

A

A

B

B

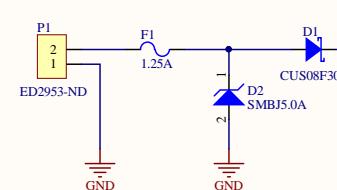
C

C

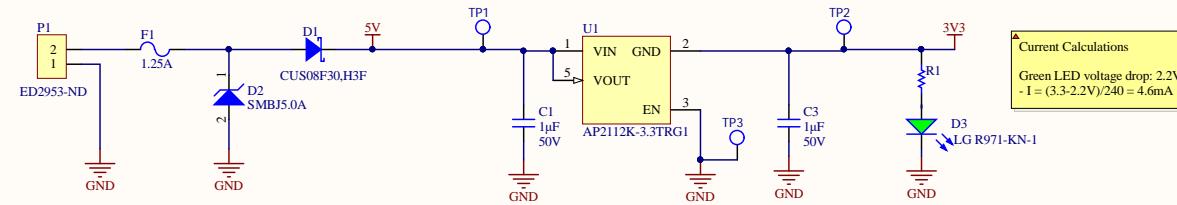
D

D

Power In

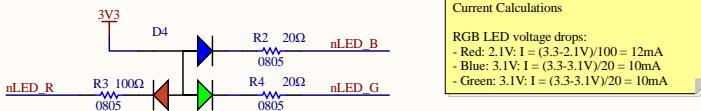
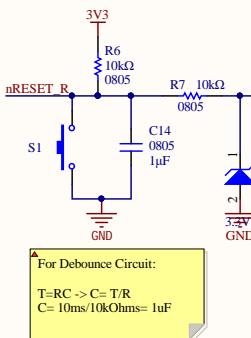


5V to 3V3 LDO



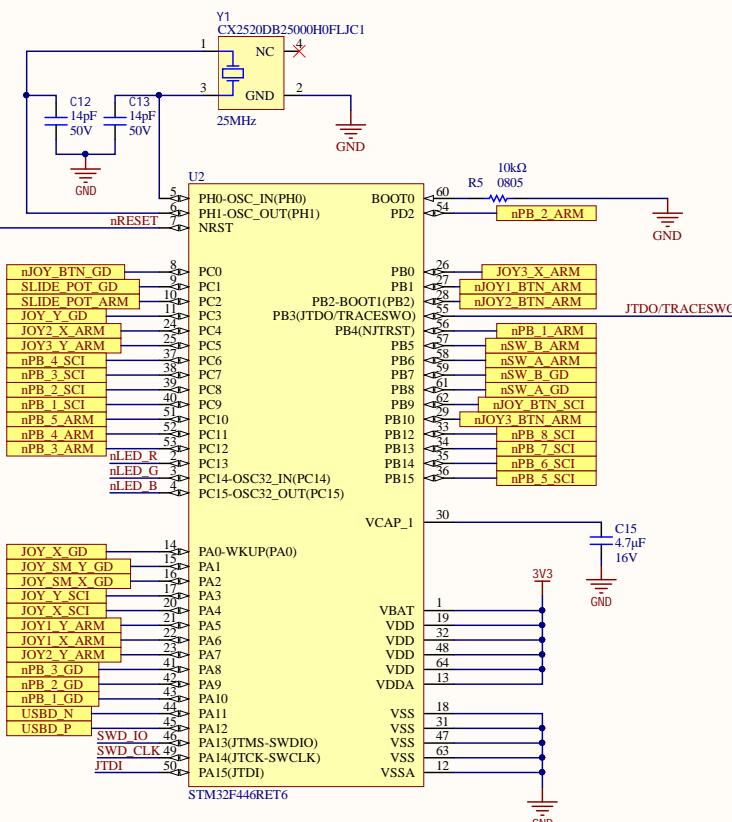
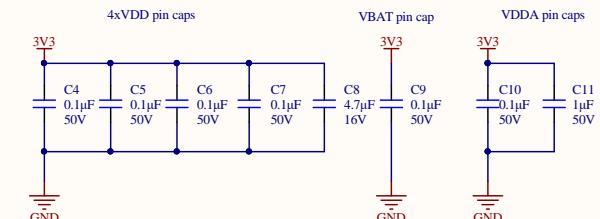
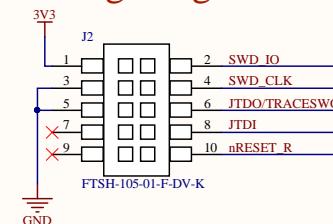
Title: Power	
Project: Robot Controller.PrjPcb	
Rev: 1	Checker: Lance Bantoto
	Engineer: Christopher Arjune
Date: 2020-12-28	Sheet: 1 of 6



RGB LED**Reset Button**

TP4

MOUNTING_HOLES

STM32F446RET6**Decoupling Caps****Debug/Programming**

Title: Microcontroller

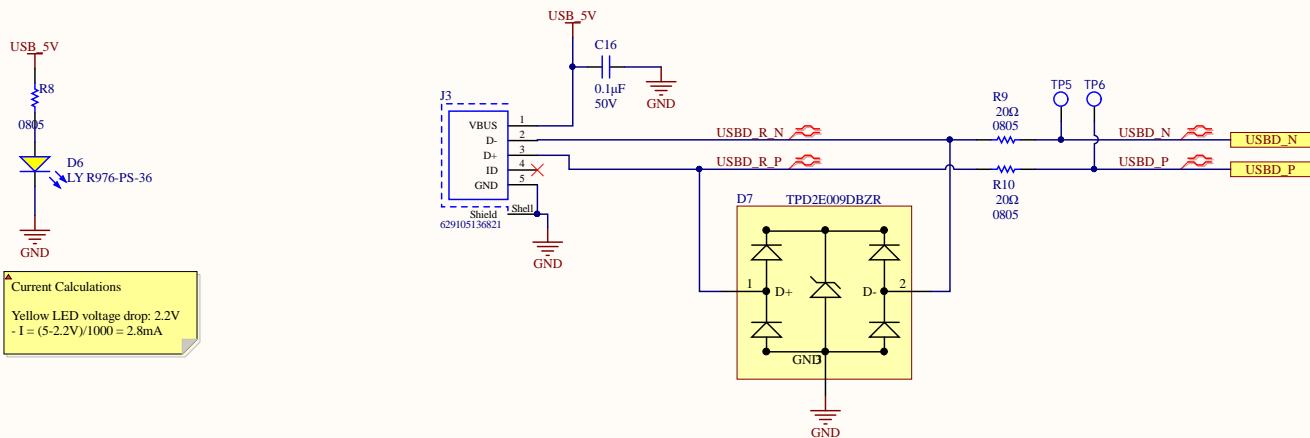
Project: Robot Controller.PnjPcb

Rev: 1 Checker: Lance Bantoto

Engineer: Christopher Arjune

Date: 2020-12-28 Sheet: 2 of 6

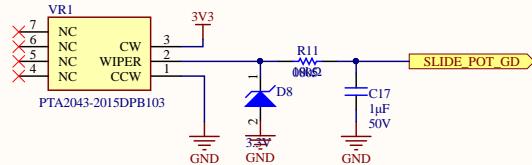
USB Connector



Title: USB	
Project: Robot Controller.PrjPcb	
Rev: 1	Checker: Lance Bantoto
Engineer: Christopher Arjune	
Date: 2020-12-28	Sheet: 3 of 6



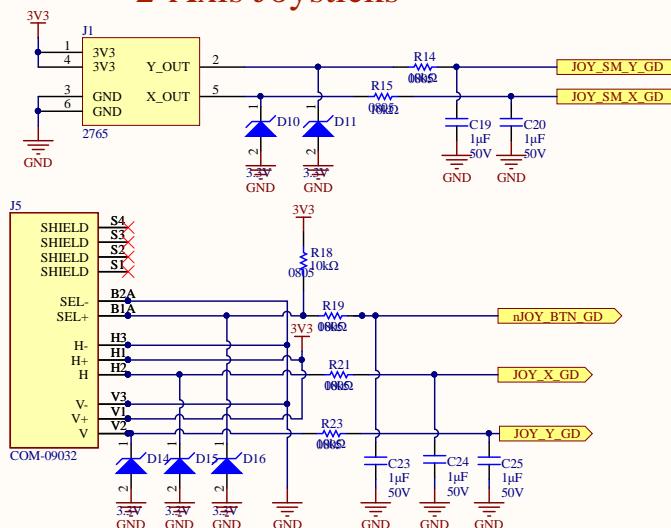
Slide Potentiometer



For Debounce Circuits:

$$T=RC \rightarrow C = T/R \\ C = 10\text{ms}/10\text{k}\Omega = 1\mu\text{F}$$

2-Axis Joysticks



Controls (subject to change)

Joysticks:

- Large joystick is used for driving
- Small joystick is used for gimbal

Potentiometer:

- Used for driving speed control

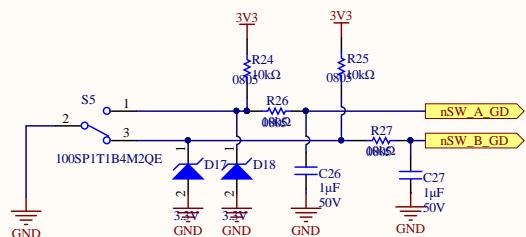
Switch:

- Used for reverse-mode toggle

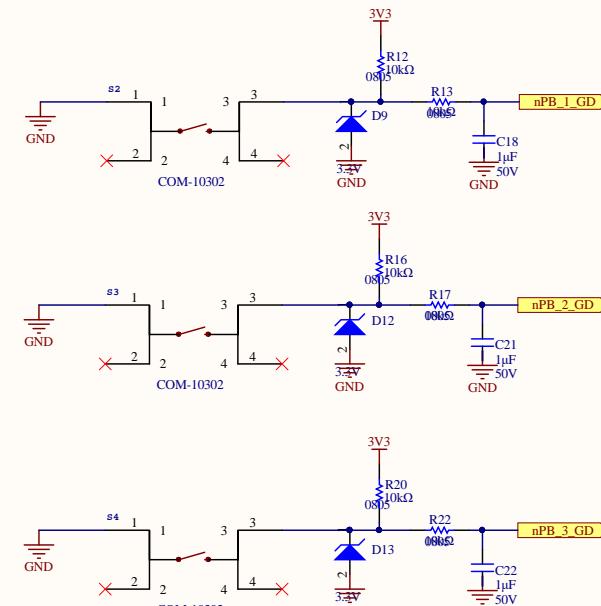
Buttons:

- 1: Full-stop (halt all movement immediately)
- 2-3: Extra, in case additional functionality is requested

SPDT Switch



Pushbuttons



Title: GimbdDrive Controls

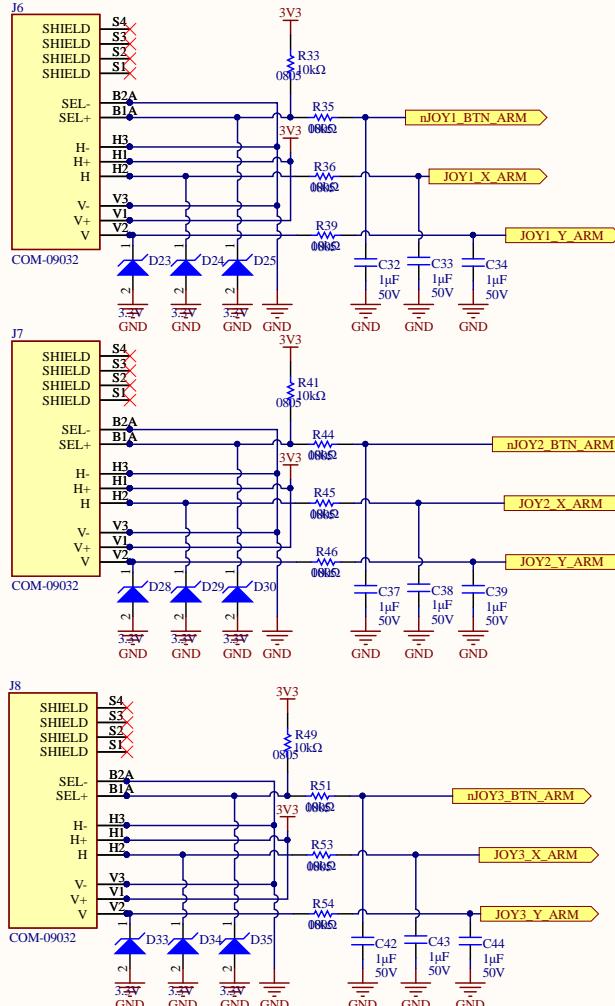
Project: Robot Controller.PrbPcb

Rev: 1 Checker: Lance Bantoto

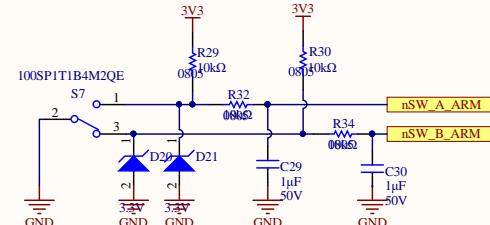
Engineer: Christopher Arjune

Date: 2020-12-28 Sheet: 4 of 6

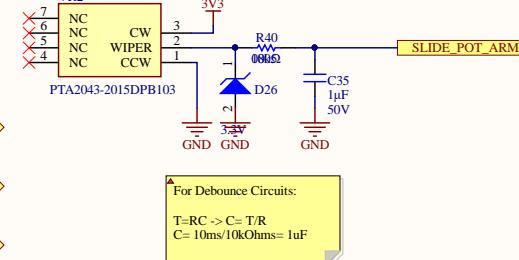
2-Axis Joysticks



SPDT Switch



Slide Potentiometer



Controls

Joysticks: (in joint-control mode)

- 1: Up/Down is for shoulder, Left/Right is for turntable
- 2: Up/Down is for elbow
- 3: Up/Down is for wrist pitch, Left/Right is for wrist roll

Switch:

- Used to toggle between joint-control and inverse-kinematics

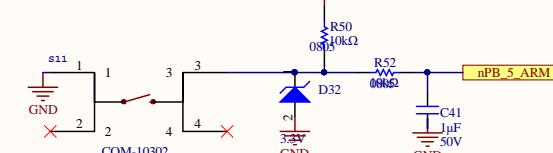
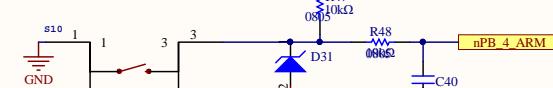
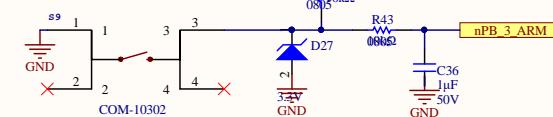
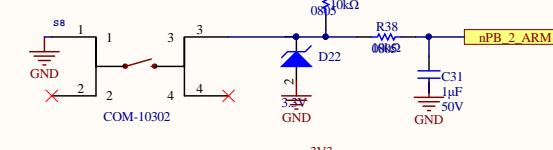
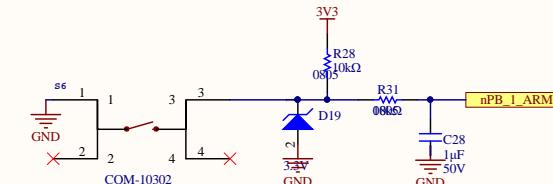
Potentiometer:

- Used to adjust movement speed of joints/arm (depending on control mode)

Buttons:

- 1/2: Open/close claw
- 3/4: Set/Go to home position
- 5: Extra, in case extra functionality is requested later

Pushbuttons



Title: Arm Controls

Project: Robot Controller.PrbPcb

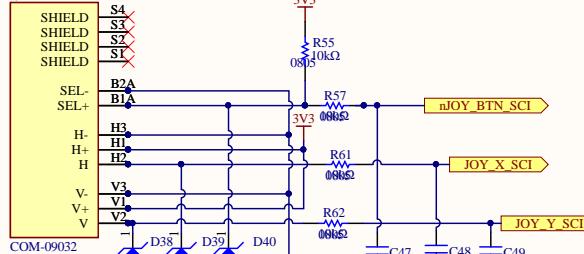
Rev: 1	Checker: Lance Bantoto
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Engineer: Christopher Arjune

Date: 2020-12-28

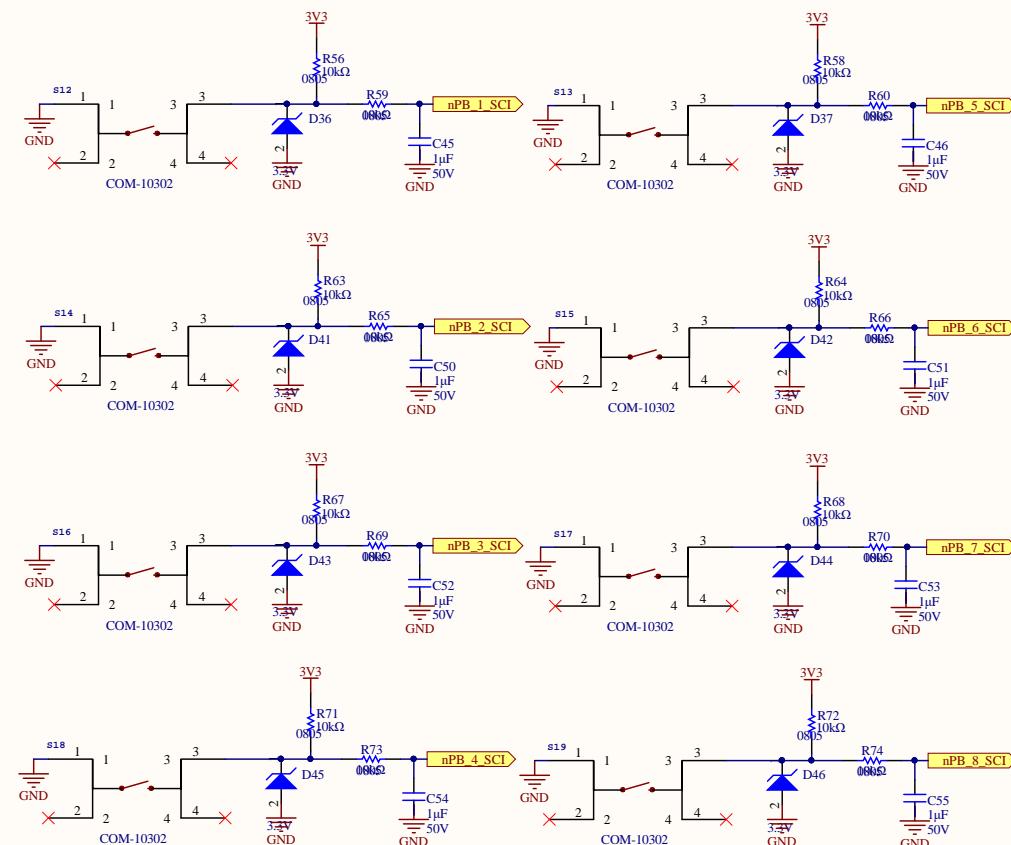
Sheet: 5 of 6





Pushbuttons

For Debounce Circuits:
 $T=RC \rightarrow C = T/R$
 $C = 10\text{ms}/10\text{k}\Omega = 1\mu\text{F}$



Controls

- Joystick:
- Up/Down for elevator, Left/Right is for opening/closing shovel
- Button should be used to choose between L/R and U/D, since the science mechanism may be damaged if too many things are moving at once

Buttons:

- 1/2: Move left/right 1 index
- 3/4: Move to leftmost/rightmost index
- 5/6: Open/close lid
- 7: Pre-programmed mixing sequence
- 8: Extra, in case additional functionality is requested later

Title: Science Controls	
Project: Robot Controller.PnjPcb	
Rev: 1	Checker: Lance Bantoto
Engineer: Christopher Arjune	
Date: 2020-12-28	Sheet: 6 of 6

