

# www.Kama-Labs.com

## ELENA v10

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

Assembled my own hands 😊

# Thanks for purchase!!!

### Features:

- \* 4x **IV-11 or IV-12** Russian VFD tubes (made in 1990-93)
  - \* Universal design to use IV-11 or IV-12 tubes
  - \* 1x IV-1 VFD separator (show on/off of alarm)
    - \* **32bit** STM32F100C8 processor
      - \* 13 parameters
      - \* 20 years lifetime of tubes
        - \* 12/24h time mode
        - \* 1 Alarm
  - \* Fade at night (increase lifetime of tubes in twice!)
    - \* Fade leading zero
    - \* Noiseless work
    - \* Smooth PCB routing
    - \* Full remote control
  - \* **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)
  - \* 9 modes of switch digits
  - \* **IV-11/IV-12** tubes works in static mode
    - \* Thermometer

- \* Correction of temperature
  - \* Temperature format: Celsius or Fahrenheit
    - \* 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 5V barrel plug 5.5mm/2.1mm ("+" inside, "-" outside) or Micro-USB
    - \* Consuming current - 500mA
    - \* Height of pcb with elements only 13 mm
- Dimensions of the clock - 115mm(L) x 55mm(H) x 70mm(W).  
 Dimensions of the clock in case - 146mm(L) x 87mm(W) x 90mm(H).

№	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 - constructor 2 - smooth 3 - slot machine №1 4 - slot machine №2 5 - wave 6 - random fade 7 - shift 8 - all effects one by one 9 - reserved for service functions 10 - service mode: show ADC value from light sensor
4	Backlight mode	0 - all leds off 1..5 - brightness 6 – AUTO brightness
5	Show current temperature	0 - disable 1 - every 2 minutes 2 - every 5 minutes
6	Night fading	0 - Off 1 - On

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="746 421 1497 913"> <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
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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	Brightness of tubes	0 .. 3 4 – automatic brightness																				
14	Motion sensor	0 - off 1 – show time for 30sec 2 – show time for 1min 3 – show time for 3min																				

## How to use remote control?

Button	Action
OK	Enter/exit in parameters mode
◀ ▶	Next effect of switch time
▲ ▼	Change value
0	HH:MM or MM:SS time format

<b>1</b>	Time setup
<b>2</b>	Alarm setup
<b>3</b>	Date setup
<b>4</b>	Show temperature
<b>5</b>	Show date
<b>6</b>	On/off alarm
<b>7</b>	
<b>8</b>	Fade LEDs and tubes
<b>9</b>	Brightness of bottom LEDs
<b>*</b>	Change brightness of top LEDs
<b>#</b>	Change color of top LEDs *
<b>▲</b>	Change brightness of tubes

- \* # - change color one by one. When top leds will blink 3 times with white clock that's mean AUTO color change mode activated. Another click to '#' will freeze current color
- 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 **2** 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 make HARD RESET if something wrong?

When your clock starts, you will see firmware version. Something like:        27 05

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's mean HARD RESET is done.

### How to set night fading?

Set 6<sup>th</sup> 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 5V DC power supply

Light sensor

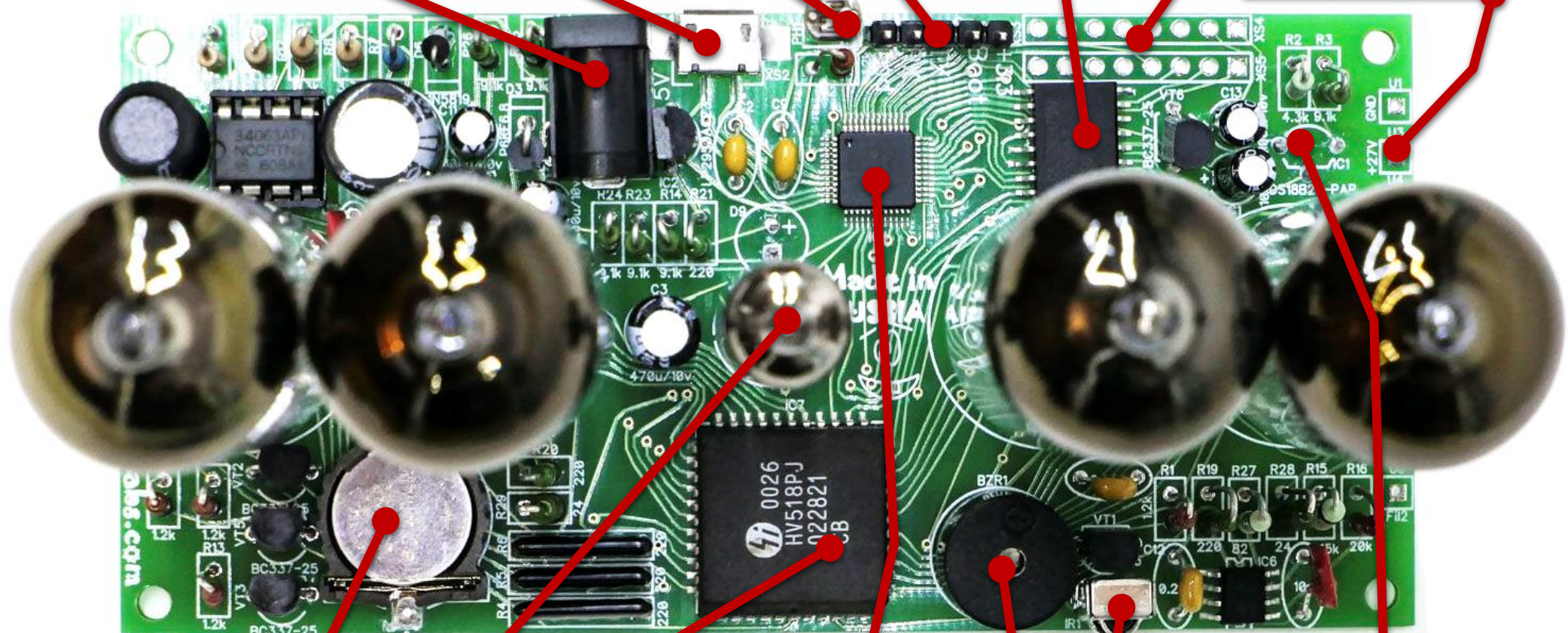
Socket for updating firmware

High-precision time chip DS32kHz

Micro-USB

Free ports

Test points



CR1220 Battery

MCU

Temperature sensor

Am/Pm separator

VFD driver

Buzzer

Infrared Receiver