

Servo motor stepper project (M4)

Stepper motor controller with overtemperature, overvoltage and overcurrent protection

Status reading guide:

Draft: Early stage, ignore details.
Preliminary: Almost finished, could have some errors.
Checked: There shouldn't be any error, inform if that isn't the case.
Released: The schematic belongs to a board sent to production.

Status: Released

Release date: 07/03/24 (DD/MM/YY)

Variation: No variations

Comments reading guide:

Compatibility

Design

Layout

user information



Number of layers: 2

Micro/blind/buried vias: No

Related files: BOM, gerber files and pick and place data

Number of sheets: 1

Mark not fitted components as: 

Note:  This is a global scope label.
 This is a local (sheet) scope label.

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Servo motor stepper (M4)
V1 – 2024–03–07 (DD/MM/YY)

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File: M4-V1.kicad_sch

Title: Servo motor stepper – M4 project

Size: A4 Date: 2024–03–07

KiCad E.D.A. kicad 7.0.11–2.fc39

Rev: V1

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Power block Diagram

Schematic top level

Signal block Diagram

Mechanical

Servo motor stepper – Index

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**Input power
(+24V)**

**+10V regulator
(L78L10)**

+10V

**OV detection
(LM321)**

+10V

**+3.3V regulator
(HT7533-1)**

**RS485
(SP3485EN)**

**MCU
(STM32G031G8U6)**

+3.3V

**Stepper driver
(TMC2209)**

**Hall sensors
(AH49HSC)**

Stepper motor

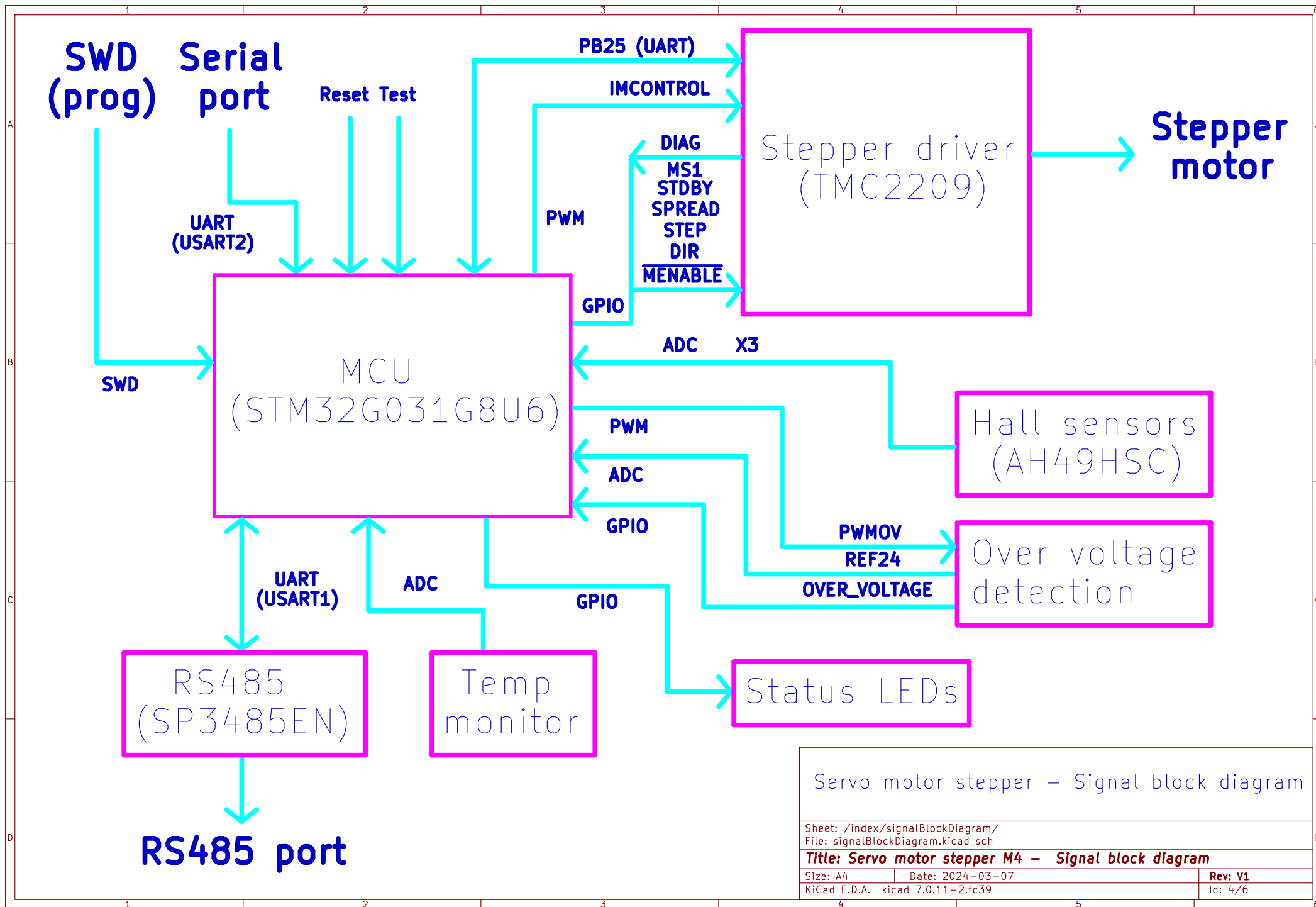
Servo motor stepper – Power block diagram

Sheet: /index/PowerBlockDiagram/
File: PowerBlockDiagram.kicad_sch

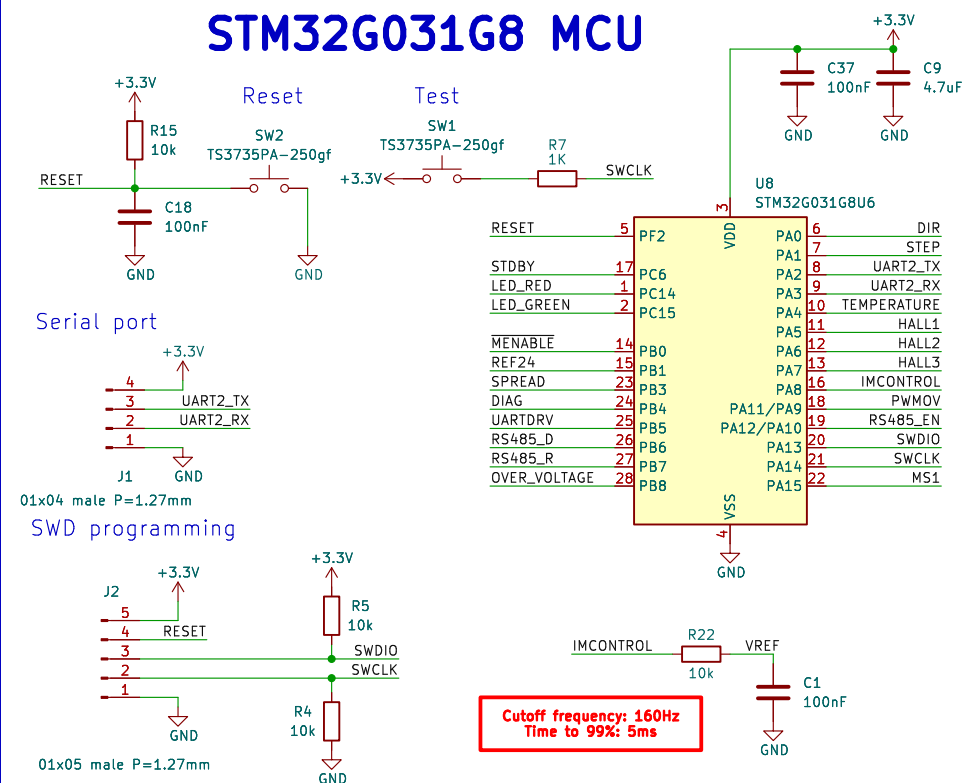
Title: Servo motor stepper M4 – Power block diagram

Size: A4 Date: 2024-03-07
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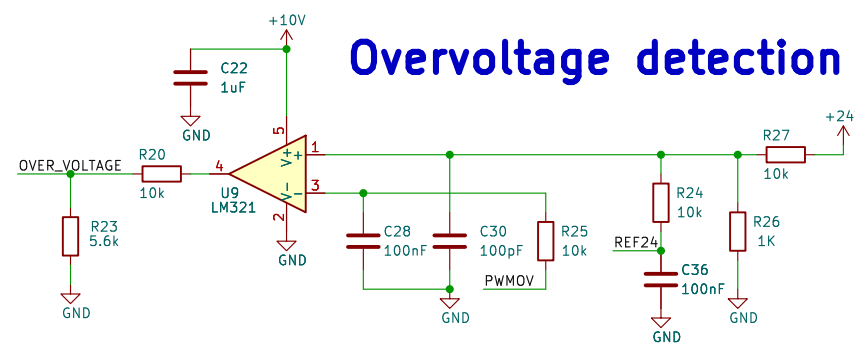
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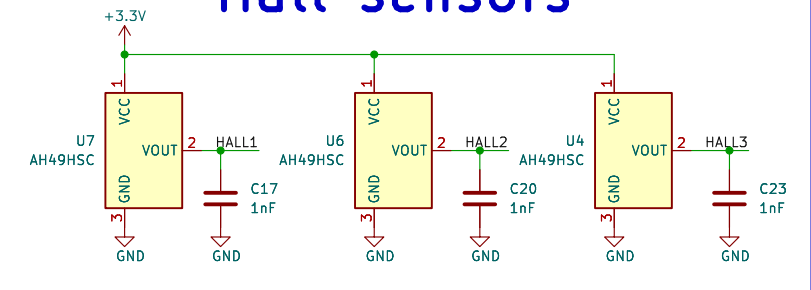
STM32G031G8 MCU



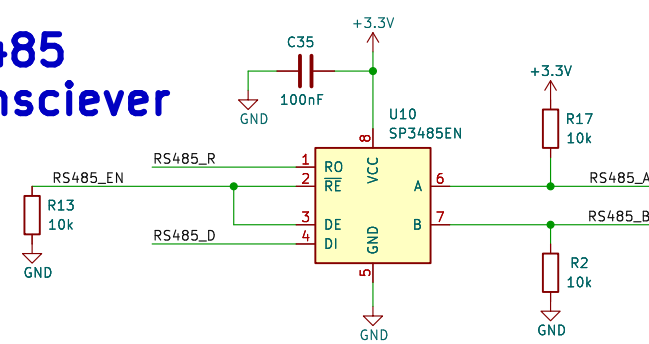
Overvoltage detection



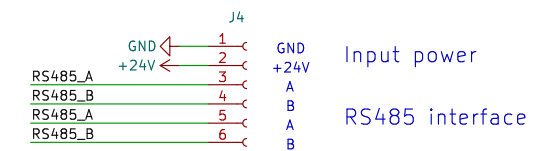
Hall sensors



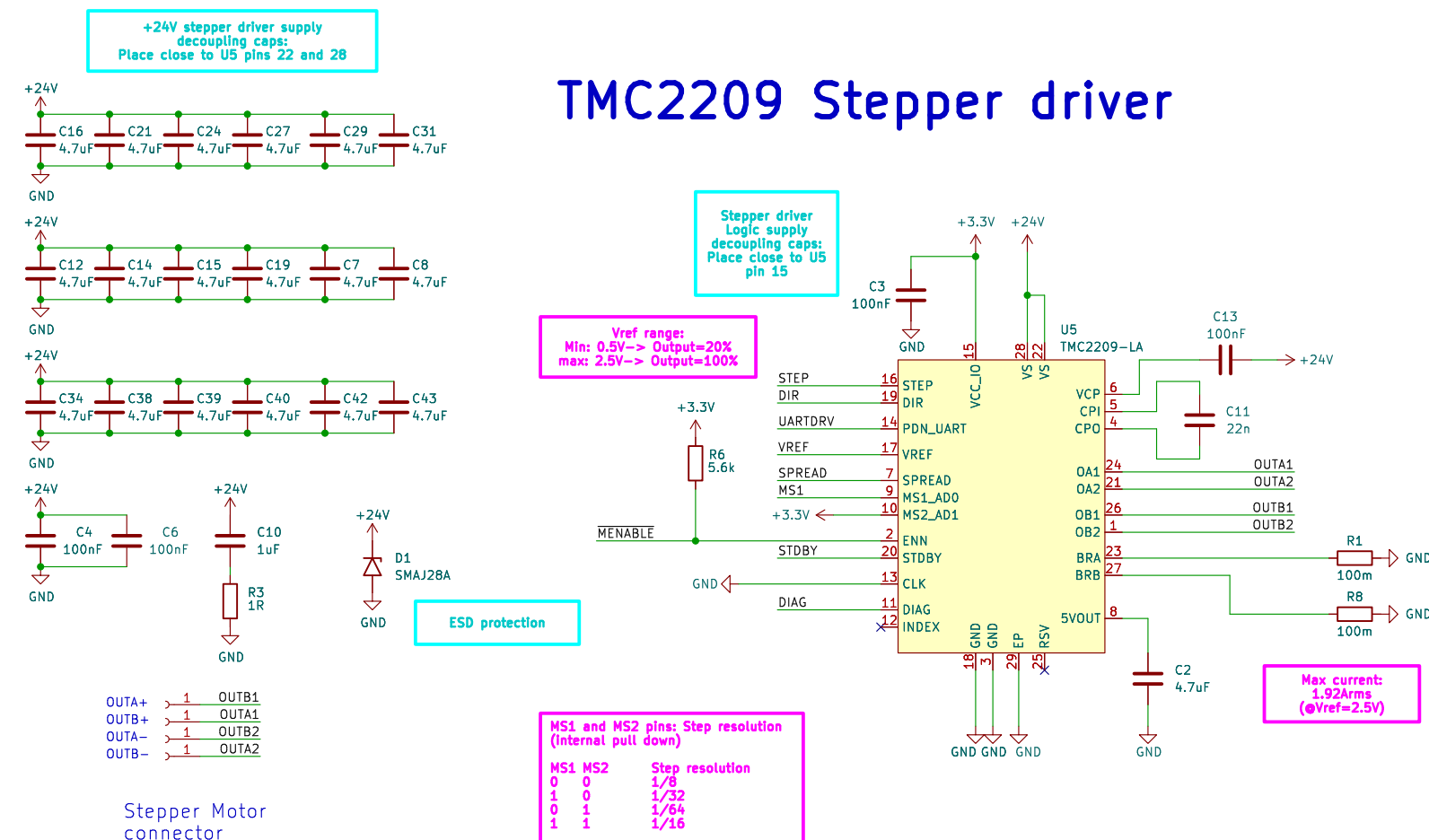
RS485 transceiver



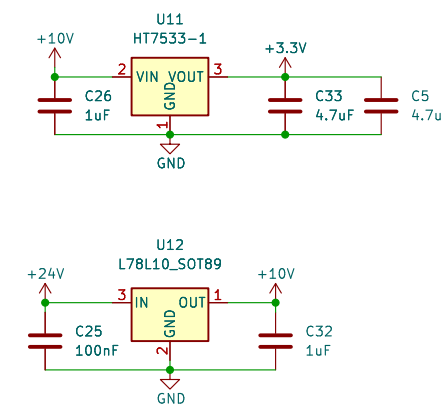
Input power and RS485 connector



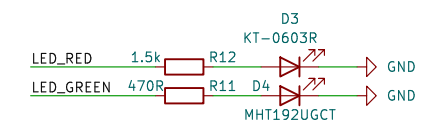
TMC2209 Stepper driver



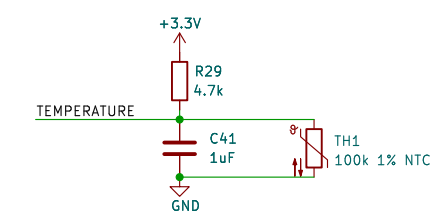
Input power and linear regulators



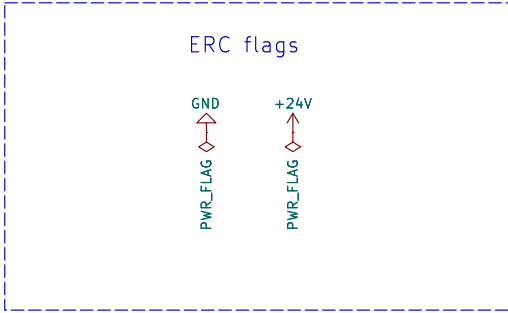
Status LEDs



Temperature monitoring



Servo motor stepper – Schematic top level



Servo motor stepper – Mechanical and ERC

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