User Manual Oscilloscope Clock V2

Power for your Oscilloscope 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 9VDC – 12VDC 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 Oscilloscope Clock

Turn on the clock by plugging in the wall adapter and connect your oscilloscope. The time will start at 12:00 and blinks. Press and hold the set button, for about 5-6 seconds until the menu appears on the screen. Release the button.

Now, with each short press of the button, you can advance to the next menu item. When you reacht the last item, 'exit', the clock resumes normal operation.

Select a menu item by pressing and holding the button for about 2-3 seconds. Whatever you have chosen appears on the screen, with a small cursor underneath it. With each short press, you can advance the digit. To skip to the next digit, press and hold until the cursor moves. When all is done, 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 Oscilloscope Clock

Build clocks 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. Also, if you bought it as a kit, you need to calibrate it yourself. Enter the calibration menu. 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 exactly 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 oscilloscope clock 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 oscilloscope clock seems 7 seconds too fast. Divide by 48 hours,

And 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.

Set Options

In this menuoption setup you can select 'fading' display of the digits, and also you can turn off the flashing semicolons. Then there's the RTC installed or not, and the 12/24 hour mode.

Set Custom Message

Default, the microcontroller is programmed with 'www.franktechniek.nl' as the custom message. But you can change that. Enter the menu, and change each letter one by one. The letters go from A-Z, a-z, space, some other characters and so on. It takes a while to change the message, but the good news is that it will be stored in the internal EEPROM, so you only have to do it once. The software will remove all leading and trailing spaces, so your message will always appear in the middle of the screen, no matter how long or short it is. The maximum length is 20 characters.

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 Oscilloscope Clock!

Thanks,
Frank Bemelman.