

Pilotix H743-SLIM

User manual



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1. Product overview



Fig.1. Pilotix H743-SLIM

The Pilotix H743 Slim is a premium, high-density flight controller powered by a high-speed STM32H743 MCU. It features dual camera switching, dedicated dual battery/current sensor tracking, and a comprehensive layout optimized for advanced setups.

2. Wiring guide

2.1. Main Power & System Voltages

The H743 Slim offers extensive power management options across multiple pads:

- Vbat / G: Main battery voltage input and ground.
- Vbt2 / Cur2: Secondary battery voltage and current inputs for dual-battery configurations or multi-PDB setups.
- 5V / 4V5: Filtered 5V power rails for receivers, GPS, and LEDs. 4V5 pads are USB-powered, allowing you to safely configure your receiver without connecting the main flight battery.
- Vsw (Video Switch Power): Power rail for your video transmitter. The supply voltage can be toggled via the central hardware jumper solder pads (5V / Vsw=Vbt).

2.2. ESC, Signal, and Telemetry Routing

The right side of the board houses an extensive array of motor signals and sensor monitoring:

- S1 – S4: Primary motor signal outputs (Quadcopter standard configuration).
- S5 – S12: Expanded motor signal outputs supporting Hexacopters, Octocopters, or specialized X8 cinema setups.
- CUR / S9: Main analog current sensor input from your PDB or 4-in-1 ESC.

- Tx8 / Rx8: Dedicated hardware UART adjacent to the signal rail, ideal for collective ESC telemetry or system communication.

2.3. Dual Camera Configuration & Analog Video

The board supports dual-camera switching natively via onboard hardware logic:

- C1 / C2: Analog video signal inputs from Camera 1 and Camera 2.
- VTx: Clean video output routed directly to your Video Transmitter.
- Vsw / G: Switchable power output and ground dedicated to clean, noise-free video transmission.
- Vbt / 5V / G: Variable power distribution array located next to the camera pads to accommodate both low-voltage (5V) and high-voltage (Vbat) cameras.

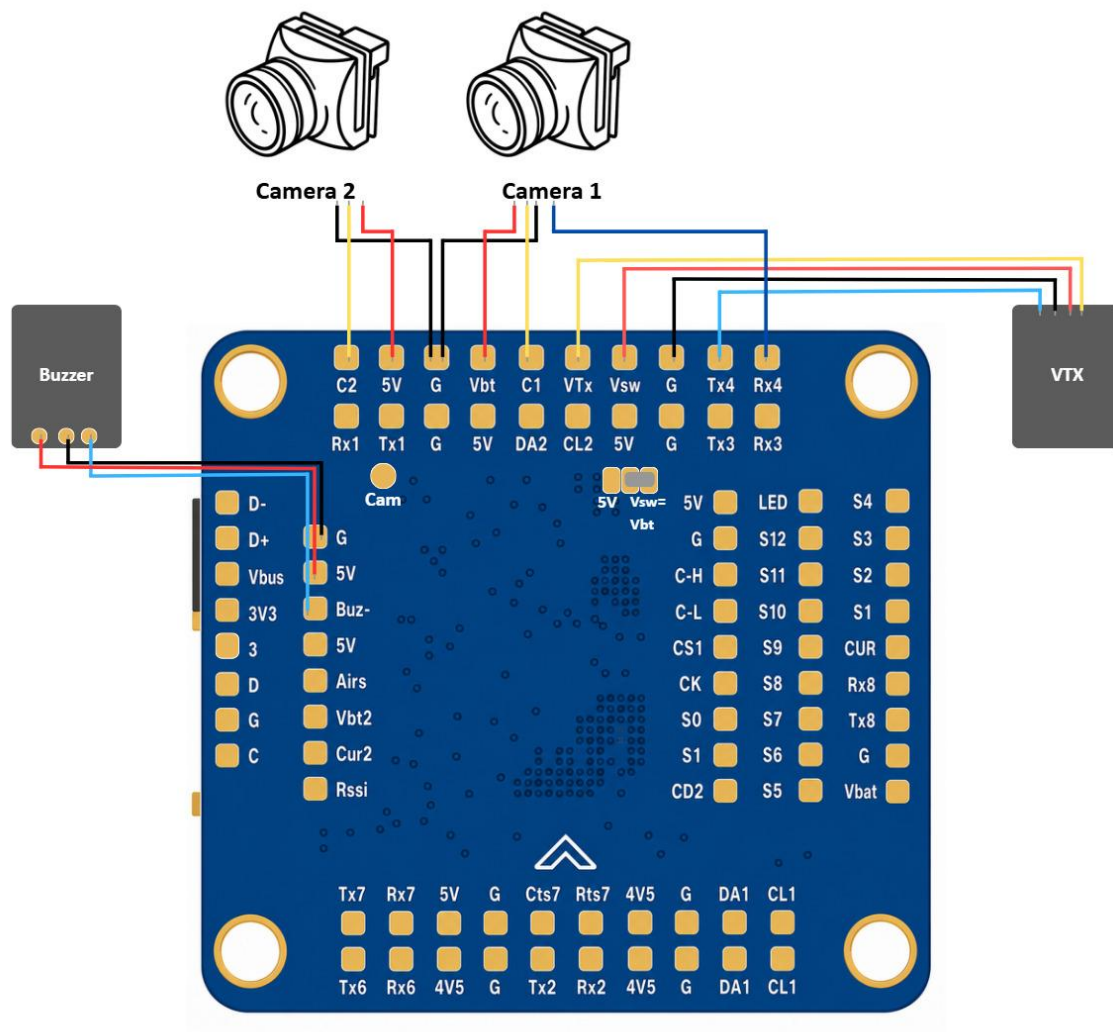
2.4. Digital Video Options

For HD digital video systems that do not use the internal analog OSD chip:

- Tx4 / Rx4: High-speed UART output array located on the top right, explicitly color-coded and designated for MSP DisplayPort digital protocol configurations.

2.5. Peripherals

- Buzzer (Left Side): Connect an active 5V buzzer using the G, 5V, and Buz- pads to enable audible status beeps and lost-model tracking.
- DA1 / CL1 & DA2 / CL2: Dual I2C buses (SDA/SCL) dedicated to external compasses (magnetometers) found on GPS modules.
- Tx2/Rx2, Tx3/Rx3, Tx6/Rx6, Tx7/Rx7: Highly versatile, un-inverted independent hardware UARTS for connecting ELRS/Crossfire receivers, GPS modules, or external telemetry hubs.
- LED: Dedicated signal pad for addressable RGB LED configurations.



- **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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