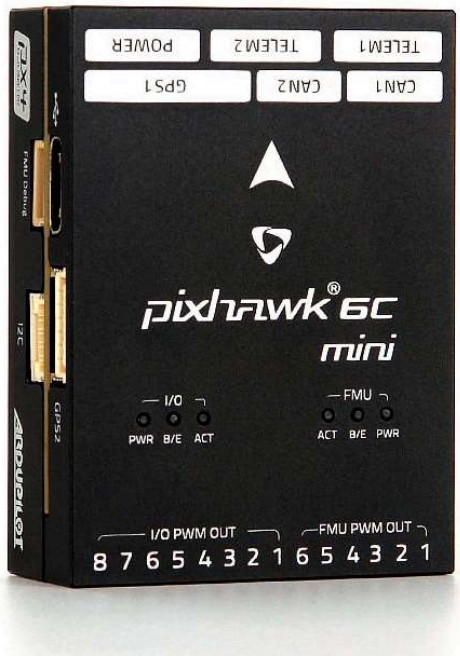
Pixhawk 6C 6C Mini Flight Controller

Pixhawk6C is the latest update to the successful family of Pixhawk® autopilots made by Holybro, featuring STM32H7 cpus, vibration isolation of IMUs, redundant IMUs, and IMU heating. It comes in two form factors. The 6C Mini reduces the size and has a built-in PWM motor/servo header, at the expense of a bit fewer ports.



Where To Buy

The Pixhawk6 autopilots are sold by Holybro

Features of Pixhawk6 Series

	Pixhawk 6X	Pixhawk 6C/Mini	Pix32 v6
Key Design Point	Additional Redundancy	Low profile	Cost effective
	Modular design, allowing customized baseboard	Cost effective	Modular design, allowing customized baseboard
Processor	STM32H753	STM32H743	
Clock Speed	480 MHz		
IO Processor	STM32F103		
IMU Redundancy	Triple	Double	Double
IMU Temperature Control	Yes		
Barometer Redundancy	Double	N/A	N/A
Power Monitor	I2C	Analog	Analog
PWM Outputs	8 Main, 8 FMU	8 Main, 8/6 FMU	8 Main, 6 FMU
UART	8	7 / 4	7
CAN Bus	2		
GPS/Compass Ports	2		
UART Flow Control	3 Ports	2/1 Ports	2 Ports
Additional I2C	Yes		
Ethernet Support	Yes	No	No
SPI Port	Yes	No	No
A/D	6.6V,3.3V,RSSI	RSSI	RSSI

UART Mapping

- SERIAL0 -> USB
- SERIAL1 -> UART7 (Telem1) RTS/CTS pins
- SERIAL2 -> UART5 (Telem2) RTS/CTS pins
- SERIAL3 -> USART1 (GPS1)
- SERIAL4 -> UART8 (GPS2)
- SERIAL5 -> USART2 (Telem3) RTS/CTS pins (not included on 6C Mini)
- SERIAL6 -> USART3 (USER) (Debug p)
- SERIAL7 -> USB (can be used for SLCAN with protocol change)

RC Input

The RCIN pin, which by default is mapped to a timer input, can be used for all ArduPilot supported receiver protocols, except CRSF/ELRS and SRXL2 which require a true UART connection. However, FPort, when connected in this manner, will only provide RC without telemetry.

To allow CRSF and embedded telemetry available in Fport, CRSF, and SRXL2 receivers, a full UART, such as SERIAL5 (UART3) would need to be used for receiver connections. Below are setups using Serial6. For the 6C Mini, SERIAL1 - SERIAL4 would need to be used.

- SERIAL5_PROTOCOL should be set to “23”.
- FPort would require SERIAL5_OPTIONS be set to “15”.
- CRSF would require SERIAL5_OPTIONS be set to “0”.
- SRXL2 would require SERIAL5_OPTIONS be set to “4” and connects only the TX pin.

Any UART can be used for RC system connections in ArduPilot also, and is compatible with all protocols except PPM. See Radio Control Systems for details.

PWM Output

The Pixhawk6C supports up to 16 PWM outputs. All 16 outputs support all normal PWM output formats. All FMU outputs (marked “FMU PWM Output”) also support DShot.

The 8 FMU PWM outputs are in 4 groups:

- PWM 1, 2, 3 and 4 in group1
- PWM 5 and 6 in group2
- PWM 7 and 8 in group3 (not 6C Mini)

FMU outputs within the same group need to use the same output rate and protocol. If any output in a group uses DShot then all channels in that group need to use DShot.

> **Note**
>
> to use BDShot capability on outputs 1-8, use the firmware in the “Pixhawk6C-bdshot” folder on the Firmware Server

Battery Monitoring

The board has 2 dedicated power monitor ports with a 6 pin connector. The Pixhawk6C uses analog power monitors on these ports.

- BATT_MONITOR = 4

- BATT_VOLT_PIN = 8
- BATT_CURR_PIN = 4
- BATT_VOLT_MULT = 18.182
- BATT_AMP_PERVLT = 36.364
- BATT2_VOLT_PIN = 5
- BATT2_CURR_PIN = 14
- BATT2_VOLT_MULT = 18.182
- BATT2_AMP_PERVLT = 36.364

Compass

The Pixhawk6C/Mini has a built-in compass. Due to potential interference, the autopilot is usually used with an external I2C compass as part of a GPS/Compass combination.

GPIOs

The FMU PWM outputs can be used as GPIOs (relays, buttons, RPM etc). To use them you need to set the output's `SERVOx_FUNCTION` to -1. See GPIOs page for more information.

The numbering of the GPIOs for PIN variables in ArduPilot is:

FMU pins:

- PWM1 50
- PWM2 51
- PWM3 52
- PWM4 53
- PWM5 54
- PWM6 55
- PWM7 56 (not 6C Mini)
- PWM8 57 (not 6C Mini)

Analog inputs

The Pixhawk6C has an analog RSSI input pin:

- Analog 3.3V RSSI input pin = 103

Connectors

Unless noted otherwise all connectors are JST GH

See Pixhawk6C pinout

or Pixhawk6C Mini pinout

Loading Firmware

The board comes pre-installed with an ArduPilot compatible bootloader, allowing the loading of xxxxxx.apj firmware files with any ArduPilot compatible ground station.

Firmware for these boards can be found here in sub-folders labeled “Pixhawk6C”.

Layout and Dimensions

See Pixhawk6C dimensions