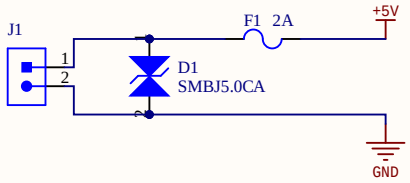
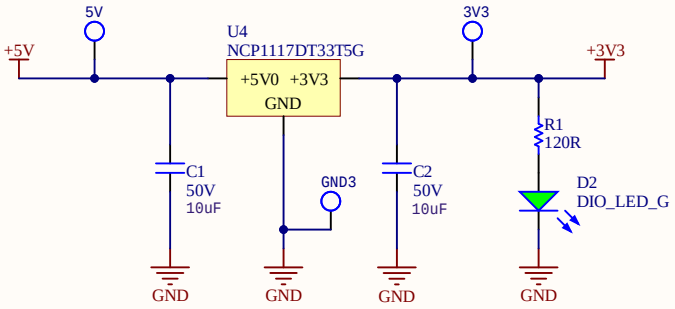
Power In



LDO Voltage Regulator

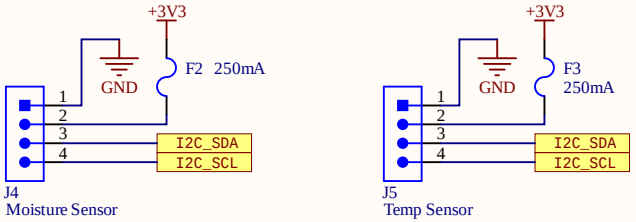


LED forward voltage: 2.2V
I = (3.3-2.2)/120 = 9.17mA

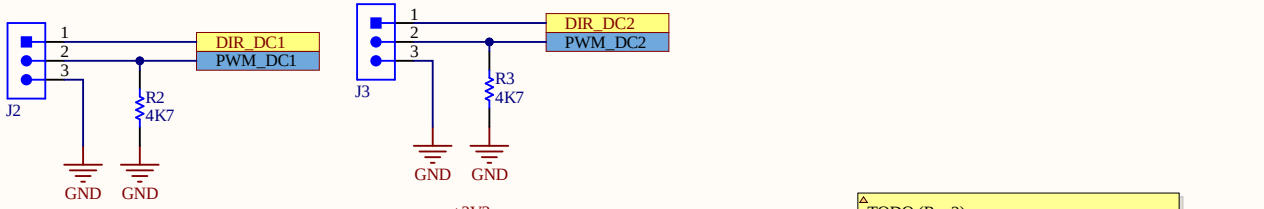
- V2: Replace LDO with an LDO with less ESR requirements
- Explore adding bulk capacitor

Title Science - Power		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
Size: Letter	Drawn By: C.Arjune	
Date: 4/4/2020	Sheet1 of 5	
File: C:\Users\badpr\altium_porjects\MarsRover2020-PCB\Projects\Science\Rev2\sch\POWER.SchDoc		

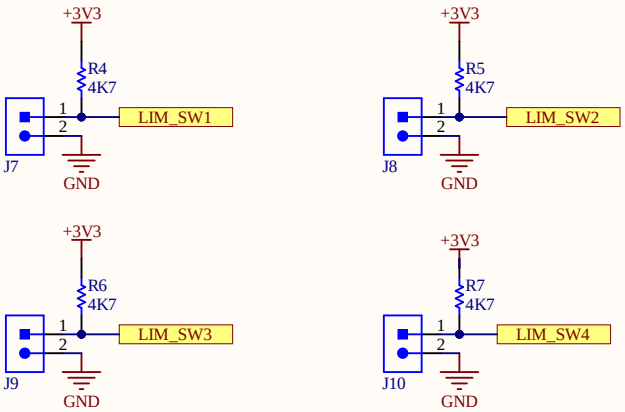
Sensors

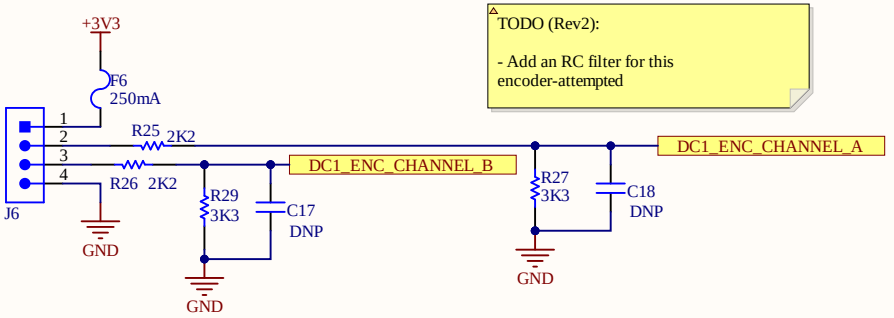


DC Motors



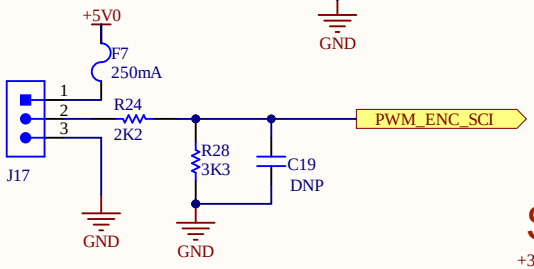
Limit Switches





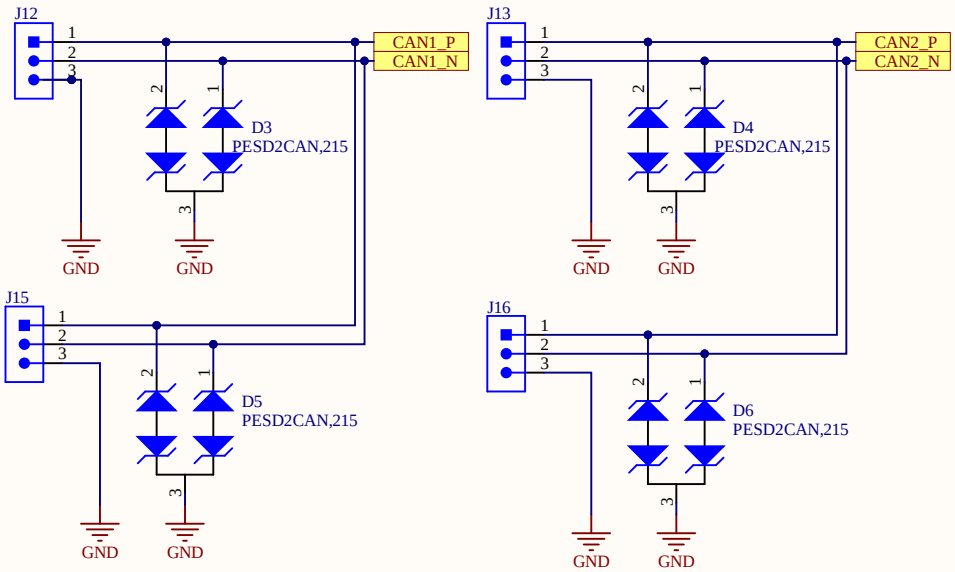
TODO (Rev2):

- Add an RC filter for this encoder-attempted

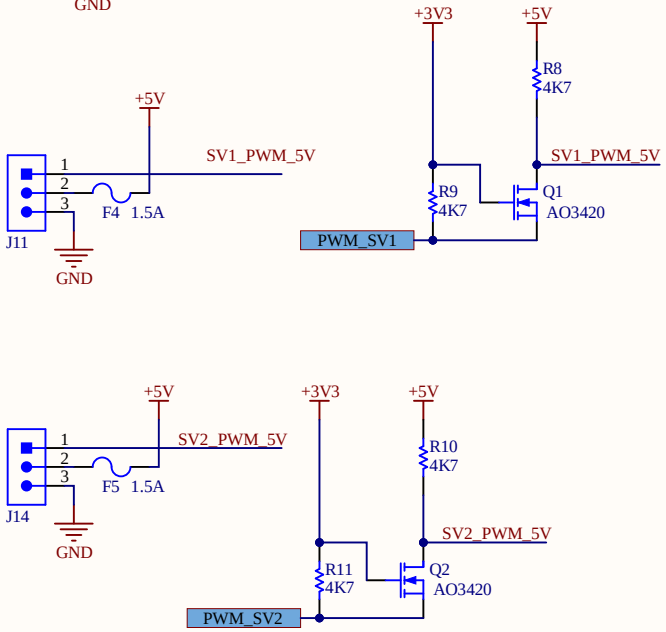


Based connector on encoder in arm. I dont know if cap value and resistor values are correct. https://www.usdigital.com/products/encoders/absolute/magnetic/MAE3needs a pin on the mcu

CAN Connectors

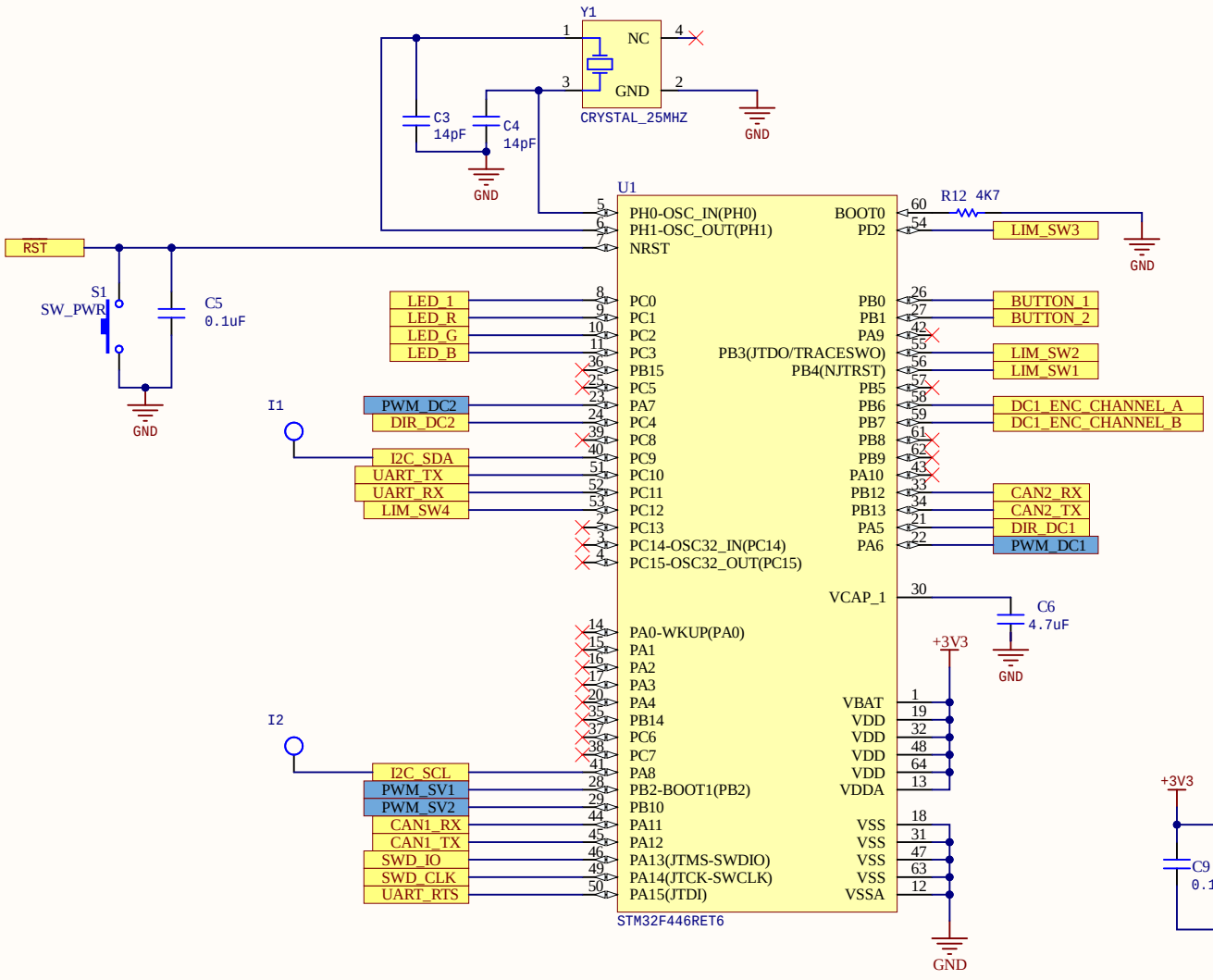


Servos

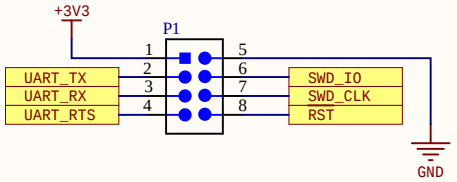


Title Science - Connectors		UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
Size: Letter	Drawn By: C.Arjune, K.Hong	
Date: 4/4/2020	Sheet 2 of 5	
File: C:\Users\badpr\altium_porjects\MarsRover2020-PCB\Projects\Science\Rev2\sch\Connectors.SchDoc		

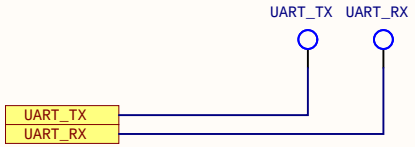
STM32F446RET6



Debug/Programming

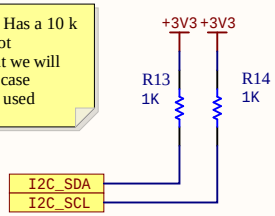


Testpoints

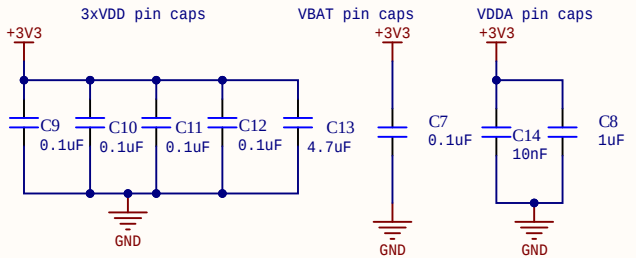


I²C Pullups

As the stemm Has a 10 k resistor 4k7 not neccessary but we will leave them in case stemma is not used



Decoupling Caps



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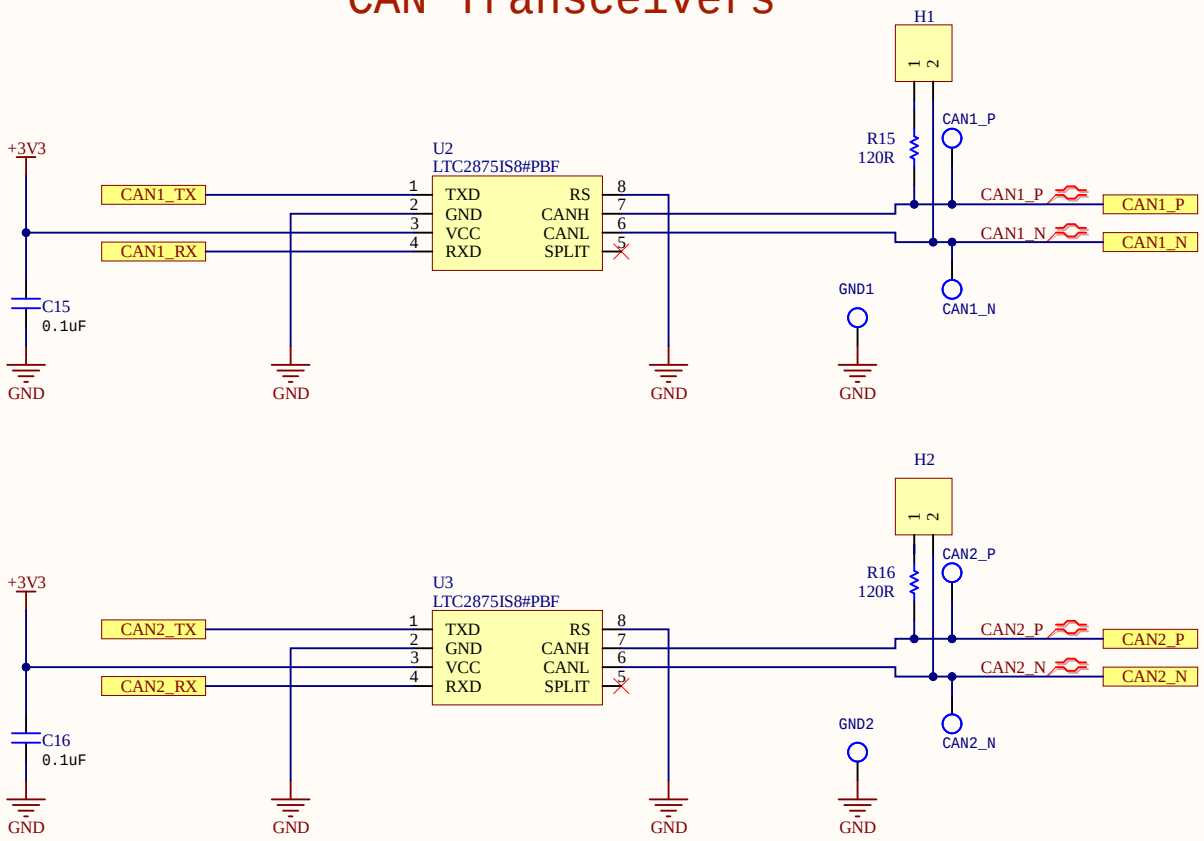
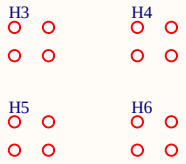
Date: 4/4/2020	Sheet 3 of 5	
File: C:\Users\badpr\altium_porjects\MarsRover2020-PCB\Projects\Science\Rev2\sch\MCU.SchDoc		

CAN Transceivers

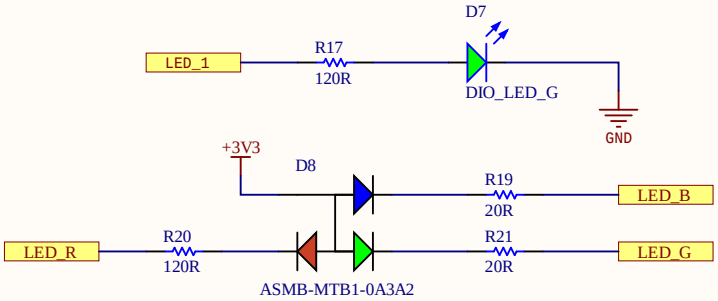


Title Science - CAN			UW Robotics 200 University Avenue Waterloo Ontario Canada N2L 3G6
Size: Letter	Drawn By: C.Arjune		
Date: 4/4/2020	Sheet 4 of 5		
File: C:\Users\badpr\altium_porjects\MarsRover2020-PCB\Projects\Science\Rev2\sch\CAN.SchDoc			

Mounting Holes



Test LEDs

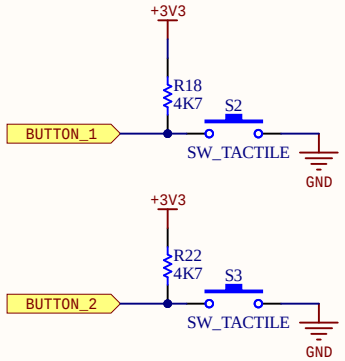


Current Calculations

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

Test Buttons



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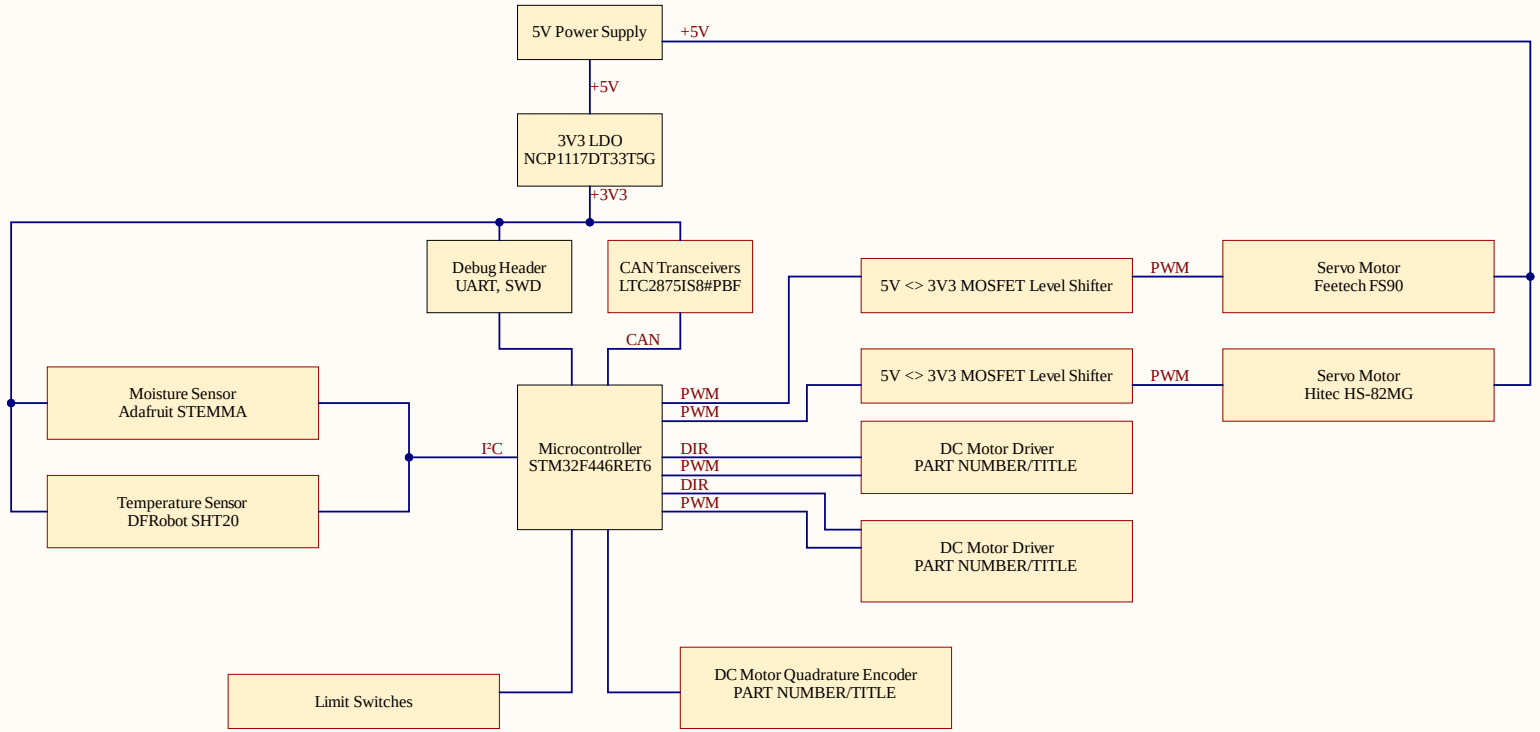
Size: Letter	Drawn By: C.Arjune, K.Hong	
Date: 4/4/2020	Sheet 5 of 5	
File: C:\Users\badpr\altium_porjects\MarsRover2020-PCB\Projects\Science\Rev2\sch\Support.SchDoc		



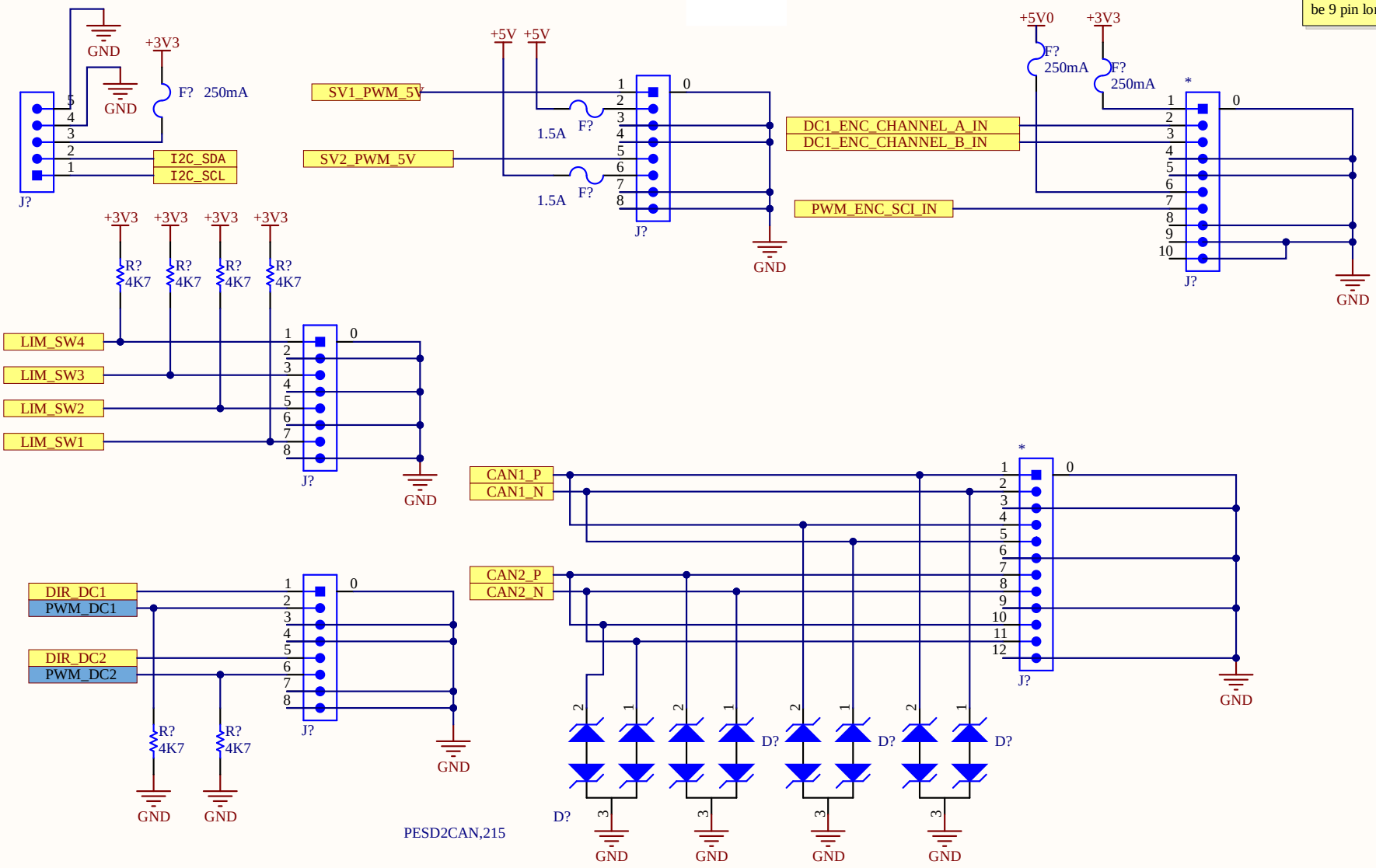
Title		
Size: A4	Number	Revision
Date: 4/04/2020		Sheet of
File: C:\Users\..\Block Diagram.SchDoc		Drawn By:

Consolitated connectors

Sensors

need to wire connections for endoders motors & can

MIstakes were made on counting the pins. This 10 long shoould be 9 pin long



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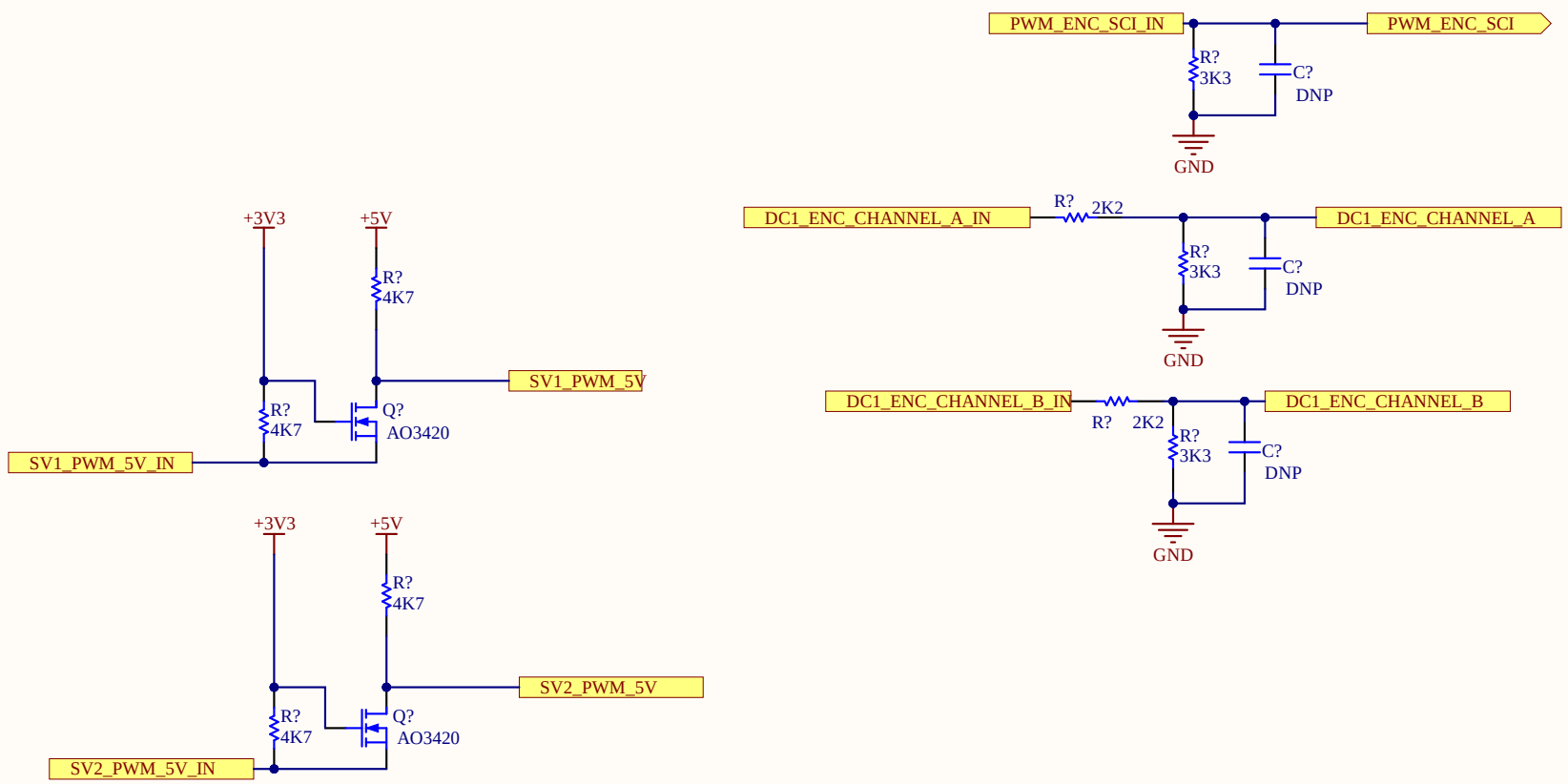
Size A	Number	Revision
Date: 4/04/2020		Sheet of
File: C:\Users\..\IntegratedConnectors.SchDoc		Drawn By:



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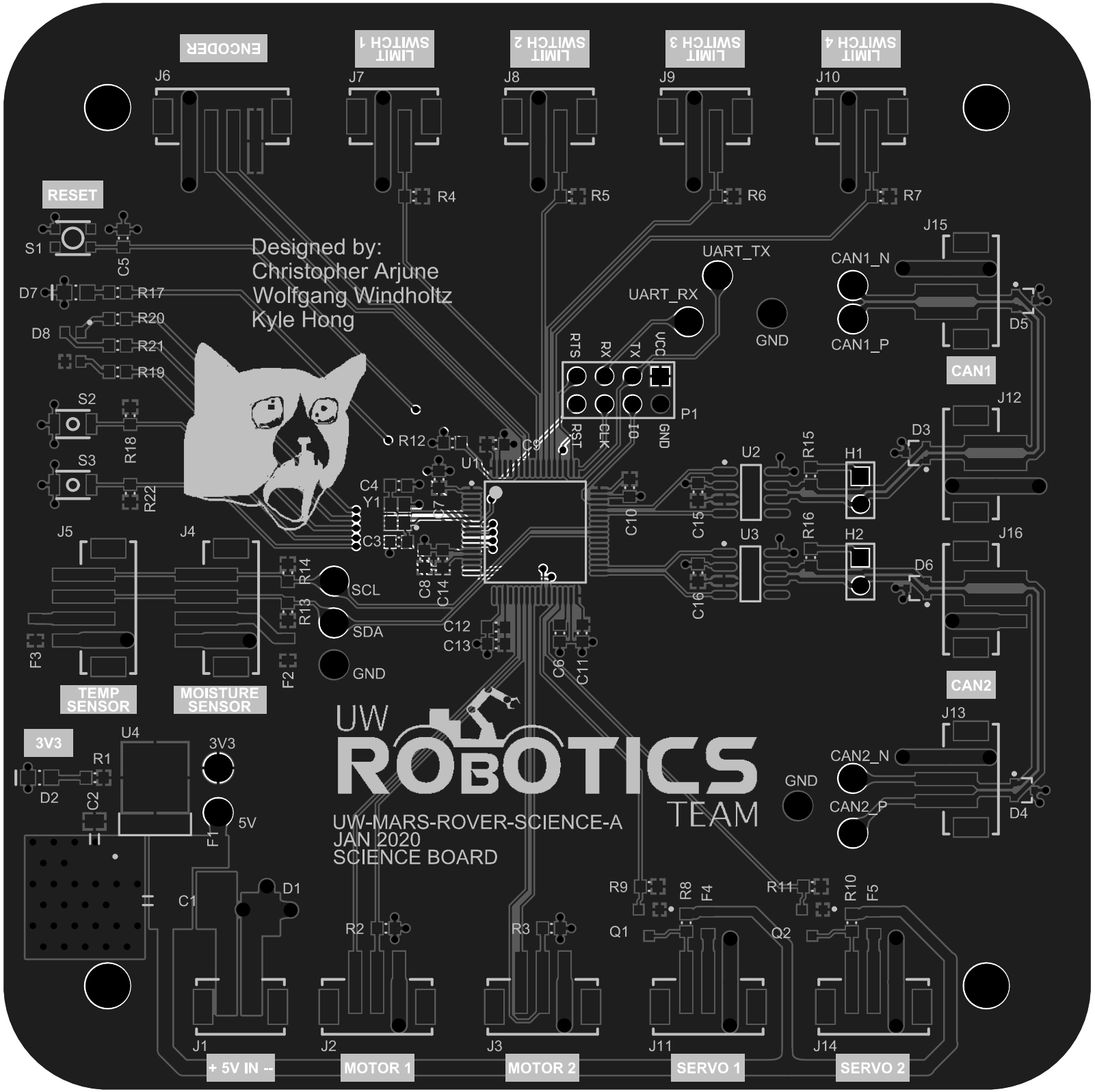
Size: A	Number	Revision
Date: 4/04/2020		Sheet of
File: C:\Users\..\Servo and Encoders.SchDoc		Drawn By:


ENCODER
LIMIT SWITCH 1
LIMIT SWITCH 2
LIMIT SWITCH 3
LIMIT SWITCH 4
J6
J7
J8
J9
J10
R4
R5
R6
R7
RESET
S1
C5
Designed by:
Christopher Arjune
Wolfgang Windholtz
Kyle Hong
D7
R17
D8
R20
R21
R19
S2
S3
R18
R22
R12
C9
U1
C4
Y1
C7
C3
C8
C14
R14
R13
SCL
SDA
GND
C12
C13
C6
C11
C10
C15
C16
U2
U3
R15
R16
H1
H2
D3
D6
J12
J16
CAN2
J5
J4
TEMP SENSOR
MOISTURE SENSOR
F3
F2
UART_TX
UART_RX
GND
RTS
RX
TX
VCC
RST
CLK
IO
GND
P1
J15
CAN1_N
CAN1_P
D5
CAN1
3V3
U4
R1
D2
C2
3V3
5V
F1
C1
D1
UW
ROBOTICS
TEAM
UW-MARS-ROVER-SCIENCE-A
JAN 2020
SCIENCE BOARD
GND
J13
CAN2_N
CAN2_P
D4
R9
R8
F4
Q1
R11
R10
F5
Q2
R2
R3
J1
J2
J3
J11
J14
+ 5V IN --
MOTOR 1
MOTOR 2
SERVO 1
SERVO 2