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

<table>
<tr><td></td><td></td><td>2 - work alternately</td></tr>
<tr><td>7</td><td>Show current date</td><td>0 - off
1 - every 2 minutes
2 - every 5 minutes</td></tr>
<tr><td>8</td><td>Correction of temperature coefficient</td><td>0 .. 9
Current temp. - temp.coeff. = real temperature

<table><tr><th>Temp.coeff</th><th>Current temp.</th></tr><tr><td>0
1
.
.
10
11
.
.
19</td><td>0
-1
.
..
-10
+1
.
.
+10</td></tr></table></td></tr>
<tr><td>9</td><td>Clock accuracy correction</td><td>0 .. 9
Bigger value - slowly clock</td></tr>
<tr><td>10</td><td>Date format</td><td>0 - DD.MM.YY
1 - MM.DD.YY</td></tr>
<tr><td>11</td><td>Temperature format</td><td>0 - Celsius
1 - Fahrenheit</td></tr>
<tr><td>12</td><td>Brightness of BOTTOM LEDs</td><td>0 .. 6</td></tr>
<tr><td>13</td><td>Firmware type</td><td>0 - for IN-14, IN-4, IN-16, IN-8 and IN-18 nixie clocks
1 - for IV-9 Numitron clock</td></tr>
<tr><td>14</td><td>Anti-cathode poisoning
For NIXIE clocks only</td><td>0 - Off
1 - Every 1 minute
2 - Every 5 minutes
3 - Every 10 minutes</td></tr>
<tr><td>15</td><td>Night fading</td><td>0 - Off
1 - On</td></tr>
</table>

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-i-p p-i-p p-i-p. That is mean HARD RESET been done.

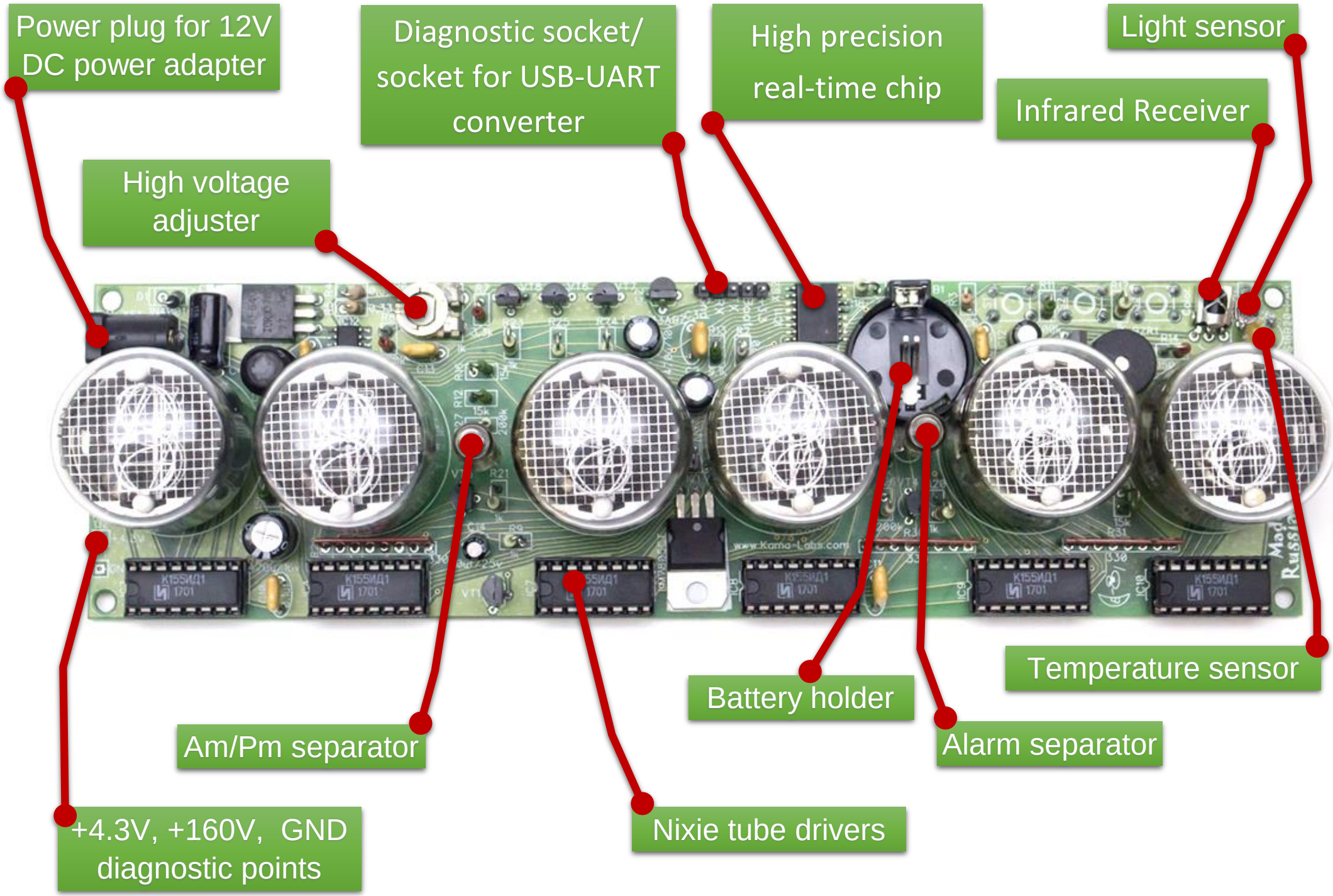
How to set night fading?

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
Temperature sensor
Battery holder
Alarm separator
Am/Pm separator
Nixie tube drivers
+4.3V, +160V, GND diagnostic points