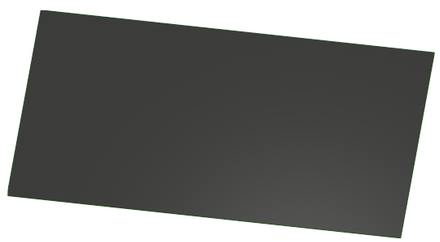
Nixie Clock Main Board

Variant: DRAFT

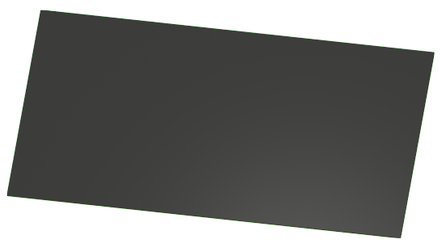
2026-03-03

Rev + (Unreleased)

TOP VIEW



BOTTOM VIEW



NOTES

Nixie Clock Main Board Document

Comment

Not fitted components are marked as ✗

DRAFT - Very early stage of schematic, ignore details.
PRELIMINARY - Close to final schematic.
CHECKED - There shouldn't be any mistakes. Contact the engineer if you find any.
RELEASED - A board with this schematic has been sent to production.

Date: 03-Mar-2026

DESIGN CONSIDERATIONS

DESIGN NOTE: Example text for informational design notes.

DESIGN NOTE: Example text for debug notes.

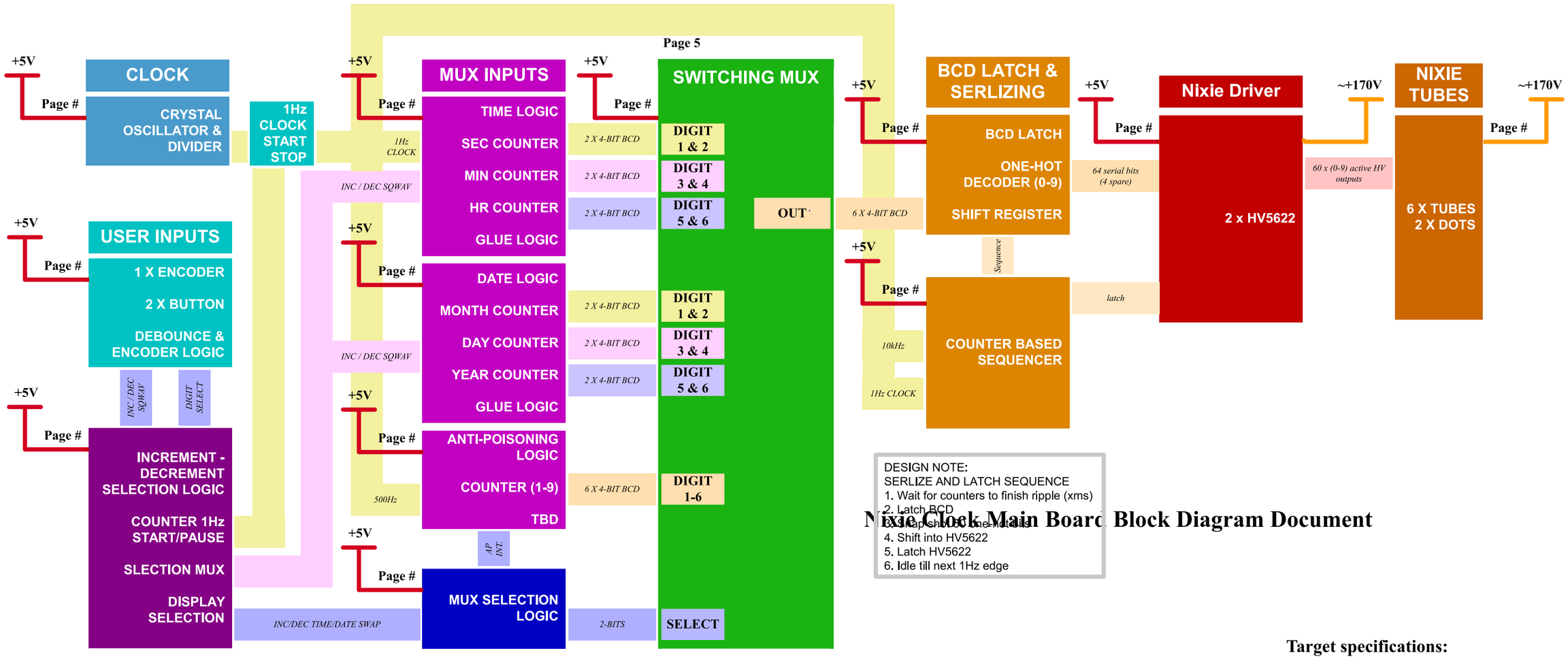
DESIGN NOTE: Example text for cautionary design notes.

DESIGN NOTE: Example text for critical design notes.

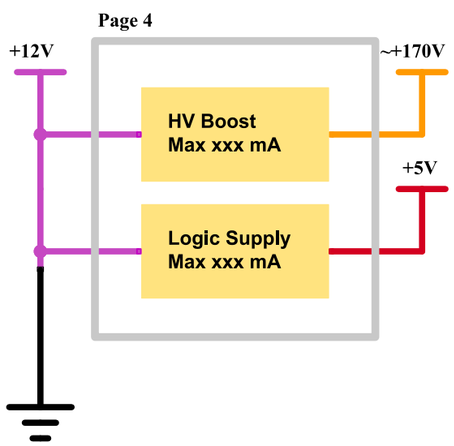
LAYOUT NOTE: Example text for critical layout guidelines.

Comments:	Company: **Company Name**		Variant: DRAFT	
	Board Name: **Nixie Clock Main Board**		Project Name: **Nixie Tube Clock**	
Sheet Title:	File Name: Nixie_Tube_Clock.kicad_sch	Designer: Aidan Brzezinski	Date: 2025-01-12	Revision: + (Unreleased)
Sheet Path: /		Reviewer:	Size: **A3**	Sheet: **1** of **10**

[2] Block Diagram



DESIGN NOTE:
SERLIZE AND LATCH SEQUENCE
1. Wait for counters to finish ripple (xms)
2. Latch BCD
3. Take snapshot of one minute
4. Shift into HV5622
5. Latch HV5622
6. Idle till next 1Hz edge



DESIGN NOTE:
TIMER FOR AP CYCLE HARD SET ~1HR NOT SURE. INCLUDE BUTTON SOMEWHERE, NOT DIRECT USER INPUT.

ENCODER FOR INCRMENT DECRMENT, 1 BUTTON FOR CYCLING THROUGH DIGITS, 1 BUTTON FOR SHOWING DATE ~15 SECONDS.

FOR INCREMENT - DECREMENT AN ENCODER INC. AND DEC. AND CYCLE BUTTON. FIRST THE CYCEL BUTTON WILL PAUSE THE 1Hz CLOCK, THEN THE CYCLE BUTTON WILL INCREMENT A COUNTER THAT WILL GO TO A MUX SELECT THAT CHANGES BTWEEN: SS, MM, HH, (AT THIS POINT THE DISPLAY WILL SWAP TOO)MM, DD, YY, THEN ENABLE THE 1Hz CLOCK AGAIN(AND SWAP BACK).
THEN EACH INC, DEC, IS PASSED TROUGH TO THE RESPECTIVE COUNTER AND PUT INTO THE INCREMNT OR DECRMENT INPUT. THE INCRMENT WILL NEED TO BE AND WITH THE RESPECITVE INCREMNT FOR THAT COUNTER.

IMPORTANT: A COUNTER SHOULD NEVER RECEIVE AN INCREMNT AND DECREMENT AT THE SAME TIME.

Nixie Clock Main Board Block Diagram Document

Target specifications:

Input voltage:	?? - ?? V
Spec 2	??
Spec 3	??
Spec 4	??

Comments:	Company: **Company Name**		Variant: DRAFT	
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Sheet Title: Block Diagram	File Name: Block Diagram.kicad_sch	Designer: Aidan Brzezinski	Date: 2025-01-12	Revision: + (Unreleased)
Sheet Path: /Block Diagram/		Reviewer:	Size: **A3**	Sheet: **2** of **10**

[3] Project Architecture

Description

Clock - Oscillator & Divider

Page 4

File: Clock - Oscillator & Divider.kicad_sch

MUX Inputs - Time Logic

Page 5

File: Section B - Title B.kicad_sch

Switching MUX

Page 5

File: Switching MUX.kicad_sch

MUX Inputs - Date Logic

Page 5

File: MUX Inputs - Date Logic.kicad_sch

MUX Inputs - Anti-Poisoning Logic

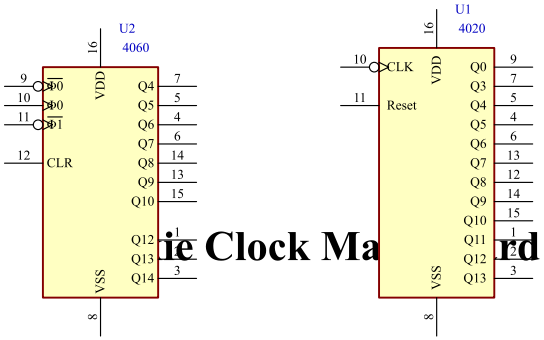
Page 5

File: MUX Inputs - Anti-Poisoning Logic.kicad_sch

Nixie Clock Main Board Project Architecture Document

Comments:	Company: **Company Name**		Variant: DRAFT		
	Board Name: **Nixie Clock Main Board**		Project Name: **Nixie Tube Clock**		
Sheet Title: Project Architecture	File Name: Project Architecture.kicad_sch	Designer: Aidan Brzezinski	Date: 2025-01-12	Revision: + (Unreleased)	
Sheet Path: /Project Architecture/		Reviewer:	Size: **A3**	Sheet: **3** of **10**	

[4] Clock



ie Clock Ma rd Clock Document

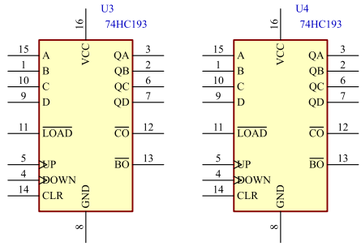
Block Description

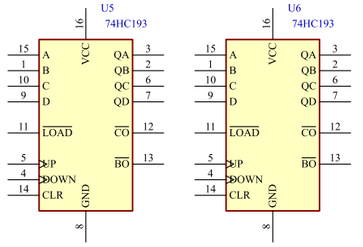
LAYOUT NOTE:
blablabla

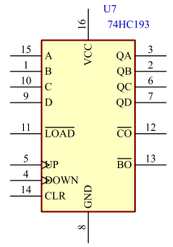
DESIGN NOTE:
blablabla

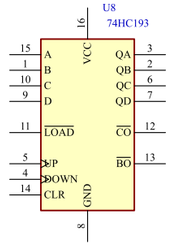
Comments: AN5346 STM32G474 Datasheet p.81 J. Pieper ADC investigation	Company: **Company Name**		Variant: DRAFT	
	Board Name: **Nixie Clock Main Board**		Project Name: **Nixie Tube Clock**	
Sheet Title: Clock - Oscillator & Divider	File Name: Clock - Oscillator & Divider.kicad_sch	Designer: Aidan Brzezinski	Date: 2025-01-12	Revision: + (Unreleased)
Sheet Path: /Project Architecture/Clock - Oscillator & Divider/		Reviewer:	Size: **A4**	Sheet: **4** of **10**

[5] Sheet Title B









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Nixie Clock Main Board Sheet Title B Document

Comments: **References:** Flexible I/O worked examples Flexible I/O source configuration	Company: **Company Name**		Variant: DRAFT	
	Board Name: **Nixie Clock Main Board**		Project Name: **Nixie Tube Clock**	
Sheet Title: MUX Inputs - Time Logic	File Name: Section B - TItle B.kicad_sch	Designer: Aidan Brzezinski	Date: 2025-01-12	Revision: + (Unreleased)
Sheet Path: /Project Architecture/MUX Inputs - Time Logic/		Reviewer:	Size: **A3**	Sheet: **5** of **10**

[8] Sheet Title B

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Nixie Clock Main Board Sheet Title B Document

Comments: **References:** Flexible I/O worked examples Flexible I/O source configuration	Company: **Company Name**		Variant: DRAFT	
	Board Name: **Nixie Clock Main Board**		Project Name: **Nixie Tube Clock**	
Sheet Title: MUX Inputs - Anti-Poisoning Logic	File Name: MUX Inputs - Anti-Poisoning Logic.kicad_sch	Designer: Aidan Brzezinski	Date: 2025-01-12	Revision: + (Unreleased)
Sheet Path: /Project Architecture/MUX Inputs - Anti-Poisoning Logic/		Reviewer:	Size: **A3**	Sheet: **8** of **10**

[9] Sheet Title B

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Nixie Clock Main Board Sheet Title B Document

Comments: **References:** Flexible I/O worked examples Flexible I/O source configuration	Company: **Company Name**		Variant: DRAFT	
	Board Name: **Nixie Clock Main Board**		Project Name: **Nixie Tube Clock**	
Sheet Title: Switching MUX	File Name: Switching MUX.kicad_sch	Designer: Aidan Brzezinski	Date: 2025-01-12	Revision: + (Unreleased)
Sheet Path: /Project Architecture/Switching MUX/		Reviewer:	Size: **A3**	Sheet: **9** of **10**

[10] Sheet Title B

Block Description

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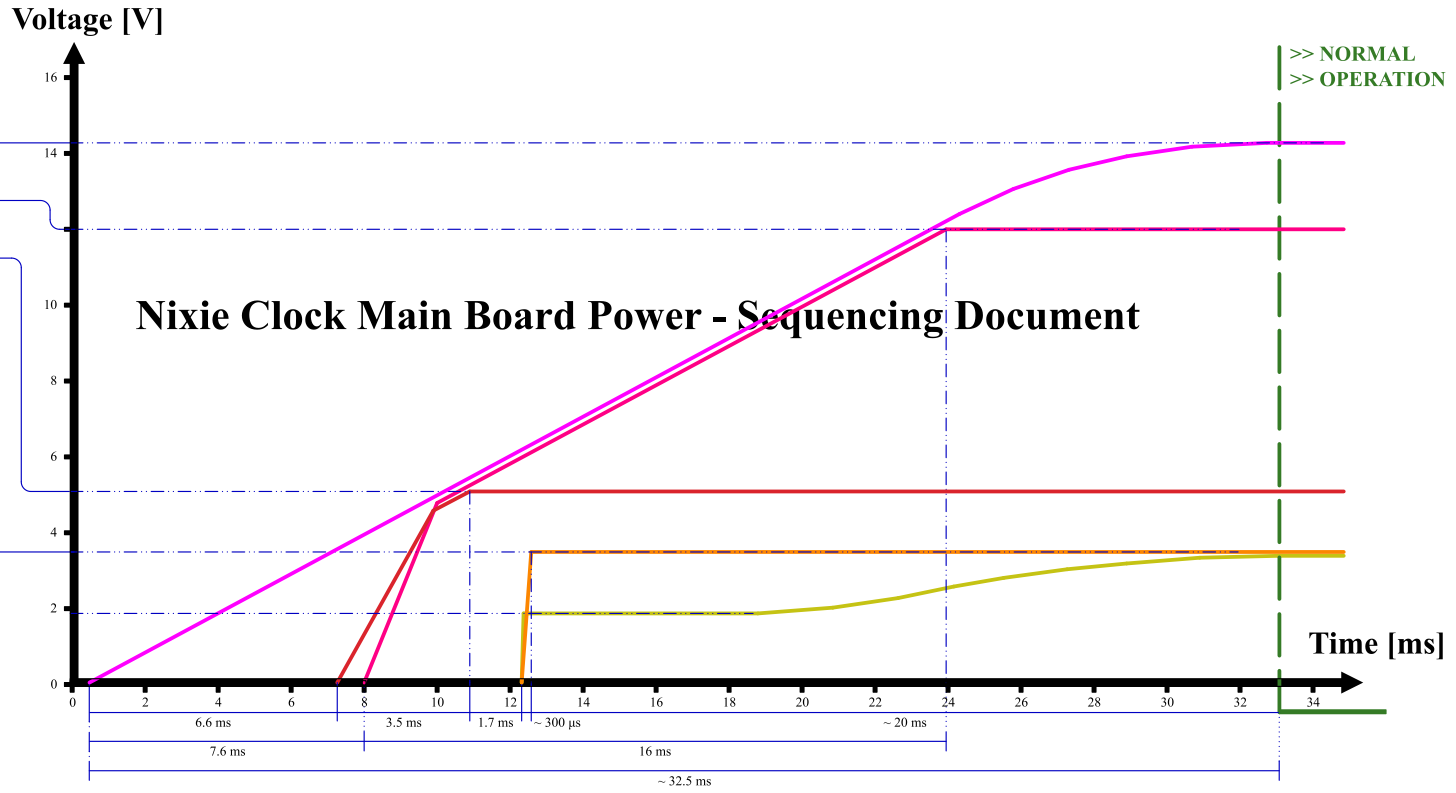
Nixie Clock Main Board Sheet Title B Document

Comments: **References:** Flexible I/O worked examples Flexible I/O source configuration	Company: **Company Name**		Variant: DRAFT	
	Board Name: **Nixie Clock Main Board**		Project Name: **Nixie Tube Clock**	
Sheet Title: MUX Inputs - Date Logic	File Name: MUX Inputs - Date Logic.kicad_sch	Designer: Aidan Brzezinski	Date: 2025-01-12	Revision: + (Unreleased)
Sheet Path: /Project Architecture/MUX Inputs - Date Logic/		Reviewer:	Size: **A3**	Sheet: **10** of **10**

[6] Power - Sequencing

NAME	SOURCE	LEVEL
+V??	??	? - ? ± ??%
+V??	??	? - ? ± ??%
+V??	??	? - ? ± ??%
+V??	??	? - ? ± ??%
+V??	??	? - ? ± ??%



	Comments:	Company: **Company Name**		Variant: DRAFT
		Board Name: **Nixie Clock Main Board**		Project Name: **Nixie Tube Clock**
	Sheet Title: Power - Sequencing	File Name: Power - Sequencing.kicad_sch	Designer: Aidan Brzezinski	Date: 2025-01-12 / Revision: + (Unreleased)
	Sheet Path: /Power - Sequencing/		Reviewer:	Size: **A4** / Sheet: **6** of **10**

[7] Revision History

Nixie Clock Main Board Revision History Document

Comments:	Company: **Company Name**		Variant: DRAFT	
	Board Name: **Nixie Clock Main Board**		Project Name: **Nixie Tube Clock**	
Sheet Title: Revision History	File Name: Revision History.kicad_sch	Designer: Aidan Brzezinski	Date: 2025-01-12	Revision: + (Unreleased)
Sheet Path: /Revision History/		Reviewer:	Size: **A4**	Sheet: **7** of **10**