

PWM Control Box

EPIC Robotz

Nov 2023

Purpose

Provide a way to manually control TALON based motors for prototyping.

Features

- Super Simple to Use
 - Simply hook up CAN wires, turn it on, twist a knob.
- Self Contained AA Batteries
 - that should last for over 50 hours of operation
- Battery Monitor
 - Power LED blinks when batteries are weak
- Direction LEDs confirm output

Usage Instructions

Pwm Output:
Connect Left to Yellow and
Right to Green

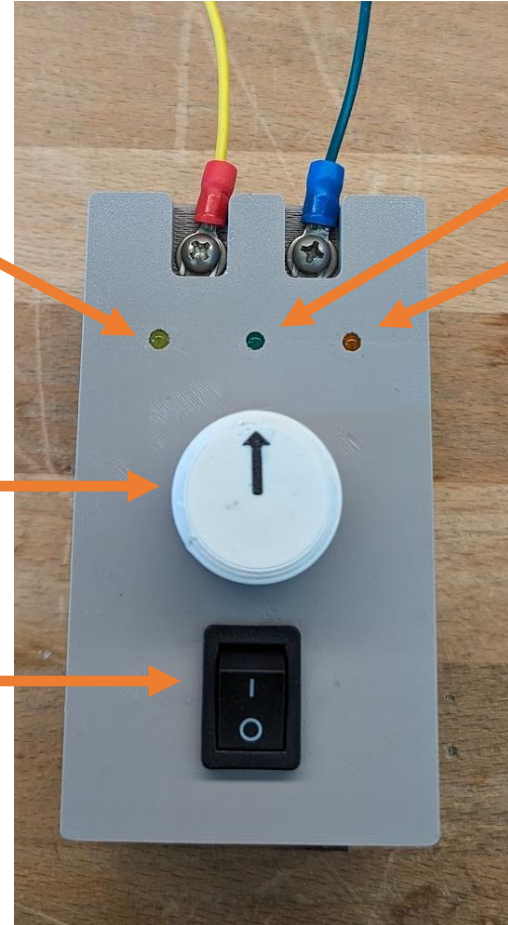
Reverse Direction LED. Blinks when slow, and turns to solid on for high speed.

Power LED. Blinks when batteries are weak.

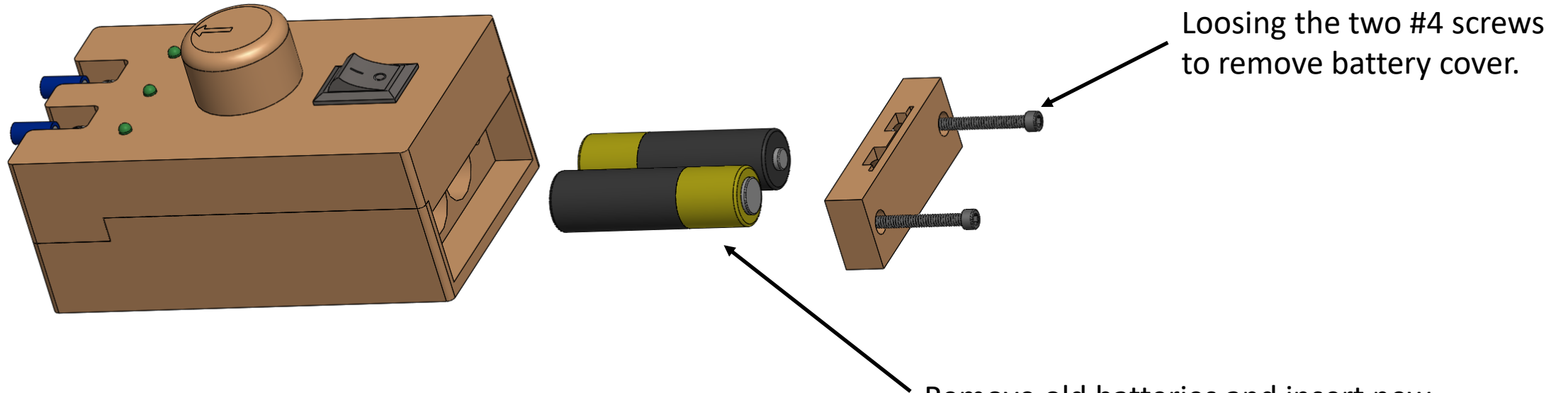
Forward Direction LED. Blinks when slow, and turns to solid on for high speed.

Control Knob. Center is for motor neutral ("OFF").
Turn left for reverse and right for forward.
There is a 10% deadband for neutral near the center.
Neutral is indicated by BOTH Direction LEDs being on.

On/Off switch. Turn off to save batteries.



Replacing Batteries



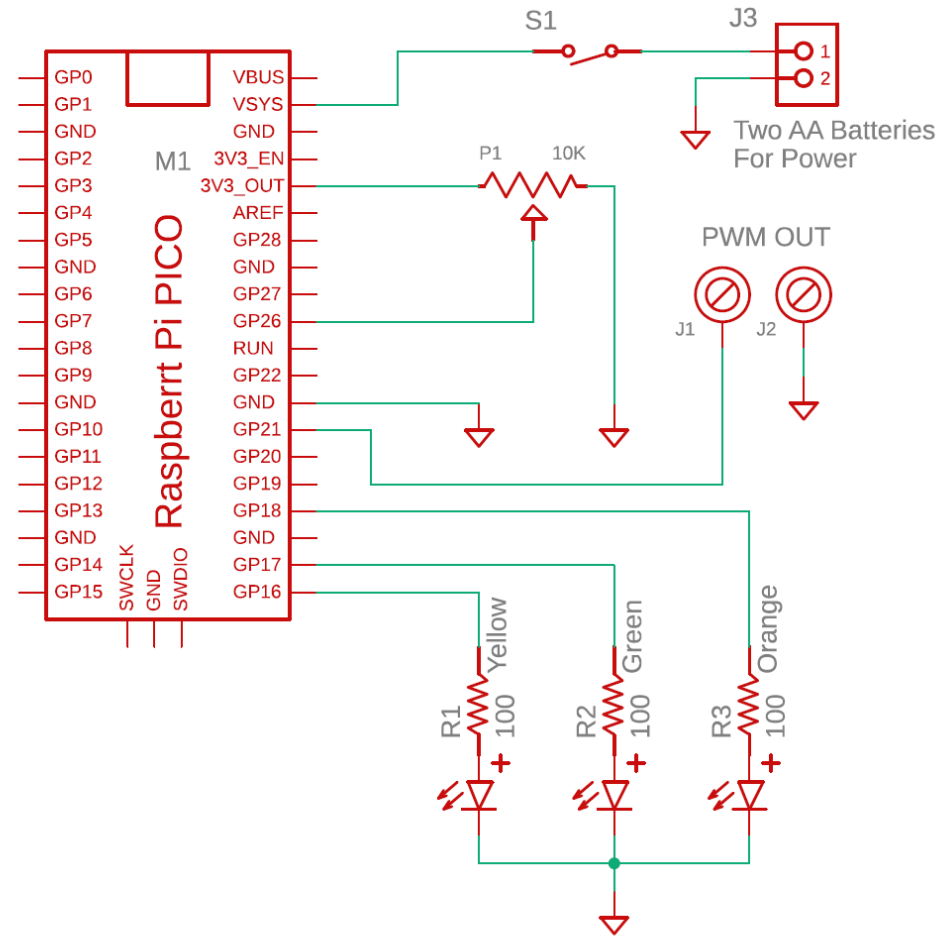
Loosing the two #4 screws
to remove battery cover.

Remove old batteries and insert new
ones in the orientation shown.

**Putting batteries in backwards WILL burn
out the microprocessor! Use the orientation shown.**

Schematic

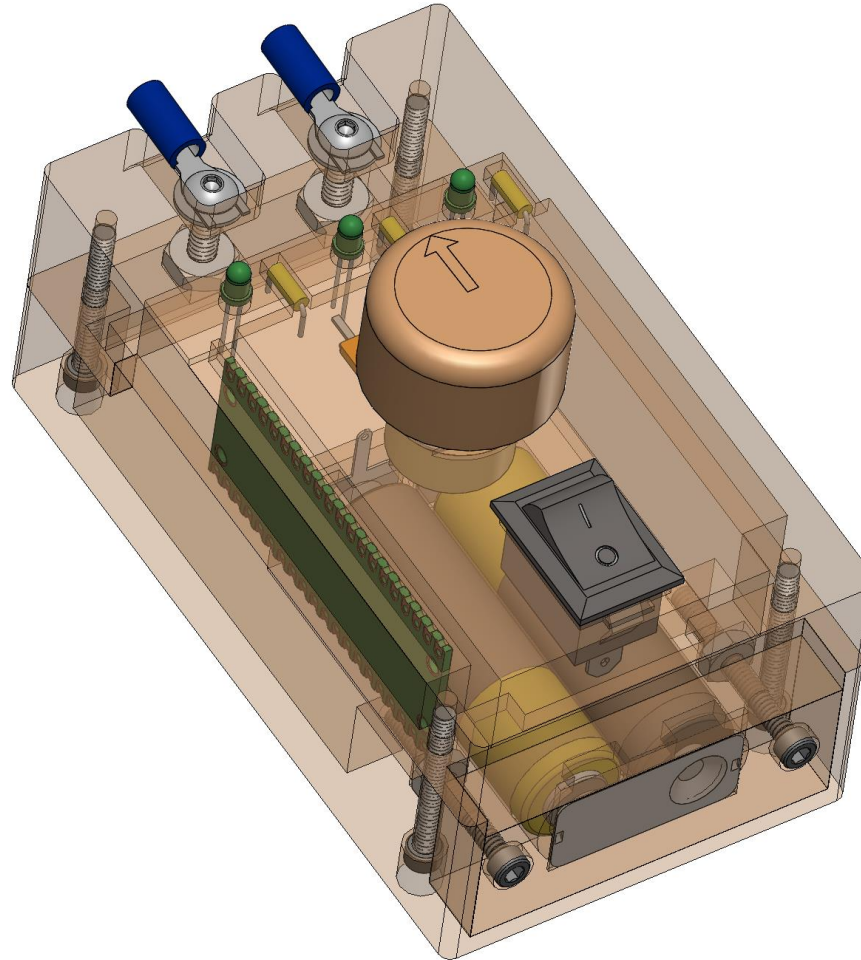
PWM Control Box for TALONs
EPIC Robotz, Nov 2023



CAD Files

CAD files located in PDM Valut

Project: F23-CB



Bill of Materials

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	Weight
1	Amazon_AA_Bat_Spring	AA Battery Tab, With Spring	1	0.001
2	Amazon_AA_Bat_Tab	AA Battery Tab, No Spring	1	0.002
3	Amazon_AA_Bat	AA Battery (Duracell)	2	0.045
4	Amazon_AA_Bat_Tab	AA Battery Tab, No Spring	1	0.001
5	Amazon_B07B2S5QYN	Rocker Switch, Mini, 10A/125V, SPST, Toggle	1	
6	Amazon_Forked_Terminal	Forked Terminal	2	0.002
7	Amazon_LED_3mm	LED, 3mm Through Hole	3	0.000
8	Amazon_Pot_PanelMount	Potentiometer	1	0.005
9	F23-CB-3001	Battery Case	1	0.176
10	F23-CB-3003	Knob	1	0.022
11	F23-CB-3004	Control Panel Top	1	0.155
12	F23-CB-3005	Battery Case End Cap	1	0.020
13	F23-CB-7003	Nut for Potentiometer	1	0.002
14	F23-CB-7004	#6 Plain Washer	2	0.001
15	F23-CB-7005	Resistor	3	0.000
16	MC_90044A111	4-40 Screw, 1.000 Long, CapHead	6	0.00
17	MC_90480A007	Nut, 6-32, Non-Locking, Standard Profile	2	0.00
18	MC_91841A005	4-40 Nut, Non-locking, Standard Profile	2	0.00
19	MC_92949A150	6-32 Screw, 0.625 Long, Button Head	2	0.003
20	RaspberryPIPICO_W	Raspberry PI PICO W	1	0.003

Software

- Written in MicroPython
- Source Code Located on Github: <https://github.com/VCHSRobots/PwmControlBox>
- Firmware Image for Python on Raspberry Pi: RPI_PICO-20231005-v1.21.0.uf2