



HDRM Hardware Check 2/3

TEAM STELLARHOLD

Design Iterations

Final Design: CAD Model

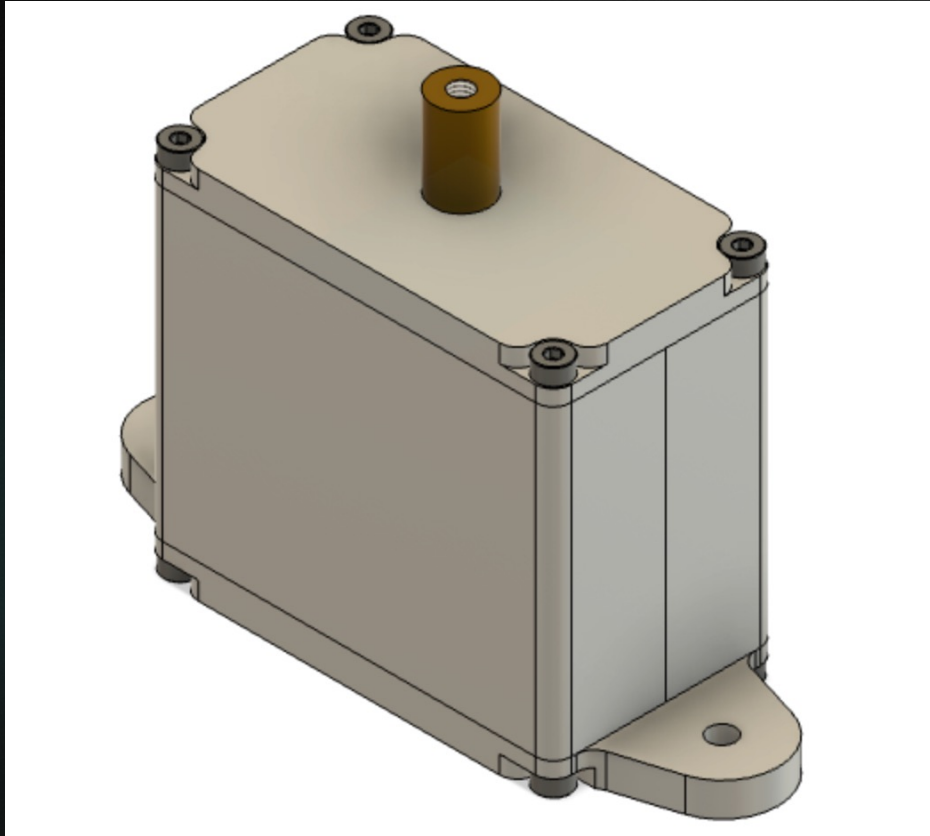


Figure 1: Previous Config

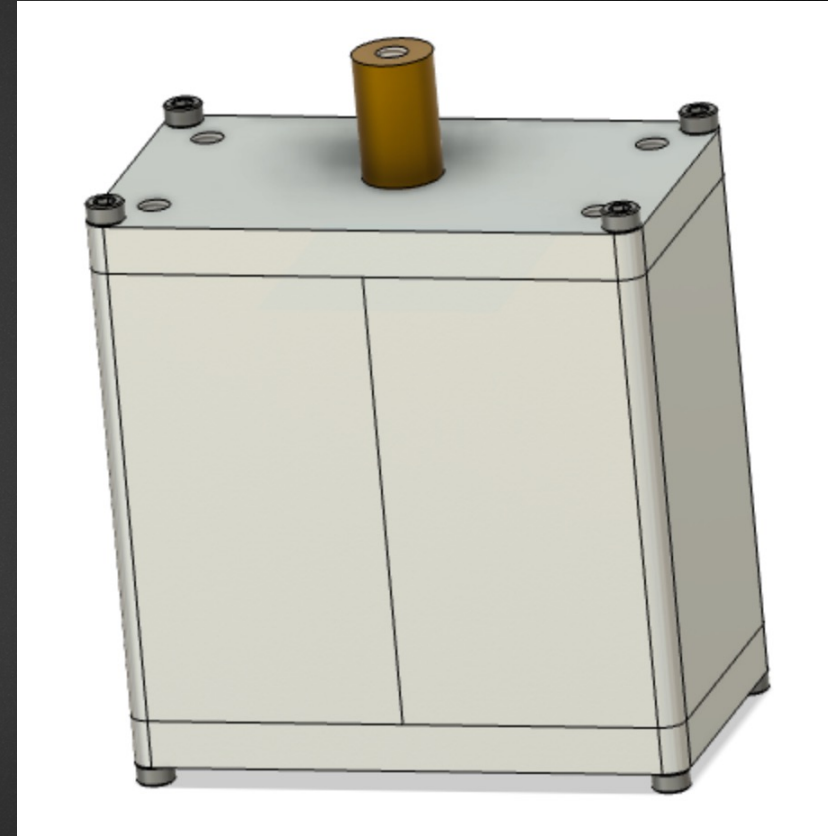


Figure 2: New Config

Final Design: Parametric CAD, DFM and fully optimized.

Design Iterations

Updated Electrical Schematics

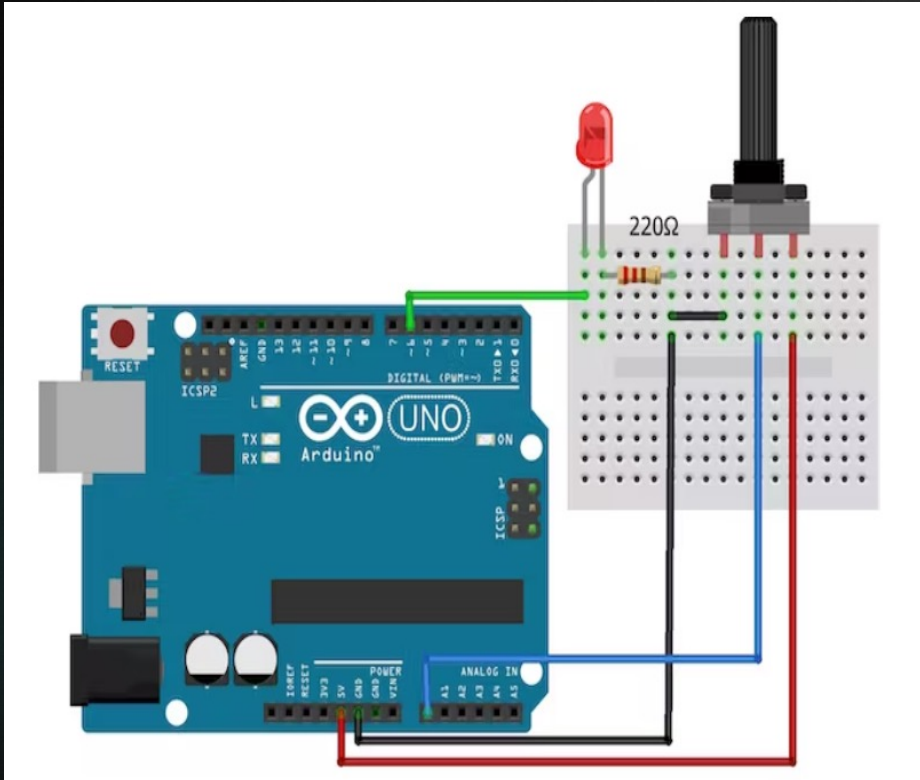


Figure 3: PWM Circuit

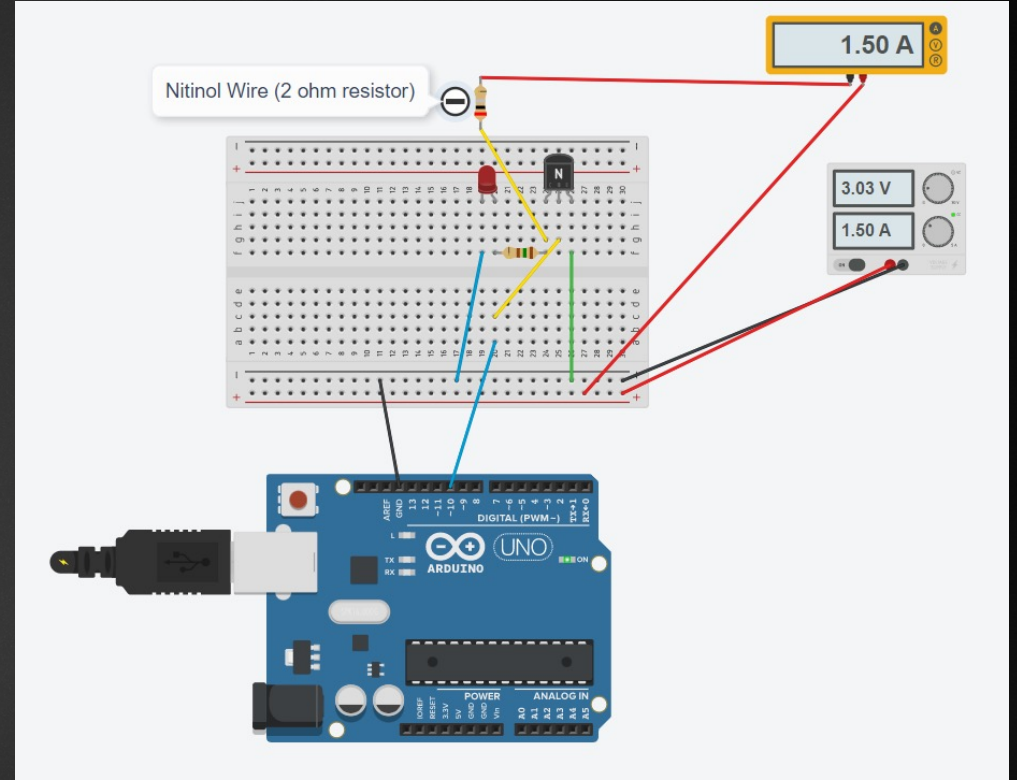


Figure 4: PWM Circuit with Nitinol

Design Efforts

Updated Electrical Schematics

Transistor switch for SMA using N-channel mosFET IRLR8743

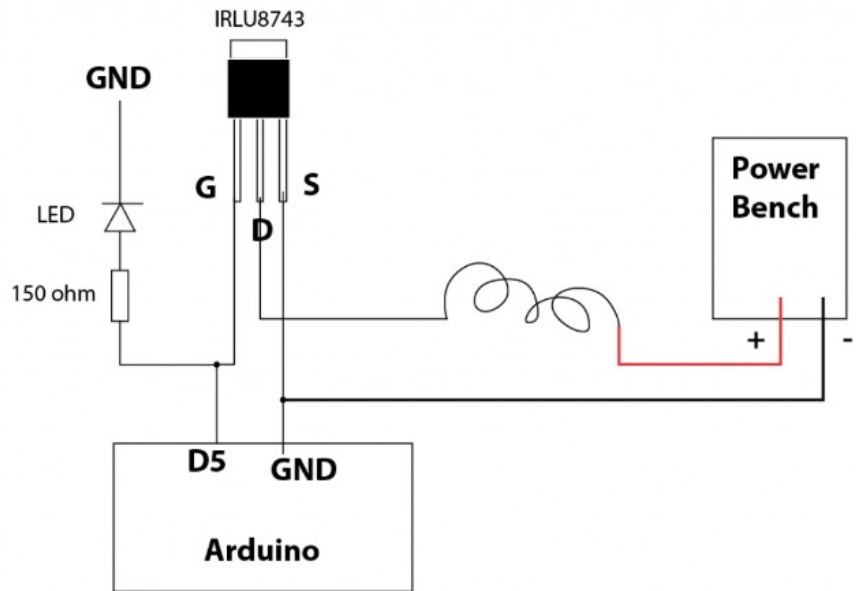


Figure 5: KobaKant's Schematics

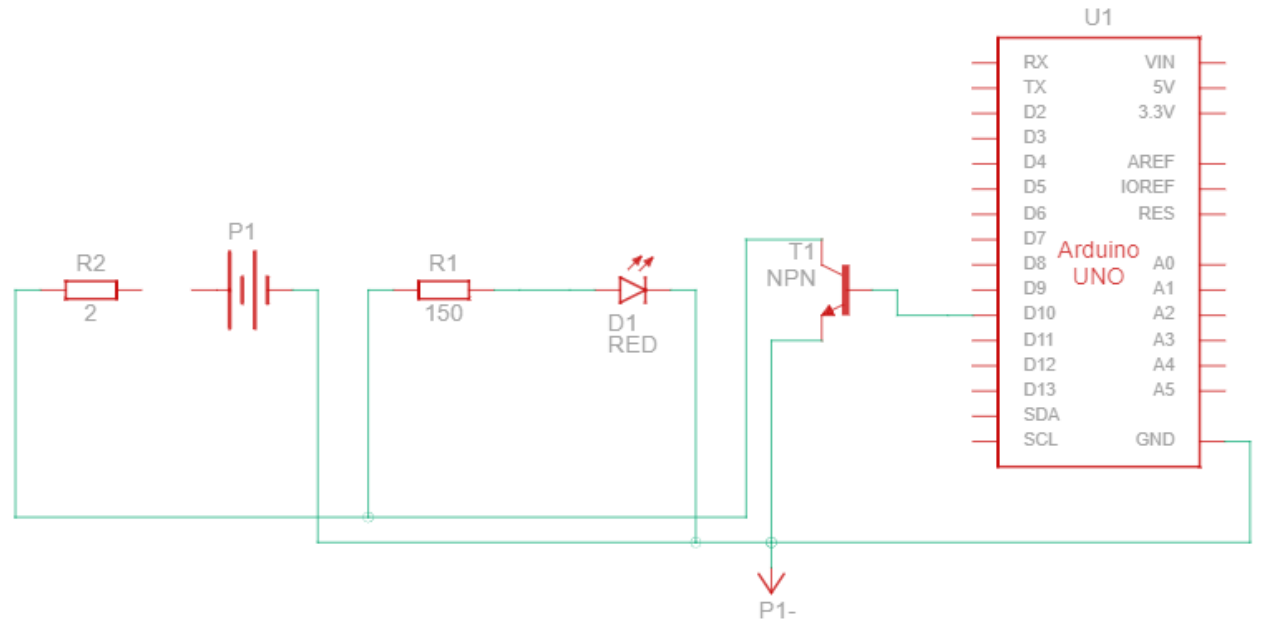


Figure 6: GA HDRM Team's Schematics

Purchasing Plan-1 (Updated)

- **Green** = Ordered and Received
- **Yellow** = Ordered but Not Received
- **Red** = Not Yet Ordered
- SMA spring in design process
- Possible updates to come (mylar, PID, Power Supply, etc.)

Part Description :	Cost: (\$)	Quantity :	Part Status:	Make/Primary Vendor:	Manufacturer:	
Acrylic Sheets	21.83	2	09/06/22	Buy Amazon	Acrylic Mega Store	
Nitinol Spring (2.4 mm)	19.58	1	02/23/22	Buy Amazon	Kellogg's Research Lab	
Aluminum Block	40.39	2	09/06/22	Buy Amazon	VERNUOS	
Generic Springs	14.18	1	09/06/22	Buy Amazon	Ninoge	
Custom SMA Spring	100 (estimate)	1	09/25/22 (latest)	Buy Menny	Menny	
Ball-Nose Plunger	8.38	2	04/05/22	Buy McMaster-Carr	McMaster-Carr	
Arduino	49.12	1	09/06/22	Buy Amazon	Arduino	
Aluminum Rod	30.43	1	10/05/22	Buy McMaster-Carr	McMaster-Carr	
U-Channel	29.55	2	10/05/22	Buy McMaster-Carr	McMaster-Carr	
PTFE Balls	12.28	1	10/05/22	Buy McMaster-Carr	McMaster-Carr	

Purchasing Plan-2

- **Green** = Ordered and Received
- **Yellow** = Ordered but Not Received
- **Red** = Not Yet Ordered
- SMA spring in design process
- Possible updates to come (mylar, PID, Power Supply, etc.)

Polyethylene Rod	5.01	1	10/05/22	Buy	McMaster-Carr	McMaster-Carr	
Socket Head Screw	19.81	1	10/05/22	Buy	McMaster-Carr	McMaster-Carr	
PTFE Film	24.45	1	10/05/22	Buy	McMaster-Carr	McMaster-Carr	
Drill Bit	6.84	1	10/05/22	Buy	McMaster-Carr	McMaster-Carr	
Compression Spring (Long)	7.24	1	10/05/22	Buy	McMaster-Carr	McMaster-Carr	
Compression Spring (Short)	29.28	1	10/05/22	Buy	McMaster-Carr	McMaster-Carr	
Flat Head Screw	9.27	1	10/05/22	Buy	McMaster-Carr	McMaster-Carr	
Load Cell	10.42	2	10/05/22	Buy	Amazon	ALAMSCN	
SMA Spring	20.93	2	10/05/22	Buy	Amazon	NextMetal	
Testing Total:					\$100		
						Repairs Total:	\$100
							Total Budget:
Part Total:						\$458.99	\$2,000
Part Total with Taxes (estimated):						\$500.00	
Total:						\$700.00	

Ordered and Received

Ordered but Not Received

Not Yet Ordered

Manufacturing Plan

Manufacturing Plan.xlsx

