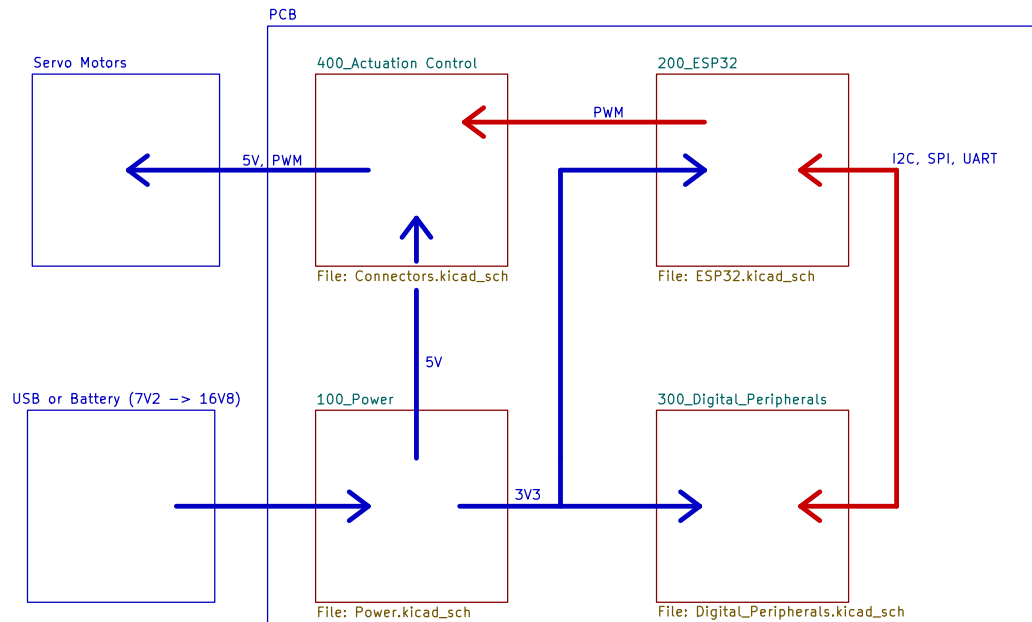


## Project Block Diagram



## Project Goals:

- Be able to power 12 servos plus all on board electronics.
- Have power switching between USB and Battery.
- Have long range radio for communication.
- Use GPS, barometer, magnetometer, gyroscope, and accelerometer to perform sensor fusion.
- Use JTAG for debugging embedded software.
- Be programmable through the ESP-IDF programming framework.
- Able to be used in a variety of robotic systems: quadrupeds, drones, rockets, and fixed wings.

## ToDo's:

- Fix block diagram (it is outdated)

Sheet: /  
File: MCU\_AURA.kicad\_sch

**Title: MCU AURA**

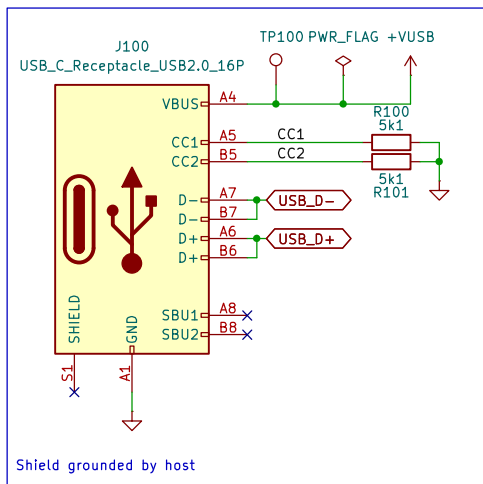
Size: A4 Date: 25-05-2025

KiCad E.D.A. 9.0.2

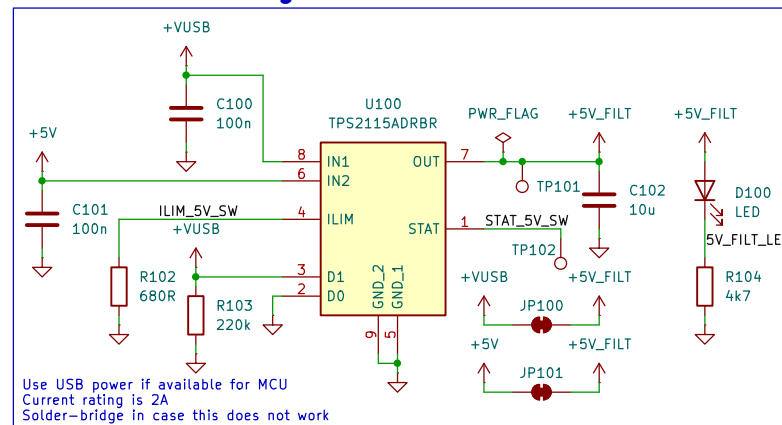
**Rev: 0.0.1**

Id: 1/5

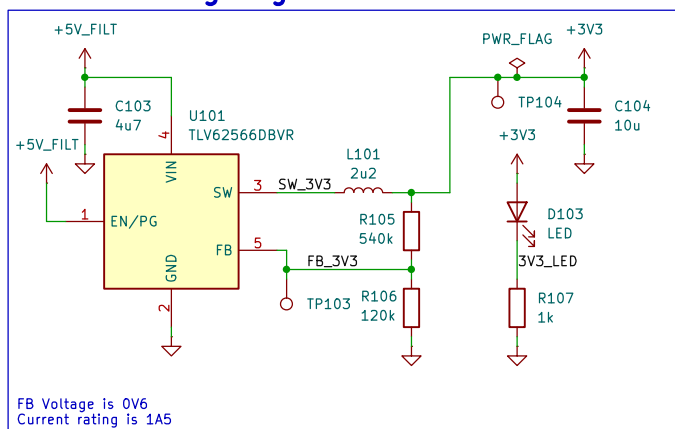
## USB



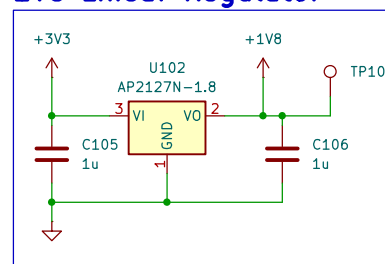
## 5V Power switching



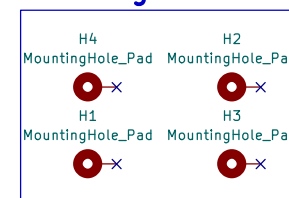
## 3V3 Switching Regulator



## 1V8 Linear Regulator



## Mounting



Sheet: /100\_Power/  
File: Power.kicad\_sch

**Title: Power Delivery**

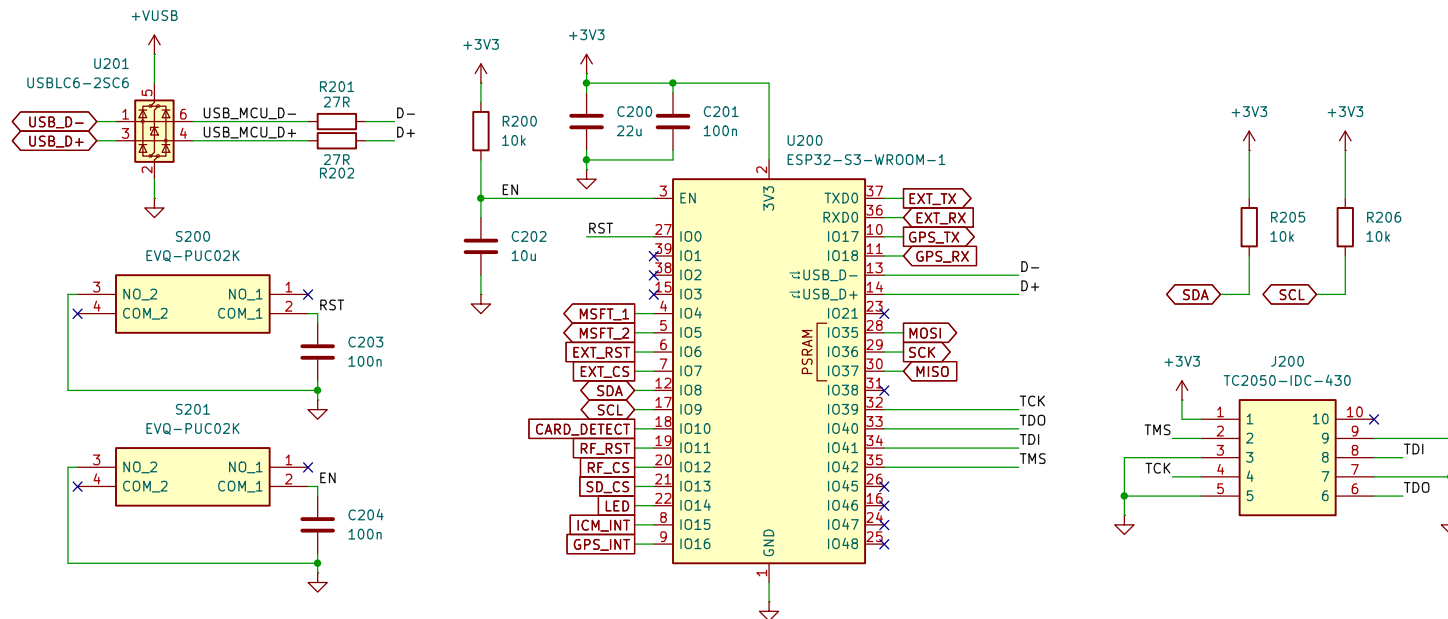
Size: A4 Date: 07-05-2025

KiCad E.D.A. 9.0.2

**Rev: 0.0.1**

Id: 2/5

## ESP32-S3



The PSRAM is not used on the ESP32-S3-WROOM-1-N8 so is used for SPI  
 UART0 may interfere with USB and sends signals on start up so UART1 is used for GPS

Sheet: /200\_ESP32/  
 File: ESP32.kicad\_sch

**Title: ESP32-S3-WROOM-1-N8**

Size: A4

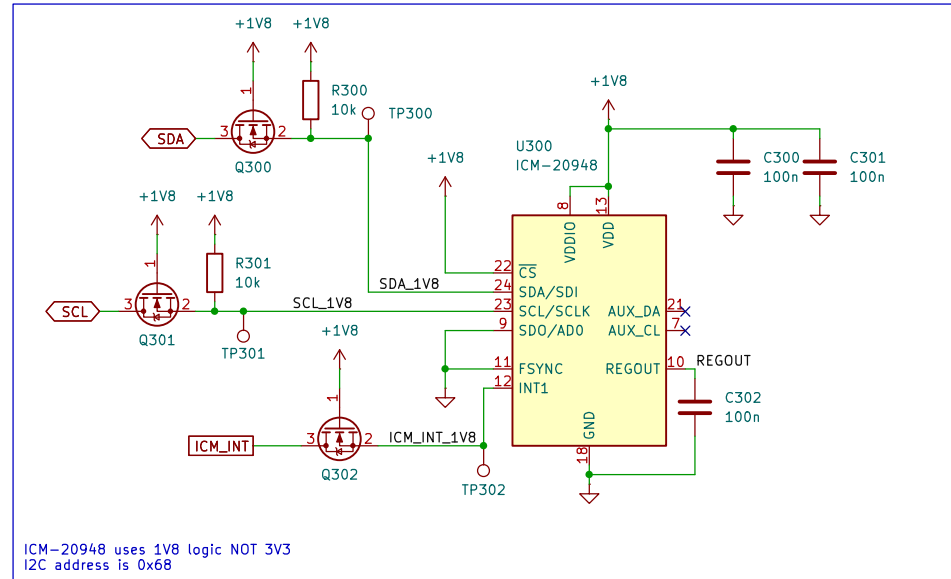
Date: 25-05-2025

Rev: 0.0.1

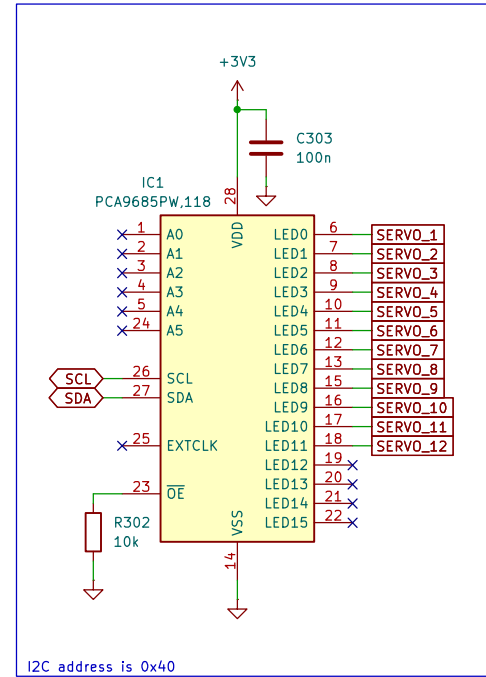
KiCad E.D.A. 9.0.2

Id: 3/5

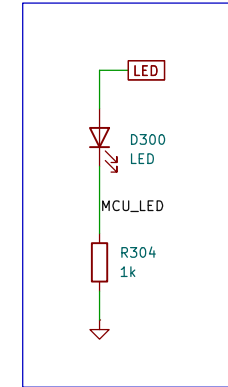
## ICM-20948 IMU I2C



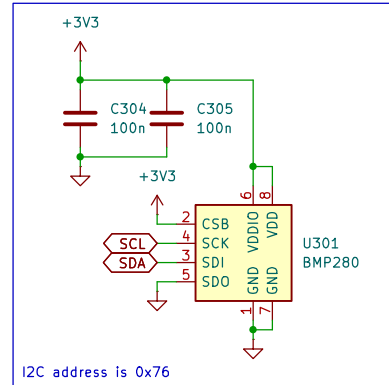
## Servo Multiplexer



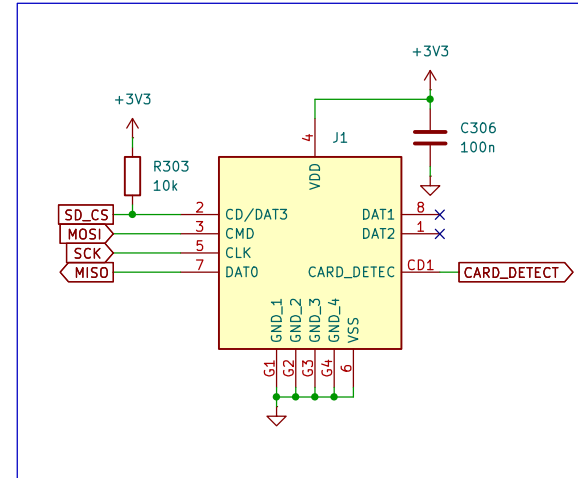
## LED



## BMP280 I2C



## SD Card SPI



Sheet: /300\_Digital\_Peripherals/  
File: Digital\_Peripherals.kicad\_sch

**Title: Digital Peripherals**

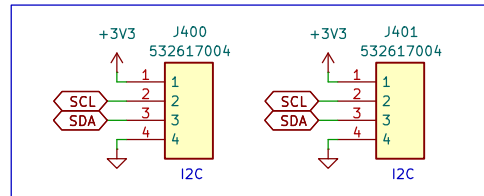
Size: A4 Date: 17-05-2025

KiCad E.D.A. 9.0.2

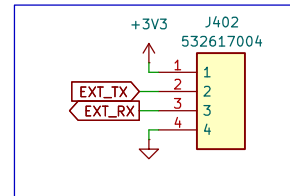
Rev: 0.0.1

Id: 4/5

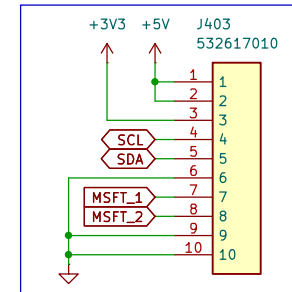
## I2C Connectors



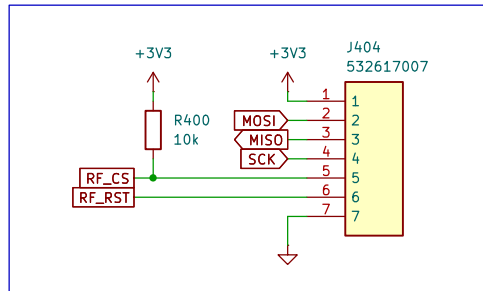
## UART Connector



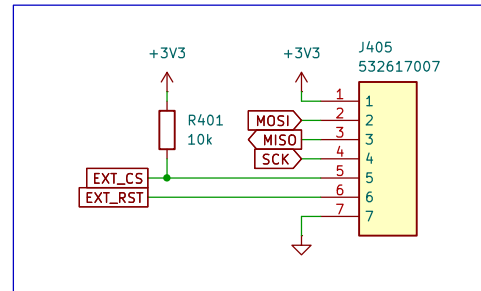
## PDB Connector



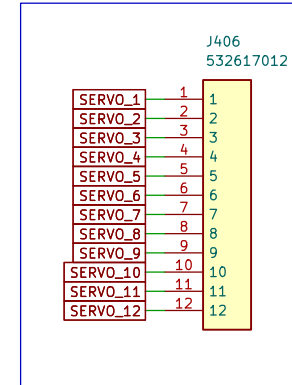
## RF Connector



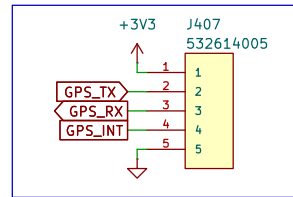
## SPI Connector



## Servo Outputs



## GPS Connector



Sheet: /400\_Actuation Control/  
File: Connectors.kicad\_sch

### Title: Actuator Outputs

Size: A4

Date: 08-05-2025

Rev: 0.0.1

KiCad E.D.A. 9.0.2

Id: 5/5