

www.Kama-Labs.com

(Assembly instructions and latest firmware you can find on my website)

SONYA v5

Made my own hands 😊

Thanks for purchase!!!

Features:

- * 6x **IN-4** Russian NIXIE tubes (made in 1970-80)
- * 2x INS-1 NIXIE separators (show am/pm and on/off of alarm)
 - * **32bit** STM32F100C8 processor
 - * **15** parameters
 - * 12/24 hours mode
 - * 1 Alarm
- * Turn off at night (increase lifetime of tubes in twice!)
 - * Fade leading zero
 - * Smooth PCB routing
- * Countdown timer 99days:23hour:59mins:59sec
 - * **Full remote control**
 - * **Anti-cathode poisoning system**
 - * **USB connection to PC** (for update firmware)
- * Double **Multicolour** led glow (independent random color leds and **RGB** leds under each tube)
 - * Adjustable brightness of **RGB** and AUTO leds
- * **RGB** led (6 colors of backlight or autochange color mode)
 - * Adjustable high-voltage block. **150-190 volts**.
 - * 10 modes of switch digits
 - * 2 modes of separator tubes
 - * **IN-4** tubes works in **static mode**

* 6 Russian chips K155ID1 in sockets

* **Thermometer**

* Correction of temperature

* Accurate to +/- 1 minute/year

* Setup of clock accuracy

* Date in format **DD.MM.YY** or **MM.DD.YY**

* **Backup battery**. Data is not lost when power off

* Power source - DC 12V barrel plug 5.5mm/2.1mm ("+" inside, "-" outside)

* Consuming current - no more 500mA

* Height of pcb with elements only 13 mm

* Noiseless work

Dimensions of the clock - 208mm(L) x 59mm(H) x 95mm(W)

* Dimensions of the clock in plastic case –

242mm(L) x 93mm(H) x 51mm(W)

DANGER! HIGH VOLTAGE! (~165 volts)

№	Parameter	Value
1	12/24 time format	0 - 12h time format 1 - 24h time format
2	Hi.Hour tube fading	0 - disable fading 1 - enable
3	Show time mode	0 - hard mode 1 - soft mode №1 2 - soft mode №2 3 - random mode №1 4 - random mode №2 5 - slot machine 6 - wave 7 - fade one by one 8 - shift 9 - run 10 - all effects one by one
4	Backlight mode	0 - all leds off 1..5 - brightness
5	Show current temperature	0 - disable 1 - every 2 minutes 2 - every 5 minutes
6	Work of separators	0 - disable 1 - work together

		2 - work alternately																				
7	Show current date	0 - off 1 - every 2 minutes 2 - every 5 minutes																				
8	Correction of temperature coefficient	0 .. 9 Current temp. - temp.coeff. = real temperature <table border="1" data-bbox="746 472 1497 965"> <thead> <tr> <th>Temp.coeff</th> <th>Current temp.</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>1</td><td>-1</td></tr> <tr><td>.</td><td>.</td></tr> <tr><td>.</td><td>..</td></tr> <tr><td>10</td><td>-10</td></tr> <tr><td>11</td><td>+1</td></tr> <tr><td>.</td><td>.</td></tr> <tr><td>.</td><td>.</td></tr> <tr><td>19</td><td>+10</td></tr> </tbody> </table>	Temp.coeff	Current temp.	0	0	1	-1	10	-10	11	+1	19	+10
Temp.coeff	Current temp.																					
0	0																					
1	-1																					
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.	..																					
10	-10																					
11	+1																					
.	.																					
.	.																					
19	+10																					
9	Clock accuracy correction	0 .. 9 Bigger value - slowly clock																				
10	Date format	0 - DD.MM.YY 1 - MM.DD.YY																				
11	Temperature format	0 - Celsius 1 - Fahrenheit																				
12	Brightness of BOTTOM LEDs	0 .. 6																				
13	Firmware type	0 - for IN-14, IN-4, IN-16, IN-8 and IN-18 nixie clocks 1 - for IV-9 Numitron clock																				
14	Anti-cathode poisoning For NIXIE clocks only	0 - Off 1 - Every 1 minute 2 - Every 5 minutes 3 - Every 10 minutes																				
15	Night fading	0 - Off 1 - On																				

How to use remote control?

Button	Action
OK	Enter/exit in menu
◀ ▶	Next effect of switch digits / next value
▲ ▼	Change value
1	Time setup
2	Alarm setup
3	Date setup
4	Show temperature
5	Show date
6	On/off alarm
7	Countdown timer setup
8	Turn off LEDs and tubes
9	Change brightness of bottom LEDs
*	Change brightness of top LEDs
#	Change color of top LEDs

- Use ◀ ▶ for change position in setup modes
- For change value you can use ▲ ▼ or use any number buttons

How to set time or alarm?

1) Press 1 key on remote for enter in time setup and 1 key for enter in alarm setup.

* Note: in time setup current time shows in 24h format only

2) Set hours

3) Press ▶ key for go to minutes setting

4) Press ▶ key again for set seconds

6) Seconds will reset to "00" if you will press ▲ key

7) Press ▶ key for exit from setting time mode



How to change settings?

- 1) Press **OK** for enter into menu
- 2) You will see number of parameter (1) and value of parameter (0):
1_ : _ _ : _ 0
- 3) Press **▲ ▼** for changing value
- 4) Press **◀ ▶** for switch parameter
- 5) Press **OK** for exit.

How to set current date?

- 1) Press **3** key
- 2) You will see date in DD.MM.YY format
- 3) Use **▲ ▼** for changing value or use any number buttons
- 4) Press **◀ ▶** for switch position

How to change color of LEDs and brightness?

Press ***** key to change brightness of top LEDs and **#** key to change color. 3 times flashing means that color will change slowly and automatically.

9 key will change brightness of bottom leds. You can't change their color.

How to set countdown timer?

Press **7** key to enter in countdown timer setup. You will see current timer value in DD:HH:MM format. Press **OK** key for **START/STOP** timer. Press **1** key to enter into setup mode. Set consistently DD -> HH -> MM -> SS values.

Press **7** key for exit from timer setup mode. Timer will work in background.

Remote control in timer mode:

Button	Action
OK	START/STOP timer
▶	DD:HH:MM / HH:MM:SS
◀	Reset to previous timer value
1	Timer setup
7	Exit

Left separator tube show on/off timer.

Right separator tube ON = DD:HH:MM

OFF = HH:MM:SS

How to make HARD RESET if something wrong?

When your clock starts, you will see firmware version. Something like: 21 11 19

If you will press OK key in this moment, clock will reset all your setting. You will hear p-i-i-i-i-i-p p-i-p p-i-p. That is mean HARD RESET been done.

How to set night fading?

Set 15th parameter to 1 and press # key. You will enter into setup. You will hear b-i-i-i-p and will see:

00 : __ : __

Now, you need set time of START and STOP fading.

Example: you go to sleep at 11:10PM and get up 6:30AM. So, you need to set START time as 23:10 and STOP time as 6:30

Power plug for 12V DC power adapter

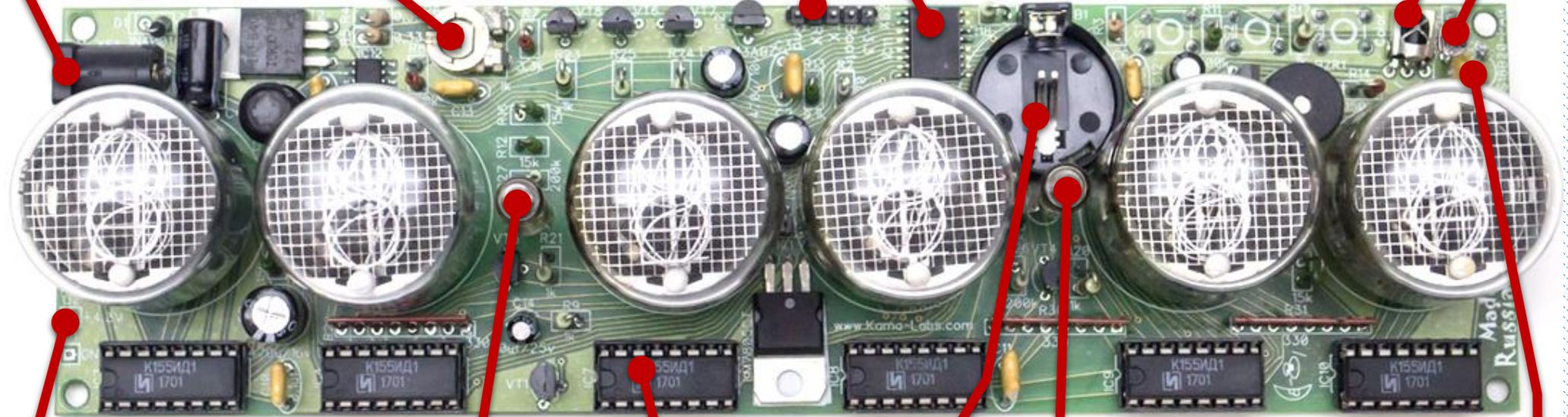
Diagnostic socket/
socket for USB-UART
converter

High precision
real-time chip

Light sensor

Infrared Receiver

High voltage
adjuster



Am/Pm separator

Battery holder

Temperature sensor

Alarm separator

+4.3V, +160V, GND
diagnostic points

Nixie tube drivers