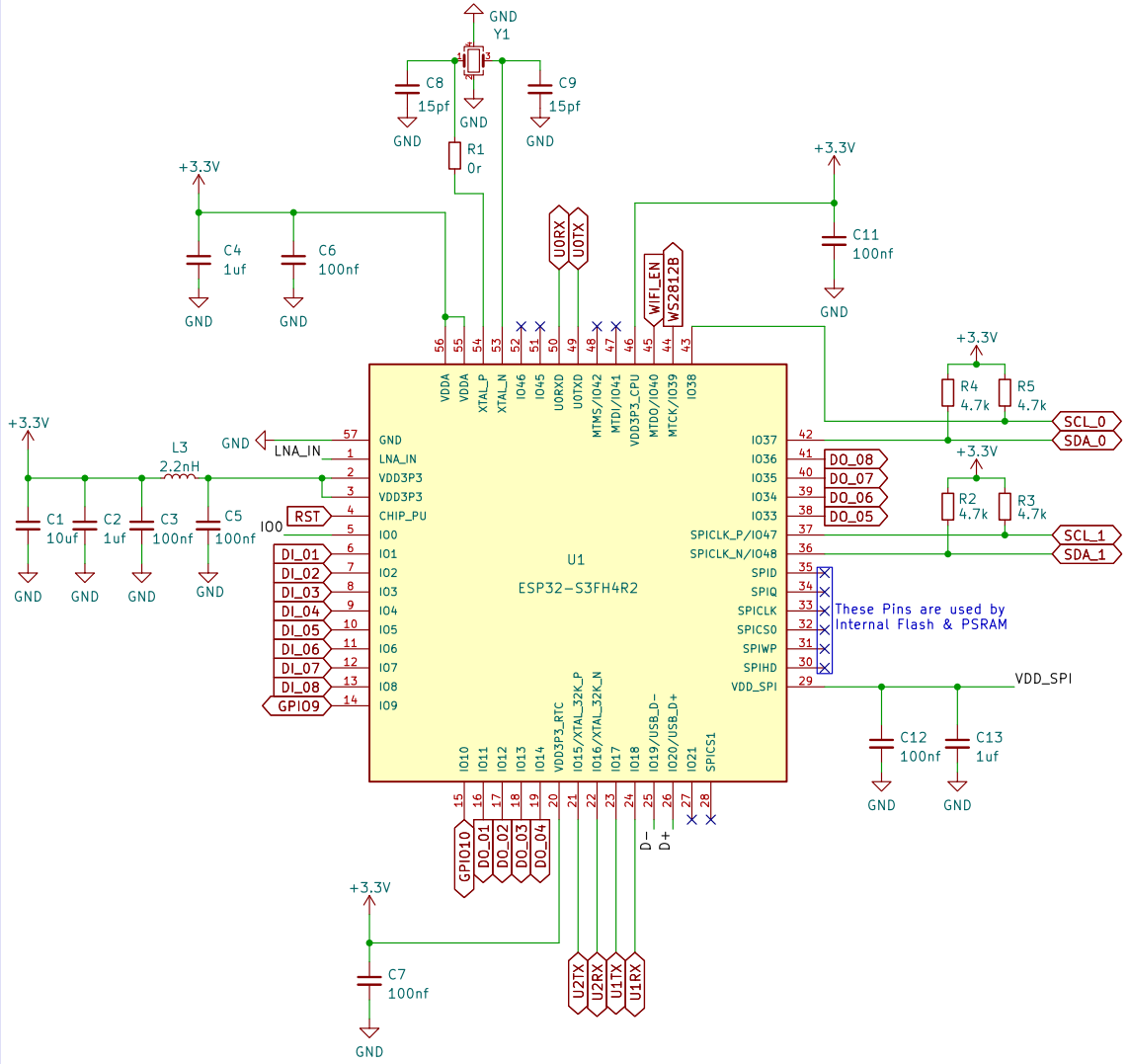
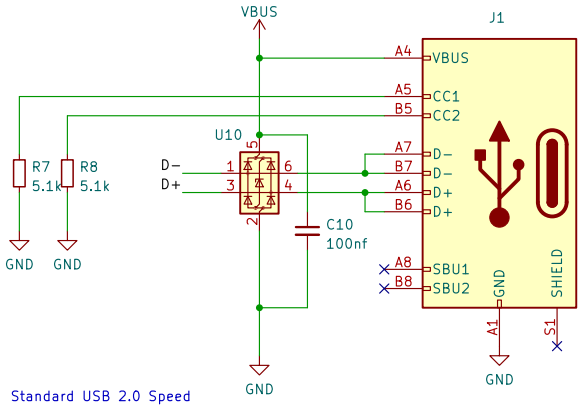
ESP32-S3

Notes:
Schematic design from reference hardware guide line.
Design based from model with internal flash and psram
Model: ESP32-S3FH4R2
See ESP-32-S3 Datasheet for pin details
JLCPCB VIA thickness is 0.018mm
Calculated via current for 0.2mm hole is 1.12A

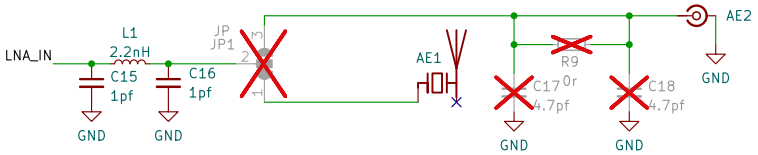


USB-C



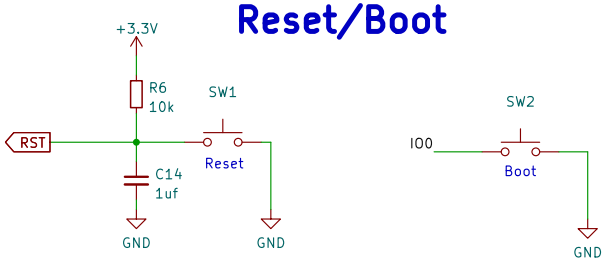
Standard USB 2.0 Speed

Antenna Ufl/chip



Tool used to calculate filter:
https://www.eeweb.com/tools/pi-match/

Reset/Boot



ModBee
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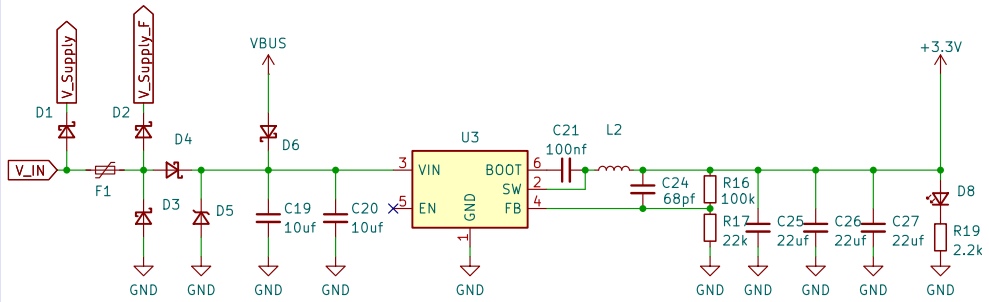
Sheet: /
File: Modbee-Node-UIO.kicad_sch

Title: ModBee Node UIO

Size: A4	Date: 2025-05-16	**Rev: 0.01**
KiCad E.D.A. 9.0.1		Id: 1/5

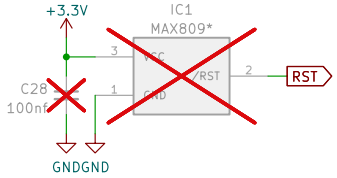
Synchronous Buck

5–24v Supply



Voltage Supervisor

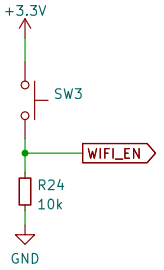
Monitor 3.3v rail and switch off
MCU automatically or reset
while being powered from 1s Batt



WIFI/RESET

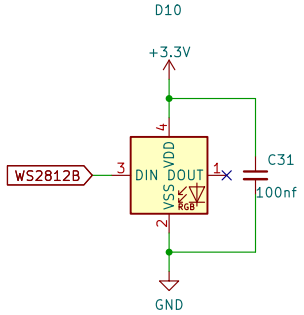
Short Press Enable WIFI
for set time

Long Press Reset EEPROM
Press > 30sec



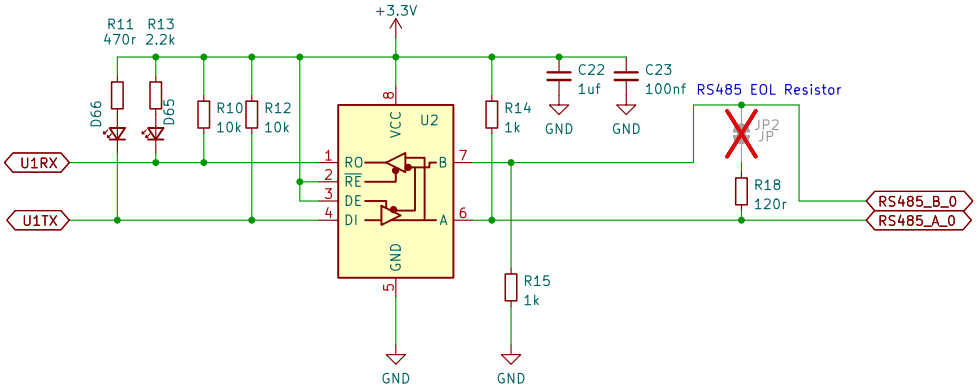
Status LED

Green = MCU OK
Red = Fault
Blue = Status



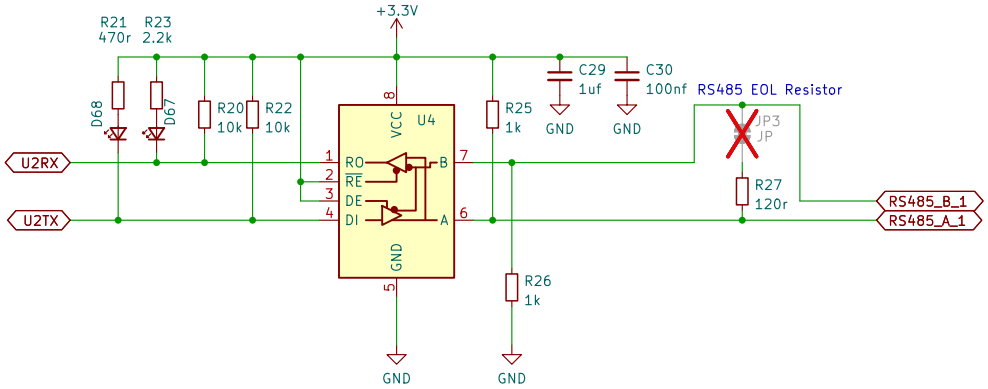
RS485 Transceiver CH1

Cut Bridge to disable 120ohm EOL termination resistor



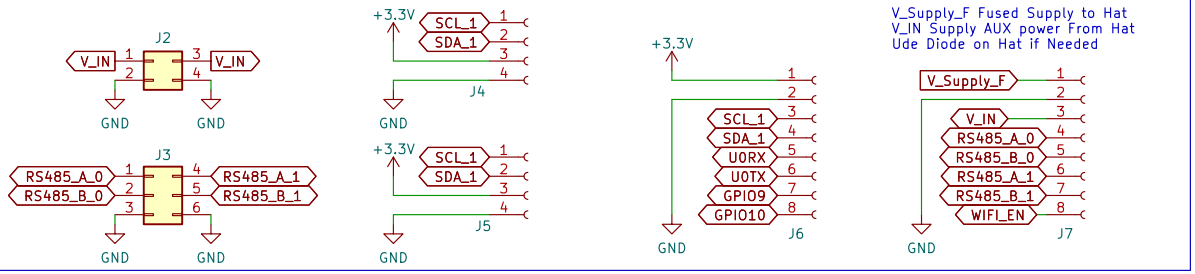
RS485 Transceiver CH2

Cut Bridge to disable 120ohm EOL termination resistor



Grove Connectors I2C 3.3V MAX

Stackable Header Pins for Hats



H1 H2

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Title: ModBee Node UIO

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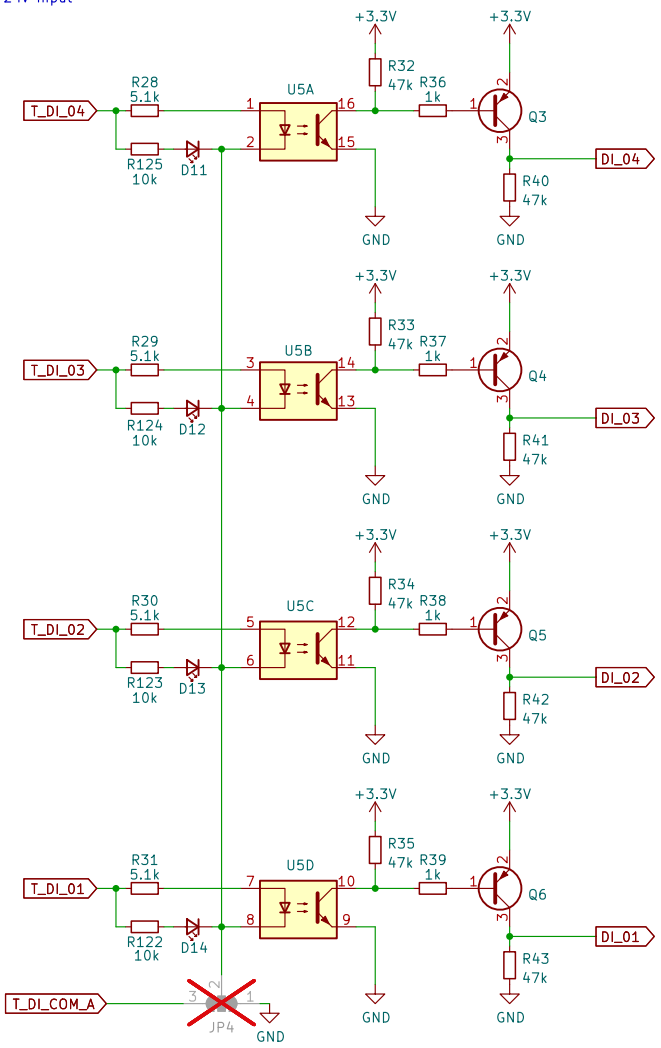
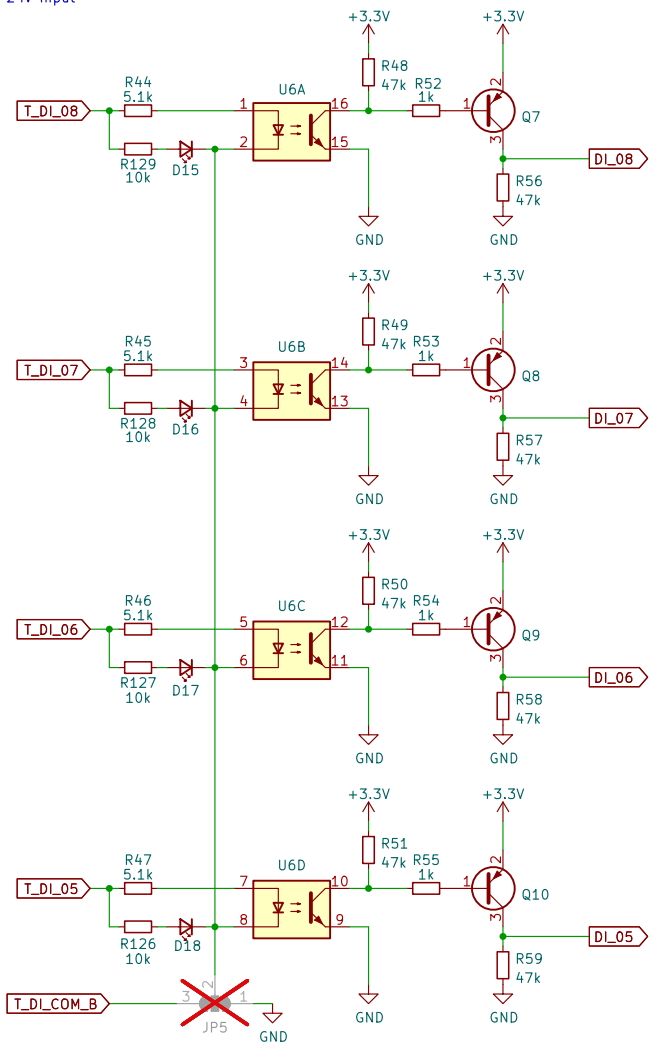
A Digital Inputs 1–4

Cut bridge 1&2 to use isolated supply
5–24v Input

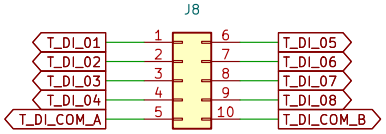


B Digital Inputs 5–8

Cut bridge 1&2 to use isolated supply
5–24v Input



10 Pin Plug Terminal



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Sheet: /Digital_Inputs/
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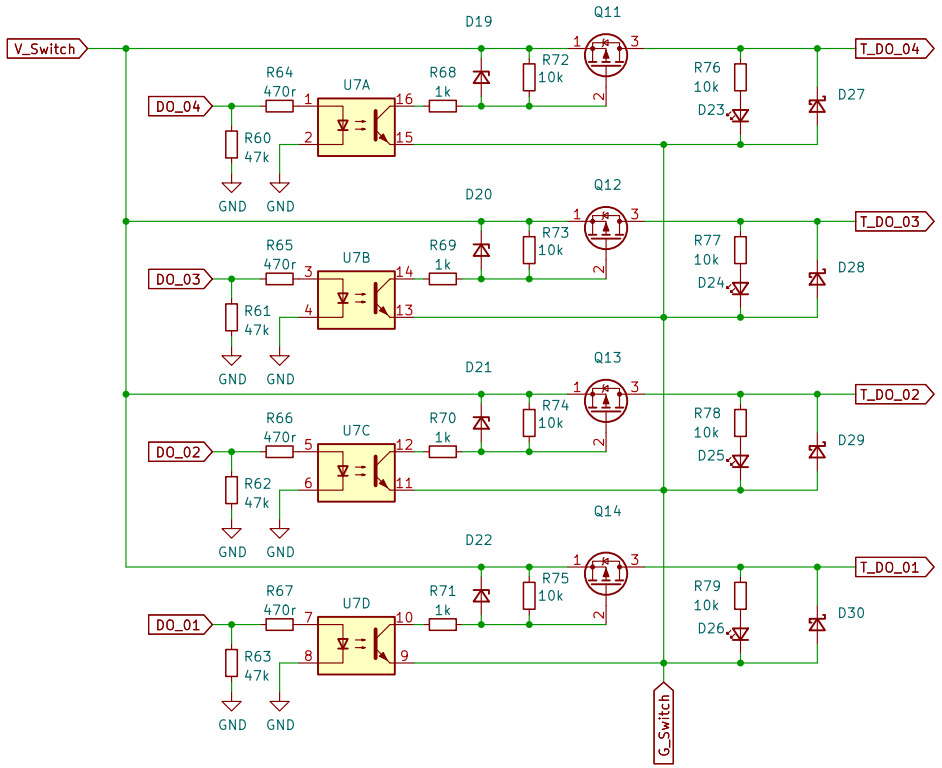
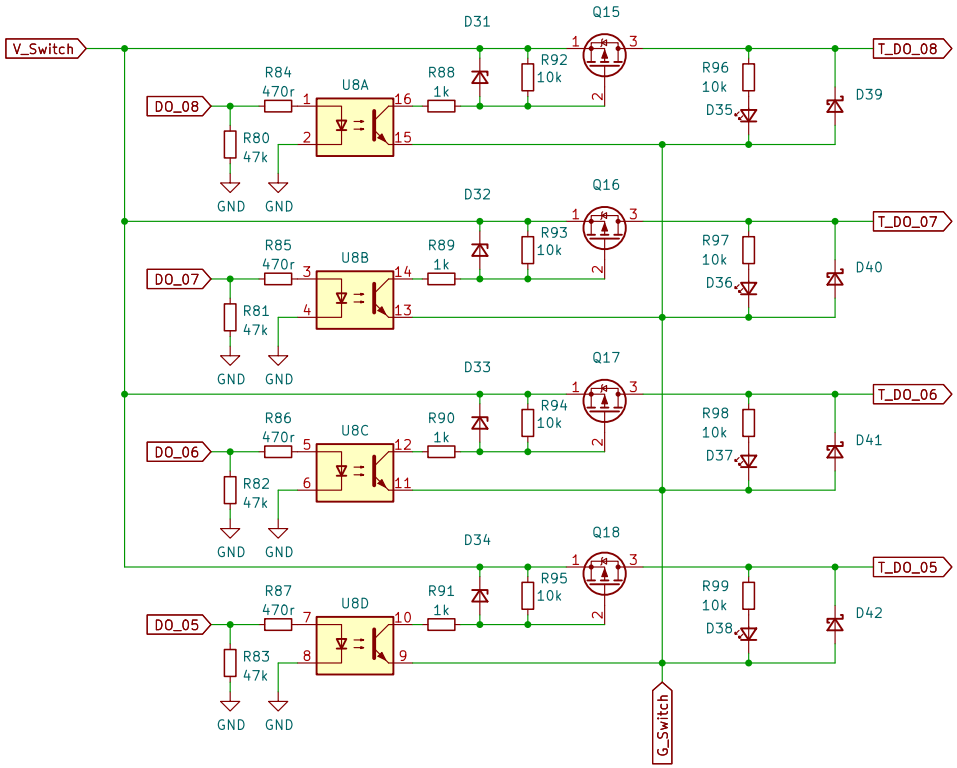
A Digital Outputs 1–4

5–24v Outputs switched from Input Supply by default 100ma MAX per output
If jumpers cut or seperate supply wire used in terminal 5 500ma MAX per output



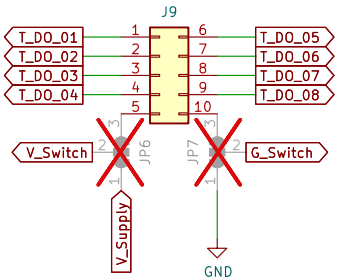
B Digital Outputs 5–8

5–24v Outputs switched from Input Supply by default 100ma MAX per output
If jumpers cut or seperate supply wire used in terminal 5 500ma MAX per output



10 Pin Plug Terminal

Cut Bridge 1&2 to use an Isolated seperate supply and Ground



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Sheet: /Digital_Outputs/
File: Digital_Outputs.kicad_sch

Title: ModBee Node UIO

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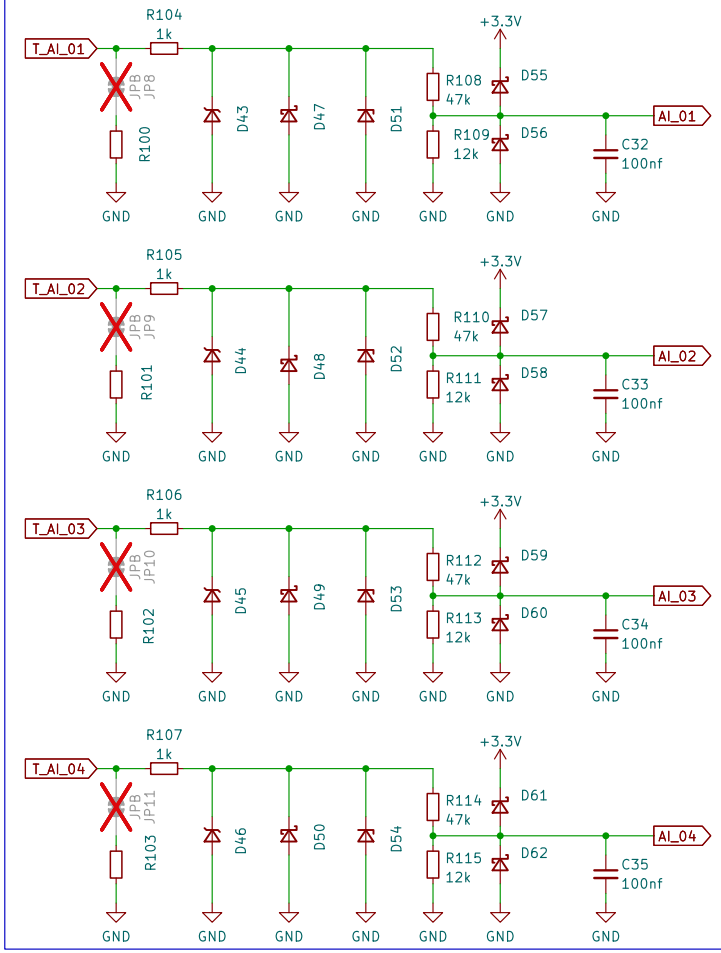
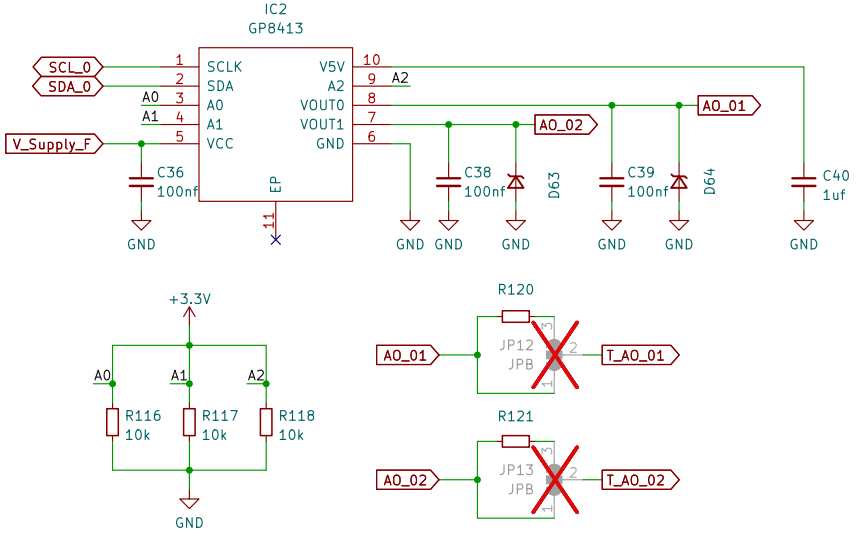
0-20ma/0-10v Analog Inputs

0-20ma Default Cut Bridge to use 0-10v



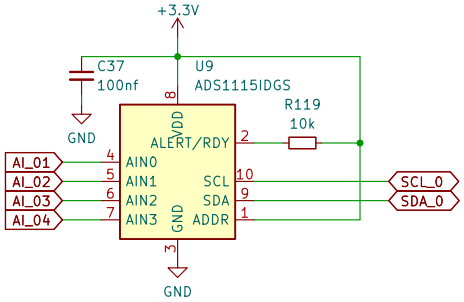
0-20ma/0-10v Analog Outputs

0-10v Default Cut Bridge 1&2 to use 0-20ma
Default I2c Address 0x5F



ADS1115 16bit ADC

Use GAIN_TWO (for an input range of +/-2.048V)
Default I2c Address 0x49



Plug In Terminals

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Sheet: /Analog_IO/
File: Analog_IO.kicad_sch

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