

#11066

Kakute F4 V2.4

User Manual & Installation Guide



Analog Camera
Power and camera control for analog camera configuration

5x UART

I2C Port
SDA SCL for external I2C sensors like GPS/compass

LED & BUZZER
RGB LED & Buzzer output

Φ4mm with M3 Silicon Grommets

Plug & Play ESC Port
Easy and simple set up for Quadcopter

IMU: MPU6000

MCU: STM32F4

DJI/Caddx HD Plug & Play Connection:
Plug and Play with DJI O3 & Caddx HD System, does not require external BEC.

Barometer: BMP280
Ready for autonomous flight

On Screen Display
AT7456E OSD Chip, allowing graphical on-screen-display

Onboard Flash
Allow for Blackbox data logging

Independent LDO & Noise Filtering
IMU & OSD uses separate LDO, and MCU uses independent BEC with extensive noise filtering to ensure reliability

9V & 5V Voltage Regulator & Filtering
9V/3A & 5V/2A voltage regulators & filtering for DJI O3 & Caddx HD system and peripheral

Mechanical and Electrical Specs:

- **Input Voltage:** 2S - 8S
- **Mounting:** 30.5 x 30.5/Φ4mm (M3 Grommets)
- **Size:** 37 x 37mm
- **Weight:** 7g

Default UART Configuration:

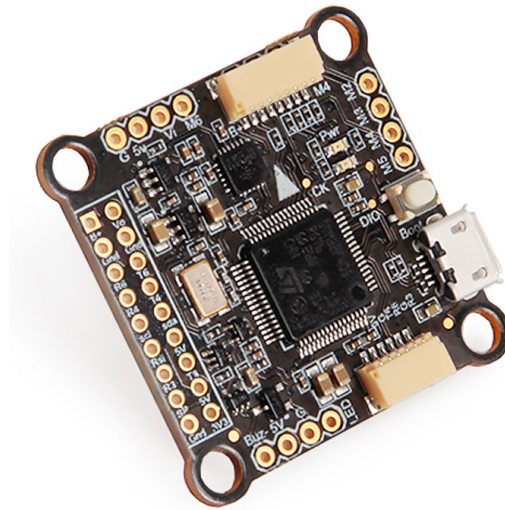
- UART1: DJI VTX (MSP ON)
- UART3: Receiver/SBUS (Serial RX On)
- UART4: Spare/GPS
- UART5: ESC
- UART6: DJI VTX (MSP On)

Other Side

30.5mm

30.5mm

Overview



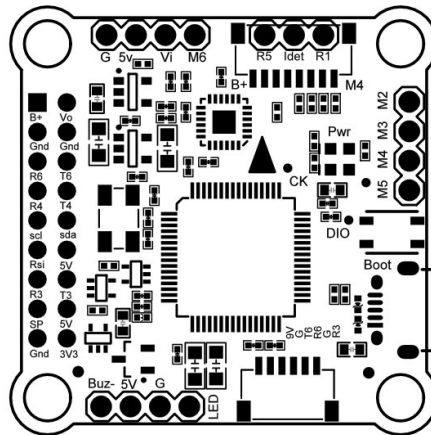
The Holybro Kakute F4 V2.4 Flight Controller includes plug-and-play DJI O3 HD camera plug, 4in1 ESC ports, barometer, OSD, 5x UARTs, logging capability with built-in flash, 5V and 9V/3A BEC, easy soldering layout and much more.

The Kakute F4 V2.4 is DJI HD ready. It has an easy plug-and-play port with an on-board 9V/A regulator designed to power your HD video transmitter like DJI O3 Air Unit & Caddx Vista while supporting analog system. It has 5x dedicated UART ports with built-in inversion for peripherals. It is also ready for autonomous flight with the on-board barometer. There are LED & buzzer pad, I2C pad (SDA & SCL) for external GPS/Magnetometers

Specification:

- MCU - STM32F405
- IMU - MPU6000
- Barometer - BMP280
- OSD - AT7456E
- 5x UARTs (1,3,4,5,6,)
- 128 Mbit Dataflash chip
- Battery input voltage: 2S-8S
- BEC 9V/3A - Optimized for DJI O3 Air unit
- BEC 5V/2A
- 7x PWM Outputs (6 Motor Output, 1 LED)
- Supports serial receivers (SBUS, iBus, Spektrum, Crossfire, ESLR).
- Mounting - 30 x 30mm, Φ 4mm hole with M3 Grommets
- Dimension - 37x37mm
- Weight – 7g
- JST-SH1.0_8pin port (For 4in1 ESCs)
- JST-SH1.0_6pin port (For DJI/Caddx HD System and other VTX)

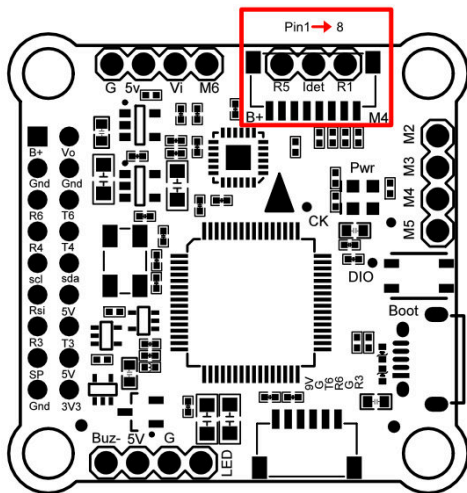
Pinout Diagram



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

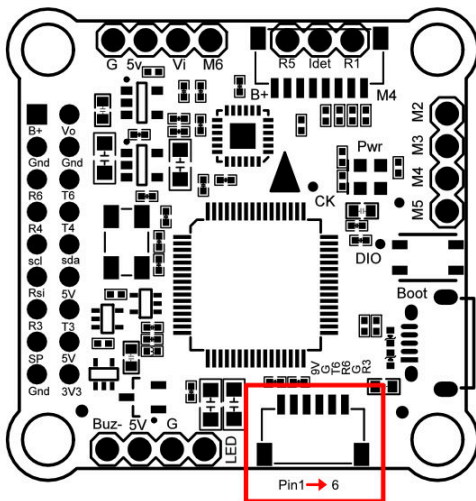
JST SH 8 Pin Port



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 SH 6 Pin Port



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

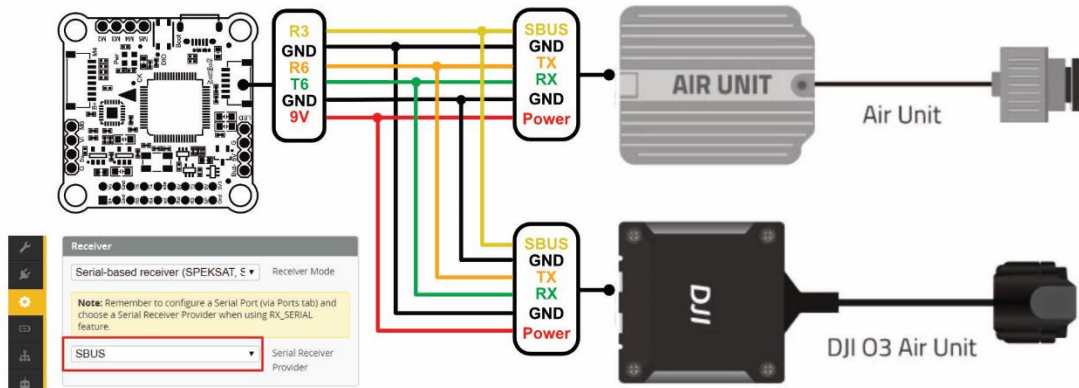
The 6PIN SH port available on the board makes it much more convenient for you to connect HolyBro Kakute F4 V2 to the DJI O3 Air Unit or Caddx Vista or other Vtx, for both signal and power supply.

Wiring diagram

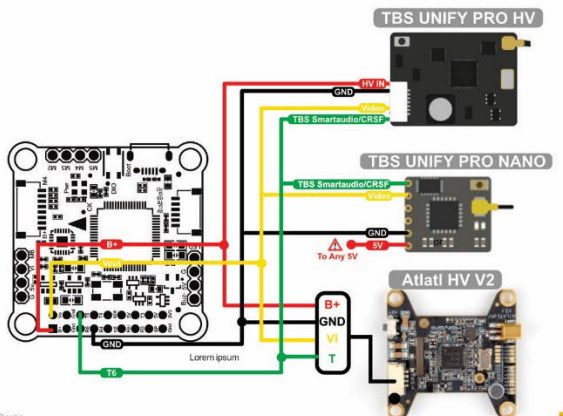
Using DJI/Caddx Digital FPV System with DJI Remote Controller

Note:

In order for the flight controller to send OSD information to the Air Unit/Vista, UART1 needs to be set to MSP. If you are using DJI Remote Controller, set Serial Rx on for UART 3. Ensure your Receiver Protocol is set to SBUS.



Video Transmitter (Vtx) If you are not Using DJI/Caddx Digital System Vtx

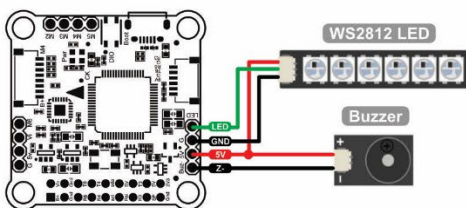


Ports

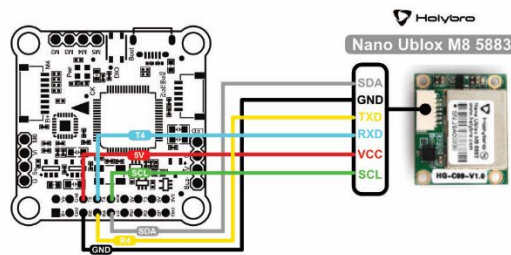
Note: Not all combinations are valid. When the flight controller firmware detects this, the serial port configuration will be reset.
 Note: Do NOT disable MSP on the first serial port unless you know what you are doing. You may have to reflash and erase your configuration if you do.

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200	Disabled	AUTO	Disabled	AUTO
UART1	115200	SmartPort	AUTO	Disabled	AUTO
UART3	115200	Disabled	AUTO	Disabled	AUTO
UART4	115200	Disabled	AUTO	Disabled	AUTO
UART5	115200	Disabled	AUTO	ESC	AUTO
UART6	115200	Disabled	AUTO	Disabled	AUTO

Buzzer/LED



GPS



Ports

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
USB VCP	115200	Disabled	AUTO	Disabled
UART1	115200	Disabled	AUTO	Disabled
UART3	115200	Disabled	AUTO	Disabled
UART4	115200	Disabled	AUTO	GPS

Setup

GPS GPS for navigation and telemetry

Configuration

Note: Remember to configure a Serial Port via Ports tab when using GPS feature.

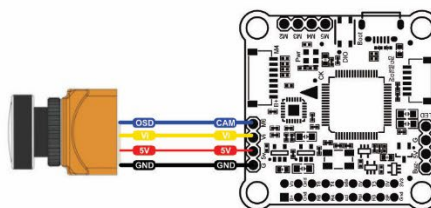
Power & Battery

UBLOX Protocol

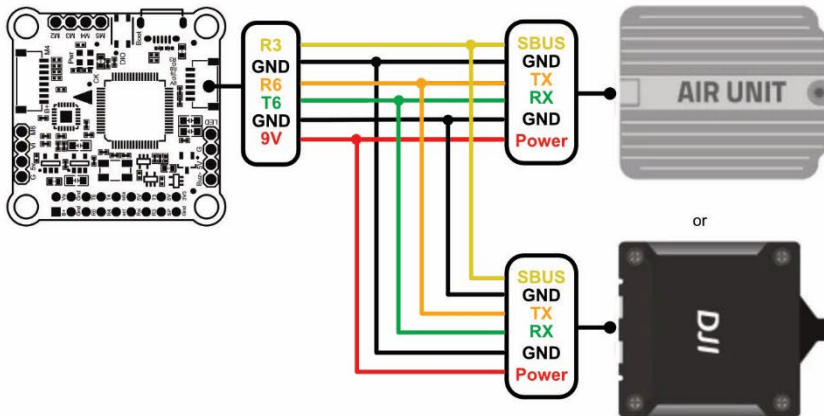
Auto Baud

Auto Config

Analog FPV Camera



Installing a Receiver (If you are not using the DJI Remote Controller)



Note:

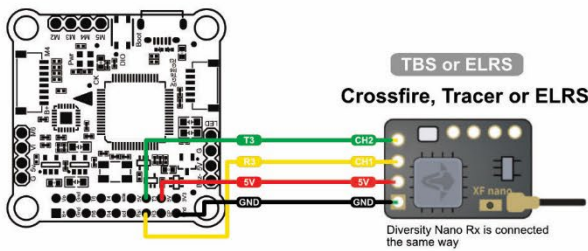
If you are not using the DJI Remote Controller, do not connect the SBUS and GND wires. (See Diagram on the left)

Follow the diagrams & instructions below to set up your own Receiver.

Ports

Note: not all combinations are valid. When the flight controller firm **Note:** Do **NOT** disable MSP on the first serial port unless you know

Identifier	Configurator/MSP	Serial Rx
USB VCP	<input checked="" type="checkbox"/> 115200	<input type="checkbox"/>
UART1	<input type="checkbox"/> 115200	<input type="checkbox"/>
UART3	<input type="checkbox"/> 115200	<input checked="" type="checkbox"/>
UART4	<input type="checkbox"/> 115200	<input type="checkbox"/>
UART5	<input type="checkbox"/> 115200	<input type="checkbox"/>
UART6	<input checked="" type="checkbox"/> 115200	<input type="checkbox"/>

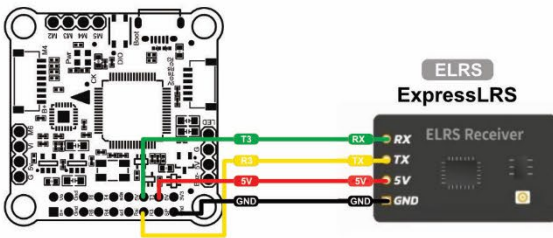


Receiver

Serial-based receiver (SPEKSAT, €) 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

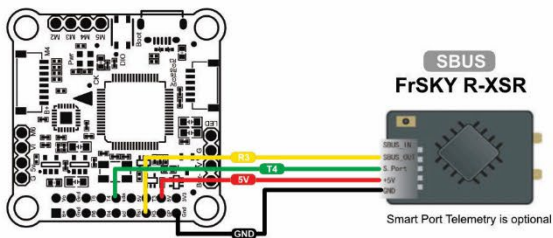


Receiver

Serial-based receiver (SPEKSAT, €) 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



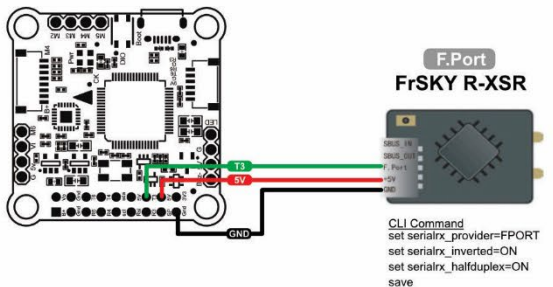
Receiver

Serial-based receiver (SPEKSAT, €) 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

UART4 115200 SmartPort AUTO



Receiver

Serial-based receiver (SPEKSAT, €) Receiver Mode

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

FrSky FPort Serial Receiver Provider

ESCs

Plug-and-Play 4in1 ESC Ports

