

6. H7 FC

6.1. About

The TBS LUCID H7 FC is a powerhouse built for those who crave peak performance and adaptability in their drones. Whether you're ripping through freestyle moves or fine-tuning a racing rig, the TBS Lucid H7 delivers with its robust 480MHz processor and seamless support for BETAFLIGHT, ArduPilot, and INAV. Featuring dual camera inputs, DJI FPV OSD compatibility, and a compact design, it fits effortlessly into any setup. Designed for both seasoned pros and enthusiastic newcomers, this flight controller makes pushing the limits of your drone easier than ever.

6.2. Specification

Processor:	STM32H743VIH6
IMU:	ICM42688 - Dual Gyro
Baro:	V1: Infineon DPS310 V2: Infineon DPS368
UARTs:	7
I2C Ports:	2
Servo Outputs:	13
Size:	32 x 32 mm
Mounting:	30.5 x 30.5 mm, M3
Weight:	4 g
Blackbox:	External, by SD-Card
OSD:	Built-in
Input Voltage:	3 - 8 S compatible
BEC Voltage:	5 V: 2 A 9 V: 2 A
Receiver:	Solder on (by wire)
DJI Airunit:	Dedicated connector
Additional Features:	SPI CAN Multiple analog Inputs ADC Vbat pad supports up to 69V



6.3. Firmware

Firmware	Target	Min. FW Version
BETAFLIGHT	TBS_LUCID_H7	4.5
INAV	TBS_LUCID_H7	8.0.1
ArduPilot ⁽¹⁵⁾	TBS_LUCID_H7	4.6.0

6.4. Serial Ports

Serial Ports

Port	Usage	Available Pins
UART 0	USB	Full UART
UART 1	S.Bus	Full UART (just RX on DJI plug)
UART 2	GPS	Full UART with DMA
UART 3	MSP, HD Video Connector	Full UART with DMA
UART 4	Spare	Full UART
UART 6	Receiver	Full UART with DMA
UART 7	Spare	Full UART with DMA
UART 8	ESC Telemetry	Full UART

ArduPilot Specification

Port	Ardu-port	Ardu-Usage	5V Tolerant
UART 0	SERIAL0	USB	Yes
UART 1	SERIAL1	S.Bus	Yes
UART 2	SERIAL2	GPS1	Yes
UART 3	SERIAL3	MSP Displayport	Yes
UART 4	SERIAL4	TELEM1	Yes
UART 6	SERIAL6	Receiver	Yes
UART 7	SERIAL7	TELEM2	no, 3.3 V
UART 8	SERIAL8	ESC	Yes

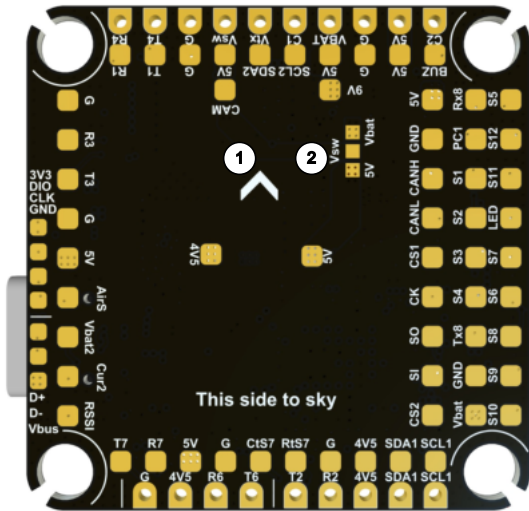
(15) *Ardu Wiki for settings*



6.5. Pinout

6.5.1. Pinout V1

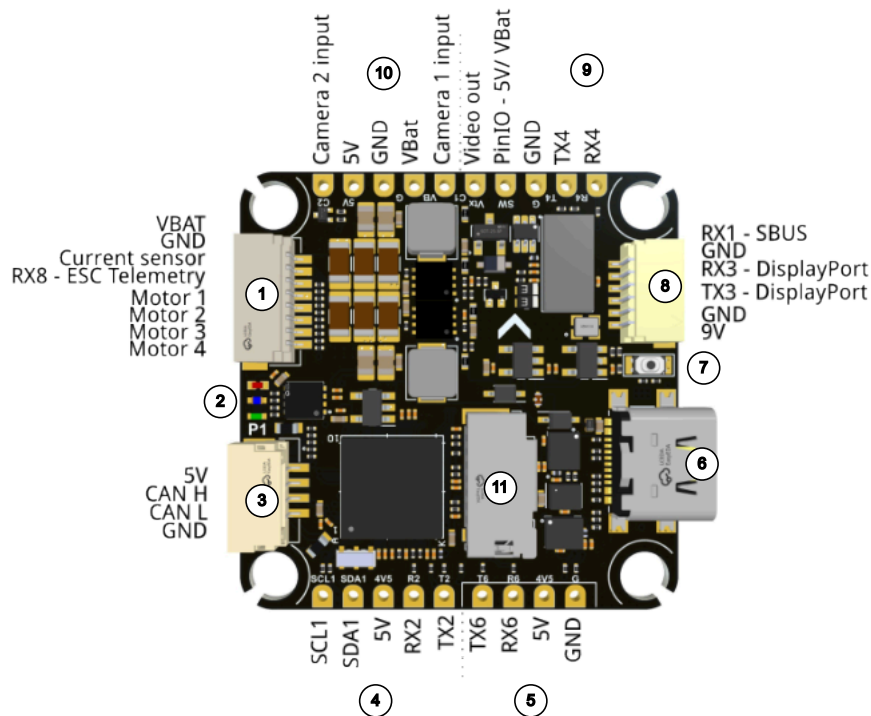
Top View



1 -- Direction Arrow

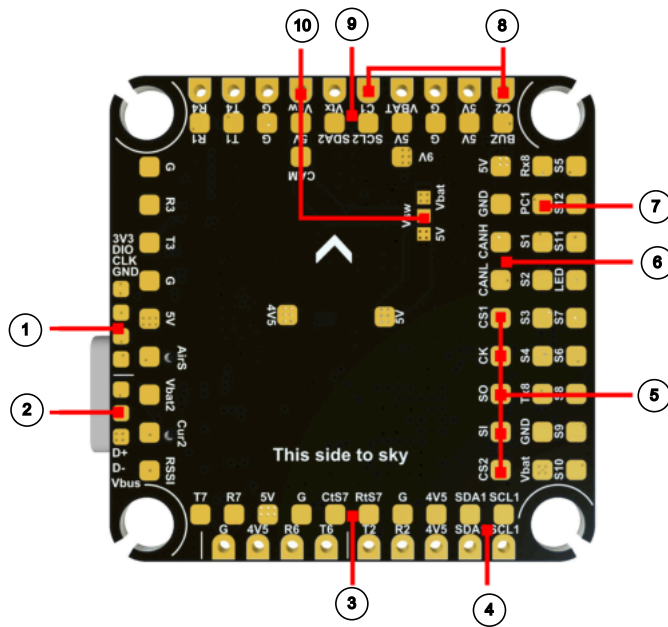
2 -- VSW Voltage Selector

Bottom View



1 -- ESC Port	2 -- Status LEDs	3 -- CAN Port
4 -- GPS Pads	5 -- Receiver Pads	6 -- USB-C Port
7 -- Bootloader Button	8 -- HD VTX Port	9 -- Analog VTX Pads
10 -- Analog Camera Pads	11 -- SD Card Slot	

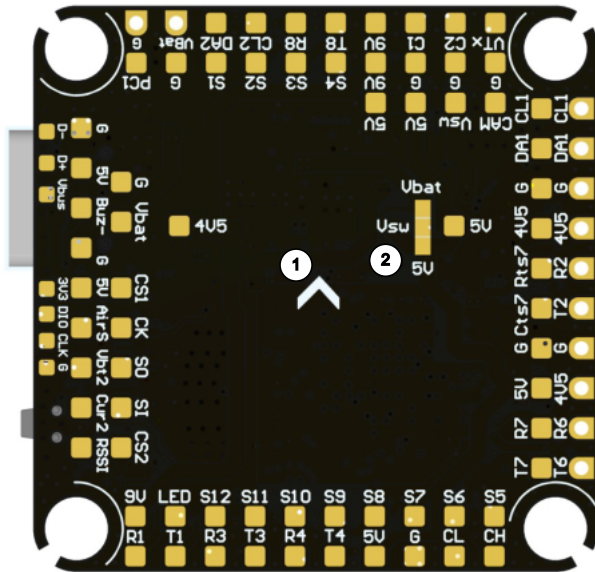
Additional Connections



1 - SWD	2 - USB Breakout	3 - Hardware Flow Control UART 7
4 - I2C 1	5 - SPI	6 - CAN
7 - Analog in Breakout (Current from ESC)	8 - Camera 1/2 input	9 - I2C 2
10 - VSW - PinIO switch with selectable voltage (by solder jumper)		

6.5.2. Pinout V2

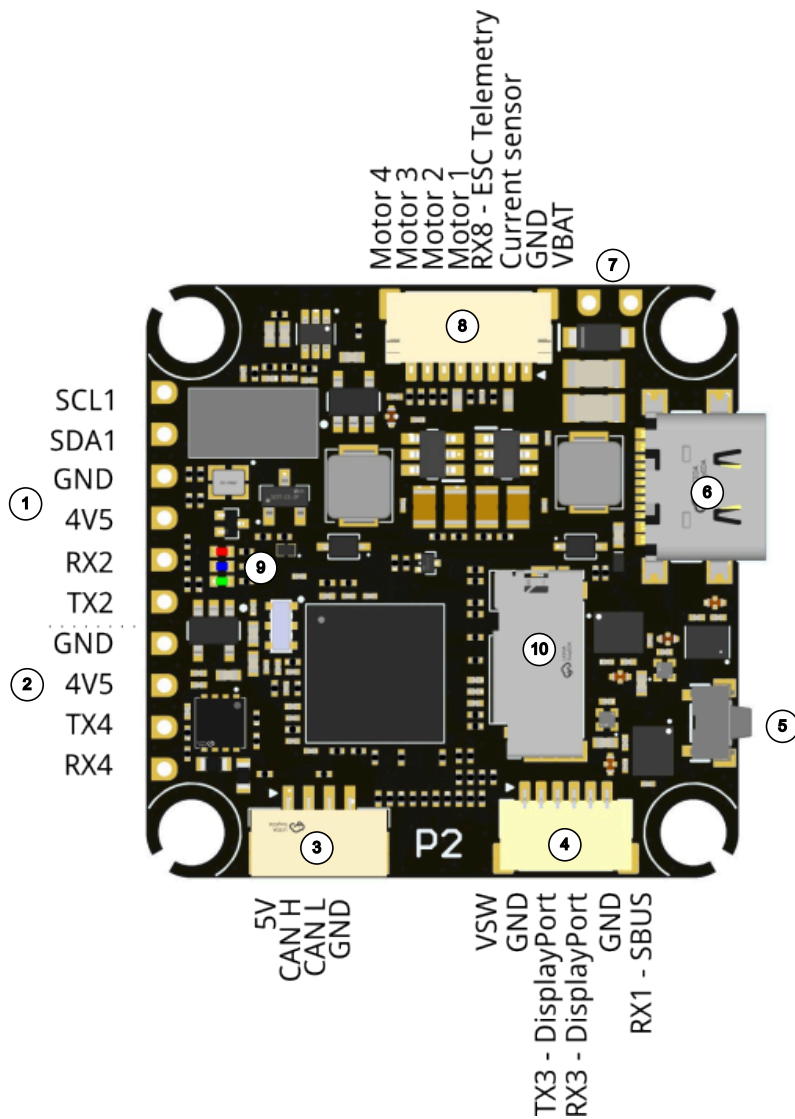
Top View



1 -- Direction Arrow	2 -- VSW/ HD Video Port Voltage Selector
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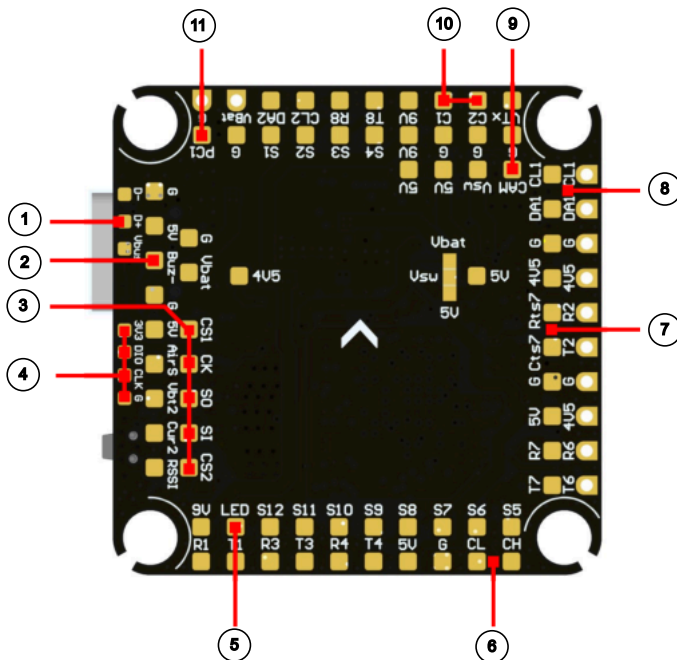
Bottom View



1 -- GPS Pads	2 -- Receiver Pads	3 -- CAN Port
4 -- HD VTX Port	5 -- Bootloader Button	6 -- USB-C Port
7 -- VBAT/GND Pads	8 -- ESC Port	9 -- Status LEDs
10 -- SD Card Slot		



Additional Connections



1 -- USB Breakout	2 -- Buzzer Signal	3 -- SPI
4 -- SWD	5 -- LED	6 -- CAN
7 -- Hardware Flow Control UART 7	8 -- I2C 1	9 -- Camera 1 Input
10 -- Camera 1/2 Input	11 -- Analog in Breakout (Current from ESC)	

6.6. GPIO Pins



Note:

VSW - Voltage Switch (PinIO) and Video in Selector (C1/C2)-Pins are *high-active*.

Settings them to **On** in your Flight Software **enables** the output.

VTX BEC 9/12 is *low-active*.

Settings them to **On** in your Flight Software **disables** the output.

VSW - Voltage Switch (PinIO)

Firmware	Function Name	MCU Pin	Function
BETAFLIGHT	PinIO	PD10	USER1
INAV	PinIO	PD10	USER1
ArduPilot	Relay	GPIO 81	RELAY2



6.8. Voltage Sensor Settings

BETAFLIGHT Input 1 (up to 33 V)

Scale:	110
Divider:	100
Multiplier Value:	10

BETAFLIGHT Input 2 (up to 69 V)

Scale:	210
Divider:	20
Multiplier Value:	1

INAV (up to 33 V)

Scale:	1100
Offset:	0

INAV Battery Battery Input 2 (up to 69 V)

Scale:	2100
Offset:	0

ArduPilot Input 1 (up to 33 V)

BATT_MONITOR:	4
BATT_VOLT_PIN	10
BATT_VOLT_MULT	11.0

ArduPilot Battery Input 2 (up to 69 V)

BATT2_MONITOR:	4
BATT2_VOLT_PIN	18
BATT2_VOLT_MULT	11.0

6.9. Current Sensor Settings

BETAFLIGHT Input 1

Scale:	Depends on used Sensor
Value:	Depends on used Sensor

BETAFLIGHT Input 2

Scale:	Depends on used Sensor
Value:	Depends on used Sensor

INAV Input 1

Scale:	Depends on used Sensor
Offset:	Depends on used Sensor

INAV Input 2

Scale:	Depends on used Sensor
Offset:	Depends on used Sensor

ArduPilot Input 1

BATT_CURR_PIN	11
BATT_AMP_PERVLT	Depends on used Sensor

ArduPilot Input 2

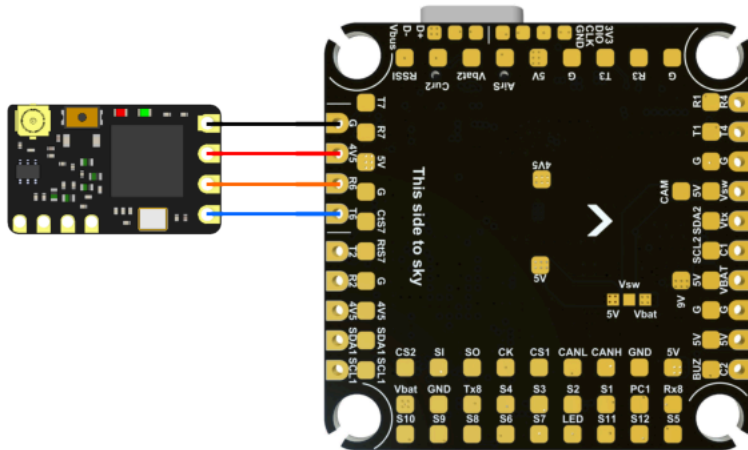
BATT2_CURR_PIN	7
BATT2_AMP_PERVLT	Depends on used Sensor



6.10. Peripheral Connections

6.10.1. Receiver

Receiver connection - V1 FC



Note:

Receiver and FC pin layout match up, allowing the receiver to be direct soldered. When done as in the picture above, the *Bind* button can become hard to reach!

BETAFLIGHT/ INAV

UART 6:	Serial RX: on
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ArduPilot

SERIAL6:	Depends on chosen protocol (MAVLink, CRSF)
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Note:

Further information on the settings can be found in the CROSSFIRE/TRACER manual

6.10.2. ESC (LUCID 4in1)

When using the LUCID 4in1 ESC, connect the included 8-pin cable to the FC and the ESC. This connection will provide VBat, GND, 4 ESC signals, and analog current sensor data.

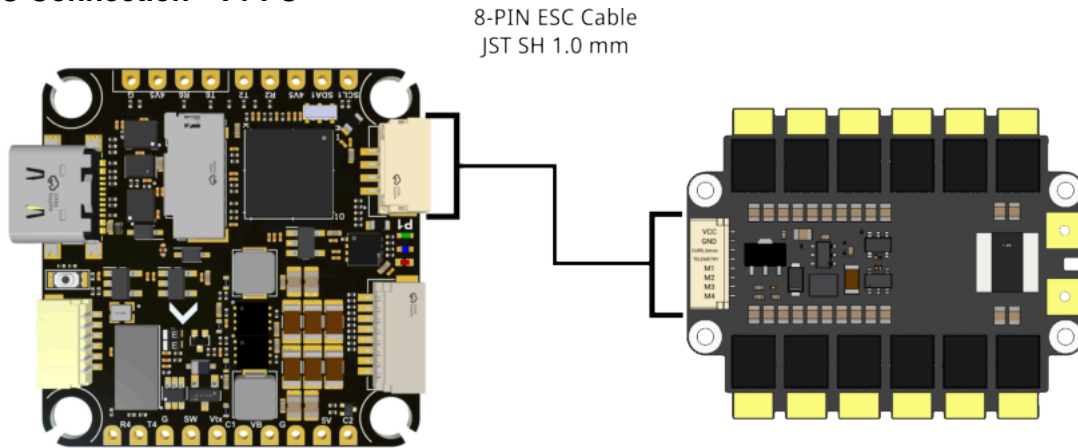


Note:

When using a non-TBS ESC, check the pinout and adjust it if required (ESC side)



ESC Connection - V1 FC



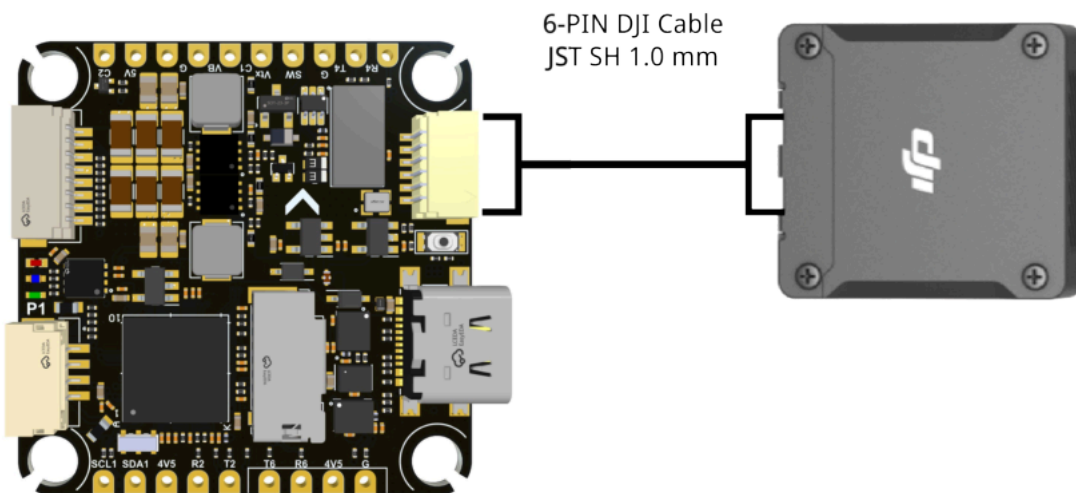
Port Settings

UART 8:	Sensor Input: ESC,
	Baudrate: Auto

6.10.3. HD Video Systems

Connect your VTX to the designated port for the HD video system.

HD System Connection - V1 FC



The supply voltage is

- 9 V (V1)
- 5 V or VBAT (V2)

Port Settings

UART 3:	MSP: on/ Peripherals: Displayport
	Baud rate: 115200 ⁽¹⁶⁾

⁽¹⁶⁾ Baud rate might be different. Check the video system manual for details.

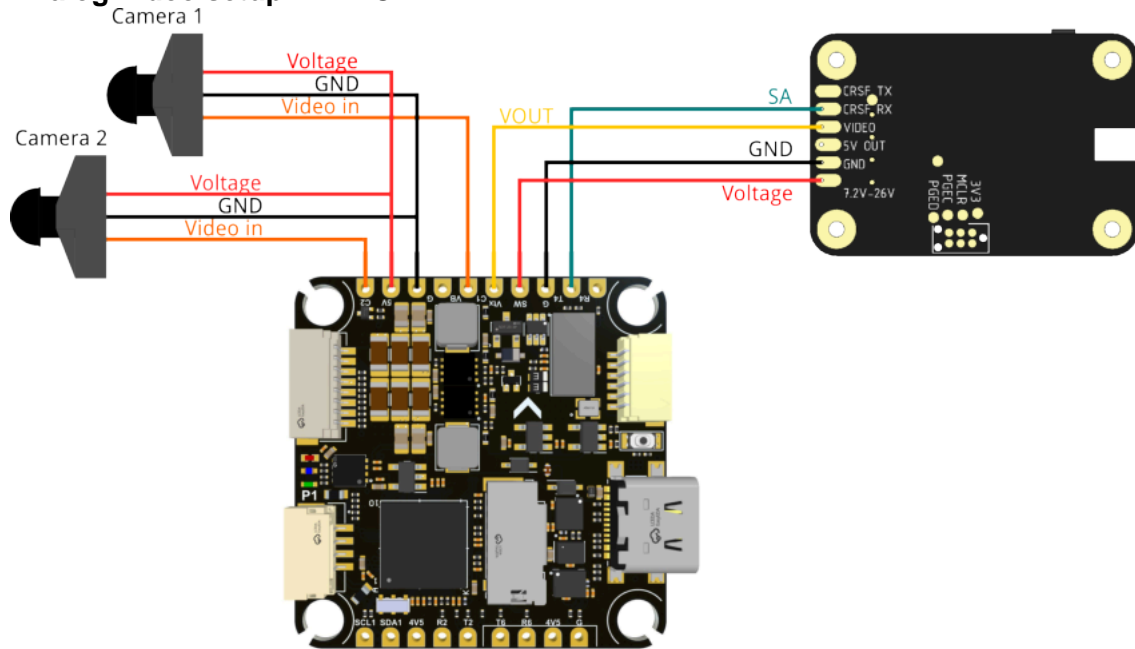
Included Receiver Settings (optional)

UART 1:	Serial RX: on
UART 6:	Serial RX: off ⁽¹⁷⁾

6.10.4. Analog Video Systems

BY wiring the VTX to the PINIO connector and selecting the correct voltage for your VTX, you can disable the VTX when on the ground by software.

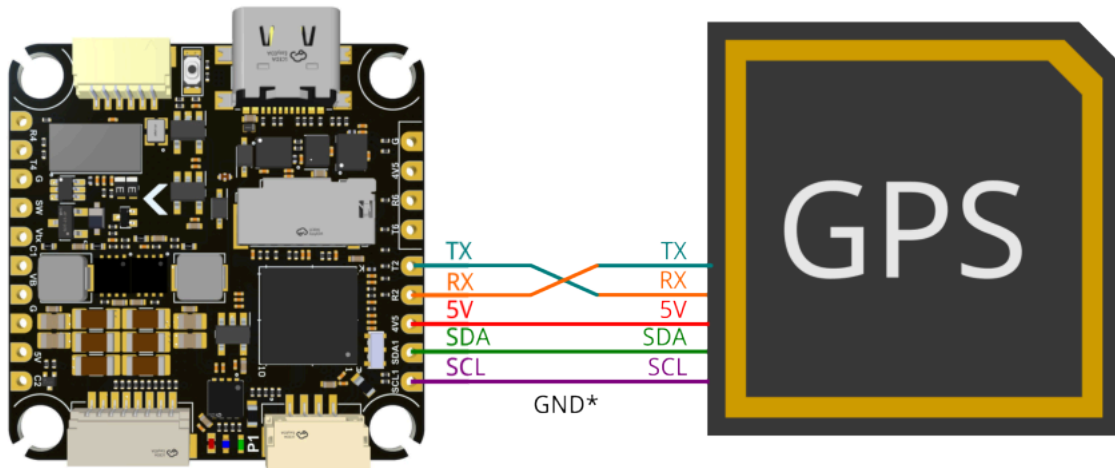
Analog Video setup - V1 FC



(17) Disables the external receiver

6.10.5. GPS and Compass

GPS Connection - V1 FC



Note:

*GND is available on the backside as solder-point



Note:

RX and TX must be swapped on one device (FC TX → GPS RX)

Port Settings

UART 2:	Peripheral: GPS
	Baudrate: depends on GPS

