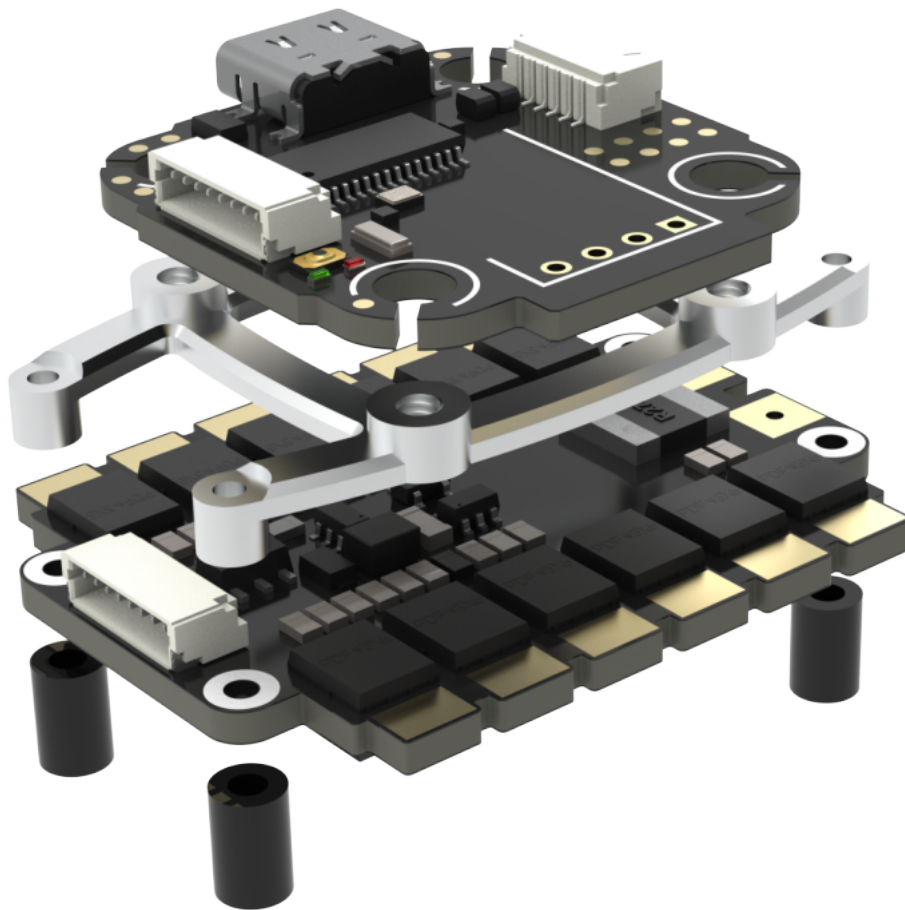

TBS LUCID

FC, ESC and Accessory series



Changelog

Revision	Date	Changes	Author
1.00	/	• Initial release after moving from GDocs • General revision	KK
1.01	/	• FC F4 ◦ Corrected BF Scaling Value ◦ Included INAV Scaling	KK
1.02	2025-07-29	• Style ◦ Fixed Image Map colors ◦ incl. Note Pictogram • General ◦ Added GPIO Section to relevant FC's ◦ Updated Voltage/ Current Scaling on all FC's • Wing PDB ◦ Updated V2 Pinout ◦ V2 Servo Voltage Selector correction (open/ closed) ◦ Added FC wiring example with V2 PDB an LUCID F4 FC • F4 FC ◦ Cleanup in Pinout Section ◦ Added for Freestyle FC voltage selector (HW Revision) • ESC's ◦ Fixed Current Sensor Scaling	KK

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1. General

Support

If you got any question left after reading this manual, have a look at the [TBS FAQ](#).

For personal help [open a ticket](#) or [check the status of your ticket](#).

TBS AGENT

Updating, configuring and managing your TBS gear is done by the TBS AGENT versions:

TBS AGENT Desktop

What was formally known as just *TBS AGENT* has become the TBS AGENT Desktop. Installed on your PC/Mac, allowing you to upgrade your gear and adjust it anywhere, even if you got no internet connection.⁽¹⁾

It allows for the full function set like:

- Up- and Downgrading the firmware
- Configuration by USB and by WiFi⁽²⁾ / Internet⁽³⁾
- Telemetry view with live map and drone data
- Setting the User ID on the device⁽⁴⁾

TBS AGENT Web

As the AGENT Desktop, the AGENT Web includes all the same features, but can be run in your browser. Simply visit <https://www.team-blacksheep.com/agentm> from any Chromium based browser (e.g. Chrome, Edge etc.) and connect to your device in the same way as with AGENT Desktop.

TBS AGENT Lite

The successor of the CRSF-Lua script, running on your radio. It allows for full configuration your connected devices like start binding for new receivers or changing the VTX settings.

- [AGENT Lite for FreedomTx/openTx](#)
- [AGENT Lite for edgeTx](#)
- [AGENT Lite for ethos](#)

Any CRSF device can be used with the TBS AGENT⁽⁵⁾

(1) For initial/new firmware file download to your PC/Mac, the AGENT must have a working internet connection.

(2) The Device must be connected to your PC/Mac by WiFi, direct or by a common hotspot

(3) The Device must be connected to a hotspot with working internet connection

(4) Only for CROSSFIRE/TRACER transmitters

(5) AGENT Desktop/ Web only works with TBS gear like CROSSFIRE, TRACER or LUCID ESCs



2. F4 FC - Freestyle

The TBS LUCID flight stack is the latest in product engineering at TBS. Built for racing and freestyle applications and developed to cater to the needs of both seasoned pilots and enthusiastic newcomers.

The F4 Flight controller is a 20x20 masterpiece built for the Lucid flight stack but compatible with all 20x20 ESCs. It is similarly designed for the TBS CROSSFIRE & TBS TRACER ecosystem but will work with any radio receiver - we don't judge :)

There are plug-and-play connectors for the DJI O3 digital system and 4in1 ESCs, following the BETAFLIGHT connector standard. The solder pads for auxiliary devices are designed and arranged to be easy to solder and logical for installation in your favorite drone frames, such as the TBS Source One.

Specification

Processor:	AT32F435	Weight:	4.51 g
IMU:	ICM-42688P	Receiver:	Solder on
Baro:	bmp388	DJI Airunit:	Dedicated connector
Input Voltage:	3-6 S compatible	Blackbox:	Built-in, 8 MB
BEC Voltage:	9V: 2.5A	OSD:	Built-in
	5V: 2A	Servo Outputs:	4 (6) (2x solder point)
UARTs	6	Size/ Mounting:	31x29 mm, 20x20 mounting, M3

Firmware

Firmware	Target	Min. FW Version
BETAFLIGHT	TBS_LUCID_FC*	4.5
	TBS_LUCID_MOD_FC*	4.5
INAV	TBS_LUCID_FC	8.0



Note: *Below the NanoRX solder pads, if you can spot a "P1" label on the PCB, the *TBS_MOD_FC* target must be used. Otherwise, use the *TBS_LUCID_FC* target.





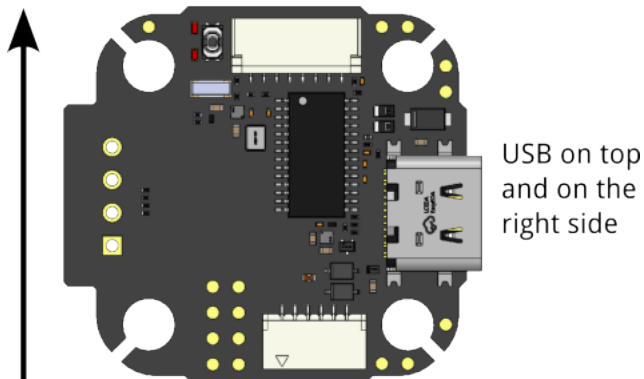
Note: When using INAV, TX3 and RX3 (HD Video connector) must be swapped

Serial Ports

Port	Usage	Available Pins
UART 1	Spare	Full UART
UART 2	ESC Telemetry	RX only
UART 3	MSP, HD Video connector	Full UART
UART 4	S.BUS, HD Video connector	RX only
UART 5	Direct mounted Receiver	Full UART
UART 7	GPS	Full UART
UART 8	SmartAudio	Full UART

Board Orientation

Installation direction
Front



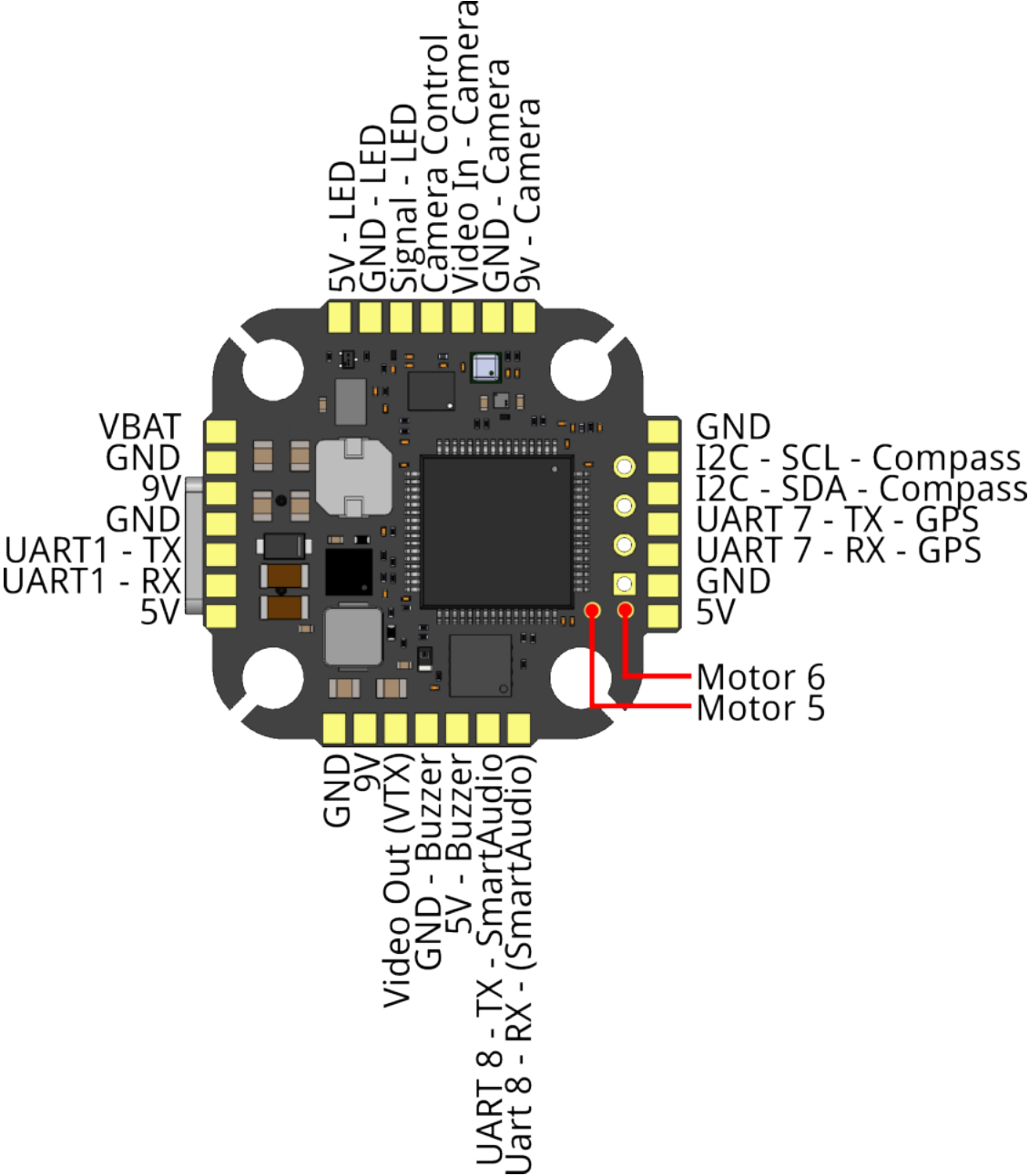
BETAFLIGHT

Roll Degrees: 180°	Pitch Degrees: 0°	Yaw Degrees: 90°
First GYRO: CW0°	MAG Alignment: Default	

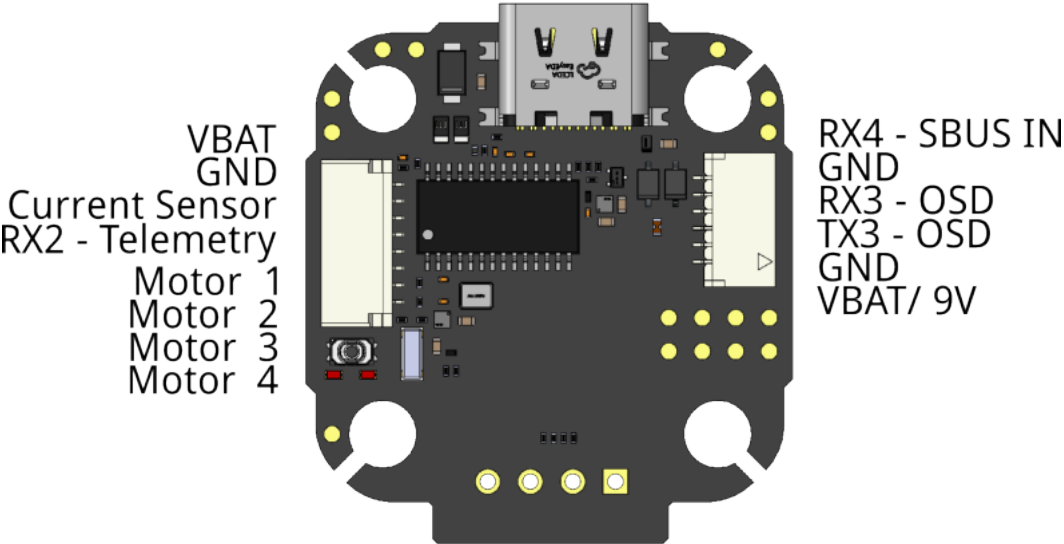


Pinout

Bottom View - Solder pads

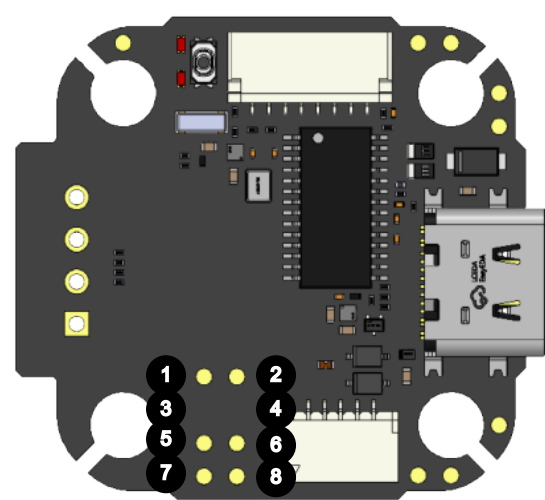


Top View - Connectors



 **Note:** On FC's with **P1** or **P2** or **P3** label, the voltage selector is not available. The VBAT pin passes the battery voltage through

Additional Pins



1 - Motor 4	2 - Motor 1	3 - USB +
4 - USB - ⁽⁷⁾	5 - Motor 3	6 - Motor 2
7 - SWDIO/ PinIO USER 1	8 - SWDCLK/ PinIO USER 2	

(6) removed on FC's with **P4** Label and higher
(7) removed on FC's with **P4** Label and higher

GPIO Pins

CameraControl

Firmware	Function Name	CLI/ Settings	Function
BETAFLIGHT	CameraControl	camera_control_pin = PC5	CameraControl
INAV	ADC In	adc_channel_3_pin = PC5	ADC

1/ SWDIO

Firmware	Function Name	CLI/ Settings	Function
BETAFLIGHT	PinIO	pinio1_pin = PA13	USER1
INAV	PinIO	pinio1_pin = PA13	USER1

2/ SWDCLK

Firmware	Function Name	CLI/ Settings	Function
BETAFLIGHT	PinIO	pinio2_pin = PA14	USER2
INAV	PinIO	pinio2_pin = PA14	USER2

Voltage Sensor Settings

BETAFLIGHT

Scale:	210
Divider:	10
Multiplier Value:	1

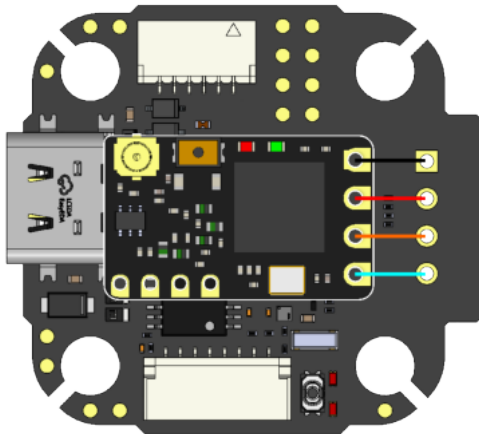
INAV

Scale:	2100
Offset:	0

Peripheral Connections

Receiver - Solder-on

Receiver



Port Settings

UART 5:	Serial RX: on
---------	---------------



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

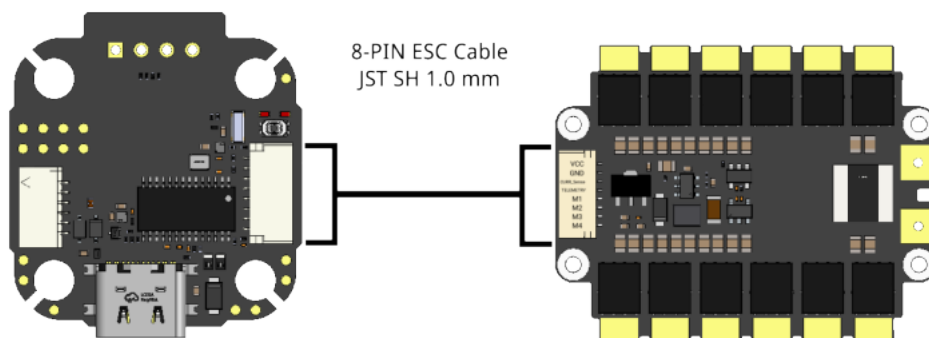
ESC (LUCID 4in1)

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



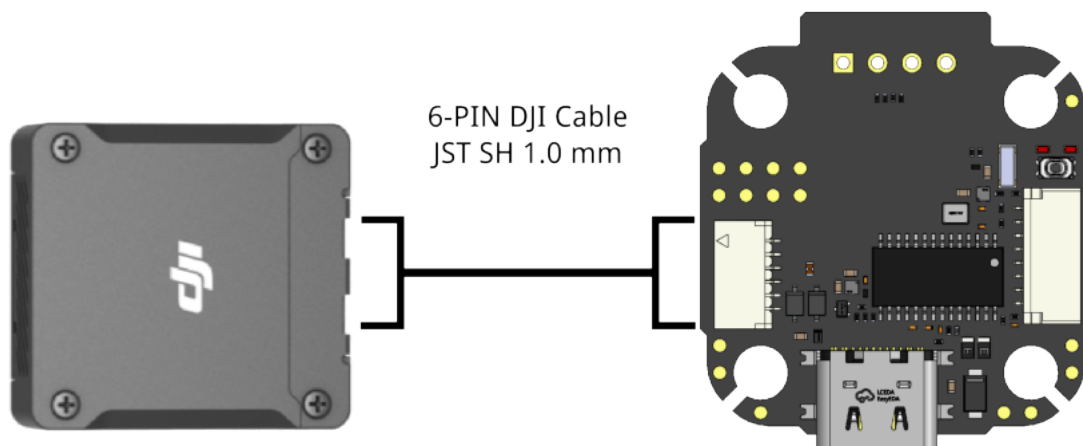
Port Settings

UART 2:	Sensor Input: ESC,
	Baudrate: Auto

HD Video Systems

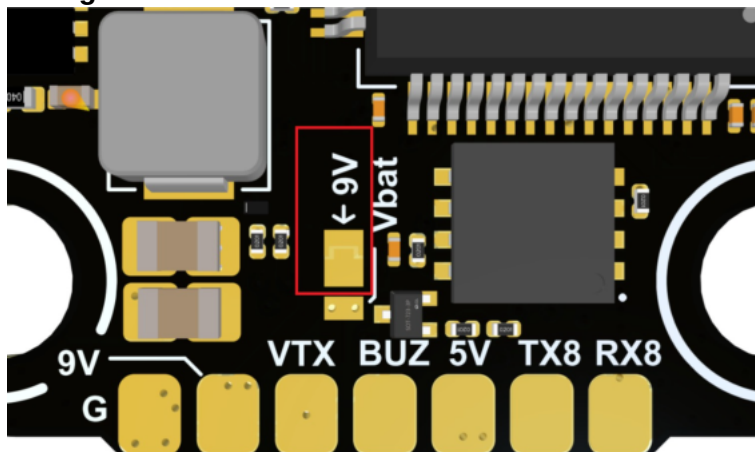
Connect your VTX to the designated port for your HD video system. The plug supports MSP and S.Bus if you want to use a DJI remote to control your drone.

VTX connection



The supply voltage can be adjusted by a solder jumper. Factory settings is 9 V.

Voltage Selector



Note: On FC's with **P1** or **P2** or **P3** label, the voltage selector is not available. The VBAT pin passes the battery voltage through

Port Settings

UART 3:	MSP: on
---------	---------

Port Settings (continued)

	Baud rate: 115200 ⁽⁸⁾
--	-------------------------------------

Included Receiver Settings (optional)

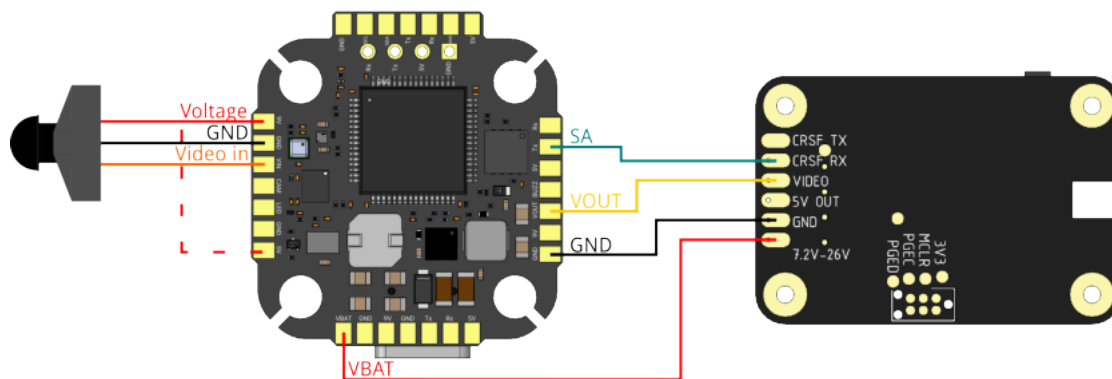
UART 4:	Serial RX: on
UART 5:	Serial RX: off ⁽⁹⁾



Note: When using INAV, TX and RX of UART 4 must be swapped in the cable

Analog Video Systems

The camera will be powered by the internal 9 V or the 5 V supply, depending on the used voltage pad.

Analog Video setup

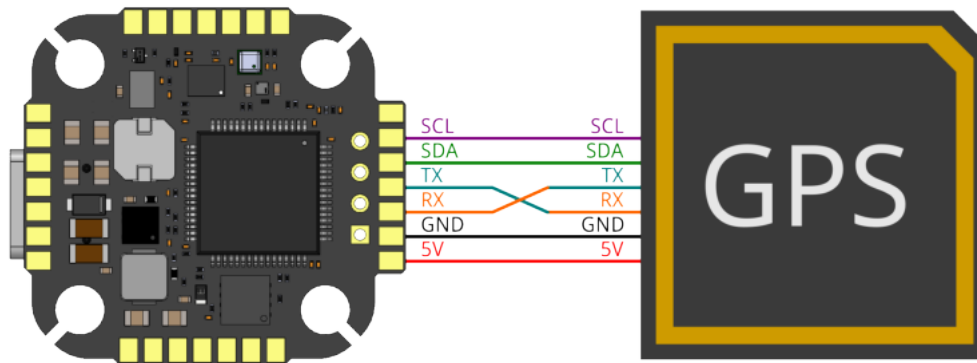
⁽⁸⁾ Baud rate might be different. Check the video system manual for details.

⁽⁹⁾ Disables the external receiver



GPS and Compass

GPS Connection



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

port Settings

UART 7:	Peripheral: GPS
	Baudrate: depends on GPS

3. F4 FC - Pro

Specification

Processor:	AT32F435	Weight:	4.51 g
IMU:	MPU6000	Receiver:Receiver:	Solder on
Baro:	bmp388	DJI Airunit:	Dedicated connector
Input Voltage:	3-6 S compatible	Blackbox:	Built-in, 8 MB
BEC Voltage:	9 V: 2.5 A	OSB:	Built-in
	5 V: 2 A	Servo Outputs	4 (6) (2x solder-point)
UARTs	6	Size/ Mounting:	31x29 mm, 20x20 mounting, M3

Firmware

Firmware	Target	Min. FW Version
BETAFLIGHT	TBS_LUCID_PRO_FC	4.5
INAV	TBS_LUCID_PRO_FC	8.0



Note: When using INAV, TX3 and RX3 (HD Video connector) must be swapped

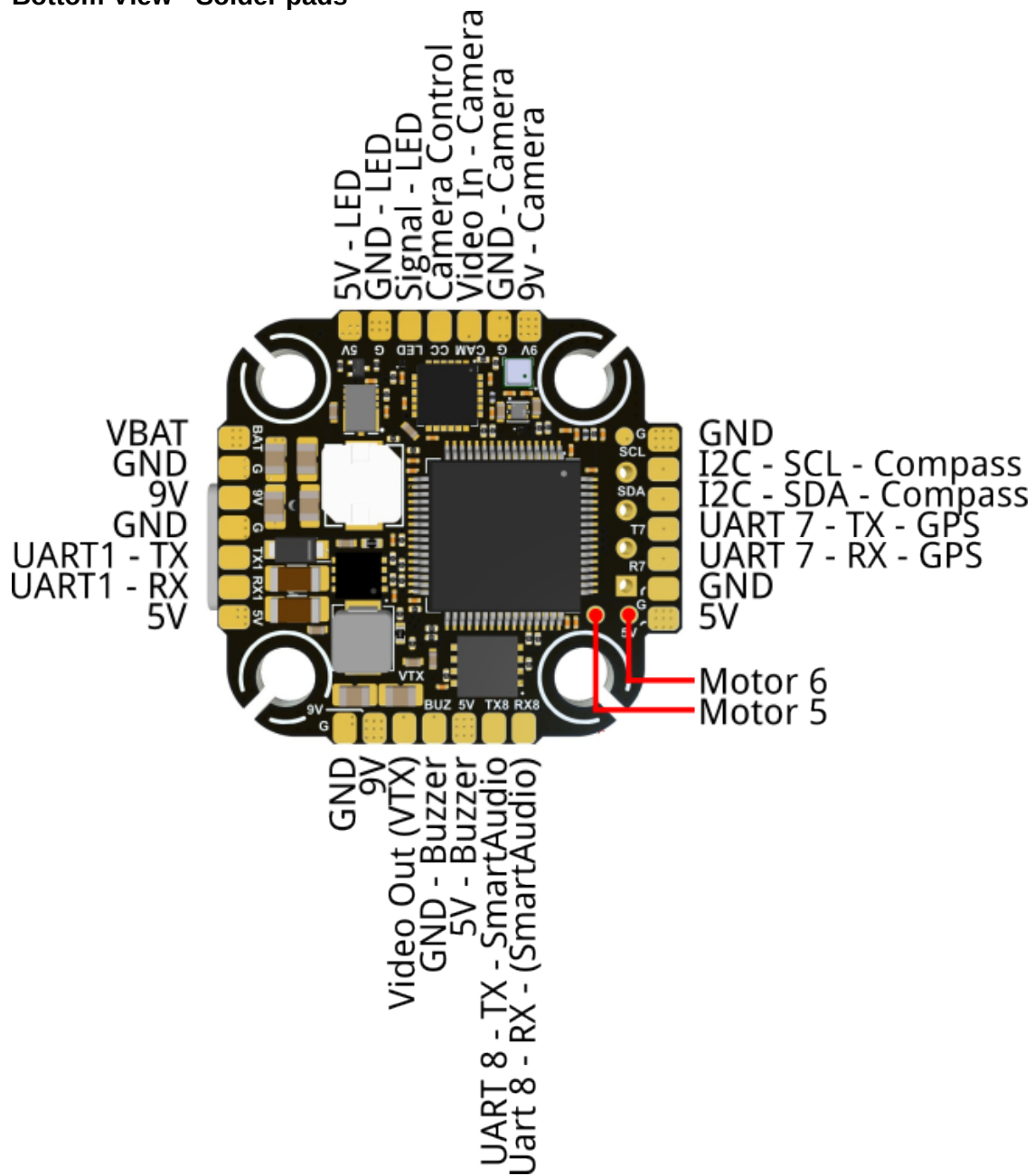
Serial Ports

Port	Usage	Available Pins
UART 1	Spare	Full UART
UART 2	ESC Telemetry	RX only
UART 3	MSP, HD Video connector	Full UART
UART 4	S.BUS, HD Video connector	RX only
UART 5	Direct mounted Receiver	Full UART
UART 7	GPS	Full UART
UART 8	SmartAudio	Full UART

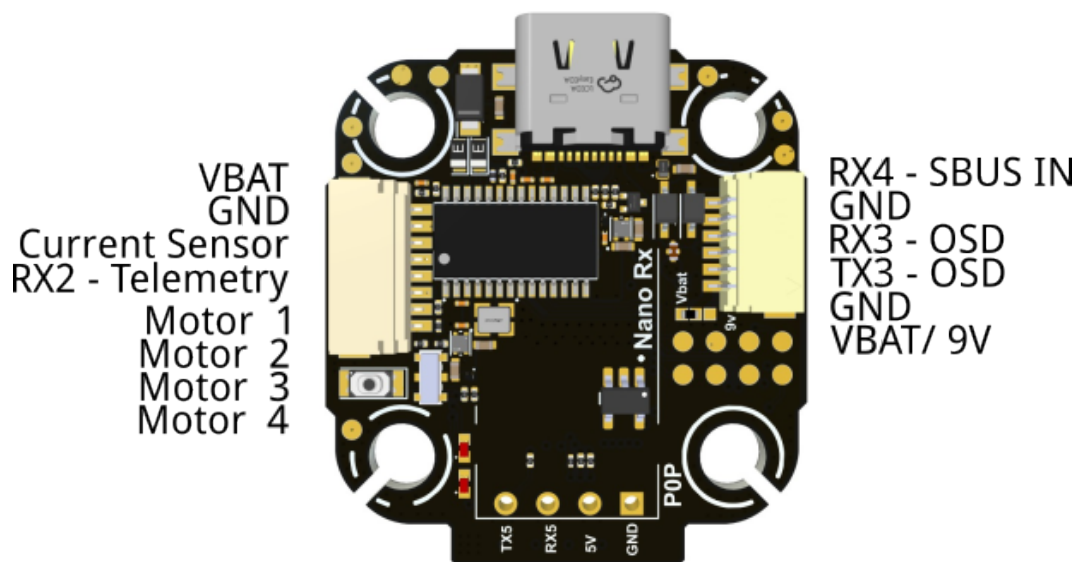


Pinout

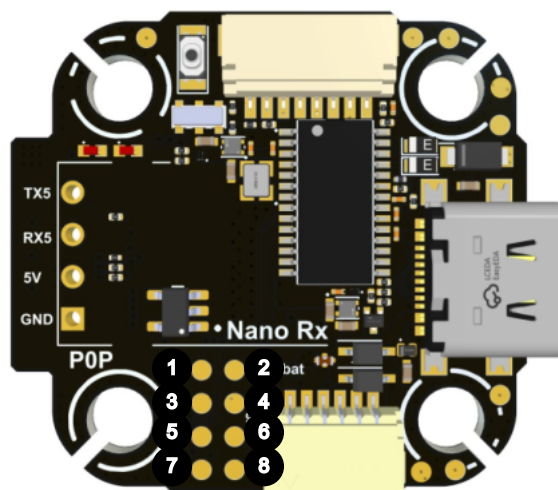
Bottom View - Solder pads



Top View - Connectors



Additional Pins



1 - Motor 4	2 - Motor 1	3 - USB +
4 - USB -	5 - Motor 3	6 - Motor 2
7 - SWDIO/ PinIO USER 1	8 - SWDCLK/ PinIO USER 2	

GPIO Pins

CameraControl

Firmware	Function Name	CLI/ Settings	Function
BETAFLIGHT	CameraControl	camera_control_pin = PC5	CameraControl
INAV	ADC In	adc_channel_3_pin = PC5	ADC

1/ SWDIO

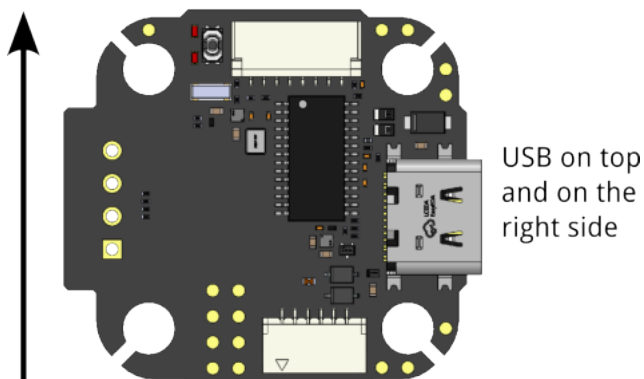
Firmware	Function Name	CLI/ Settings	Function
BETAFLIGHT	PinIO	pinio1_pin = PA13	USER1
INAV	PinIO	pinio1_pin = PA13	USER1

2/ SWDCLK

Firmware	Function Name	CLI/ Settings	Function
BETAFLIGHT	PinIO	pinio2_pin = PA14	USER2
INAV	PinIO	pinio2_pin = PA14	USER2

Board Orientation

Installation direction
Front



BETAFLIGHT

Roll Degrees: 180°	Pich Degrees: 0°	Yaw Degrees: 180css°
First GYRO: CW 0°	MAG Alignment: Default	

Voltage Sensor Settings

BETAFLIGHT

Scale:	210
Divider:	10
Multiplier Value:	1

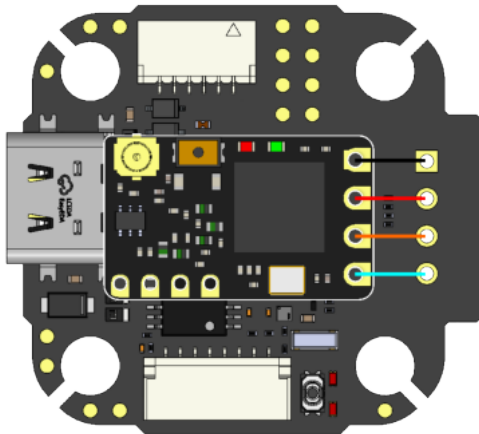
INAV

Scale:	2100
Offset:	0

Peripheral Connections

Receiver - Solder-on

Receiver



Port Settings

UART 5:	Serial RX: on
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Note: Further information on the settings can be found in the CROSSFIRE/TRACER manual

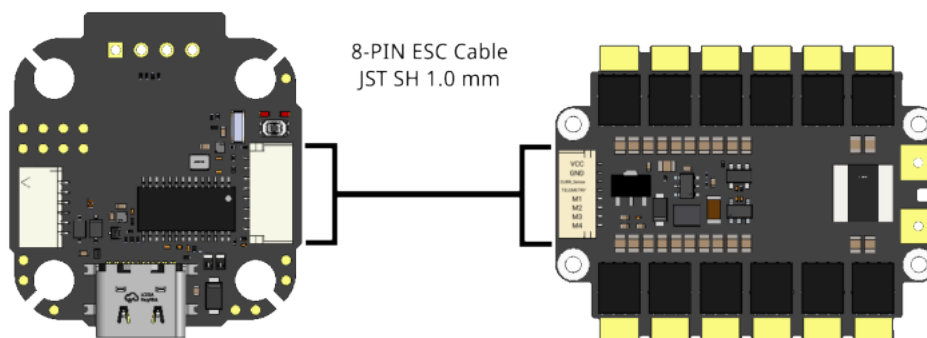
ESC (LUCID 4in1)

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



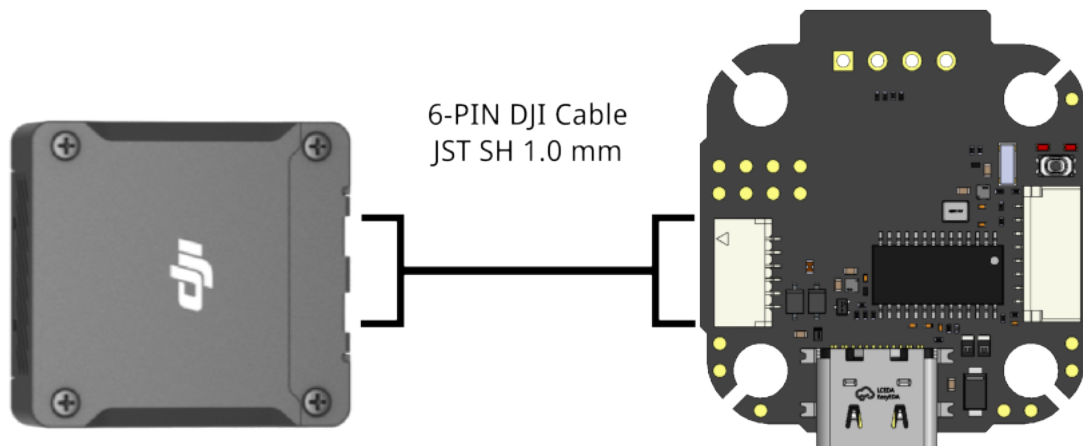
Port Settings

UART 2:	Sensor Input: ESC,
	Baudrate: Auto

HD Video Systems

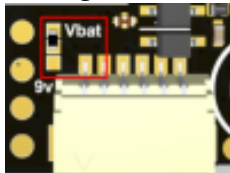
Connect your VTX to the designated port for your HD video system. The plug supports MSP and S.Bus if you want to use a DJI remote to control your drone.

VTX connection



The supply voltage can be adjusted by a solder jumper. Factory settings is 9 V.

Voltage Selector



Port Settings

UART 3:	MSP: on
	Baud rate: 115200 ⁽¹⁰⁾

Included Receiver Settings (optional)

UART 4:	Serial RX: on
---------	---------------

⁽¹⁰⁾ Baud rate might be different. Check the video system manual for details.

Included Receiver Settings (optional) (continued)

UART 5:	Serial RX: off ⁽¹¹⁾
---------	-----------------------------------

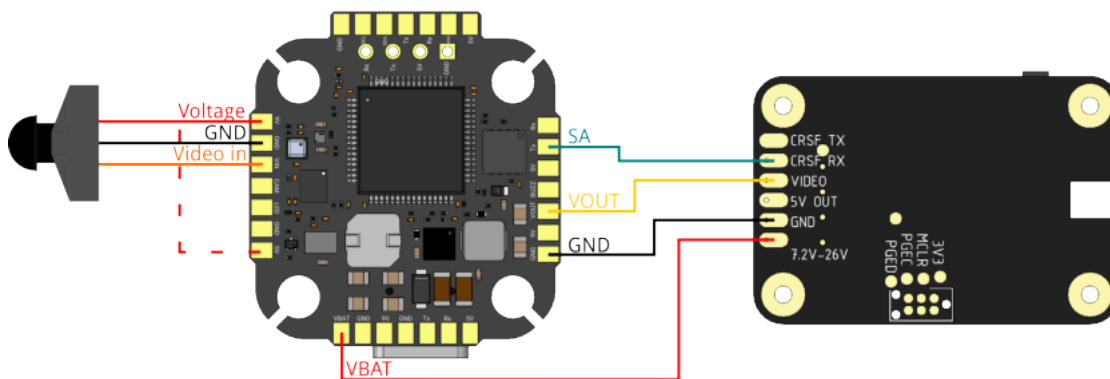


Note: When using INAV, TX and RX of UART 4 must be swapped in the cable

Analog Video Systems

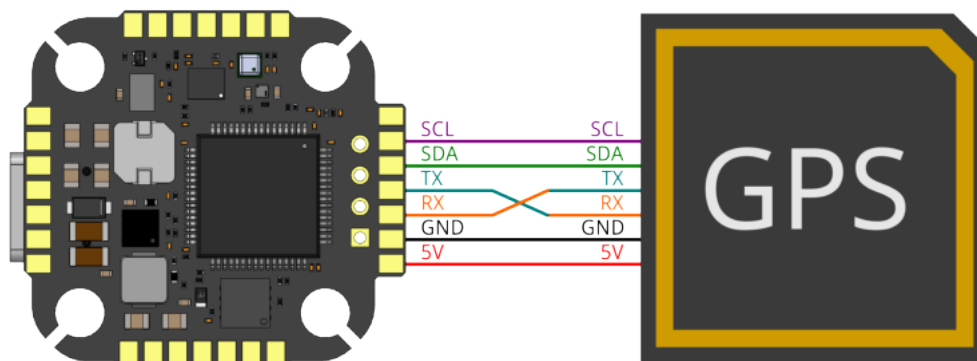
The camera will be power by the internal 9 V or the 5 V supply, depending on the used voltage pad.

Analog Video setup



GPS and Compass

GPS Connection



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

port Settings

UART 7:	Peripheral: GPS
---------	-----------------

⁽¹¹⁾ Disables the external receiver

port Settings (continued)

	Baudrate: depends on GPS
--	--------------------------

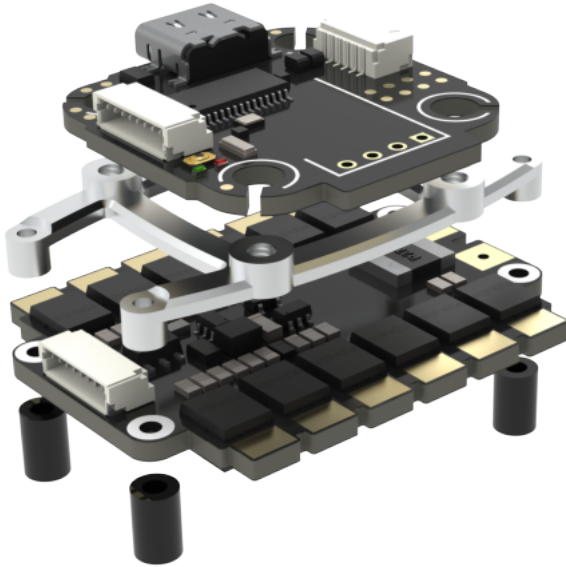


4. Gorilla mount

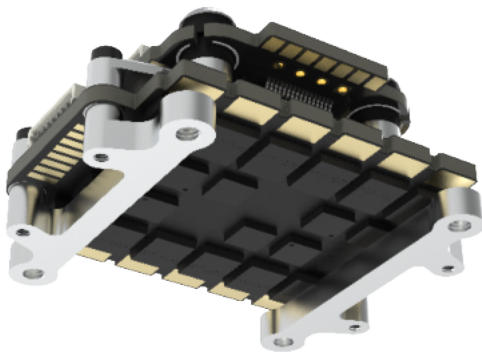
With the LUCID system, a new ESC mounting pattern took place. The TBS Gorilla mount is designed to sit atop 4-in-1 ESCs featuring a Gorilla mounting pattern. It includes 20x20 (M3) mounting points on top, allowing you to easily attach your preferred flight controller.

The Gorilla mounting system consists of 3 parts:

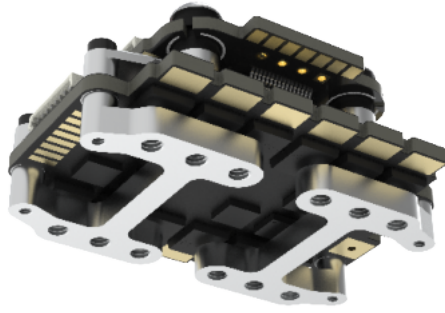
FC (20x20) Adapter



Frame Adapter 30x30



Frame Adapter 20x20



If you want to use the Gorilla pattern in your project:

- [Technical drawing \(hole spacing\)](#)
- [Frame developer pack](#)

5. Mini AIO FC - 1-2S

The TBS LUCID AIO 1-2S was engineered to tick a lot of boxes for long range 1S/2S drone pilots as well as whoop pilots that don't enjoy radio link limitations and need a bit of extra power from their stack.

Built to a 25x25 "Whoop" form factor, it is the only board that has the necessary grunt to run 2S boards without burning out, while also being capable of running 1S batteries down so low you will hear them beg for mercy.

The "AIO" stands for all in one, or a 3-in-1 specifically. Included is an Flight controller, 4in1 ESC and Crossfire Receiver. It also comes with an OSD chip for analog video.

It hopefully goes without saying that each TBS Lucid AIO is tested out of the factory and has been put through the wringer by some of the most seasoned whoop pilots before being offered for sale, which further distinguishes the board from some of the incumbents.

Specification

Processor:	AT32F435RMT7	Weight:	4 g
IMU:	ICM-42688P	Receiver:	Built-in (CROSSFIRE)
Baro:	bmp388	DJI Airunit:	Supported
Input Voltage:	1-2 S compatible	Blackbox:	Built-in, 8 MB
BEC Voltage:	5 V: 2 A	OSD:	Built-in
UARTs	3	Motor Outputs:	4
Current/Motor:	7A/Motor, 24A total	Size/Mounting:	30x30 mm, 25x25 mounting, M3

Firmware

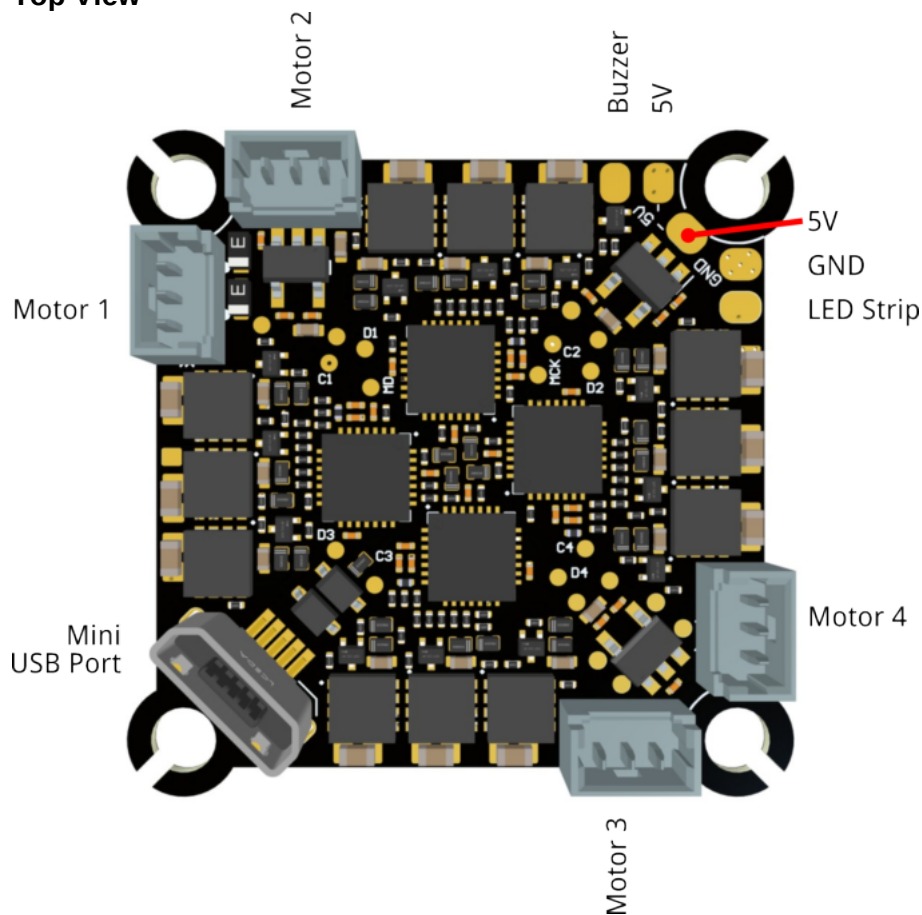
Firmware	Target	Min. FW Version
BETAFLIGHT	LUCID_AIO	4.5
INAV	Not yet available	/
CROSSFIRE	/	6.10
AM32 (ESC)	AM32_TBS_MINI_F421	2.18

Serial Ports

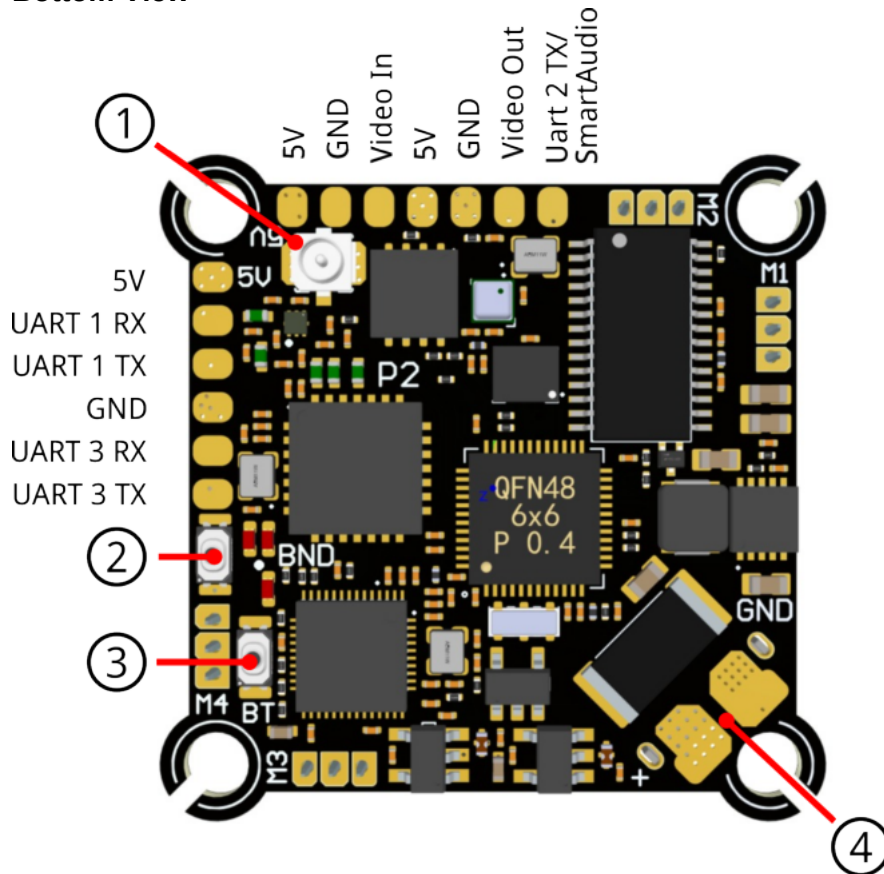
Port	Usage	Available Pins
UART 1	Spare	Full UART
UART 2	SmartAudio	TX only
UART 3	MSP, HD Video connector	Full UART
UART 5	Built-in Receiver	Full UART

Pinout

Top View



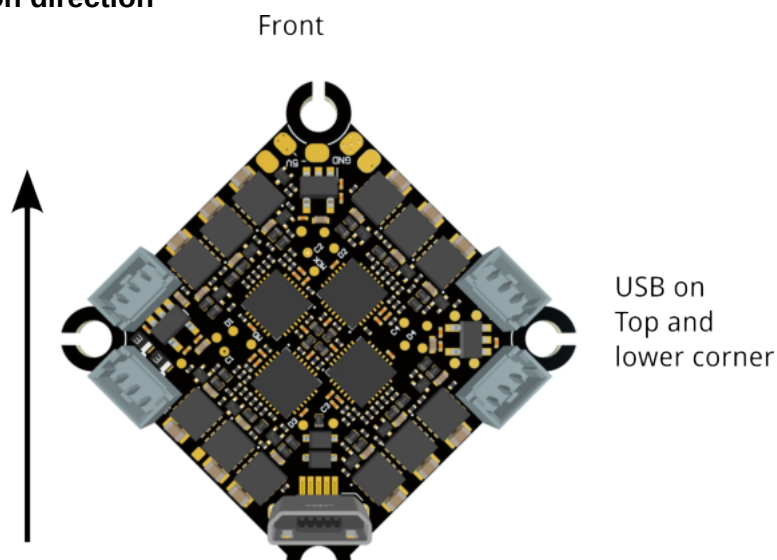
Bottom View



1 - CROSSFIRE Receiver Antenna	2 - Bind-Button
3 - Bootloader-Button	4 - Battery Solder pads

Board Orientation

Installation direction



BETAFLIGHT

Roll Degrees: 0°	Pich Degrees: 0°	Yaw Degrees: -45°
First GYRO: CW 0°	MAG Alignment: Default	

Voltage Sensor Settings

BETAFLIGHT

Scale:	57
Divider:	18
Multiplier :	1

Peripheral Connections

Receiver - Built-in

Port Settings

UART 5:	Serial RX: on
---------	---------------

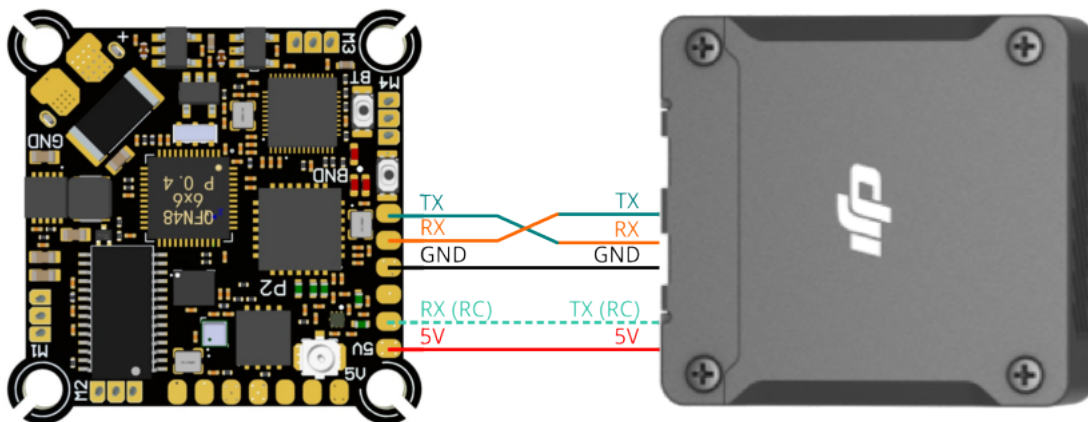


Note: Further information on the settings can be found in the CROSSFIRE/TRACER manual

HD Video Systems

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

HD System Connection



The supply voltage is fixed 5 V. Make sure your VTX and additional Peripherals do now draw more than the built-in BEC (on page 27) can provide.

Port Settings

UART 3:	MSP: on
	Baudrate: 115200 ⁽¹²⁾

Included Receiver Settings (optional)

UART 1:	Serial RX: on
---------	---------------

⁽¹²⁾ Baudrate might be different. Check the video system manual for details.



Included Receiver Settings (optional) (continued)

UART 5:	Serial RX: off ⁽¹³⁾
---------	-----------------------------------

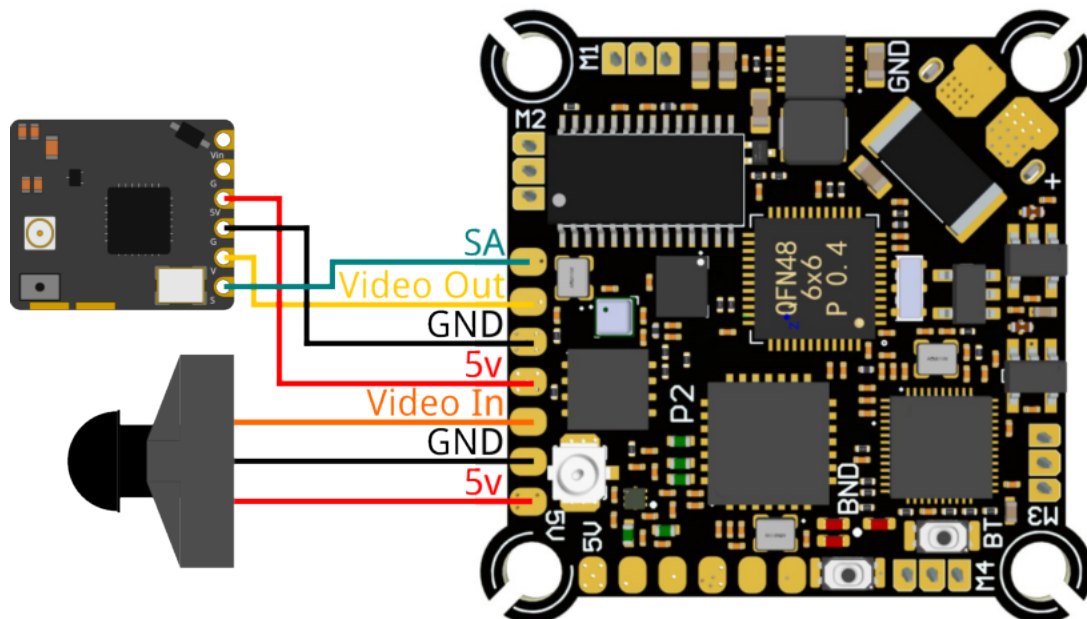


Note: Using the HD VTX RC receiver blocks the port for a GPS

Analog Video Systems

The camera will be power by the internal 5 V supply.

Analog Video setup

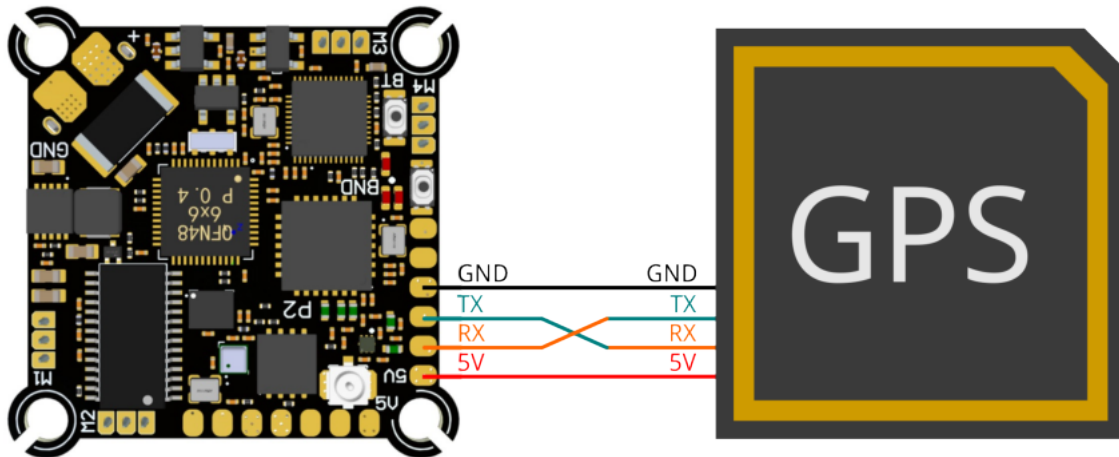


(13) Disables the internal receiver



GPS

GPS Connection



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

Port Settings

UART 1:	Peripheral: GPS
	Baudrate: depends on GPS



6. H7 FC

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.

Specification

Processor:	STM32H743VIH6	Weight:	4 g
IMU:	ICM42688 (2x) Dual Gyro	Receiver:	Solder on (by wire)
Baro:	Infineon DPS310	DJI Airunit:	Supported
Input Voltage:	3-8 S compatible	Blackbox:	By SD Card
BEC Voltage:	5 V: 2 A	OSD:	Built-in
UARTs	7	Servo Outputs	13
I2C:	2	Size/ Mounting:	32x32 mm, 30.5x30.5 mounting, M3
Additional Features:	SPI, CAN, Multiple analog Inputs, ADC Vbat pad supports up to 69V		

Firmware

Firmware	Target	Min. FW Version
BETAFLIGHT	TBS_LUCID_H7	4.5
INAV	TBS_LUCID_H7	8.0
ArduPilot ⁽¹⁴⁾	TBS_LUCID_H7	4.6.0 BETA 2

(14) [Ardu Wiki for settings](#)

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

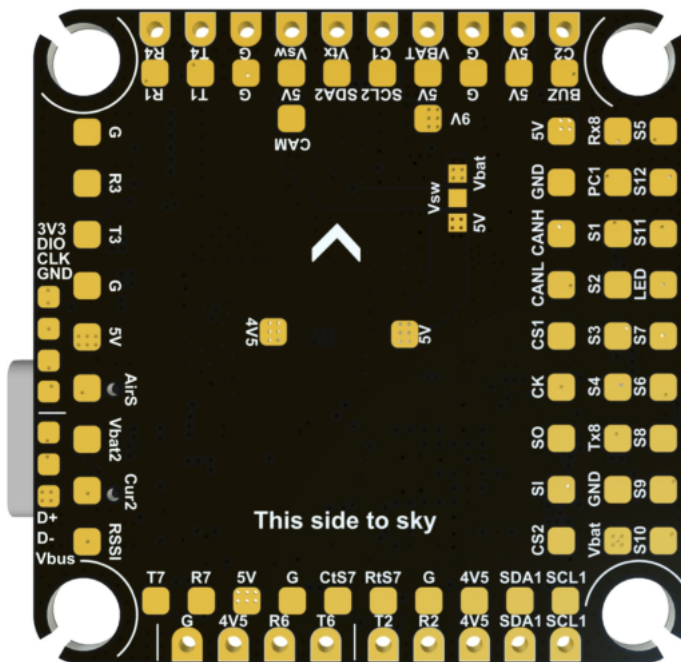
ArduPilot Specification

Port	Ardu-port	Ardu-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

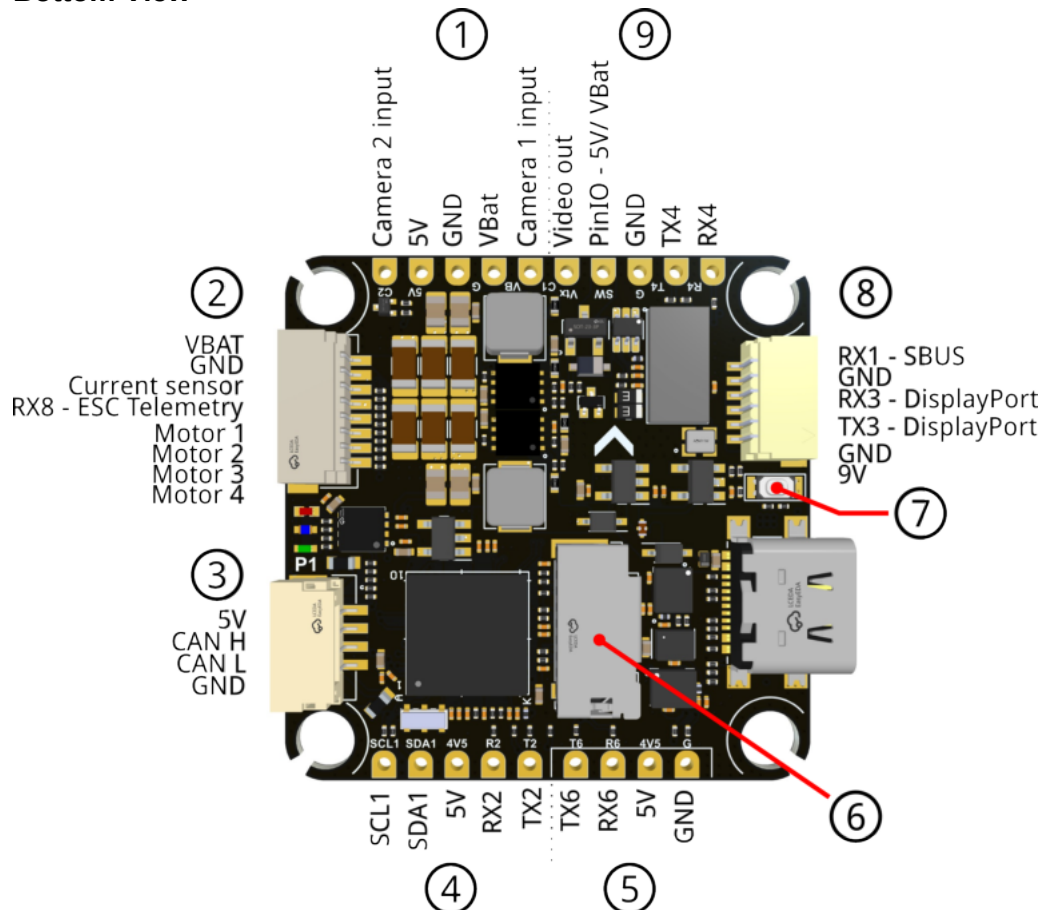


Pinout

Top View

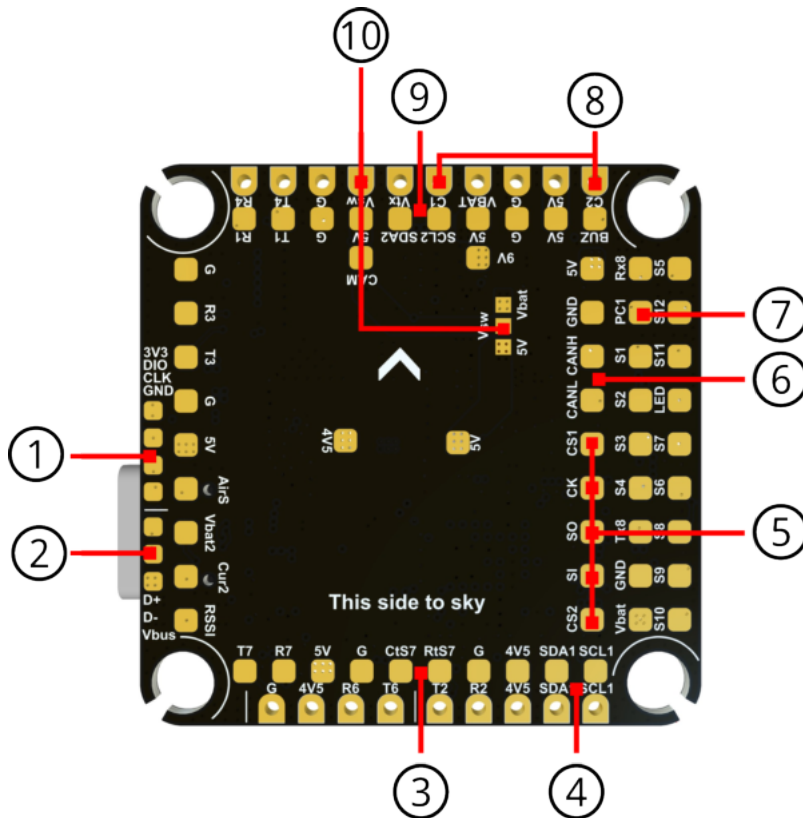


Bottom View



1 - Camera port	2 - ESC port	3 - CAN port
4 - GPS port	5 - Receiver port	6 - SD-Card Slot
7 - Bootloader-Button	8 - DJI port	9 - VTX port

Additional Connections



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

GPIO Pins

VSW

Firmware	Function Name	CLI/ Settings	Function
BETAFLIGHT	PinIO	pinio1_pin = PD10	USER1
INAV	PinIO	pinio1_pin = PD10	USER1
ArduPilot	Relay	GPIO 81	RELAY2

Video in Selector (C1/C2)

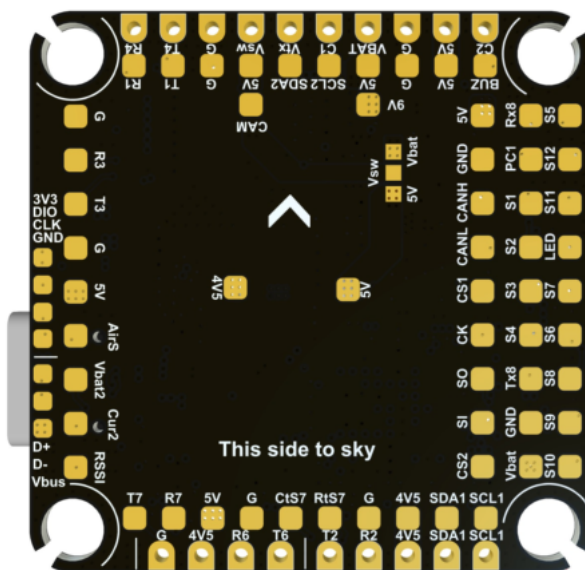
Firmware	Function Name	CLI/ Settings	Function
BETAFLIGHT	PinIO	pinio2_pin = PD11	USER2
INAV	PinIO	pinio2_pin = PD11	USER2
ArduPilot	Relay	GPIO 82	RELAY3

Board Orientation

The top/front direction is shown on the FC:

- Front: indicated by ^
- Top: *This side to sky* pointing up

Installation direction



BETAFLIGHT

Roll Degrees: 0°	Pich Degrees: 0°	Yaw Degrees: 0°
First GYRO: CW 0°	MAG Alignment: Default	

Voltage Sensor Settings

BETAFLIGHT Input 1 (up to 33 V)

Scale:	110
--------	-----

BETAFLIGHT**Input 1 (up to 33 V)****(continued)**

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



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

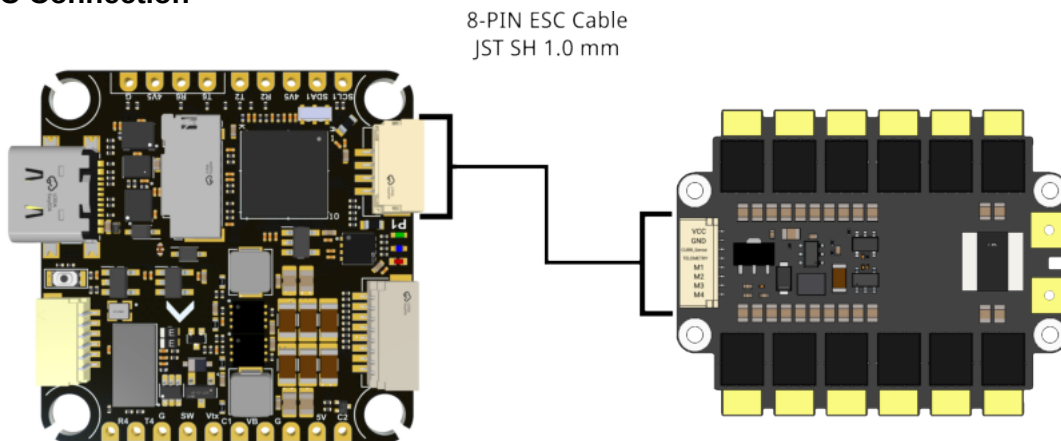
BATT2_CURR_PIN	7
BATT2_AMP_PERVLT	Depends on used Sensor





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

ESC Connection



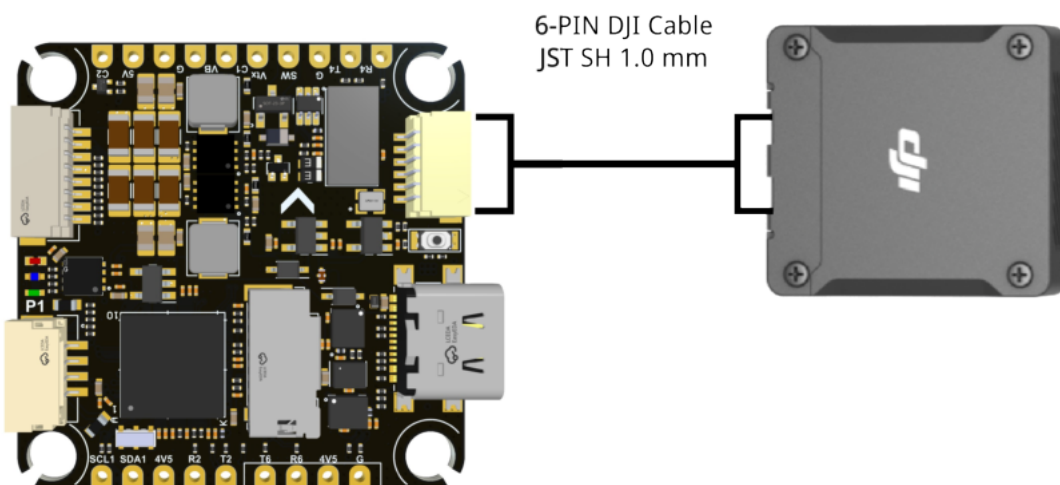
Port Settings

UART 8:	Sensor Input: ESC,
	Baudrate: Auto

HD Video Systems

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

HD System Connection



The supply voltage is fixed 9 V.

Port Settings

UART 3:	MSP: on
---------	---------



Port Settings (continued)

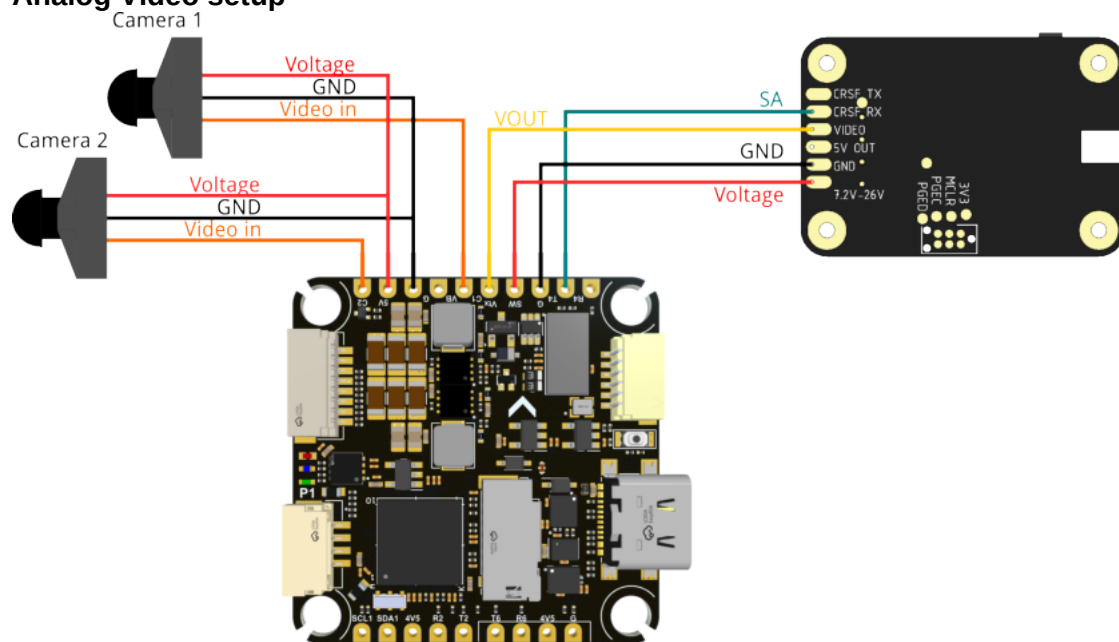
	Baud rate: 115200 (15)
--	---------------------------

Included Receiver Settings (optional)

UART 1:	Serial RX: on
UART 6:	Serial RX: off (16)

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.

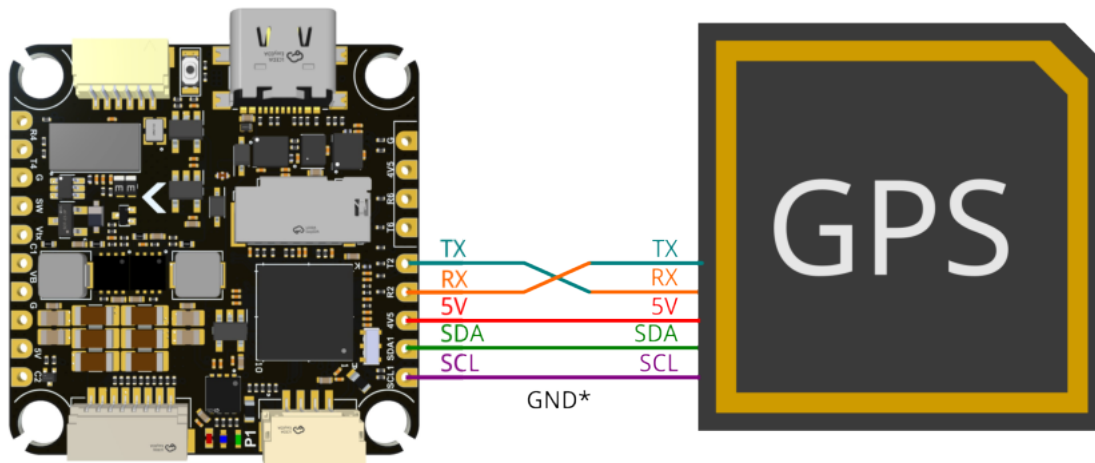
Analog Video setup

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

(16) Disables the external receiver

GPS and Compass

GPS Connection



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

7. Wing PDB

There is no doubt that innovation and choice in quadcopter FC's outpaces those of their wing counterparts. Yet, separate wing FC's are necessary due to the limited wiring space, lack of current sensing, necessary voltage rails and more. There are flight controllers specifically for wings, but they create a tasty bundle of wire spaghetti in your wing, which can lead to reliability issues at worst, or are an eye sore at best.

Admittedly, this PDB is made predominantly for the TBS's wing, but it's compatible with any wing that has up to 4⁽¹⁷⁾ / 8⁽¹⁸⁾ control servos and one or two motors. As such, it's worth a consideration to clean up both your analog or digital builds and recycle one of the 20x20 or 30.5x30.5 FCs you've surely got laying around.

Specification

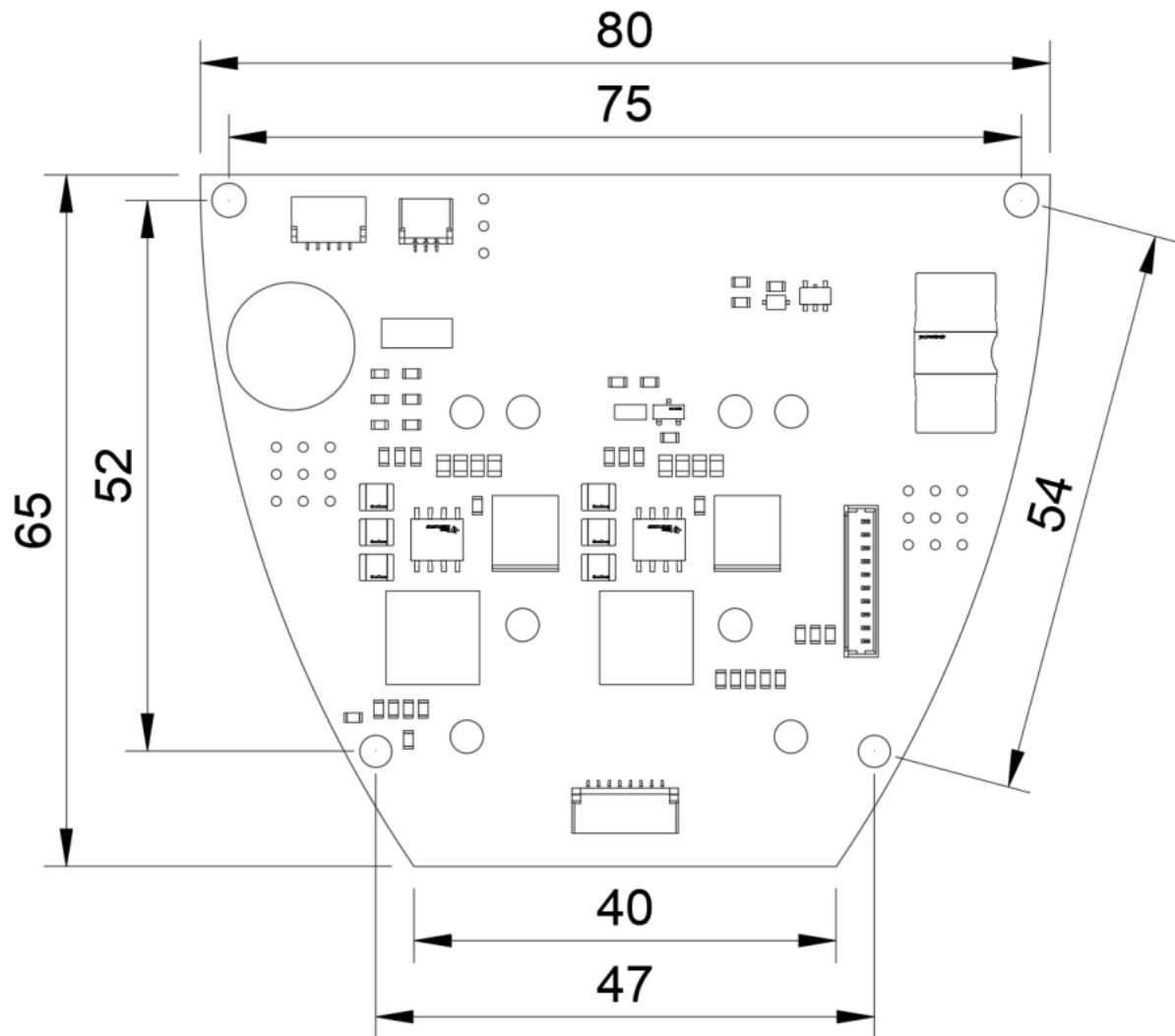
Current		Weight:	26.5 g
Input Voltage:	14 S (60 V) max.	Motor Outputs	2
Current:	90 A (continuous)	Servo Outputs	6 (V1)
	200 A (peak)		10 (V2)
Current Sensor:	Yes	BEC:	6 V / 4 A (V1)
Voltage Sensor:	Yes		5/8 V 4 A (V2)
Mounting	3D Files available	Size:	34x22 mm

(17) V1 PDB

(18) V2 PDB



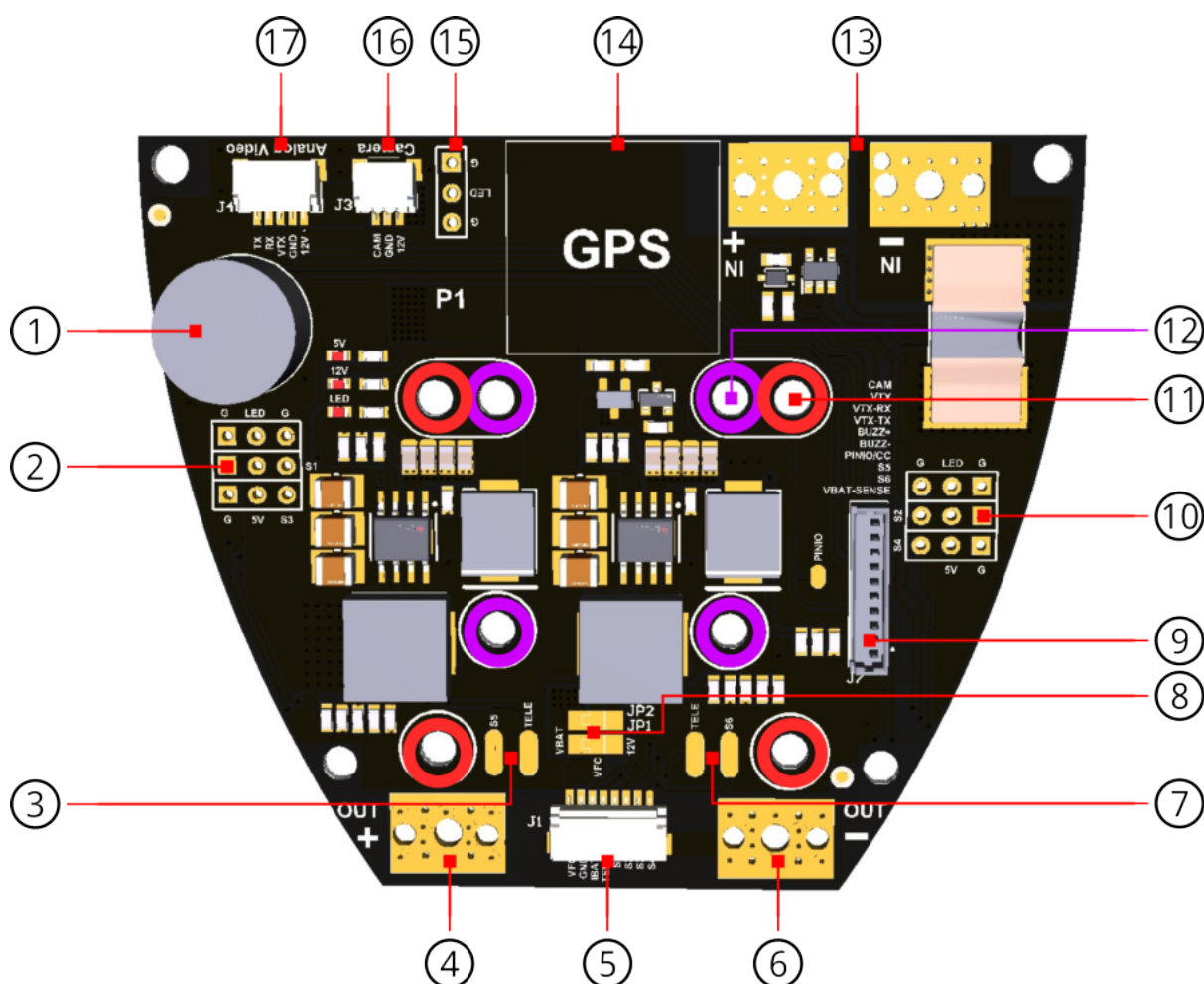
Mounting - Dimensions



Notice: All dimensions are given in mm



Pinout V1

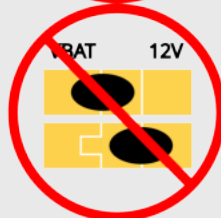
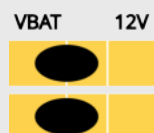
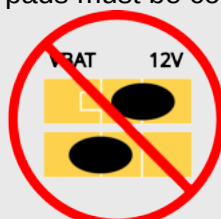
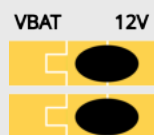


1 - Buzzer	2 - LED/ Servo Pins (1/3)	3 - Motor 1 - Signal
4 - Motor Power pad (+)	5 - FC/ ESC Connector (LUCID FC)	6 - Motor Power pad (-)
7 - Motor 2 - Signal	8 - FC Voltage Selector (12V/ VBAT)	9 - FC/ Peripheral Connector
10 - LED/ Servo Pins (2/4)	11 - 30.5x30.5 mm FC Mounting	12 - 20x20 mm FC Mounting
13 - Battery Input Pads	14 - GPS Space	15 - LED Pin
16 - Camera Connector	17 - VTX Connector	

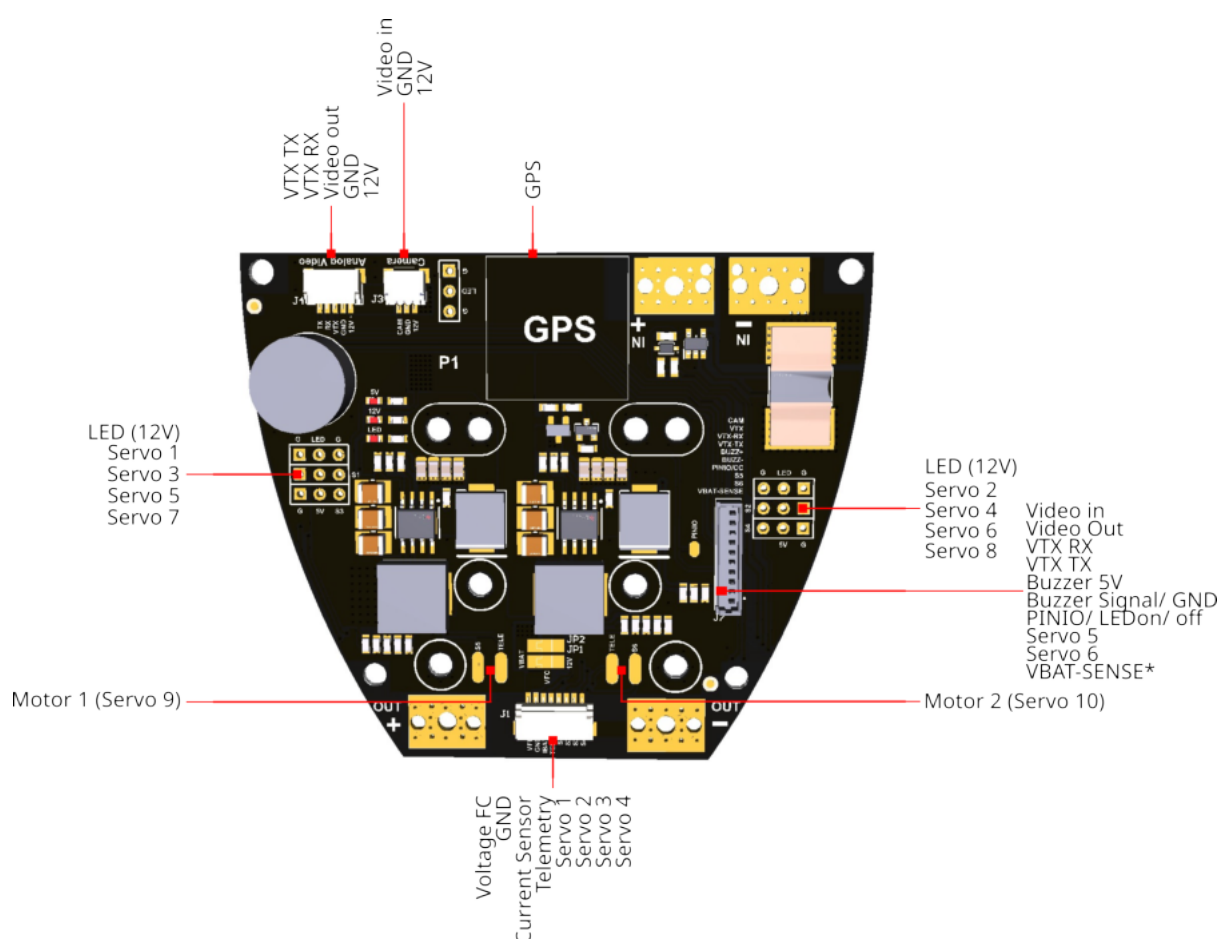
Voltage Selector

8 - Left/ Center	8 - Right/ Center
FC Supply Battery Voltage	FC Supply 12V

! Attention: Top and bottom pads must be connected to the same side/ voltage



setting

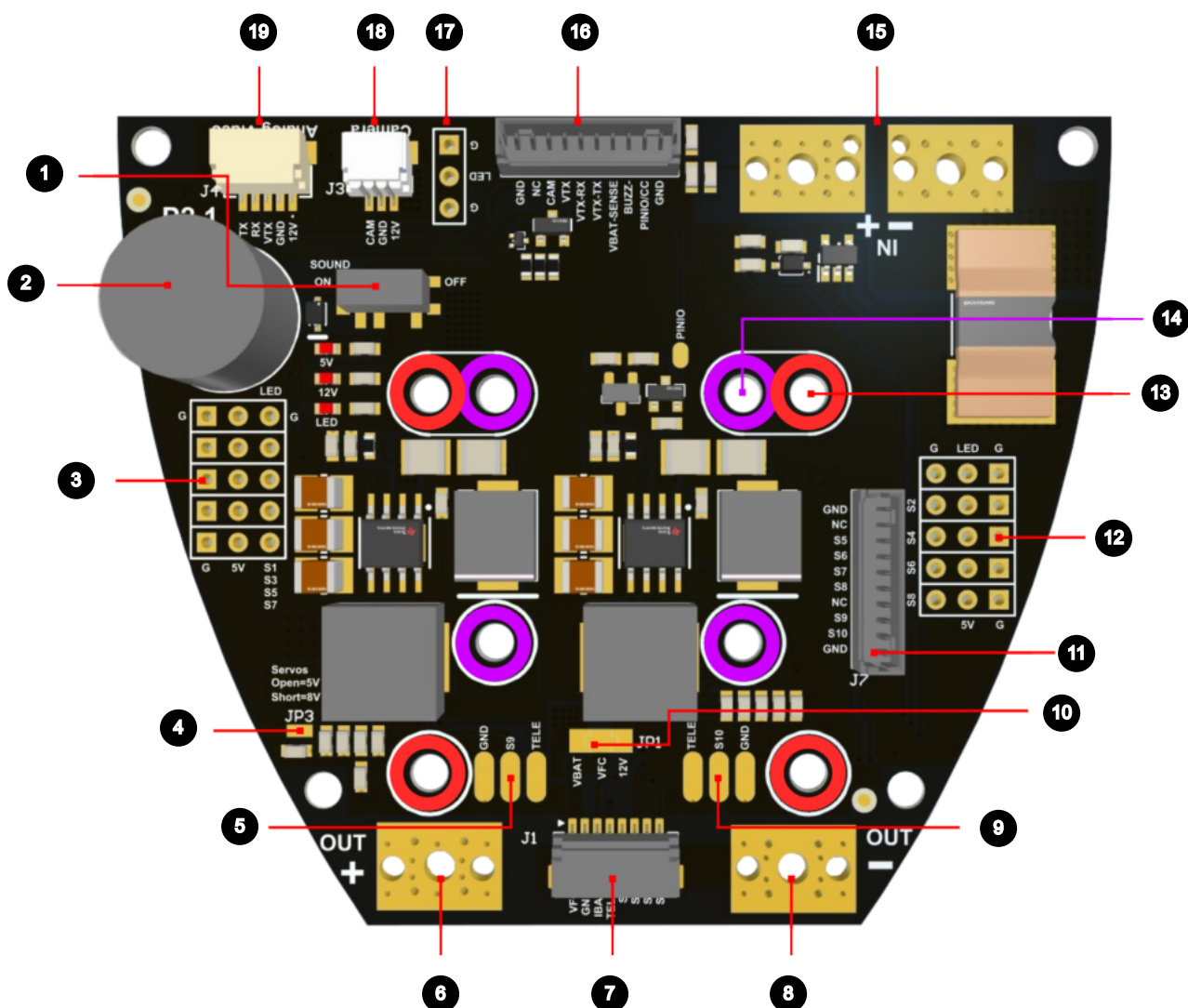


Note: * VBAT Sensor must only be used when the FC voltage selector is set to **12V⁽¹⁹⁾**

(19) CC-Pad on LUCID F4 Pro/ Freestyle FC



Pinout V2



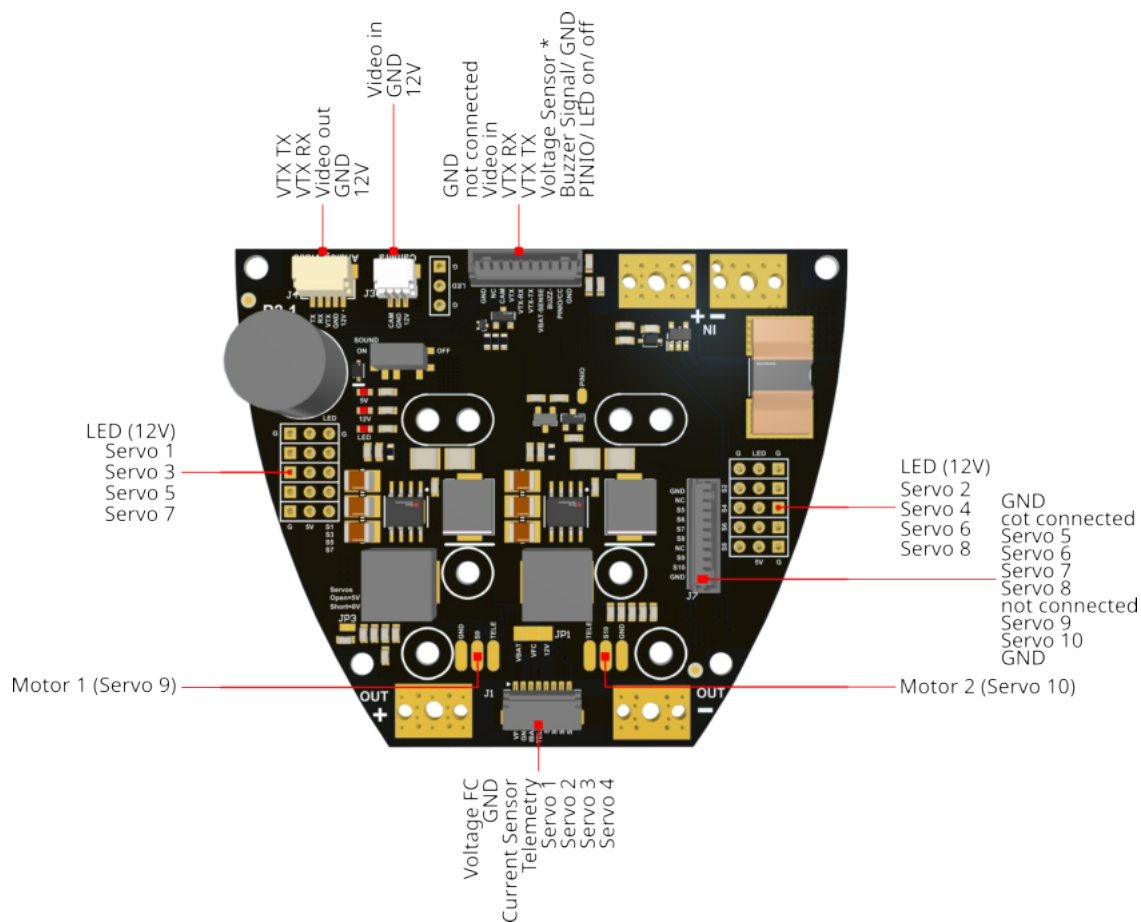
1 - Buzzer on/off switch	2 - Buzzer	3 - LED/ Servo Pins (1/3/5/7)
4 - Servo Voltage Selector (5/ 8 V)	5 - Motor 1 - Signal	6 - Motor Power pad (+)
7 - FC/ ESC Connector (LUCID FC)	8 - Motor Power Pad (-)	9 - Motor 2 - Signal
10 - FC Voltage Selector (12V/ VBAT)	11 - FC /Servo Connector	12 - LED/ Servo Pins (2/4/6/8)
13 - 30.5 x 30.5 mm FC Mounting	14 - 20 x 20 mm FC Mounting	15 - Battery Input Pads
16 - FC/ Peripheral Connector	17 - LED Pin	18 - Camera Connector
19 - VTX Connector		

Voltage Selectors

4 - Open	4 - Closed	8 - Left/ Center	8 - Right/ Center
Servos 5 V	Servos 8 V	FC Supply Battery Voltage	FC Supply 12 V



Attention: Bridging all pads will cause a short



Note: * VBAT Sensor must only be used when the FC voltage selector is set to **12 V⁽²⁰⁾**

Voltage Sensor Settings



Note: Only set up when using the voltage sensor pin for the measurement

INAV

Scale:	2100
--------	------

⁽²⁰⁾ CC-Pad on LUCID F4 Pro/ Freestyle FC



INAV
(continued)

Offset:	0
---------	---

ArduPilot

BATT_MONITOR:	#todo
BATT_VOLT_PIN:	#todo
BATT_VOLT_MULT:	#todo

Current Sensor Settings

INAV

Scale:	250
Offset:	0

ArduPilot

BATT_CURR_PIN:	#todo
BATT_AMP_PERVLT:	#todo

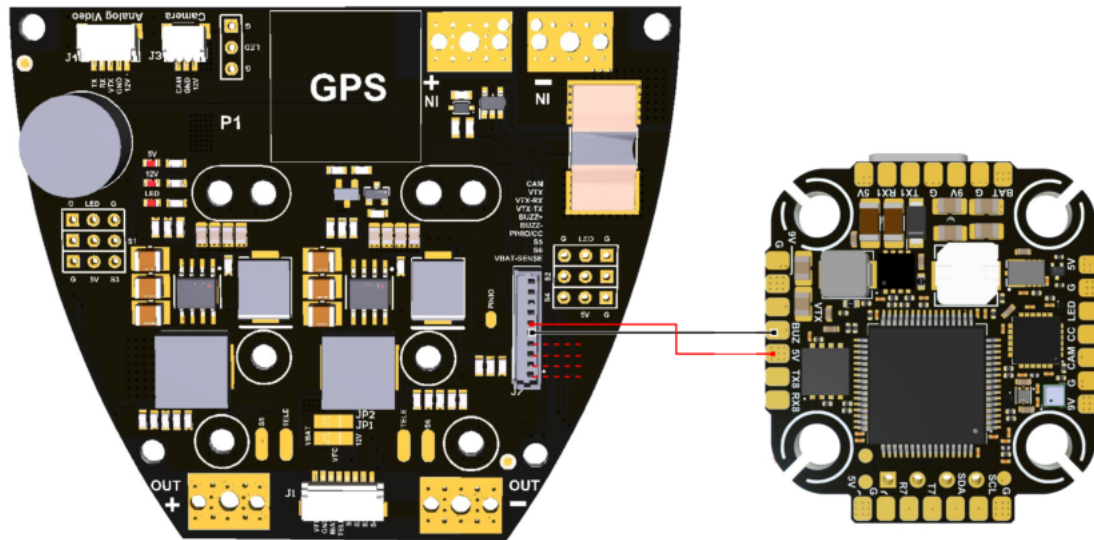


Peripheral Connections

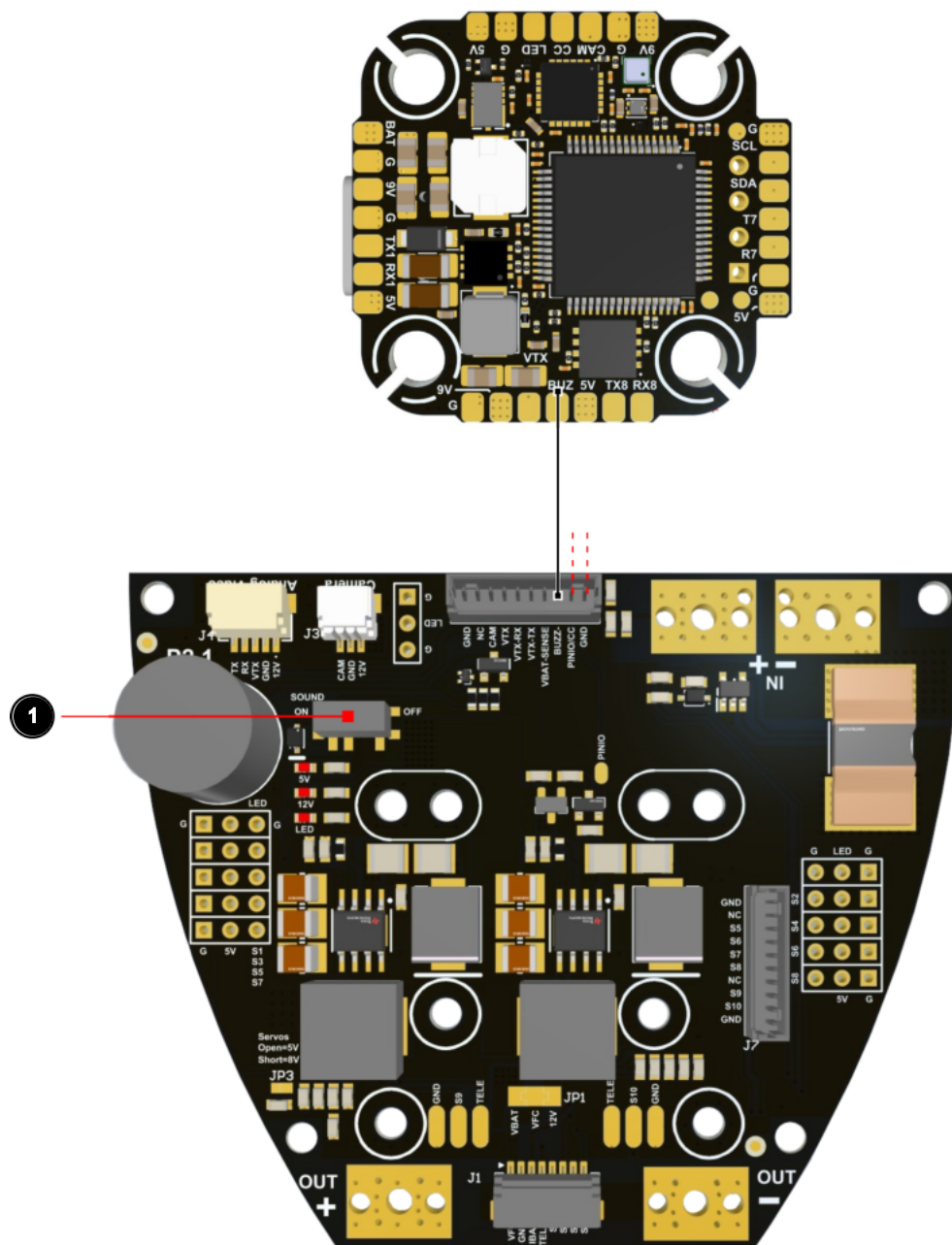
Buzzer

Connected to the PCB, the internal buzzer is either powered by the FC's 5 V pad (PDB V1) or by the PDB (PDB V2).

PDB V1 Buzzer Connection



PDB V2 Buzzer Connection



Note: The buzzer can be disabled on the PCB by the built-in switch (1)

LEDs

The LED pins on the PDB are connected to the internal 12 V supply and controlled by the *PINIO* pad.

Connect it to a pin of your FC and set it to be used as I/O. If voltage level on the *PINIO* pad switches to high (3.3 V) the 12 V output will turn on.



With a CROSSFIRE/ TRACER receiver, the GPIO function can be used as well. Make sure the receiver and the PDB share the same ground.



Note: The outer pins of the connector are both connected to ground, center to +12 V.



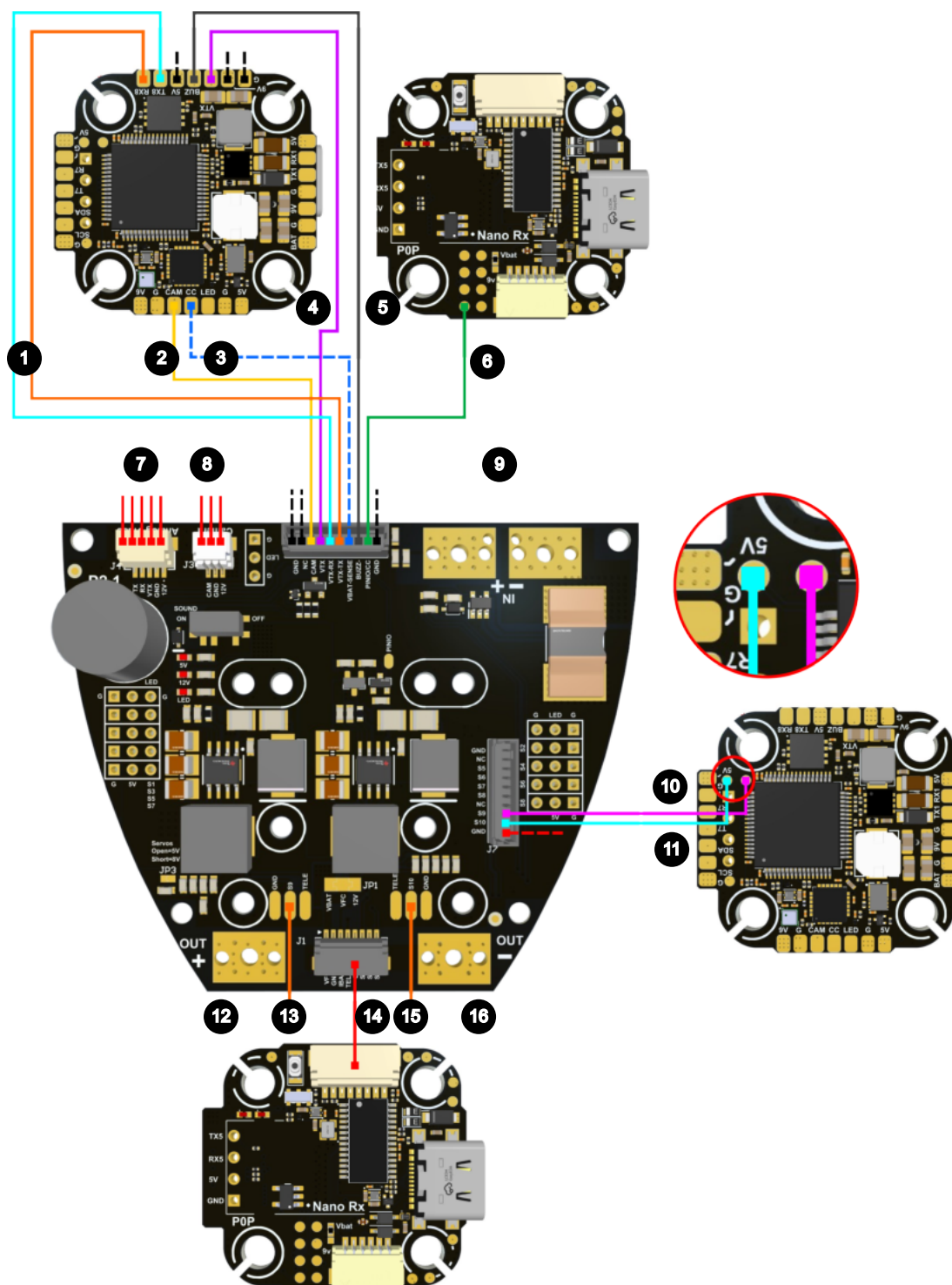
Note: If no signal is connected to the *PINIO* pad, the ELD supply will remain off



Connection Excape

LUCID F4 FC Connection - Example

Wiring-example - TBS MOJITO



1 - VTX Serial (SmartAudio, CRSF)	2 - Video In (Camera)	3 - Camera Control/ Voltage Sensor ⁽²³⁾
4 - Video Out (VTX)	5 - Buzzer	6 - LED Control (<i>PinIO</i>)
7 - Video Out - To VTX	8 - Video in - To Camera	9 - Battery Ins
10 - Servo 9 - Motor 1	11 - Servo 10 - Motor 2	12 - ESC Power Out <i>VBAT</i>
13 - ESC 1 Signal	14 - FC/ESC Connector ⁽²⁴⁾	15 - ESC 2 Signal
16 - ESC Power Out <i>GND</i>		



Important: Voltage Sensor (3) and *Camera Control* use the same pin. Do not connect both at the same time. **When using the Voltage Sensor, the *Camera Control* function must not be activated.**

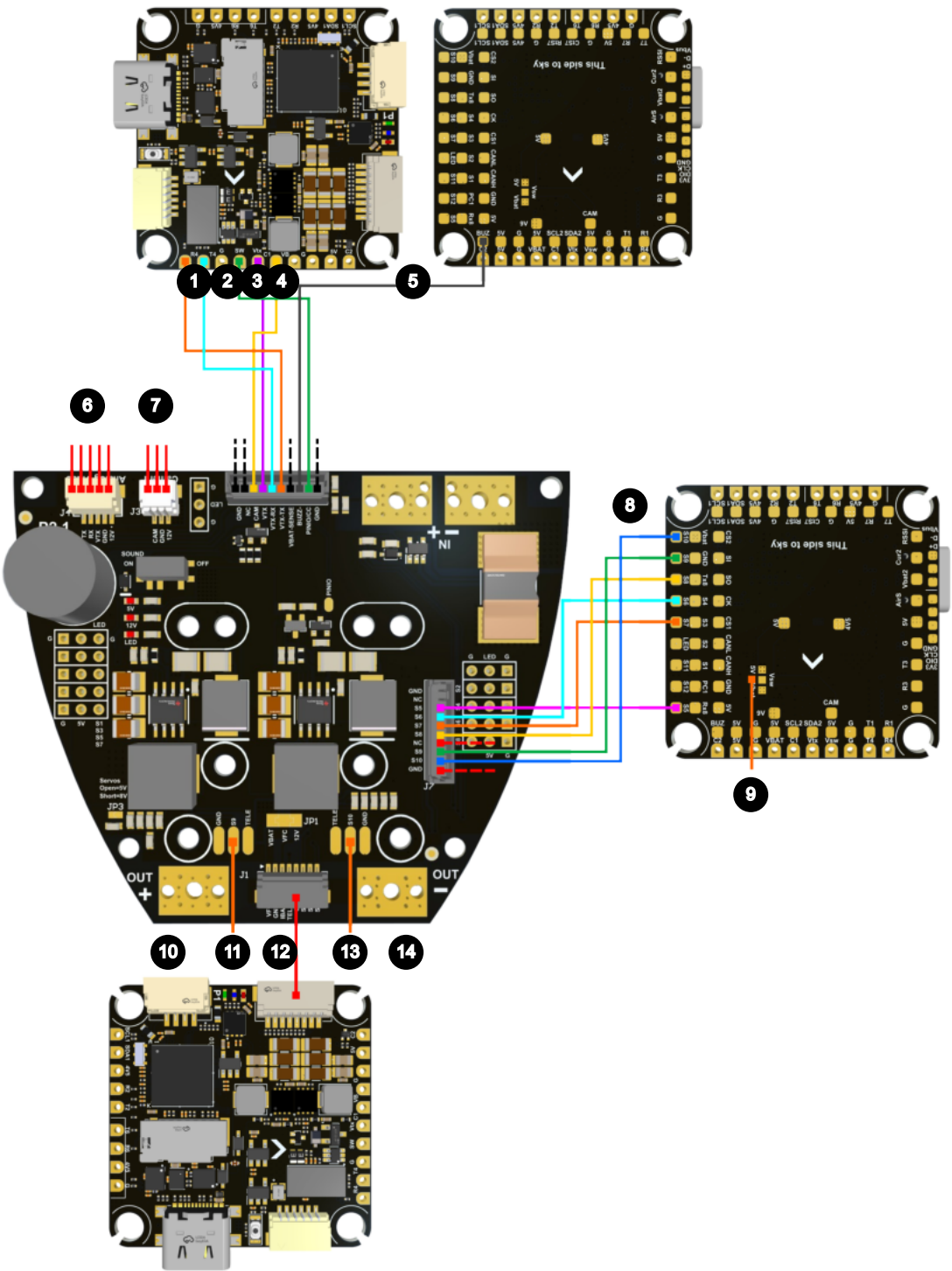
⁽²³⁾ Voltage Sensor when FC is powered by 12 V

⁽²⁴⁾ Connects *VBAT*, Current sensor and Servo 1-4



LUCID H7 FC Connection - Example

Wiring-example - TBS MOJITO



- VTX Serial (SmartAudio, CRSF)	- LED Control (PinIO)	- Video Out (VTX)
- Video In (Camera)	- Buzzer	- Video Out - To VTX

- Video in - To Camera	- Servo 5..10	- Voltage Selector PinIO
- ESC Power Out <i>VBAT</i>	- ESC 1 Signal	- FC/ESC Connector ⁽²⁶⁾
- ESC 2 Signal	- ESC Power Out <i>GND</i>	-



Important: Voltage Selector (9) must be set to **5 V**.



Note: Servo 9 (10) must be connected for motor 1(2) signal. Servo 5..8 are optional.

(26) Connects *VBAT*, Current sensor and Servo 1-4



8. Single ESC - 12S

The TBS LUCID12S ESC is a force to be reckoned with. Built for high voltage and high power applications that demand high reliability and power at your fingertips.

Featuring an 8-layer high current density board with excellent heat resistance, the ESC is built to withstand the harshest punishment of everyday flying while delivering excellent payload capabilities. With built-in TVS, voltage spikes are no longer a concern. The ESC achieves excellent power-to-weight density without needing heavy heat sinks by focusing on thermal dissipation from the ground up.

A close collaboration with AM32 allowed us to squeeze the last bit of performance without breaking the bank.

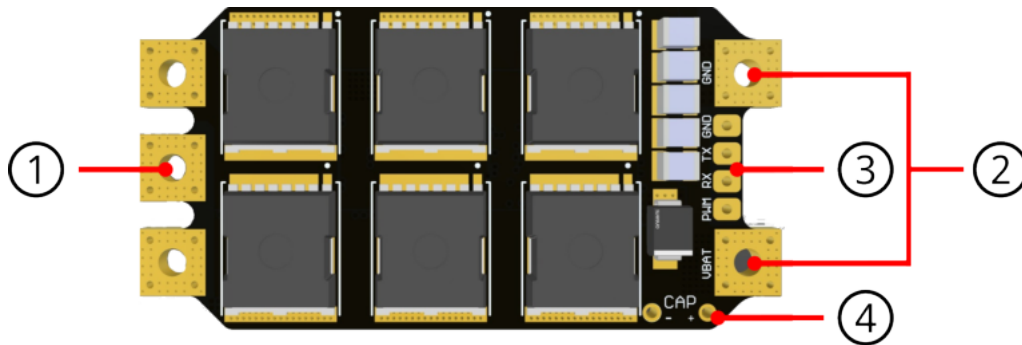
Specification

Firmware:	AlkaMotors32 (AM32)	Weight:	19 g
Input Voltage:	3-12 S	Motor Outputs:	1
Current:	60 A (Continuous)	Protocols:	DShot 300/600 with ESC Telemetry
	70 A (peak, 60 s)		KISS ESC Telemetry
	90 A (peak 40 s)		CRSF
	120 A (peak 30 s)		PWM
Mounting	/	Size:	58x29 mm

Firmware

Firmware	Target	Min. FW Version
AlkaMotors32	AM32_TBS_12S_F415	2.18

Pinout

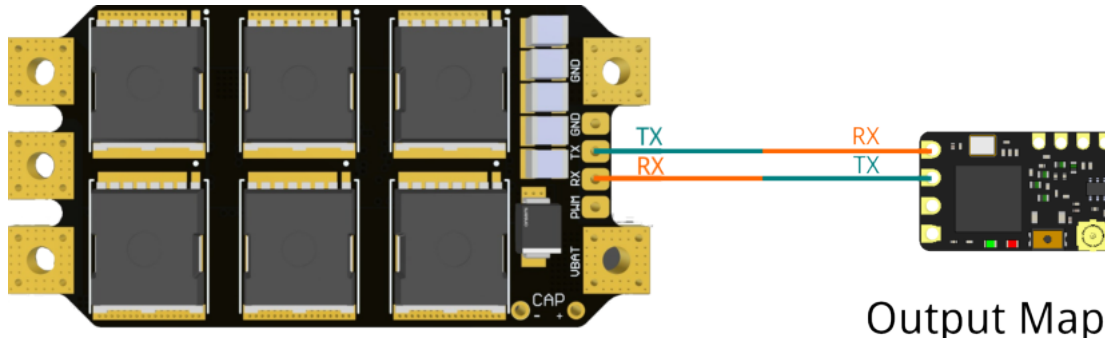


1 - Motor	2 - Input/ Battery
3 - RC Input	4 - External Capacitor Pads

Peripheral Connections

Receiver - CRSF

CRSF Connection



Output Map

Output 1	CRSF TX
Output 2	CRSF RX
Output 3	Ch 3
Output 4	SmartAudio
Output 5	BST SDA
Output 6	BST SCL

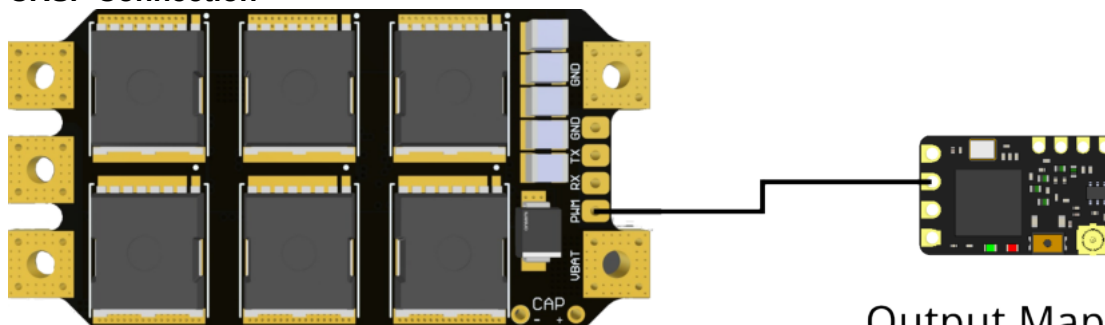
CRSF enables extra features over other protocols:

- Configuration on the fly (by TBS AGENT through the connected CROSSFIRE/ TRACER connection)
- Telemetry Sensors
- CRSF as RC input signal (channel selectable by CRSF menu)

Receiver Connection - PWM

When using an FC, its recommended to use [CRSF \(on page 61\)](#), KISS Telemetry or DShot or

CRSF Connection



Output Map

Output 1	Ch 1
Output 2	Ch 2
Output 3	Ch 3
Output 4	SmartAudio
Output 5	BST SDA
Output 6	BST SCL

9. 4in1 ESC - 3-6S

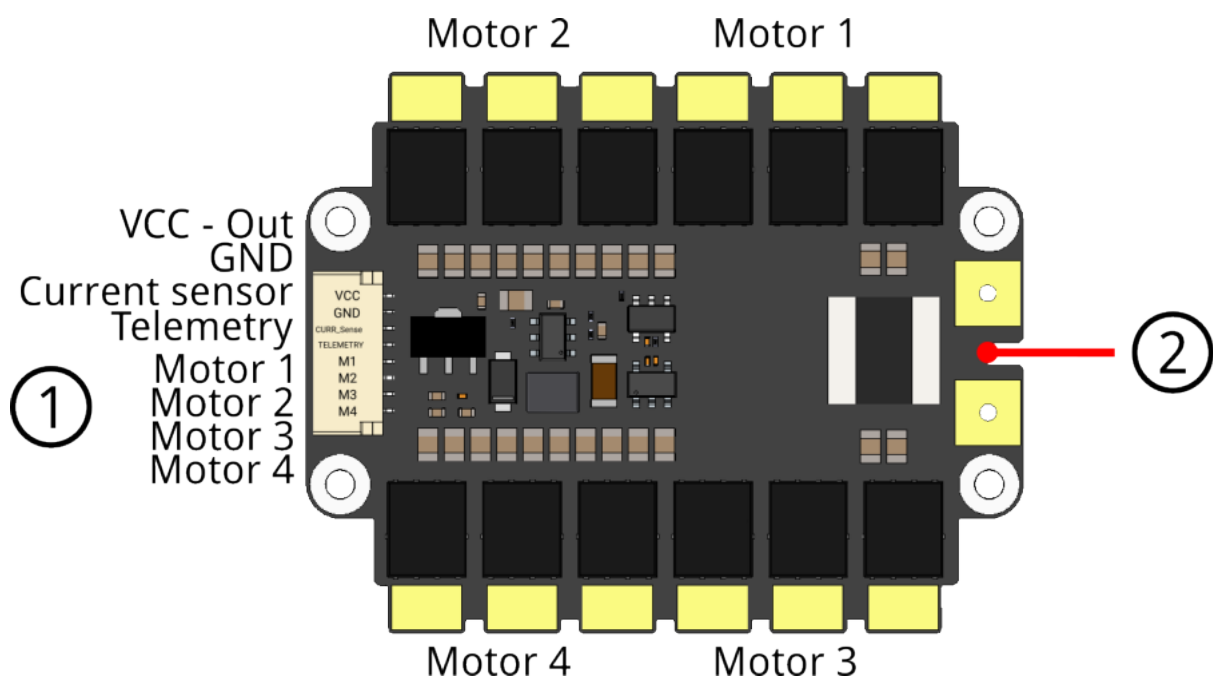
Specification

Firmware:	AlkaMotors32 (AM32)	Weight:	13.81 g
Input Voltage:	3-6 S	Motor Outputs	4
Current:	60 A (continuous)	Protocols:	DSHOT 300/600 with ESC Telemetry
	70 A (peak, 60 s)		KISS ESC Telemetry
Current Sensor:	Yes		CRSF
Voltage Sensor:	No		PWM
Mounting	Gorilla Pattern, M2	Size:	34x22 mm

Firmware

Firmware	Target	Min. FW Version
AlkaMotors32	AM32_TBS_6S_4IN1_F421	2.18

Pinout



1 - FC Connector

2 - Input/ Battery, Capacitor

Capacitor

Depending on the motor size used, certain capacitors need to be installed on the hardware.

! **Important:** The cable length of the capacitor must not exceed 1 cm

Motor Size	Capacitor (ESC)	Capacitor (FC)
22 - 24 mm	min. 500 μ F	not required
25 - 29 mm	min. 1000 μ F	not required
≥ 30 mm	min. 1000 μ F	min. 220 μ F (recommended)

Current Sensor Settings

BETAFLIGHT

Scale:	125
Offset:	0

INAV

Scale	125
Offset:	0

10. 4in1 ESC - 3-8S

Featuring an 8-layer high current density board with twice the market average on-board capacitance, the ESC is built to withstand the harshest punishment of everyday FPV flying while delivering buttery-smooth flight characteristics paired with face-melting acceleration. By focusing on thermal dissipation from the ground up, the flight stack achieves excellent power to weight density without the need of heavy heat sinks.

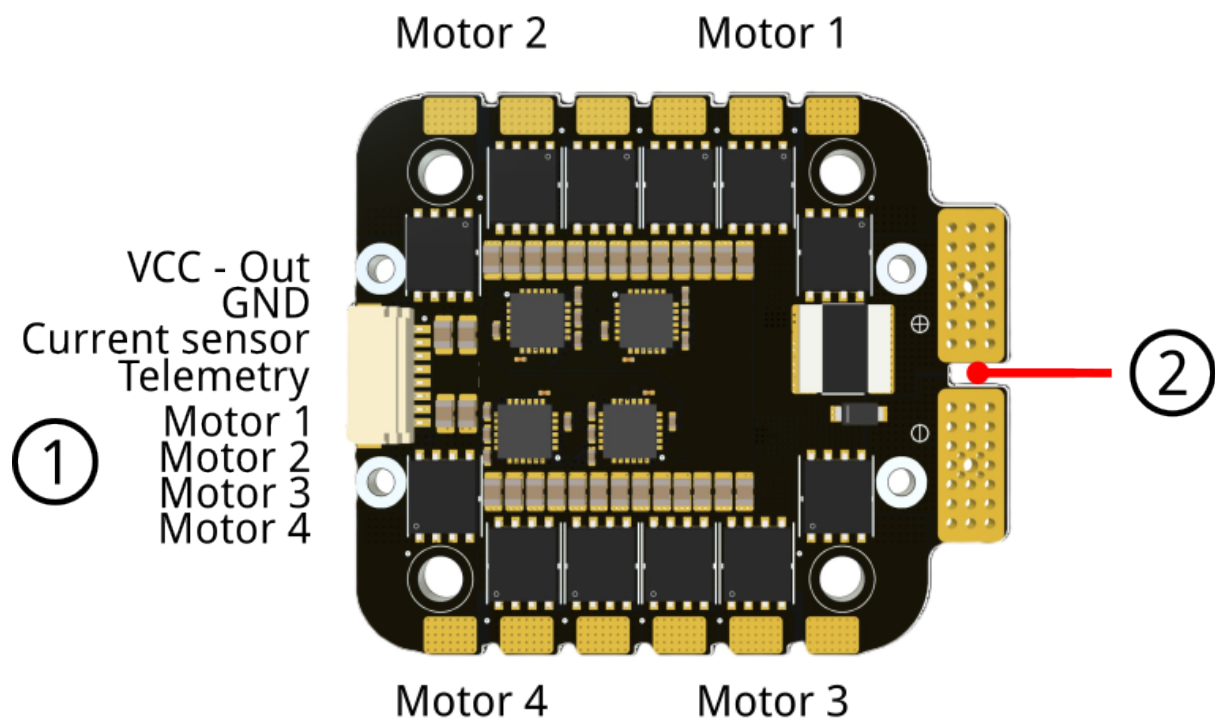
Specification

Firmware:	AlkaMotors32 (AM32)	Weight:	17.58 g
Input Voltage:	3-8 S	Motor Outputs	4
Current:	4 x 55 A (peak, 60 s)	Protocols:	DShot 300/600 with ESC Telemetry
	85 A (peak, 10 s)		KISS ESC Telemetry
Current Sensor:	Yes		CRSF
Voltage Sensor:	No		PWM
Mounting	Gorilla Pattern (M2)	Size:	34x44 mm
	30.5x30.5 mm (M3)		

Firmware

Firmware	Target	Min. FW Version
AlkaMotors32	AM32_TBS_8S_4IN1_F421	2.18

Pinout



1 - FC Connector

2 - Input/ Battery, Capacitor

Capacitor

Depending on the motor size used, certain capacitors need to be installed on the hardware.

! Important: The cable length of the capacitor must not exceed 1 cm

Motor Size	Capacitor (ESC)	Capacitor (FC)
22 - 24 mm	min. 500 μ F	not required
25 - 29 mm	min. 1000 μ F	not required
≥ 30 mm	min. 1000 μ F	min. 220 μ F (recommended)

Current Sensor Settings

BETAFLIGHT

Scale: 50

BETAFLIGHT
(continued)

Offset:	0
---------	---

INAV

Scale:	50
Offset:	0

