“SPARK”
WRIST WATCH OPERATION MANUAL
IN-xx / IV-xx 4-6 Tubes Series Clock

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Updated instructions.
If you find an error or inaccuracy, please let me know.

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1. Introduction

In normal conditions, the clock display is off. After pressing the **TOP** button, the time appears for a few seconds. First, it shows the hour and after some delay the minutes. The time-setting process is simple and is described in the instructions.
The tubes cannot be turned on permanently, as this may damage the battery.

The rechargeable battery model is Li-ion 14500 3.7V or Li-ion 10440 3.7V
and it's used to illuminate the display and keep time. Battery life: about **2000-3000** button pressing and about **two months** in standby mode.

The clock enables

1. New NIXIE tubes (comes from 1980-1990).
2. Display hours, and minutes (12 or 24 hours format optional).
3. Delays between values can be adjusted
4. Seconds can be reset to zeros
5. Display the date (DD/MM, MM/DD) (can be turned off)
6. Display temperature (Celsius or Fahrenheit) (can be turned off)
7. Visual effects (can be turned off)
8. The first tube can be disabled in a value lower than 10
9. Backlight LEDs can be adjusted to 8 colors and also help to navigate the menu
10. With an extremely accurate RTC module, accuracy <1 minute in a year
11. Built-in backup lithium battery keeps time for more than 3 years without a power supply
12. Display Li-ion battery. 2000-3000 button pressing and about two months in standby mode.

2. Charging

Any free USB power jack can be used for charging the built-in battery.
Pic. 1 shows the device power cord (*NOT INCLUDED to clock set*). The watch has an automatic indication of the charge end. The full charging time is about 60 minutes.

If you think the battery is draining too quickly, try changing the charger. Many modern chargers with Quick Charge or Power Delivery technology can send incorrect information to the chip that controls the watch's charging, so it is better to get a charger without these technologies.

RED lights up when the battery is being charged.
GREEN indicates that the battery is already charged.
BLUE warns of low battery.



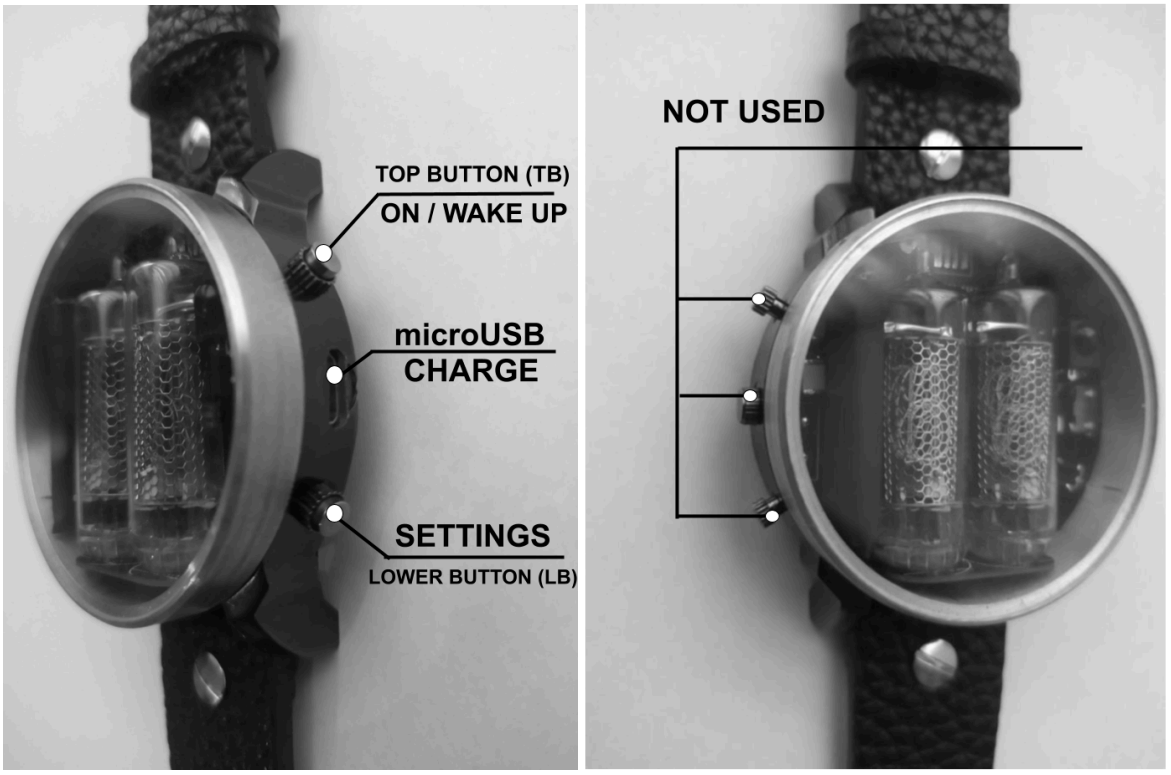
Pic. 1 Power cord example (*NOT INCLUDED to clock set*)

3. Configuring the clock using the menu

The basic configuration method is using the bottom button through the user menu.
An auxiliary method using the remote control provides enhanced capabilities.

3.1 Configuring with a button

The watch is super useful and simple to use. Press the **TOP BUTTON** (hereinafter simply **TB**) once to display the time, and then press the **LOWER BUTTON** (hereinafter simply **LB**) to select the right hour and minutes. You can even set all settings by doing the same thing.



Pic. 2

Click the **LB** to select the value that you want to change. Click again to pass the value and go to the next.
You can increase the respective parameters by holding the **LB.**
Don't press the **LB** button for about 6 seconds to save data and exit the menu.

YouTube example with buttons:
nixie tube watch wrist IN-16 clock ticker style compact neon-lit wristwatch

Tab. 1 shows the structure of the main menu functions with the description.

Tab. 1. Main menu structure

Menu position	**Function description**
0	Manual setting of the hour
1	Manual setting of the minute
2	Reset seconds to zeros (only for watches with seconds)
3	Manual setting of the day
4	Manual setting of the month
5	Manual setting of the year (only for watches with seconds)
6	Configuration automatic switching off of tubes
7	Configuration of the time format (12/24)
8	Configuration of the temperature unit
9	Configuration of the data to display
10	Configuration backlight color
11	Adjusting the visual effects

To set the clock hours, you should:
1) Wake up the watch with **TB.**
2) Call the configuration menu by pressing the **LB** key.
3) Holding the **LB** to increase the hours to the correct value. Release the button to stop increasing. Click **LB** to go to the next value OR avoid touching the button for several seconds to end the settings.

To set the clock minutes, you should:
1) Once you've selected the correct hour, click the **LB.**
2) Hold the **LB** to increase the minutes to the correct value. Release the button to stop increasing.
3) Click **LB** to go to the next value OR avoid touching the button for several seconds to end the settings.

NOTE! If you do not manage to click LB in time, the watch will exit the menu and you will need to start from the hours.

To set the clock day, you should:
1) Once you've selected the correct minute, click the **LB.**

2) Hold the **LB** to increase the day to the correct value. Release the button to stop increasing.
3) Click **LB** to go to the next value OR avoid touching the button for several seconds to end the settings.

To set the clock month, you should:
1) Once you've selected the correct day, click the **LB.**
2) Hold the **LB** to increase the month to the correct value. Release the button to stop increasing.
3) Click **LB** to go to the next value OR avoid touching the button for several seconds to end the settings.

To change the displayed time format, you should:
1) Once you've selected the correct month, click the **LB.**
2) Holding the **LB** select your preferred format for displaying the time

12	12-Hours
24	24-Hours

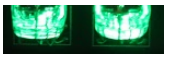
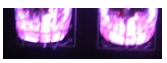
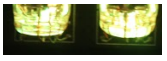
3) Release the button to stop changing. Click **LB** to go to the next value OR avoid touching the button for several seconds to end the settings.

To change the temperature unit, you should:
1) Once you've selected the displayed time format, click the **LB.**
2) Holding the **LB** select your preferred temperature unit

00	Celsius degrees
01	Fahrenheit degrees

3) Release the button to stop changing. Click **LB** to go to the next value OR avoid touching the button for several seconds to end the settings.

To change the backlight color, you should:
1) Once you've selected the temperature unit, click the **LB.**
2) Holding the **LB** select your preferred backlight color

01	Blue	
02	Green	
03	Red	
04	Aqua	
05	Violet	
07	Yellow	
08	None	

3) Release the button to stop changing. Click **LB** to go to the next value OR avoid touching the button for several seconds to end the settings.

To configure the automatic switching off of tubes, you should:
1) Once you've selected the backlight color, click the **LB.**
2) Holding the **LB** select your preferred switching off of tube time

01	1 second
02	2 seconds
03	3 seconds
–	–
20	20 seconds
00	Don’t turn off

NOTE! 00 mode isn’t recommended for use at all it may damage the battery and the VFD tube filament with active motion. This mode is present only for a special event, for example, to shoot a short video.

3) Release the button to stop changing. Click **LB** to go to the next value OR avoid touching the button for several seconds to end the settings.

To configure the data to display, you should:
1) Once you’ve selected automatic switching off of tubes, click the **LB.**
2) Holding the **LB** select your preferred data to display

00	display time only (hours, minutes)
01	display time and date (hours, minutes, date, month)
02	display time and temperature (hours, minutes, temperature)
03	display time, date, and temperature (all)

3) Release the button to stop changing. Click **LB** to go to the next value OR avoid touching the button for several seconds to end the settings.

To configure the visual effect, you should:
1) Once you’ve selected the data to display, click the **LB.**
2) Holding the **LB** select your preferred mode

00	Option is OFF
01	Gradual awakening
02	Running line

3) Release the button to stop changing. Click **LB** to go to the next value OR avoid touching the button for several seconds to end the settings.

4. Battery replacement

The display DOESN’T work from an AAA or AA 1.5V battery!

IVL2-7/5, IV-3, IV-8, IV-9, IV-28 - work with Li-ion 14500 3.7V battery
IV-16, IV-21 - works with Li-ion 10440 3.7V battery

5. External links

Setting up with remote control https://youtu.be/cfrpeTssY_I
Setting up with button https://youtu.be/e7A_hSg5iek
My site https://www.spark-tube.com/

If you have any questions don't hesitate to write me at
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