

Pilotix H743-WING V3 Advanced CZ

User manual



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1. Product overview

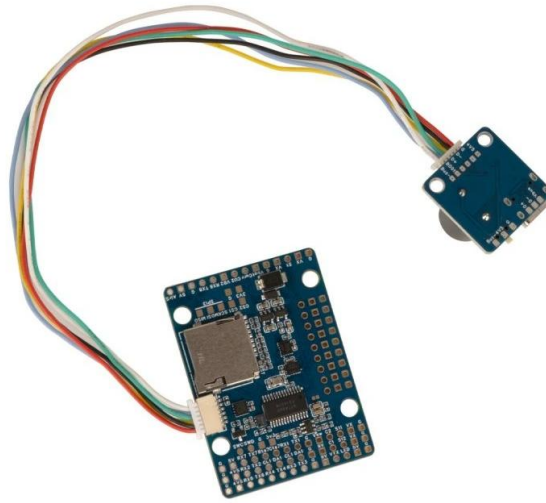


Fig.1. H743-WING V3 Advanced CZ

This Pilotix H743 variant uses an advanced dual-board architecture. The Main Board contains the high-performance STM32H743VIT6 MCU and peripheral inputs, while the Power/PDB Board handles power distribution, voltage regulation, and direct wiring to individual Single ESCs.

2. Wiring guide

2.1. Main Power Input & PDB Connections

The Power Board acts as the power distribution hub for the entire aircraft:

- BAT (+) / GND (-): Main flight battery input pads (Supports 8V – 36V input, ideal for up to 8S configurations natively).
- ESC / BAT Pads: Located along the top edge of the power board. These pass full battery voltage directly to the individual Single ESC power rails (BTA+ and BTA-).
- Curr / Vbat / G / Vx Pins: The interconnecting pads that bridge power, current sensing data, and regulated voltages between the Power Board and the Main Flight Controller board.

2.2. Voltage Regulation & Jumper Customization (Vx Output)

The Power Board features an adjustable regulator (Vx) to power high-voltage servos or specific peripherals. You can change its output voltage by bridging the hardware pads on the right edge of the power board:

- Vx = 5V (Default): No solder bridges.
- Vx = 6V: Solder bridge applied across the designated "6V" pads.
- Vx = 7.2V: Solder bridge applied across the designated "7.2V" pads.

2.3. Connecting Single ESCs to the Flight Controller

The diagram illustrates how individual Single ESCs (like the one shown on the left) wire into the system:

Power Routing (Power Board Side):

- Connect the Red (BTA+) wire of the ESC to the (+) ESC pad.
- Connect the Black (BTA-) wire of the ESC to the (-) BAT or common ground pad.

Signal Routing (Main Board Side - Top Left Rail):

- S1 – S10: Main motor signal output pads. The diagram shows the signal wire (white/gray) running from the ESC's PWM pad straight to the S1 pin.
- G (Ground): Connect the ESC's GND pad to the corresponding G pad right next to the signal pin to eliminate electrical noise.
- Curr / CU2: Connect the ESC telemetry TX pad to the Rx8 or Rx lines if you are tracking digital telemetry, or use the dedicated Curr line for analog current feedback.

2.4. Dual Camera System Wiring

The bottom left rail of the Main Board features dedicated switching circuitry for two independent analog cameras:

- C1 / C2: Video signal inputs from Camera 1 and Camera 2.
- Vtx: Video output pad running straight to your Video Transmitter.
- 9V / G: Filtered 9V power supply and Ground dedicated to keeping the video feed clean.
- Vsw: Switchable power rail for advanced video setups.

2.5. Specialized Expansion Ports (JST-GH)

To prevent cluttering the board with solder joints, the right side includes pre-configured plug-and-play ports:

- JST-GH-4P (I2C): Provides G, DA2, CL2, 4V5. Explicitly meant for external GPS compass modules (SDA/SCL lines).
- JST-GH-6P (CAN Bus): Provides G, CAN-L, CAN-H, 4V5. Designed for commercial UAV sensors, professional GPS units, or CAN-based ESC systems.

2.6. Specialized Expansion Ports (JST-GH)

- Tx1/Rx1, Tx3/Rx3, Tx4/Rx4, Tx6/Rx6, Tx7/Rx7: Multiple un-inverted high-speed hardware UARTS for receivers (ELRS/Crossfire), telemetry modules, or digital video links.
- Buz- / 5V / G: Dedicated connection cluster for an active 5V finder buzzer.
- LED: Addressable RGB LED control strip output pad.

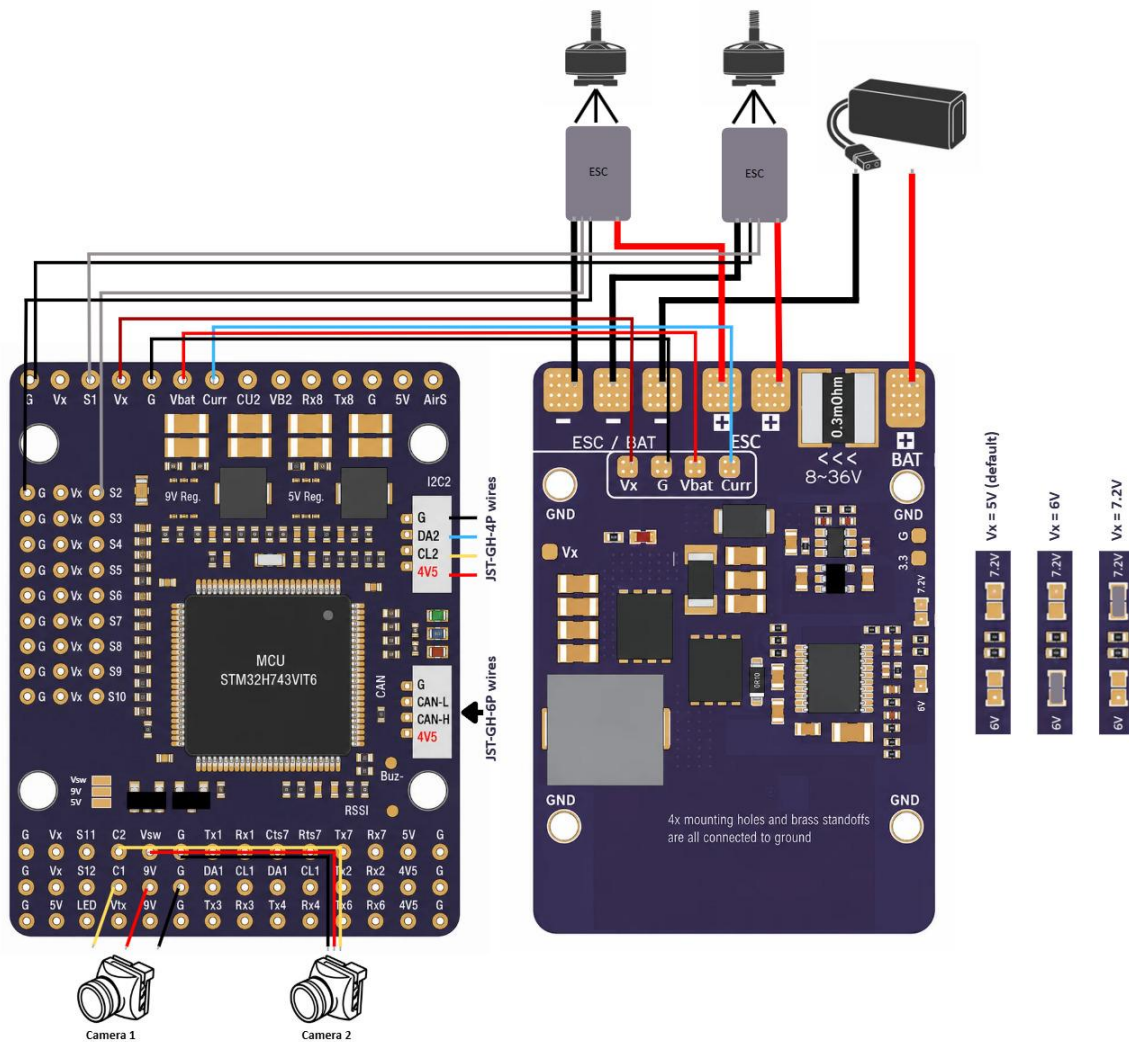


Fig.2. Wiring diagram

3. Safety & usage rules

- **Always Use a Smoke Stopper:** For the initial power-up after soldering, always connect a current-limiting device (Smoke Stopper) between the battery and the ESC. If there is a short circuit, this prevents immediate destruction of the components.
- **Anti-Spark Connectors are Mandatory:** When plugging in a 6S to 12S battery, massive inrush currents create an electrical arc that degrades connectors over time. Always use anti-spark connectors such as AS150, XT90-S, or dedicated anti-spark switches.
- **Capacitor Installation:** High-voltage setups generate massive voltage spikes during motor braking (damped light). You must solder high-voltage, Low-ESR capacitors (minimum 63V rating for 12S systems) directly to the ESC main battery pads. Failing to do so will eventually burn the ESC mosfets or pass voltage ripples back to the Flight Controller.
- **Polarity Check:** Double-check the battery polarity (BTA+/B+ and BTA-/B-) with a multimeter before plugging in. Reverse polarity on high voltage causes catastrophic, irreversible damage instantly.

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