IN-14 NIXIE CLOCK v1.0

Jakub Dorda © 2018

USER MANUAL

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Introduction

Thank You for choosing this nixie clock, I sincerely hope that owning and using it will give You as much fun and satisfaction as designing it gave me. If You have any questions or encountered unpredicted problem; contact me through this e-mail address: **jak_dor@wp.pl** or eBay message.

Sincerely, Jakub Dorda

High voltage warning

Nixie tubes require high voltage to operate, therefore this nixie clock has some parts of its circuitry that run voltage around 180-300V DC. **Do not touch any electric circuit during operation!**

Power supply

This device requires 9V DC constant voltage power source with at least 400mA load capability. Power plug must have 2.1/5.5 standard with center positive polarity; (-) outside barrel (+) inside tip. It is advisable to use good quality stabilized or pulse power based supply.

First use

Insert DC power plug first then plug power supply into electrical outlet. Clock should start operating right away. If display is showing **00:00:80** it is sign that time was never set or backup battery was replaced. In order to fix it look up how to set up time (page 5).

Settings and usage

Buttons description

Buttons are named by their position while looking at the clock from the behind

Left – down / change display format
Middle – settings / next field
Right – up / alarm on & off

Changing display format

While clock is displaying time, press **Left** button to switch between 12h and 24h display format.

Alarm on & off

While clock is displaying time, press **Right** button to turn alarm on and off. Setting alarm on is indicated by three beeps. Setting alarm off is indicated by one beep lasting 2 seconds.

Settings' mode

In order to enter settings' mode, click **Middle**. First two digits represents menu page and next four nixies displays values in two fields that you can modify. Field that you are currently modifying will blink.

If you press **Right** while first two digits blink, you will move forward to next setting page. By pressing **Middle**, you can change active field to the next one, and modify it with **Right** and **Left** buttons.

After moving through all three fields next press of **Middle** button will save changes and return to normal operation mode.

Setting pages' description

1. Time setting

First page in settings' mode allows for modifying current time which clock will display. Notice that although clock has 12/24h display format in order to avoid confusion settings' mode uses **24h display format only!** Sorry for inconvenience.

2. Alarm setting

This page allows to set alarm time. After changing value in this page alarm clock is automatically turned on. (How to turn alarm on and off on page 4)

3. Night mode start

Night mode allows to turn off nixies and backlight on set time. This allows for increased nixies life span and turning off light source If you sleep in the same room where clock is placed.

During night mode, you can still enter settings' mode, however setting pages 5 and 6 are not available.

4. Night mode end

Setts time after which clock will turn nixies and backlight back on after night mode.

If you don't want to use night mode set both night mode start and end to **the same time**. For instance; set both to 00:00.

5. Separator and backlight settings

First field allows to modify separators behavior:

0 – turned off
1 – blinking
2 – constantly on

Second field modify backlight behavior:

0 – turned off
1 – changing random RGB color (every 1.5min)
2 – changing base color (red, green, blue) (every 1.5min)
3 – changing random RGB color (every 1h)
4 – changing base color (red, green, blue) (every 1h)
5 – user defined color

Setting 5 without specifying your own color at setting page 6 will save currently displayed color.

6. User defined RGB color

This page unlike rest of them doesn't have first field dedicated to displaying setting page. All three fields represent each base color (red, green, blue). As you modify values backlight will change accordingly. Any change in this page will result in setting mode 5 in backlight behavior automatically.

Setting nixies' brightness

First unplug power supply from electrical outlet. Use small slotted or philips screwdriver and turn trim pod located in front right part of main board. Turn clock back on to check on the results, repeat process until you are satisfied with nixies' brightness. I recommend setting it to half of the range.

Increasing nixies' life span

It is advisable not to set brightness too high as it may cause nixies to age faster. Using night mode for couple hours every day will help as well. Don't forget that clock has backup power so if you are away from home for longer than a day, feel free to turn it off, all settings and time will be saved.

Anticathode poisoning

Cathode poisoning is happening when nixie tube is turned too long on same digit, therefore setting separators on setting 2 (constantly on) is not advisable.

This clock also has special system that prevents cathode poisoning by “roulette effect” which is happening every hour for 10 seconds.

Replacing nixie tube

If one of nixie tubes happens to break down or cathode poisoning becomes to apparent, it is probably sign that you should replace it with “new” one.

You will have to desolder faulty tube and then fallow steps of placing and aligning nixies as described in the assembly guide.

Troubleshooting

Clock doesn’t turn on after assembly

If you bought this clock as DIY kit, and it’s not working at all, double check that you didn’t make any mistake during assembly, or insert backup battery if you haven’t done so.

Clock doesn’t turn on but it was working already

Check if clock is not in night mode by pressing **Middle**. Check if power supply is working correctly.

Clock display acting weirdly

It might be sign that nixie driver (IN74141 or K155ID1) broke down, or one of the parts is creating too much rf noise, try to lower nixie brightness.

Contact: **jak_dor@wp.pl** or eBay message