Nixie Clock Main Board

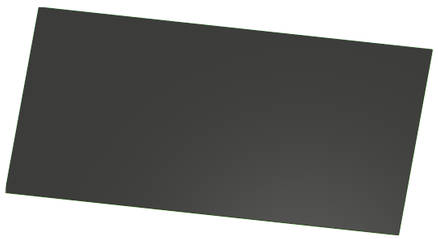
Variant: DRAFT

2026-02-26

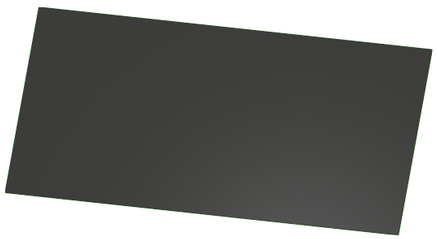
Rev + (Unreleased)

Page	Index	Page	Index	Page	Index	Page	Index
1	Cover Page	11	.....	21	.....	31	.....
2	Block Diagram	12	.....	22	.....	32	.....
3	Project Architecture	13	.....	23	.....	33	.....
4	123	14	.....	24	.....	34	.....
5	123	15	.....	25	.....	35	.....
6	Power - Sequencing	16	.....	26	.....	36	.....
7	Revision History	17	.....	27	.....	37	.....
8	124	18	.....	28	.....	38	.....
9	.....	19	.....	29	.....	39	.....
10	.....	20	.....	30	.....	40	.....

TOP VIEW



BOTTOM VIEW



NOTES

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: 26-Feb-2026

DESIGN CONSIDERATIONS

DESIGN NOTE: Example text for informational design notes.

DESIGN NOTE: Example text for debug notes.

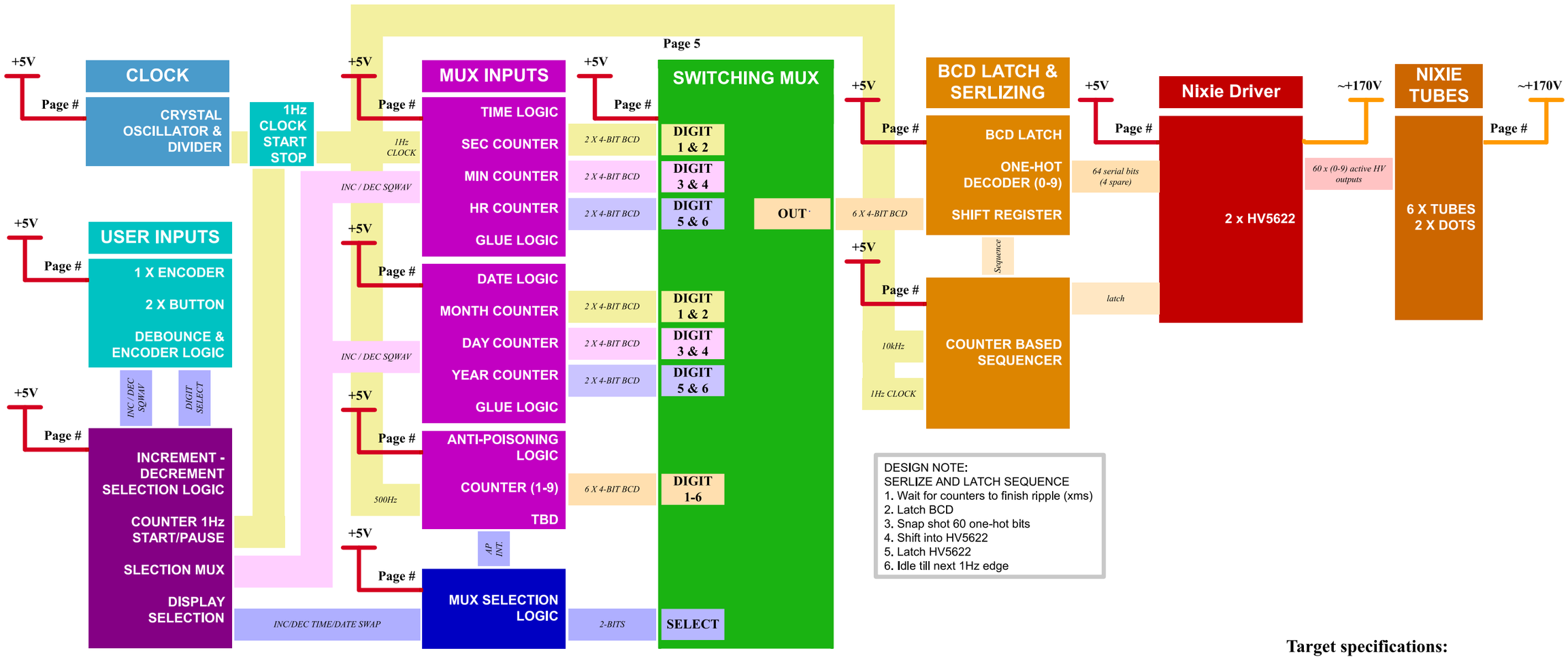
DESIGN NOTE: Example text for cautionary design notes.

DESIGN NOTE: Example text for critical design notes.

LAYOUT NOTE: Example text for critical layout guidelines.

Comments:	Company: **Company Name**		Variant: DRAFT	Git Hash: b199e49
	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 **8**

[2] Block Diagram



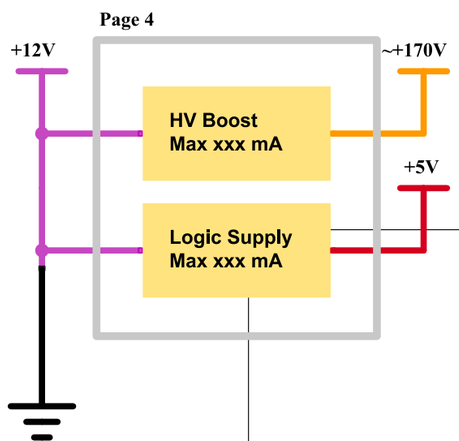
DESIGN NOTE:
SERLIZE AND LATCH SEQUENCE
1. Wait for counters to finish ripple (xms)
2. Latch BCD
3. Snap shot 60 one-hot bits
4. Shift into HV5622
5. Latch HV5622
6. Idle till next 1Hz edge

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.



Target specifications:

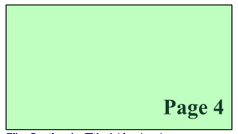
Input voltage:	?? - ?? V
Spec 2	??
Spec 3	??
Spec 4	??

Comments:	Company: **Company Name**	Variant: DRAFT	Git Hash: b199e49
	Board Name: **Nixie Clock Main Board**	Project Name: **Nixie Tube Clock**	
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 **8**

[3] Project Architecture

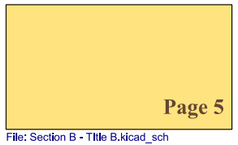
Description

123



File: Section A - Title A.kicad_sch

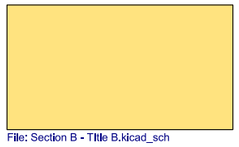
123



File: Section B - Title B.kicad_sch

Description

124



File: Section B - Title B.kicad_sch

Comments:	Company: **Company Name**		Variant: DRAFT	Git Hash: b199e49
	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 **8**

[4] Sheet Title A

LAYOUT NOTE:
blablabla

DESIGN NOTE:
blablabla

Block Description

Comments: AN5346 STM32G474 Datasheet p.81 J. Pieper ADC investigation	Company: **Company Name**		Variant: DRAFT	Git Hash: b199e49
	Board Name: **Nixie Clock Main Board**		Project Name: **Nixie Tube Clock**	
Sheet Title: Sheet Title A	File Name: Section A - Title A.kicad_sch	Designer: Aidan Brzezinski	Date: 2025-01-12	Revision: + (Unreleased)
Sheet Path: /Project Architecture/123/		Reviewer:	Size: **A4**	Sheet: **4** of **8**

[5] Sheet Title B

DESIGN NOTE:
blabla

DESIGN NOTE:
blabla

LAYOUT NOTE:
blabla

Block Description

Block Description

Block Description

Block Description

Block Description

Block Description

Block Description

Block Description

Block Description

Block Description

Comments: **References:** Flexible I/O worked examples Flexible I/O source configuration	Company: **Company Name**		Variant: DRAFT	Git Hash: b199e49
	Board Name: **Nixie Clock Main Board**		Project Name: **Nixie Tube Clock**	
Sheet Title: Sheet Title B	File Name: Section B - TItle B.kicad_sch	Designer: Aidan Brzezinski	Date: 2025-01-12	Revision: + (Unreleased)
Sheet Path: /Project Architecture/123/		Reviewer:	Size: **A3**	Sheet: **5** of **8**

[8] Sheet Title B

DESIGN NOTE:
blabla

DESIGN NOTE:
blabla

LAYOUT NOTE:
blabla

Block Description

Block Description

Block Description

Block Description

Block Description

Block Description

Block Description

Block Description

Block Description

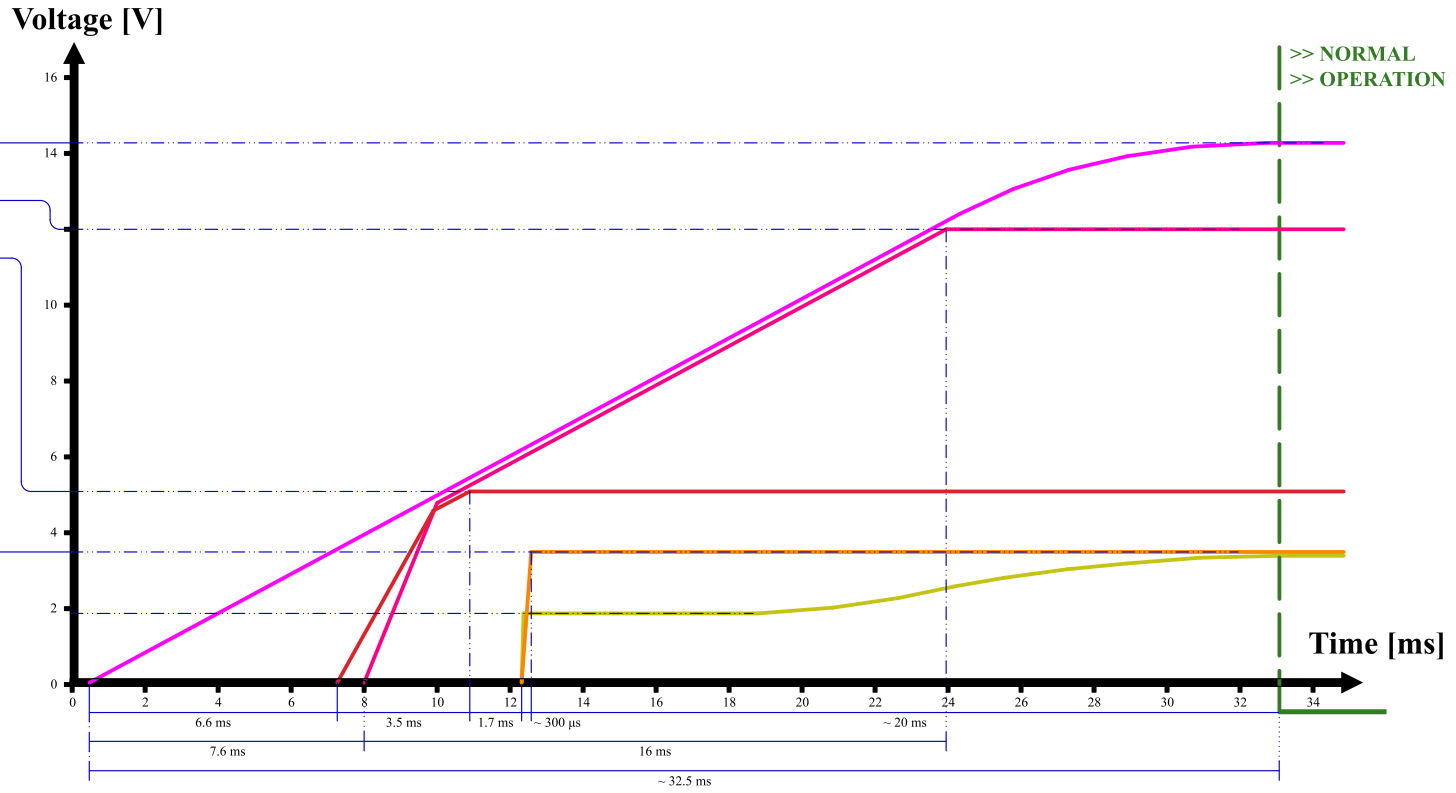
Block Description

Block Description

Comments: **References:** Flexible I/O worked examples Flexible I/O source configuration	Company: **Company Name**		Variant: DRAFT	Git Hash: b199e49
	Board Name: **Nixie Clock Main Board**		Project Name: **Nixie Tube Clock**	
Sheet Title: Sheet Title B	File Name: Section B - TItle B.kicad_sch	Designer: Aidan Brzezinski	Date: 2025-01-12	Revision: + (Unreleased)
Sheet Path: /Project Architecture/124/		Reviewer:	Size: **A3**	Sheet: **8** of **8**

[6] Power - Sequencing

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



Comments:	Company: **Company Name**		Variant: DRAFT	Git Hash: b199e49
	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 **8**

[7] Revision History

Comments:	Company: **Company Name**		Variant: DRAFT	Git Hash: b199e49
	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 **8**