User Manual IN14-6-Vx Nixie Clock, 6TMV3.xx software
User Manual IN16-6-Vx Nixie Clock, 6TMV3.xx software

Power for your Nixie Clock

The clock does not include a wall adapter. You should get a universal adapter yourself, these are not very expensive. The preferred voltage is 12VDC, but often 10VDC – 14VDC will do nicely too. The middle pin of the plug is the positive. Universal adapters often come with a set of various plugs, choose one that fits. If none them fits, you can use the dc-plug is included with the clock. If the clock does not work, you may have gotten the polarity wrong. Change the polarity and try again.

Setting the Nixie Clock

Turn on the clock by plugging in the wall adapter. The time will start at 12:00:00 and blinks. Press and hold the set button, for about 5-6 seconds until the first tube will turn on its decimal point and starts blinking. Release the button.

Now, with each short press of the button, you can advance the first digit. The format is 24 hours, so the first tube only changes from 0-1-2 etcetera. After the digit is set correct, press the button again for 2 seconds, and see that the second tube will turn on its decimal point. Set all the other tubes in the same way.

Once you have set all digits, press and hold the button for 5-6 seconds, and the clock will resume normal operation.

At first, this may seem a bit of a hassle, but after a while you will notice that it is remarkably easy to set the clock.

Calibrating the Nixie Clock

The clock comes calibrated. There's a label on the bottom with the correct calibration value for use at normal room temperature. If you use the clock in extreme cold or warm places, you may want to recalibrate it. Press and hold the set button, for about 7-8 seconds. While you hold it, you will first see that the first tube turns on its decimal point, and then the second tube will turn on its decimal point. Now release the button. There should be 4 digits displayed now. Here you can set a new calibration value for the timing of the clock. First set this value at 5000. After setting this value, press and hold the button for 5-6 seconds, to return to normal mode. This value will be stored inside the microcontroller. Turn off the clock, and turn it on again.

Now set the clock, using a reliable time reference. Set the clock as described earlier, and wait until your time reference matches the time you have set. Now press and hold the set button for 5-6 seconds, and notice that the clock now runs synchronous with your reference, both displaying the same time.

Using the standard calibration value of 5000, the clock should run with a better accuracy than +/- 10 seconds per day. Let the clock run for a couple of days, and note the time difference

between the nixieclock and the reference clock you have used. Calculate the number of milliseconds per hour the clock runs too fast or too slow.

Example: after 2 days, the nixieclock seems 7 seconds too fast. Divide by 48 hours, then multiply by 1000. That's 145 millisecond per hour. The clock needs to run 145 milliseconds per hour slower, so the new calibration value will be 5000 - 145 = 4855.

Enter the new calibration value, turn off the clock, and turn it on again. Now you can set the clock, and it will be more accurate now. Repeat the procedure if need be.

Setting Display Off Time

Nixietubes last very long, but possibly not forever. You may want to use this option, to turn the tubes off during the night. Press and hold the set button, for about 9 seconds. You will first see that the first tube turns on its decimal point, and then the second tube will turn on its decimal point, and then the third tube turns on its decimal point. Now release the button. There should be 2 values displayed now, the two middle tubes are off. These values tell you at what hour the display goes off, and at what hour it turns on again. Adjust the values to your preferences. To save the values, hold the button for 5-6 seconds, to return to normal mode. The value will be stored automatically inside the clock. If you don't want to use this option, put both hours at 00. (or set them at equal values). For your information, rumours tell the tubes last for 50.000 hours. I have reasons to believe it will be actually longer than that, as the current at which the tubes are driven is very low and well regulated in this design. 50.000 hours equals to more than 5 years. Lifetime is defined as the time it takes for the nixies to fade to 50% of their initial brightness.

Setting General Options

In this option setup you can set the modes for the little neons, choose 12hr or 24hr mode, and set the timezone if you are using the optional DCF77 or WWVB receiver that synchronizes the clock to atomic time. And last but not least, you can set the 'fading' on or off.

Press and hold the set button, for about 11 seconds. Notice the neons light briefly, and release the button after the 4th flash. There should be 5 values displayed now.

The 1st digit defines the behaviour of the little neons in normal running mode. It can have a value of 0-5. A '0' means the neons will be off. A '1' means the neons will be always on. A '2' means they will both flash every second. A'3' means they will work as an indicator for the atomic time receiver. A '4' means it will be on if a succesful synchronisation has occurred in the last 24 hours. A '5' means that it will work as a AM/PM indicator, and the neons will be on when it is PM.

The 2nd digit defines the 12hr or 24 hour mode. A '0' selects 24 hour mode, a '1' selects the 12 hour mode.

The 3rd digit sets the number of hours to be added to the Atomic time that was received. The 4th digit sets the number of hours to be subtracted to the Atomic time that was received. Depending on your location and receiver used, you can thus add or subtract 9 hours. You can set both if you like, but that doesn't make much sense. Normally, you set one of them to 0 and

the other one to correct the number of hours. If you don't have a receiver attached, it will make no difference at all.

The 5th digit sets the 'fading' on or off. A '0' means 'fading off' and a '1' means 'fading on'. Once you have set all the options and values, press and hold the button for 5-6 seconds, ignoring the brief flash of the neons and wait until they turns on permanent. Release the button and the clock will resume normal operation.

If you have any further questions, please contact me at
support@franktechniek.nl
or look for additional information at
www.franktechniek.nl

Have fun with your new nixieclock!

Thanks,
Frank Bemelman.