2. Safety instructions

- The power distribution board carries the full current from the flight battery. A short circuit between the **+** and **−** pads can cause fire, destroy the battery and cause burns.
- Solder only with the **battery disconnected**. After wiring, check all joints and use a multimeter to verify that there is no short circuit between the positive and negative rails.
- Do not exceed the input voltage of 33.6 V (8S LiPo) or a current of 25 A continuous per ESC.
- Connect the capacitor with the correct polarity. An electrolytic capacitor connected in reverse can overheat and burst.
- When connecting the battery for the first time, use a **short-circuit protector** (smoke stopper) and **remove the propellers**.
- Charge and store LiPo batteries according to their manufacturer's instructions. A fully charged cell has 4.20 V, end the flight at 3.5 V per cell at the latest, and store at 3.8 V per cell.
- Protect the board from moisture, dust and metal objects that could bridge the pads.
- This product is not a toy. Keep it out of the reach of children.

3. Installation and wiring

3.1 Before you start

In addition to the package contents you will need:

- four separate ESCs rated for the voltage of your battery,
- a flight controller (FC) that can be powered directly from battery voltage, **or** a separate BEC module,
- M3 screws and standoffs suitable for your frame,
- a soldering iron, flux-core solder, a multimeter and a short-circuit protector (smoke stopper).

※ The BAT pin of the JST-SH connector carries the full battery voltage. Before connecting, check in the flight controller manual that its input can handle the voltage of your battery.

3.2 Mounting in the frame

- Depending on the frame, choose the **30.5 × 30.5 mm** pattern (Φ 4 mm holes) or the **20 × 20 mm** pattern (Φ 3 mm holes).
- Insert the included silicone grommets into the 30.5 × 30.5 mm holes – they reduce the hole from M4 to M3 and dampen vibrations.
- Orient the board so that the ESC pads point towards the frame arms and the JST-SH connector is on the same side as the flight controller connector.
- Metal screws and standoffs must not touch the solder pads.

3.3 XT60 power lead and capacitor

① Solder the red wire of the XT60 lead to the **+** pad and the black wire to the **−** pad (see ① in Chapter 1.2).

② Solder the Rubycon 35 V 560 µF capacitor to the same pads. The longer lead (without the stripe) goes to **+**, the lead next to the stripe with the minus sign goes to **−**.

③ Shorten the capacitor leads and insulate them with heat-shrink tubing. Secure the capacitor so that it cannot rub against the frame or the propellers in flight.

④ Use a multimeter to check that there is no short circuit between the contacts of the XT60 connector.

3.4 Connecting the ESCs

Each corner of the board has a set of pads for one ESC:

Pad	Function
+	ESC power (battery voltage)
–	ESC power ground
S1–S4	signal of ESC 1–4 (from the flight controller)
TX	ESC telemetry (routed to the TX pin of the JST-SH connector)

- Route the ESC power wires along the shortest path and solder them to the **+** and **–** pads with the correct polarity.
- Solder the ESC signal wire to the **S** pad in that corner. The signal number corresponds to the motor order expected by the flight controller firmware – check the order as described in Chapter 4.4.
- If the ESC has a telemetry output, solder it to the **TX** pad.

3.5 Connecting to the flight controller

The JST-SH connector ⑤ has 8 pins. Their designations are printed on the board next to the connector:

Pin	Function
GND	ground
BAT	battery voltage (FC power and voltage measurement)
1, 2, 3, 4	ESC signals S1–S4
TX	ESC telemetry
CUR	current sensor signal

※ The pin order on the flight controller side differs between manufacturers. Before connecting, compare the pin designations on the PDB and on the FC. If they do not match, rearrange the wires in the cable connector or solder the cable to the spare JST-SH connector from the package. An incorrectly connected BAT pin can destroy the flight controller.

3.6 VIN / GND / OUT pads for a BEC module

The board has no voltage regulator of its own. Pads ④ are used to connect a separate BEC module (not included): **VIN** is the regulator input (battery voltage), **GND** is ground and **OUT** is the regulator output.

Choose the BEC module according to the battery voltage and the voltage and current required by the powered device (e.g. the flight controller or the video transmitter (VTX)). Check the module wiring in its documentation.

4. Betaflight and INAV setup

4.1 Current sensor

In the **Betaflight** configurator, open the *Power & Battery* tab, select *Onboard ADC* as the *Current Meter Source* and enter **290** in the *Scale* field. The corresponding CLI command is *set ibata_scale = 290*.

In the **INAV** configurator, enable the ADC current sensor and set the scale to **290** (CLI: *set current_meter_scale = 290*).

Save the changes. Compare the measured consumption with the capacity reported by your charger after the flight and fine-tune the scale if necessary.

4.2 Voltage measurement

The battery voltage reaches the flight controller via the BAT pin. Select *Onboard ADC* as the *Voltage Meter Source*. Compare the displayed voltage with a multimeter and adjust the voltage scale according to the flight controller manual.

4.3 ESC telemetry

The TX pin of the JST-SH connector carries the ESC telemetry. On the flight controller, connect it to the RX input of a free serial port (UART) and enable the *ESC Sensor* function (ESC telemetry) for this port in the *Ports* tab. If the flight controller has no free UART on its connector, do not connect the telemetry.

4.4 First power-up and check

① **Remove the propellers.** Connect the battery via a short-circuit protector.

② Check in the configurator that the battery voltage is displayed.

③ In the *Motors* tab, spin up the motors one by one and check that the motor order and direction of rotation match the diagram in the configurator.

④ With the motors under load, check that the current draw is displayed.

⑤ After disconnecting the battery, check that no joint or the capacitor is getting warm.

5. Troubleshooting

Problem	Possible cause and solution
Flight controller does not power up	Wrong pin order in the JST-SH cable – compare the designations on the PDB and FC. The flight controller does not support battery voltage input – use a BEC module.
A motor does not spin or the wrong motor spins	The signal wire is on a different S pad or does not match the order of pins 1–4 in the connector. Correct the wiring or remap the motors in the flight controller.
Current is not displayed or makes no sense	*Onboard ADC* source or scale 290 is not set. The CUR pin is not connected to the current input on the FC.
Voltage is not displayed	The BAT pin is not connected to the voltage input on the FC, or no voltage meter source is selected.
ESC telemetry does not work	The TX pin is not connected to the RX of a free UART, the port does not have *ESC Sensor* enabled, or the ESC does not support telemetry.
Joints or the capacitor get warm	Cold joint, wire too thin or overload. Disconnect the battery immediately and resolder the joints.

Maintenance

- After a crash, check the solder joints, the capacitor and the JST-SH cable.
- Clean the board with a dry brush. Remove flux residue with isopropyl alcohol.

6. Information for the EU and Czech Market

6.1 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

6.2 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.

7. Warranty and rights arising from defective performance

7.1 Rights of the buyer under Czech law

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 6.1.
- 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.