

Pilotix H743 BMI270

User manual



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1. Product overview



Fig.1. Pilotix H743 BMI270

The Pilotix H743 BMI270 is a flight controller for FPV drones. It is based on the STM32H743 MCU, supports Betaflight firmware, and features an analog OSD. The board has a dual-gyro configuration with BMI270 and MPU6000 sensors connected via SPI with an 8 kHz update rate, and a built-in accelerometer. It provides 8 motor control outputs, 8 UART ports, an LED strip output, a buzzer output, a USB Type-C port, a DFU button, and dual BEC outputs rated at 5V @ 2.5A and 9V @ 3A. The board measures 37 x 37 mm with a 30.5 x 30.5 mm (M3) mounting pattern and weighs 8.8 g.

2. Wiring guide

2.1. Power and FC connection

The flight controller (FC) is the core of your build.

- ESC link: Use the ESC 1 and ESC 2 connectors (8-pin, see Fig. 3) to connect up to two 4-in-1 ESCs. Each connector carries the battery voltage (Vbat), ground (G), current sensor signal (CU), telemetry (TX), and four motor signals (1-4).
- Battery pads: VBAT and G on the top edge are the battery voltage and ground pads.
- Motor outputs: S1-S4 and S5-S8 are the 8 motor signal outputs for ESCs connected to the pads instead of the connectors. S9 and S10 (right edge) are additional signal pads.
- Current sensor: CU1 and CU2 are the current sensor input pads.
- Power outputs: The 5V pads (BEC 5V @ 2.5A) and 9V pads (BEC 9V @ 3A) power peripherals such as receivers, GPS, cameras, and video systems.

2.2. Peripheral wiring (UARTs)

The FC provides 8 UART ports. The pad layout is as follows (see Fig. 2):

- UART 1: R1 and T1 pads (bottom edge).
- UART 2 (GPS): Connect your GPS module here, as shown in Fig. 2. Match GPS TX to R2 and GPS RX to T2. Use the 5V and G pads for power.
- UART 3 (DJI Air Unit): T3 and R3 pads, also routed to the DJI UNIT connector (see section 2.3).
- UART 4: R4 and T4 pads (right edge).
- UART 6 (ESC telemetry): The ESC telemetry (TX) from the ESC connectors is received on R6 (see Fig. 3).
- UART 7 and UART 8: R7 / T7 pads (second row of the top edge) and R8 / T8 pads (right edge).
- Receiver: This FC has no built-in receiver. Solder your ELRS or Crossfire receiver to any free UART (receiver TX to the R pad, receiver RX to the T pad).
- RSI: RSSI input pad (right edge).

2.3. Video and camera setup

This FC features an analog OSD, a camera input, and a video transmitter output.

Camera connections

- Camera: Connect the camera signal wire to the CAM pad, ground to G, and power to the 9V pad (see Fig. 2). Check the supply voltage rating of your camera before choosing between the 5V and 9V pads.

Video transmitter (VTX)

- Signal: Connect the VTX video wire to the VTX pad.
- Power: Use the G pad and the 5V or 9V pad next to the VTX pad, according to the supply voltage of your VTX. (Crucial) Check the voltage rating of the VTX before wiring.

Digital video (DJI Air Unit)

- DJI UNIT connector: Connect the DJI Air Unit to the 6-pin DJI UNIT connector (see Fig. 3): 9V to 7-24V, G to GND, T3 to RX, R3 to TX, G to GND, R3 to SBUS.

2.4. Additional components

- Buzzer: Connect an active 5V buzzer to the BZ and 5V pads.
- LED strip: Connect the LED strip signal wire to the LED pad and use the G and 5V pads for power.
- I2C (Compass): This FC has no built-in magnetometer. If your GPS has a compass, connect SCL to SCL and SDA to SDA (located near the UART 2 pads).
- DFU button: Use the DFU button to enter the bootloader mode when flashing the Betaflight firmware.

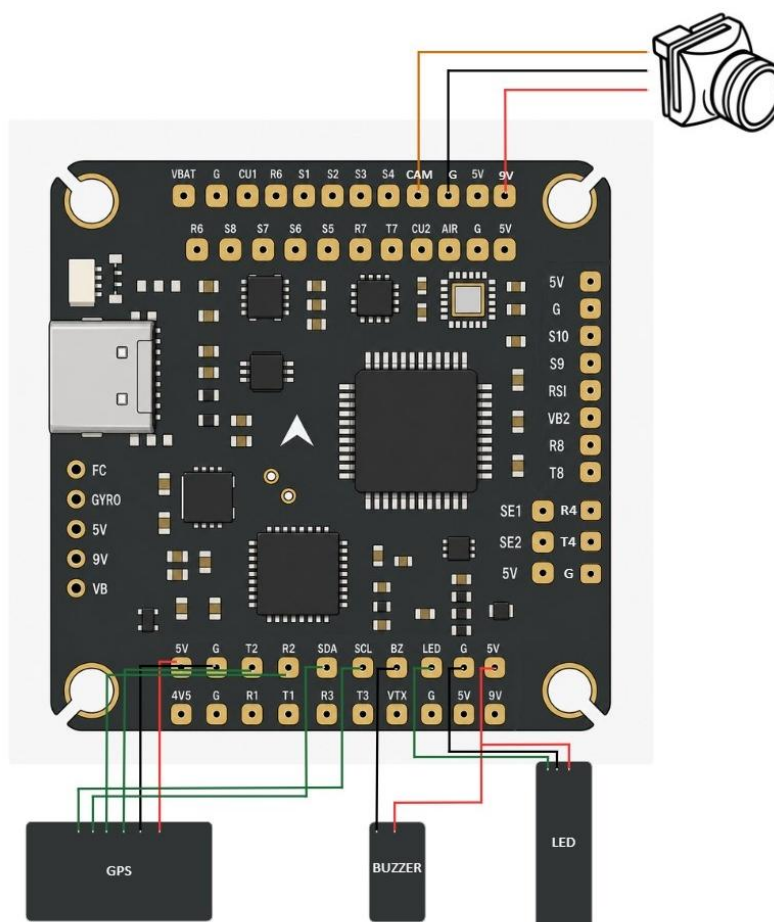


Fig.2. Wiring diagram (pads)

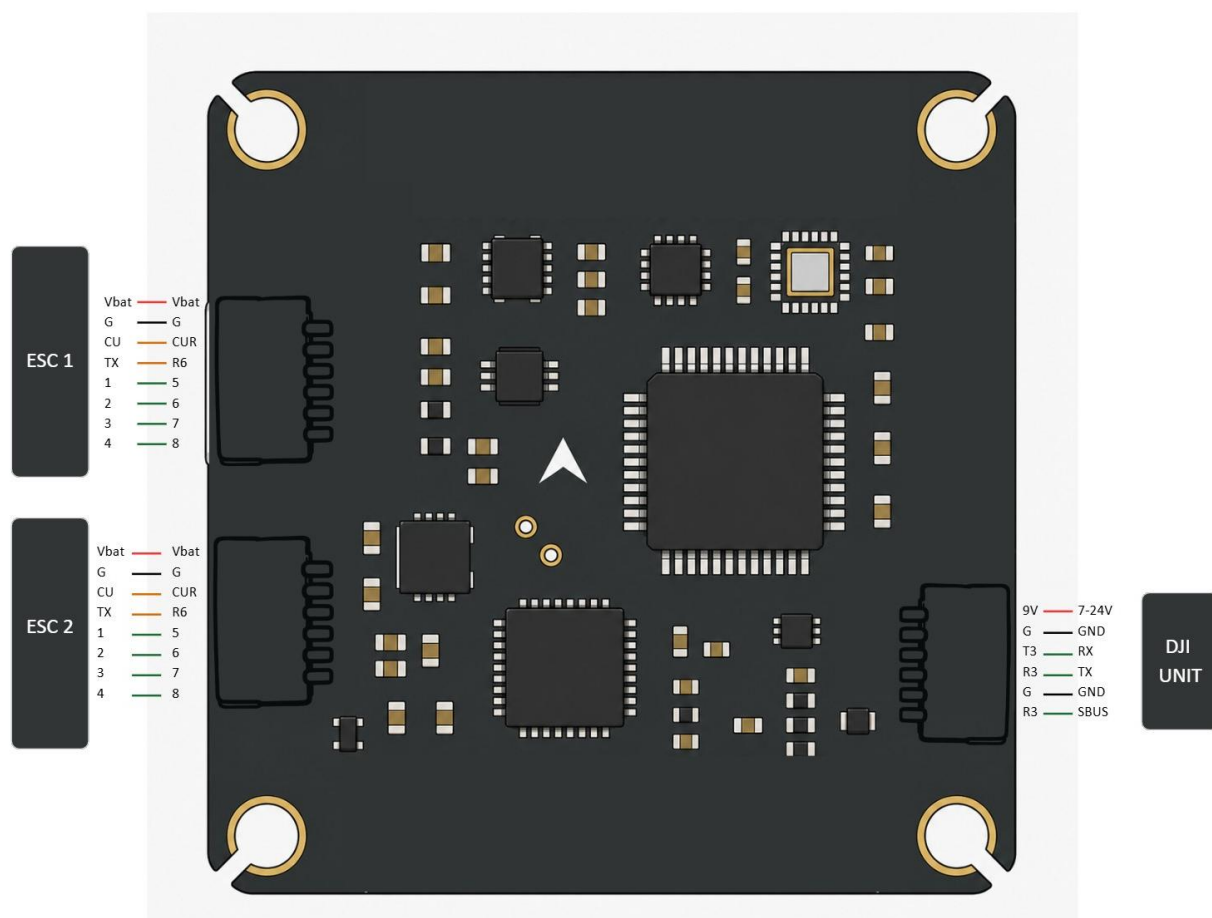


Fig.3. Wiring diagram (ESC and DJI Air Unit connectors)

3. Safety & usage rules

- Voltage check: This FC provides separate 5V (2.5A) and 9V (3A) BEC pads. Verify the supply voltage rating of every peripheral before wiring; connecting a 5V-only device to a 9V pad will result in instant hardware failure.
- Smoke stopper: Always use a current-limiting "Smoke Stopper" during the first power-up after soldering. This is your only line of defense against a short circuit caused by a solder bridge.
- Polarity: Ensure the VBAT and G pads (and the Vbat and G pins of the ESC connectors) are wired correctly. Reversed polarity can destroy the board immediately.
- Vibration isolation: The BMI270 and MPU6000 gyros are sensitive to mechanical noise. Always use the supplied shock-absorbing balls (4x) and ensure no wires are pressing tightly against the board.
- Airflow: The onboard 9V and 5V regulators (becs) generate heat, especially when powering high-output video transmitters or multiple leds. Ensure the FC is mounted in a way that allows active airflow during flight.
- Solder quality: Use high-quality leaded or lead-free solder with flux. "Cold" solder joints (dull, grainy appearance) can fail under the high-frequency vibrations of an FPV drone.
- Bench cooling: Do not leave the FC powered by a battery on your workbench for more than 2-3 minutes without a fan. The regulators can heat up very quickly.

Contacts:

WhatsApp: +420 777 054 888

Email: support@pilotix.eu

Telegram: https://t.me/PilotixSupport_bot