6 Digit Nixie Clock "64Bit" - Display Board

A project started in earnest September 2025

64Bit comes from the fact that this clock is driven with shift registers. Between the 6 nixie digits, and indicators, 64 bits are sent from the microcontroller to the shift registers to create the display output

On this Display PCB is mounted 6 IN-12 Nixie tubes, and 6 INS-1 indicator Nixie bulbs. Each IN-12 has 10 filaments. The indicator pairs between the tubes are controlled together. The INS-1 bulbs on the far left end are individually contrllable.

The shift registers that control the nixie output are located on this PCB. There is a built in diode in the shift registers to prevent glowing of the tubes when they are supposed to be turned off.

This PCB passes the neopixel signal into the LED board. The LED board is mounted behind the Display PCB. It mounts an RGB LED behind each IN-12 Nixie Tube.

The loops for the safety circuit pass through this PCB. This ensures the high voltage power supply cannot turn on unless this board is plugged in.

The IN-12 Nixie tubes are plugged into this Display PCB via socket pins that are soldered to the PCB. The INS-1 Nixie indicators are soldered directly to the PCB with a 3D printed base that controls installation height

Nixie Tubes

Nixie Control

Connectors

Kadin Whiting

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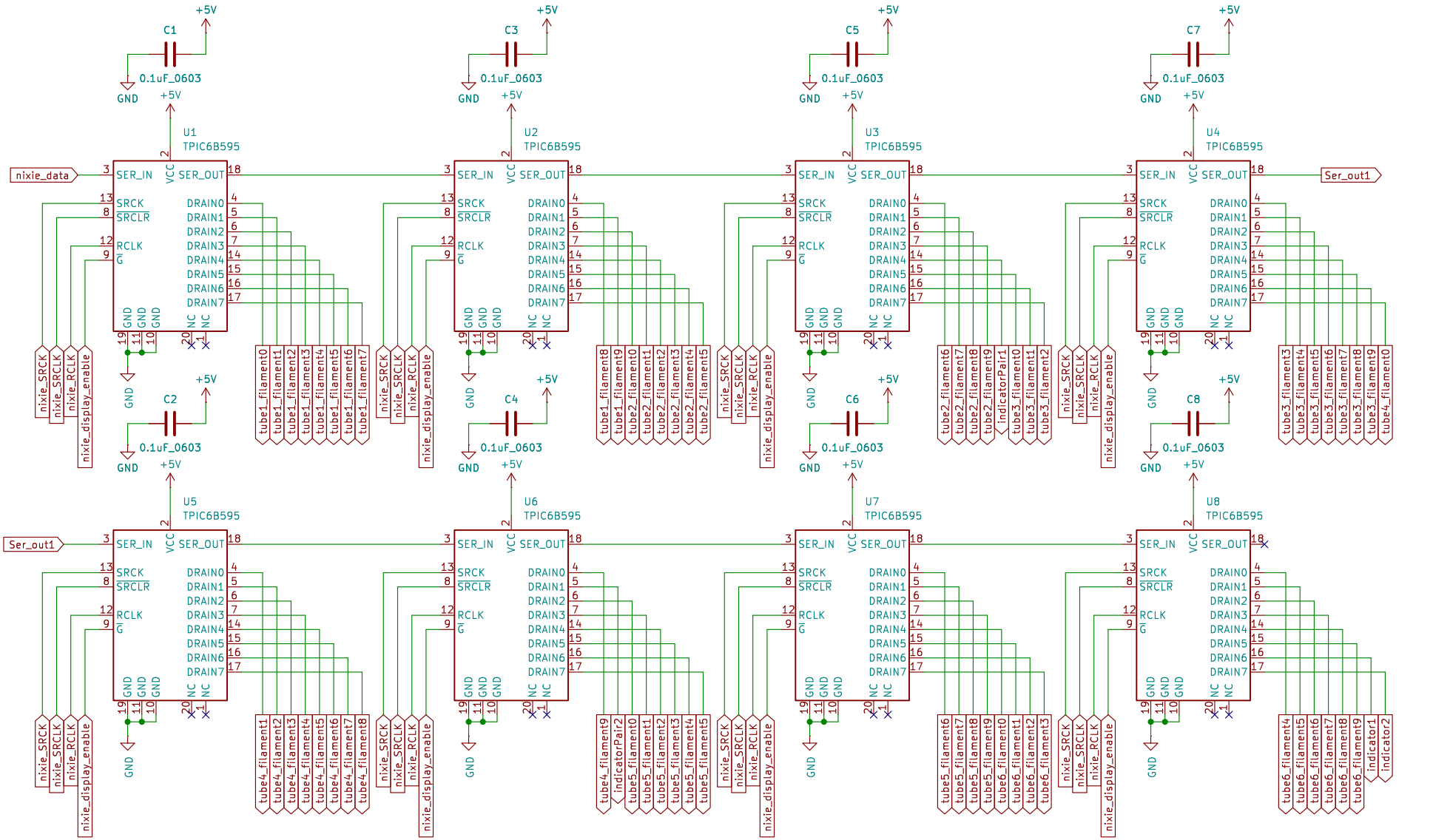
File: 64 Bit - Display Board.kicad_sch

Title: Project Overview

Size: A4	Date: 2025-10-04	**Rev: 1**
KiCad E.D.A. 9.0.4		Id: 1/4



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Sheet: /Nixie Control/

File: Nixie Control.kicad_sch

Title: Nixie Control – Shift Register

Size: A4	Date: 2025-10-04	**Rev: 1**
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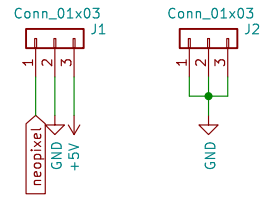
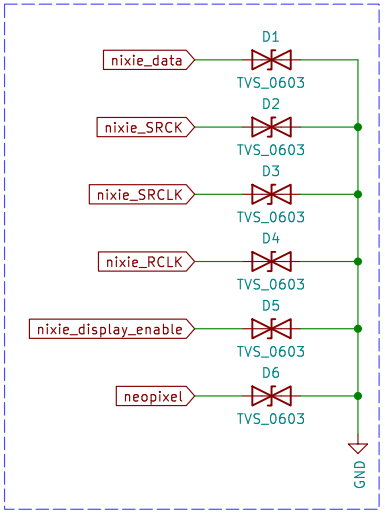
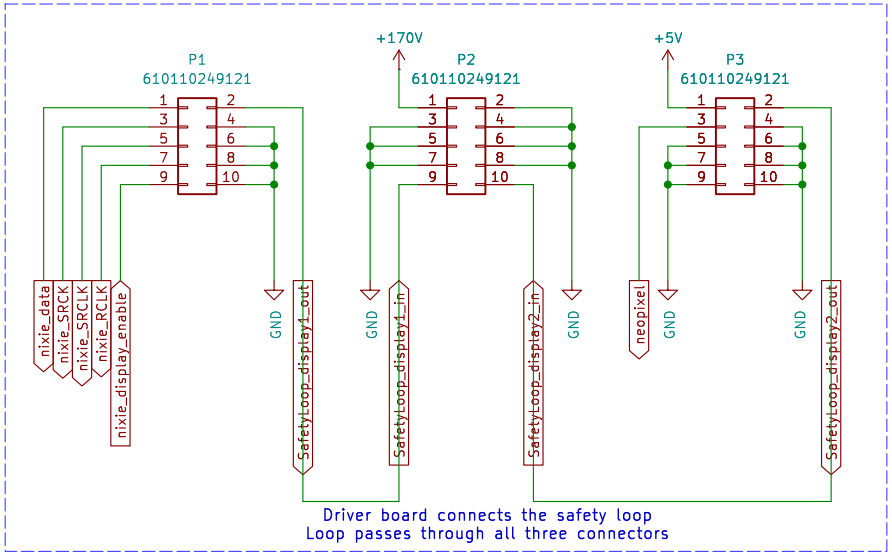
connections to LED board



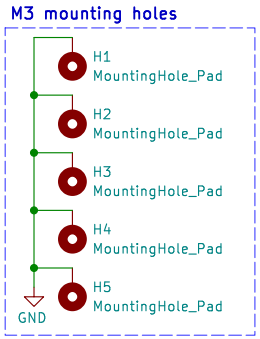
ESD protection



connections to driver board



M3 mounting holes



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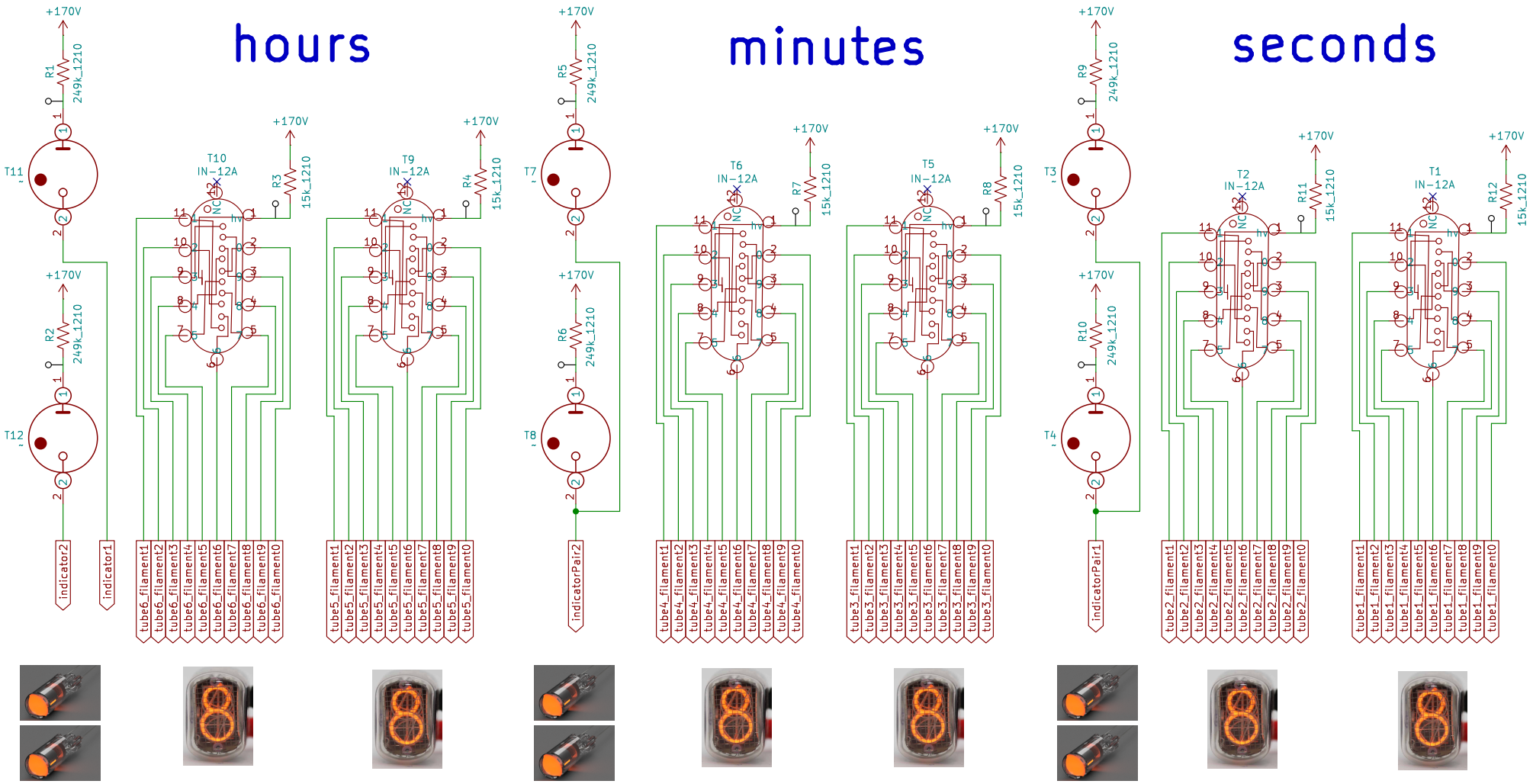
Sheet: /Connectors/		
File: Connectors.kicad_sch		
Title: Connectors		
Size: A4	Date: 2025-10-04	**Rev: 1**
KiCad E.D.A. 9.0.4		Id: 3/4



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Sheet: /Nixie Tubes/
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Title: Nixie Tubes

Size: A4	Date: 2025-10-04	**Rev: 1**
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