**Camera Arm Control - MZIRBC20**

**Meeting and Update Notes**

**10/15:**

Purchased Hardware:

- Servo-Arm: <https://www.adafruit.com/product/1967?gclid=EAIaIQobChMI_4H3zKaB5QIVhK7ICh2JmAAJEAQYByABEgLSl_D_Bw>

- ELP USB Camera Module

Parts to Explore:

1. Mediating Micro Controller (with CAN):

a. Teensy 3.2

2. CAN Transceiver to Read from CAN Bus

* <https://www.mouser.com/>
* Clarify as to if CAN transceiver is needed on both the microcontroller side and the computer side

Rough System Model:

Servo-Arm <==Power and Control Input==> Micro-Controller (decipher CAN messages and send input to servo arm) <===CAN BUS===> NVIDIA JETSON (ECU)

**10/18:**

**Hardware to Purchase:**

**- 12 V Desk Power Supply**

* [**https://www.amazon.com/KORAD-KD3005D-Precision-Adjustable-Regulated/dp/B00FPU6G4E/ref=sr\_1\_1?keywords=power+supply+with+limits&qid=1571410411&s=hi&sr=1-1**](https://www.amazon.com/KORAD-KD3005D-Precision-Adjustable-Regulated/dp/B00FPU6G4E/ref=sr_1_1?keywords=power+supply+with+limits&qid=1571410411&s=hi&sr=1-1)
* **[https://www.amazon.com/Switching-Regulated-Temperature-Protection-Alligator/dp/B07JQXQ8S5/ref=cm\_cr\_arp\_d\_product\_top?ie=UTF8#detail-bullets](https://www.amazon.com/Switching-Regulated-Temperature-Protection-Alligator/dp/B07JQXQ8S5/ref=cm_cr_arp_d_product_top?ie=UTF8" \l "detail-bullets)**

**- 24 – 12 V Converter for Drone**

* **Linear Regulator vs Buck Converter**
  + **Linear Regulator is less efficient and generates heat. Doesn’t produce electromagnetic interference**
  + **Buck converter is efficient and doesn’t produce as much heat. However, it produces EMF**
* **Yazhe suggests that in the past even the EMF generated from the camera has caused issues. Therefore, it is likely better to buy linear regulator over buck converter.**
* **Power usage of the jetson can range from:**
  + **Voltage Range = 5.5 V-19.6 V**
  + **Power Range = 7.5 W – 15 W**
  + **Current consumption: Up to 1.5 A**
* **Yazhe thinks I should also get a buck converter just in case:**
  + **https://www.digikey.com/product-detail/en/texas-instruments/LM2576T-12-NOPB/LM2576T-12-NOPB-ND/149008**
* **The following linear converters can work:**
  + [**https://www.digikey.com/product-detail/en/texas-instruments/LM2990T-12-NOPB/LM2990T-12-NOPB-ND/182373**](https://www.digikey.com/product-detail/en/texas-instruments/LM2990T-12-NOPB/LM2990T-12-NOPB-ND/182373) **(buy multiple just in case)**

**- USB mini-hub**

* [**https://www.amazon.com/LoveRPi-MicroUSB-Port-Black-Raspberry/dp/B01HYJLZH6?ref\_=fsclp\_pl\_dp\_4**](https://www.amazon.com/LoveRPi-MicroUSB-Port-Black-Raspberry/dp/B01HYJLZH6?ref_=fsclp_pl_dp_4)

**- Microcontroller**

* **This needs to be a microcontroller with CAN Bus covered**
  + **Options are Teensy 3.2:**
    - [**https://www.digikey.com/product-detail/en/sparkfun-electronics/DEV-13736/1568-1231-ND/5721426**](https://www.digikey.com/product-detail/en/sparkfun-electronics/DEV-13736/1568-1231-ND/5721426) **(buy two just in case, if we have enough money?)**

**- Tranceiver**

* **Although the CAN reader within the microcontroller and jetson can read CAN messages, they can’t write onto the bus without a tranceiver**
* [**https://www.digikey.com/product-detail/en/microchip-technology/MCP2562-E-P/MCP2562-E-P-ND/4079966?utm\_adgroup=Integrated%20Circuits&slid=&gclid=EAIaIQobChMIt8-KzNCm5QIVBeXICh3x3gJ9EAAYASAAEgKZIPD\_BwE**](https://www.digikey.com/product-detail/en/microchip-technology/MCP2562-E-P/MCP2562-E-P-ND/4079966?utm_adgroup=Integrated Circuits&slid=&gclid=EAIaIQobChMIt8-KzNCm5QIVBeXICh3x3gJ9EAAYASAAEgKZIPD_BwE) **(4 of these just in case)**