

Readiness report — SMD Nixie Clock

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Readiness: SMD Nixie Clock

Verdict: Ready with caveats · 2026-07-09 · est. parts cost \$185-\$220

The hardware is largely obtainable, but the project relies on vintage Soviet-era Nixie tubes and indicator lamps sourced from secondary markets. Sourcing these requires verifying "new-old-stock" status. Additionally, the high-voltage shift registers (HV5622) show tightening stock levels at major distributors, which may constrain large group implementations. This is a baseline cold check of current market availability.

Action required

Part	Problem	Recommended action
MC78L05ABPX	Obsolete	Use substitute L78L05ACZTR.
67996-103HLF	Specific P/N unavailable	Use generic 1x3 0.1" (2.54mm) pin header or snap from a larger strip.
IN-14 Nixie Tube	Vintage/No longer produced	Purchase from secondary market (eBay/specialist) and verify tested status.

Parts

Integrated Circuits and Semiconductors

Part	Spec/Package	Status	Stock	Price	Source
IC1: ATmega328P-AU	LQFP-32	Active	10,288	\$2.66	DigiKey
U2, U3: HV5622PG-G	LQFP-44	Active	96	\$8.81	DigiKey
U1: DS3231SN#	SO-16-W	Active	3,220	\$17.49	DigiKey
U4: 78L05 Regulator	TO-92	Obsolete	0	—	—

Display Components

Part	Spec/Package	Status	Stock	Price	Source
N1-N7: IN-14 Nixie Tube	Russian Base	Surplus	Various	\$20.00	eBay
N4, N8: IN-3 Indicator	2-lead Neon	Surplus	High	\$1.75 (3-pk)	Electronic Goldmine

Resistors

Part	Spec/Package	Status	Stock	Price	Source
27 kΩ (R1, R4, R5, R6, R9, R10)	TH 5mm Spacing	Active	77,612	\$0.10	DigiKey
120 kΩ (R2, R7)	TH 5mm Spacing	Active	35,646	\$0.10	DigiKey
4.7 kΩ (R3, R8)	TH 5mm Spacing	Active	95,094	\$0.10	DigiKey
10 kΩ (R11)	TH 5mm Spacing	Active	619,610	\$0.10	DigiKey

Capacitors

Part	Spec/Package	Status	Stock	Price	Source
0.1 μF (C1, C4, C5)	TH 2.5mm Spacing	Active	35,451	\$0.27	DigiKey
22 pF (C2, C3)	TH 2.5mm Spacing	Active	390	\$0.37	DigiKey

Electromechanical and Support Hardware

Part	Spec/Package	Status	Stock	Price	Source
Y1: Crystal Oscillator	HC49-U (16 MHz)	Active	5,201	\$0.28	DigiKey
SW1-SW3: Tactile Button	RA SPST	Ready	High	\$0.60	SparkFun
CON1: DC Barrel Jack	TH PJ-102AH	Active	35,252	\$0.72	DigiKey
BT1: CR2032 Holder	SMD/TH Hybrid	Active	14,260	\$0.38	DigiKey
P1: ISP Header	2x03 2.54mm	Active	11,260	\$0.56	DigiKey
P2: Power Header	1x03 2.54mm	Not in stock	0	—	—
Nixie Sockets	Machine Tooled	Ready	High	\$2.00	Pololu
Boost Converter	NCH6100HV	Ready	High	\$11.58	eBay
Power Adapter	12V 1A DC	Ready	High	\$6.49	Waveshare
Chassis Hardware	4-40 Screw/Nut	not checked	—	—	—

Substitutes

For part	Substitute	Differences	Judgment
MC78L05ABPX	L78L05ACZTR	Physical and electrical match (5V, 100mA, TO-92).	Acceptable.

Verify any substitute against its datasheet before ordering.

Other dependencies

- **IDE:** Microchip Studio (Active/Ready).
- **Compiler:** AVR-GCC (Active/Ready).
- **External Libraries:** `millis` and `ds_rtc_lib` (Included in source/Ready).
- **Programming Hardware:** AVRISP mkII or similar ISP programmer (not checked).
- **Fabrication:** 2-layer PCB, 101.60mm x 38.10mm (Ready).
- **Chassis:** Wood or 3D printed enclosure (not checked).

Watch list

- **HV5622PG-G:** Stock is limited (under 100 units at DigiKey). Monitor availability closely if planning multiple kits.
- **IN-14 Tubes:** As vintage stock, prices fluctuate and availability decreases over time. Verify tube testing results from sellers.
- **22 pF Capacitors:** Stock level for specified P/N is relatively low (390 units); easily replaced by generic equivalents if depleted.