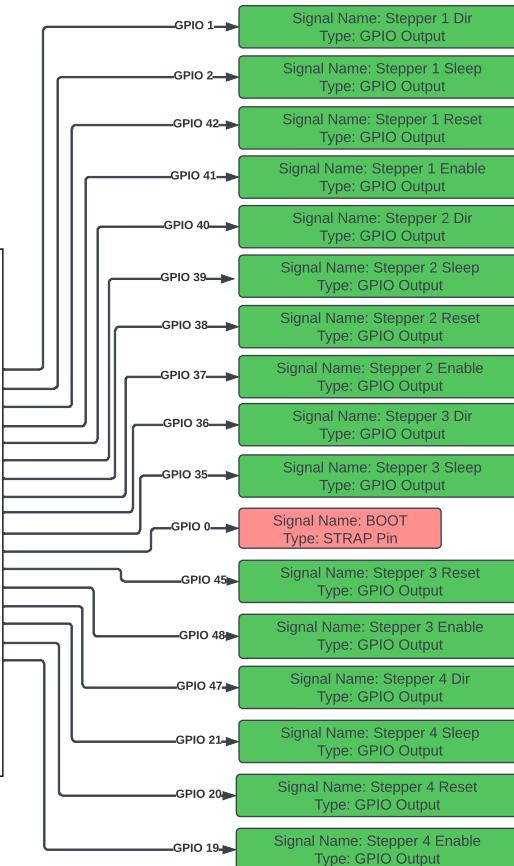
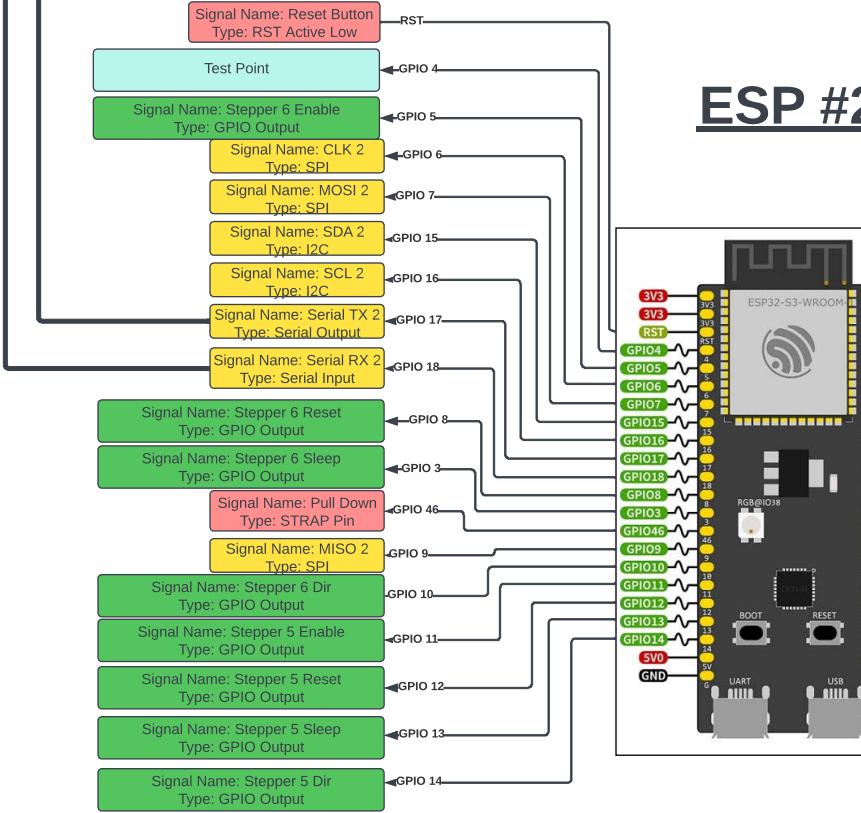
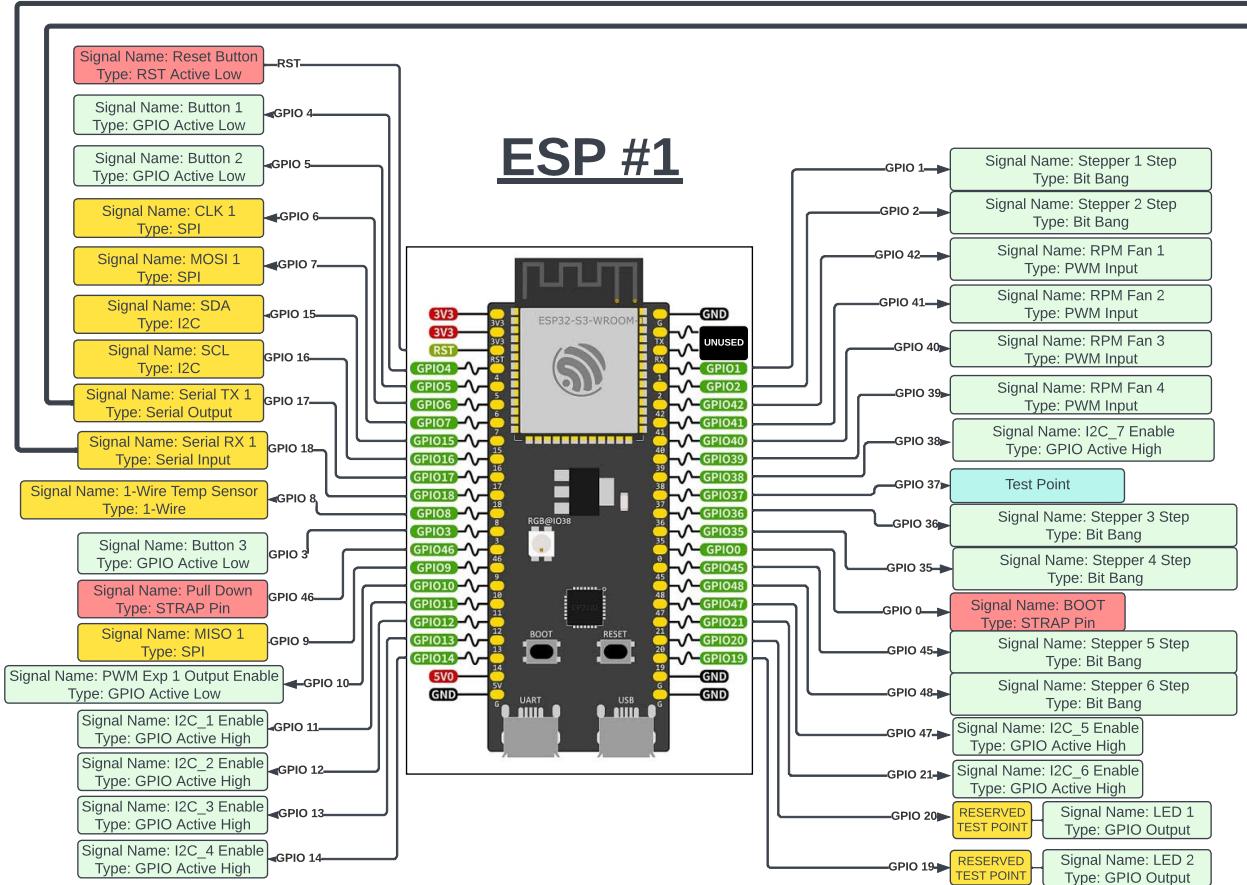


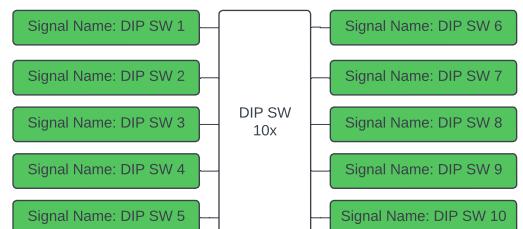
# MCU Controls x2



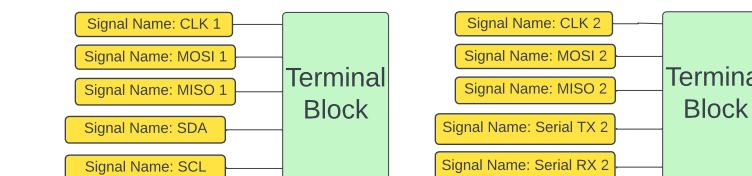
## Control Buttons



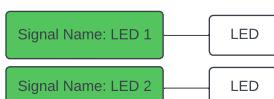
## DIP Switch



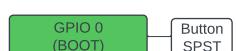
## Serial Comms



## LEDs



## Processor Reset



### Notes:

DevKit Shown for Reference Only  
Programming Support Circuitry Not Included

### Changes:

#### Changed GPIO Pin Assignments

- Changed MCU#2 GPIO 47 to "Test Point"
- Changed MCU#2 GPIO 1 to "Stepper 1 Dir"
- Changed MCU#2 GPIO 2 to "Stepper 1 Sleep"
- Changed MCU#2 GPIO 42 to "Stepper 1 Reset"
- Changed MCU#2 GPIO 41 to "Stepper 1 Enable"
- Changed MCU#2 GPIO 40 to "Stepper 2 Dir"
- Changed MCU#2 GPIO 39 to "Stepper 2 Sleep"
- Changed MCU#2 GPIO 38 to "Stepper 2 Reset"
- Changed MCU#2 GPIO 37 to "Stepper 2 Enable"
- Changed MCU#2 GPIO 36 to "Stepper 3 Dir"
- Changed MCU#2 GPIO 35 to "Stepper 3 Sleep"
- Changed MCU#2 GPIO 45 to "Stepper 3 Reset"
- Changed MCU#2 GPIO 48 to "Stepper 3 Enable"
- Changed MCU#2 GPIO 47 to "Stepper 4 Dir"
- Changed MCU#2 GPIO 21 to "Stepper 4 Sleep"
- Changed MCU#2 GPIO 20 to "Stepper 4 Reset"
- Changed MCU#2 GPIO 19 to "Stepper 4 Enable"
- Changed MCU#2 GPIO 14 to "Stepper 5 Dir"
- Changed MCU#2 GPIO 13 to "Stepper 5 Sleep"
- Changed MCU#2 GPIO 12 to "Stepper 5 Reset"
- Changed MCU#2 GPIO 11 to "Stepper 5 Enable"
- Changed MCU#2 GPIO 10 to "Stepper 6 Dir"
- Changed MCU#2 GPIO 3 to "Stepper 6 Sleep"
- Changed MCU#2 GPIO 8 to "Stepper 6 Reset"
- Changed MCU#2 GPIO 5 to "Stepper 6 Enable"

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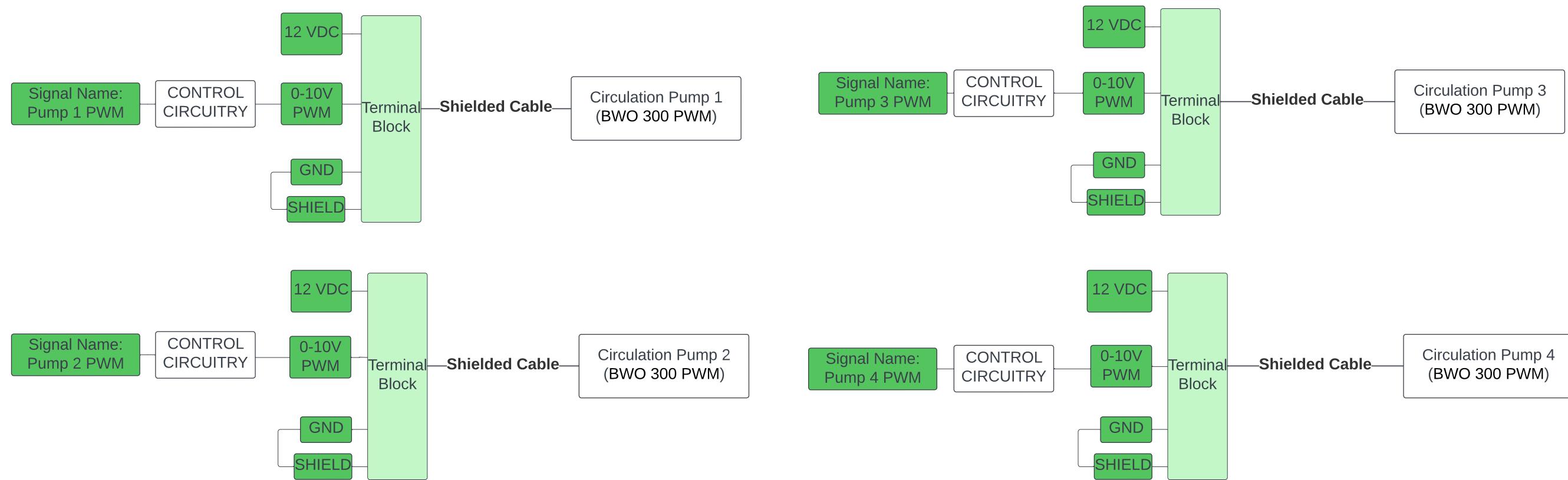
Email: CVBartosh@gmail.com

Notes	Date	Rev
Initial Document		A
Fixed PWM Controller PN: PCA9685		B
Added New Stepper IC and GPIO		C
Documentation Correction		D
Documentation Correction	1/8/23	E
Added Stepper 5&6 IO Signals	1/9/23	F
Adjusted signals for new IO Expander	1/25/23	G

## Zamba Wiring Diagram MCU Controls x2

DRAWN BY:	REV	PAGE / TOTAL
Chris Bartosh	G	1 / 16

# Circulation Pumps x4



Changes:

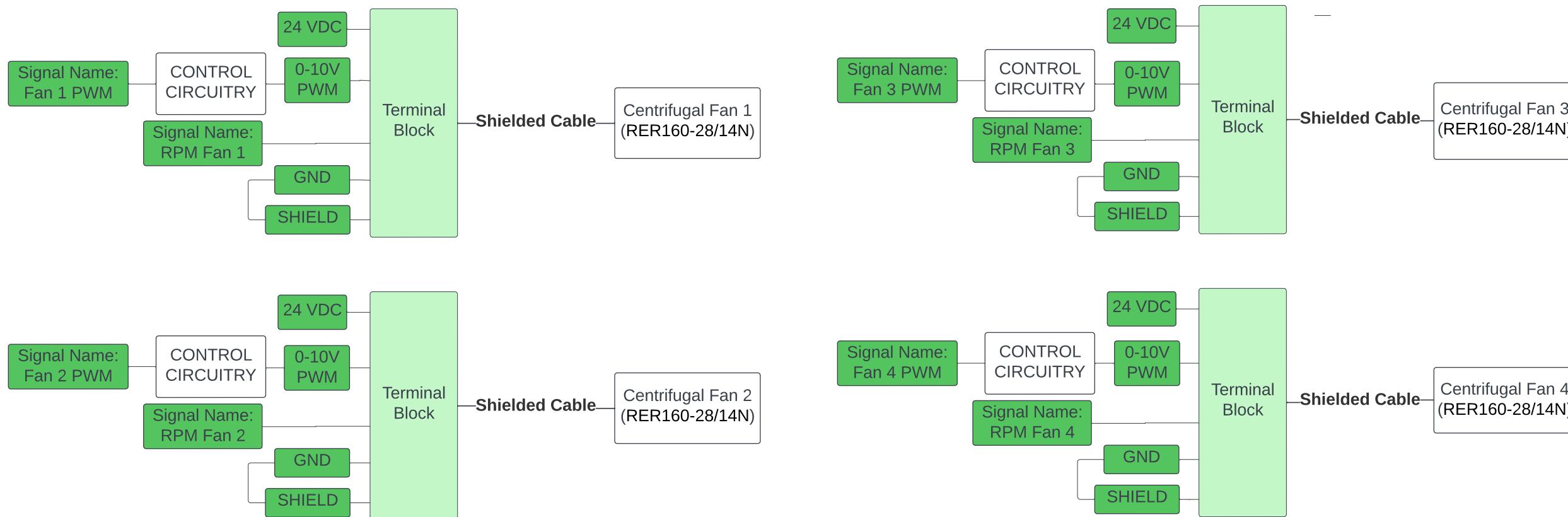
Notes:

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Email: CVBartosh@gmail.com

Notes	Date	Rev	Zamba Wiring Diagram
Initial Document		A	
Fixed PWM Controller PN: PCA9685		B	
Added New Stepper IC and GPIO		C	
Documentation Correction		D	
Documentation Correction	1/8/23	E	
Added Stepper 5&6 IO Signals	1/9/23	F	
Adjusted signals for new IO Expander	1/25/23	G	
DRAWN BY:	REV	PAGE / TOTAL	
Chris Bartosh	G	2 / 16	

# Centrifugal Fans



Changes:

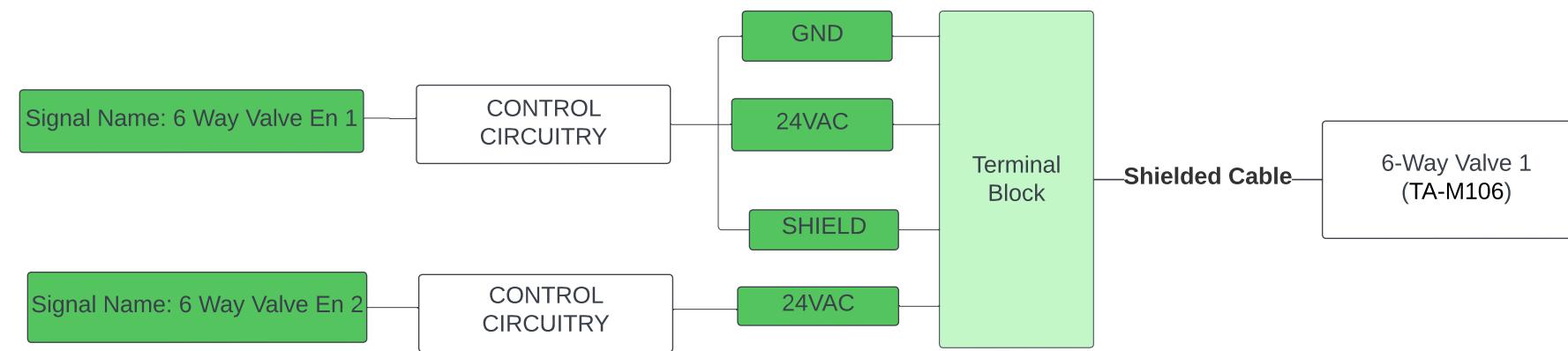
Notes:

Davinci Product Designs, LLC

Email: CVBartosh@gmail.com

Notes	Date	Rev	Zamba Wiring Diagram
Initial Document		A	Centrifugal Fans
Fixed PWM Controller PN: PCA9685		B	
Added New Stepper IC and GPIO		C	
Documentation Correction		D	
Documentation Correction	1/8/23	E	
Added Stepper 5&6 IO Signals	1/9/23	F	
Adjusted signals for new IO Expander	1/25/23	G	
DRAWN BY:	REV	PAGE / TOTAL	
Chris Bartosh	G	3 / 16	

# 6-Way Valve x1



Changes:

Notes:

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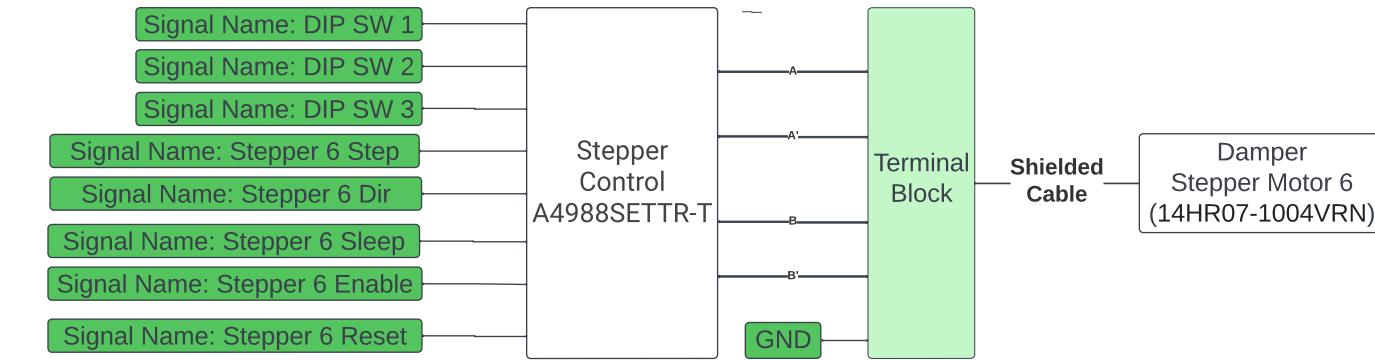
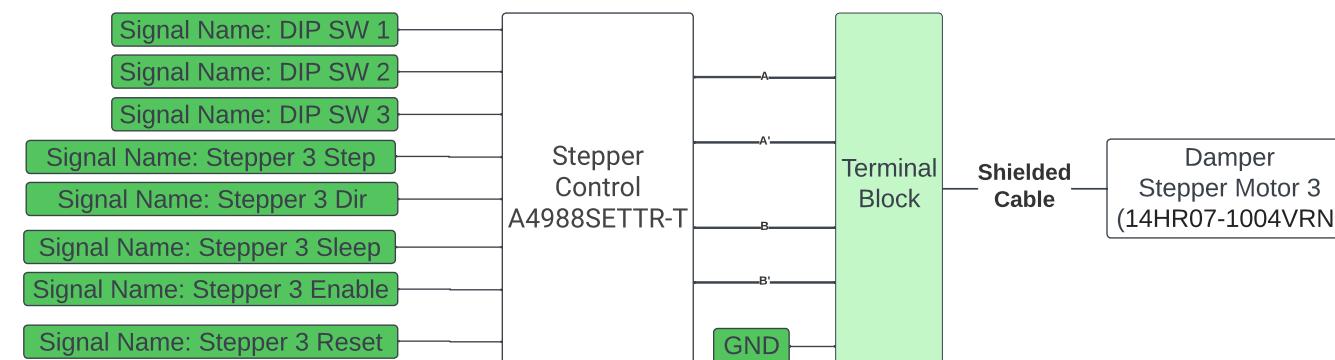
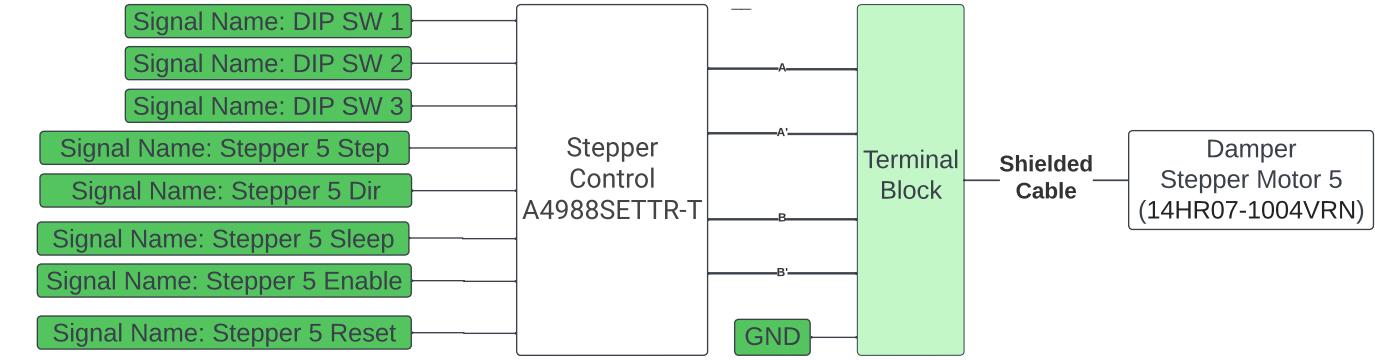
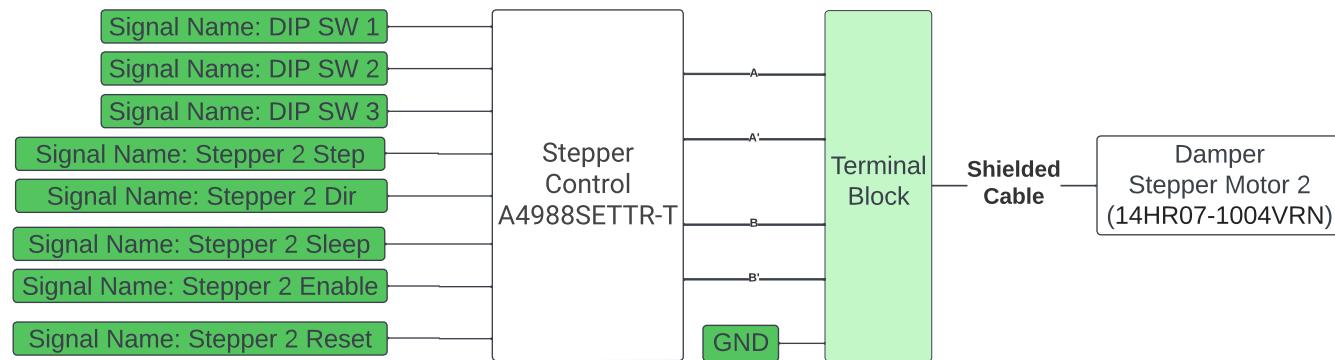
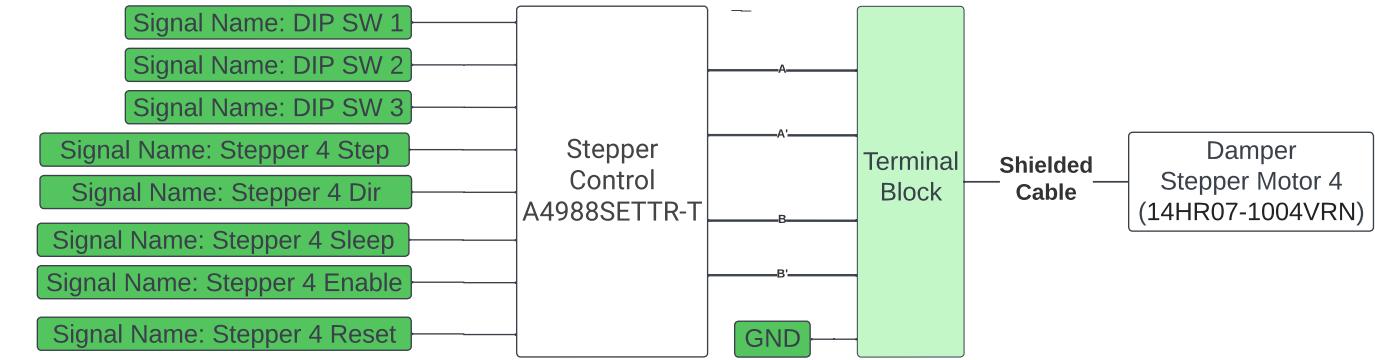
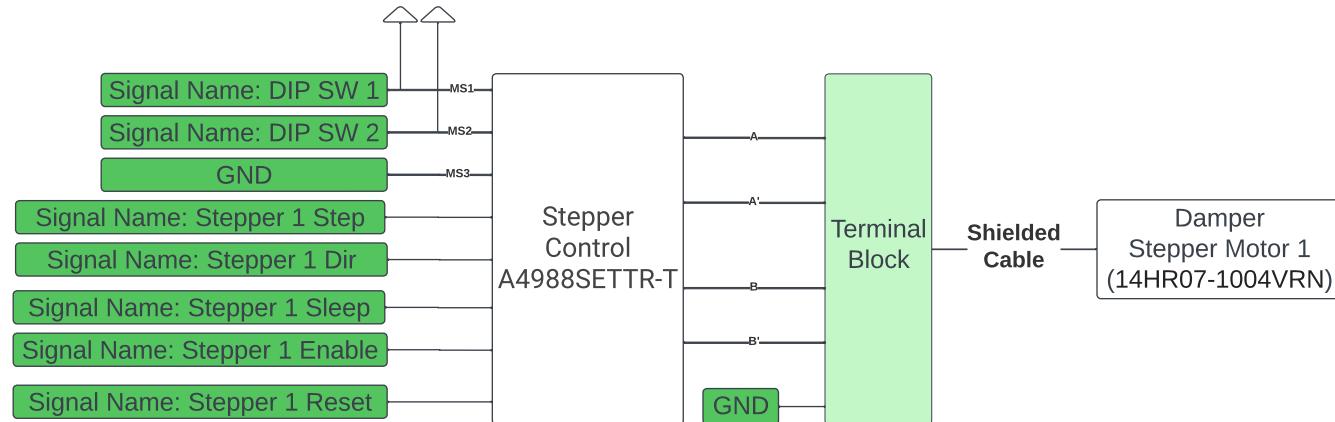
Email: CVBartosh@gmail.com

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Initial Document		A	
Fixed PWM Controller PN: PCA9685		B	
Added New Stepper IC and GPIO		C	
Documentation Correction		D	
Documentation Correction	1/8/23	E	
Added Stepper 5&6 IO Signals	1/9/23	F	
Adjusted signals for new IO Expander	1/25/23	G	
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Chris Bartosh	G	4 / 16	
PAGE / TOTAL			

Zamba Wiring Diagram

6-Way Valve x1

# Stepper Control x6



Changes

- 1

## Notes

Note:  
Pull Ups Only needed once, DIP SW signals are tied together.

Notes	Date	Rev	Zamba Wiring Diagram Stepper Control x6		
Initial Document		A			
Fixed PWM Controller PN: PCA9685		B			
Added New Stepper IC and GPIO		C			
Documentation Correction		D			
Documentation Correction	1/8/23	E			
Added Stepper 5&6 IO Signals	1/9/23	F			
Adjusted signals for new IO Expander	1/25/23	G			
DRAWN BY:			REV	PAGE / TOTAL	
Chris Bartosh			G	5	/ 16

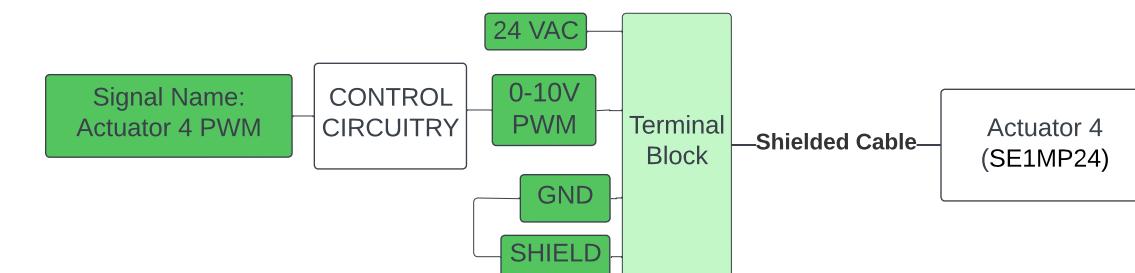
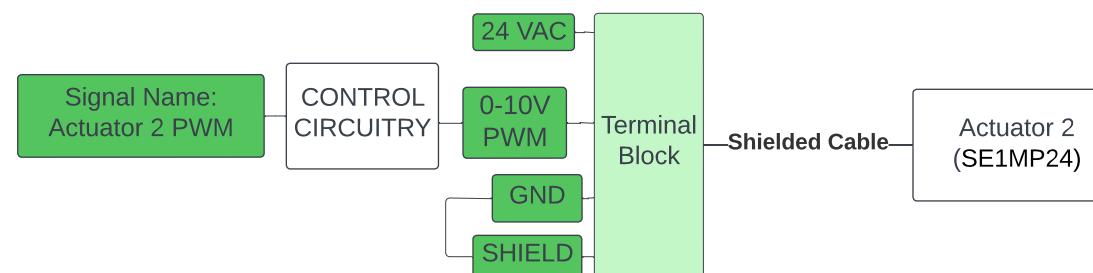
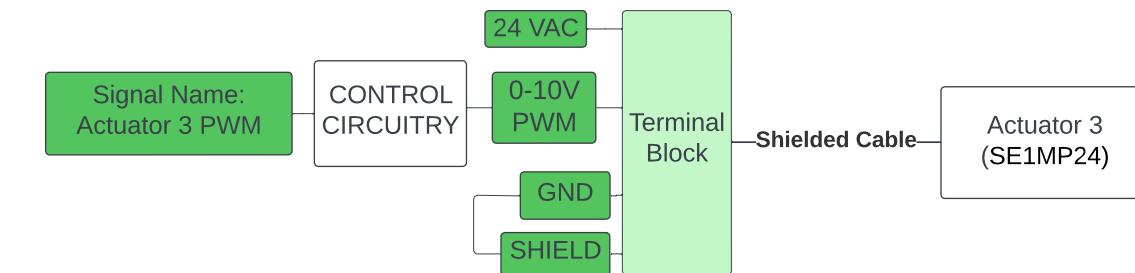
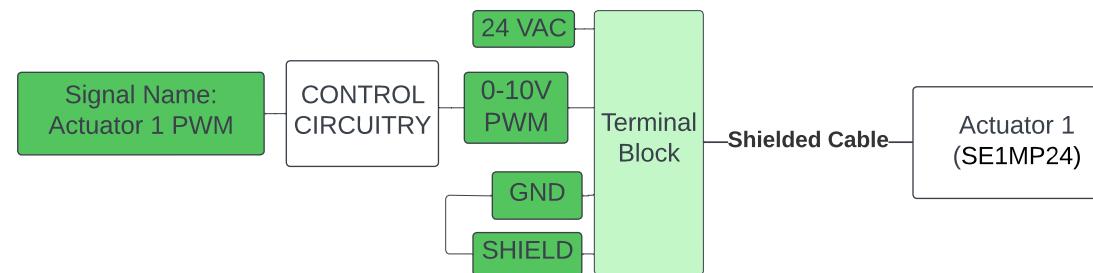
Davinci Product Designs, LLC

Email: CVBartosh@gmail.com

## Zamba Wiring Diagram

Stepper Control x6

# Actuators x4



Changes:

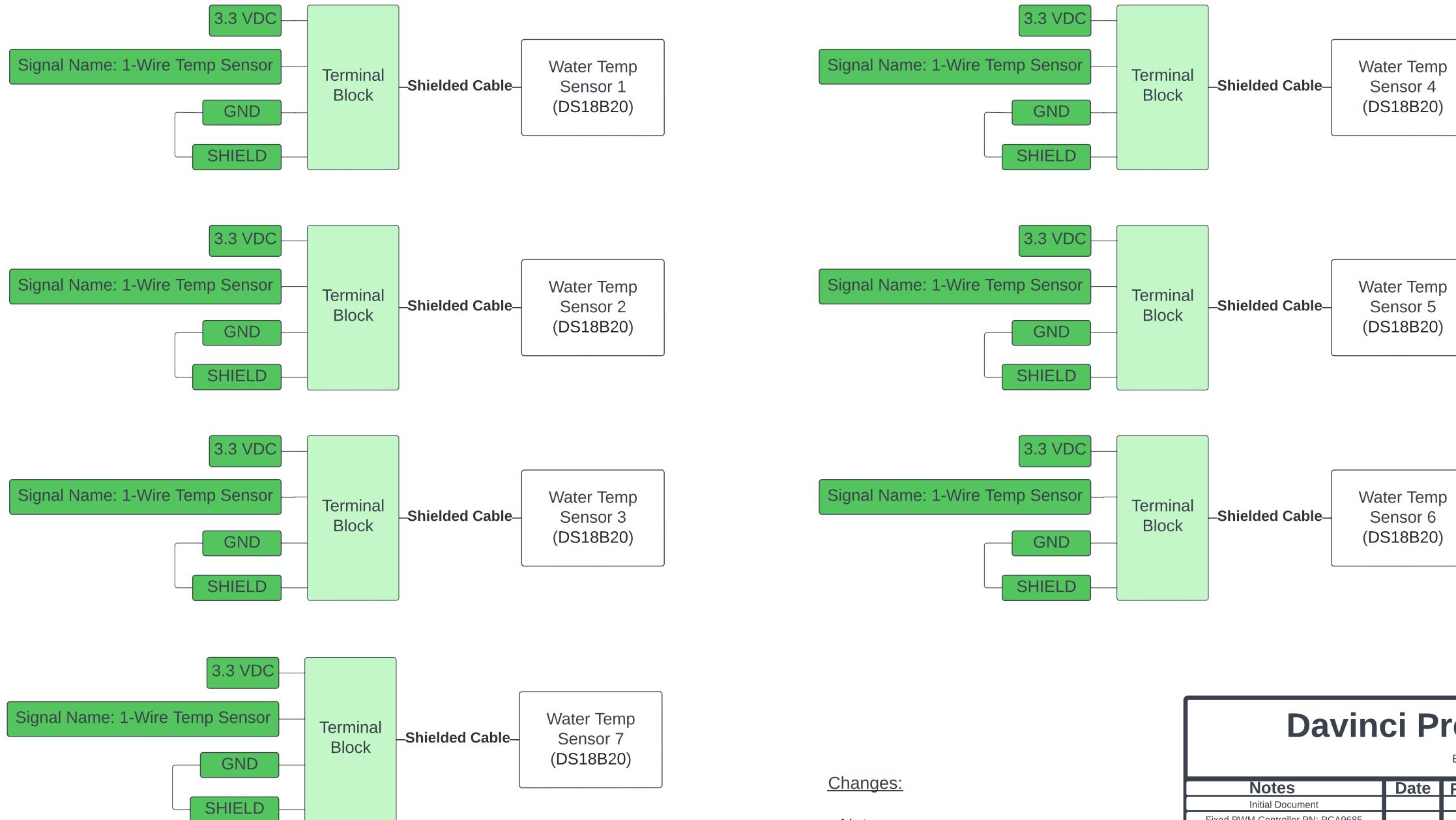
Notes:

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Notes	Date	Rev	Zamba Wiring Diagram
Initial Document		A	
Fixed PWM Controller PN: PCA9685		B	
Added New Stepper IC and GPIO		C	
Documentation Correction		D	
Documentation Correction	1/8/23	E	
Added Stepper 5&6 IO Signals	1/9/23	F	
Adjusted signals for new IO Expander	1/25/23	G	
			Actuators x4
DRAWN BY:	REV	PAGE / TOTAL	
Chris Bartosh	G	6 / 16	

# Water Temperature Sensors x7



Changes:

Notes:

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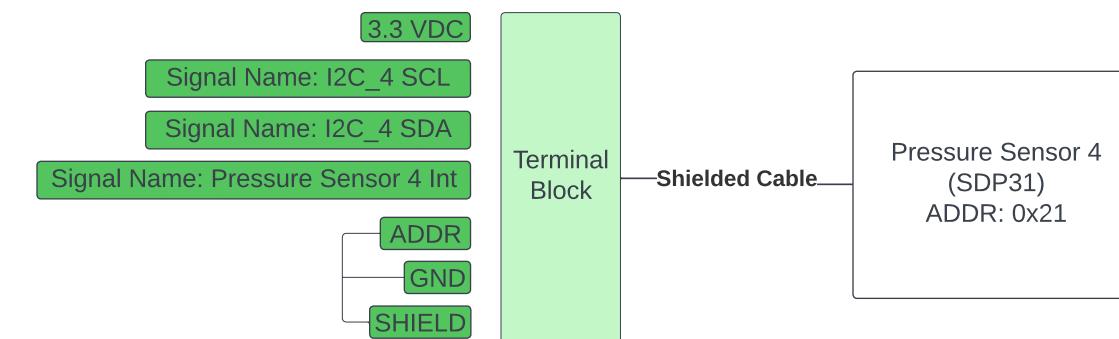
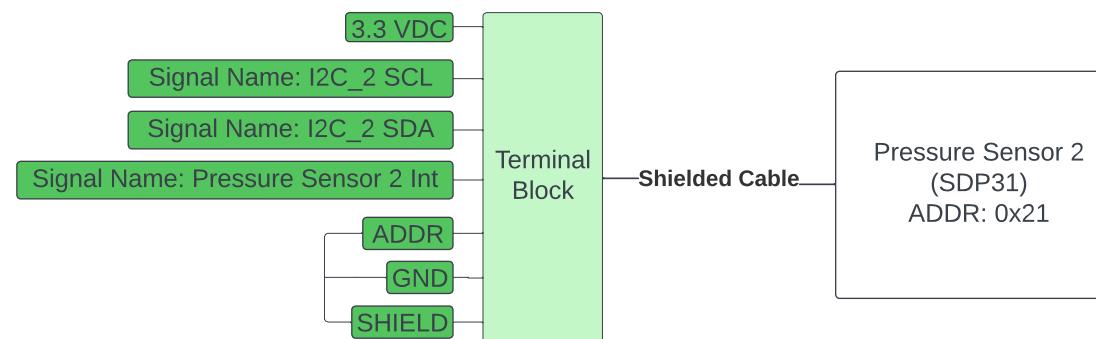
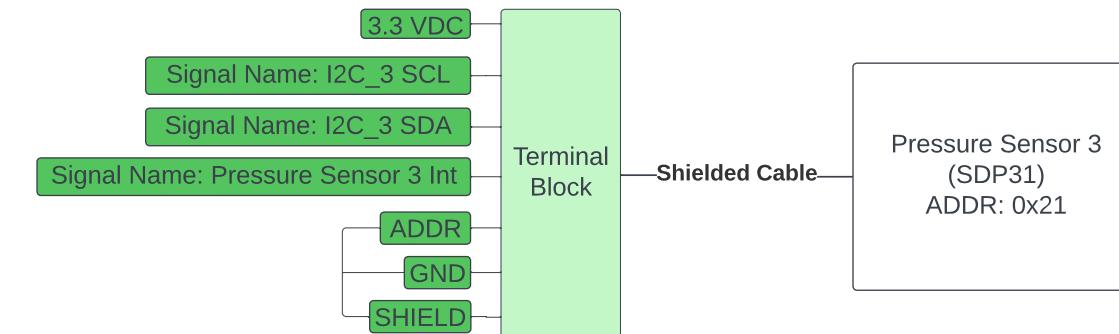
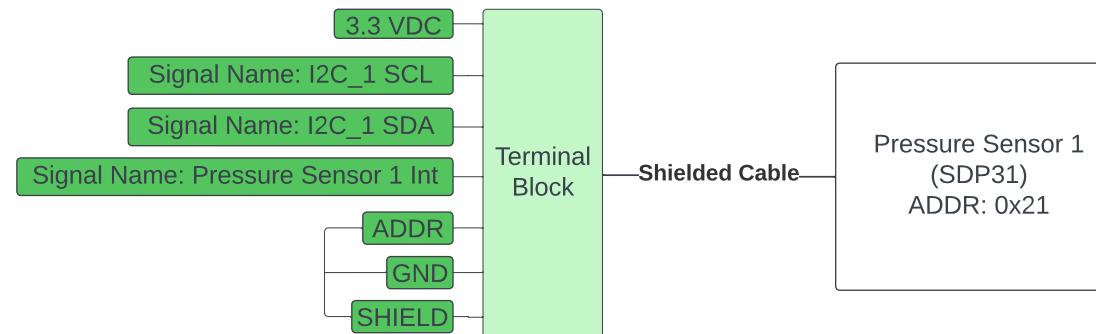
Email: CVBartosh@gmail.com

Notes	Date	Rev
Initial Document		A
Fixed PWM Controller PN: PCA9685		B
Added New Stepper IC and GPIO		C
Documentation Correction		D
Documentation Correction	1/8/23	E
Added Stepper 5&6 IO Signals	1/9/23	F
Adjusted signals for new IO Expander	1/25/23	G

**Zamba Wiring Diagram**  
Water Temperature Sensors x7

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Chris Bartosh	G	7 / 16

# Pressure Sensors x4



Changes:

Notes:

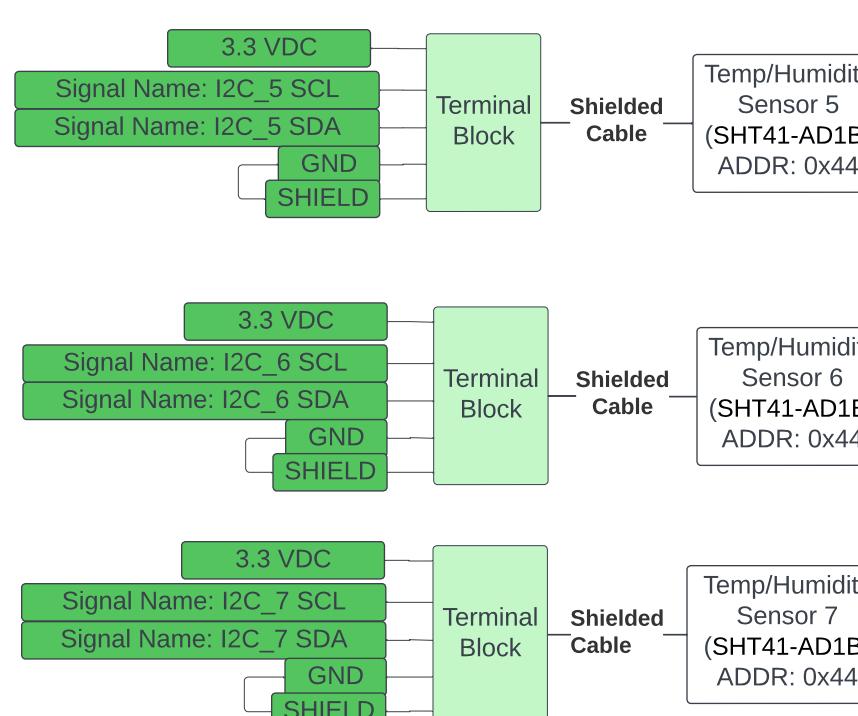
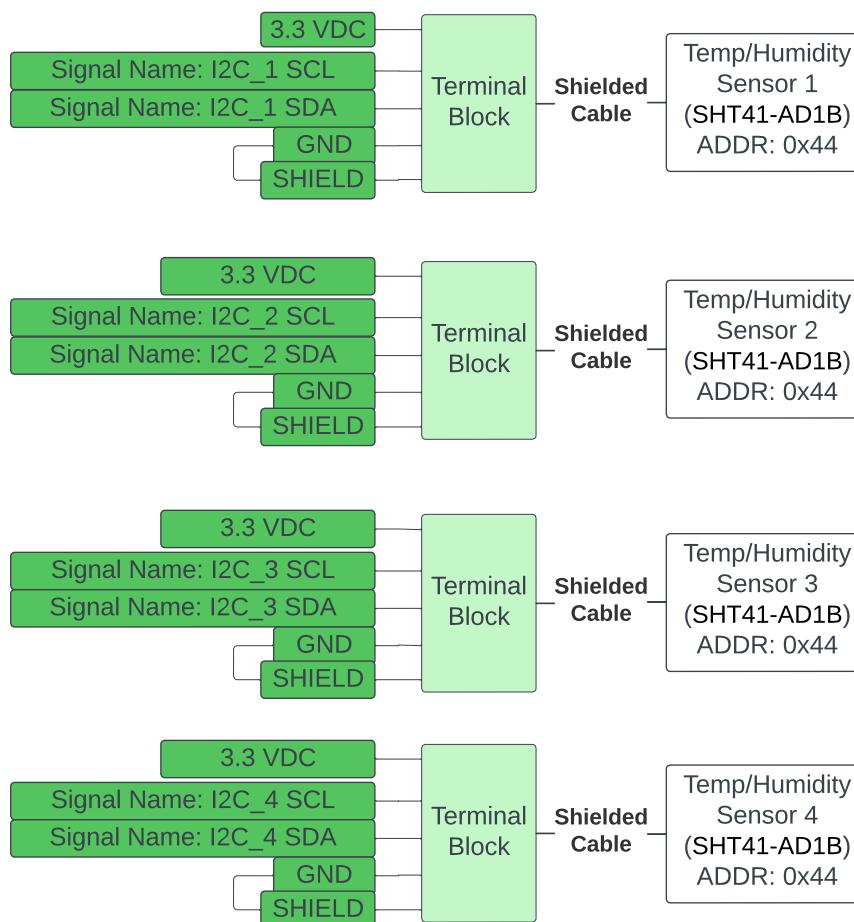
**Davinci Product Designs, LLC**

Email: CVBartosh@gmail.com

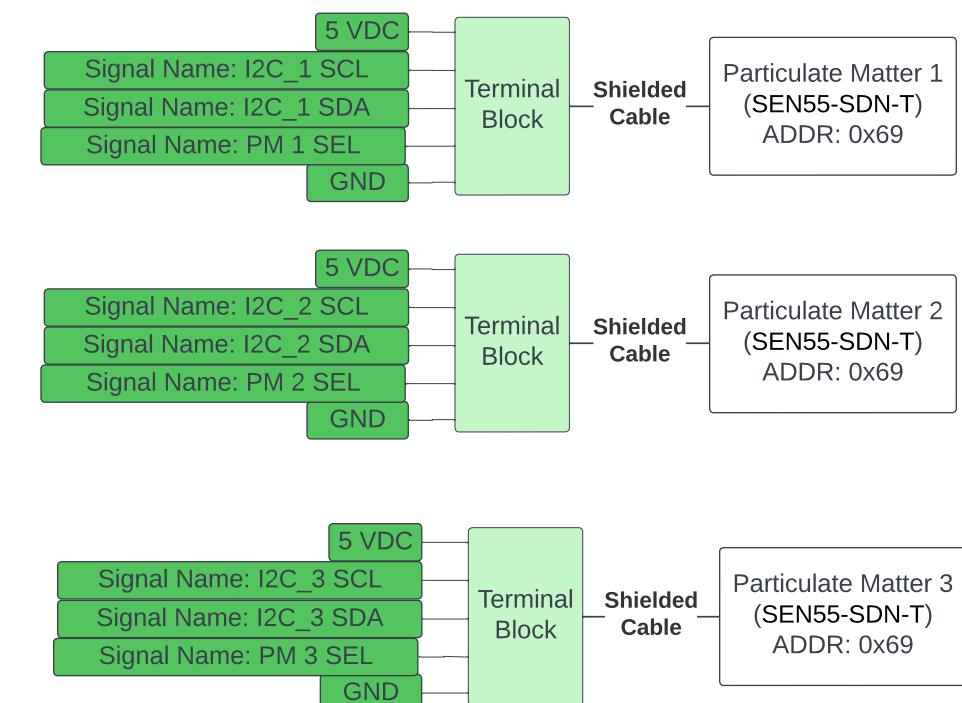
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Initial Document		A	
Fixed PWM Controller PN: PCA9685		B	
Added New Stepper IC and GPIO		C	
Documentation Correction		D	
Documentation Correction	1/8/23	E	
Added Stepper 5&6 IO Signals	1/9/23	F	
Adjusted signals for new IO Expander	1/25/23	G	
			Pressure Sensors x4
DRAWN BY:	REV	PAGE / TOTAL	
Chris Bartosh	G	8 / 16	

# Particulate & Humidity Sensors x10

## Temp/Humidity Sensors x7



## Particulate Sensors x3



Changes:

Notes:

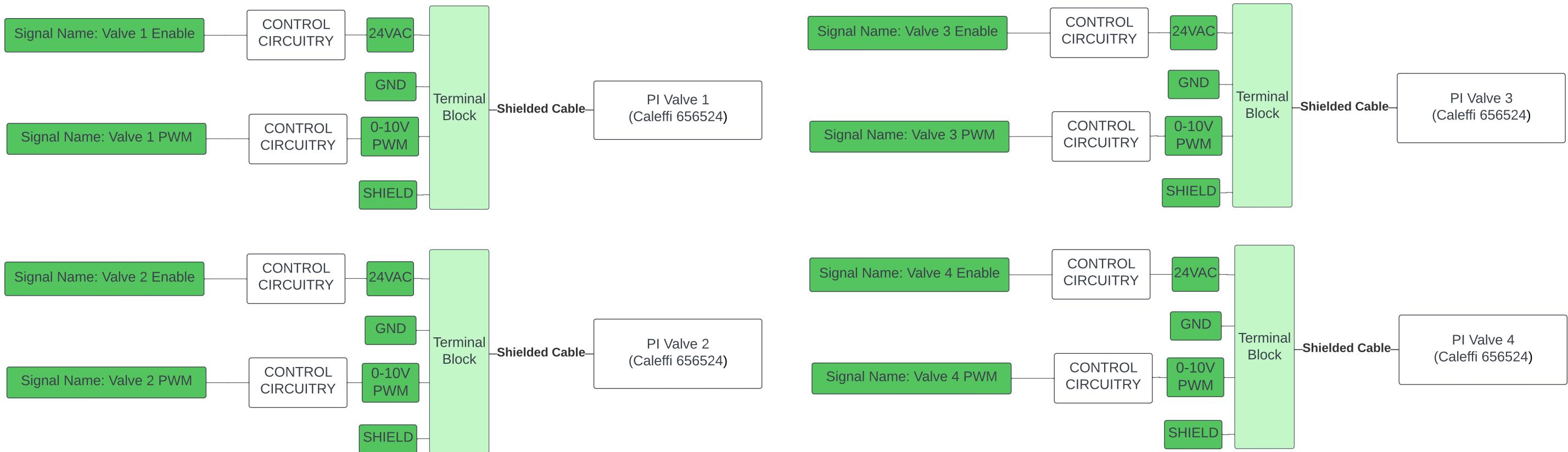
Davinci Product Designs, LLC

Email: CVBartosh@gmail.com

Notes	Date	Rev
Initial Document		A
Fixed PWM Controller PN: PCA9685		B
Added New Stepper IC and GPIO		C
Documentation Correction		D
Documentation Correction	1/8/23	E
Added Stepper 5&6 IO Signals	1/9/23	F
Adjusted signals for new IO Expander	1/25/23	G

Zamba Wiring Diagram		
Particulate & Humidity Sensors x10		
DRAWN BY:	REV	PAGE / TOTAL
Chris Bartosh	G	9 / 16

# Pressure Independent Valves x4



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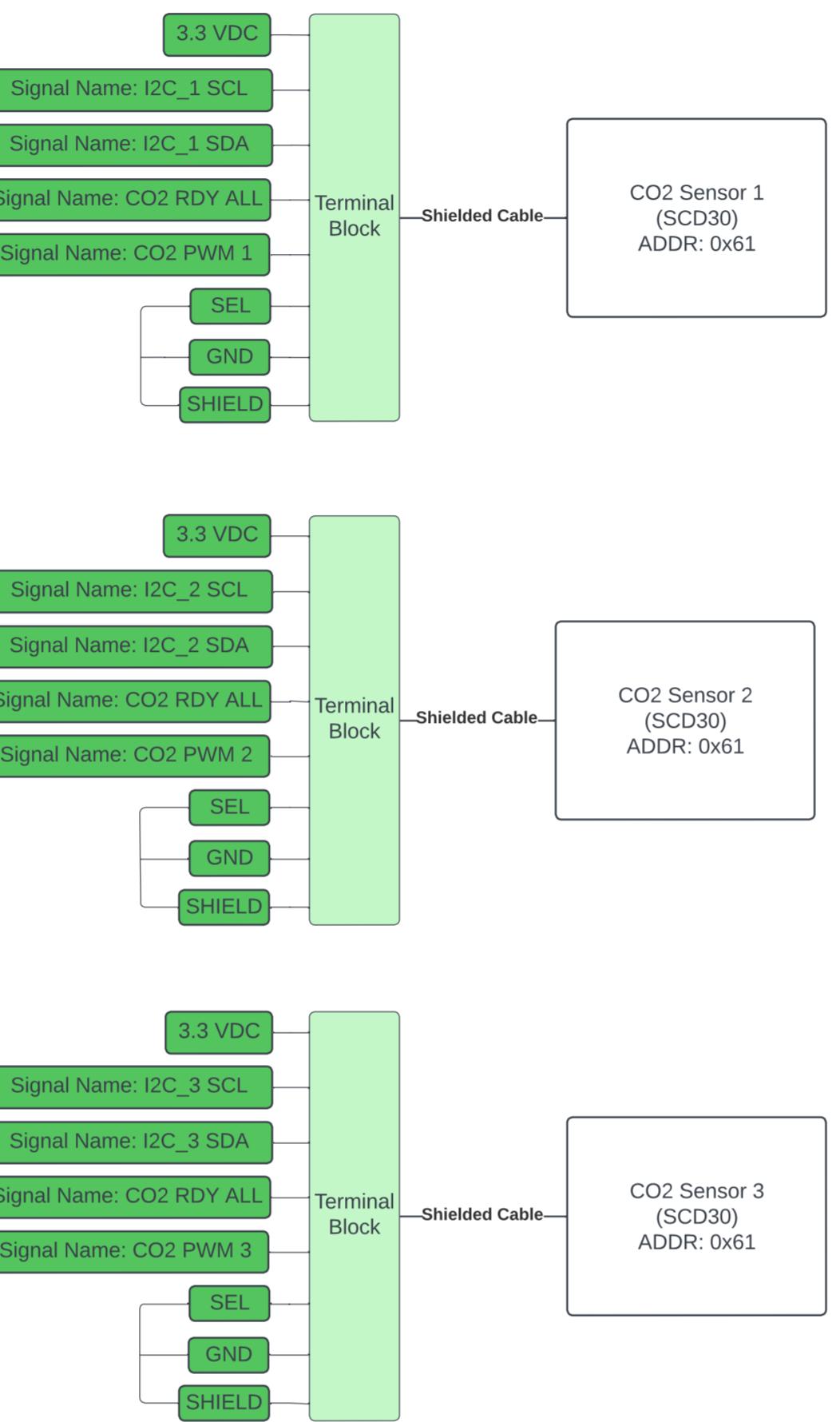
Email: CVBartosh@gmail.com

Notes	Date	Rev
Initial Document		A
Fixed PWM Controller PN: PCA9685		B
Added New Stepper IC and GPIO		C
Documentation Correction		D
Documentation Correction	1/8/23	E
Added Stepper 5&6 IO Signals	1/9/23	F
Adjusted signals for new IO Expander	1/25/23	G

Zamba Wiring Diagram  
Pressure Independent Valves x4

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Chris Bartosh	G	10 / 16

# CO2 Sensors x3



Changes:  
◦ Combined CO2 RDY 1,2 & 3 into single single named "CO2 RDY ALL"

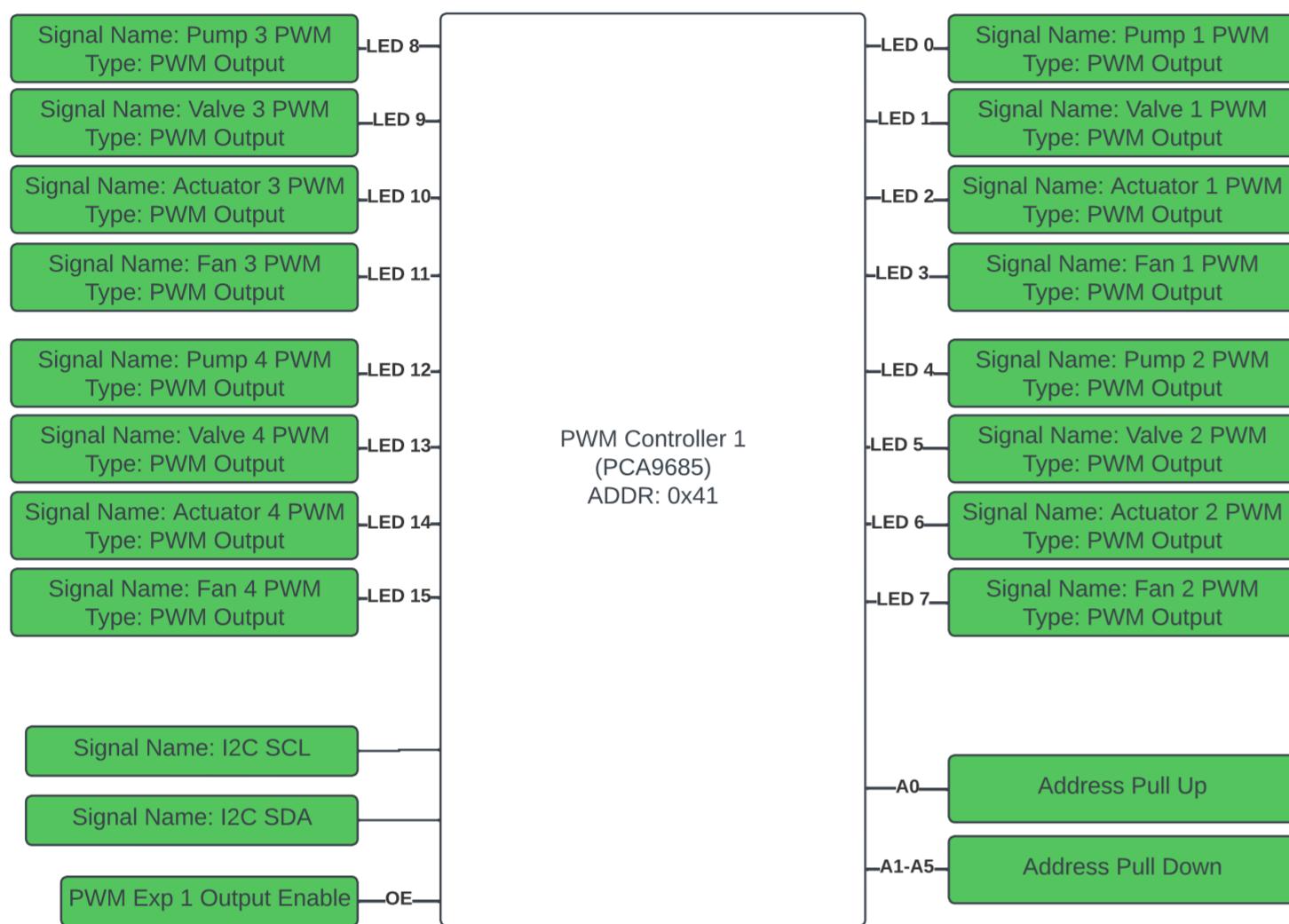
Notes:

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Email: CVBartosh@gmail.com

Notes	Date	Rev	Zamba Wiring Diagram
Initial Document		A	
Fixed PWM Controller PN: PCA9685		B	
Added New Stepper IC and GPIO		C	
Documentation Correction		D	
Documentation Correction	1/9/23	E	
Added Stepper 5&6 IO Signals	1/9/23	F	
Adjusted signals for new IO Expander	1/25/23	G	
DRAWN BY:	REV	PAGE / TOTAL	CO2 Sensors x3
Chris Bartosh	G	11 / 16	

# PWM Driver x1



Changes:

Notes:

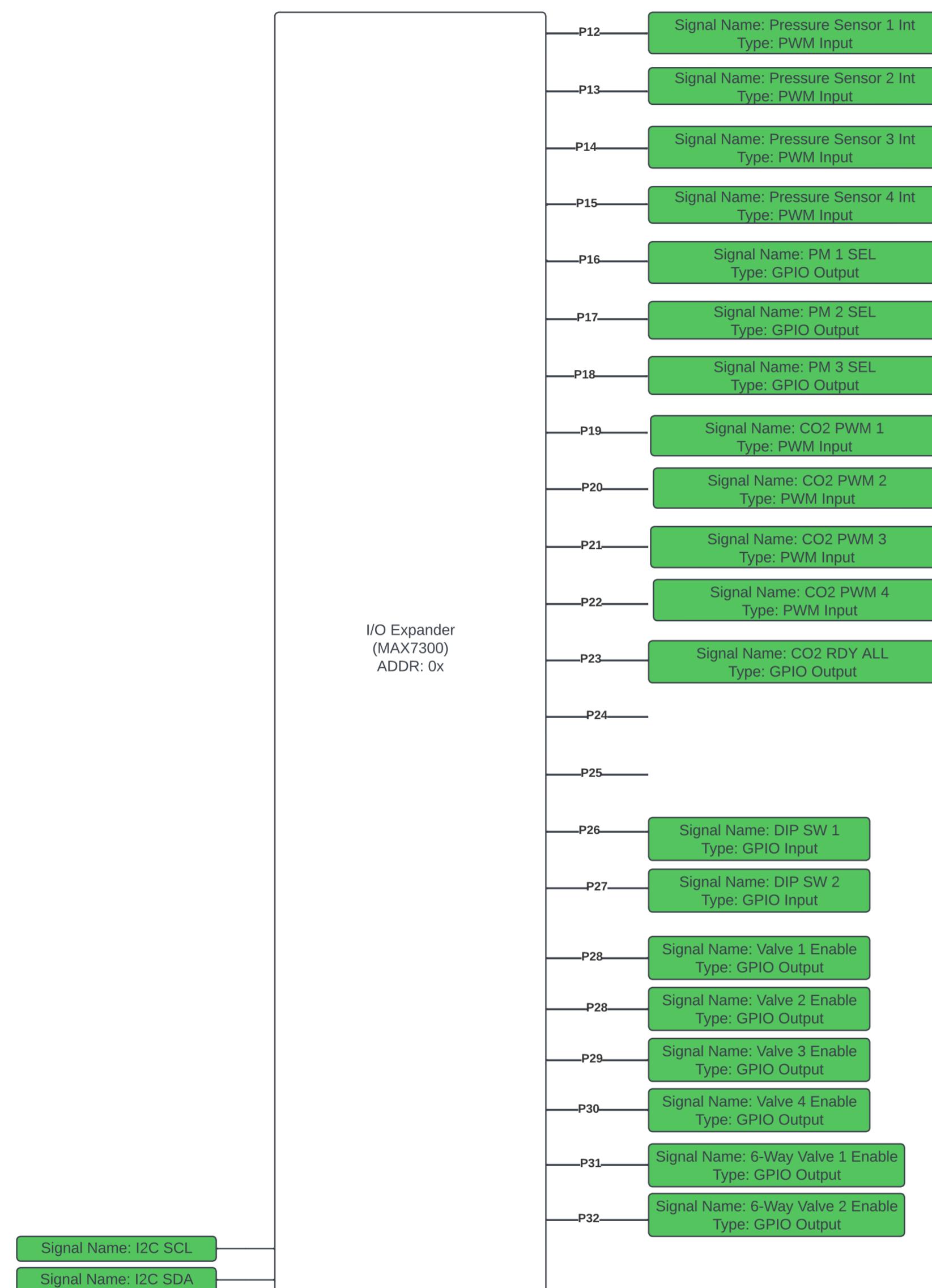
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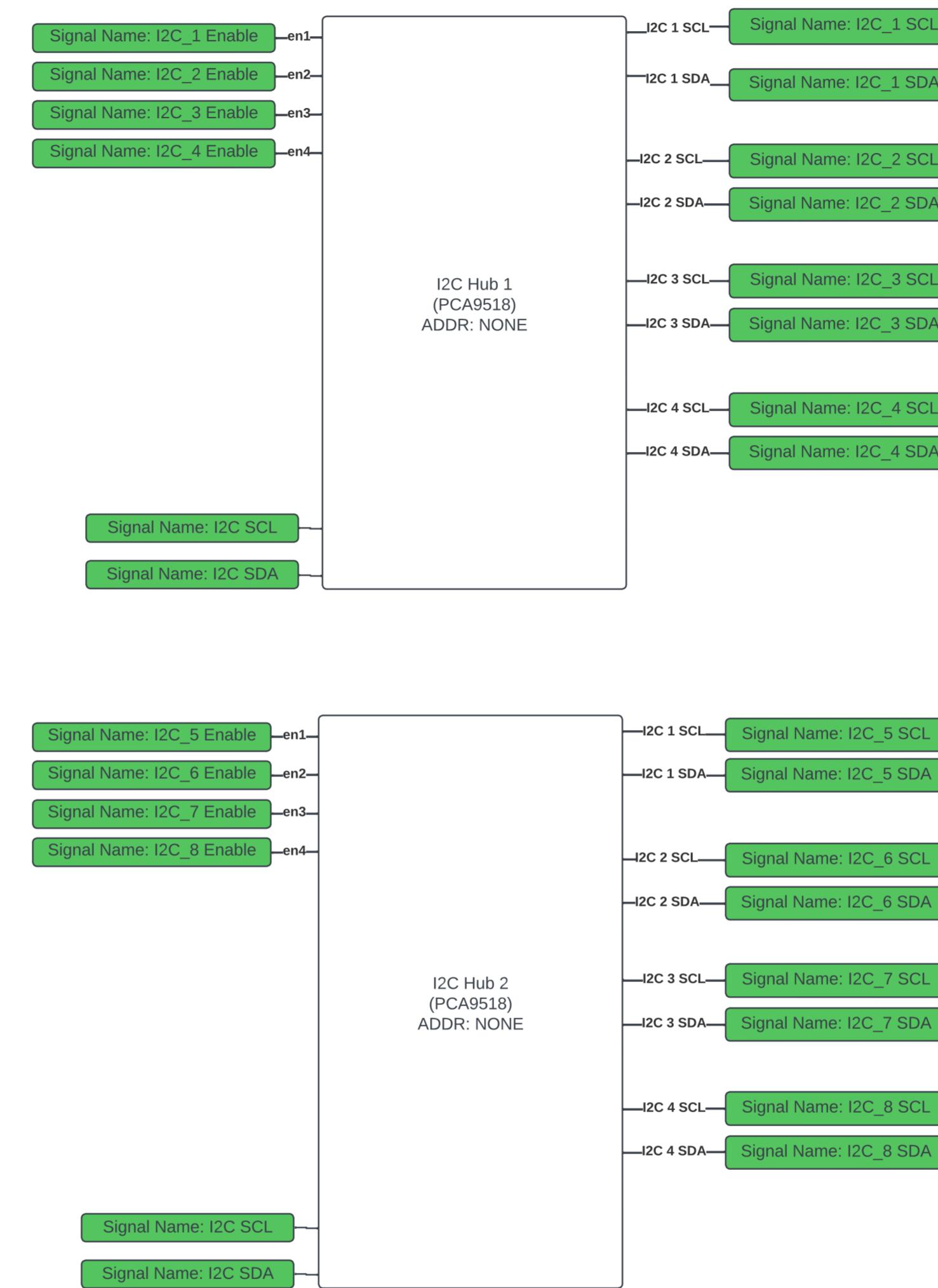
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Fixed PWM Controller Page PCA9685	12/20/2022	B	
Added New Stepper IC and GPIO		C	
Documentation Correction		D	
Documentation Correction	1/8/23	E	
Added Stepper 5&6 IO Signals	1/9/23	F	
Adjusted signals for new IO Expander	1/25/23	G	
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Chris Bartosh	G	12 / 16	

# IO Expander x1 & I2C Hubs x2

## IO Expander x1



## I2C Hub x2



### Changes:

- Rewired IO Expander for new 28P version
  - Assigned P12 to "Pressure Sensor 1 Int"
  - Assigned P13 to "Pressure Sensor 2 Int"
  - Assigned P14 to "Pressure Sensor 3 Int"
  - Assigned P15 to "Pressure Sensor 4 Int"
    - Assigned P16 to "PM 1 SEL"
    - Assigned P17 to "PM 2 SEL"
    - Assigned P18 to "PM 3 SEL"
    - Assigned P19 to "CO2 PWM 1"
    - Assigned P20 to "CO2 PWM 2"
    - Assigned P21 to "CO2 PWM 3"
    - Assigned P22 to "CO2 PWM 4"
    - Assigned P23 to "DIP SW 1"
    - Assigned P26 to "DIP SW 2"
    - Assigned P27 to "Valve 1 Enable"
    - Assigned P28 to "Valve 2 Enable"
    - Assigned P29 to "Valve 3 Enable"
    - Assigned P30 to "Valve 4 Enable"
    - Assigned P31 to "6-Way Valve 1 Enable"
    - Assigned P32 to "6-Way Valve 2 Enable"

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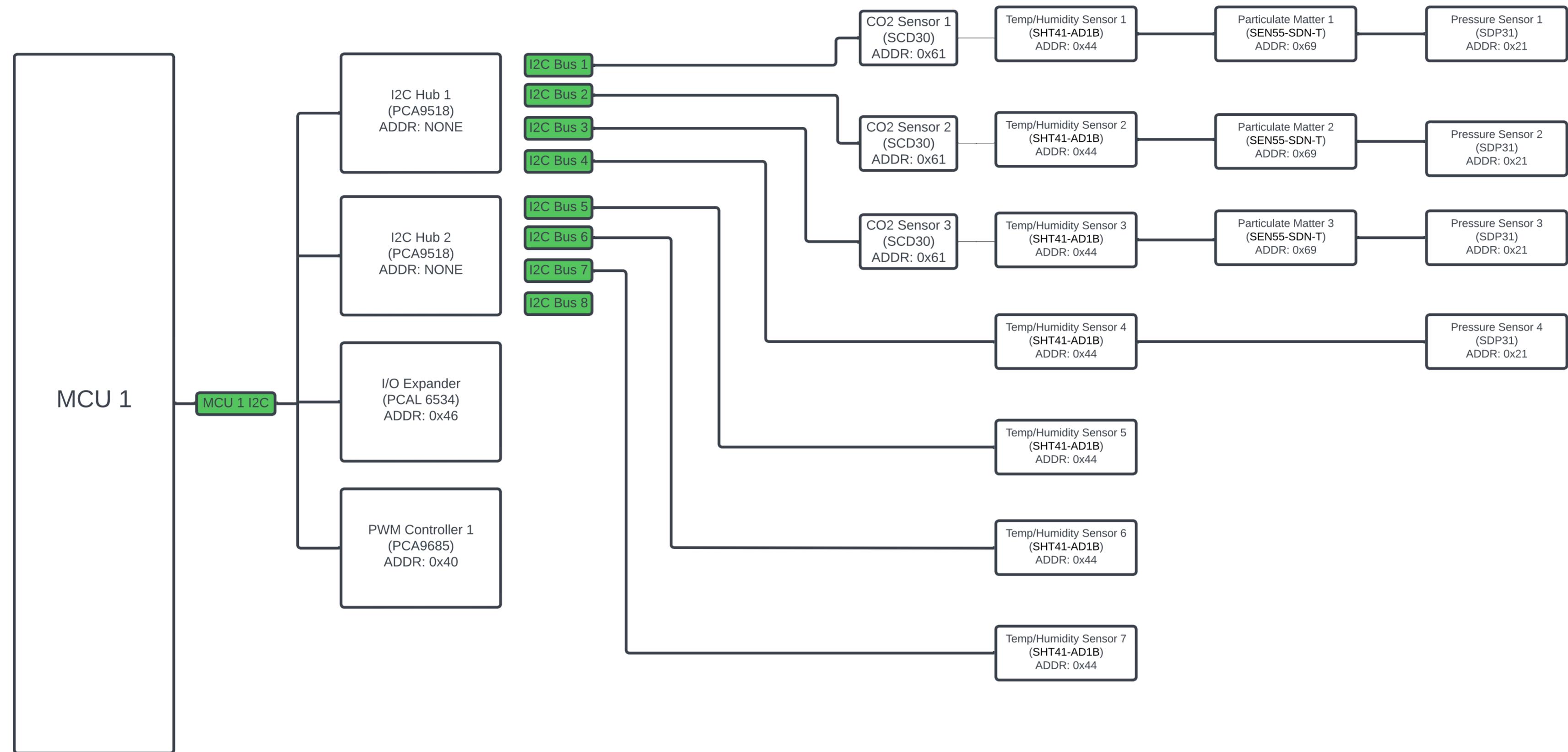
Email: CVBartosh@gmail.com

Notes	Date	Rev
Initial Document		A
Fixed PWM Controller PN: PCA9685		B
Added New Stepper IC and GPIO		C
Documentation Correction		D
Documentation Correction	1/8/23	E
Added Stepper 5&6 IO Signals	1/9/23	F
Adjusted signals for new IO Expander	1/25/23	G

Zamba Wiring Diagram  
IO Expander x1 & I2C Hubs x2

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Chris Bartosh	G	13 / 16

# I2C Communications Map

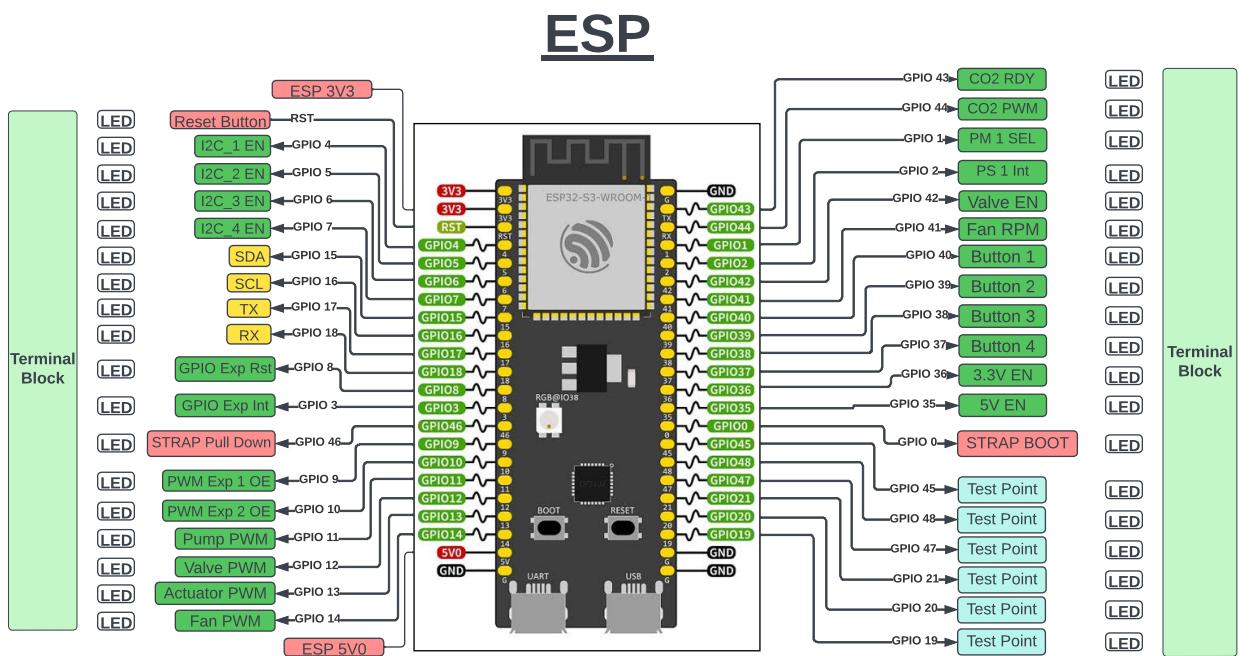


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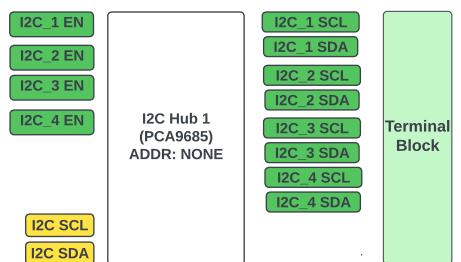
Email: CVBartosh@gmail.com

Notes	Date	Rev	Zamba Wiring Diagram
Initial Document		A	
Fixed PWM Controller PN: PCA9685		B	
Added New Stepper IC and GPIO		C	
Documentation Correction		D	
Documentation Correction	1/9/23	E	
Added Stepper 5&6 IO Signals	1/9/23	F	
Adjusted signals for new I/O Expander	1/25/23	G	
			I2C Communications Map
DRAWN BY:	REV	PAGE / TOTAL	
Chris Bartosh	G	14 / 16	

# Expansion Board



## I2C Hub



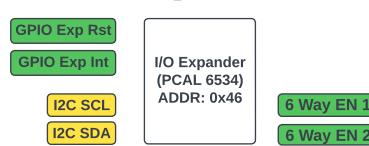
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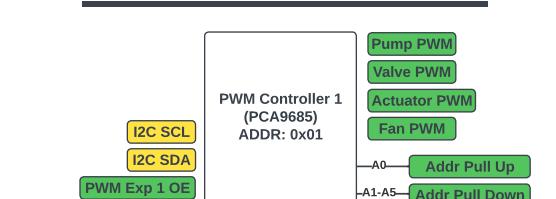
I2C



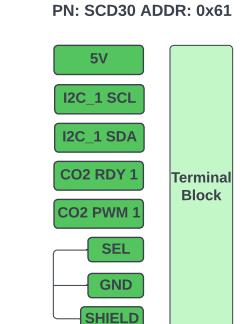
# I/O Expander



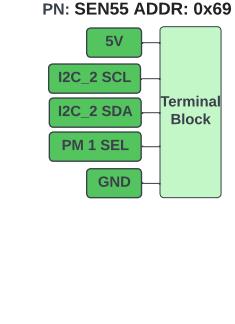
# PWM Controller



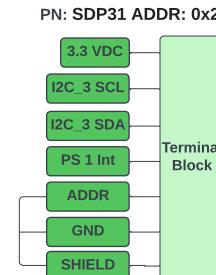
## CO2 Senso



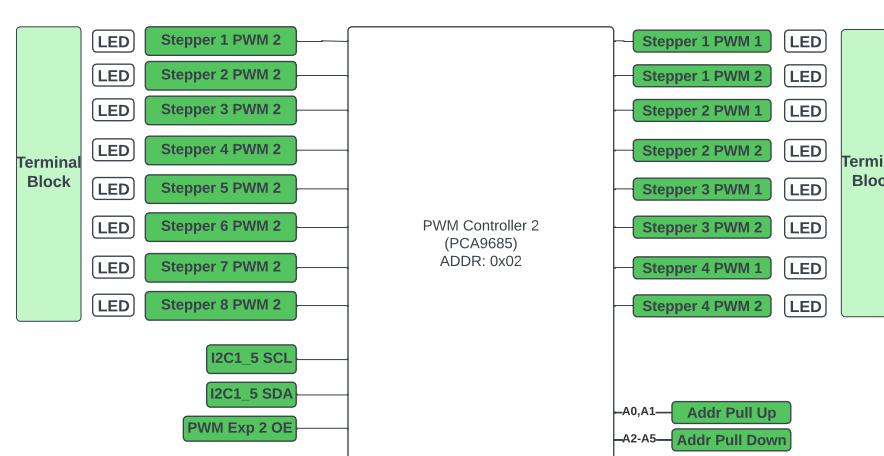
PM Sensor



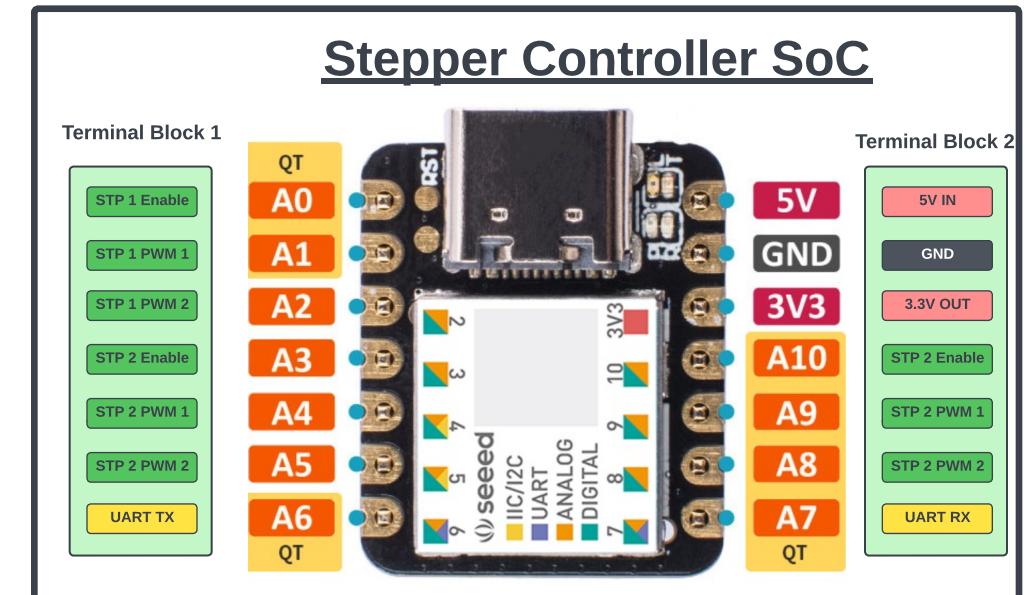
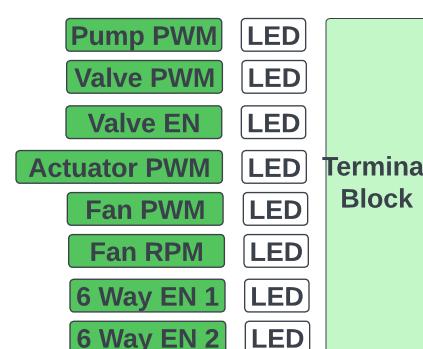
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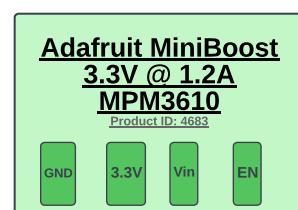
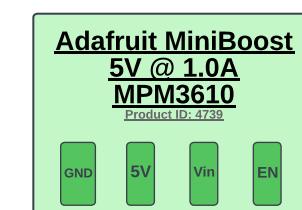
## PWM Controller



# Motor Controls



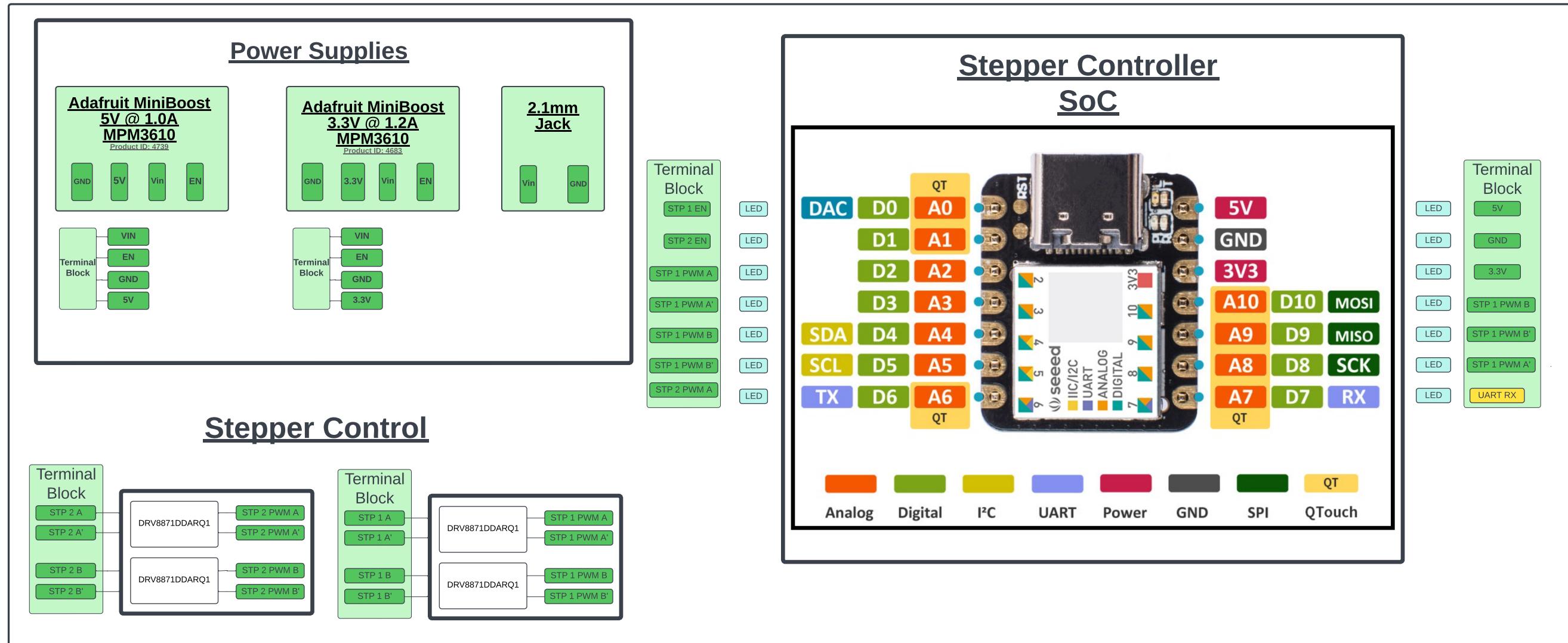
## Power Supplies



Davinci Product Designs, LLC

Email: CVBartosh@gmail.com

# Stepper Controller SoC Expander



**Davinci Product Designs, LLC**

Email: CVBartosh@gmail.com

Notes	Date	Rev
Initial Document		A
Fixed PWM Controller PN: PCA9685		B
Added New Stepper IC and GPIO		C
Documentation Correction		D
Documentation Correction	1/8/23	E
Added Stepper 5&6 IO Signals	1/9/23	F
Adjusted signals for new IO Expander	1/25/23	G

**Zamba Wiring Diagram**  
Stepper Controller SoC Expander

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Chris Bartosh	G	16 / 16