Skystars AM60 II AM32

4-in-1 speed controller (ESC) 60 A, 3–6S, AM32 firmware
User manual



Read the entire manual, especially the safety instructions in Chapter 2, before installation and before connecting a battery for the first time.

www.rotorama.com

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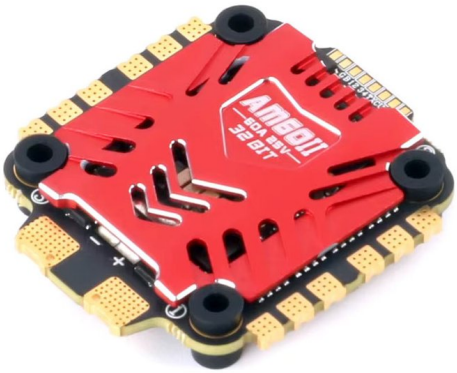
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1. Product description

1.1 Intended use

Skystars AM60 II AM32 is a 4-in-1 electronic speed controller (ESC) – a single board that independently drives the four brushless motors of a quadcopter. It changes the speed of each motor according to commands from the flight controller (FC). It is intended for 5–7" FPV drones powered by a 3S to 6S LiPo battery.

The ESC is fitted with an aluminium heatsink that dissipates heat and also protects the components. It runs the 32-bit **AM32** firmware (AlkaMotors), which is configured through the flight controller using the AM32 configurator. The ESC mounts on the standard 30.5 × 30.5 mm hole pattern, usually underneath the flight controller in a so-called stack.



Skystars AM60 II AM32 with aluminium heatsink

1.2 Specifications and package contents

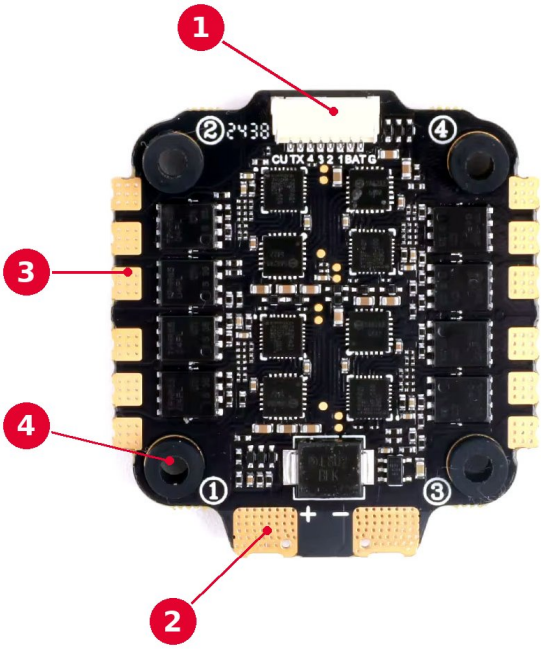
Product designation	Skystars AM60 II AM32 (heatsink print: AM60II 60A 25V 32 BIT)
Type	4-in-1 speed controller (ESC) for 4 brushless motors
Input voltage	3–6S LiPo
Continuous current	60 A
Firmware	AM32
Mounting holes	30.5 × 30.5 mm, M3
Heatsink	aluminium
FC connector	pins marked on the board: CU, TX, 4, 3, 2, 1, BAT, G

▶ **Package contents**

- 1× Skystars AM60 II AM32 ESC
- 2× set of silicone damping grommets (soft mount)
- 1× XT60 connector with cable
- 1× capacitor

Not included: flight controller (FC), motors, propellers, battery or charger.

1.3 Parts overview



Bottom view (side without heatsink)

1 – connector for the flight controller (FC); pins CU, TX, 4, 3, 2, 1, BAT, G

2 – power solder pads **+** and **−** (battery lead, XT60 connector and capacitor)

3 – motor solder pads; each motor has three pads

4 – mounting hole with silicone damping grommet (four in total)

The circled numbers ① to ④ printed directly on the board indicate which motor the nearest group of solder pads belongs to.

2. Safety instructions

- The ESC should only be installed by a person who can solder electronics and is familiar with FPV drone wiring. Incorrect wiring can permanently damage the ESC, the flight controller and the battery.
- **Disconnect the battery before any work on the drone.** Always solder with the power disconnected.
- **Remove the propellers whenever you test the motors on the bench.** Motors may spin up unexpectedly – due to incorrect settings, a firmware update or after connecting the battery.
- Observe the **power polarity**. Reverse battery polarity will destroy the ESC; such damage is not a product defect.
- Do not exceed the permitted supply of 3–6S LiPo. A battery with a higher cell count will permanently damage the ESC.
- Always solder the capacitor supplied in the package (Chapter 3.4). Without it, voltage spikes may damage the ESC.
- The ESC and heatsink get hot during operation. Do not touch them after a flight until they have cooled down. Ensure airflow around the heatsink.
- Solder pads and components must not touch a carbon frame or metal screws – carbon is conductive and there is a risk of short circuit.
- Protect the ESC from moisture, water, dust and metal filings. Do not power a wet ESC.
- Charge LiPo batteries only under supervision, on a non-flammable surface and with a suitable charger. Do not use a damaged or swollen battery.
- This product is not a toy. Keep it out of the reach of children.

3. Installation and wiring

3.1 What else you need

- a frame with a 30.5 × 30.5 mm mounting hole pattern for M3 screws,
- a flight controller (FC) running Betaflight with outputs for four motors,
- four brushless motors suitable for the chosen 3–6S battery,
- a connecting cable between the ESC and the flight controller matching the pinout of both boards,
- a soldering iron powerful enough for heavy power leads, solder and flux,
- a computer with Betaflight Configurator and a web browser.

3.2 Mechanical mounting

① Insert the silicone damping grommets from the package into the mounting holes of the ESC.

② Place the ESC on the M3 screws in the frame so that the **+** and **−** power pads face the rear of the frame, where the battery lead will exit.

③ Mount the flight controller above the ESC. The arrow on the flight controller must point forward; the orientation of the ESC is then handled by motor assignment in Betaflight.

④ Tighten the nuts only lightly – the silicone grommets must not be fully compressed, otherwise they lose their damping effect.

⑤ Check that no solder pad or component touches the frame or the screws.

3.3 Connecting the motors

Each motor has three solder pads next to the motor number ① to ④ on the board. Solder the three motor wires to these pads in any order – the order only determines the direction of rotation, which can be changed later in software (Chapters 4.2 and 4.3).

- Shorten the motor wires to the required length so that they are neither taut nor hanging loose into the propellers.
- The joint must be shiny and the solder must flow around both the wire and the pad. A cold joint may come apart in flight.
- After soldering, check that no solder bridge has formed between adjacent pads.

3.4 Power supply and capacitor

① Solder the cable with the XT60 connector to the power pads: red wire to the **+** pad, black wire to the **−** pad.

② Solder the capacitor from the package to the same pads. Observe its polarity – the lead next to the stripe with the minus sign goes to the **−** pad.

③ Keep the capacitor leads as short as possible and secure the capacitor (e.g. with a cable tie) so that it does not vibrate in flight or touch the propellers.

④ Before connecting a battery for the first time, use a multimeter to check that there is no short circuit between **+** and **−**.

※ A capacitor connected with reversed polarity may fail violently when the battery is connected. Check the polarity twice.

3.5 Connecting to the flight controller (FC)

The ESC is connected to the flight controller with a cable via the connector on the board. The connector pins are marked on the board as follows:

Pin	Function
CU	current sensor output (measurement of current draw)
TX	ESC telemetry
4, 3, 2, 1	control signals for motors 4, 3, 2 and 1
BAT	battery voltage for voltage measurement in the flight controller
G	ground (GND)

※ The pin order on flight controller connectors differs between manufacturers. Before connecting, compare the pinout of both connectors with the flight controller documentation. A swapped BAT wire can destroy the flight controller.

4. Setup and first power-up

4.1 Checks before connecting a battery for the first time

- The propellers are removed.
- The polarity of the power supply and the capacitor is correct and there is no short circuit between **+** and **−**.
- The connecting cable to the flight controller matches the pinout of both connectors.
- For the first power-up, we recommend a *smoke stopper* or a current-limited bench power supply.
- After connecting the battery, the motors play the ESC start-up tone sequence. If anything heats up or smokes, disconnect the battery immediately.

4.2 Betaflight setup

① Connect the flight controller to the computer and launch Betaflight Configurator.

② On the *Motors* tab (or *Configuration*), select **DShot** as the motor protocol, at a speed supported by your flight controller.

③ Connect the battery (without propellers!) and spin up the individual motors one by one on the *Motors* tab. Verify that the correct motor according to the frame diagram spins, and in the correct direction.

④ If the motor order does not match, reassign the motors with the *Motor Reordering* function. Correct a wrong direction of rotation with the *Motor Direction* function or in the AM32 configurator (Chapter 4.3).

⑤ On the *Power & Battery* tab, check the voltage and current readings. Verify the current sensor scale by comparing the capacity used in flight with the capacity recharged, and adjust it if needed.

4.3 AM32 firmware configuration

ESC parameters (motor direction, protections, start-up tones, etc.) and firmware updates are handled in the AM32 configurator, connected through the flight controller (*passthrough*).

① Remove the propellers and connect the battery; the ESC must be powered.

② Connect the flight controller to the computer with a USB cable. Disconnect in Betaflight Configurator (*Disconnect*) so that the port is free.

③ Open the AM32 web configurator am32.ca (a browser with Web Serial support, e.g. Chrome or Edge), connect to the flight controller and read the ESC settings.

④ Save the changes and test the motors without propellers before the next flight.

※ Update only with firmware intended exactly for this ESC. Wrong firmware may damage it permanently; this is not a product defect.

5. Maintenance and troubleshooting

5.1 Maintenance

- After every flight, and especially after a crash, check the solder joints, motor wires, capacitor and ESC mounting.
- Remove dust, grass and dirt from the heatsink and the area around the board. Do not use water or solvents.
- After flying in damp conditions, let the drone dry thoroughly before connecting the battery again.
- Replace the silicone damping grommets as soon as they are cracked or have lost their elasticity.

5.2 Troubleshooting

Problem	Possible cause and solution
No start-up tone sequence after connecting the battery	Check the power joints and the XT60 connector. Check the battery voltage.
One motor does not spin	Check the soldering of the three motor wires and the signal wire of that motor in the connecting cable. Check the selected DShot protocol.
Motor spins in the wrong direction	Change the direction of rotation in the AM32 configurator or with the *Motor Direction* function in Betaflight.
A different motor spins than the one selected	Reassign the motors with the *Motor Reordering* function in Betaflight.
Motor stutters, whines or stops	Check the motor joints and the motor windings. Make sure the motor and propeller are not damaged.
Flight controller does not show current or voltage	Check the CU and BAT wires in the connecting cable and the settings on the *Power & Battery* tab.
ESC gets excessively hot	Check the airflow, damaged motors and bearings, and whether the propellers suit the motors and battery used.

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

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.