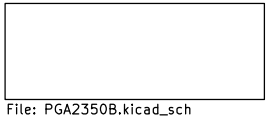
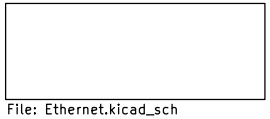
PGA2350B



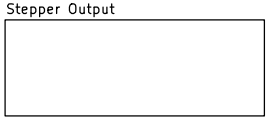
File: PGA2350B.kicad_sch

Ethernet



File: Ethernet.kicad_sch

Stepper Output

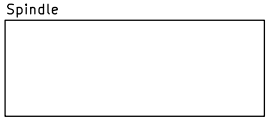


File: StepperOutput.kicad_sch

Misc IO

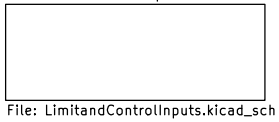
File: MiscIO.kicad_sch

Spindle



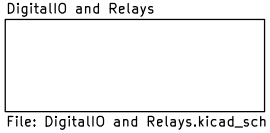
File: Spindle.kicad_sch

Limit and Control inputs



File: LimitandControlInputs.kicad_sch

DigitalIO and Relays



File: DigitalIO and Relays.kicad_sch

Power

File: power.kicad_sch

Servo_error

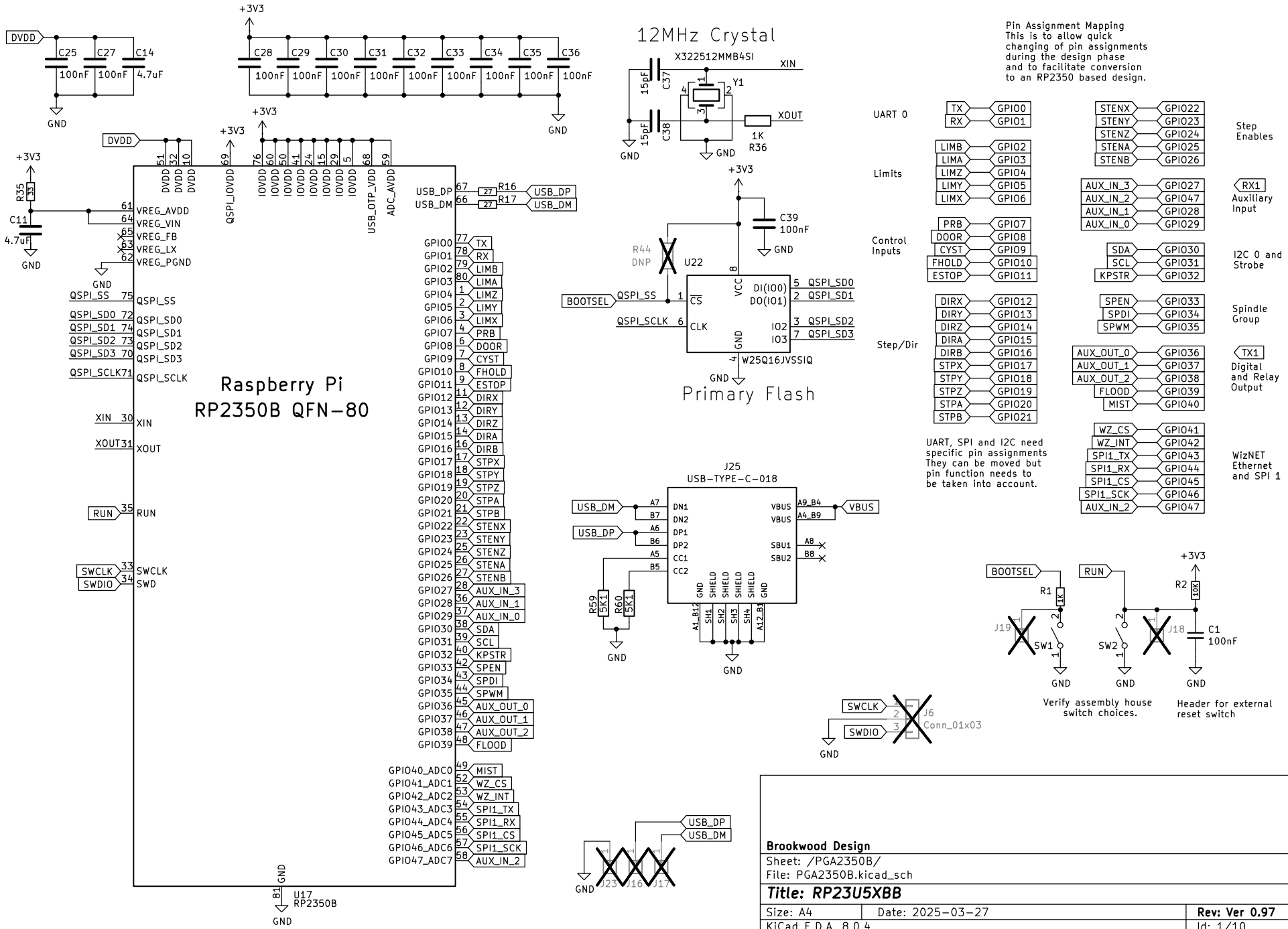
File: servo_error.kicad_sch

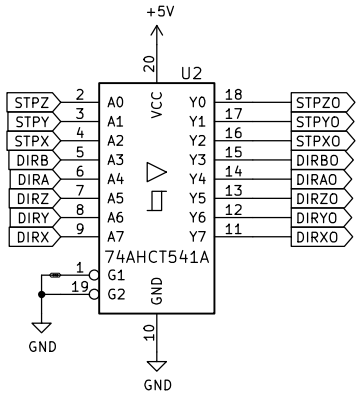
Brookwood Design

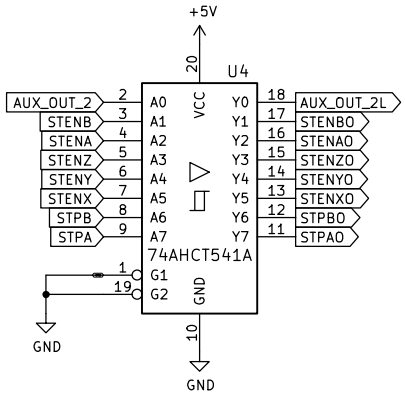
Sheet: /
File: PGA2350.kicad_sch

Title: RP23U5XBB

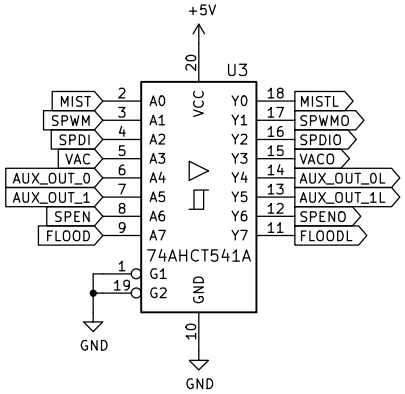
Size: A4	Date: 2025-03-27	**Rev: Ver 1.0**
KiCad E.D.A. 8.0.4		Id: 1/10

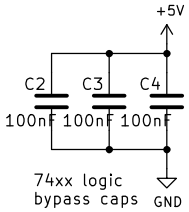

Raspberry Pi
RP2350B QFN-80
U17
RP2350B
12MHz Crystal
X322512MMB4SI
Y1
XIN
XOUT
1K
R36
Primary Flash
U22
W25Q16JVSSIQ
J25
USB-TYPE-C-018
J6
Conn_01x03
Pin Assignment Mapping
This is to allow quick changing of pin assignments during the design phase and to facilitate conversion to an RP2350 based design.
UART 0
Limits
Control Inputs
Step/Dir
Step Enables
Auxiliary Input
I2C 0 and Strobe
Spindle Group
Digital and Relay Output
WizNET Ethernet and SPI 1
UART, SPI and I2C need specific pin assignments They can be moved but pin function needs to be taken into account.
Verify assembly house switch choices.
Header for external reset switch
Brookwood Design
Sheet: /PGA2350B/
File: PGA2350B.kicad_sch
Title: RP23U5XBB
Size: A4
Date: 2025-03-27
Rev: Ver 0.97
KiCad E.D.A. 8.0.4
Id: 1/10



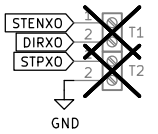


Digital output section. 3.3V inputs, 5V outputs. Use of AHCT logic allows this. Drive capability of 8mA.

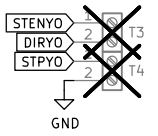




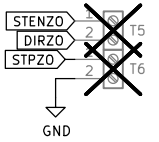
74xx logic bypass caps



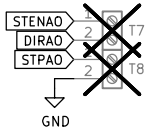
X Axis driver interface.



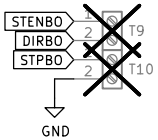
Y Axis driver interface.



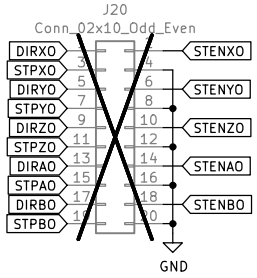
Z Axis driver interface.



A Axis driver interface.

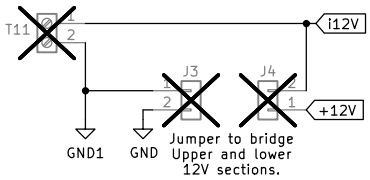


B Axis driver interface.



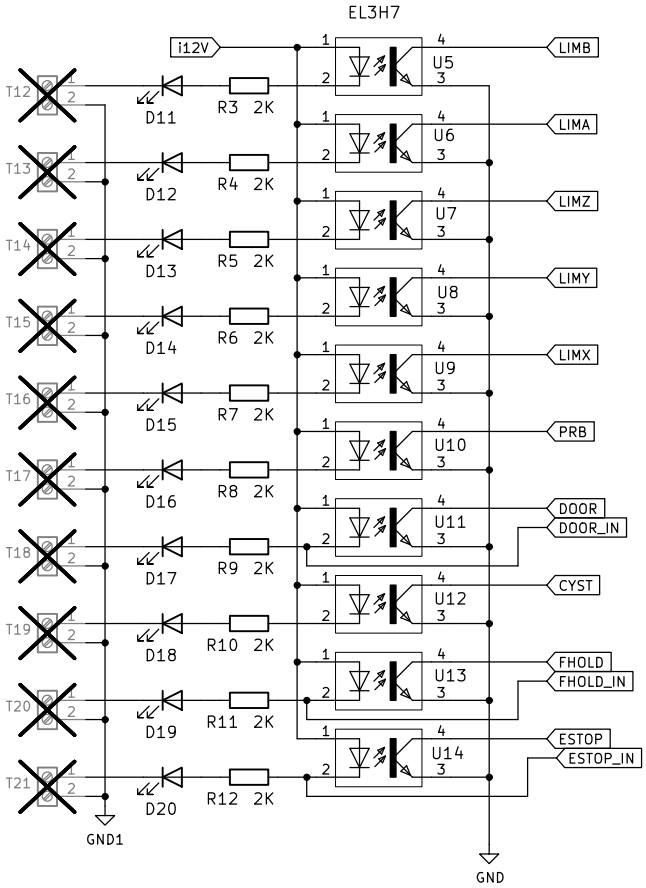
Brookwood Design		
Sheet: /Stepper Output/		
File: StepperOutput.kicad_sch		
Title: RP23U5XBB		
Size: A4	Date: 2025-03-27	**Rev: Ver 0.97**
KiCad E.D.A. 8.0.4		Id: 1/10

Isolated Voltage
input for Optos.



Place the headers so it is
impossible to jumper them
the wrong way (short to ground).

EL3H7

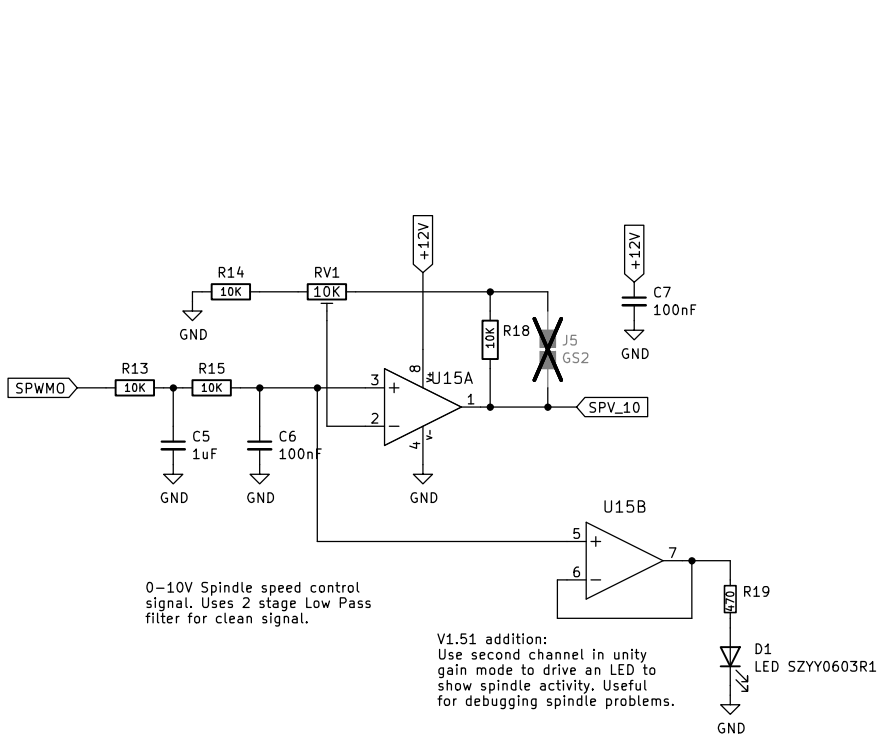


Brookwood Design

Sheet: /Limit and Control inputs/
File: LimitandControlInputs.kicad_sch

Title: RP23U5XBB

Size: A4	Date: 2025-03-27	**Rev: Ver 0.97**
KiCad E.D.A. 8.0.4		Id: 1/10

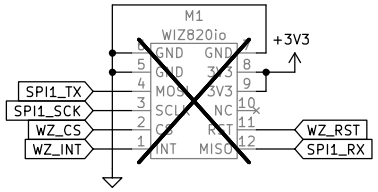


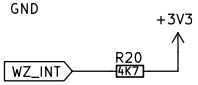
Brookwood Design

Sheet: /Spindle/
File: Spindle.kicad_sch

Title: RP23U5XBB

Size: A4	Date: 2025-03-27	**Rev: Ver 0.97**
KiCad E.D.A. 8.0.4		Id: 1/10

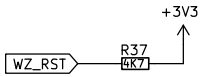




The WZ850io datasheet shows a pullup resistor on it but there have been reports of instability when WZ_INT does not have the additional pullup resistor. So, included out of caution – the additional pullup does not seem to hurt.

Wiz820io used here is technically the Wiz850io. Marketed as being compatible with the Wiz820io, it uses the W5500 chip. The Wiz820io uses the W5200 chip and is not supported.

Yes, it is confusing – just make sure the module has a W5500 on it.



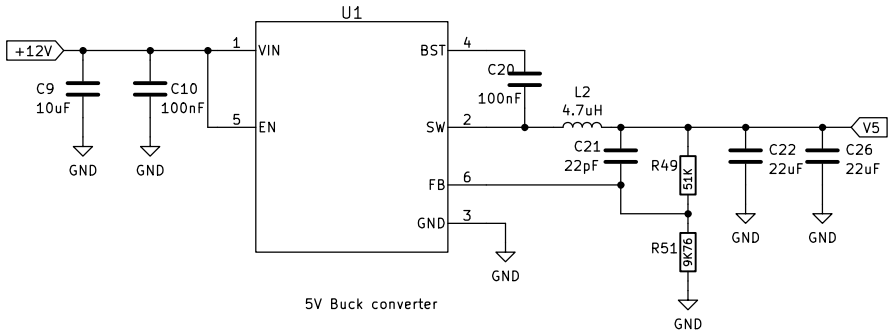
RST is held high. Need to make sure that there will not be a case where RST (active low) is needed. Evaluate if a higher value (10K) is better.

Brookwood Design

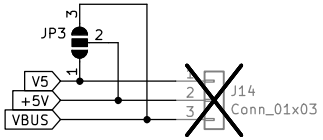
Sheet: /Ethernet/
File: Ethernet.kicad_sch

Title: RP23U5XBB

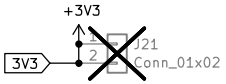
Size: A4	Date: 2025-03-27	**Rev: Ver 0.97**
KiCad E.D.A. 8.0.4		Id: 1/10



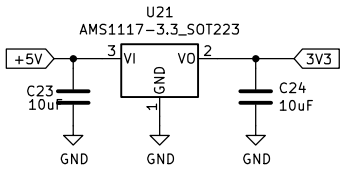
5V Buck converter



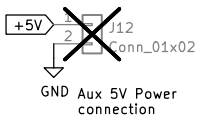
5V bypass to allow USB VBUS +5V for testing and current monitoring. Remove for production PCB? Convert to solder jumper?



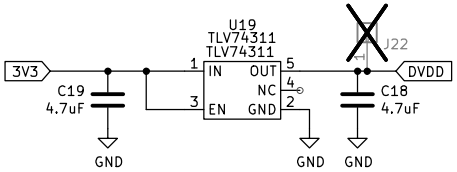
3V3 bypass to allow external 3.3V for testing. Also, allows for current draw monitoring. Remove for production PCB and connect to +3V3.



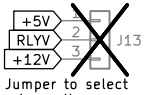
3.3V LDO Regulator



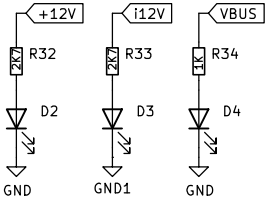
Aux 5V Power connection



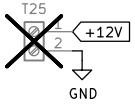
DVDD (1.1V) LDO Regulator



Jumper to select relay voltage



Power Indicators



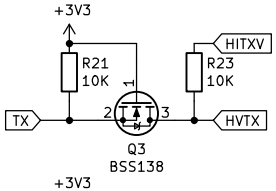
Upper board 12V Input

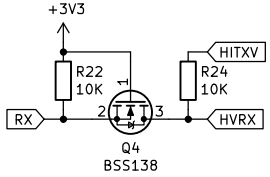
Brookwood Design

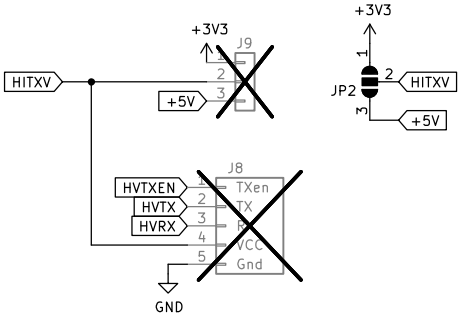
Sheet: /Power/
File: power.kicad_sch

Title: RP23U5XBB

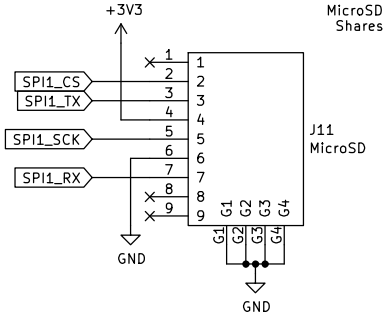
Size: A4	Date: 2025-03-27	**Rev: Ver 0.97**
KiCad E.D.A. 8.0.4		Id: 1/10



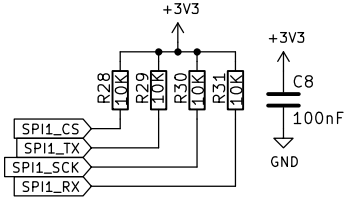


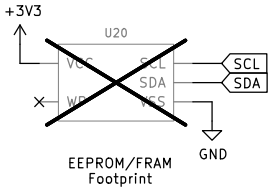


UART 0 support. Adds standard mounting holes.

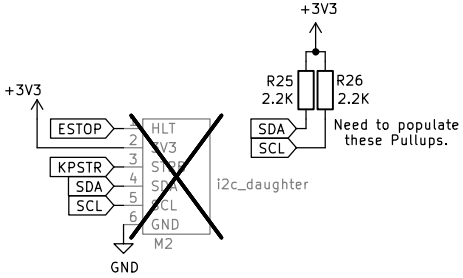


MicroSD Card Adaptor
Shares SPI Interface

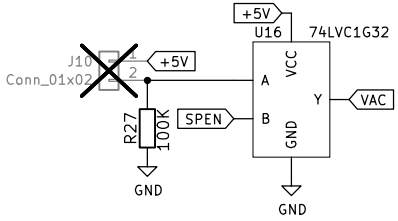




EEPROM/FRAM
Footprint



I2C Daughter card header. Adds standerd mounting holes.



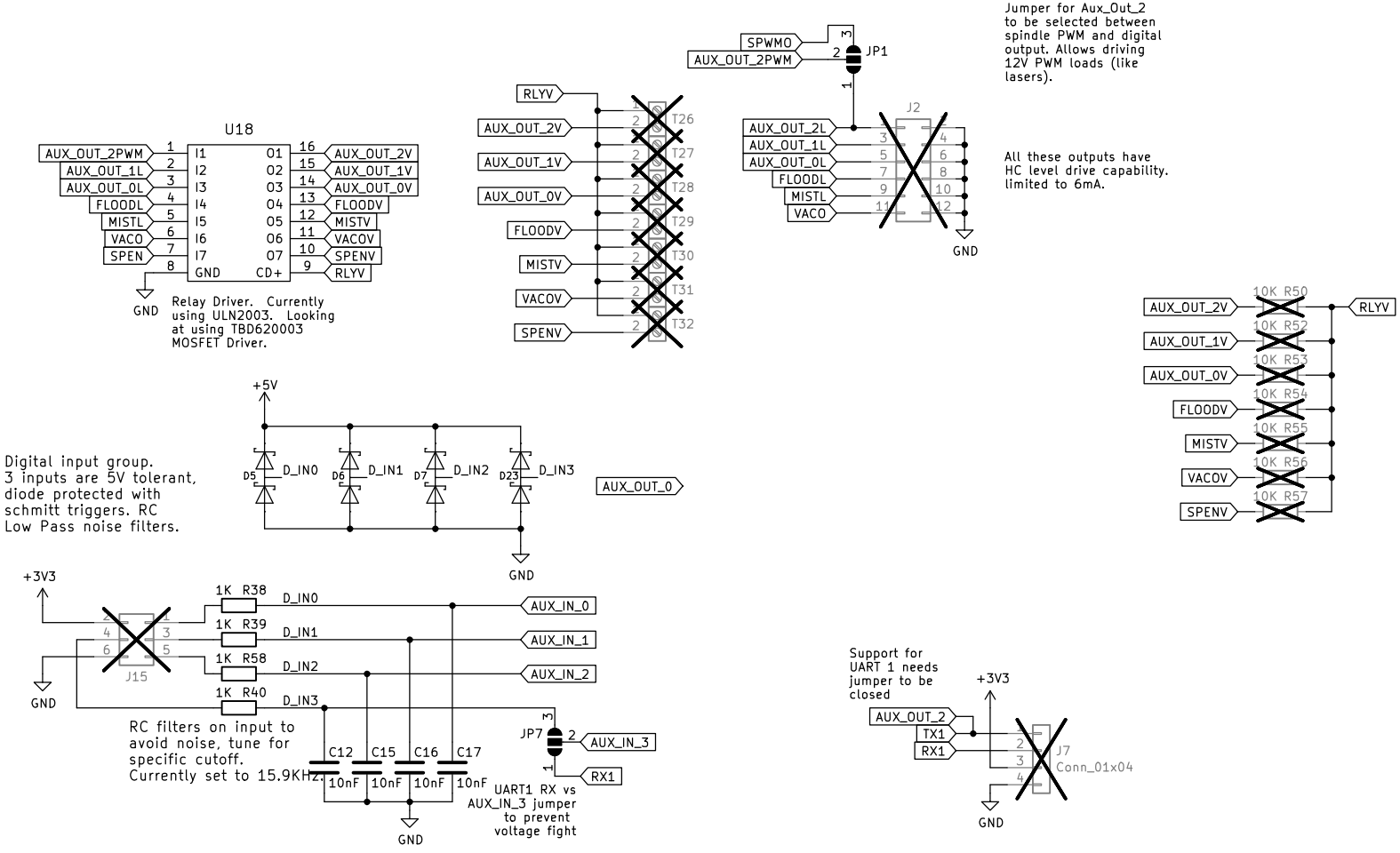
Independent Control for Dust Extractor. A switch attached to the pin header can turn on the DE separately from the spindle.

Brookwood Design

Sheet: /Misc IO/
File: MiscIO.kicad_sch

Title: RP23U5XBB

Size: A4	Date: 2025-03-27	**Rev: Ver 0.97**
KiCad E.D.A. 8.0.4		Id: 1/10

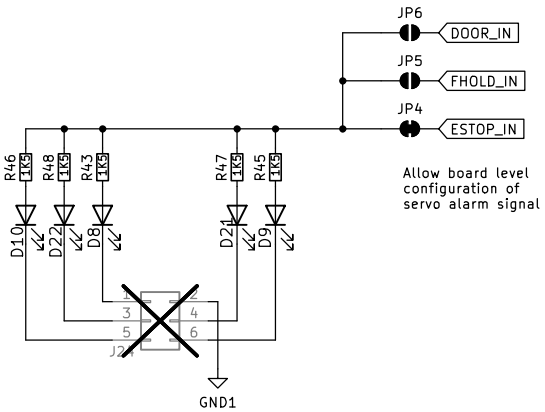


Brookwood Design

Sheet: /DigitalIO and Relays/
File: DigitalIO and Relays.kicad_sch

Title: RP23U5XBB

Size: A4	Date: 2025-03-27	**Rev: Ver 0.97**
KiCad E.D.A. 8.0.4		Id: 1/10



Brookwood Design		
Sheet: /Servo_error/		
File: servo_error.kicad_sch		
Title: RP23U5XBB		
Size: A4	Date: 2025-03-27	**Rev: Ver 0.97**
KiCad E.D.A. 8.0.4		Id: 1/10