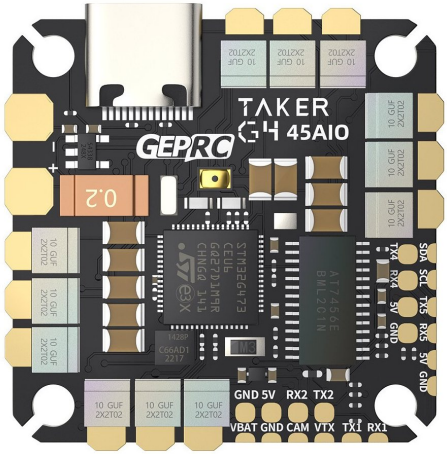
TAKER G4 45A AIO

GEPRC · flight controller (FC) and 4× ESC 45 A
User manual



Read this entire manual carefully before installation and before connecting a battery for the first time. Always remove the propellers when configuring and testing the motors.

Rotorama, s.r.o. · www.rotorama.com

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1. Safety instructions

1.1 Before you start

The TAKER G4 45A AIO is an electronic component intended to be built into an FPV drone. Installation requires soldering, basic knowledge of electronics and working with the Betaflight configuration software. Read the entire manual before installation. If you are unsure about any step, ask an experienced modeller for help.

- This product is not a toy. It is not intended for children; keep small parts (soft mounts, connectors) out of their reach.
- Never connect the board to a battery until you have checked all connections and ruled out a short circuit.
- Modifications to the board, incorrect wiring or a power supply outside the permitted range are not product defects.

1.2 Soldering and electrical safety

- Solder in a well-ventilated area, on a non-flammable surface and with a suitable tool. Do not overheat the pads — they may lift off the board.
- After soldering, check that no solder bridge has formed between adjacent pads and that no solder balls remain on the board.
- Observe the power polarity. Reversing + and − will immediately and permanently damage the board.
- When connecting a battery for the first time, we recommend using a protective current limiter (a so-called smoke stopper).

1.3 Li-Po batteries

- The board is designed for **2S to 6S** Li-Po batteries. Do not use a battery with a higher cell count.
- Charge batteries only with a charger designed for Li-Po, under supervision and on a non-flammable surface.
- Do not use a damaged, swollen or punctured battery; dispose of it safely.
- Always disconnect the battery after a flight. For storage, keep the voltage at 3.8 V per cell.

1.4 Rotating propellers

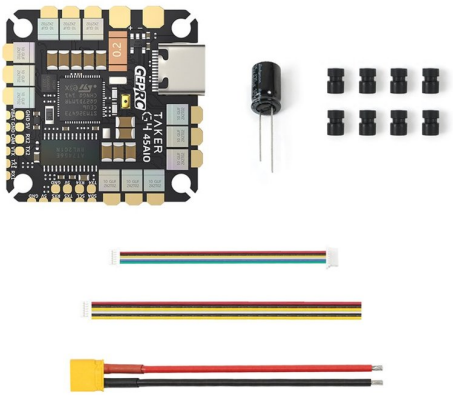
Always remove the propellers when connecting to a computer, configuring and testing the motors. A motor may start spinning unexpectedly — for example after a settings change or during a test on the Motors tab.

2. Product description

2.1 What the board is for

The GEPRC TAKER G4 45A AIO (All-in-One) combines a flight controller (FC) and four electronic speed controllers (ESC) on a single board. The flight controller is based on the STM32G473 processor with an operating frequency of 170 MHz and the ICM42688-P gyroscope; it includes the AT7456E OSD chip, current measurement, a 5 V / 3 A regulator and a USB-C connector. The ESCs are 8-bit with a continuous current rating of 45 A. The board is mounted in a frame with a 25.5 × 25.5 mm hole pattern.

2.2 Package contents

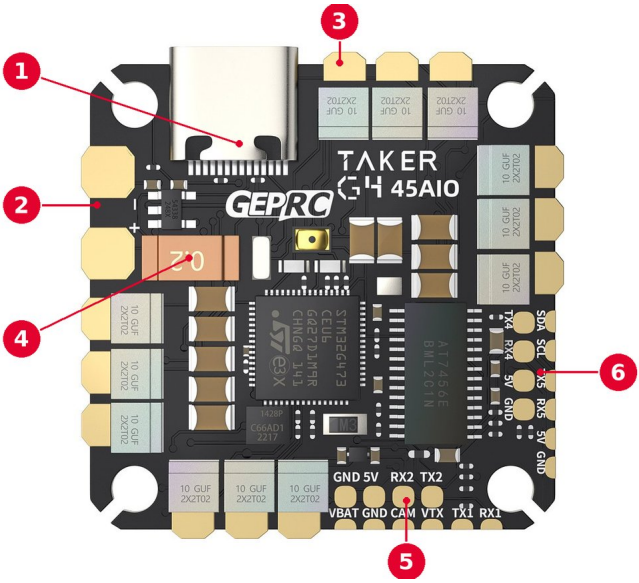


Package contents

- 1× TAKER G4 45A AIO board
- 1× electrolytic capacitor
- 8× soft mount grommet for mounting the board
- 2× connection cable with connector (cable set)
- 1× power lead with battery connector

The package does **not** include motors, a receiver, a video transmitter, a camera, a battery, screws or a USB-C cable.

2.3 Board overview



Top side of the board

① USB-C connector for connecting to a computer

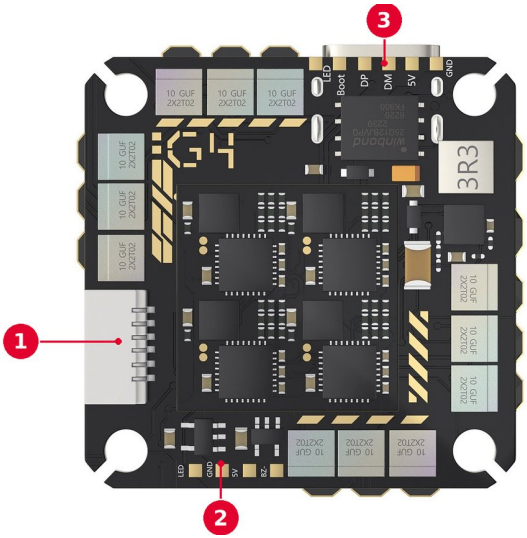
② Main power pads for the battery (− top, + bottom, according to the board marking)

③ Motor pads (three pads along each of the four board edges)

④ Current-sense shunt (resistor marked 0.2)

⑤ Pads VBAT, GND, CAM, VTX, TX1, RX1 and GND, 5V, RX2, TX2

⑥ Pads SDA, SCL, TX5, RX5, 5V, GND and TX4, RX4, 5V, GND



Bottom side of the board

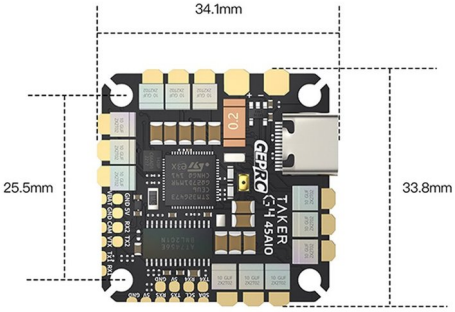
① Six-pin connector for the DJI digital video system

② Pads LED, GND, 5V, BZ− (LED strip and buzzer)

③ Pads LED, Boot, DP, DM, 5V, GND next to the USB connector

2.4 Technical data

Parameter	Value
Model	TAKER G4 45A 8Bit AIO
Processor (MCU)	STM32G473CEU6, 170 MHz
Gyroscope (IMU)	ICM42688-P
FC firmware	Betaflight, target **TAKERG4AIO**
OSD	Betaflight OSD, AT7456E chip
UART	R1 T1 / R2 T2 / R4 T4 / R5 T5
Buzzer / LED	connection pads
USB	USB-C
BEC output	5 V / 3 A
ESC	4× 8-bit ESC
Continuous current	45 A
Burst current	50 A (5″)
Input voltage	2–6S Li-Po
ESC protocols	DShot600, Oneshot, Multishot
Current meter	yes
Board dimensions	33.8 × 34.1 mm
Mounting pattern	25.5 × 25.5 mm
Weight	9 g



Board dimensions (mm)

3. Legal conditions of operation

3.1 The law of the country where you fly applies

Regulations (EU) 2019/947 and 2019/945 apply in all member states of the European Union, but the national implementing rules differ from country to country — registration portals, minimum pilot age, geographical zones, mandatory insurance, permitted frequency bands and maximum transmit power. The information in this chapter describes the situation in the Czech Republic. If you operate a drone in another country, you must follow the regulations of the state in which you fly.

3.2 A drone built with this board

- A drone that you build from individual parts is operated as a **privately built unmanned aircraft system** without a class identification label. In the open category it may fly in subcategory **A1** if its take-off mass is below 250 g, otherwise in subcategory **A3** (among other things at least 150 m from residential, commercial, industrial and recreational areas). Subcategory A2 is not available.
- If the drone has a camera, its operator must be **registered** (in the Czech Republic with the Civil Aviation Authority) regardless of the drone's mass. Display the registration number on the drone.
- The flight height is limited to 120 m. Flying with FPV goggles is only possible with an observer who keeps the drone in direct visual line of sight.
- We recommend liability insurance even where it is not mandatory.

3.3 Radio equipment connected to the board

The board itself does not transmit any radio signal. The receiver, video transmitter and other radio equipment you connect to it must meet the conditions of the general authorisations of the Czech Telecommunication Office (ČTÚ). The user is responsible for the transmit power setting.

Band	Max. power	ČTÚ authorisation
2400–2483.5 MHz	25 mW e.i.r.p.	VO-R/10, Art. 3 (j)
5725–5875 MHz	25 mW e.i.r.p.	VO-R/10, Art. 3 (k)

※ Outside the Czech Republic, the frequencies and limits of the respective country apply.

4. Installation and wiring

4.1 Mounting in the frame

- Place the board in the frame on the 25.5 × 25.5 mm mounting holes. Insert the supplied soft mounts into the holes; they dampen vibrations transmitted to the gyroscope.
- Do not overtighten the screws — the soft mounts must remain flexible.
- Make sure the board does not touch the carbon frame anywhere. Carbon is electrically conductive and contact can cause a short circuit.
- Note the orientation of the board relative to the direction of flight; you will check it in Betaflight in step 5.3.

4.2 Power and capacitor

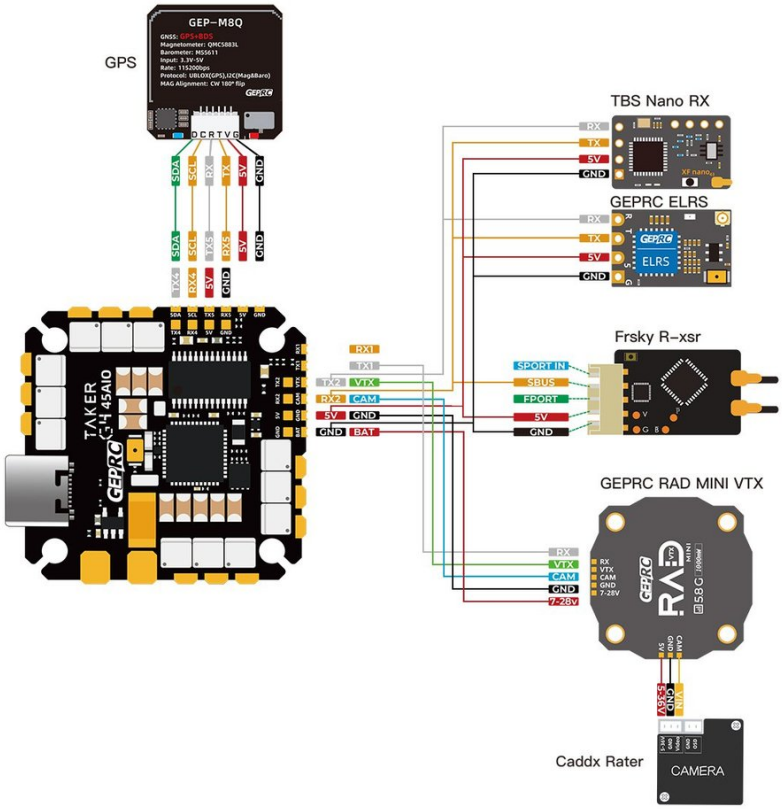
- Solder the power lead to the main power pads ② (top side of the board). Observe the polarity according to the + and − marking on the board.
- Solder the supplied electrolytic capacitor as close as possible to the power pads, with the correct polarity (the negative lead is marked with a stripe on the housing). The capacitor suppresses voltage spikes generated by the ESCs.
- Shorten and insulate the capacitor leads; secure the capacitor so that it cannot get into the propellers.

4.3 Motors

Solder the three wires of each motor to the group of three pads ③ at the corresponding corner of the board. The order of the wires within a group does not affect the motor's function, only its direction of rotation — this can be reversed later in software (chapter 5.5). Cut the wires to the required length and make sure they do not touch the propellers or sharp edges of the frame.

4.4 Peripheral wiring diagram

The following manufacturer's diagram shows examples of connecting receivers, a GPS module, an analogue video transmitter and a camera to the pads on the top side of the board.



Peripheral wiring on the top side of the board (manufacturer's diagram)

4.5 Receiver

- Connect a serial receiver (ExpressLRS, Crossfire, etc.) to a free UART (a pair of RX/TX pads with the same number): **receiver TX to board RX** and **receiver RX to board TX**, power to the 5V and GND pads.
- Connect the SBUS output of an SBUS receiver to the RX pad of the selected UART. Examples of wiring the TBS Nano RX, GEPRC ELRS and FrSky R-XSR receivers are shown in the manufacturer's diagram in chapter 4.4.
- Note the number of the UART used — you will set it in Betaflight in step 5.4.

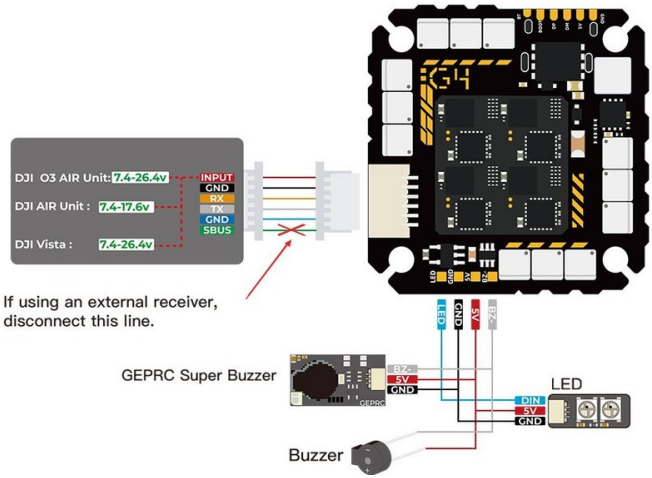
4.6 Analogue video transmitter and camera

- Connect the video input of the video transmitter (VTX) to the **VTX** pad and the camera signal to the **CAM** pad. The camera image passes through the board's OSD chip.
- The **VBAT** pad provides the battery voltage. Use it only for a video transmitter whose input voltage range matches the battery used.
- Connect the control wire of the video transmitter (SmartAudio / Tramp, usually marked RX on the VTX) to the TX pad of a free UART.

4.7 GPS module

Connect the GPS module according to the diagram to UART5 (TX5, RX5) — module TX to RX5 and module RX to TX5 — and power to 5V and GND. Connect the module's compass to the **SDA** and **SCL** pads (I2C bus).

4.8 DJI digital system



DJI connector, buzzer and LED on the bottom side of the board (manufacturer's diagram)

- DJI units are connected with a cable to the six-pin connector ① on the bottom side of the board. The connector carries the INPUT (battery power), GND, RX, TX, GND and SBUS wires.
- Supply ranges stated by the board manufacturer in the diagram: **DJI O3 Air Unit 7.4–26.4 V**, **DJI Air Unit 7.4–17.6 V**, **DJI Vista 7.4–26.4 V**. The voltage of a fully charged battery (4.20 V per cell) must not exceed the upper limit of the unit — for example, a 4S Li-Po has 16.8 V when charged, a 6S Li-Po 25.2 V.
- If you use a separate receiver, **disconnect the SBUS wire** in the DJI cable (according to the manufacturer's diagram).

4.9 Buzzer and LED

- Connect the buzzer to the **BZ−** and **5V** pads on the bottom side of the board ②; for a buzzer with its own battery (e.g. GEPRC Super Buzzer) also connect GND.
- Connect an addressable LED strip with its DIN input to the **LED** pad and power to 5V and GND.
- The total current drawn by all devices powered from the 5V pads must not exceed 3 A (BEC output).

5. Configuration in Betaflight

5.1 Connecting to a computer

The flight controller is configured with the **Betaflight Configurator** software (betaflight.com). Connect the board to the computer with a USB-C data cable. A battery is not required for the USB connection; however, the ESCs and the video transmitter are not powered without a battery.

Remove the propellers before connecting to a computer or a battery.

5.2 Firmware

- The board uses Betaflight firmware with the target **TAKERG4AIO**. When updating on the *Firmware Flasher* tab, always select exactly this target.
- Before updating, save a backup of your settings (the *diff all* command on the *CLI* tab).
- The **Boot** pad on the bottom side of the board (③) is used to force the DFU bootloader mode. If the board is not recognised after a failed update, contact your retailer.

5.3 Board orientation and calibration

- On the *Setup* tab, tilt the drone and check that the 3D model moves the same way. If not, adjust the orientation on the *Configuration* tab (*Board and Sensor Alignment*).
- Place the drone on a level surface and run *Calibrate Accelerometer*.

5.4 Ports and receiver

- On the *Ports* tab, enable *Serial Rx* for the UART to which the receiver is connected. For GPS, DJI OSD (MSP DisplayPort) and VTX control, set the appropriate functions on their UARTs.
- On the *Receiver* tab, select the receiver protocol (CRSF for ExpressLRS and Crossfire, SBUS, etc.) and check that the stick movements correspond to the channels.
- Bind the receiver to the radio transmitter according to the receiver's manual.

5.5 Motors and ESCs

- On the *Motors* tab, set the ESC protocol (DShot600 according to the manufacturer's data) and check the motor order against the diagram in the software.
- **Without propellers**, briefly spin each motor with the slider and check the direction of rotation. Correct a reversed direction in the software (*Motor direction* or the ESC configurator) or by swapping two motor wires.

- ESC settings (direction, timing) are made through the flight controller (passthrough) using a configurator compatible with the ESC firmware.

5.6 Voltage and current

On the *Power & Battery* tab, check that the displayed voltage matches the battery voltage measured with a voltmeter. Verify the current measurement by comparing the consumed capacity (mAh) with the capacity put back by the charger and adjust the current scale if necessary. Set a low-voltage warning — end the flight at 3.5 V per cell.

5.7 Arm, Disarm and failsafe

- On the *Modes* tab, assign the **Arm** (motors on) and Disarm (motors off) function to a switch on the radio transmitter. Do not use the throttle stick for arming.
- On the *Failsafe* tab, set the behaviour on signal loss (recommended: *Drop* — motors off). Test the function without propellers by switching off the radio transmitter.
- To find a lost drone, assign the *Beeper* function to a switch.

6. First power-up and flight

6.1 Check before connecting a battery for the first time

- Visually inspect all solder joints and the polarity of the power lead and the capacitor.
- Use a multimeter to measure the resistance between + and − on the battery connector. Zero or very low resistance indicates a short circuit — do not connect the battery.
- Use a current limiter (smoke stopper) for the first connection. The propellers must be removed.

6.2 Pre-flight check

- Insert a **fully charged** battery: 4.20 V per cell (2S 8.4 V · 3S 12.6 V · 4S 16.8 V · 5S 21.0 V · 6S 25.2 V).
- Check the mounting of the board, battery, propellers and antennas.
- Verify the direction of rotation and orientation of the propellers, the Arm switch and the failsafe function.
- Check that the video image and OSD show the battery voltage.

6.3 Battery voltage

State (Li-Po)	2S	3S	4S	5S	6S
Fully charged (4.20 V/cell)	8.4 V	12.6 V	16.8 V	21.0 V	25.2 V
End flight (3.5 V/cell)	7.0 V	10.5 V	14.0 V	17.5 V	21.0 V
Storage (3.8 V/cell)	7.6 V	11.4 V	15.2 V	19.0 V	22.8 V

※ Under load the voltage drops temporarily. The decisive value is the voltage that settles after reducing the throttle.

7. Maintenance and troubleshooting

7.1 After every flight

- Disconnect the battery and let the board and motors cool down.
- Check the solder joints, cables and capacitor, especially after a crash.
- Protect the board from moisture, dust and dirt. Do not connect a wet board to a battery until it has dried completely.
- Store an unconnected board in a dry place and in an antistatic bag.

7.2 Troubleshooting

Problem	Possible cause and solution
Computer does not recognise the board	Charge-only USB-C cable — use a data cable. Missing driver — use the driver installation tool in Betaflight. Corrupted firmware — see chapter 5.2.
Motors do not respond	No battery connected. Wrong ESC protocol set on the *Motors* tab. Cold solder joint on the motor pads.
Drone will not arm	The *Setup* tab shows the reason (*Arming disable flags*) — e.g. the drone is not level, the throttle is not at minimum, there is no receiver signal or Betaflight Configurator is connected.
Drone flips over on take-off	Wrong motor order or direction, propellers mounted the wrong way round or incorrect board orientation (chapter 5.3).
No video or OSD	Check the CAM and VTX wiring and the power supply of the camera and video transmitter. For the DJI system, set MSP DisplayPort on the correct UART.
Incorrect voltage or current reading	Adjust the scale on the *Power & Battery* tab (chapter 5.6).

8. Information for the EU and Czech Market

8.1 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

8.2 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 (TAKER G4 45A AIO) is printed directly on the circuit board (“TAKER G4 45AIO”) and on the product packaging.

8.3 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.

9. Warranty and rights arising from defective performance

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 8.1.
- 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.