8. H7 FC - Wing AIO

8.1.

The TBS LUCID H7 Wing AIO 2-6S 50A is your quick plug & play wing FC for flying wings with up to 1m wingspan, or 1.5kg of takeoff weight (approximately). Running the STM32H7 chip, a custom AM32 50A ESC in a sleek, heat-dissipating plastic case with plug connectors for peripherals such as servos, VTx, Camera, GPS and external USB.

Designed for both seasoned pros and enthusiastic newcomers, this flight controller takes the chore out of building your FPV setup and gets you up and running quicker and easier.

8.2. Specification

Note: The lower part of the housing acts as a heat-sink.

FC

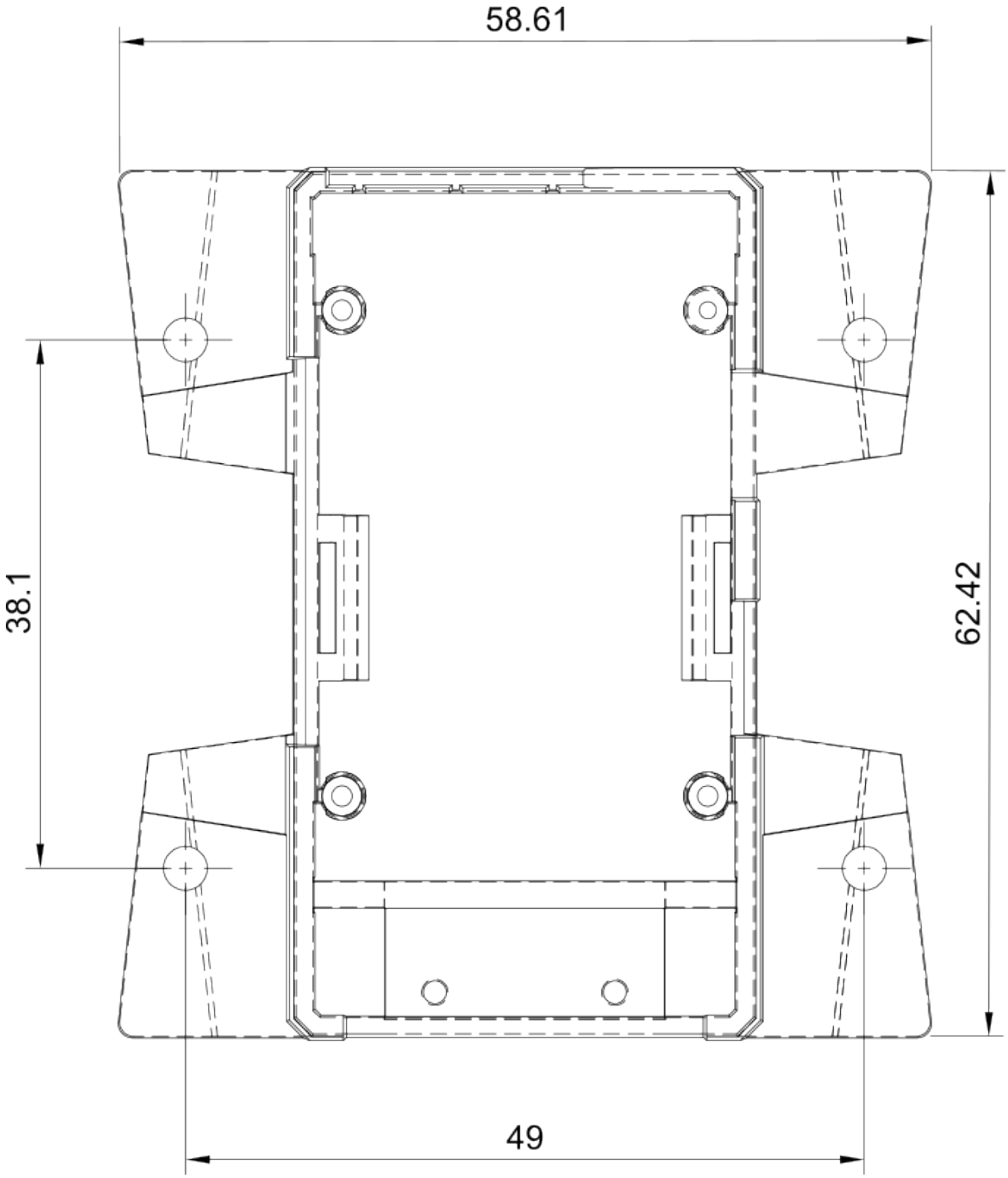
Processor:	STM32H743VIH6	Weight:	51 g
IMU:	ICM-42688P (SPI1) ICM-42688P (SPI4)	Receiver:	Connected by Plug
Baro:	Infineon DPS310	DJI Airunit:	Supported by Plug
Input Voltage:	3-6 S	Blackbox:	By SD Card
BEC Voltage:	5/6.2/7.2/8.4 V 5A (23) 5 V 1A (24)	OSD:	Built-in
UARTs	7	Servo Outputs	6 (25)
I2C Ports:	2	Size:	59 x 63 x 22.4 mm
Additional Features:	SPI, CAN, Current Sensor, Additional Analog Inputs(26), USB-C Extension Board w. Buzzer		

(23) *Servo, VTX, Camera*
(24) *Receiver, GPS, CAN bus*
(25) *6 accessible, 1 extra for internal ESC connection*
(26) *RSSI, Airspeed Sensor, User1, User2*

ESC

Firmware:	AlkaMotors32 (AM32)	Weight:	5 g
Input Voltage:	3-6 S	Motor Outputs	1, MR30 Connector
Current:	50 A (continuous)	Protocols:	DShot 300/600
			ESC Telemetry
Mounting	Soldered on to FC	Size:	31.3 x 23.4 mm

8.3. Mounting - Dimensions



Notice: All dimensions are given in mm

8.4. Firmware

Firmware	Target	Min. FW Version
INAV	TBS_LUCID_H7_WING_MINI	8.0.1
ArduPilot(27)	INAV TBS_LUCID_H7_WING	4.6.0 BETA 2
AM32 (ESC)	AM32_TBS_6S_4in1_F421	2.18

8.5. 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	VTX/ Spare	Full UART with DMA(28)
UART 3	MSP, HD Video Connector	Full UART with DMA
UART 4	Receiver	Full UARTFull UART
UART 6	GPS	Full UART with DMA
UART 7	ESC Telemetry	Used internaly
UART 8	Spare	Full UART (29)

ArduPilot Specification

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

(27) *Ardu Wiki for settings*
(28) *Located on the Servo Connector*
(29) *Accessible as solder-point inside the cover*

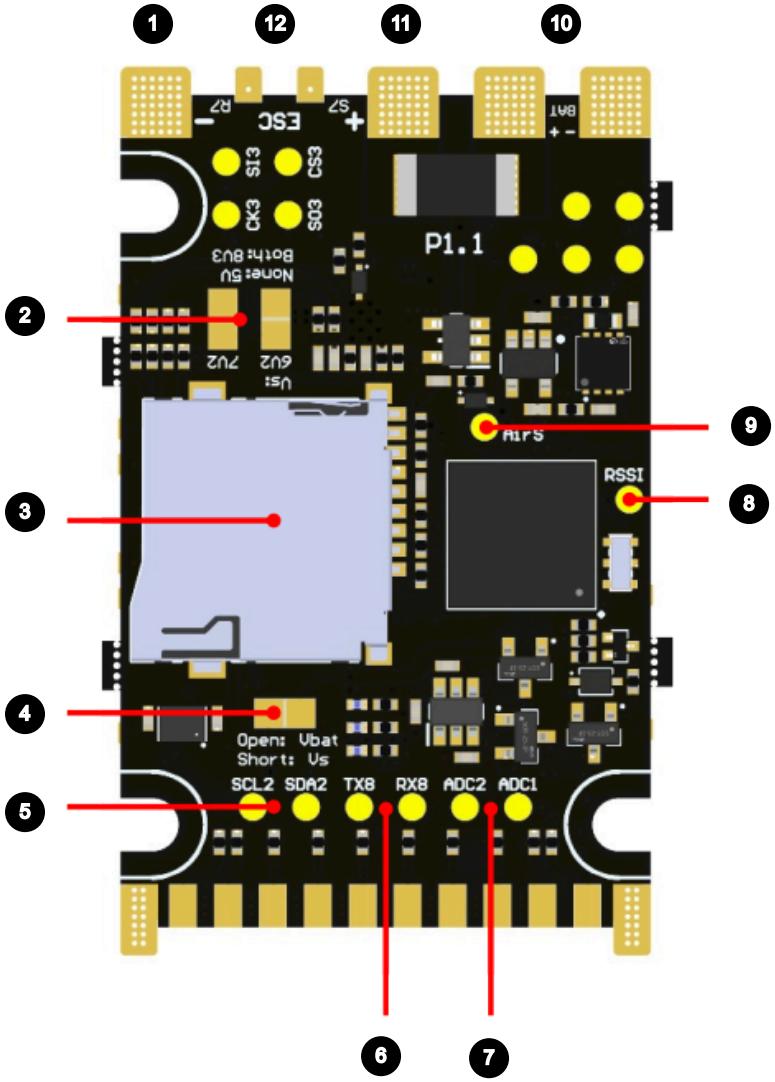
8.6. Pinout

Note: Status LEDS are installed but not visible when installed in to the housing

CAUTION:
On some units the VTX voltage selector (4) does not work. The output will remain at battery voltage level. Please contact the TBS support.

Units that have been factory-repaired got a green sticker on the ESC

Top Plate



1 - ESC GND	2 - Servo Voltage Selector	3 - SD Card Holder

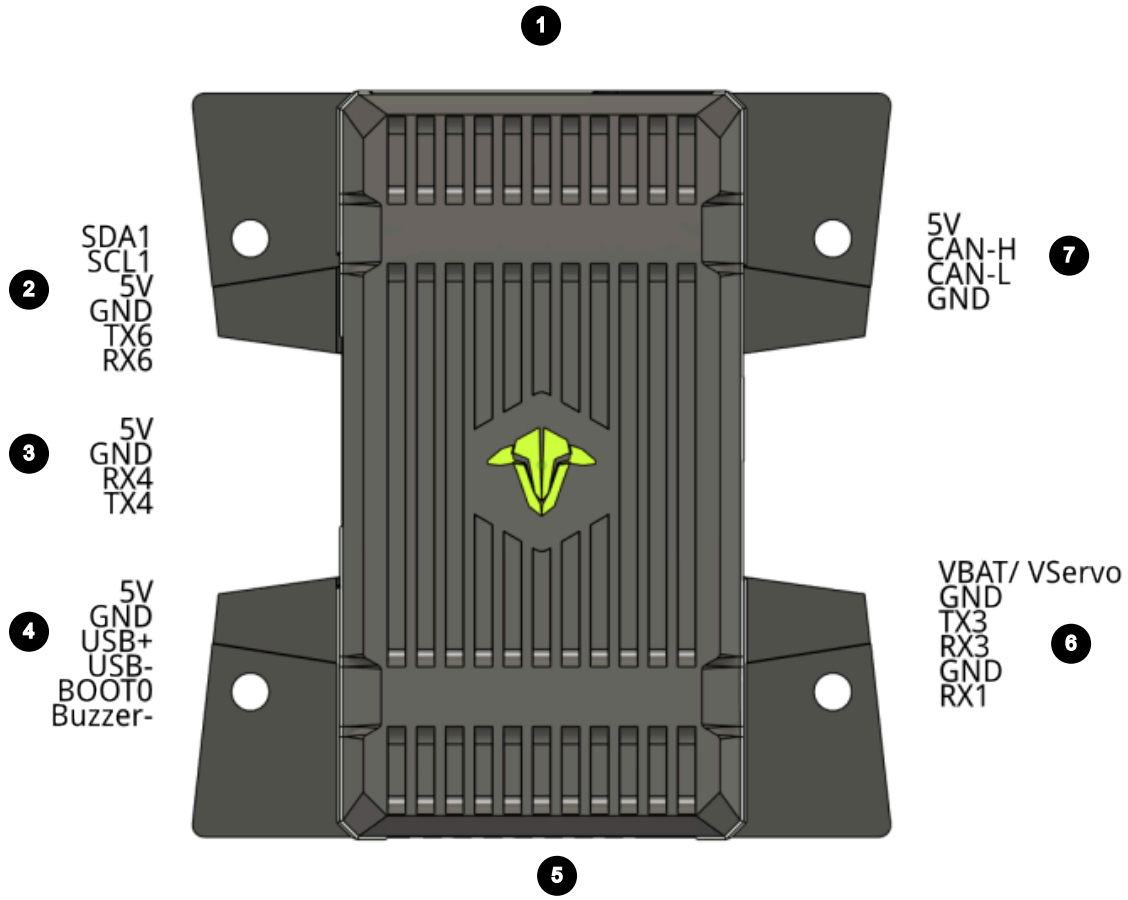
4 - HD-Video port Voltage Selector (VBAT/ VServo (2)	5 - I2C 2	6 - UART 8
7 - ADC 1 / 2 (30)	8 - Analog RSSI in	9 - Analog Airpseedsensor in
10 - Battery In	11 - ESC VBAT	12 - ESC Signal

Servo Voltage Selector settings (2)

Pin	5 V	6.2 V	7.4 V	8.4 V
6V2	open	closed	open	closed
7V2	open	open	closed	closed

Important: Don't cross-bridge the voltage selector pads

Connectors - View from Top-Down

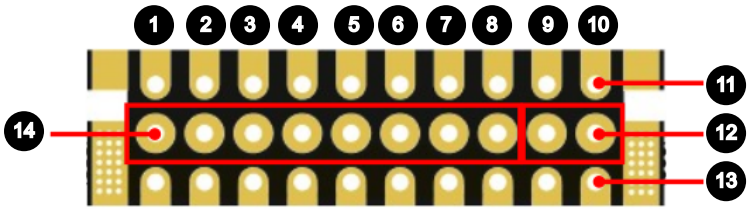


1 - Battery Cable	2 - GPS Connector	3 - Receiver Connector

(30) *Internally used for VBAT and Current Sensor*

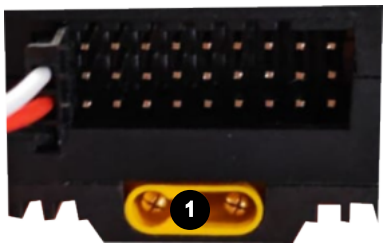
4 -USB Connector	5 - Servo Pins/ Motor Connector	6 - DJI Connector
7 - CAN Connector		

Servo Connector - Front View

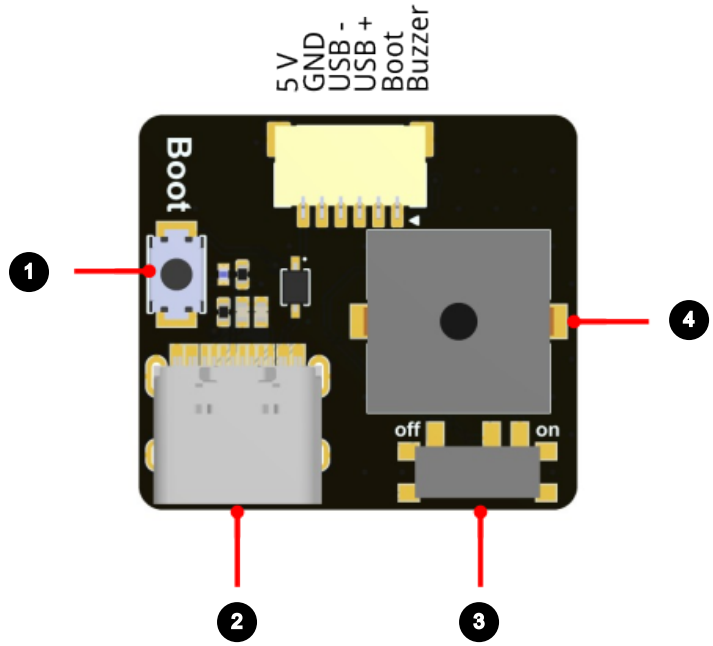


1..6 - Servo 1-6	7 - TX 2	8 - RX 2
9 - Analog Video In	10 - Analog Video Out	11 - Signal Row
12 - Voltage FPV (HD-Voltage selector)	13 - GND Row	14 - Servo Voltage Row (Vservo selector)

Servo Connector - Front View with Motor-Connector (1)



USB Board



1 - Boot-Button	2 - USB-C Port
3 - Buzzer On/Off Switch	4 - Buzzer

8.7. GPIO Pins

Note: GPIO is *high-active*. Setting it to **On** in your Flight Software **enables** the output.

VSW - VTX Voltage Supply

Firmware	Function Name	MCU Pin	Function
INAV	PinIO	PD10	USER1
ArduPilot	Relay	GPIO 81	RELAY 2

8.8. Voltage Sensor Settings

INAV

Scale:	2100
Offset:	0

ArduPilot

BATT_MONITOR:	4
BATT_VOLT_PIN	10
BATT_VOLT_MULT	11.0

8.9. Current Sensor Settings

INAV

Scale:	200
Offset:	0

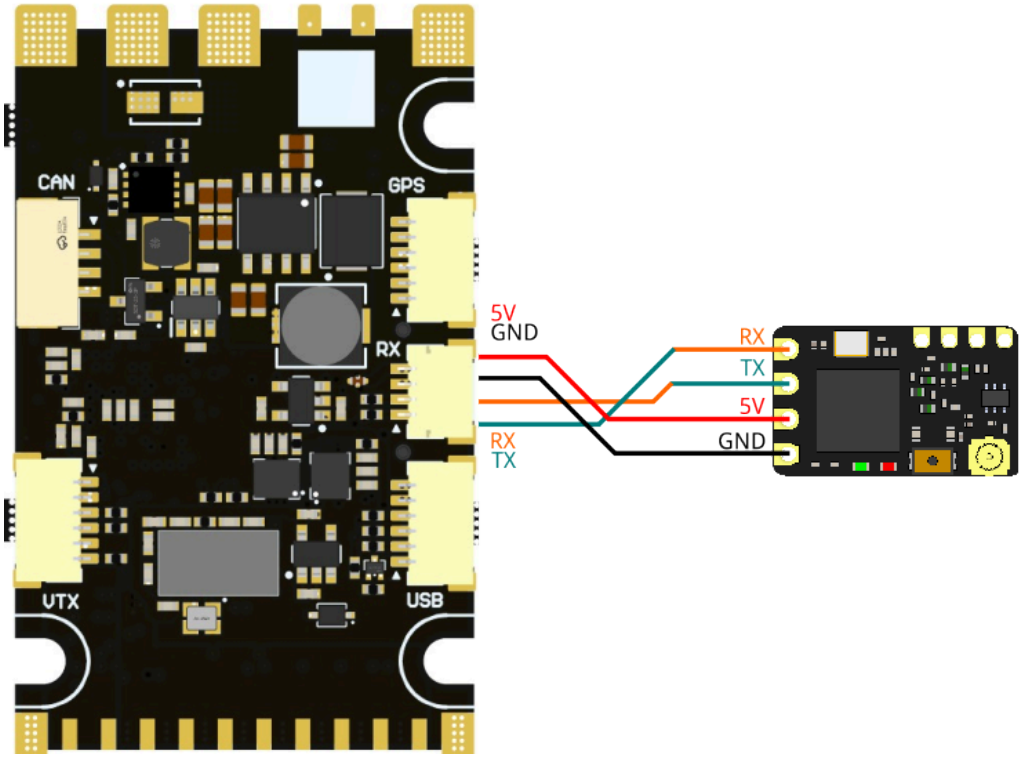
ArduPilot

BATT_CURR_PIN	11
BATT_AMP_PERVLT	40.0

8.10. Peripheral Connections

8.10.1. Receiver

Receiver connection



Port Settings - BETAFLIGHT/ INAV

UART 4:	Serial RX: on

ArduPilot

SERIAL4:	Depends on chosen protocol (MAVLink, CRSF)

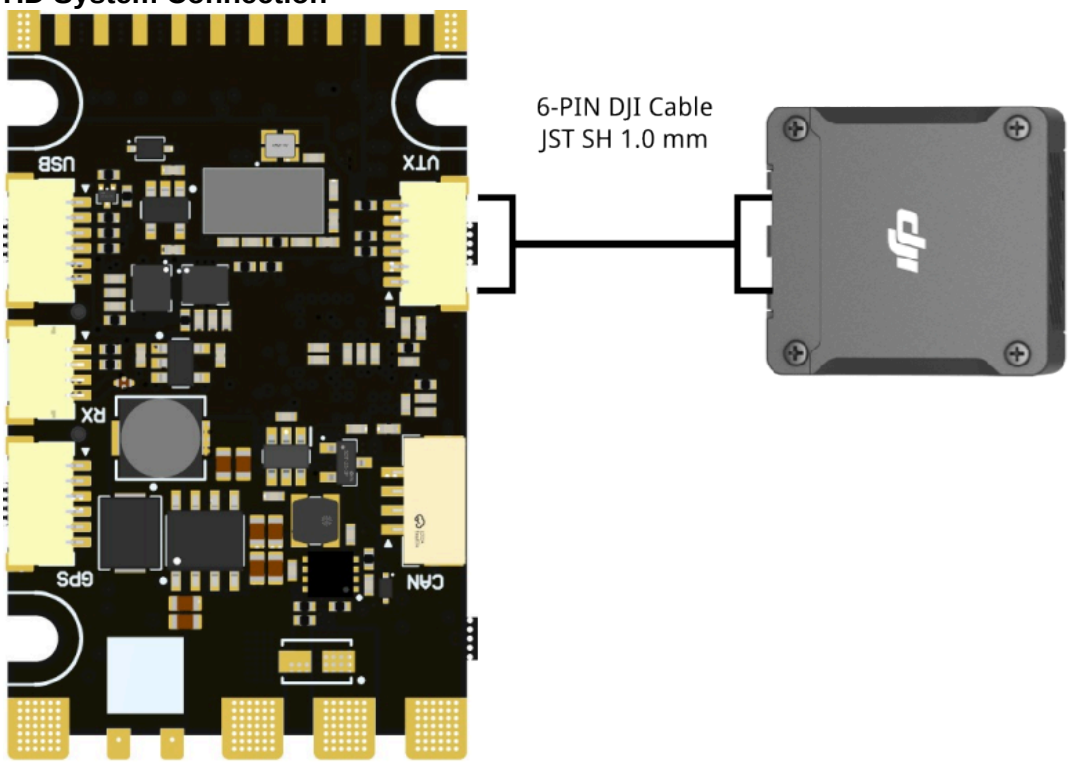
Note: Further information on the settings can be found in the CROSSFIRE/TRACER manual

8.10.2. HD Video Systems

Note: For the VTX supply to work, **VSW** (USER1 (INAV)/ REALY2 (ArduPilot)) must be set to **On**.

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

HD System Connection



Note:

The supply voltage is either VBAT or Servo voltage.

Port Settings

UART 3:	MSP: on/ Peripherals: Displayport
	Baud rate: 115200[31]

Included Receiver Settings (optional)

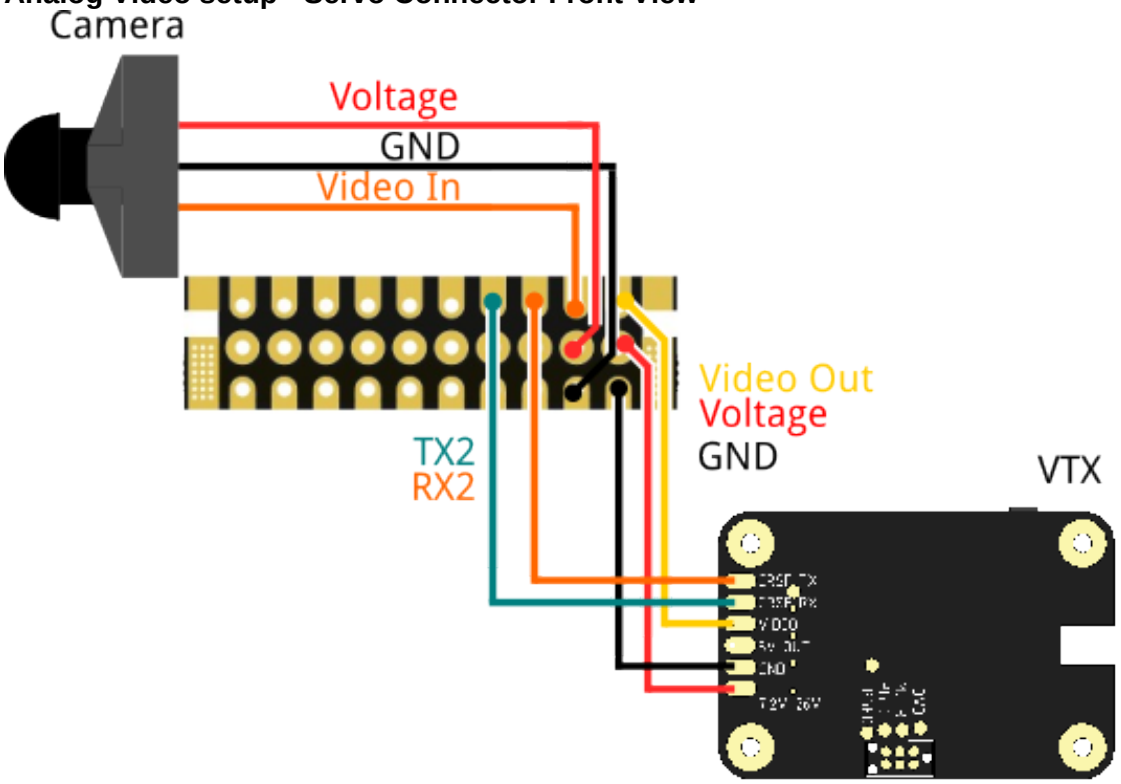
UART 1:	Serial RX: on
UART 6:	Serial RX: off[32]

8.10.3. Analog Video

Note: For the VTX supply to work, **VSW** (USER1 (INAV)/ REALY2 (ArduPilot)) must be set to **On**.

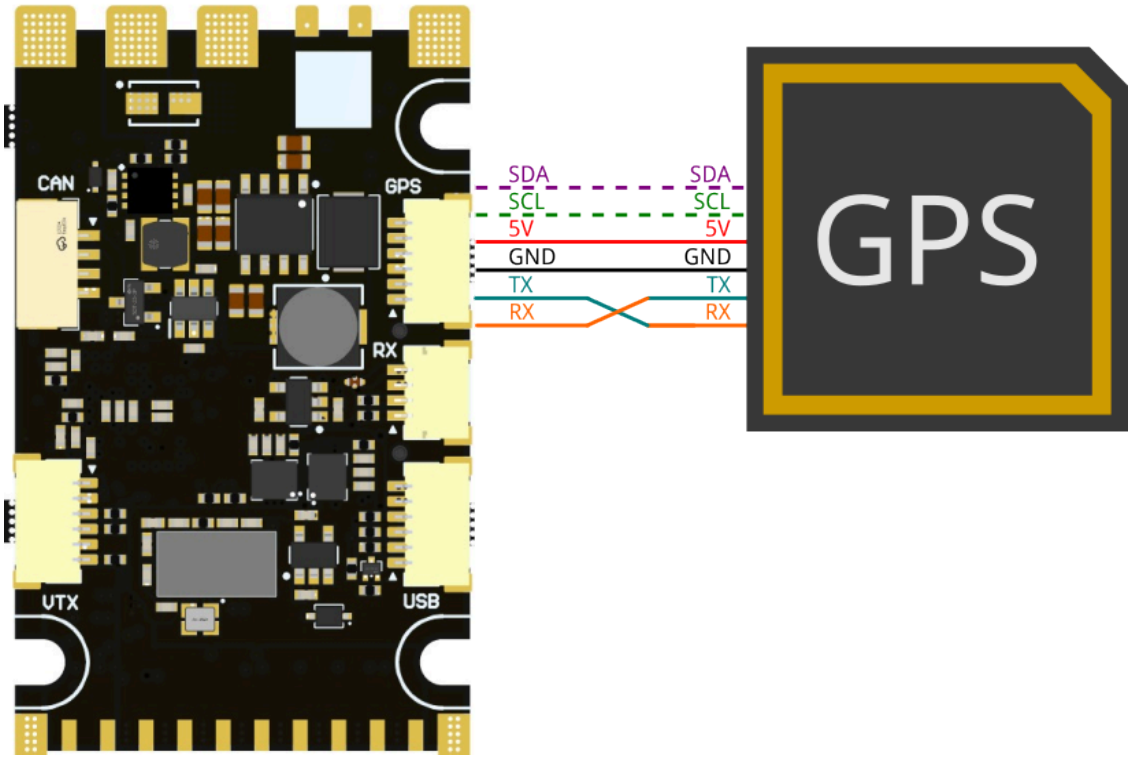
(31) *Baud rate might be different. Check the video system manual for details.*
(32) *Disables the external receiver*

Analog Video setup - Servo Connector Front View



8.10.4. GPS and Compass

GPS Connection



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

Port Settings

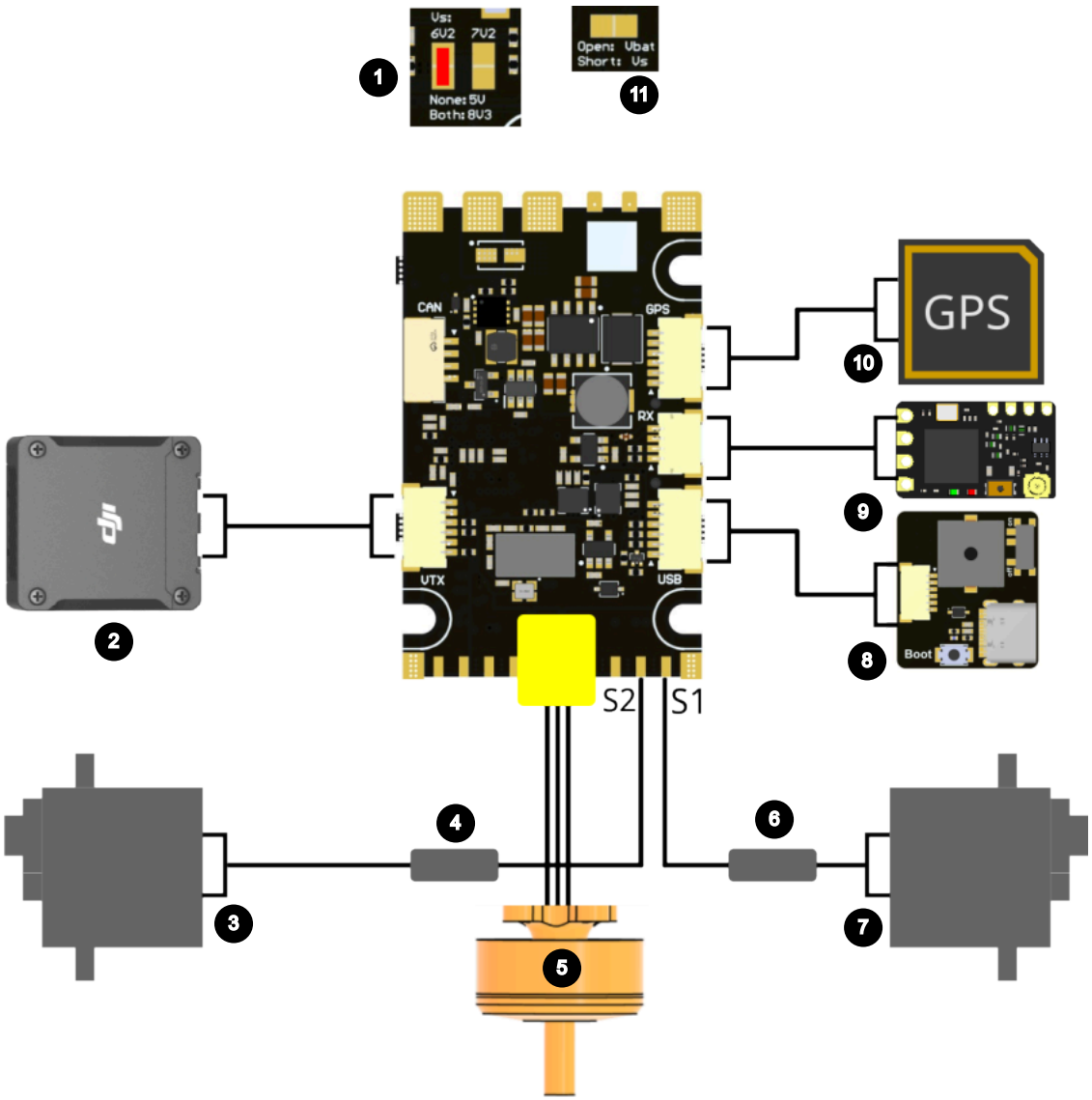
UART 6:	Peripheral: GPS
	Baud rate: depends on GPS

8.11. Connection Excaple

8.11.1. TBS CHUPITO Connection Example

Wiring Example - Bottom View

Important: On some units the VTX voltage selector (9) does not work. the output will remain VBAT voltage. Please contact the TBS support.



1 – Voltage Selector Servos	2 – HD-VTX	3 – Servo Right Elevon incl. Servo Extension
4 – Servo Extention	5 – Motor	6 – Servo Extention
7 – Servo Left Elevon incl. Servo Extension	8 – USB-Board	9 – Receiver
10 – GPS	11 – Voltage Selector VTX	

Note: The VTX Voltage selector (9) must be left open if the video system requires more than 6.2 V to operate.