

Stack F405 V3 ICM42688 AM32 80A CZ

User manual



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1. Product overview

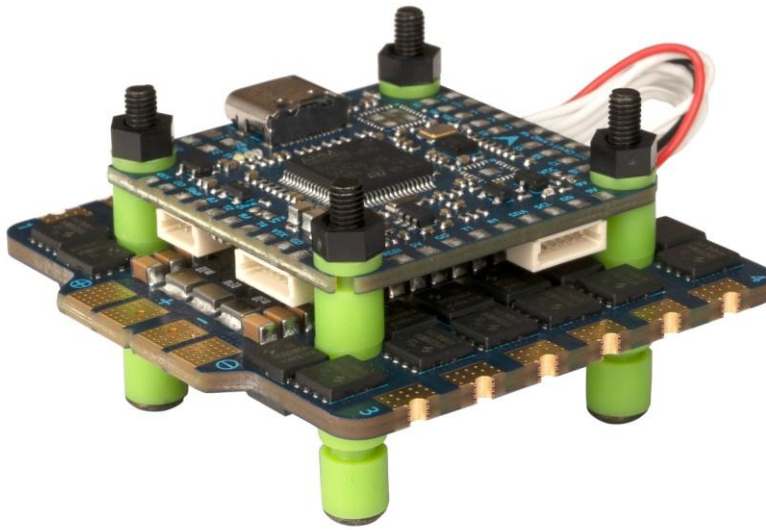


Fig.1. Pilotix F405 V3 ICM42688 AM32 80A CZ

The F405 V3 ICM42688 AM32 80A CZ from Pilotix is a flight controller and electronic speed controller (ESC) combination designed for FPV applications. The flight controller is powered by the STM32F405 microcontroller with an integrated ICM42688-P gyro connected via SPI, supports Betaflight firmware, and features an analog OSD. The 4 in 1 ESC is powered by the AT32F421K8U7 microcontroller and runs AM32 firmware, providing a continuous current rating of 4 x 80A and peak current of 4 x 100A. It operates within an input voltage range of 3 to 8S, and supports multiple protocols including DShot150, DShot300, DShot600, Multishot, OneShot, ProShot and PWM, with bi-directional DShot capability.

2. ESC Installation & Wiring

The ESC is designed to handle high current loads. Pay close attention to the power leads.

Wiring Steps:

1. Power Input: Solder the supplied power cord to the "+" and "-" pads. Ensure the polarity is correct.
2. Capacitor: Solder the supplied solid-state capacitor to the power pads. This is mandatory for 3S-8S builds to filter voltage spikes.
3. Motor Pads: Solder motor wires to the pads on the left (3 & 4) and right (1 & 2).
4. Link to FC: Connect the 8-pin JST-SH 1.0 mm harness to the control connector on the top edge (VB, GD, CU, TX, S1-S4). This transmits power (VB), current sensor signal (CU), telemetry (TX), and motor signals (S1-S4) to the FC.

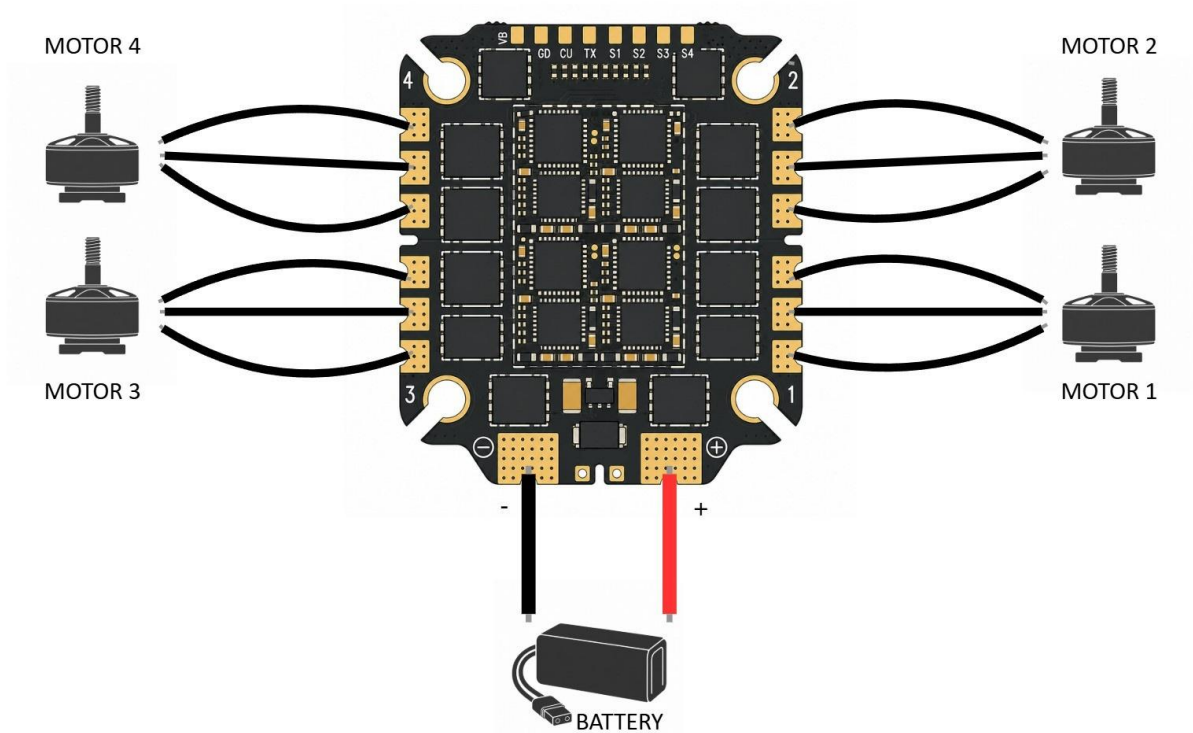


Fig.2. ESC installation & wiring

3. Flight Controller (FC) Wiring

The Pilotix F405 V3 is a high-performance flight controller featuring a powerful MCU, dual camera support, and versatile power options. Follow this guide for a correct and safe installation.

1. Power and Battery Connection

- VB / GD (8-pin harness): Main power input, supplied to the FC from the ESC through the harness.
- VCC: Battery voltage.
- 5V / 9V Pads: Used to power peripheral devices like receivers, GPS, and video systems (BEC: 5V @ 2.5A, 9V @ 2.5A).
- Voltage Selection Jumper (Right Edge, VCC / 9V): Bridges the pads to select between VCC (Battery Voltage) or 9V for the video system output.
 - Selection for 3-4S: Use VCC.
 - Selection for 6S: Use 9V to prevent overheating your VTX.

2. ESC Connection

- S1, S2, S3, S4: Motor signal outputs (connect to the corresponding ESC signal pads).
- S5 - S8: Additional signal pads for Hexacopters or Octocopters (require external ESCs).
- CURR: Analog Current Sensor input. Connected to the CU pad of the ESC through the 8-pin harness; for an external ESC/PDB, connect it to its CUR pad to monitor amperage.

3. Video and Camera System (Dual Camera Support)

The Pilotix F405 V3 supports two cameras:

- Camera 1 / Camera 2: Connect the signal wires (Orange) to CAM1 and CAM2.
- GD / 5V: Common ground and power for the cameras.
- VTX: Video output to your Video Transmitter.
- VX: Power output for the Video Transmitter (VCC or 9V, depending on the voltage selection jumper).

4. Digital Video (DJI / Walksnail / HDZero)

For digital systems, use the specific UART mapping:

- T4 / R4: Recommended for the DJI Air Unit or O3 System (MSP DisplayPort).
- Selection Jumper (Bottom Edge, Sbus / VTX): Bridge the Sbus pads for the DJI Air Unit connector (T4, R4, GD, Sbus), or the VTX pads for a video transmitter connector (T4, R4, GD, VTX).

5. Receiver and GPS (UART Mapping)

- ELRS / Crossfire: Connect to any free UART (5 UART ports available).
- GPS: Connect to SDA / SCL pads for the Compass (I2C) and TX/RX of a free UART for GPS data.

- 5V / BZ-: Dedicated pads for an active 5V Buzzer.
- LED: Output for an LED strip (use the adjacent 5V and GD pads for power).

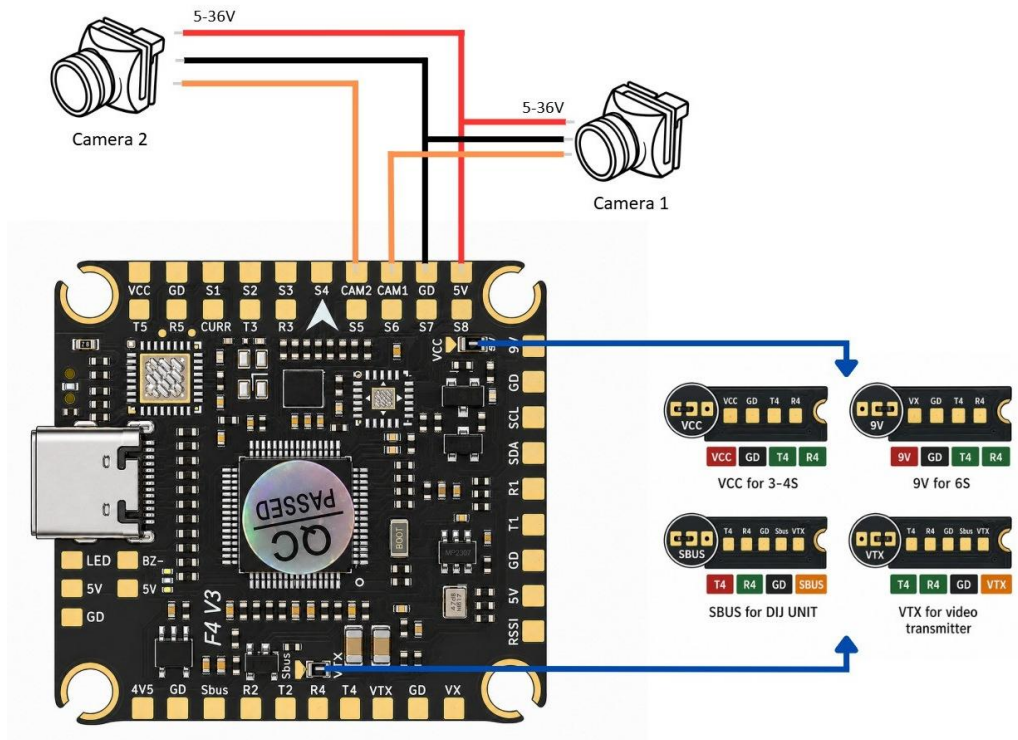


Fig.3. FC wiring diagram

4. Safety & Usage Rules

1. **Bridge Check:** Ensure the voltage selection jumpers (VCC/9V and Sbus/VTX) are bridged cleanly without touching adjacent pads.
2. **Polarity:** Triple-check the "+" and "-" orientation of the battery leads.
3. **Smoke Stopper:** Always use a current-limiting device for the first power-on.
4. **Firmware Updates:** Use AM32 Configurator for the AM32 ESC. The FC runs Betaflight (target PILOTIXF405V3); use the DFU button to enter bootloader mode.
5. **Mounting:** Use the provided shock-absorbing balls and screws (M3, 30.5 x 30.5 mm pattern). High-current ESCs create electromagnetic noise; keep the FC physically separated by at least 2-3mm from the ESC.

Contacts:

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