

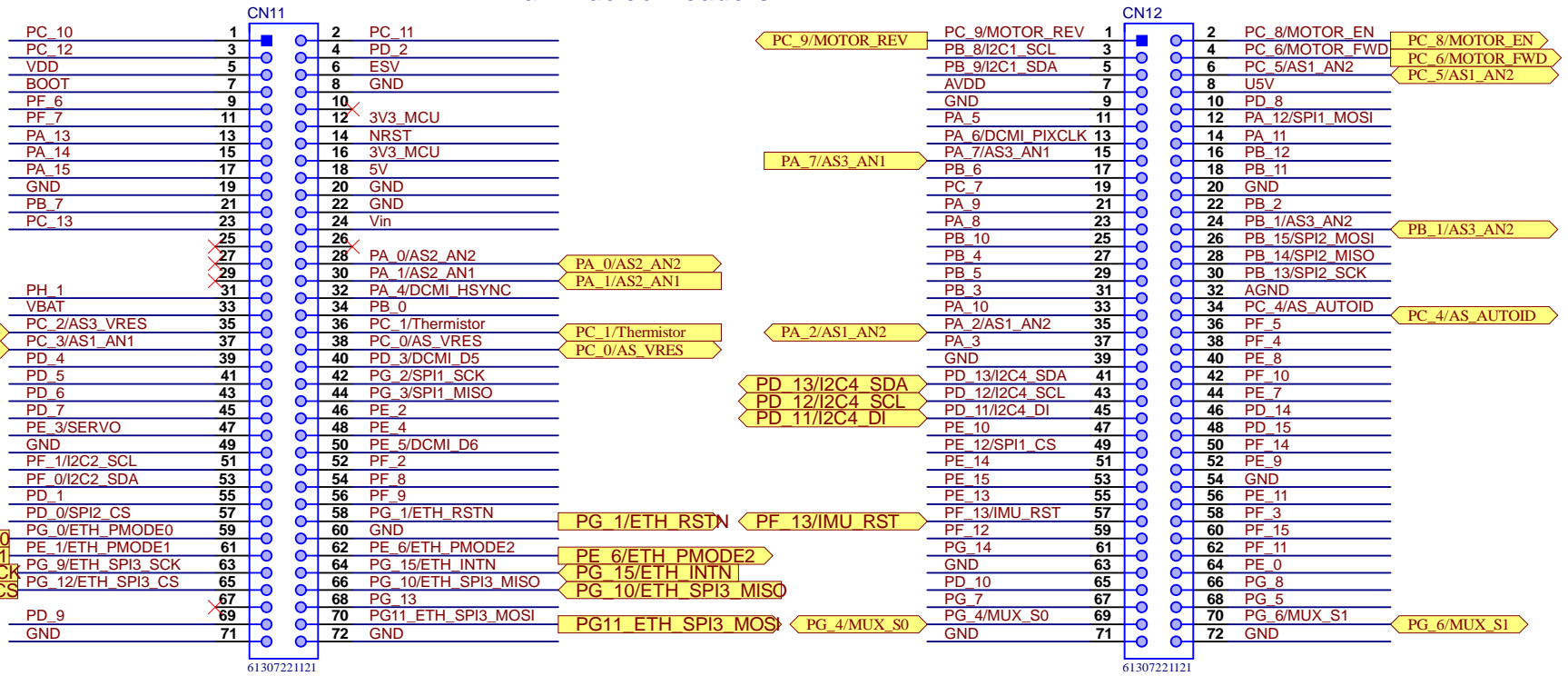


REV	Description	DATE	BY
1.0	Initial Revision	12/27/2022	RB
1.1	Motor Controller updated from high side switch to H-bridge	1/19/2023	RB
1.2	Added Ethernet controller for higher data transfer rate vs USB	2/1/2023	RB

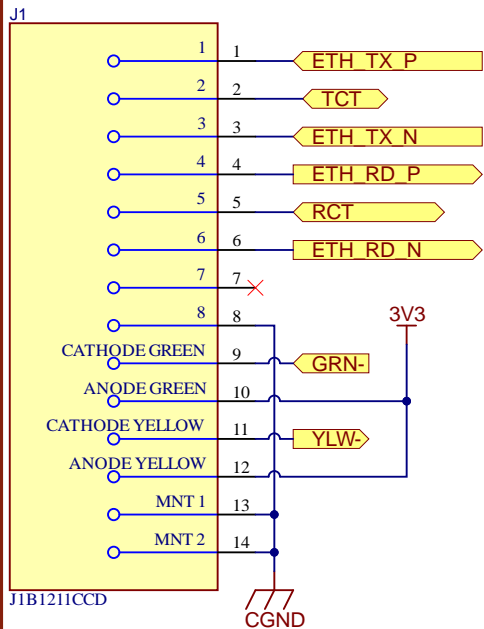
PAGE NO.	SCHEMATIC PAGE
1	Cover Page
2	Camera, Servo, Nucleo Headers, RJ45 Ethernet Jack
3	DC-DC Power Conversion
4	Vernier Sensor Interface Circuitry
5	Thermistor and IMU
6	Motor Controller
7	Ethernet Controller

		Kate Gleason College of Engineering Multidisciplinary Senior Design		<b>RIT SPEX</b> 77 Lomb Memorial Dr. Rochester NY, 14623 Phone: (585) 475-7971	
		Size <b>A</b>	Sheet # <b>1</b> of <b>3</b> P01_Cover.SchDoc		Drawn By <b>Ryan Barry</b>
<b>Cover page</b>					
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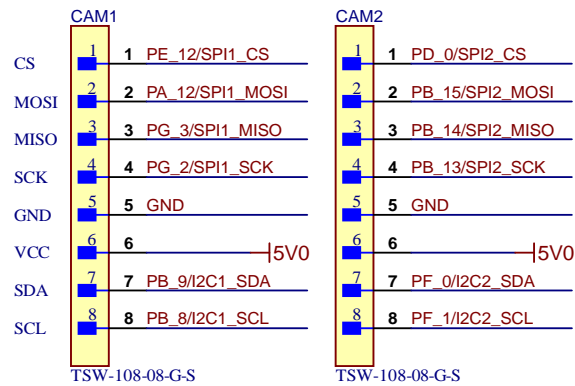
## Main Nucleo Headers



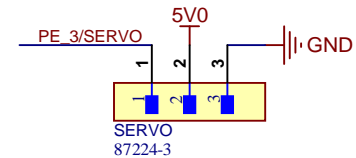
### Ethernet Jack



### Camera Headers



### Servo Pins



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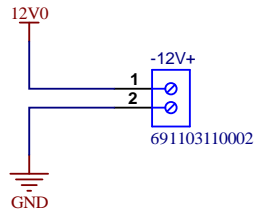
Size <b>A</b>	Sheet # <b>2</b> of <b>3</b>	<b>Altium</b>	Drawn By *	Date 10:33:52 PM <b>2/12/2023</b>	Rev. <b>1.0</b>
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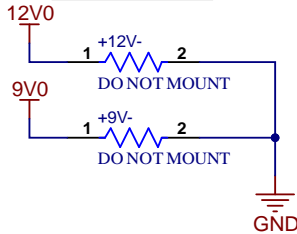
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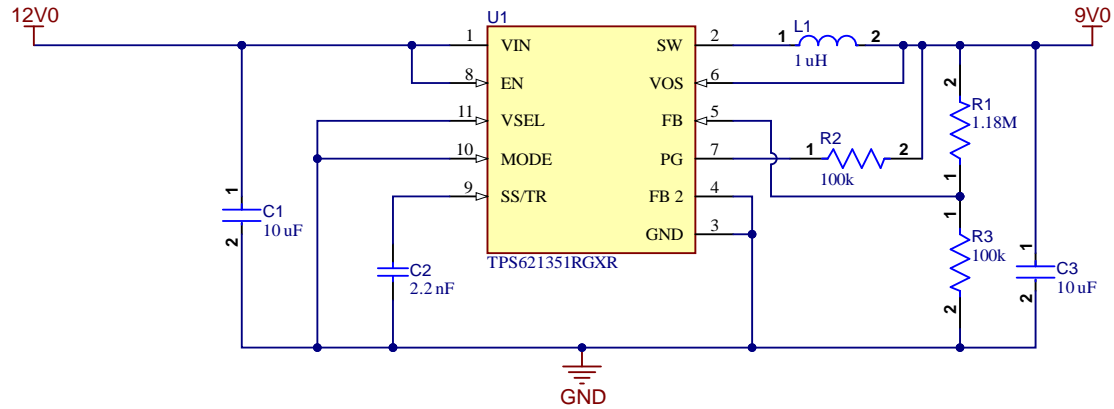
### Battery Input



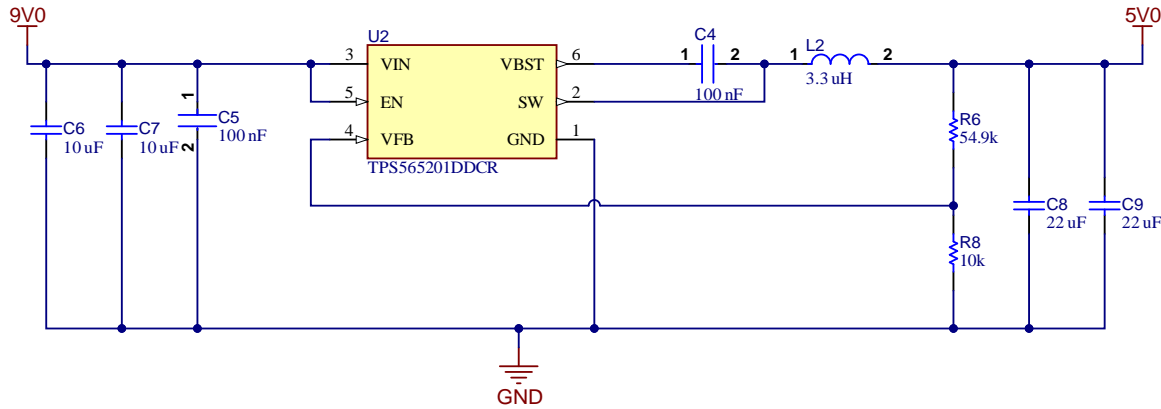
DNM 0 Ohm Resistors to use external power supply in the event this buck is too small to solder



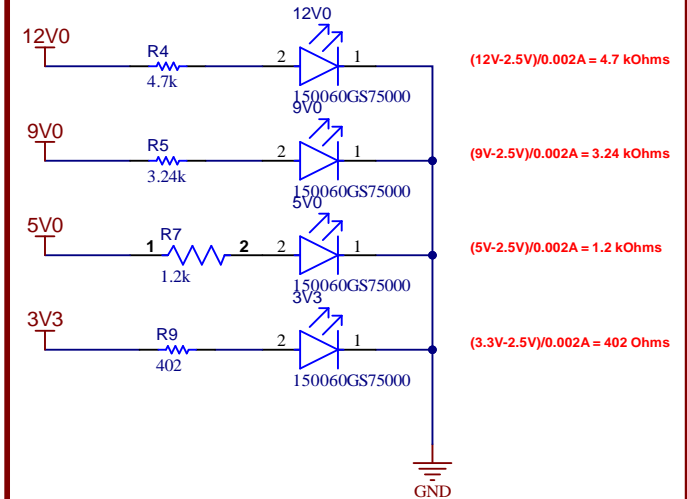
### 12V - 9V DC to DC Converter



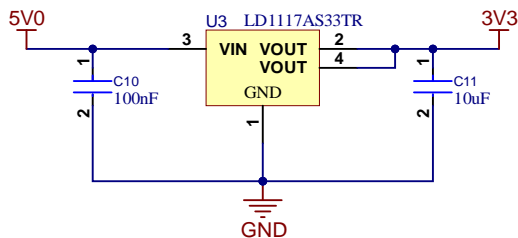
### 9V - 5V DC to DC Converter



### Green Power LEDs



### 5-3.3V LDO



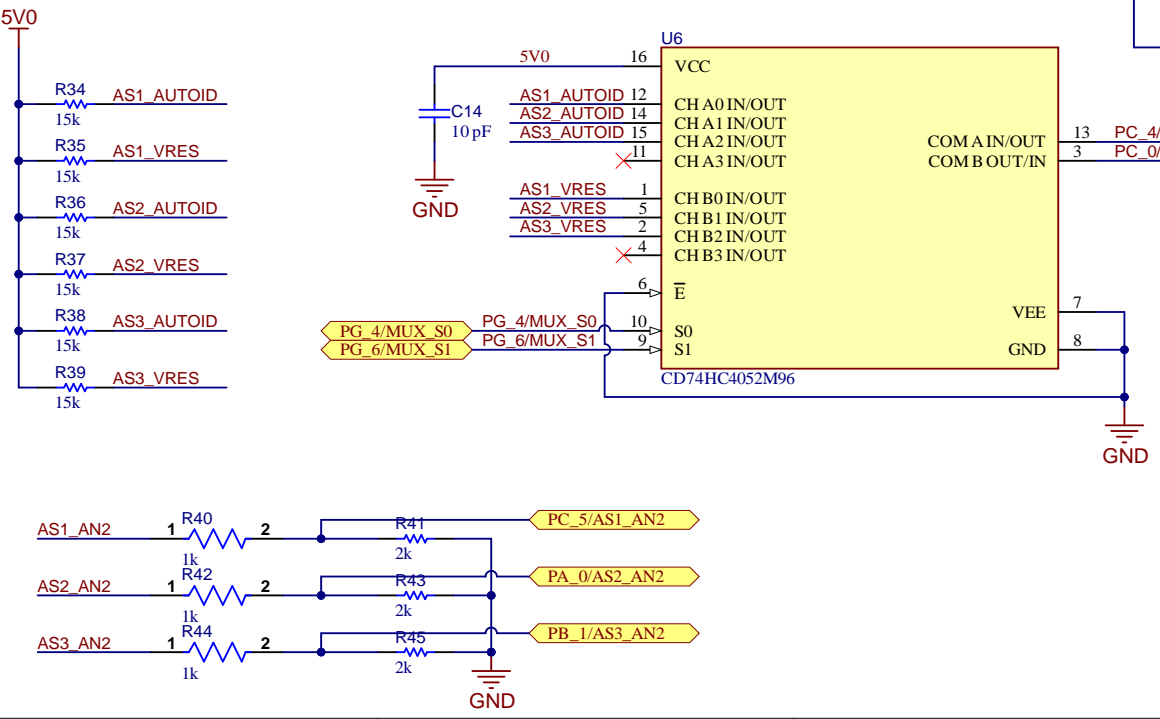
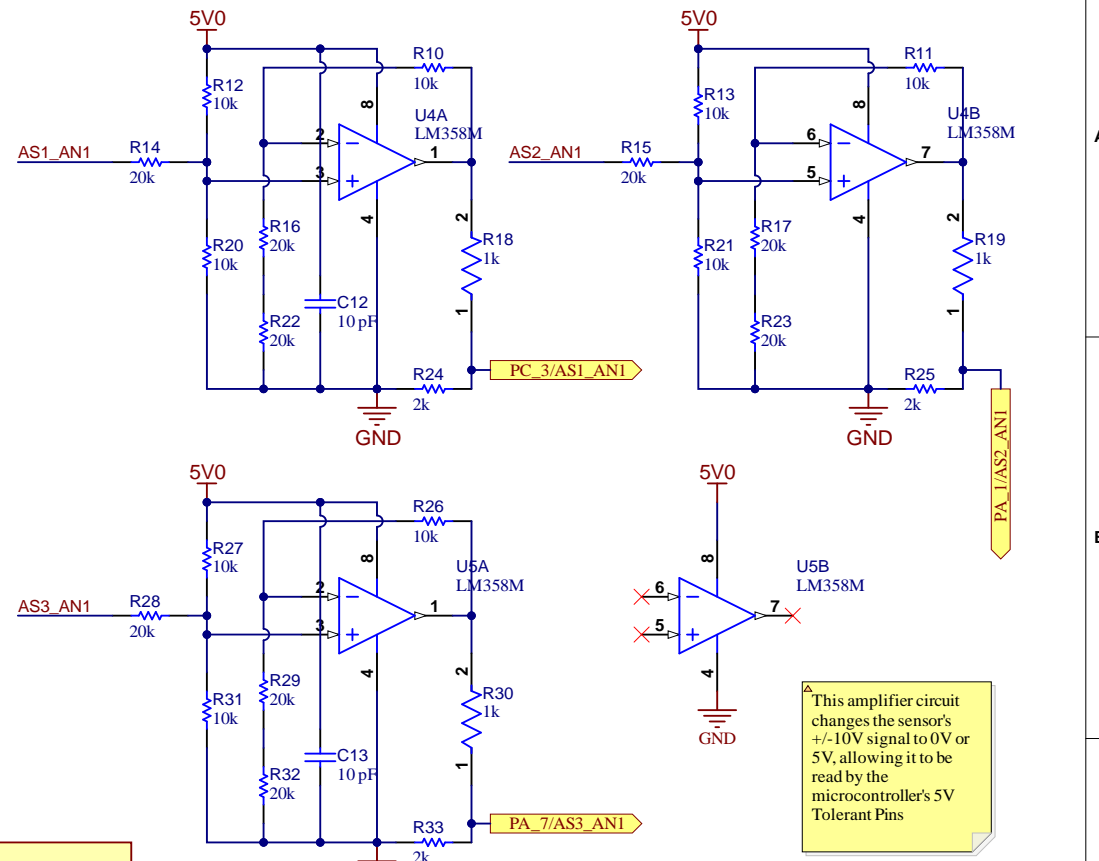
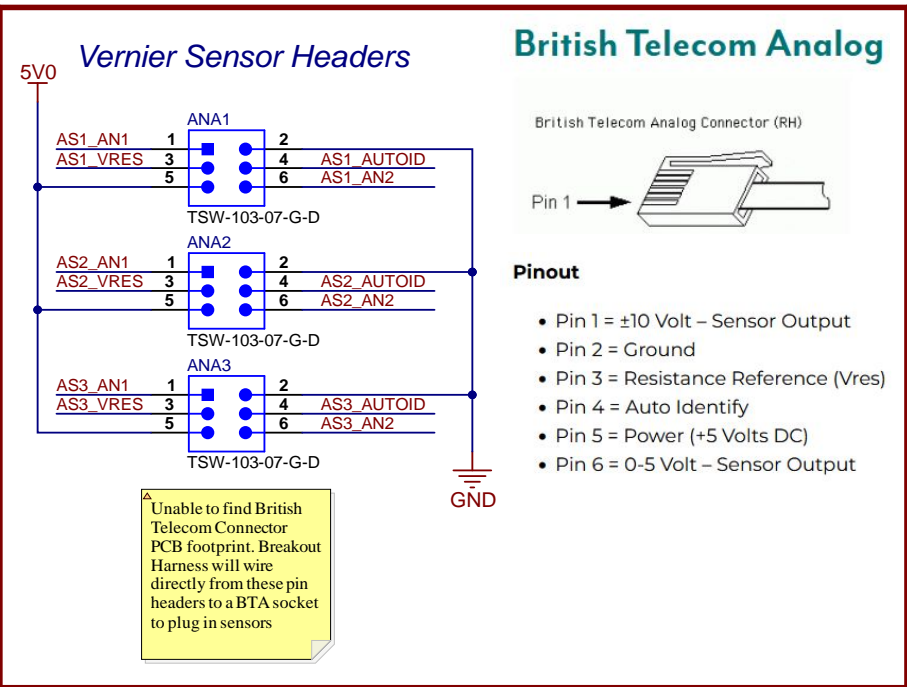
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Size <b>A</b>	Sheet # <b>3</b> of <b>3</b>	<b>Altium</b>	Drawn By *	Date 10:33:52 PM <b>2/12/2023</b>	Rev. <b>1.0</b>
P03_Power_Conversion.SchDoc					

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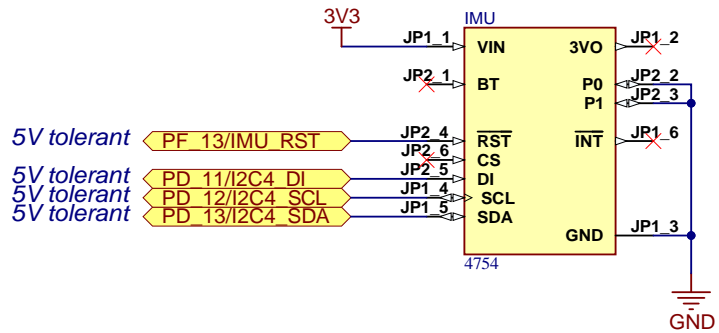
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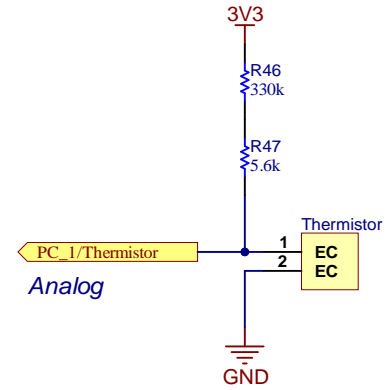
Size	Sheet # 4 of 3	<b>Altium</b>	Drawn By	Date 10:33:53 PM	Rev.
<b>A</b>	P04_Vernier_Sensor_Handler.SchDoc		*	<b>2/12/2023</b>	<b>1.0</b>

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 APPROVED: \_\_\_\_\_ Dwg # **Template Project MSD P2XXXX**

### Inertial Measurement Unit



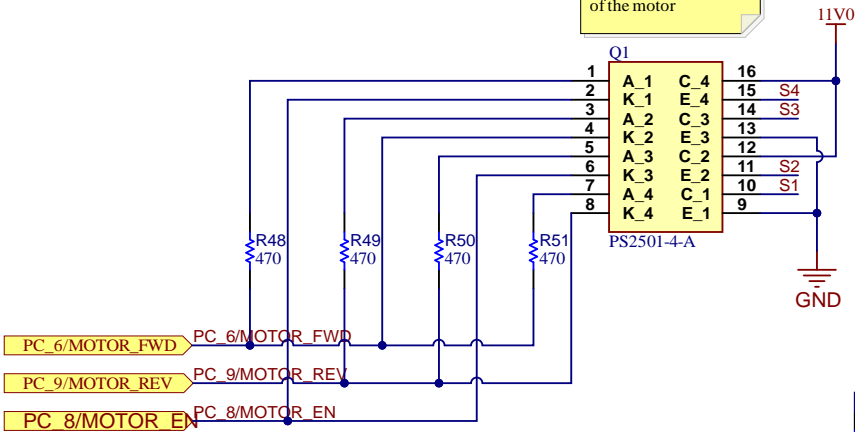
### Thermistor



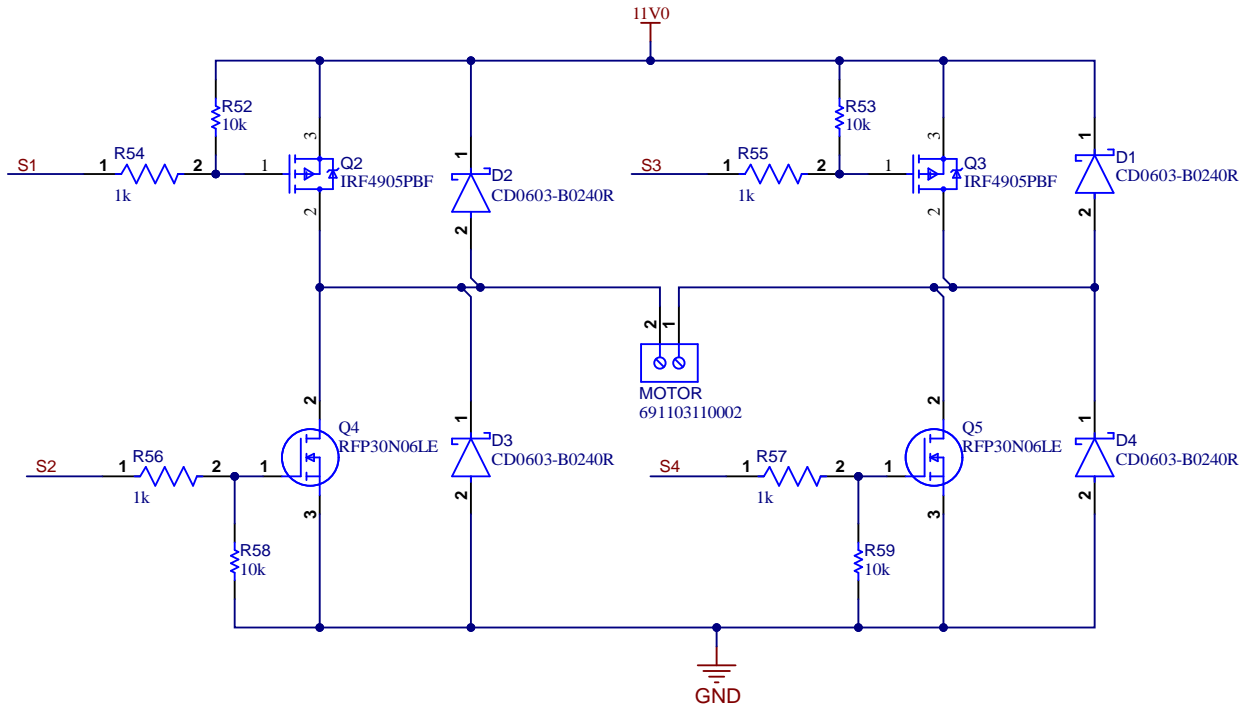
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Size	Sheet # 5 of 3		Drawn By	Date	Rev.
A	P05_Thermistor_IMU.SchDoc		*	10:33:53 PM	1.0
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# Motor Controller

Optocouplers to separate digital control from the analog control of the motor



H Bridge for bi-directional motor control

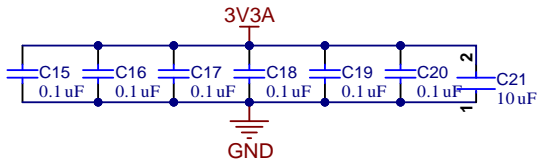


The motor used in this project is rated for 7.4-11.1V. Use a power diode to drop the voltage from 12. The footprint of the 0 Ohm resistor below provides pads to solder a diode to.

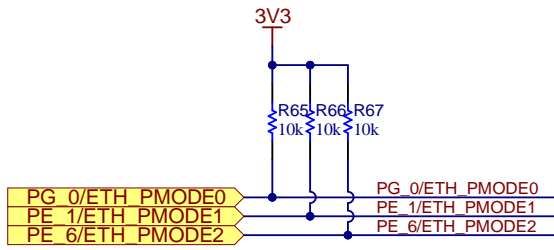


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Size <b>A</b>	Sheet # <b>6</b> of <b>3</b>	Drawn By <b>Altium</b>	Date 10:33:53 PM
		*	Rev. <b>1.0</b>
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## Decoupling Capacitors



## PMODE Select

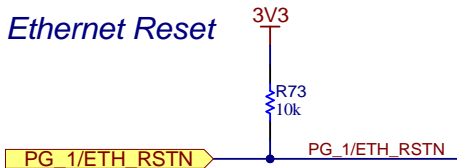


### PHY Operation mode select pins

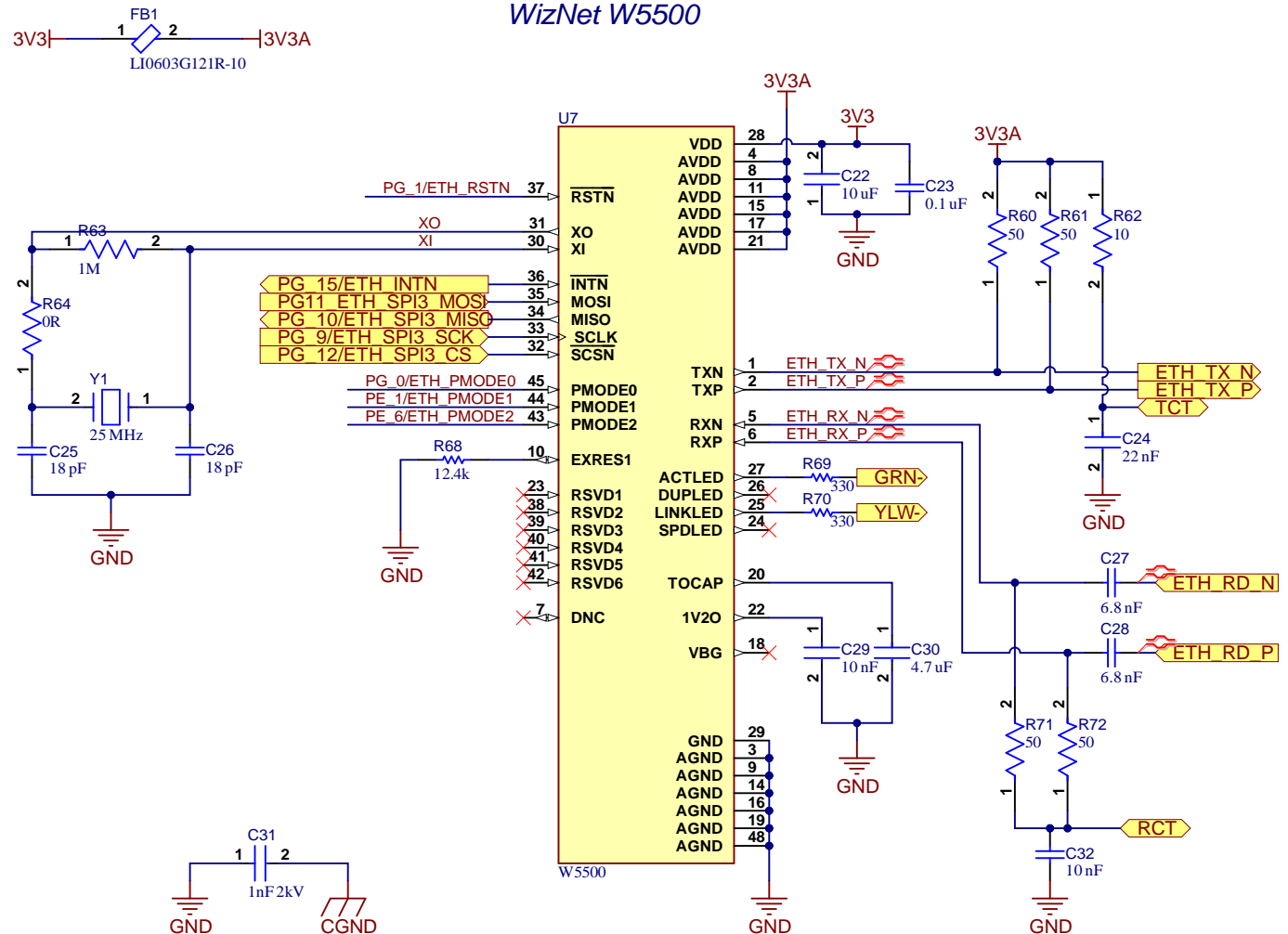
These pins determine the network mode. Refer to the below table for details.

PMODE [2:0]	Description
2 1 0	
0 0 0	10BT Half-duplex, Auto-negotiation disabled
0 0 1	10BT Full-duplex, Auto-negotiation disabled
0 1 0	100BT Half-duplex, Auto-negotiation disabled
0 1 1	100BT Full-duplex, Auto-negotiation disabled
1 0 0	100BT Half-duplex, Auto-negotiation enabled
1 0 1	Not used
1 1 0	Not used
1 1 1	All capable, Auto-negotiation enabled

## Ethernet Reset



## WizNet W5500



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