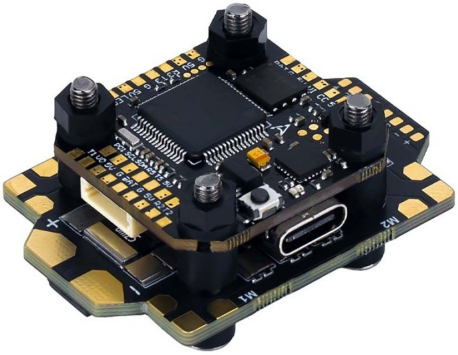
Argus Mini F7 Pro + 55A

Axisflying – 20×20 mm stack: F7 flight controller + 55A AM32 4in1 ESC

User Manual



Read the entire manual, especially the safety instructions, before assembly and first power-up. Always remove the propellers when working on the drone.

www.rotorama.com

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1. Safety instructions

1.1 Before you start

The Axisflying Argus Mini F7 Pro + 55A stack is a set of electronic components for building an FPV drone. Installation requires soldering, basic electronics knowledge and familiarity with Betaflight. Read this entire manual before installation and keep it for future reference.

- This product is not a toy. It is not intended for children or for persons without experience with RC electronics.
- Before soldering, always **verify the label of every pad** against the figures in chapter 4. Incorrect wiring can destroy the flight controller (FC), the ESC (electronic speed controller) and connected peripherals; such damage is not covered by rights for defective performance.
- Keep the **propellers removed** whenever you work on the drone (soldering, configuration, motor tests).
- Connect the battery only after checking the wiring, and always disconnect it when working on the drone.

1.2 Electrical safety and soldering

- The ESC power lead is connected directly to the battery. A short circuit on the power pads or wires causes a very high current, sparking and burns, and can set the battery on fire.
- Solder in a well-ventilated area, on a non-flammable surface, with a sufficiently powerful soldering iron. Make clean joints without solder bridges between adjacent pads.
- Solder the 470 µF / 35 V capacitor from the package to the ESC power pads with the **correct polarity** (longer lead and side without the stripe = +). A capacitor installed with reversed polarity can explode.
- After soldering, use a multimeter to check for a short between power + and −. We recommend making the first battery connection through a fuse or current limiter (smoke stopper).
- The voltage on the BAT pads equals the battery voltage (4–6S). Connect only devices rated for this voltage to the BAT pads.

1.3 Li-Po and LiHV batteries

- Use only **4S to 6S** Li-Po or LiHV batteries.
- Charge batteries under supervision, on a non-flammable surface, using a charger designed for the cell type. Do not use a damaged, swollen or punctured battery.
- Install a **fully charged** battery before flight. End the flight at **3.5 V/cell** at the latest. For storage, leave the battery charged to **3.8 V/cell**.

Battery	Fully charged Li-Po	Fully charged LiHV	End flight	Storage
per cell	4.20 V	4.35 V	3.5 V	3.8 V
4S	16.8 V	17.4 V	14.0 V	15.2 V
5S	21.0 V	21.75 V	17.5 V	19.0 V
6S	25.2 V	26.1 V	21.0 V	22.8 V

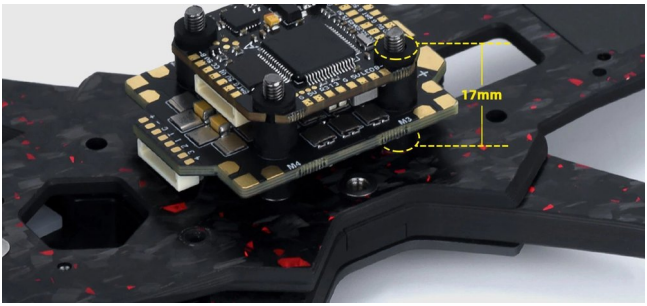
1.4 Spinning propellers and drone operation

- Motors can start unexpectedly – after connecting the battery, due to a configuration error or during a test in the *Motors* tab. Never work with propellers installed on a workbench or near people.
- Operate the finished drone only in accordance with unmanned aircraft regulations, see chapter 6.4.
- After a crash, disconnect the battery and inspect the stack, cables and solder joints before the next flight.

2. Product description

2.1 Intended use

The Argus Mini F7 Pro + 55A is a stack with 20×20 mm mounting hole spacing for 4–6S FPV drones, typically 5" racing and freestyle quads. It consists of the **Argus Mini F7** flight controller (FC) with an STM32F722 processor and the **Argus Mini 55A** four-in-one ESC (4in1 ESC) running AM32 firmware. The two boards are connected with the included cable.



Argus Mini stack installed in a frame (manufacturer's illustrative photo, frame not included)

2.2 Package contents

#	Item	Qty
1	Argus Mini F7 flight controller (FC)	1×
2	Argus Mini 55A 4in1 ESC	1×
3	Short connecting cable	1×
4	Long connecting cable	1×
5	Capacitor 470 µF / 35 V	1×
6	Cable for digital video transmitter (HD VTX)	1×
7	M2 rubber dampers (soft mounts)	8×
8	M3 rubber dampers (soft mounts)	8×
9	M2×25 screws	4×
10	M3×25 screws	4×
11	M2 lock nuts	4×
12	M3 lock nuts	4×
13	Power cable with XT60 connector	1×

※ **Not included:** motors, frame, receiver, camera, video transmitter, GPS, buzzer, LEDs, battery and USB cable.

2.3 Specifications – Argus Mini F7 flight controller

Firmware / target	Betaflight, target **AXISFLYINGF7PRO** (listed by the manufacturer as “AXIS FLYING F7 PRO”)
Processor (MCU)	STM32F722RET6
Gyroscope	MPU6000 or ICM-42688-P (depending on production batch)
Input voltage	4–6S Li-Po (14.8–26.1 V)
BEC	5 V, max. 3 A
OSD	yes (AT7456E chip)
Serial ports	UART1–UART5
Barometer	yes
Blackbox memory	16 MB
USB connector	USB-C, BOOT button
Dimensions	28.5 × 27 × 6.2 mm
Mounting holes	20 × 20 mm, M2 / M3
Weight	5 g

2.4 Specifications – Argus Mini 55A ESC

Firmware / target	AM32, target **AT_F4_04_F421**
Processor (MCU)	AT32F421G8U7
Continuous current	55 A
Peak current	65 A
Input voltage	Li-Po, 4–6S when used in the stack (see note)
BEC	none
Telemetry	yes
PWM frequency	24–96 kHz
Current sensor	yes, scale 200
Dimensions	44.3 × 31.3 mm
Mounting holes	20 × 20 mm, Ø 4 mm hole
Weight	11 g

※ The manufacturer rates the ESC alone for 2–6S, but the flight controller requires 4–6S. Therefore, power the stack as a whole only with a **4S to 6S** battery.

2.5 Stack as a whole

Stack weight	21.6 g
Stack height	17 mm
Supported digital systems	DJI O3 Air Unit, Walksnail Avatar HD, DJI Vista / Link (per manufacturer)
Supported receivers	CRSF (TBS, ExpressLRS), SBUS

3. Installation

3.1 What else you need

- a frame with 20 × 20 mm mounting holes (M2 or M3), four brushless motors suitable for 4–6S, and propellers,
- a receiver (CRSF or SBUS) and radio transmitter, a camera and video transmitter (analog or digital),
- a soldering iron, flux-core solder, a multimeter, hex keys,
- a computer with **Betaflight Configurator** and a USB-C data cable,
- a 4S–6S Li-Po or LiHV battery with an XT60 connector and a suitable charger.

3.2 Mounting the stack in the frame

① Choose the M2 or M3 set according to the screw size of your frame – screws, rubber dampers and nuts from the package.

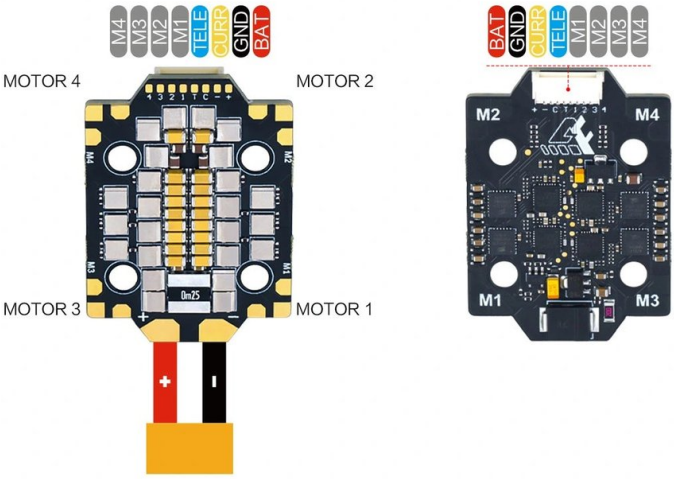
② Insert the M2×25 or M3×25 screws through the frame from below. Fit rubber dampers onto the screws, place the ESC (orient it to suit the frame so that the XT60 cable points toward the battery position), add more rubber dampers and place the flight controller on top.

③ The boards must rest only on the rubber dampers and must not touch the frame or each other anywhere.

④ Secure the stack with the lock nuts. Tighten the nuts only lightly – overtightening compresses the rubber dampers and reduces gyro vibration damping.

The boards and components must not come into contact with the carbon frame – carbon fiber is electrically conductive.

3.3 Motors, power and capacitor



Argus Mini 55A ESC – left: top side with motor and power pads; right: bottom side with FC connector

① Trim the motor wires to the required length and solder them to pads **M1–M4** as shown (the order of a motor's three wires only determines its direction of rotation, which can be changed later in software).

② Solder the XT60 power cable to the large **+** and **−** pads.

③ Solder the 470 µF / 35 V capacitor to the same pads with the correct polarity. The capacitor suppresses voltage spikes and protects the electronics – do not omit it.

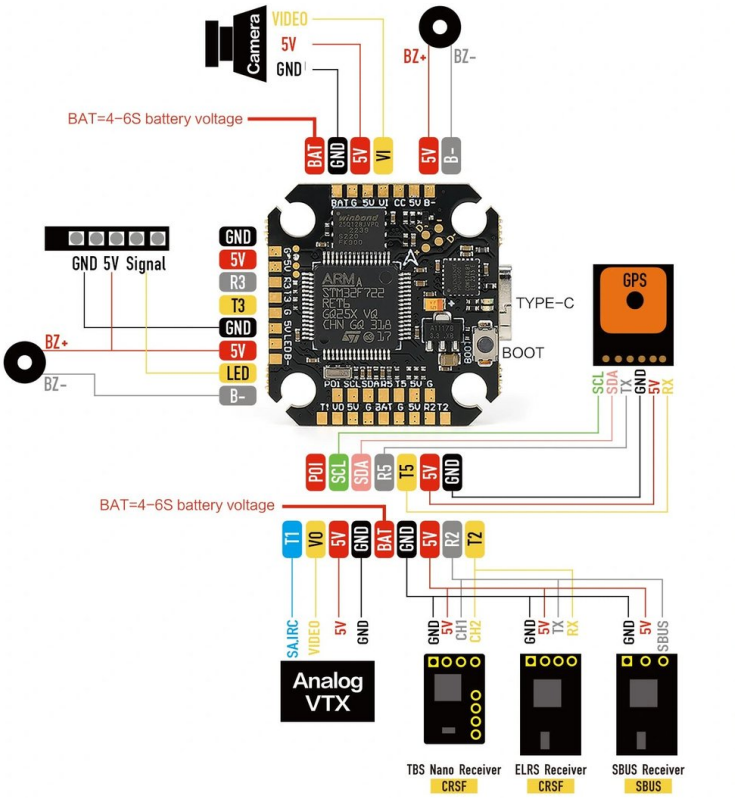
④ Use a multimeter to check that there is no short between + and −.

3.4 Connecting the ESC and flight controller

Connect the ESC and FC with one of the included connecting cables (short or long, depending on the connector spacing in your build). The connector on both the ESC and the FC has 8 wires: **BAT** (battery voltage), **GND**, **CURR** (current sensor), **TELE** (ESC telemetry, port R4 on the FC) and motor signals **M1–M4**. Insert the connectors without force and in the correct orientation.

4. Connecting peripherals

4.1 Flight controller wiring diagram



FC top side – wiring of camera, buzzer, LEDs, GPS, analog VTX and receivers (manufacturer's diagram)

※ Before soldering, always verify the pad labels directly on the board. The **BAT** pads carry the 4–6S battery voltage, the **5V** pads the 5 V BEC output (max. 3 A total).

4.2 Serial port overview

Port	Pads	Typical use per manufacturer
UART1	T1, R1	digital system (HD connector); with an analog VTX, T1 = SmartAudio / IRC Tramp
UART2	T2, R2	CRSF receiver (TBS, ELRS) or SBUS (R2)
UART3	T3, R3	free port for other peripherals
UART4	R4	ESC telemetry (TELE) via the ESC connector
UART5	T5, R5	GPS

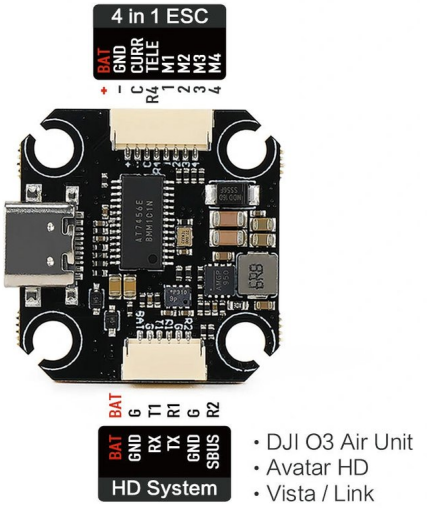
The **SCL** and **SDA** pads (I2C) are for the GPS module's magnetometer. The manufacturer does not describe the **PO1** and **CC** pads in detail in its documentation.

4.3 Receiver

- **CRSF (TBS Crossfire / Tracer, ExpressLRS):** receiver TX to **R2**, receiver RX to **T2**, power 5V and GND. In Betaflight, set *Serial RX* on UART2 and select the CRSF protocol.
- **SBUS:** SBUS signal to **R2**, power 5V and GND. In Betaflight, set *Serial RX* on UART2 and select the SBUS protocol.
- Check the receiver's supply voltage in its manual.

4.4 Digital video transmitter (HD system)

The bottom side of the FC has an **HD System** connector with the signals BAT, GND, T1 (unit RX), R1 (unit TX), GND and R2 (SBUS). The manufacturer states compatibility with DJI O3 Air Unit, Walksnail Avatar HD and DJI Vista / Link. Use the HD VTX cable from the package for the connection.



FC bottom side – ESC connector (top) and HD system connector (bottom)

- The HD connector carries the **full battery voltage** (BAT). Make sure your digital system is rated for 4–6S power.
- If you **do not use the DJI FPV Controller**, disconnect the SBUS wire (R2) in the HD cable – otherwise it conflicts with the receiver on UART2.
- To display OSD in the goggles, enable *MSP* / *DisplayPort* on UART1 in Betaflight according to your digital system's manual.

4.5 Analog camera and video transmitter

- **Camera:** VIDEO signal to the **VI** pad, power 5V and GND (or BAT if the camera is rated for 4–6S).
- **Analog VTX:** VIDEO input to the **VO** pad, SmartAudio / IRC Tramp control to **T1**, power from the 5V or BAT pad depending on the transmitter's input voltage, and GND.
- The video passes through the flight controller's OSD chip, which overlays the Betaflight OSD.
- Never power on the video transmitter without an antenna attached.

4.6 GPS, buzzer and LEDs

- **GPS:** module TX to **R5**, module RX to **T5**, 5V and GND. Connect SCL and SDA only for a module with a magnetometer. In Betaflight, enable *GPS* on UART5.
- **Buzzer:** BZ+ to the **5V** pad, BZ− to the **B−** pad.
- **Addressable LEDs:** signal to the **LED** pad, power 5V and GND.

5. Setup

5.1 Connecting to a computer

① Remove the propellers.

② Connect the flight controller to a computer with a USB-C cable and launch **Betaflight Configurator**.

③ Select the correct port and click *Connect*. When powered from USB only, the motors will not run and some peripherals may not be powered.

④ On the *Setup* tab, check that the on-screen model moves in the same way as you tilt the drone. If not, adjust the board orientation on the *Configuration* tab (*Board and Sensor Alignment*).

⑤ With the drone on a level surface, run *Calibrate Accelerometer*.

5.2 Port and receiver configuration

- On the *Ports* tab, assign functions to the serial ports according to chapter 4.2 and save.
- On the *Receiver* tab, check that the radio transmitter's stick movements match the channels. Bind the receiver to the radio transmitter according to the receiver's manual.
- On the *Configuration* tab, select the **DShot** ESC protocol (e.g. DShot300 or DShot600) and enable *Bidirectional DShot* for the RPM filter – AM32 firmware supports it.

5.3 Current and voltage sensor

The ESC has a built-in current sensor. On the *Power & Battery* tab, select *Onboard ADC* as the current source; the manufacturer specifies **scale 200**, which is the default in the Betaflight target. Compare the displayed battery voltage with a multimeter and fine-tune it if necessary.

5.4 Motor check – without propellers

① Remove anything that must not come into contact with spinning motors. **The propellers must be removed.**

② Connect the battery (through a current limiter) and confirm the safety notice on the *Motors* tab.

③ Spin up motors 1–4 one by one and check that the correct motor spins according to the frame diagram in Betaflight.

④ Check the direction of rotation. To reverse it, swap any two motor wires or change it in software – in Betaflight (*Motor direction*) or in the AM32 configurator.

5.5 ESC configuration and firmware (AM32)

- ESC settings (direction of rotation, PWM frequency in the 24–96 kHz range, startup, thermal protection) are changed in the AM32 configurator via the flight controller (passthrough) with the battery connected.
- Update the ESC firmware only with a file for the **AT_F4_04_F421** target. Flashing firmware for a different target can damage the ESC.
- Do not interrupt power while the ESC is updating.

5.6 Flight controller firmware

- Update the firmware on the *Firmware Flasher* tab in Betaflight Configurator, target **AXISFLYINGF7PRO**.
- Before updating, save your configuration (*CLI* tab, command *diff all*); after updating, restore it and check it.
- If the FC does not connect, unplug USB, hold the **BOOT** button, plug USB back in and release the button. The flight controller will start in DFU mode.

5.7 Arm, Disarm and failsafe

- On the *Modes* tab, assign **Arm** (motors enabled) and **Disarm** (motors disabled) to a dedicated switch on the radio transmitter.
- On the *Failsafe* tab, set the response to signal loss (*Drop* – motors off – is recommended). Test it without propellers by switching off the radio transmitter.
- Never rely on the Arm switch as the only way to disable the drone while working on it – always disconnect the battery.

6. Operation

6.1 First power-up with propellers

- Install the propellers only after checking motor order and direction and verifying failsafe.
- Make the first takeoff in an open area with no people around, using a fully charged battery.

6.2 Pre-flight check

- fully charged, undamaged 4S–6S battery, securely fastened,
- propellers firmly tightened and installed in the correct direction, stack screws not loose,
- no loose wires within reach of the propellers, intact solder joints,
- working failsafe, correctly configured Arm switch.

6.3 Temperature and load

- Do not exceed the continuous current of 55 A per motor; the 65 A peak current is for short bursts only.
- After flying, check the temperature of the ESC and motors. Overheating indicates propellers that are too large, unsuitable motors or a configuration error.
- Ensure airflow to the ESC; do not wrap it in insulation.

6.4 The law of the country where you fly applies

A finished drone built with this stack is an unmanned aircraft. Regulations (EU) 2019/947 and 2019/945 apply in all EU member states, but national implementing rules differ from country to country – registration portals, minimum pilot age, geographical zones, mandatory insurance, permitted frequency bands and maximum transmit power. If you operate the drone in a country other than the Czech Republic, you must comply with the regulations of the country where you fly. In the Czech Republic, information is provided by the Civil Aviation Authority (www.caa.gov.cz).

7. Maintenance and troubleshooting

7.1 Maintenance

- After every flight and every crash, inspect the solder joints, cables and rubber dampers.
- Protect the electronics from moisture, dust and metal debris. After flying in wet conditions, disconnect the battery and let the drone dry thoroughly.
- Replace a damaged capacitor immediately with one of the same or higher capacitance and voltage rating.
- Store in a dry place, out of the reach of children, with the battery disconnected.

7.2 Troubleshooting

Problem	Possible cause and solution
FC does not connect to the computer	Use a USB-C data cable (not charge-only), try another port, check drivers. If needed, start in DFU mode with the BOOT button (chapter 5.6).
Motors do not respond on the *Motors* tab	Battery not connected, ESC–FC connecting cable not properly inserted, wrong ESC protocol.
Motor spins in the wrong direction	Change the direction in Betaflight or the AM32 configurator, or swap two motor wires.
Receiver does not work	TX and RX swapped, wrong UART or protocol set on the *Ports* / *Receiver* tab; with an HD system, SBUS wire (R2) connected.
No OSD in the goggles (digital)	MSP / DisplayPort not enabled on UART1, T1 and R1 swapped.
Incorrect current reading	Check the *Onboard ADC* current source and the scale value (manufacturer specifies 200).
Drone flips over on takeoff	Wrong motor order, direction of rotation or board orientation; propellers installed backwards.

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 (Axisflying Argus Mini F7 Pro + Argus Mini 55A, 20×20 mm stack) is given in this manual and on the proof of purchase. The product has no rating plate and no menu showing the firmware version; the flight controller firmware version is shown by Betaflight Configurator after connecting via USB.

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

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.