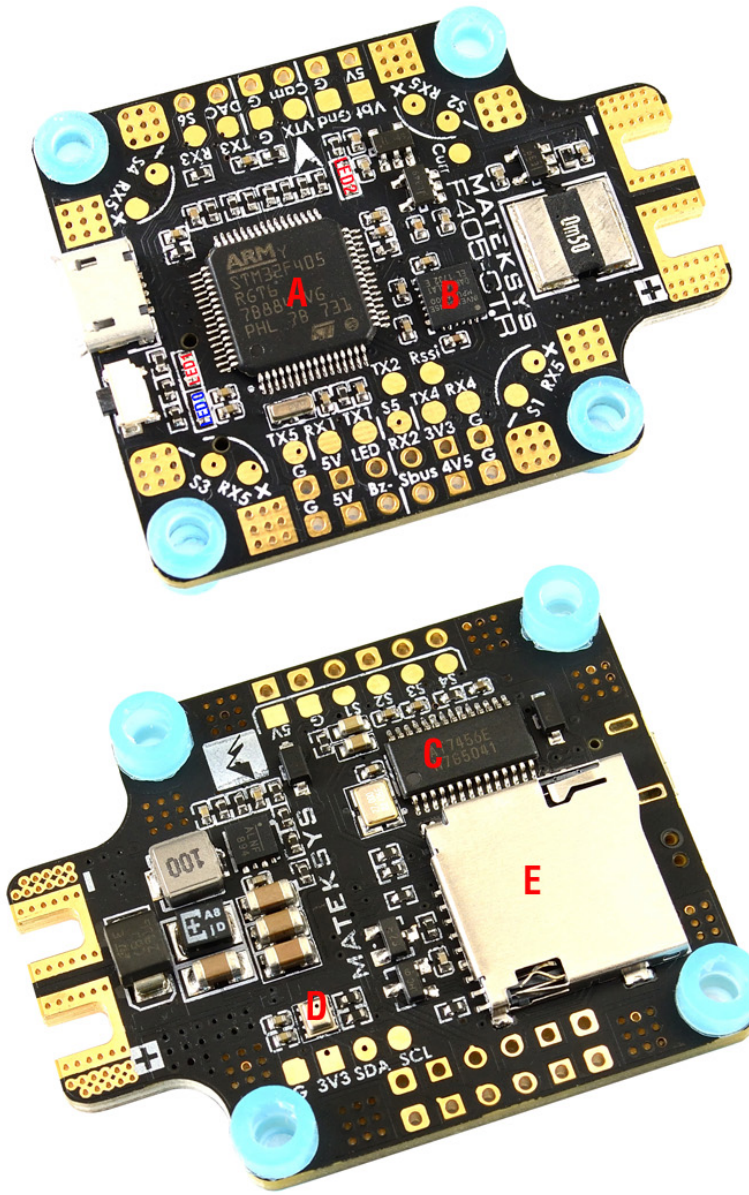


N4N1 Wiring

- Matek F405-CTR
- Not the best choice
- I had one handy



A MCU: STM32F405RGT6(168MHz)
B IMU: MPU6000 (8kHz Max.)
C OSD: BetaFlight OSD w/ AT7456E chip
D Baro: BMP280
E BlackBox: MicroSD Slot

Button: Boot(DFU) mode button
LED0(Blue) & LED1(Red): FC Status indicator
LED2(Red):3.3V indicator

+ & - : LiPO & ESC power pads, 6~30V DC.
S1~S6: ESC signal 1~6 (PWM, Oneshot, Multishot, DSHOT)
[5V G S1 S2 S3 S3 S4] pads: For 4in1 ESC signal group connection

Voltage meter scale: 110
Current Sensor: 184A (Scale 179)

Vbt & Gnd: Battery voltage for Video Transmitter
Curr: current sensor input /output
5V: onboard BEC 5V 2A Cont. Max.3A
3V3: LDO 3.3V, Max. 300mA
4V5: 4.4~4.8V, the voltage is also supplied when connecting via USB
G: Ground
LED: WS2812 LED signal output
Buz- & 5V: For active 5V buzzer
Rssi: Frsky RSSI input

[G 3V3 SDA SCL] : I2C1 for magnetometer connection

VTX: Video Transmitter Signal
Cam: Camera video signal
DAC: Camera control pin (BF3.3)

SBus: Built in inverter of RX2 for SBUS input
RX2: UART2-RX for DSM2, DSMX, IBUS, PPM share RX2 pad
RX1/TX1: UART1, RX3/TX3: UART3, RX4/TX4: UART4, RX5/TX5: UART5
TX2: PA2 with TIM9_CH1, can be resourced to softserial
4x RX5 pads at each corner, for ESC Telemetry

Tips:
TX3, TX4 & TX5 can be used for SA_VTX & TR_VTX control directly.
Non-inversion hacks must be required for Frsky Smartport on TX pins
S5 (PA15) or TX2 (PA2) can be resourced to softserial
2812LED share I2C1_SCL pad. only one can run, turn off another one.
2812LED can be resourced to S5 (PA15) if using Baro the same time.
S6 pad (PA8) can be resourced to Camera Control

Size: 36x36mm with standard 30.5mm mounting holes
Weight: 10g
M3 Silicon Grommets included

- **Firmware**

- ArduPilot (ChibiOS) Target
- [MatekF405](#) for F405-CTR

- **PWM outputs**

- S1 PWM1 TIM3
- S2 PWM2 TIM8
- S3 PWM3 TIM8
- S4 PWM4 TIM8
- S5 PWM5 TIM2
- S6 PWM6 TIM1

- Motor can't share same TIM with servo.

- **Default UART order**

- SERIAL0 = console = USB
- SERIAL1 = Telemetry1 = USART3
- SERIAL2 = Telemetry2 = UART4
- SERIAL3 = GPS1 = USART1
- SERIAL4 = GPS2 = UART5

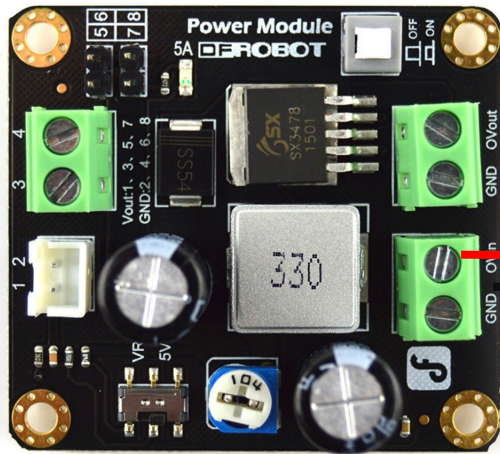
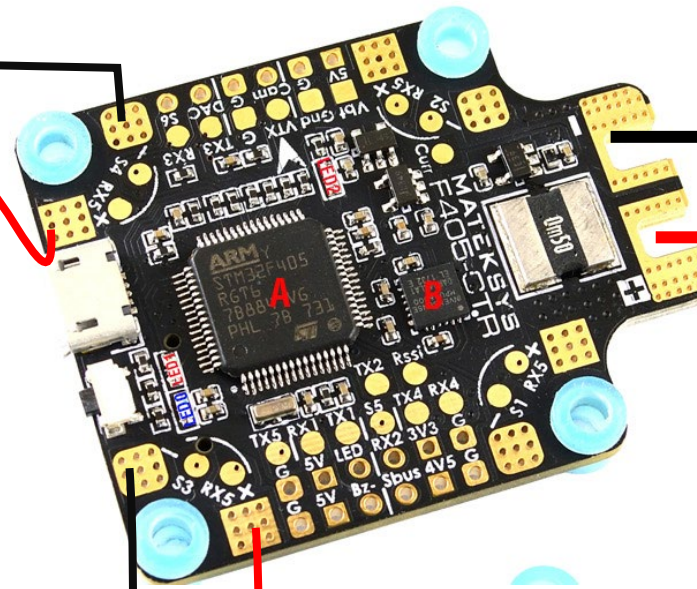
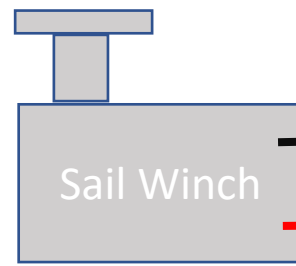
- **ADC**

- BATT_VOLT_PIN 15
- BATT_VOLT_MULT 11.0
- BATT_CURR_PIN 14
- BATT_AMP_PERVLT 56 (F405-CTR)
- BATT_MONITOR 4
- RSSI_ANA_PIN 9

- **Frsky Smartport Telemetry**

- non-inverted (hacked) S.Port signal
- TX4 pad
- SERIAL2_BAUD 57
- SERIAL2_OPTIONS 7
- SERIAL2_PROTOCOL 4

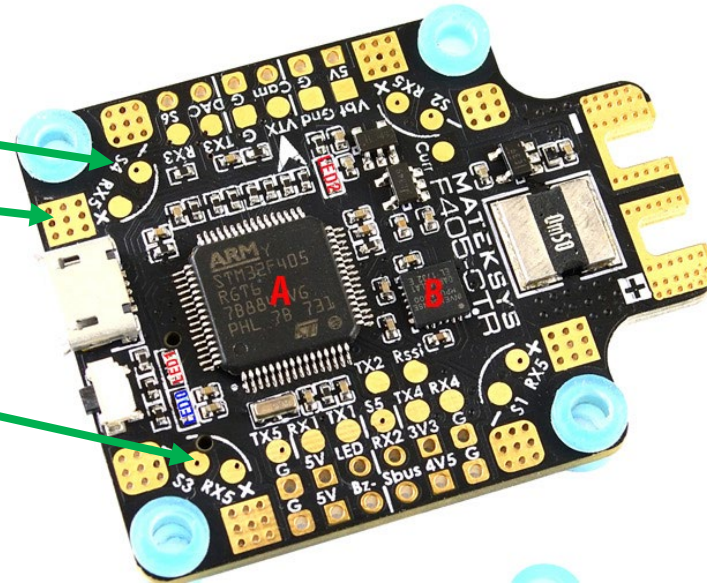
Power



5A 5V DC-DC converter
Powers rudder servo
(sail winch is 7.4V)

Servos

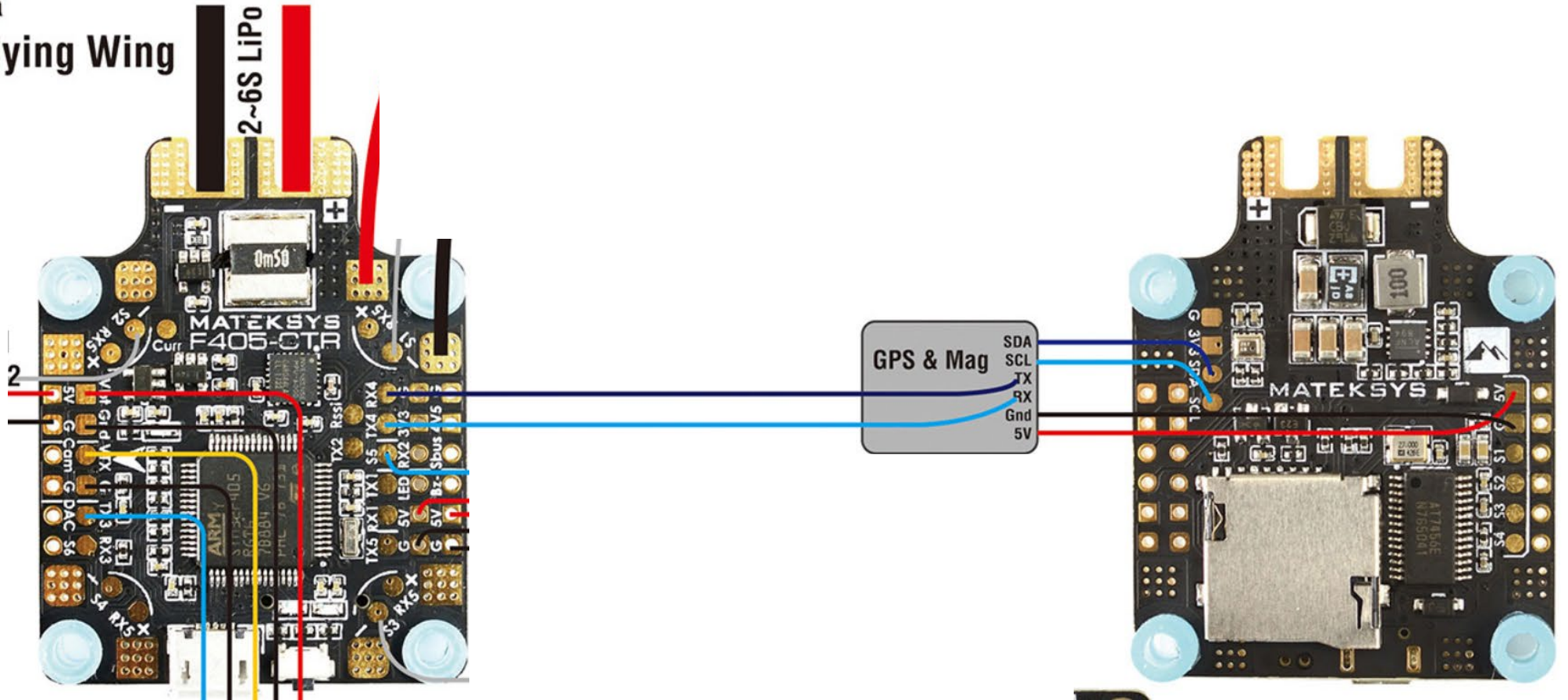
- Sail is S4
 - Sail servo power from ESC Pads
- Rudder is S3
 - Rudder power from DC-DC converter (see power image)



GPS and Compass

- From Matek website
- GPS to Rx4/Tx4
 - Serial 2 in ardupilot

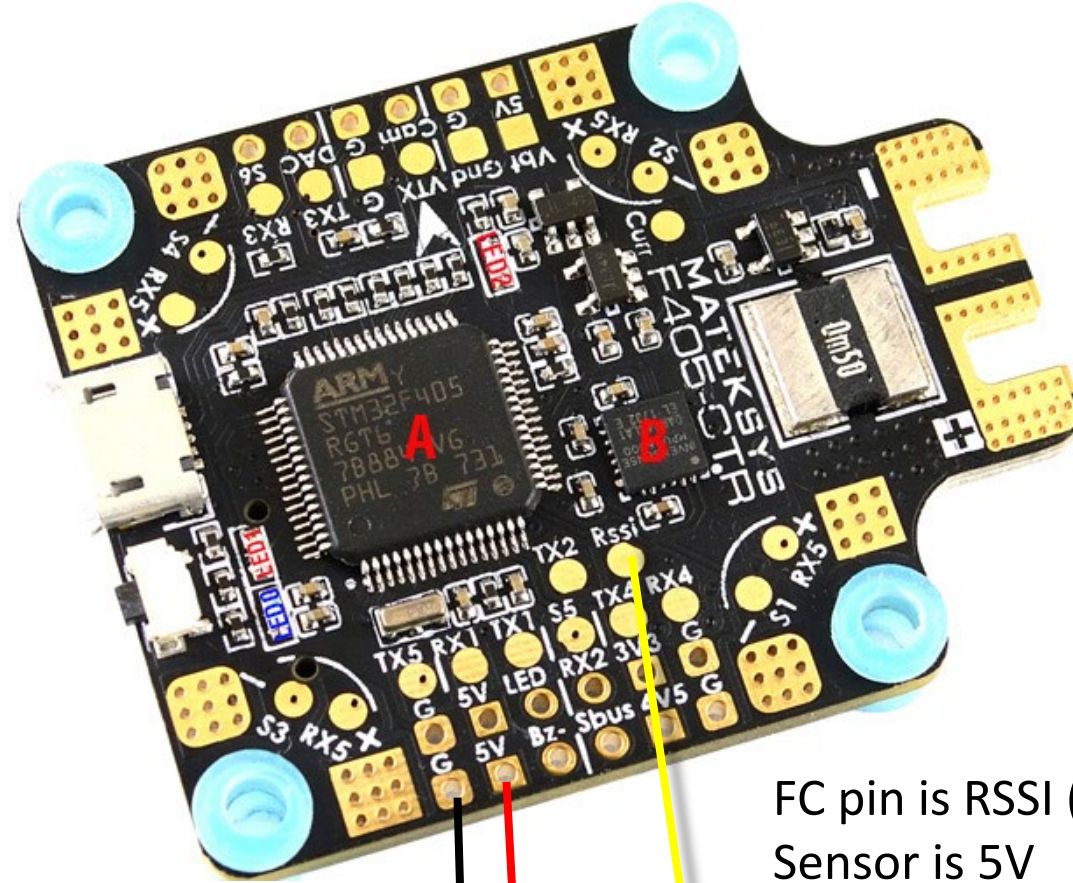
F405-CTR
& INAV Flying Wing



Windvane

- 5V —
- Gnd —
- Signal

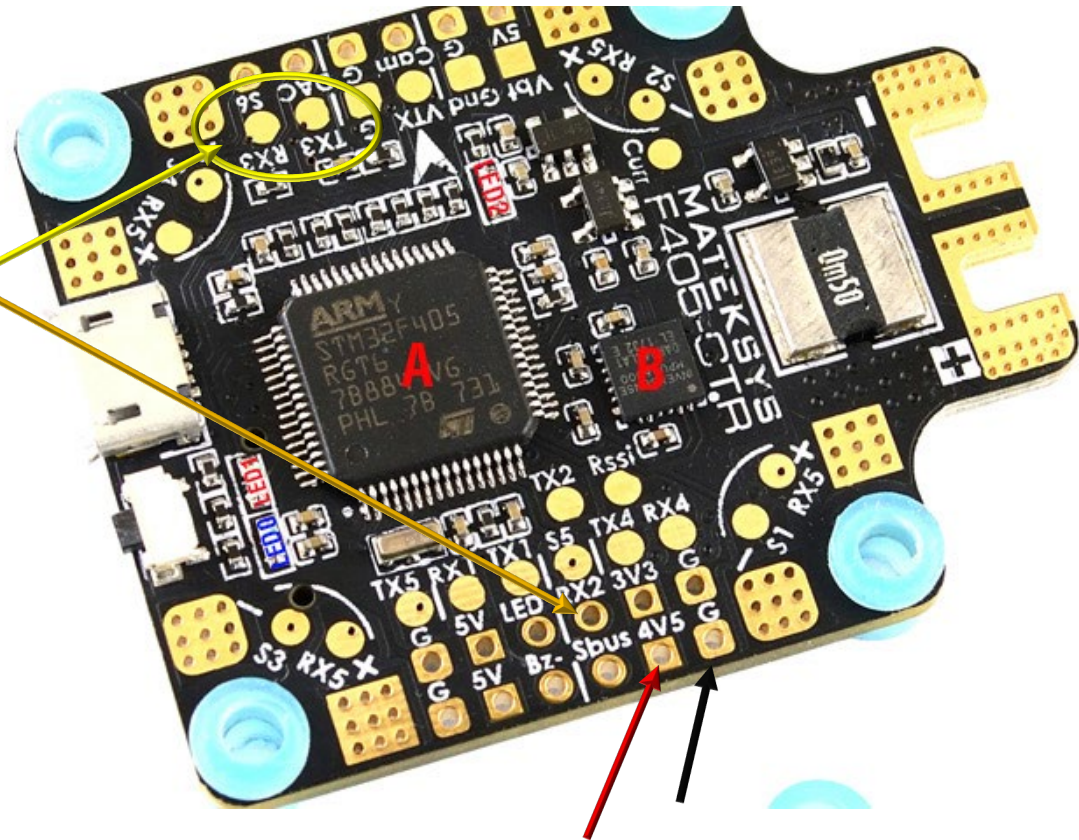
Voltage divider
Gain of 0.5



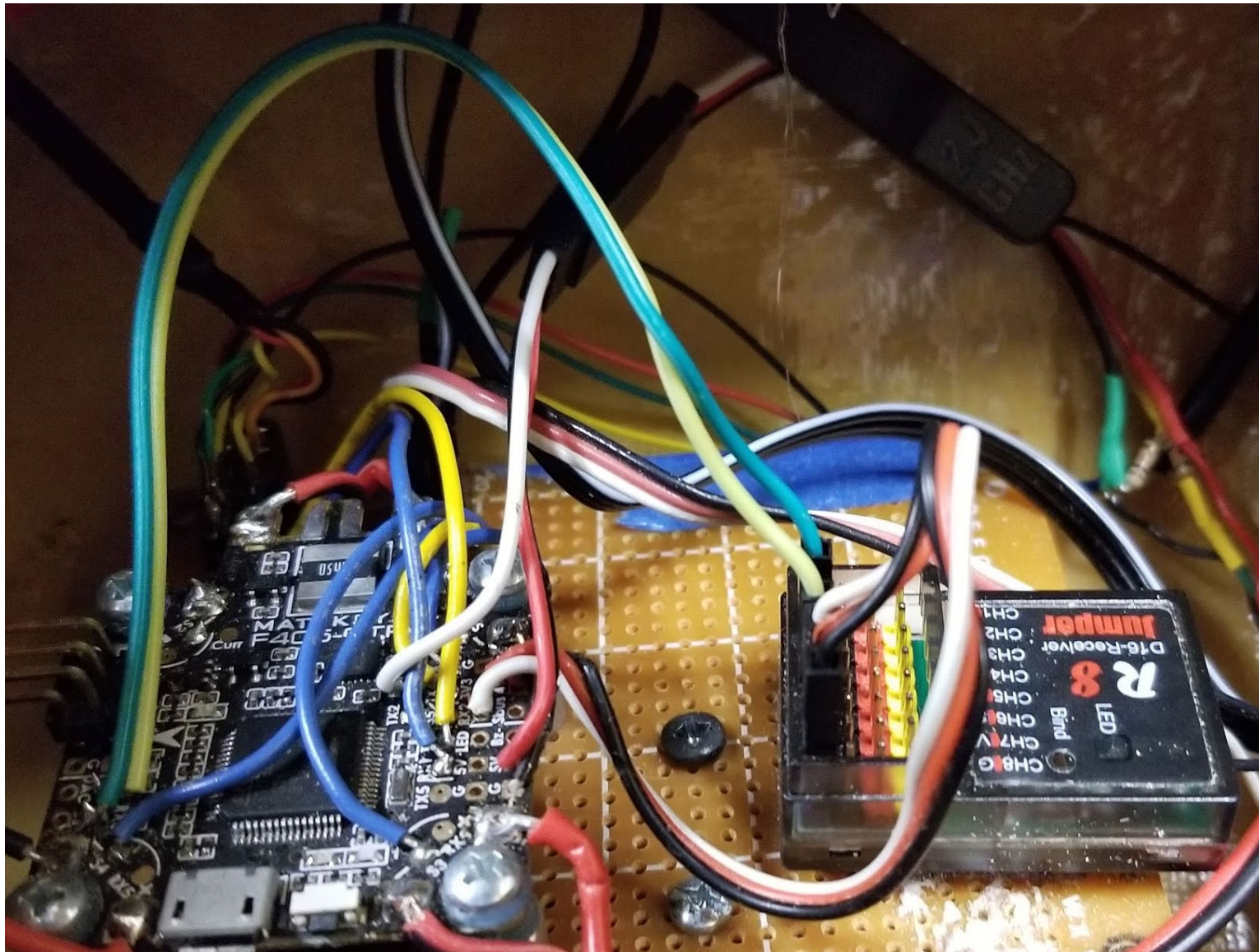
FC pin is RSSI (3.3V max)
Sensor is 5V
voltage divider reduction

RC Receiver (includes telemetry)

- RC Signal to RX2
- (+) Power to 4V5
- (-) Power to GND
- Telem Tx to RX3
- Telem Rx to TX3
 - RX3/TX3 is Serial 1 in ardupilot

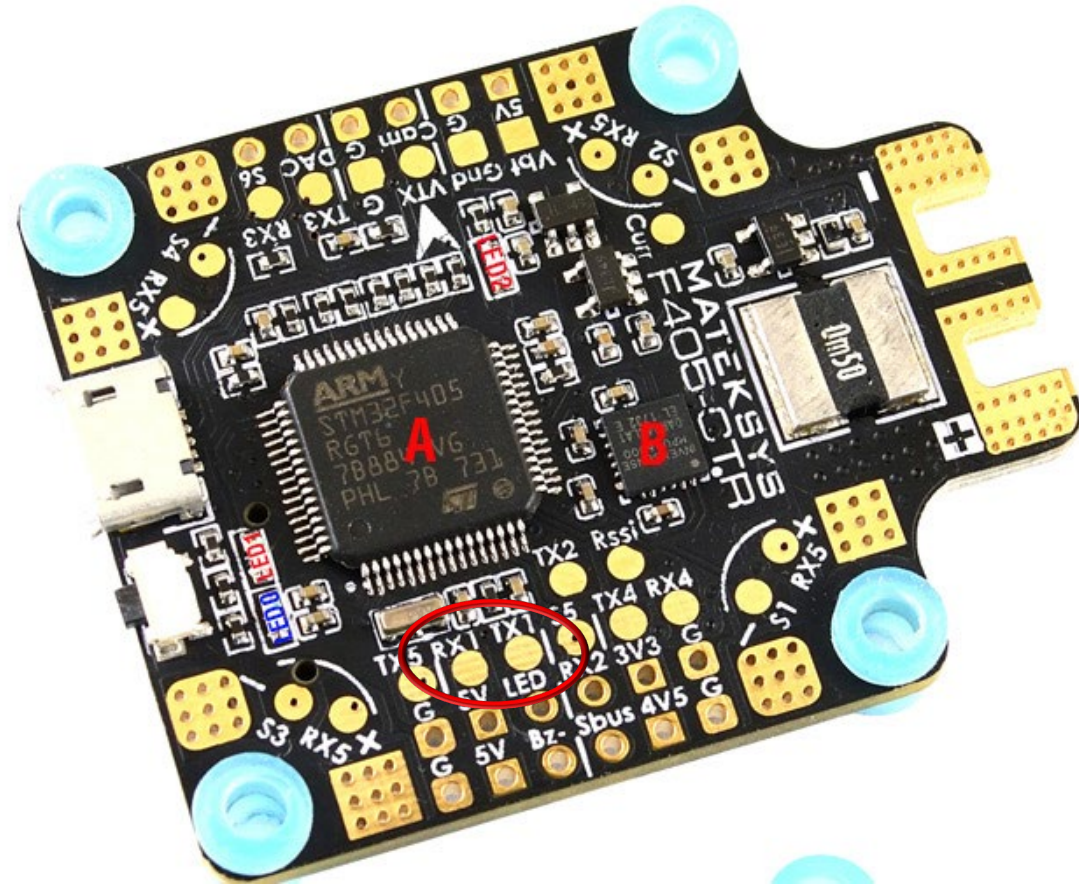


RC Receiver (includes telemetry)

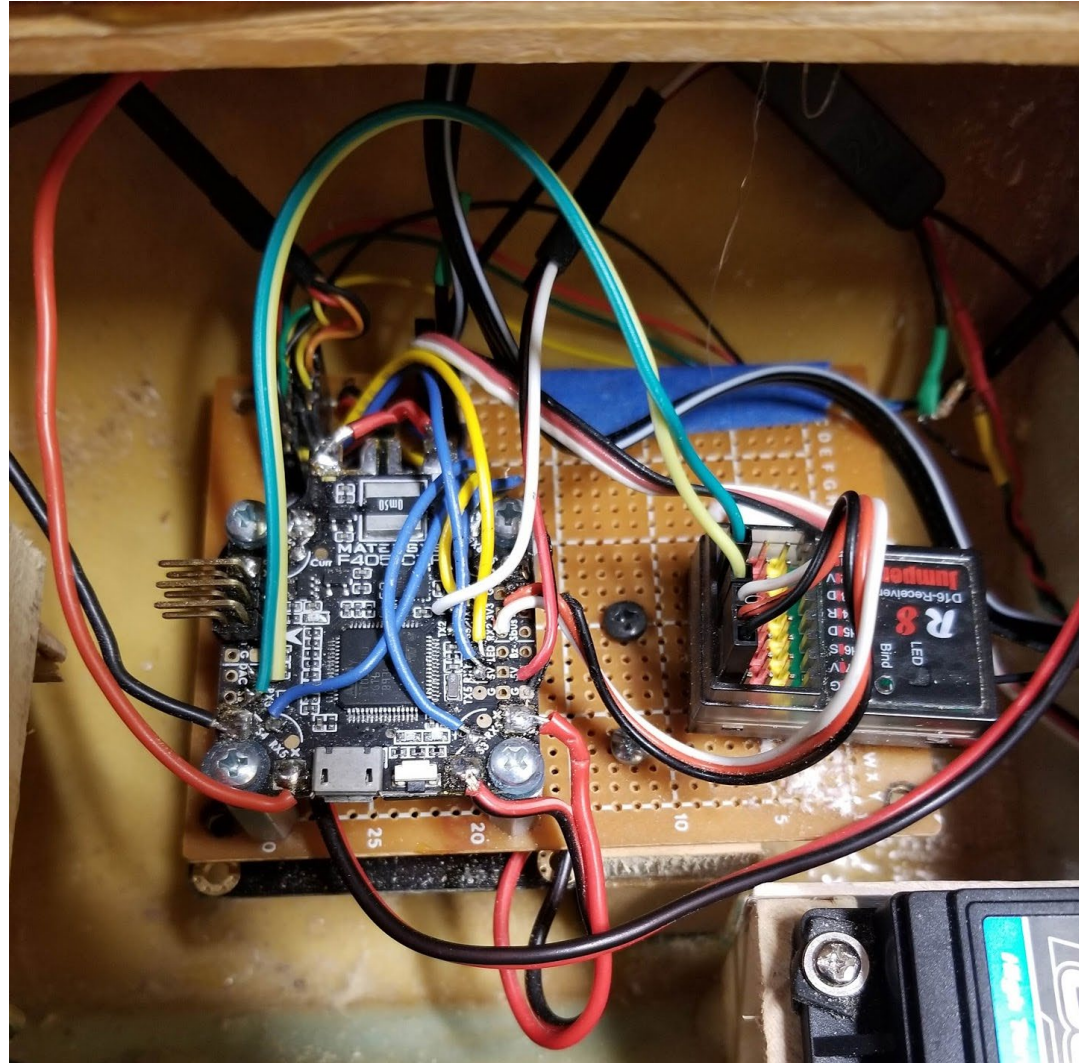


Telemetry Radio

- RX1/TX1
 - Serial 3 in ardupilot



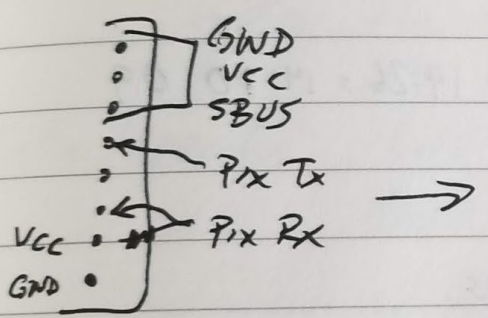
Background References



Background References

3/8/21

Rx R8 Jumper Yaapu Telemetry

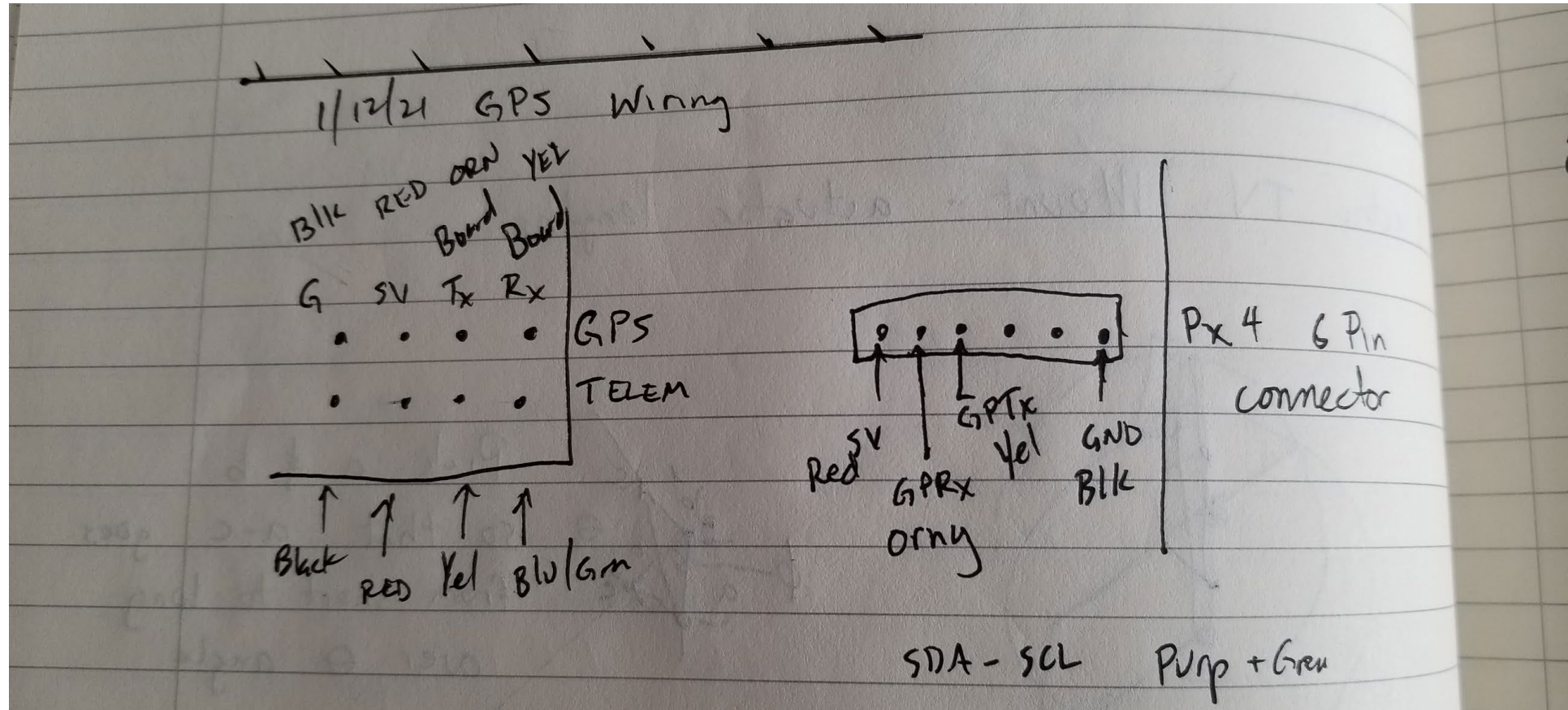


	Board Pins	Ardu Number
F405 CTR	Tx3 Rx3 ?	= Serial 3 on Ardu Protocol 10 I think
	RxTx 1	(Serial 3) Mavlink
	RxTx 4	(Serial 2) GPS

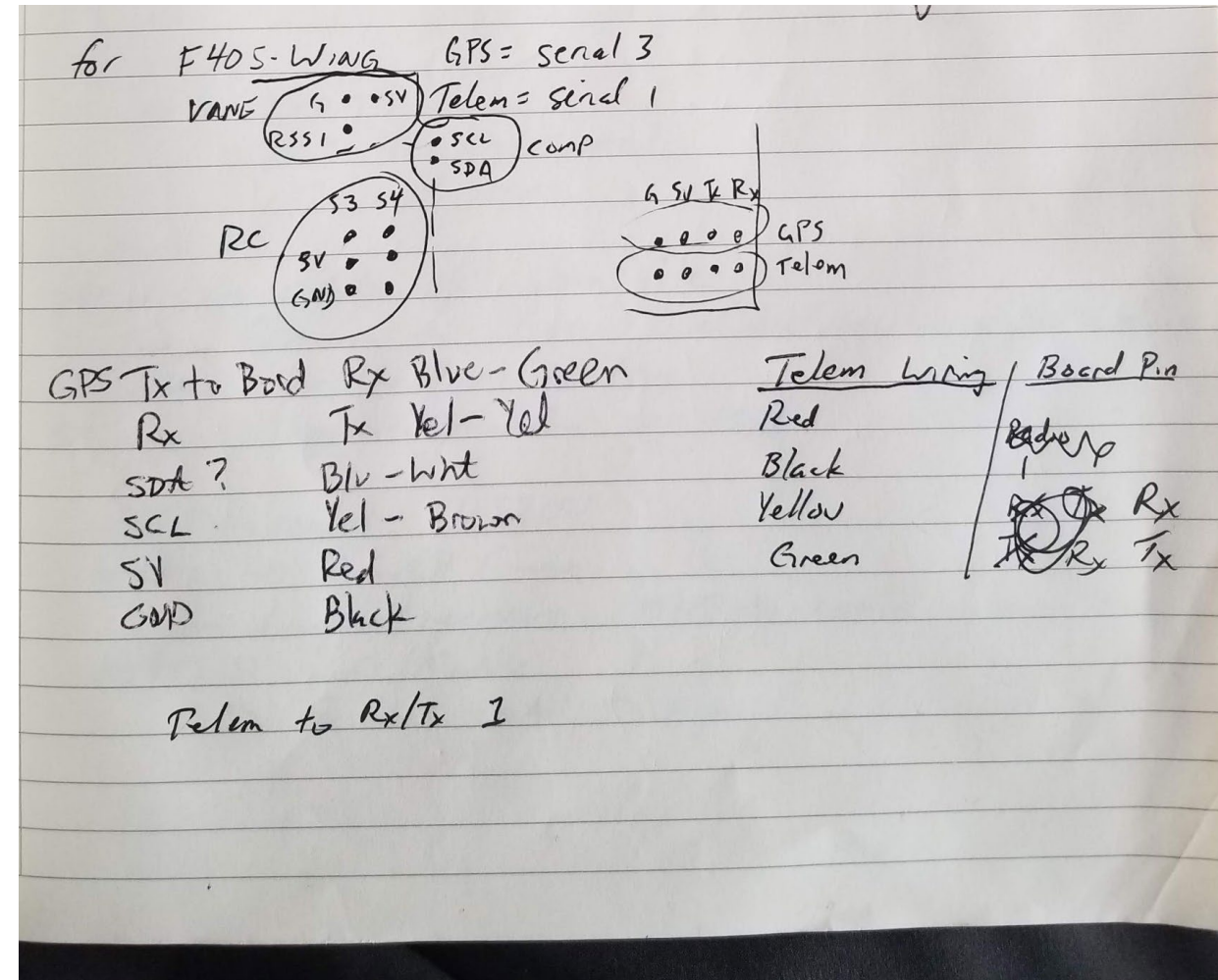
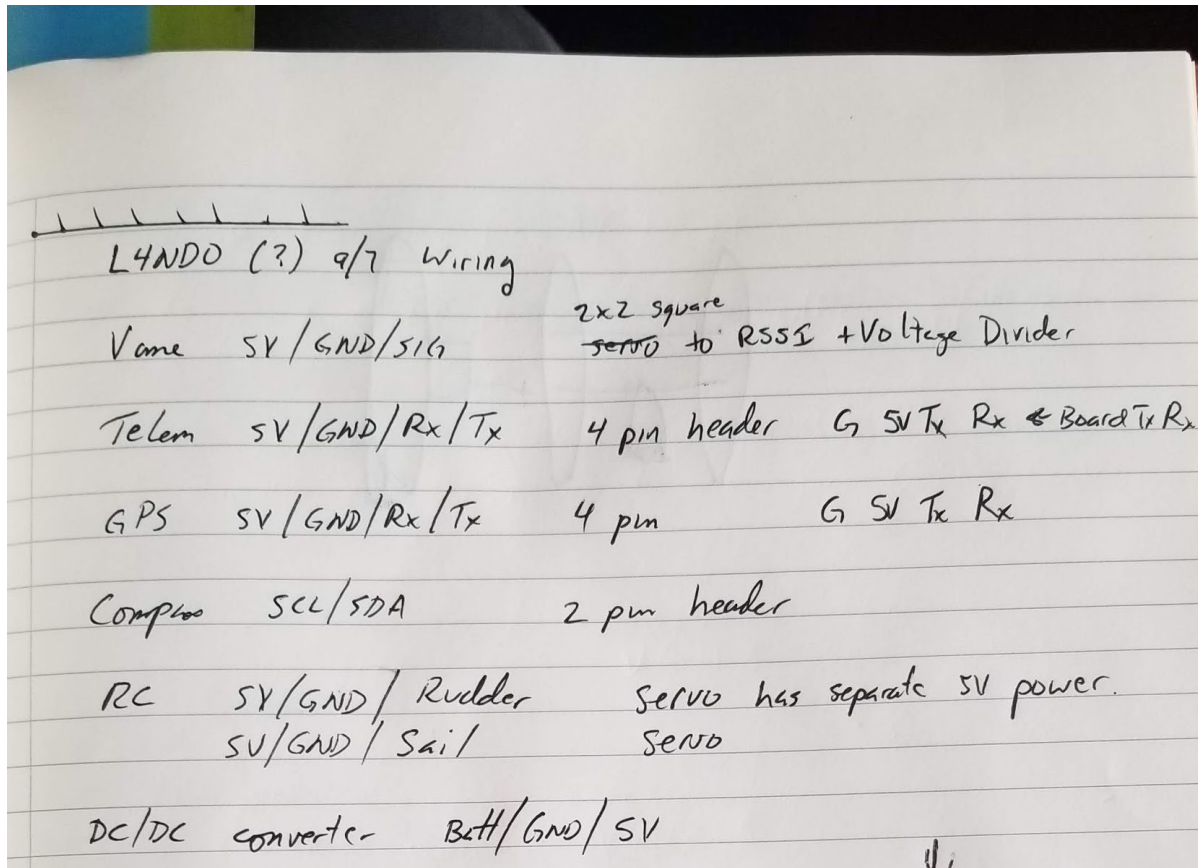
currently wired to

Opentx 2.3.9-otx (60e1edc1

Background References

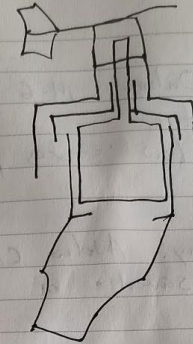


Background References



Background References

P3022 sensor
7/6/2020



MATEKSYC.COM F405-CTR

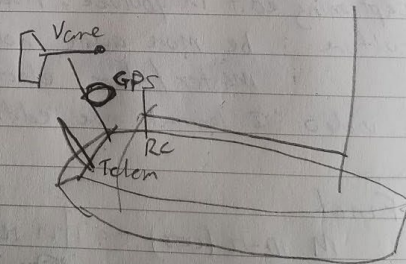
RSSI-ANA_PIN = 9

Telem = USART3

GPS = USART1

function 26 = Gnd Steering

funct 89 = Main Sail



→ 31.5 ←
↓ 31.0
↑
31 x 31.5 mm
5mm deep socket
6mm over the top