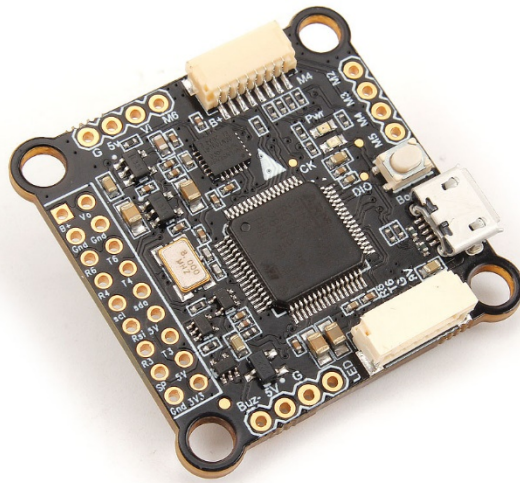


#11048

Kakute F4 V2.3



User Manual & Installation Guide

v1.0

Warranty and Return Policy

If you believe that your Kakute F4 is defective, please contact us. If we determine that the board is defective, it will be repaired or replaced at no charge to you. We may ask you to send your Kakute to our service center for examination or repair. Shipping costs are your responsibility. Returned items should include the original packaging and all accessories.

If product is damaged or defective, we will repair or replace it. Refunds are only given when product is lost by the shipping company. The refund amount is limited to the price of the product. Shipping costs are never refundable.

Contact us at:

- Email: productservice@holybro.com
- Facebook Page: Holybro
- Facebook Group: Holybro Hobby Official Group

Overview

The Holybro Kakute F4 flight controller supports important features of Betaflight/Cleanflight, such as OSD and Dshot. The faster F4 processor gives room for future feature development: run all features at the fast 8 kHz PID loop rate, at single-digit CPU utilization! Because of issues with serial inversion, other F4 boards struggle to support protocols such as FrSky SBUS and SmartPort at the same time. The Kakute F4 is designed to support all serial protocols at once.

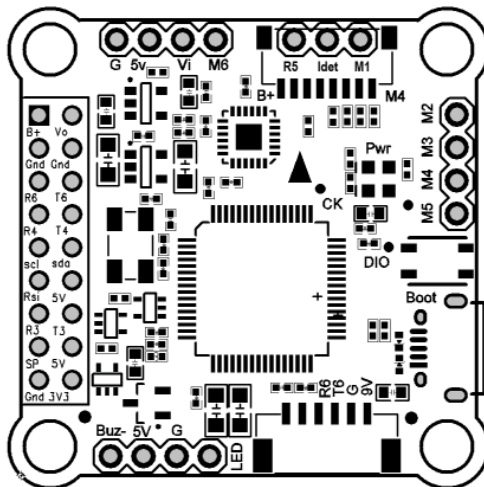
Features

- Supports Betaflight and Cleanflight.
- Betaflight OSD. Change PIDs, adjust common configuration parameters, and change video transmitter channel and power level, all using your transmitter sticks and goggles.
- High-performance / low-noise IMU. MPU6000 with 6-axis gyro and accelerometer.
- Ready for autonomous flight: Integrated BMP280 barometer and SCL/SDA for use with external GPS/magnetometer units.
- Dedicated bootloader button for easy firmware flashing.
- Low-profile design fits into even very compact frames.
- Input voltage 7v to 42v. Power the board directly from the flight pack, up to 6S (on "B+" pad only).
- Automatic voltage monitoring. No need to run a separate vBat wire for voltage monitoring; the Kakute F4 V2 monitors voltage directly from the battery power lead.
- On-board regulators output 5v at up to 1.0 amps and 3.3v at up to 200 mA to power peripherals such as receiver, video transmitter, FPV camera, or LED strip.
- On-board regulators output 9v at up to 2A to power DJI VTX.
- 6 PIN JST GH connector for DJI VTX.
- Supports BLHeli pass-through for easy ESC upgrade and configuration.
- 2 Additional PWM output, can be used for Camera control , motor5 or motor6 after resourced.

Specifications

- MCU: STM32F405RGT6 32-bit processor
- IMU: MPU6000 (SPI)
- Barometer: BMP280
- USB VCP Driver (all UARTs usable simultaneously; USB does not take up a UART)
- 5 hardware UARTS (UART1,3,4, 5, 6)
- Supports serial receivers (SBUS, iBus, Spektrum, Crossfire) only. PPM and PWM receivers are not supported.
- 128 Mbit Dataflash chip for Blackbox logging
- Dimensions: 36.8x36.8x8mm
- Mounting Holes: 30.5x30.5mm(M4)
- Weight: 7.4g

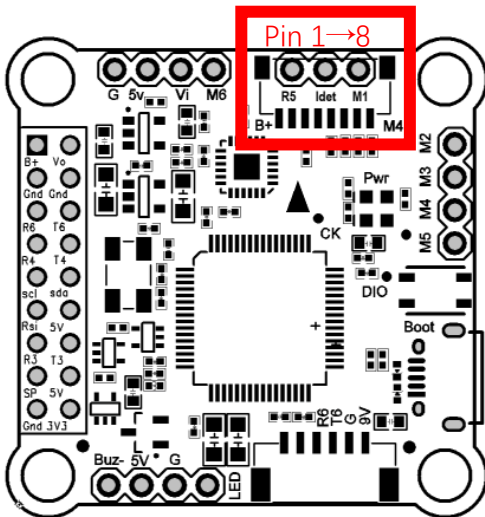
Pinout Diagram



Pin	Function
Buz-	Piezo buzzer negative leg
Led	WS2812 addressable LED signal wire
SP	FrSky SmartPort Telemetry (UART 1, inverted)
R3, T3	UART3 RX and TX (automatic inversion)
R4, T4	UART4 RX and TX (uninverted)
R5	UART5 RX (uninverted)
R6, T6	UART6 RX and TX (uninverted)
Scl	I2C SCL pin
Sda	I2C SDA pin
Rsi	Analog (0-3.3v) RSSI input
Idet	Current Sensor (0-3.3v) input
3V3	3.3v output (200 mA max)
5v	5v output (1.0 A max)
M1 to M4	Motor signal outputs
M5 to M6	Motor signal outputs(need to resource)
RX	UART 5 RX (uninverted, for ESC Telemetry)
VO	Video output to video transmitter
VI	Video input from FPV camera
Boot	Bootloader button
G or Gnd	Ground
B+	Battery positive voltage (2S-6S)

Pinout Diagram

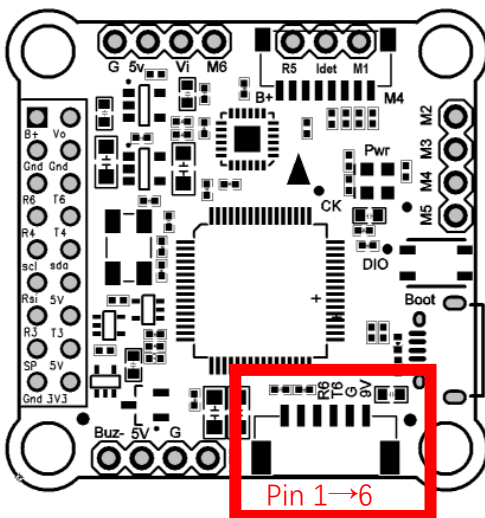
JST SH 8 Pin Port



Pin	Function
1	Battery Voltage
2	R5 (for ESC telemetry)
3	Ground
4	Current Sensor Input
5	M1
6	M2
7	M3
8	M4

The 8PIN SH connector can be used to connect directly to compatible 4-in-1 ESCs. However, you might need to use the SH connector even if you are not using a 4-in-1 ESC, because some pins are only present in the SH connector, not as pads on the board.

JST GH 6 Pin Port

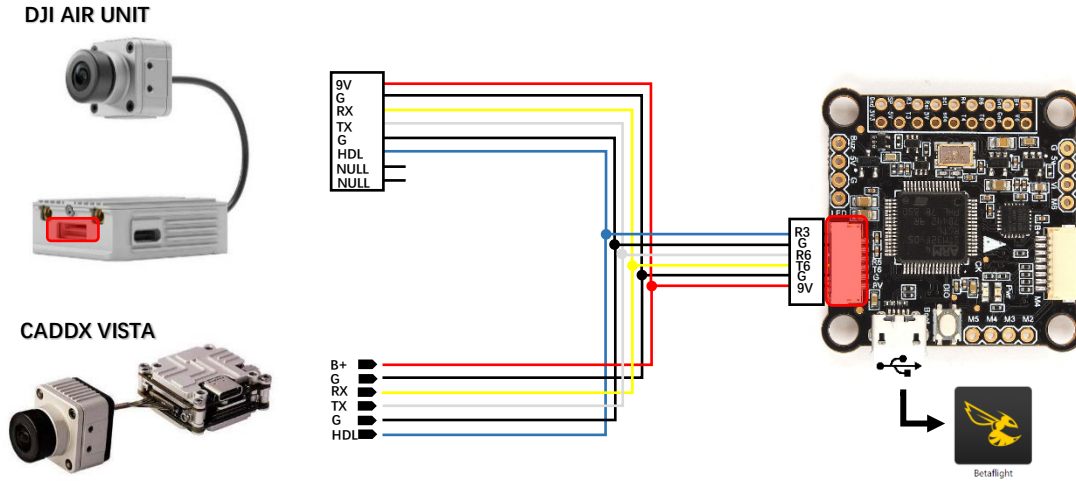


Pin	Function
1	R3
2	G
3	R6
4	T6
5	G
6	9V

The 6PIN GH port available on the board makes it much more convenient for you to connect HolyBro Kakute F4 V2 to the DJI FPV VTx or Caddx Vista, for both signal and power supply.

Wiring diagram

1).Digital HD Camera



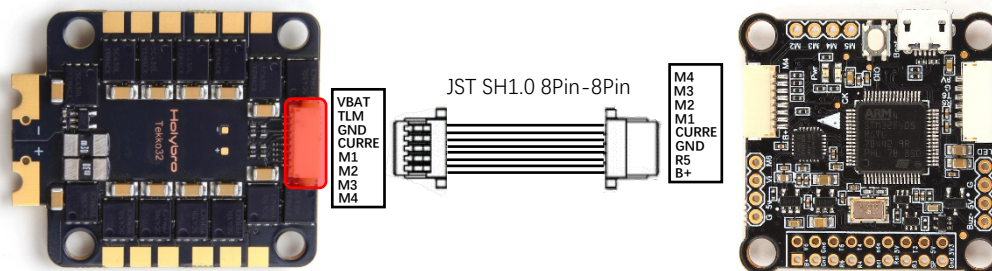
Ports

[WIKI](#)

Note: not all combinations are valid. When the flight controller firmware detects this the serial port configuration will be reset.
Note: Do **NOT** disable MSP on the first serial port unless you know what you are doing. You may have to reflash and erase your configuration if you do.

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	<input checked="" type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART1	<input type="checkbox"/> 115200	<input type="checkbox"/>	SmartPort AUTO	Disabled AUTO	Disabled AUTO
UART3	<input type="checkbox"/> 115200	<input checked="" type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART4	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART5	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	ESC AUTO	Disabled AUTO
UART6	<input checked="" type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO

2).ESC



Ports

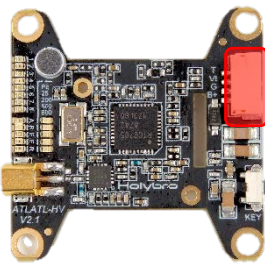
[WIKI](#)

Note: not all combinations are valid. When the flight controller firmware detects this the serial port configuration will be reset.
Note: Do **NOT** disable MSP on the first serial port unless you know what you are doing. You may have to reflash and erase your configuration if you do.

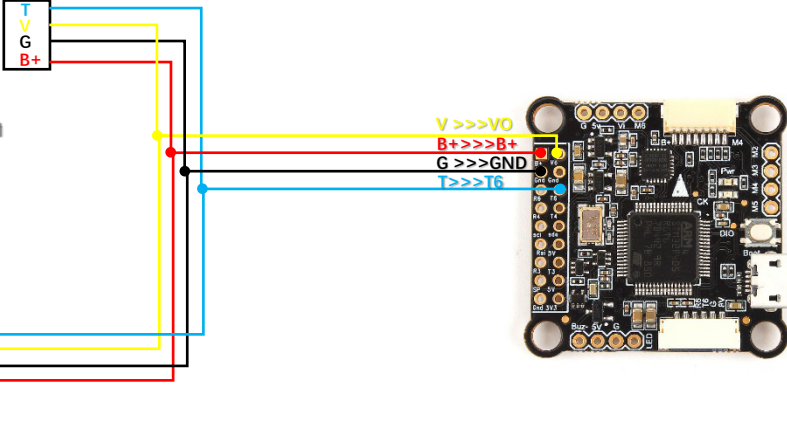
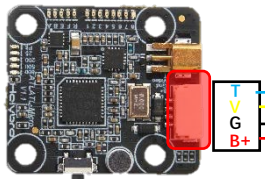
Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	<input checked="" type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART1	<input type="checkbox"/> 115200	<input type="checkbox"/>	SmartPort AUTO	Disabled AUTO	Disabled AUTO
UART3	<input type="checkbox"/> 115200	<input checked="" type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART4	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART5	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	ESC AUTO	Disabled AUTO
UART6	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	VTX (TBS Sm: AUTO

3).5.8G VTx

ATLATL-HV V2



ATLATL-Micro



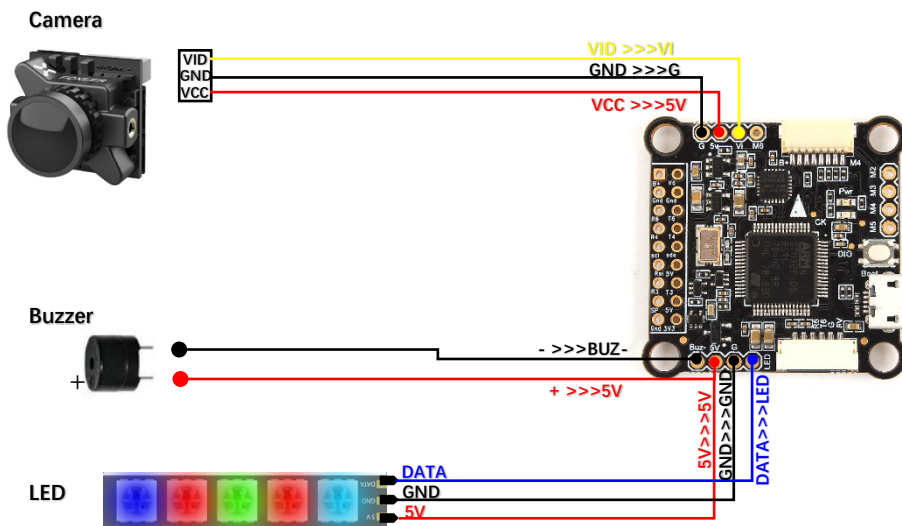
Ports

WIKI

Note: not all combinations are valid. When the flight controller firmware detects this the serial port configuration will be reset.
Note: Do **NOT** disable MSP on the first serial port unless you know what you are doing. You may have to reflash and erase your configuration if you do.

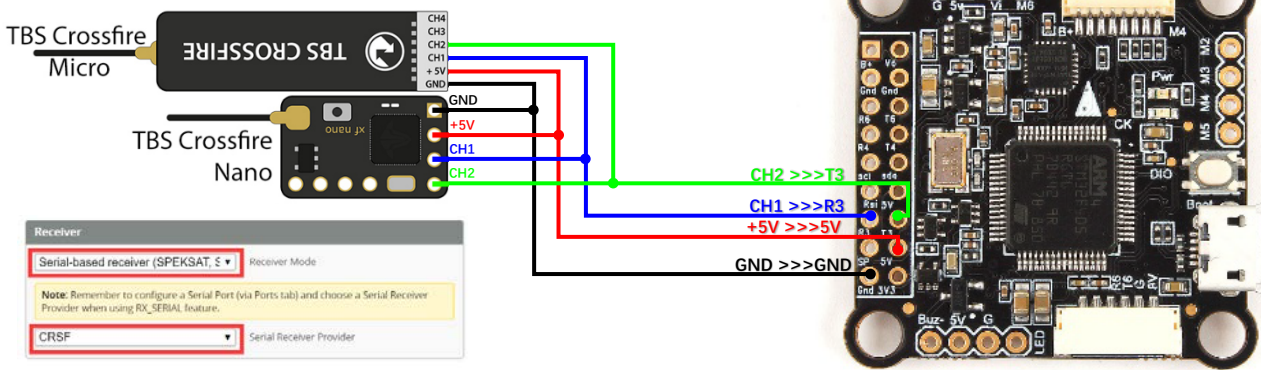
Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	<input checked="" type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART1	<input type="checkbox"/> 115200	<input type="checkbox"/>	SmartPort AUTO	Disabled AUTO	Disabled AUTO
UART3	<input type="checkbox"/> 115200	<input checked="" type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART4	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART5	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	ESC AUTO	Disabled AUTO
UART6	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	VTX (TBS Sm: AUTO

4).Analog FPV Camera & Buzzer & LED



5).Receiver

TBS Crossfire Receiver



Receiver

Serial-based receiver (SPEKSAT, S) Receiver Mode

Note: Remember to configure a Serial Port (via Ports tab) and choose a Serial Receiver Provider when using RX_SERIAL feature.

CRSF Serial Receiver Provider

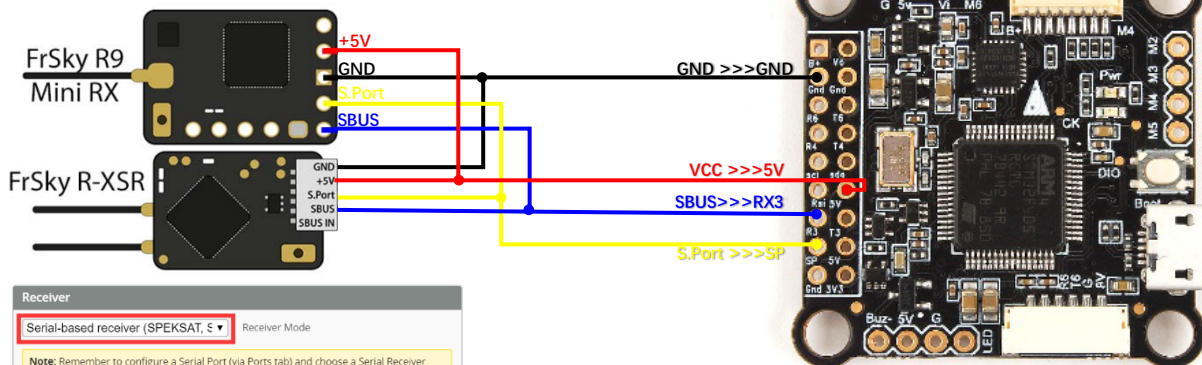
Ports

[WIKI](#)

Note: not all combinations are valid. When the flight controller firmware detects this the serial port configuration will be reset.
 Note: Do **NOT** disable MSP on the first serial port unless you know what you are doing. You may have to reflash and erase your configuration if you do.

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	<input checked="" type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART1	<input type="checkbox"/> 115200	<input type="checkbox"/>	SmartPort AUTO	Disabled AUTO	Disabled AUTO
UART3	<input type="checkbox"/> 115200	<input checked="" type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART4	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART5	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	ESC AUTO	Disabled AUTO
UART6	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	VTX (TBS Smx) AUTO

Frsky Receiver



Receiver

Serial-based receiver (SPEKSAT, S) Receiver Mode

Note: Remember to configure a Serial Port (via Ports tab) and choose a Serial Receiver Provider when using RX_SERIAL feature.

SBUS Serial Receiver Provider

Ports

[WIKI](#)

Note: not all combinations are valid. When the flight controller firmware detects this the serial port configuration will be reset.
 Note: Do **NOT** disable MSP on the first serial port unless you know what you are doing. You may have to reflash and erase your configuration if you do.

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	<input checked="" type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART1	<input type="checkbox"/> 115200	<input type="checkbox"/>	SmartPort AUTO	Disabled AUTO	Disabled AUTO
UART3	<input type="checkbox"/> 115200	<input checked="" type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART4	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART5	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	ESC AUTO	Disabled AUTO
UART6	<input type="checkbox"/> 115200	<input type="checkbox"/>	Disabled AUTO	Disabled AUTO	VTX (TBS Smx) AUTO