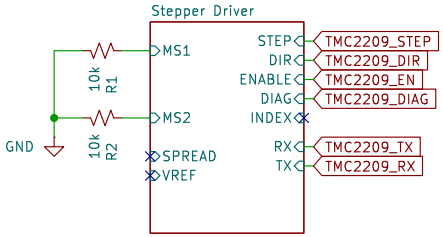
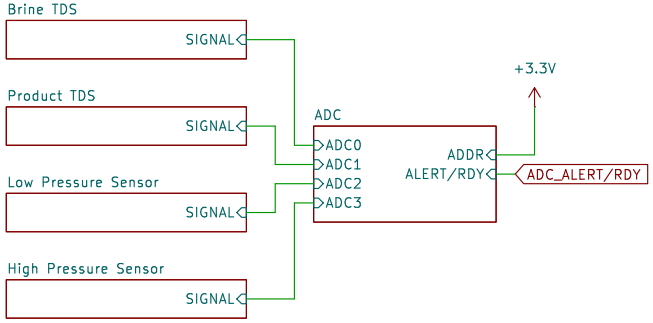
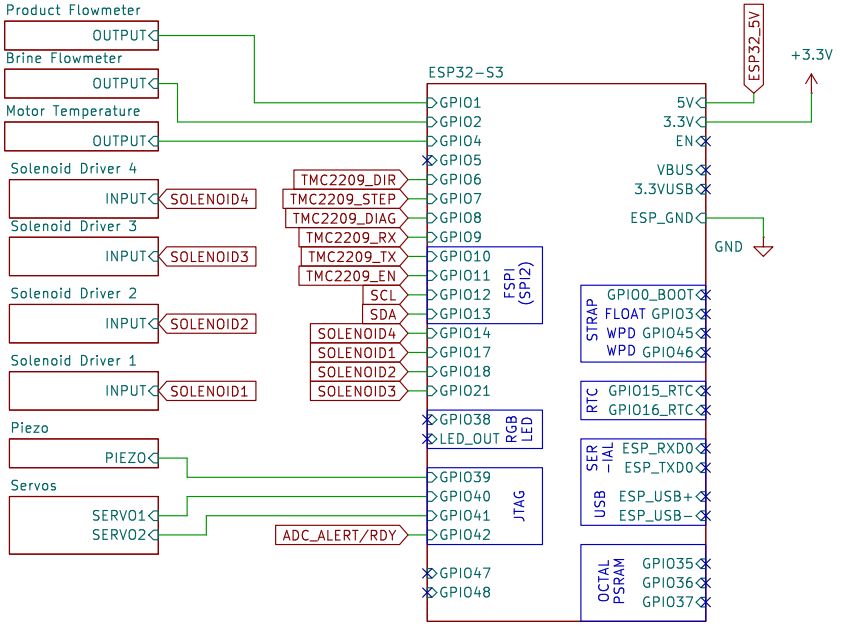
Stepper Driver



Analog Sensors

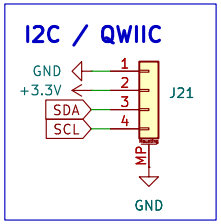


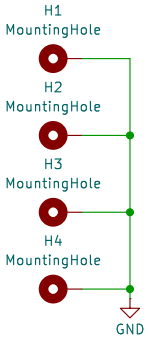
ESP32-S3 Module



Power Supply

I2C / QWIIC



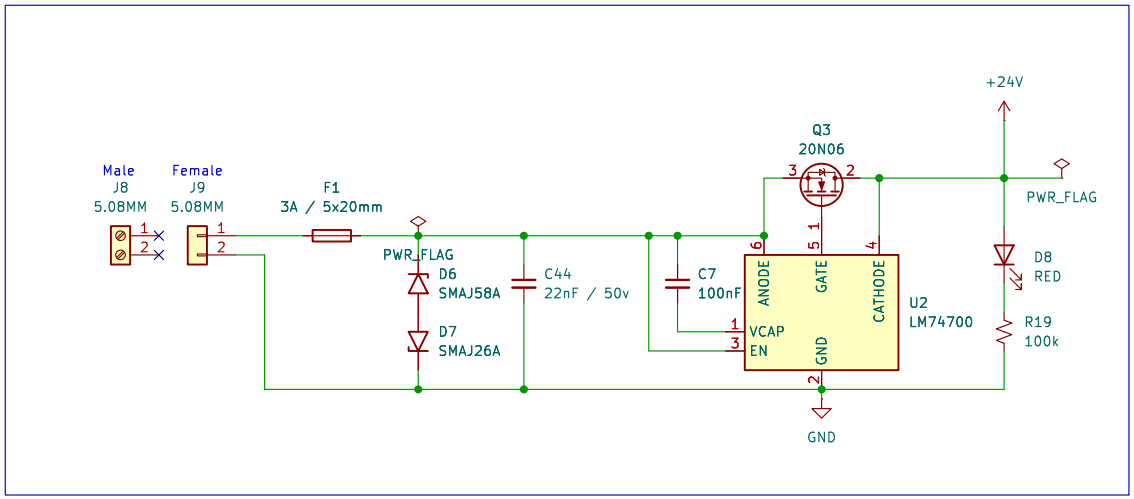


Sheet: /
File: brineomatic.kicad_sch

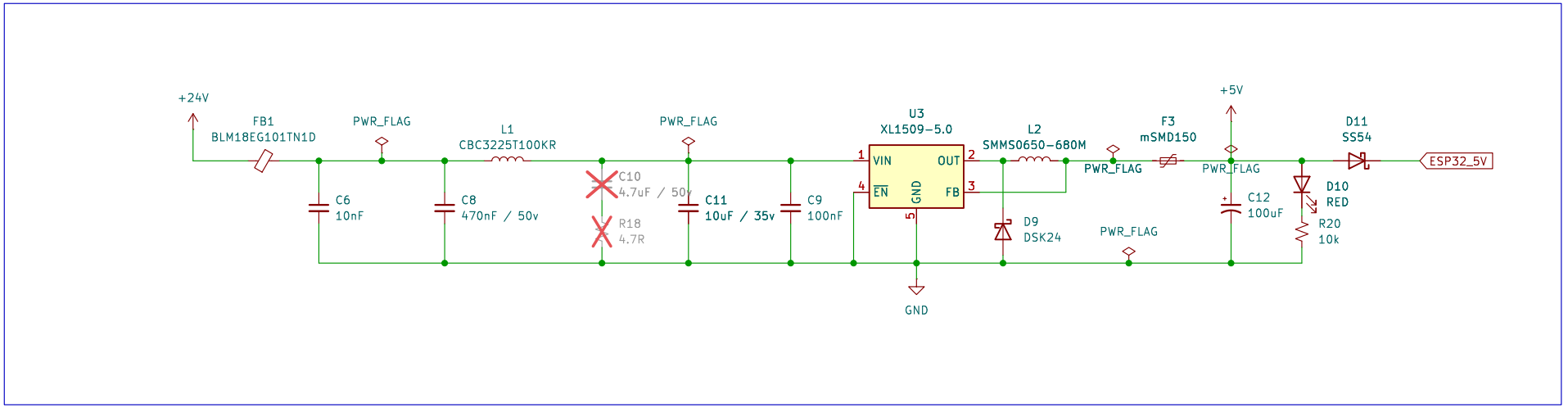
Title: https://github.com/hoeken/brineomatic

Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 1/18

24v Power Input



24v to 5v Power Supply

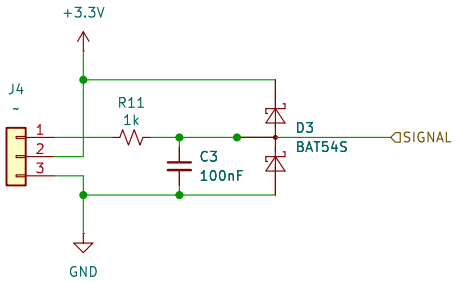


Sheet: /Power Supply/
File: power_supply.kicad_sch

Title: https://github.com/hoeken/brineomatic

Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 10/18

TDS Sensor Connector

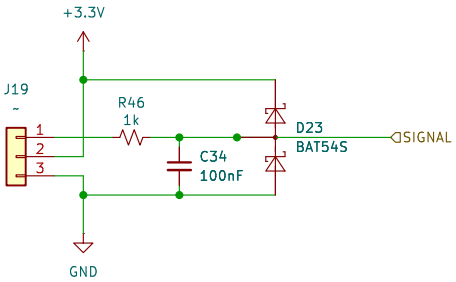


Designed for DFRobot TDS Sensor SEN0244
https://www.dfrobot.com/product-1662.html

* Noise filtering RC filter
* BAT54S for ESD / overvoltage protection

Sheet: /Brine TDS/		
File: tds.kicad_sch		
Title: https://github.com/hoeken/brineomatic		
Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 5/18

TDS Sensor Connector

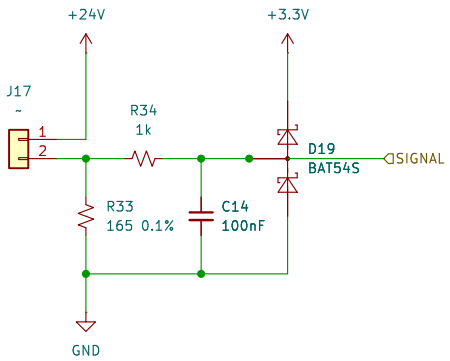


Designed for DFRobot TDS Sensor SEN0244
https://www.dfrobot.com/product-1662.html

* Noise filtering RC filter
* BAT54S for ESD / overvoltage protection

Sheet: /Product TDS/		
File: tds.kicad_sch		
Title: https://github.com/hoeken/brineomatic		
Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 17/18

4–20mA Sensor

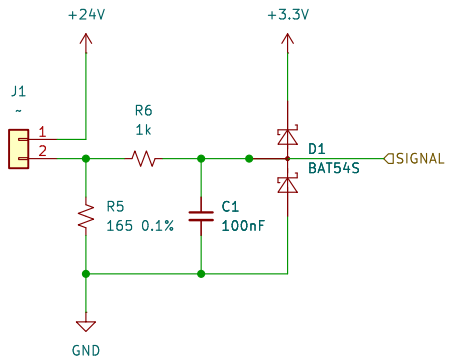


Designed for 4–20mA pressure sensors powered by 12–24v

* 165ohm shunt for 3.3v output
* Noise filtering RC filter
* BAT54S for ESD / overvoltage protection

Sheet: /Low Pressure Sensor/		
File: pressure_sensor.kicad_sch		
Title: https://github.com/hoeken/brineomatic		
Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 15/18

4–20mA Sensor

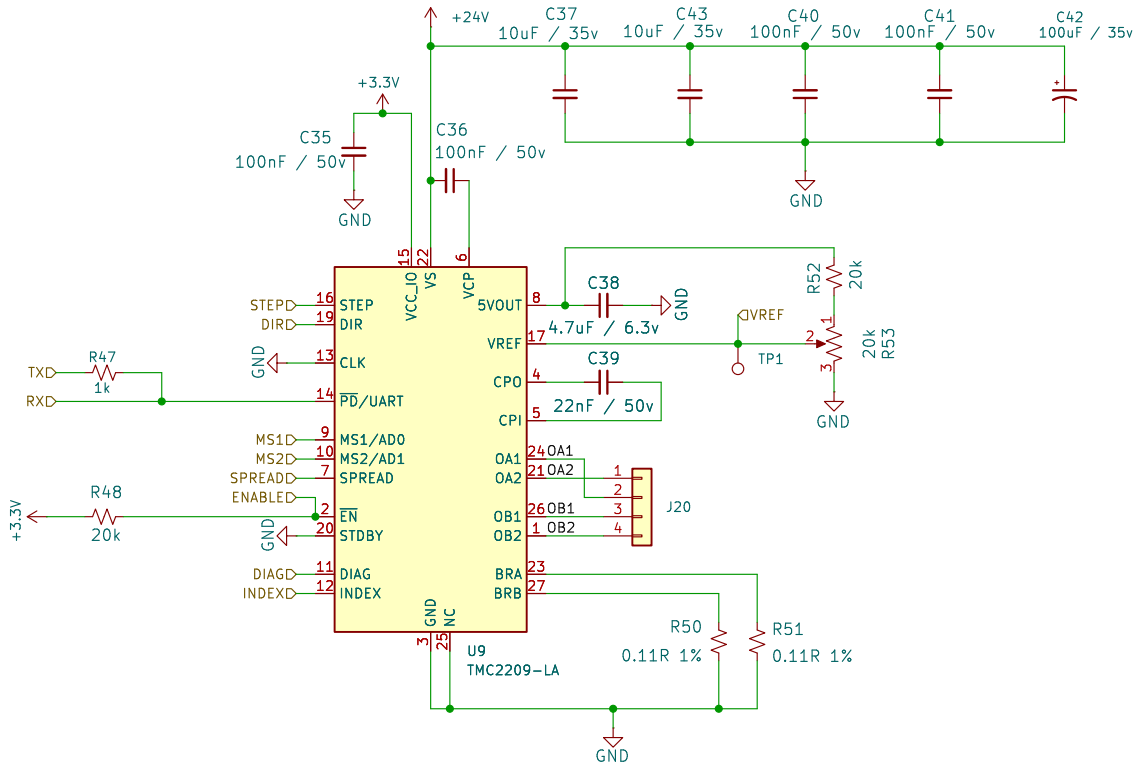


Designed for 4–20mA pressure sensors powered by 12–24v

* 165ohm shunt for 3.3v output
* Noise filtering RC filter
* BAT54S for ESD / overvoltage protection

Sheet: /High Pressure Sensor/ File: pressure_sensor.kicad_sch		
Title: https://github.com/hoeken/brineomatic		
Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 2/18

TMC2209 Stepper Driver



Configuration

VRef 0...2.5V (0.11 Ohm sense resistor)
>=2.50V 100% – 1.77A RMS
1.25V 50% – 0.88A RMS
0.50V 20% – 0.35A RMS

EN (with pull-up)
GND driver enabled
VCC driver disabled

PDN/UART (with pull-down)
GND automatic standstill current reduction
VCC automatic standstill power down disable
optional UART interface

MS1	MS2	Steps	Interpolation
GND	GND	8	Yes to 256
VIO	GND	32	Yes to 256
GND	VIO	64	Yes to 256
VIO	VIO	16	Yes to 256

SPREAD (with pull-down)
GND stealthChop
VIO spreadCycle

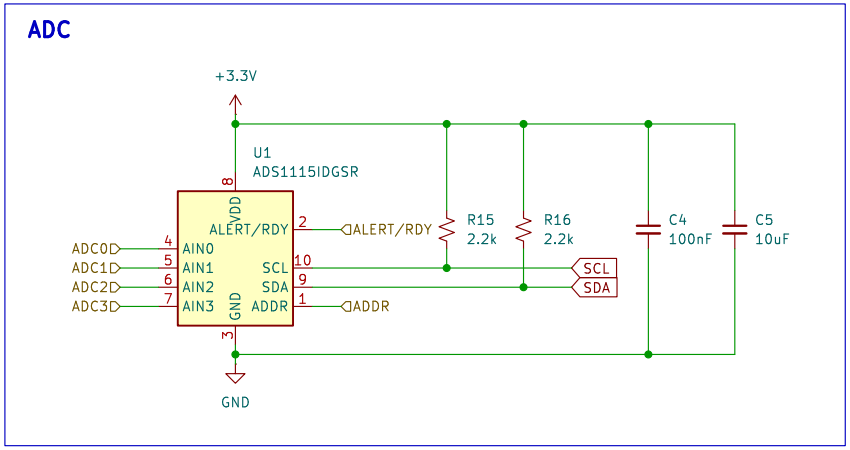
To access all other modes you have to use the UART interface.

Designed by Stephan Watterott (Watterott electronic)
Re-drawn by Zach Hoeken

Sheet: /Stepper Driver/
File: tmc2209.kicad_sch

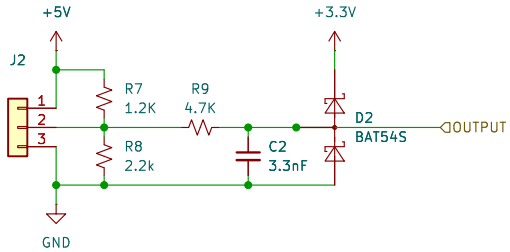
Title: https://github.com/hoeken/brineomatic

Size: A4 | Date: 2025-08-28 | **Rev: B**
KiCad E.D.A. 9.0.3 | Id: 17/18



Sheet: /ADC/		
File: 1115_adc.kicad_sch		
Title: https://github.com/hoeken/brineomatic		
Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 8/18

Flowmeter Connection

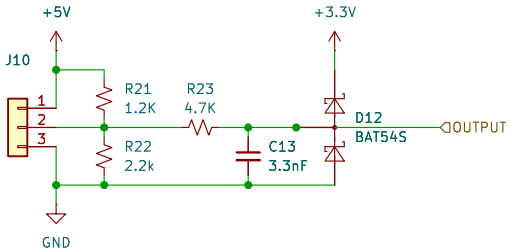


Designed for flowmeters powered by 5v with open collector output.

* 5v to 3.3v voltage divider as pullup on the input.
* Noise filtering RC filter
* BAT54S for ESD / overvoltage protection

Sheet: /Product Flowmeter/ File: pulse_counter.kicad_sch		
Title: https://github.com/hoeken/brineomatic		
Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 3/18

Flowmeter Connection

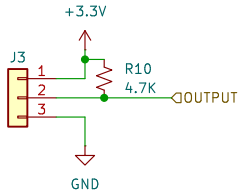


Designed for flowmeters powered by 5v with open collector output.

* 5v to 3.3v voltage divider as pullup on the input.
* Noise filtering RC filter
* BAT54S for ESD / overvoltage protection

Sheet: /Brine Flowmeter/		
File: pulse_counter.kicad_sch		
Title: https://github.com/hoeken/brineomatic		
Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 11/18

Temperature Connection



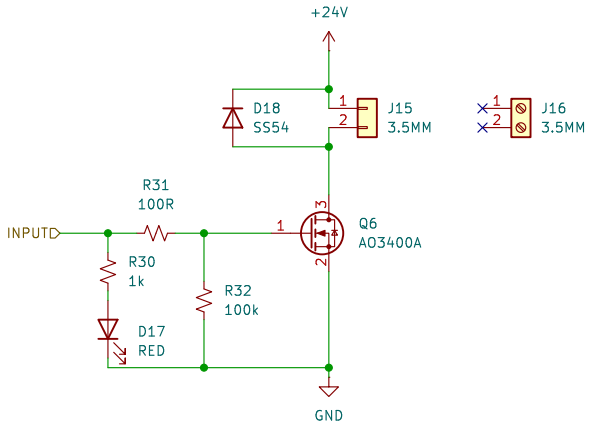
Simple connector for a DS18B20 temperature sensor.

Sheet: /Motor Temperature/
File: DS18B20.kicad_sch

Title: https://github.com/hoeken/brineomatic

Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 4/18

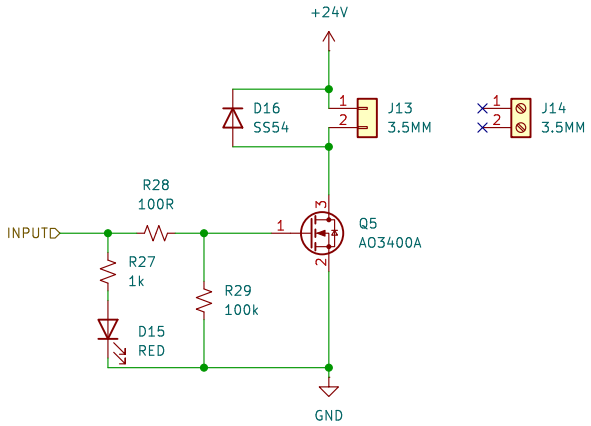
Solenoid / Relay Driver



Designed to control small solenoids, relays, fans, and other small DC loads.
Max 3A per channel, total based on fuse installed.

Sheet: /Solenoid Driver 4/		
File: solenoid_driver.kicad_sch		
Title: https://github.com/hoeken/brineomatic		
Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 14/18

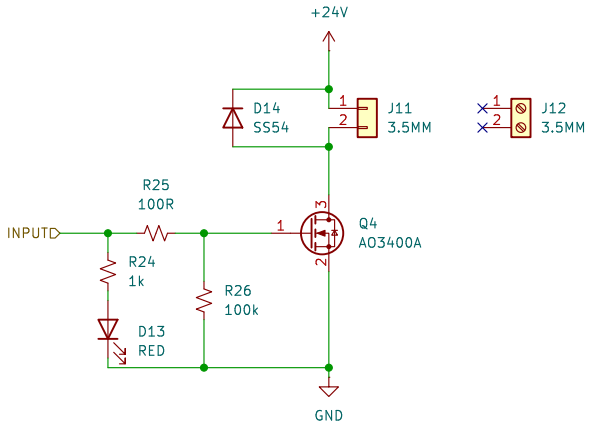
Solenoid / Relay Driver



Designed to control small solenoids, relays, fans, and other small DC loads.
Max 3A per channel, total based on fuse installed.

Sheet: /Solenoid Driver 3/		
File: solenoid_driver.kicad_sch		
Title: https://github.com/hoeken/brineomatic		
Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 13/18

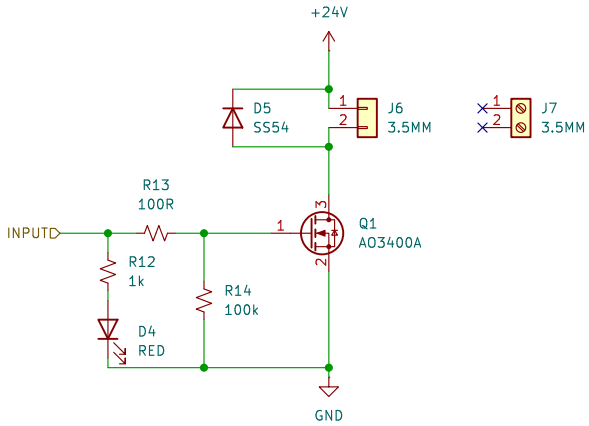
Solenoid / Relay Driver



Designed to control small solenoids, relays, fans, and other small DC loads.
Max 3A per channel, total based on fuse installed.

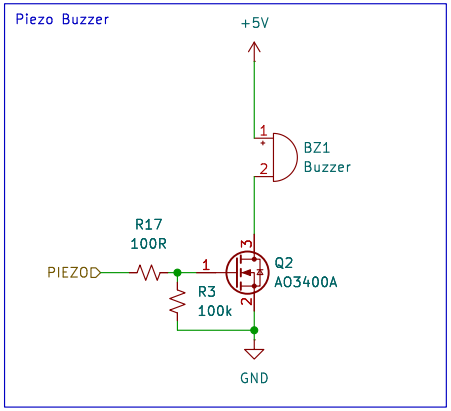
Sheet: /Solenoid Driver 2/		
File: solenoid_driver.kicad_sch		
Title: https://github.com/hoeken/brineomatic		
Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 12/18

Solenoid / Relay Driver



Designed to control small solenoids, relays, fans, and other small DC loads.
Max 3A per channel, total based on fuse installed.

Sheet: /Solenoid Driver 1/		
File: solenoid_driver.kicad_sch		
Title: https://github.com/hoeken/brineomatic		
Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 7/18

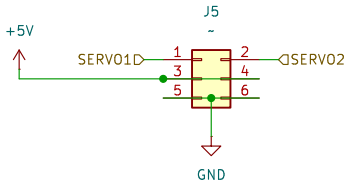


Sheet: /Piezo/
File: piezo.kicad_sch

Title: https://github.com/hoeken/brineomatic

Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 9/18

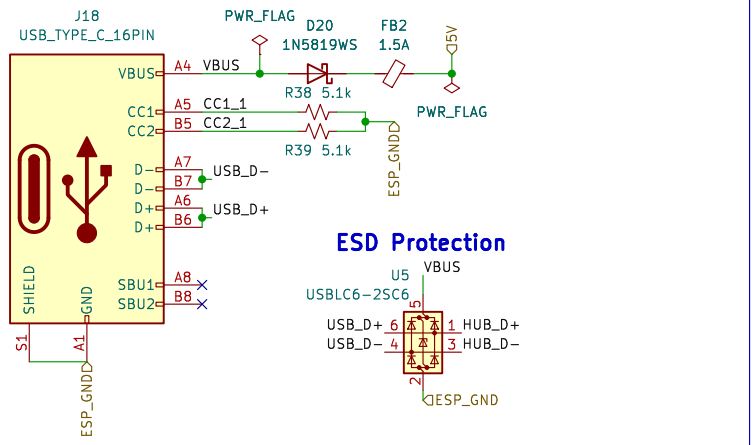
Servo Connectors



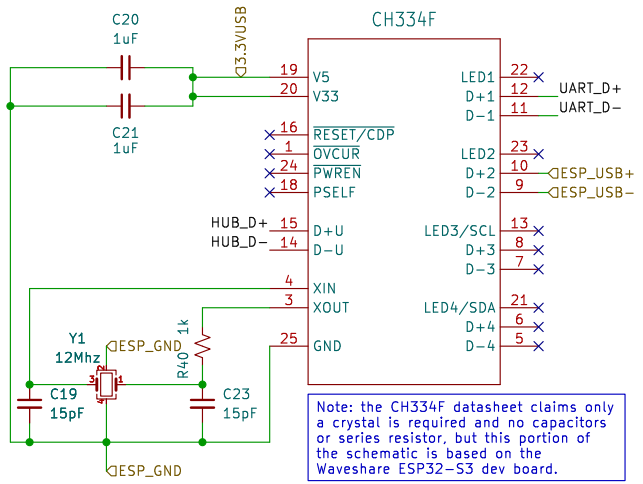
Standard 3 pin servo motor connector
Max 2A total output.

Sheet: /Servos/		
File: servo.kicad_sch		
Title: https://github.com/hoeken/brineomatic		
Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 6/18

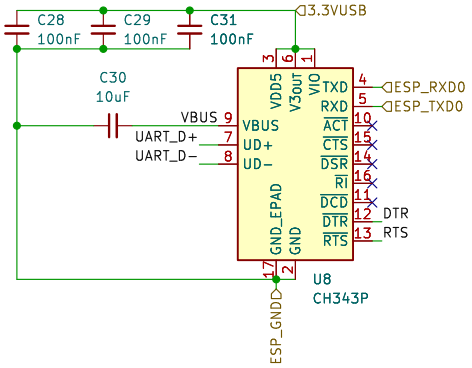
USB PORT



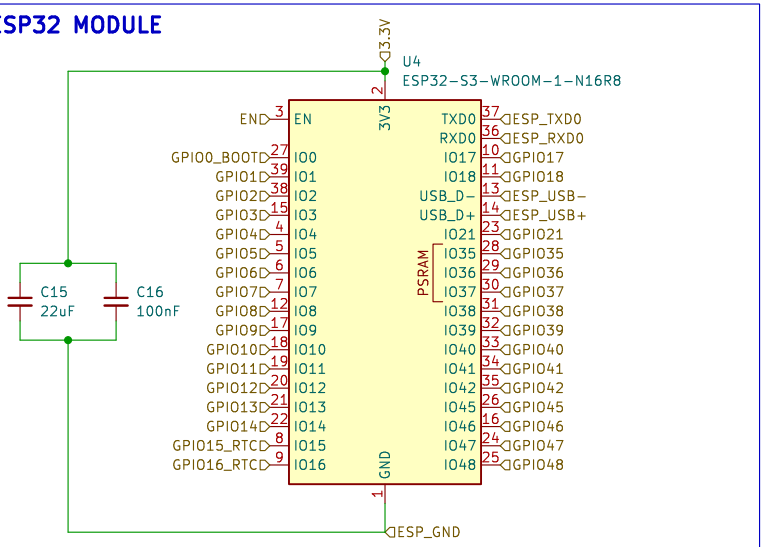
USB HUB



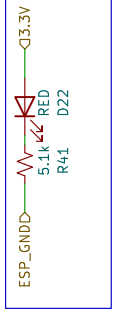
USB TO SERIAL



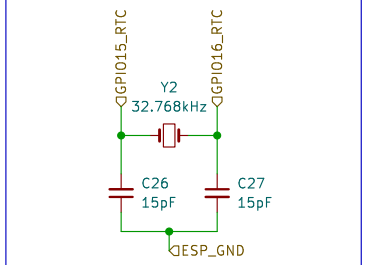
ESP32 MODULE



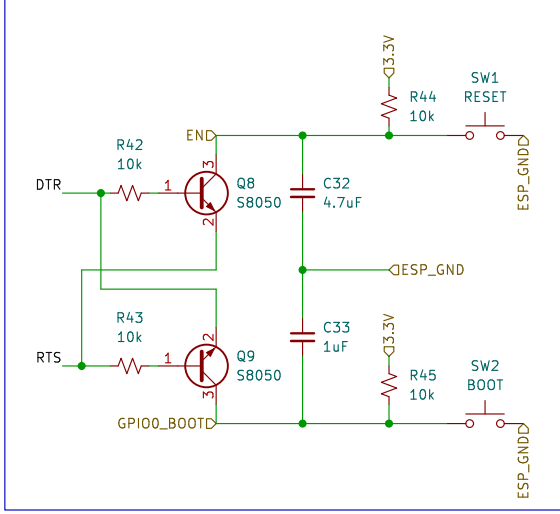
POWER



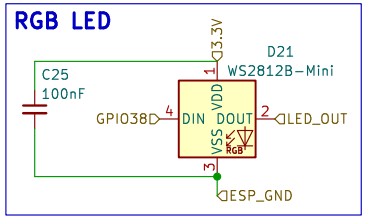
RTC CLOCK



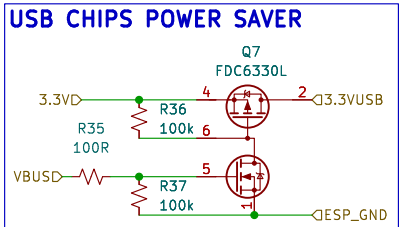
BOOT CONTROL



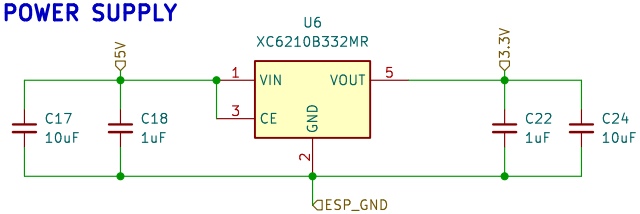
RGB LED



USB CHIPS POWER SAVER



POWER SUPPLY



Originally forked from: github.com/eggsampler/ESP32-S3-Breakout
Updates based on www.waveshare.com/wiki/ESP32-S3-DEV-KIT-N8R8

Design by Zach Hoeken

Sheet: /ESP32-S3/
File: esp32-s3.kicad_sch

Title: https://github.com/hoeken/brineomatic

Size: A4	Date: 2025-08-28	**Rev: B**
KiCad E.D.A. 9.0.3		Id: 16/18