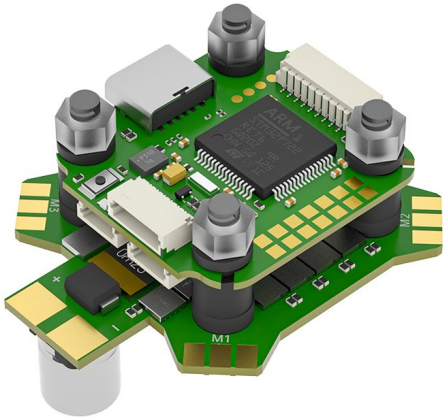
ROTORAMA

BLITZ Mini F7 + E55S

BLITZ Mini F7 V1.2 flight controller
and BLITZ Mini E55S 4-IN-1 ESC (2–6S)



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

User manual · www.rotorama.com

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1. Safety instructions

1.1 Before you start

The **BLITZ Mini F7 + E55S** stack consists of a flight controller (FC) and a 4-in-1 electronic speed controller (ESC) for building FPV drones. It is an electronic component intended for installation in a model – it does not fly on its own, and putting it into operation requires soldering, connecting further components and configuration on a computer.

- Read the entire manual before installation and keep it for future reference.
- The product is intended for experienced users with basic knowledge of electronics, soldering and flight controller configuration. If in doubt, ask a more experienced hobbyist for help.
- This product is not a toy. Keep it out of the reach of children – it contains small parts that could be swallowed.
- The manufacturer states that the product is intended for recreational use only and does not support autonomous flight.

1.2 Electrical safety and soldering

- Always carry out all soldering and wiring **with the battery disconnected** and the USB cable unplugged.
- Observe the correct power polarity. Reversing the positive and negative terminals or a short circuit between pads will destroy the electronics and may cause a fire.
- Use solder suitable for electronics and a temperature-controlled soldering iron. Solder quickly to avoid damaging the pads or nearby components.
- After soldering, check that there are no solder bridges between adjacent pads and that no stripped wire ends are protruding.
- When connecting the battery for the first time, we recommend using short-circuit protection (a so-called smoke stopper) or a current-limited bench power supply.
- Protect the boards from moisture, dust, metal shavings and carbon dust from the frame – carbon is electrically conductive.

1.3 Li-Po batteries

- Use only batteries within the range specified by the manufacturer for the ESC: **Li-Po 2S to 6S**.
- Charge batteries only with a suitable charger, never unattended, and on a non-flammable surface.
- Do not continue to use a damaged, swollen or overheated battery; dispose of it properly.

- Never discharge the battery below 3.5 V per cell. For storage, keep it charged to 3.8 V per cell (for whole-pack values see section 3.3).

1.4 Rotating propellers

- For any motor test on the bench, in Betaflight Configurator or with the battery connected, **always remove the propellers**.
- Fit the propellers only after checking the motor rotation direction and setting up Arm/Disarm and failsafe.
- Rotating propellers can cause serious injury. Never reach into the propeller area while the battery is connected.

1.5 Operating the finished drone

A drone built with this flight controller is subject to Regulations (EU) 2019/945 and 2019/947 when flown. These regulations apply in all member states of the European Union, 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. The **law of the country in which the drone is operated** is always decisive. In the Czech Republic, information on operating rules is provided by the Civil Aviation Authority (www.caa.gov.cz).

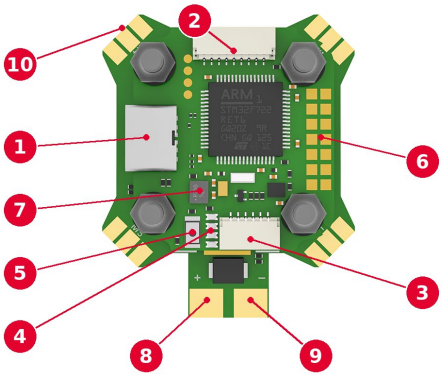
2. Product description

2.1 Package contents

Qty	Item
1×	BLITZ Mini F7 V1.2 flight controller
1×	BLITZ Mini E55S 4-IN-1 ESC (2–6S)
1×	Silicone grommets (soft mounts)
1×	Set of connecting cables for the flight controller

※ The package does **not** include screws, nuts, battery, motors, propellers, receiver, video transmitter, camera, power lead with connector or USB-C cable.

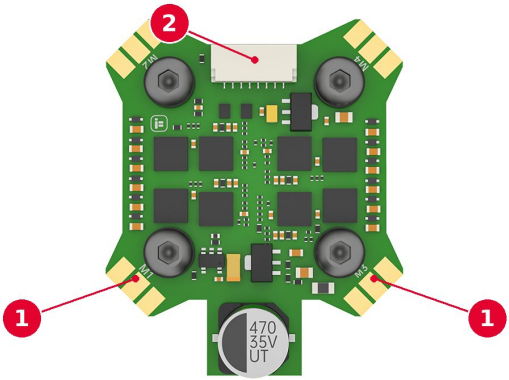
2.2 Parts description



Stack viewed from above – flight controller on top, ESC below

①	USB-C connector – connection to a computer
②	Flight controller connector
③	Flight controller connector
④	Flight controller status LED
⑤	Button
⑥	Flight controller solder pads
⑦	DPS310 barometer
⑧	ESC power pad **+** (battery positive)
⑨	ESC power pad **−** (battery negative)
⑩	Motor solder pads on the ESC (M1–M4, three pads each)

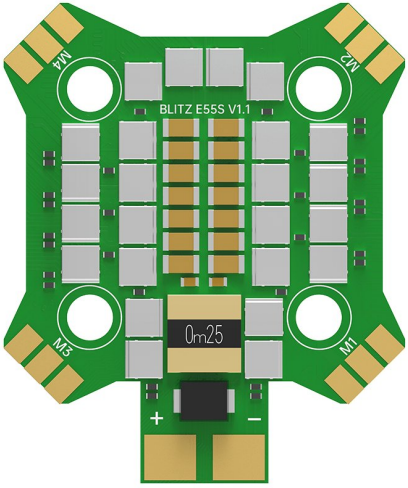
The flight controller has a connector for linking to the ESC (cable included) and a connector for a DJI digital video transmitter that allows connection without soldering (plug-and-play).



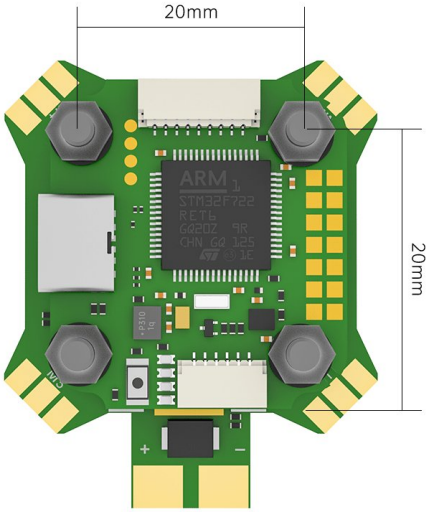
BLITZ Mini E55S ESC – side facing the flight controller

①	Motor solder pads M1–M4 (labels are printed next to the pads)
②	Connector for linking to the flight controller

※ The capacitor shown in the manufacturer's pictures is **not listed** in the package contents. Check whether your package includes it; recommendations for its use are given in section 3.3.



ESC – bottom side with + and − power pads



Flight controller – mounting hole pattern 20 × 20 mm

2.3 Flight controller specifications

Parameter	Value
Model	BLITZ Mini F7 V1.2
Processor (MCU)	STM32 F722
Gyroscope	ICM42688
Barometer	DPS310
OSD chip	AT7456
Blackbox memory	8 MB
Serial ports (UART)	6
Motor outputs	4× (SH1.0 connector)
I2C	SDA / SCL solder pads
VTX control protocols	SmartAudio / IRC Tramp
LED control	yes
Buzzer pad	yes
DJI digital VTX connector	yes (plug-and-play)
Betaflight firmware target	IFRC-IFLIGHT_BLITZ_F722
Mounting pattern	20 × 20 mm, Ø 4 mm holes, silicone grommets for M3 screws
Dimensions	30.5 × 27 mm
Weight	5 g

2.4 ESC specifications

Parameter	Value
Model	BLITZ Mini E55S 4-IN-1 ESC
Input voltage	Li-Po 2S–6S
Processor (MCU)	BB21
Continuous current	55 A
Burst current	65 A
Current sensor	yes
Current sensor scale (Current rate)	200
BEC	no
Supported protocols	DShot150 / DShot300 / DShot600, MultiShot, OneShot
Firmware target	BLHeli_S: Q-H-25; Bluejay: Q-H-50
Mounting pattern	20 × 20 mm, Ø 4 mm holes
Weight	11.3 g

※ The data in the tables are provided by the manufacturer iFlight on the stack's product page. Current ratings are manufacturer figures; the actual current capability depends on cooling and operating conditions.

2.5 Recommended serial port assignment

The manufacturer recommends using the flight controller's serial ports (UART) as follows:

Port	Recommended use
UART1	video transmitter – digital (HD) or analog
UART2	radio receiver
UART3, UART4, UART5	GPS or other sensors with a serial interface
UART6	ESC telemetry

3. Installation and wiring

3.1 What else you need

- an FPV drone frame with a 20 × 20 mm mounting pattern and M3 screws of suitable length,
- four brushless motors and propellers suited to the chosen battery,
- a power lead with a connector matching your batteries (e.g. XT60 or XT30),
- a radio receiver and a video transmitter with camera (analog or digital system),
- a 2S–6S Li-Po battery and a suitable charger,
- a soldering iron, solder, flux, a USB-C data cable and a computer with **Betaflight Configurator**.

3.2 Mechanical installation

- Mount the ESC at the bottom and the flight controller above it. Install both boards in the frame using the supplied silicone grommets – they dampen vibrations that would otherwise disturb the gyroscope.
- Do not overtighten the screws and nuts. The grommets must remain flexible; the board must not be clamped rigidly.
- Orient the flight controller with the arrow (or direction mark) pointing forward. If you rotate it for design reasons, set the rotation in Betaflight on the *Configuration → Board and Sensor Alignment* tab.
- Make sure the boards touch the frame, screws or each other only through the grommets and that no cables can reach the propellers.

3.3 Power and motors

- Solder the power lead to the ESC pads **+** and **−** (figure in section 2.2, ⑧ and ⑨). Check the polarity with a multimeter before connecting for the first time.
- We recommend soldering a low-ESR electrolytic capacitor to the power pads with a sufficient voltage margin above a fully charged battery. It suppresses voltage spikes from sharp throttle changes that can damage electronics or disturb video.
- Solder the motor wires to pads M1–M4. The order of a motor's three wires does not matter – the direction of rotation is set in software (section 4.5).
- Assign the motors to the pads according to the motor layout diagram in Betaflight (*Motors* tab). If the wiring does not match, the assignment can be changed with the *Motor Remapping* function.

▶ **Li-Po battery voltages**

State	per cell	2S	3S	4S	6S
Fully charged	4.20 V	8.4 V	12.6 V	16.8 V	25.2 V
End flight	3.5 V	7.0 V	10.5 V	14.0 V	21.0 V
Storage	3.8 V	7.6 V	11.4 V	15.2 V	22.8 V

※ Always fit a **fully charged** battery before flight. The manufacturer specifies support for 2S–6S Li-Po batteries; high-voltage LiHV batteries are not explicitly listed.

3.4 Connecting the flight controller and ESC

- Connect the flight controller to the ESC using the cable from the included set. Plug the cable into the connectors on both boards; do not twist or stretch it.
- The ESC has no BEC of its own (voltage regulator for peripherals). It has a current sensor; its setup in Betaflight is described in section 4.4.
- Insert and remove connectors by holding the connector body; never pull on the wires.

3.5 Radio receiver

- As recommended by the manufacturer, connect the receiver to **UART2**: receiver TX to the flight controller RX pad, receiver RX to the TX pad, and power to the 5 V and GND pads (for receivers that tolerate 5 V).
- Pad labels are printed on the flight controller board; inspect them under a magnifier before soldering.

3.6 Video transmitter

- **DJI digital system:** plug the unit into the digital VTX connector on the flight controller – no soldering required. First check that the voltage supplied by the connector is within the input range specified by the unit's manufacturer.
- **Analog video transmitter:** the manufacturer recommends **UART1** for VTX control (SmartAudio or IRC Tramp). The camera video passes through the AT7456 OSD chip, which overlays flight data on the image.
- Never power the video transmitter without an antenna attached – it may be permanently damaged.

3.7 GPS, compass, LEDs and buzzer

- Connect the GPS module to one of the ports **UART3, UART4 or UART5**.
- A compass (magnetometer) can be connected to the I2C pads (SDA / SCL).
- The flight controller has an output for addressable LEDs and a buzzer pad. The buzzer helps locate the drone after a crash and signals status (e.g. low voltage).

4. Betaflight setup

4.1 Connecting to a computer

Connect the flight controller to a computer with a USB-C cable and launch **Betaflight Configurator**. A battery is not required for configuration over USB. The motors will not spin without a battery.

- If the computer does not recognise the flight controller, try a different cable – many USB-C cables are charge-only and do not carry data.
- On Windows, you may need to install drivers (Betaflight Configurator links to the ImpulseRC Driver Fixer tool).
- The flight controller status LED (④) provides a visual check of the board status.

4.2 Flight controller firmware

- The flight controller runs Betaflight firmware with the target **IFRC-IFLIGHT_BLITZ_F722**. Always select this target when updating on the *Firmware Flasher* tab.
- Back up your settings before updating: on the *CLI* tab, enter the command *diff all* and save the output to a file.
- The manufacturer states that the flight controller is intended primarily for Betaflight. The manufacturer neither provides ArduPilot firmware for it nor offers technical support for it.

4.3 Ports, receiver and OSD

- On the *Ports* tab, enable *Serial Rx* on the port the receiver is connected to (UART2 recommended). On the *Receiver* tab, select your receiver's protocol (e.g. CRSF for ExpressLRS and TBS Crossfire).
- For a DJI digital system, enable *MSP* on UART1 and select the HD format on the *OSD* tab.
- For an analog video transmitter, set the protocol on UART1 in the *Peripherals* column to *VTX (TBS SmartAudio)* or *VTX (IRC Tramp)* according to your transmitter.
- Set up the GPS module on the *Ports* tab by selecting *GPS* in the *Sensor Input* column for the port it is connected to.
- For ESC telemetry, select *ESC* in the *Sensor Input* column for UART6.

4.4 Voltage and current

- On the *Power & Battery* tab, select *Onboard ADC* as the current meter source and enter **200** in the current meter *Scale* field, the value specified by the manufacturer for the ESC current sensor.
- Compare the voltage and current readings with a multimeter or with the charger reading after a flight, and fine-tune them if necessary.

- Set up battery voltage monitoring: a warning at 3.5 V per cell at the latest.

4.5 Motors and ESC protocol

- On the *Configuration* tab, select the **DShot** protocol (DShot300 or DShot600).
- On the *Motors* tab, with the **propellers removed** and the battery connected, spin up each motor in turn and check that the correct motor spins in the correct direction.
- You can change the direction of rotation without resoldering – using the *Motor direction* function in Betaflight or in the ESC configurator.

4.6 Arm, Disarm and failsafe

- On the *Modes* tab, assign the **ARM** mode (Arm – motors enabled) to a switch on your radio transmitter. Turning the switch off performs a Disarm (motors disabled).
- We also recommend setting up the *BEEPER* mode for locating the drone, and *Flip over after crash* (Turtle) only if you know how to use it.
- On the *Failsafe* tab, verify that the drone stops the motors when the signal is lost. Test this without propellers by switching off the radio transmitter.
- Before the first Arm, check on the *Setup* tab that the on-screen model tilts in line with the actual orientation of the board. If necessary, run *Calibrate Accelerometer* on a level surface.

5. ESC firmware

5.1 Supported firmware and configuration

- The ESC supports both **BLHeli_S** firmware (target **Q-H-25**) and **Bluejay** (target **Q-H-50**). You can check which firmware is installed on your unit in the ESC configurator.
- Configure and update the ESC through the flight controller (passthrough) in ESC Configurator (esc-configurator.com) with the battery connected and **without propellers**.
- When updating, always select the target matching this ESC. Flashing the wrong target can permanently damage the ESC.
- The RPM filter in Betaflight requires ESC firmware with bidirectional DShot support.

6. First power-up

6.1 Connecting the battery for the first time

- Before connecting the battery for the first time, check the polarity, the solder joints and that there are no short circuits. Use a smoke stopper.
- Leave the propellers off. After connecting, watch that nothing heats up and that the flight controller and ESC start up normally (status LED, motor tones).
- If anything heats up, smokes or smells, disconnect the battery immediately.

6.2 Pre-flight check of the finished drone

- Fit a **fully charged** battery in the drone and check its voltage in the OSD.
- Check that the boards, battery, antennas and propellers are secured and that the propellers are fitted in the correct direction.
- Verify that the Arm switch is in the off position and that failsafe works.
- End the flight at 3.5 V per cell at the latest.

7. Maintenance and troubleshooting

7.1 Maintenance

- After a crash, inspect the boards, connectors, solder joints and motor wires.
- Remove dust and dirt with a dry brush. Do not use water or solvents.
- Regularly check the condition of the silicone grommets and the tightness of the screws.
- Store the product in a dry place at room temperature and out of the reach of children.

7.2 Troubleshooting

Problem	Possible cause and solution
FC not detected by PC	Charge-only cable without data wires – use a data cable. Missing drivers – install them (section 4.1).
Motors do not respond	FC–ESC cable not properly seated; wrong protocol on the *Configuration* tab; battery not connected.
Motor spins backwards	Change the direction in Betaflight or in the ESC configurator (section 4.5).
Drone will not arm	The *Setup* tab shows the reason for the block (Arming disable flags). Common causes: the drone is not level, the throttle is not at minimum, no receiver signal.
No video or OSD	Check the port and OSD settings (section 4.3) and the video transmitter wiring.
Incorrect current reading	Check the *Scale* value on the *Power & Battery* tab (section 4.4).
No receiver signal	Check the TX/RX wiring (crossed), the *Serial Rx* port and the protocol on the *Receiver* tab; bind the receiver to the radio transmitter.

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 (BLITZ Mini F7 V1.2 + BLITZ Mini E55S) is given on the product packaging and on the printed circuit board; the firmware version of the flight controller can be found in Betaflight Configurator.

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.