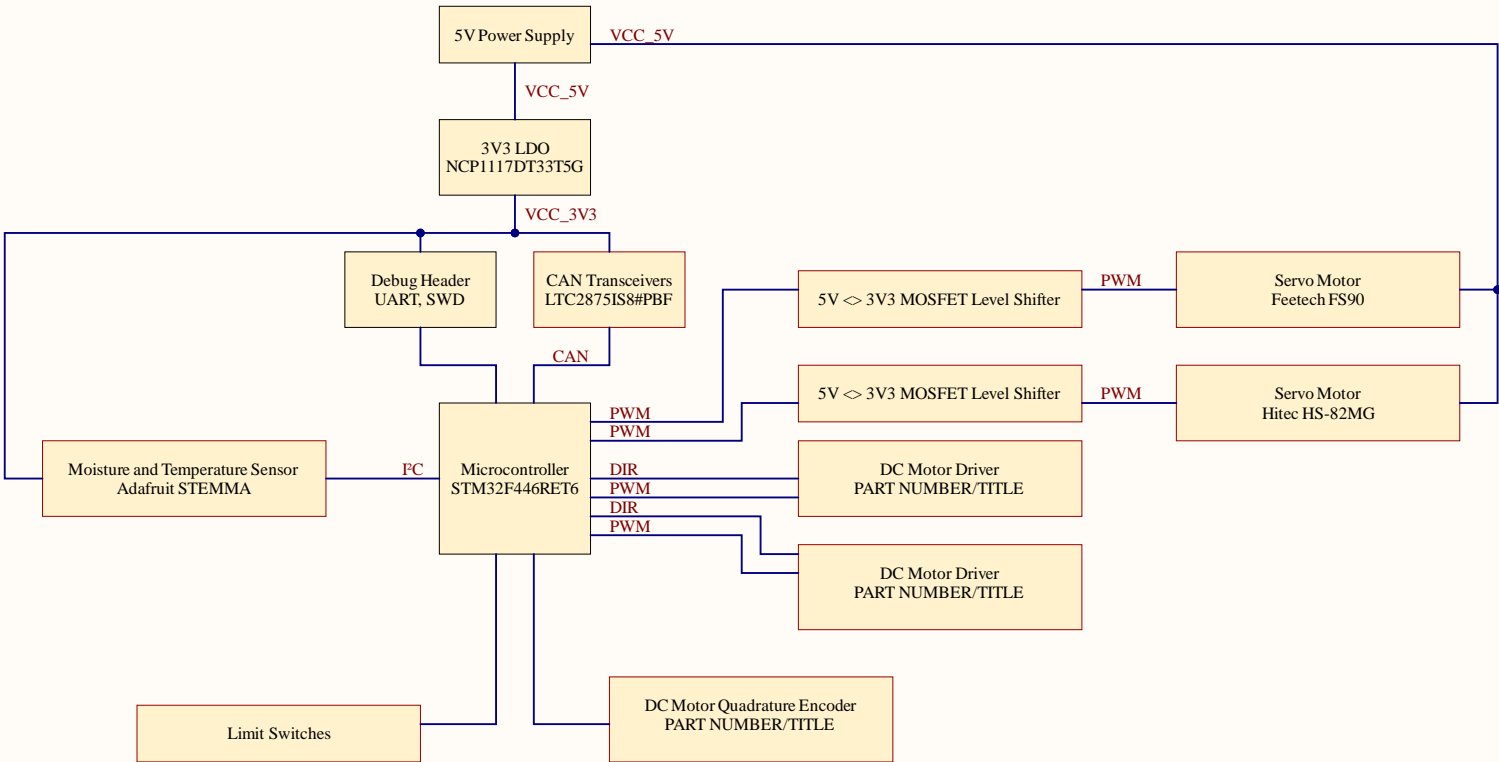
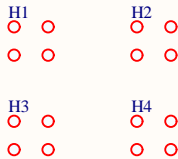
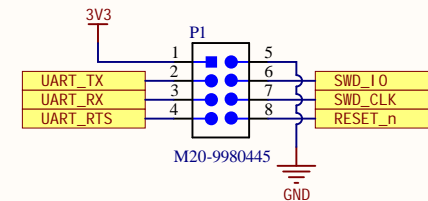


Mounting Holes



Debug/Programming

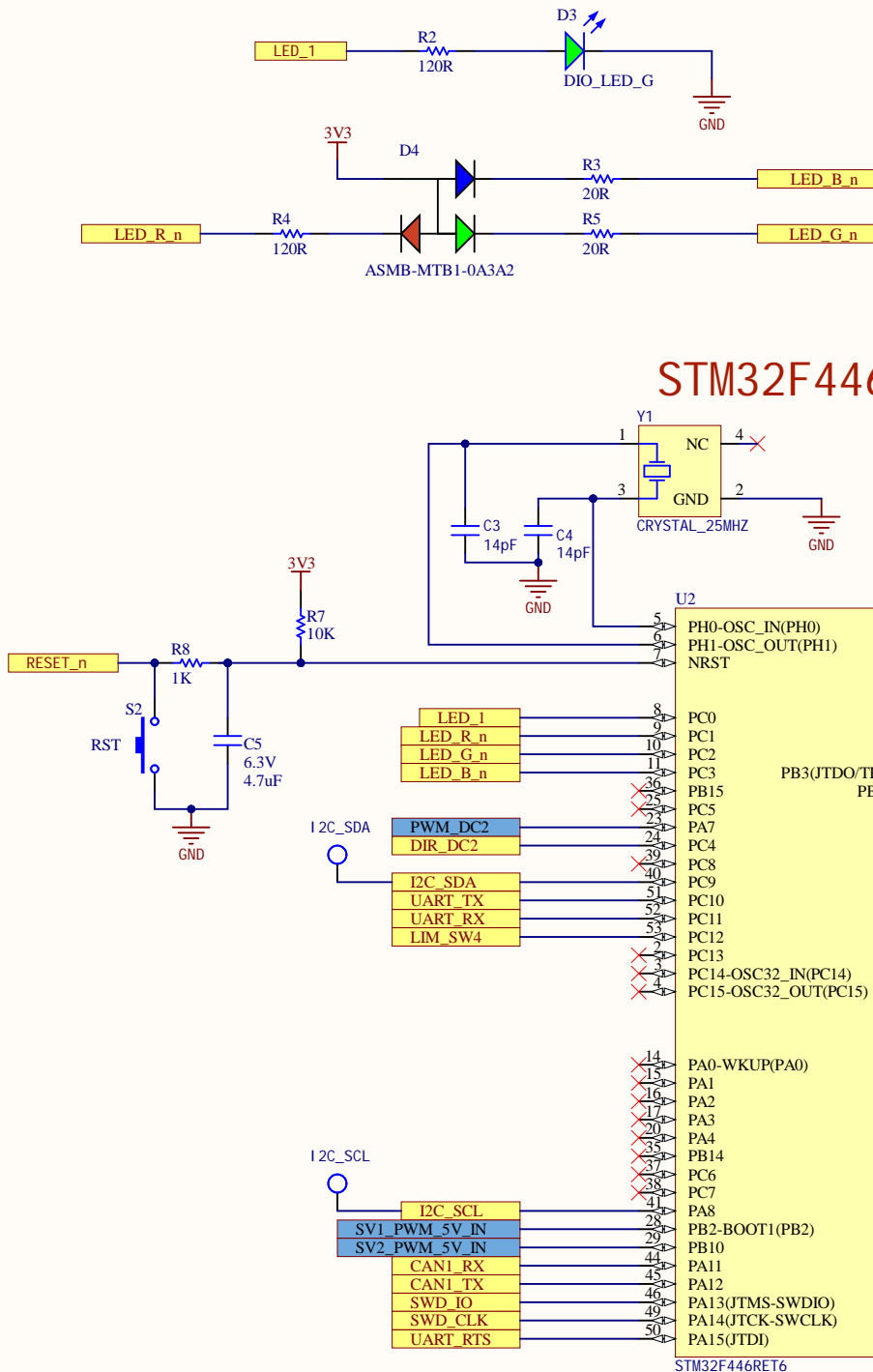


Current Calculations

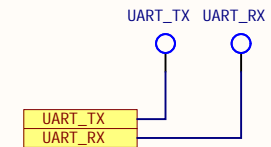
Green LED voltage drop: 2.2V
 $- I = (3.3 - 2.2V) / 120 = 10.83mA$

RGB LED voltage drops:
 - Red: 2.1V: $I = (3.3 - 2.1V) / 120 = 10mA$
 - Blue: 3.1V: $I = (3.3 - 3.1V) / 20 = 10mA$
 - Green: 3.1V: $I = (3.3 - 3.1V) / 20 = 10mA$

STM32F446RET6

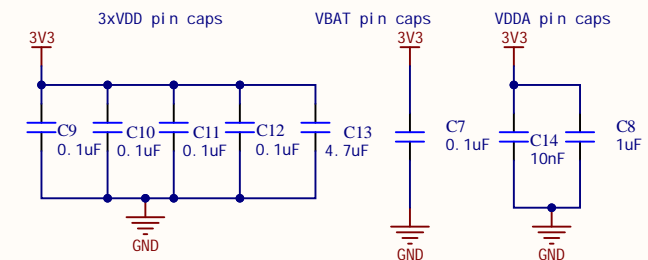
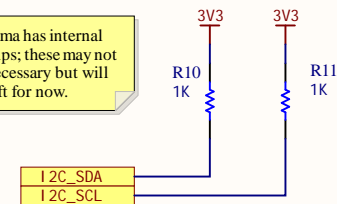


Testpoints

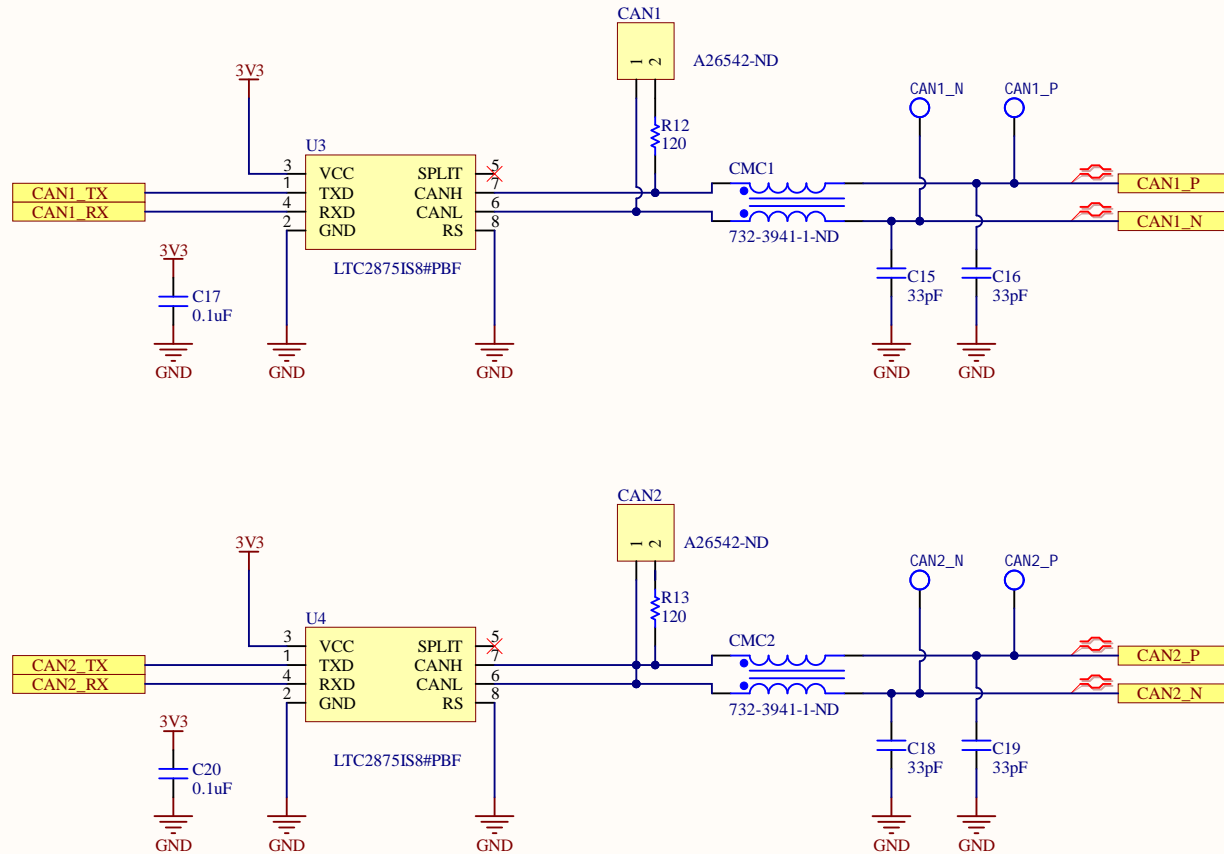


I²C Pullups

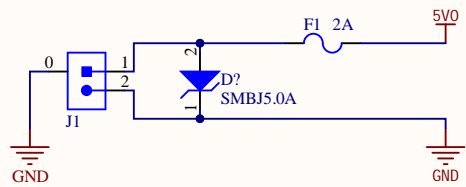
Stemma has internal pullups; these may not be necessary but will be left for now.



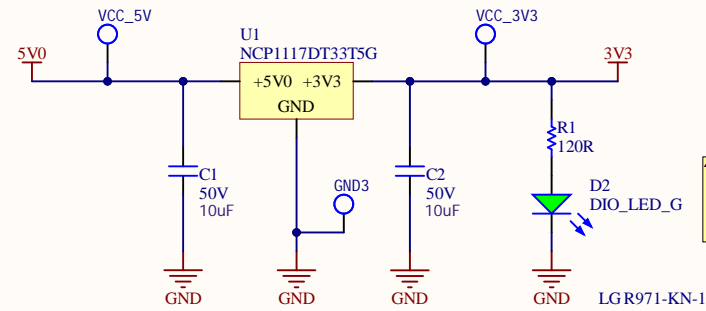
CAN Transceivers



Power In



5V -> 3V3 LDO



LED forward voltage: 2.2V
 $I = (3.3 - 2.2) / 120 = 9.17 \text{mA}$

^ V2: Replace LDO with an LDO
 with less ESR requirements
 - Explore adding bulk capacitor

1

2

3

4

A

A

B


B

C

C

D

D

Title Science - Support			UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6		
Size: Letter	Drawn By: C. Arjune, K. Hong				
Date: 6/2/2020	Sheet 5 of 5				
File: C:\Users\badpr\al titanium_projects\MarsRover2020-PCB\Projects\Science\Rev2\Support.SchDoc					

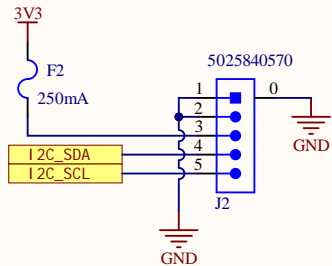
1

2

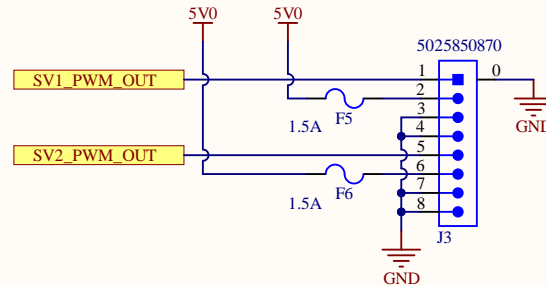
3

4

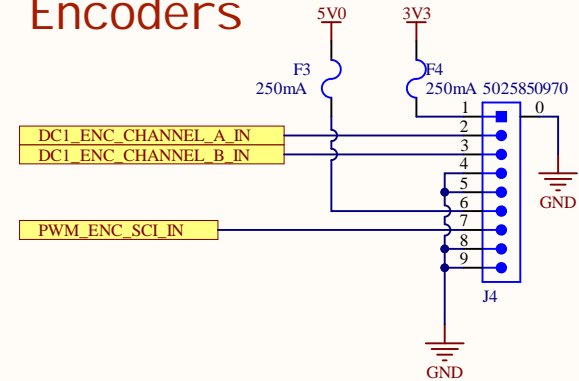
I²C Sensors



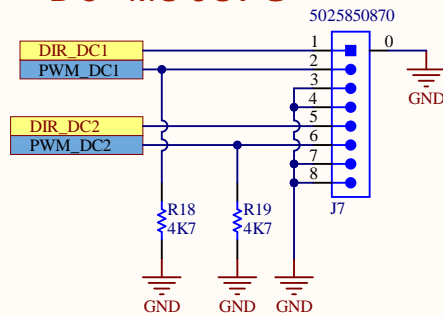
Servos



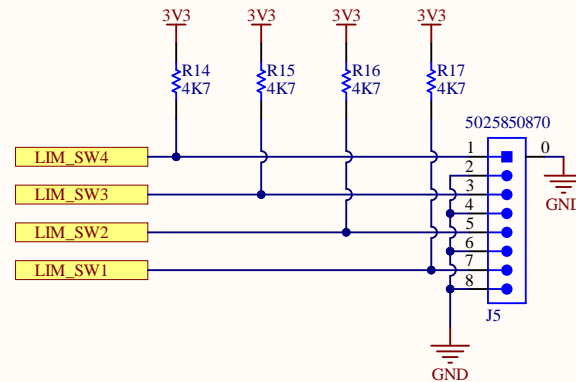
Encoders



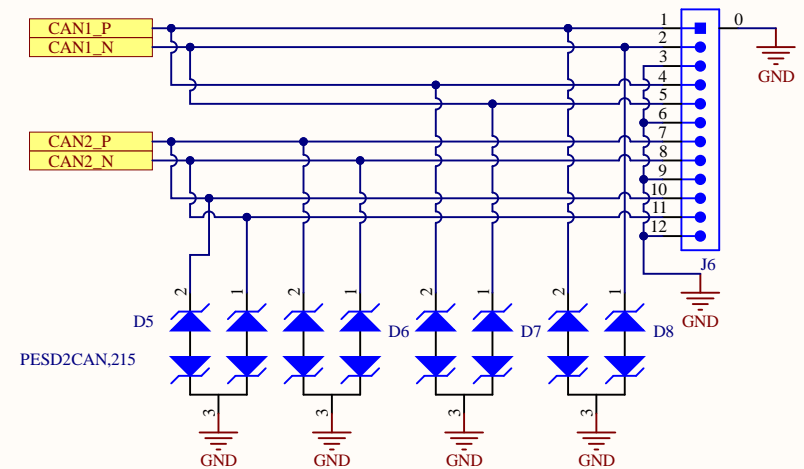
DC Motors



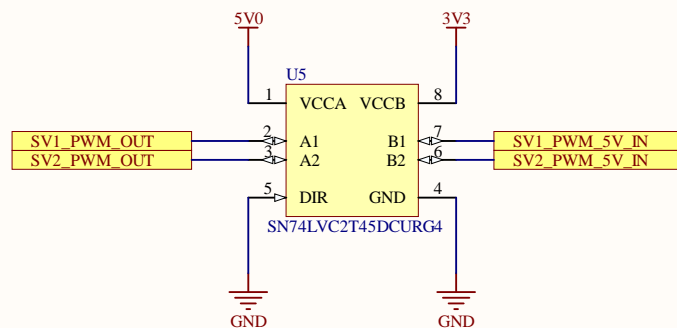
Limit Switches



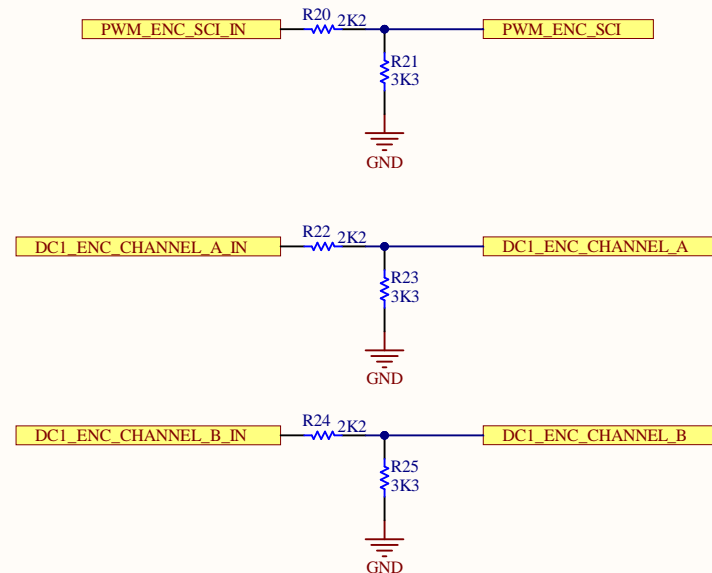
CAN



Servo Level Shifters



Encoder Voltage Dividers



Low-pass filter cutoff frequency:
 $f_c = 1 / (2 * \pi * 3.3k * ?)$
 = ? Hz

Voltage Division:
 $V_{out} = 5 * 3.3k / (2.2k + 3.3k)$