TMC2209

File: tmc2209.kicad_sch

TMC51X0

File: tmc51x0.kicad_sch

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Sheet: /

File: trinamic-wiring.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 1/25

description

File: tmc2209-description.kicad_sch

microcontroller

File: tmc2209-microcontroller.kicad_sch

stepper-controller

File: tmc2209-stepper-controller.kicad_sch

teensy40

File: tmc2209-teensy40.kicad_sch

mega2560

File: tmc2209-mega2560.kicad_sch

uno

File: tmc2209-uno.kicad_sch

unidirectional

File: tmc2209-unidirectional.kicad_sch

unidirectional-multiple

File: tmc2209-unidirectional-multiple.kicad_sch

unidirectional-multiple-address

File: tmc2209-unidirectional-multiple-address.kicad_sch

unidirectional-multiple-uart

File: tmc2209-unidirectional-multiple-uart.kicad_sch

bidirectional-coupled

File: tmc2209-bidirectional-coupled.kicad_sch

bidirectional-coupled-multiple-address

File: tmc2209-bidirectional-coupled-multiple-address.kicad_sch

bidirectional-coupled-multiple-uart

File: tmc2209-bidirectional-coupled-multiple-uart.kicad_sch

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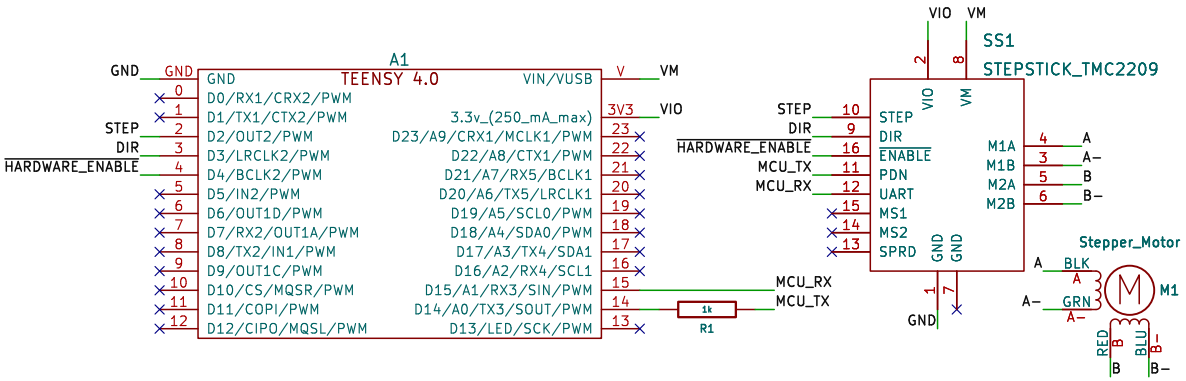
Sheet: /TMC2209/

File: tmc2209.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 2/25

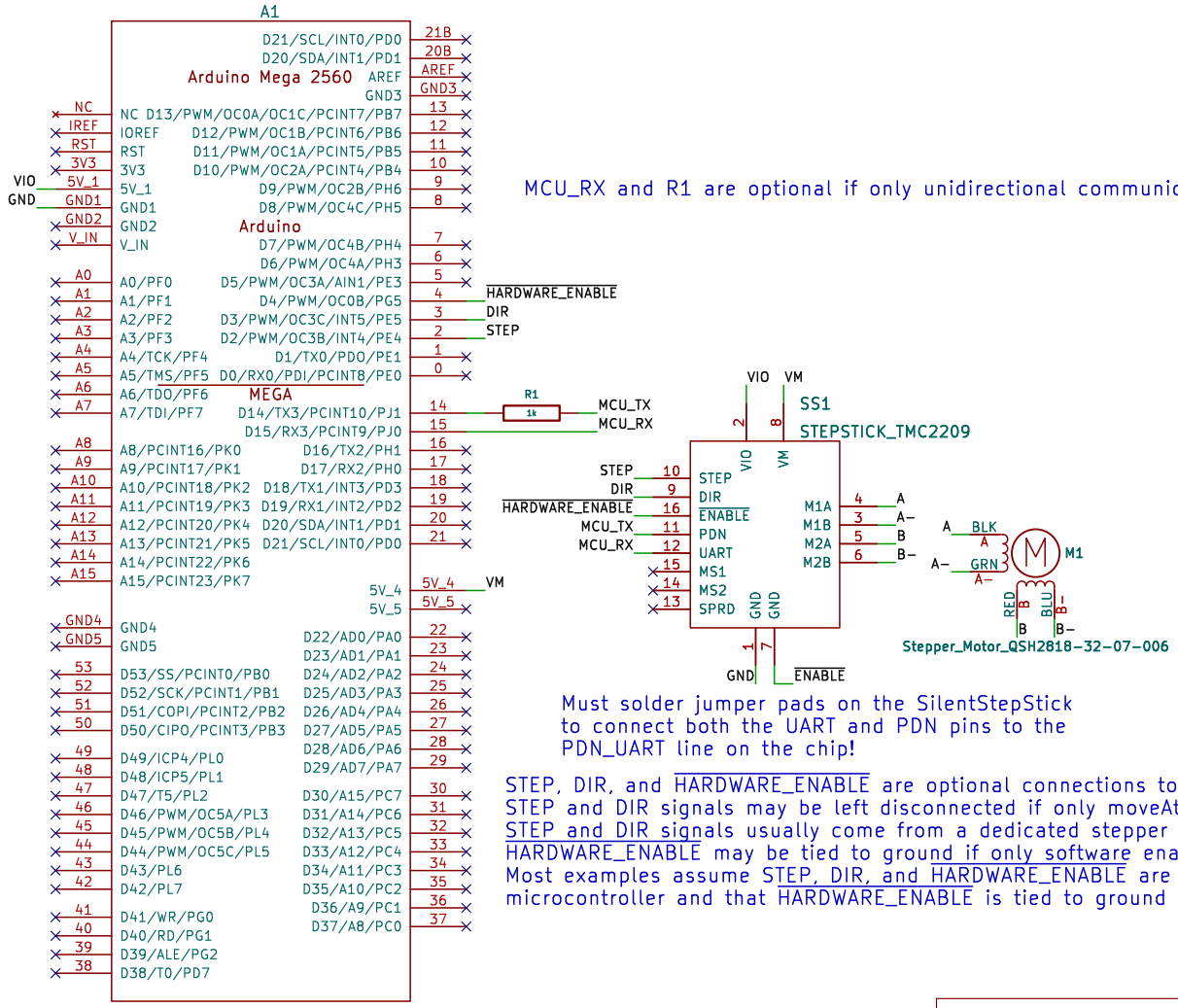
MCU_RX and R1 are optional if only unidirectional communication is desired.



Must solder jumper pads on the SilentStepStick to connect both the UART and PDN pins to the PDN_UART line on the chip!

STEP, DIR, and HARDWARE_ENABLE are optional connections to the microcontroller.
STEP and DIR signals may be left disconnected if only moveAtVelocity method is used.
STEP and DIR signals usually come from a dedicated stepper controller, like the TMC429.
HARDWARE_ENABLE may be tied to ground if only software enable is desired.
Most examples assume STEP, DIR, and HARDWARE_ENABLE are not connected to the microcontroller and that HARDWARE_ENABLE is tied to ground on the TMC2209.

Janelia Research Campus		
Sheet: /TMC2209/teensy40/		
File: tmc2209-teensy40.kicad_sch		
Title: Trinamic Wiring		
Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 3/25



MCU_RX and R1 are optional if only unidirectional communication is desired.

Must solder jumper pads on the SilentStepStick
to connect both the UART and PDN pins to the
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microcontroller and that HARDWARE_ENABLE is tied to ground on the TMC2209.

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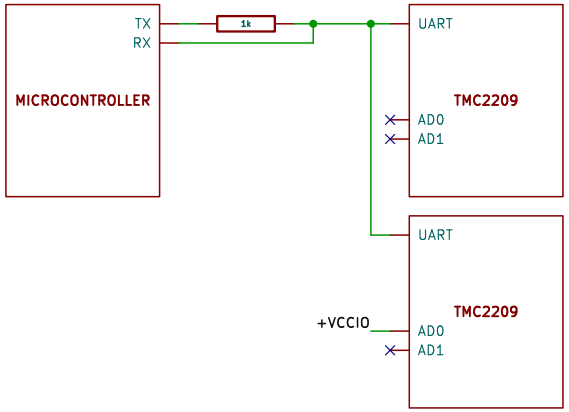
Sheet: /TMC2209/mega2560/		
File: tmc2209-mega2560.kicad_sch		
Title: Trinamic Wiring		
Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 4/25



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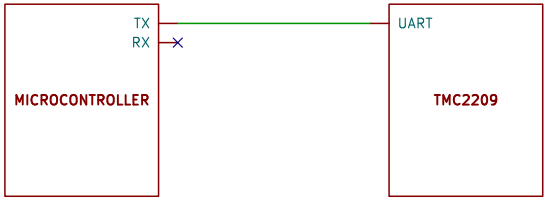
Sheet: /TMC2209/bidirectional-coupled-multiple-address/

File: tmc2209-bidirectional-coupled-multiple-address.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 5/25



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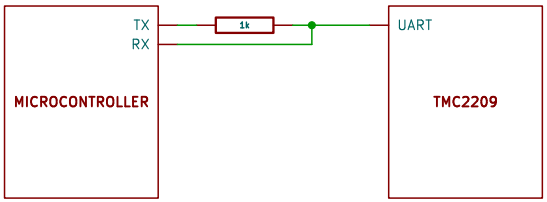
Sheet: /TMC2209/unidirectional/

File: tmc2209-unidirectional.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 6/25



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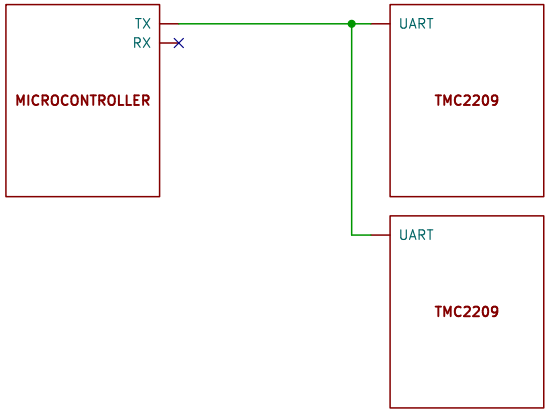
Sheet: /TMC2209/bidirectional-coupled/

File: tmc2209-bidirectional-coupled.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 7/25



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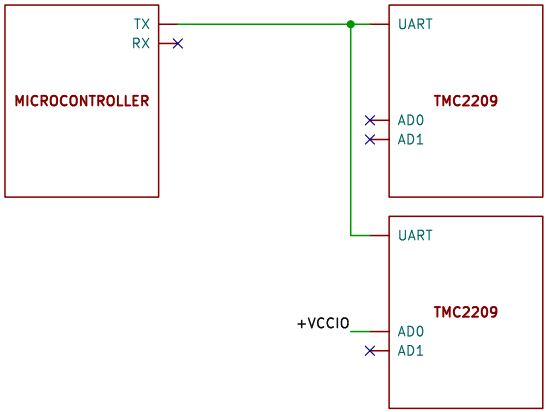
Sheet: /TMC2209/unidirectional-multiple/

File: tmc2209-unidirectional-multiple.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 8/25



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Sheet: /TMC2209/unidirectional-multiple-address/

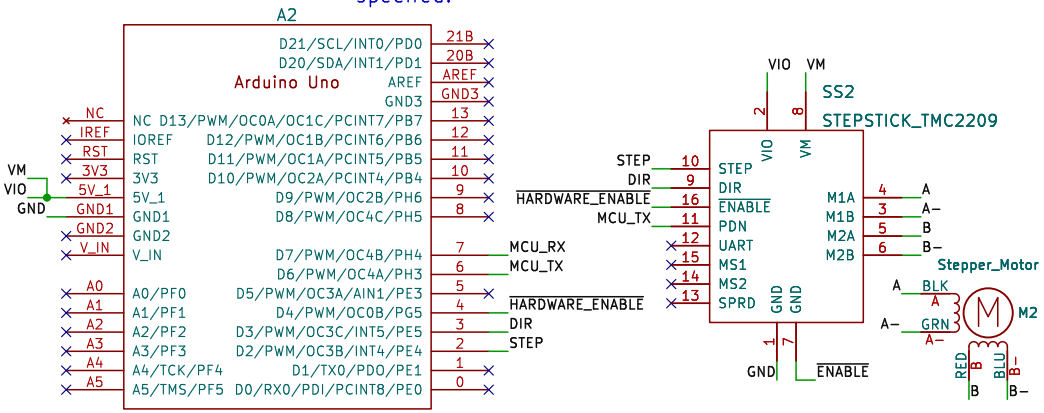
File: tmc2209-unidirectional-multiple-address.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 9/25

RX and TX pins must be changed in the SoftwareSerial example:
const uint8_t RX_PIN = 7;
const uint8_t TX_PIN = 6;

Arduino Uno is only capable of unidirectional communication, so only TX is connected and used, but the SoftwareSerial library requires that the RX pin must be reserved and specifed.



Must solder jumper pads on the SilentStepStick to connect both the UART and PDN pins to the PDN_UART line on the chip!

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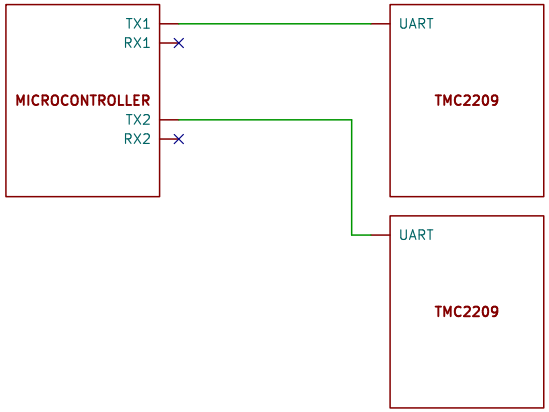
Janelia Research Campus		
Sheet: /TMC2209/uno/		
File: tmc2209-uno.kicad_sch		
Title: Trinamic Wiring		
Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 10/25



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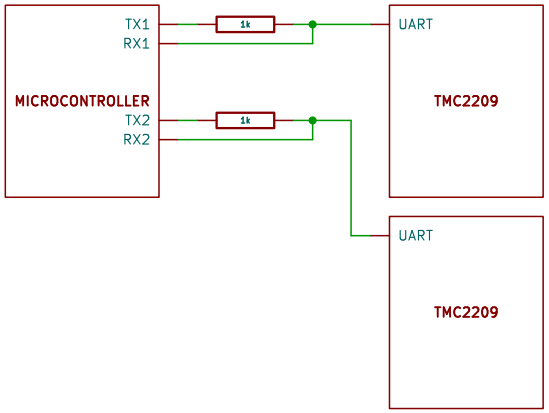
Sheet: /TMC2209/unidirectional-multiple-uart/
File: tmc2209-unidirectional-multiple-uart.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 11/25



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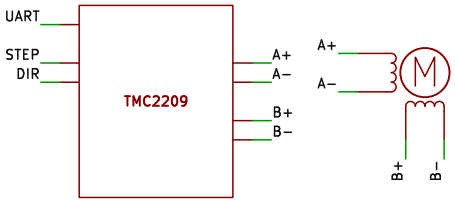
Sheet: /TMC2209/bidirectional-coupled-multiple-uart/

File: tmc2209-bidirectional-coupled-multiple-uart.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 12/25



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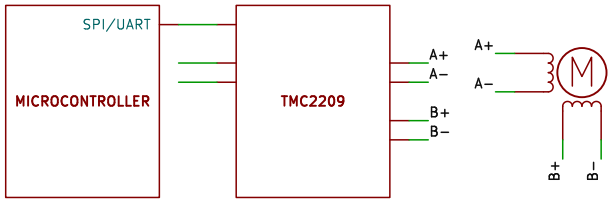
Sheet: /TMC2209/description/

File: tmc2209-description.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 13/25



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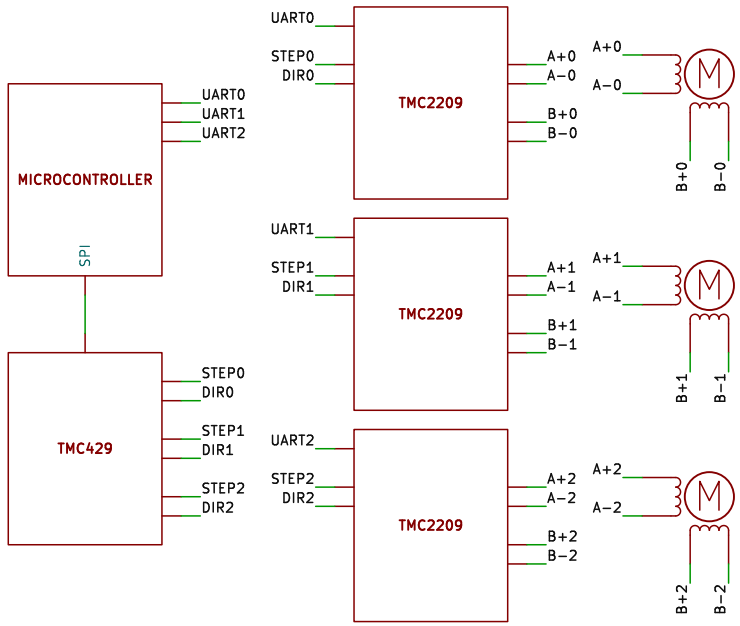
Sheet: /TMC2209/microcontroller/

File: tmc2209–microcontroller.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024–08–01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 14/25



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Sheet: /TMC2209/stepper−controller/		
File: tmc2209−stepper−controller.kicad_sch		
Title: Trinamic Wiring		
Size: A4	Date: 2024−08−01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 15/25

description

File: tmc51x0-description.kicad_sch

microcontroller

File: tmc51x0-microcontroller.kicad_sch

tmc51x0-spi

File: tmc51x0-spi.kicad_sch

tmc51x0-uart

File: tmc51x0-uart.kicad_sch

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Sheet: /TMC51X0/

File: tmc51x0.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 16/25

pico

File: tmc51x0-tmc51x0-eval-pico.kicad_sch

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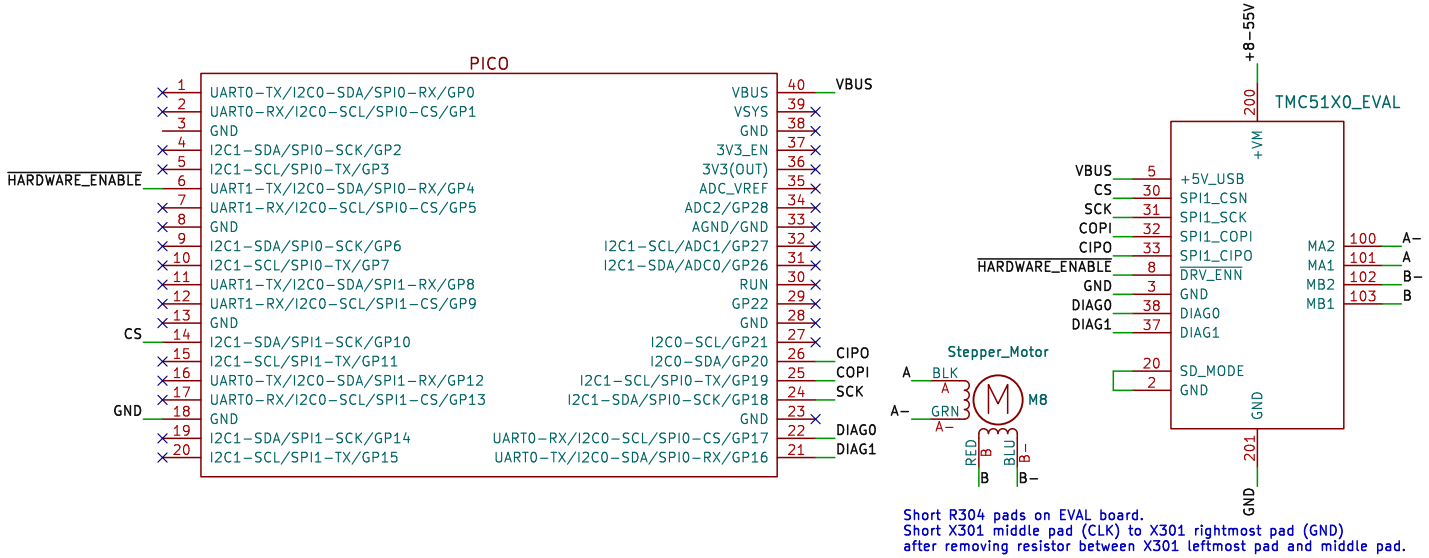
Sheet: /TMC51X0/tmc51x0-spi/tmc51x0-eval/

File: tmc51x0-eval.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 17/25



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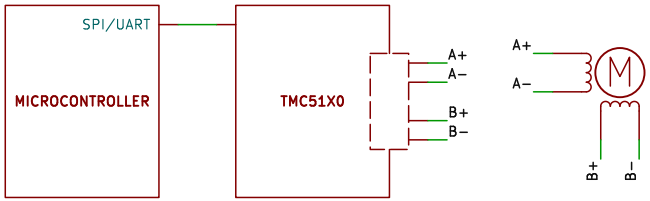
Sheet: /TMC51X0/tmc51x0-spi/tmc51x0-eval/pico/		
File: tmc51x0-tmc51x0-eval-pico.kicad_sch		
Title: Trinamic Wiring		
Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 18/25



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Sheet: /TMC51X0/microcontroller/

File: tmc51x0-microcontroller.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 19/25

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Sheet: /TMC51X0/tmc51x0-uart/

File: tmc51x0-uart.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 20/25

teensy40

File: tmc51x0-tmc51x0-bob-teensy40.kicad_sch

pico

File: tmc51x0-tmc51x0-bob-pico.kicad_sch

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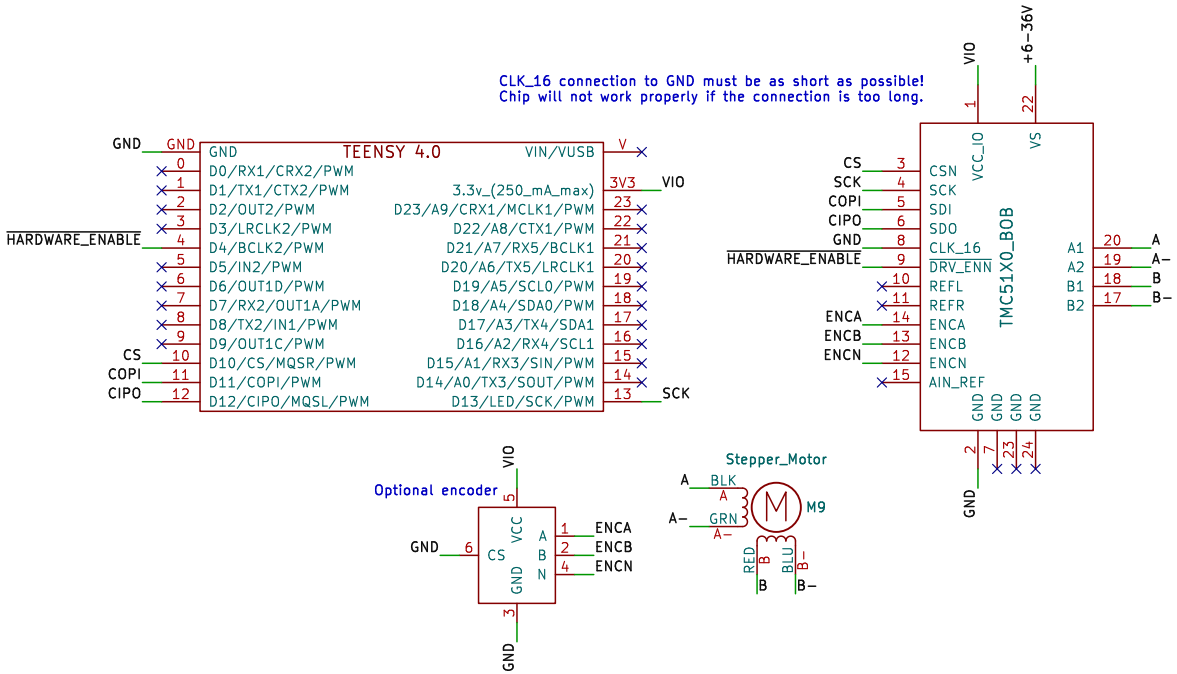
Sheet: /TMC51X0/tmc51x0-spi/tmc51x0-bob/

File: tmc51x0-bob.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 21/25



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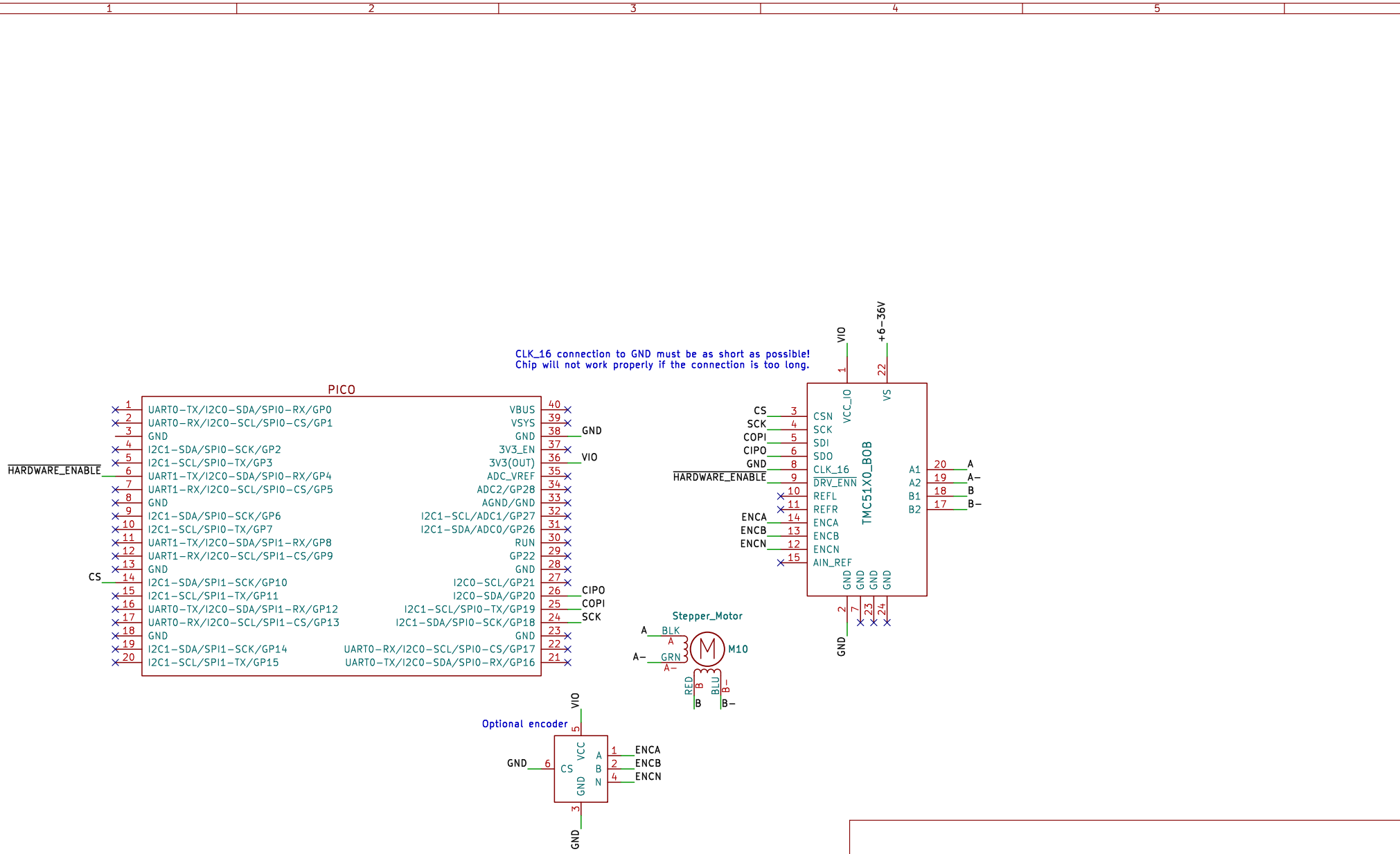
Sheet: /TMC51X0/tmc51x0-spi/tmc51x0-bob/teensy40/
File: tmc51x0-tmc51x0-bob-teensy40.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 22/25



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Sheet: /TMC51X0/tmc51x0-spi/tmc51x0-bob/pico/
File: tmc51x0-tmc51x0-bob-pico.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 23/25

tmc51x0-bob

File: tmc51x0-bob.kicad_sch

tmc51x0-eval

File: tmc51x0-eval.kicad_sch

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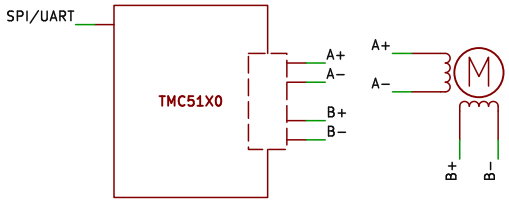
Sheet: /TMC51X0/tmc51x0-spi/

File: tmc51x0-spi.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 24/25



Janelia Research Campus

Sheet: /TMC51X0/description/

File: tmc51x0-description.kicad_sch

Title: Trinamic Wiring

Size: A4	Date: 2024-08-01	**Rev: 0.5**
KiCad E.D.A. kicad 7.0.11		Id: 29/25