Flits lezing 21-oktober-2019
Rens, PE1LGW

Goed (koop) gereedschap is het halve werk.

Meten is weten.

Betekenis 'gereedschap'
woord: gereedschap.
ge·reed·schap (het; o; meervoud: gereedschappen) 1de gezamenlijke benodigde werktuigen.

WIKIPEDIA
De vrije encyclopedie

Gereedschappen of **werktuigen** zijn hulpmiddelen om bewerkingen te kunnen uitvoeren die een mens (of dier) met zijn lichaam zelf niet of moeilijk kan uitvoeren.

Ieder voordeel heeft zijn nadeel.
Cruijffiaans

Ieder voordeel heeft zijn nadeel.
Cruijffiaans (of toch niet)

Het meten van de digitale en analoge signalen.

Digitale signalen.

Nadeel :

Maar een kanaal, met geen extra info.

Een gedateerde logic analyzer opgekocht 16 kanalen

Werkt best , nadeel, groot, zwaar en maar beperkte analyse van het signaal zelf.

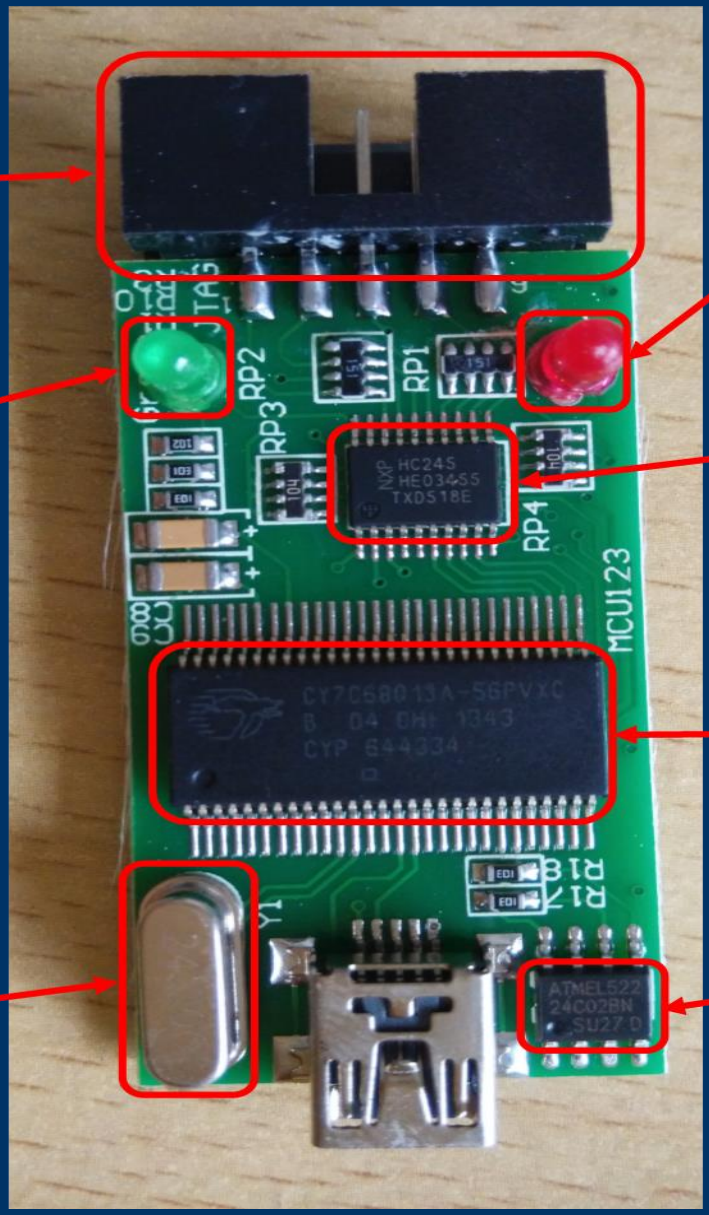
Wil je wat meer.

Maar een nadeel is de prijs.

Maar het kan ook anders

Van het merk Saleae.

En wat zit er in deze probe



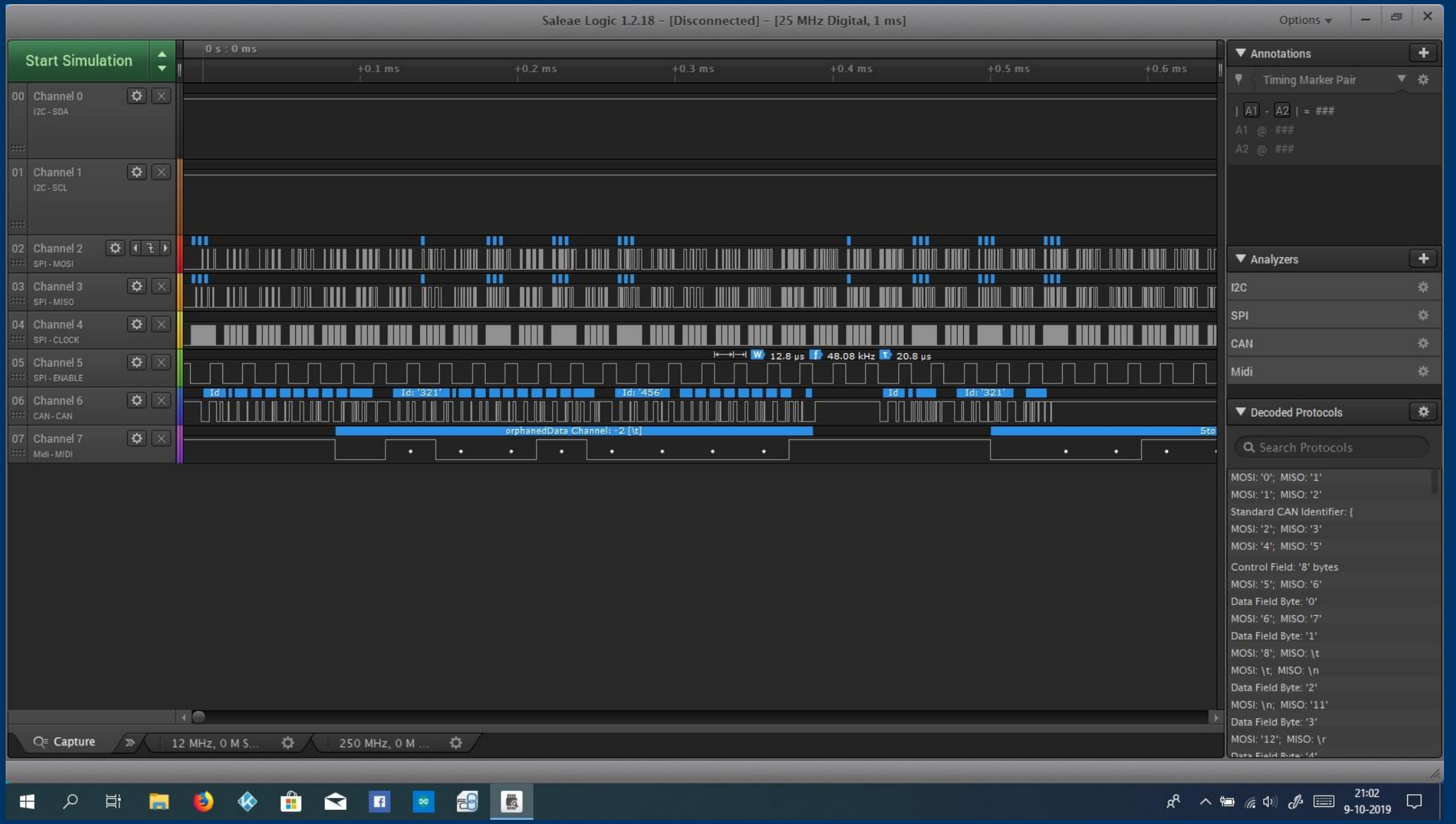
Specs

SPI, I2C,serial, 1-Wire, CAN,
UNI/O, I2S/PCM, MP Mode, Manchester, Modbus,
DMX-512, Parallel, JTAG, LIN, Atmel SWI, MDIO, SWD,
LCD HD44780, BiSS C, HDLC, HDMI CEC, PS/2, USB
1.1, Midi – en andere opties via een SDK.

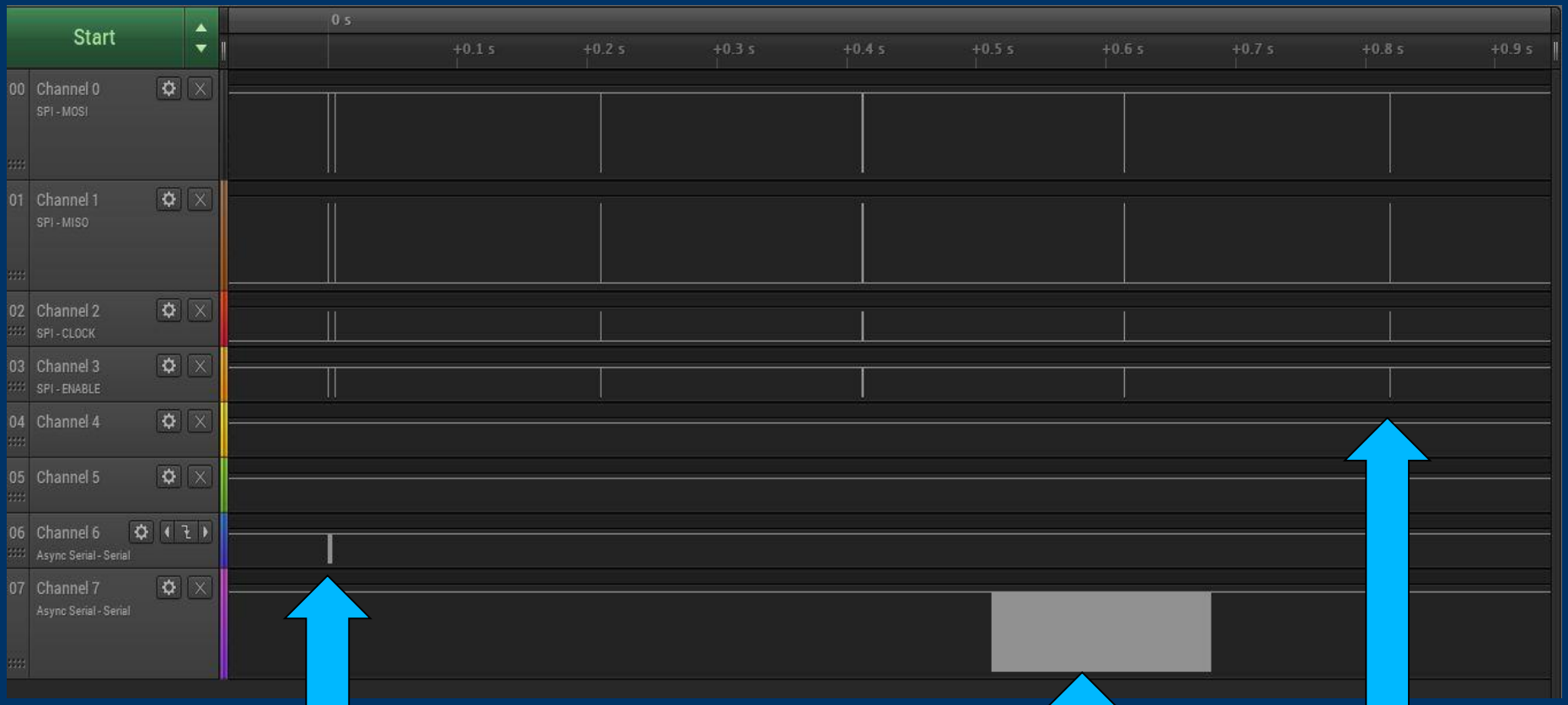
The Logic can sample up to 100 billion everything, so
you Capture even the most exclusive evenementen.

To accept from Logic:
5 V voltage 5.25 V, standaard CMOS threshold Logic
Low Level of 0.8 V. 2.0 V Logic High.
The input impedantie 1 mΩ

De software van Saleae. (gratis)



Mogelijkheid om meerdere signaal bronnen gelijktijdig te bekijken.



Serieel signaal

GPS

57600 Baud

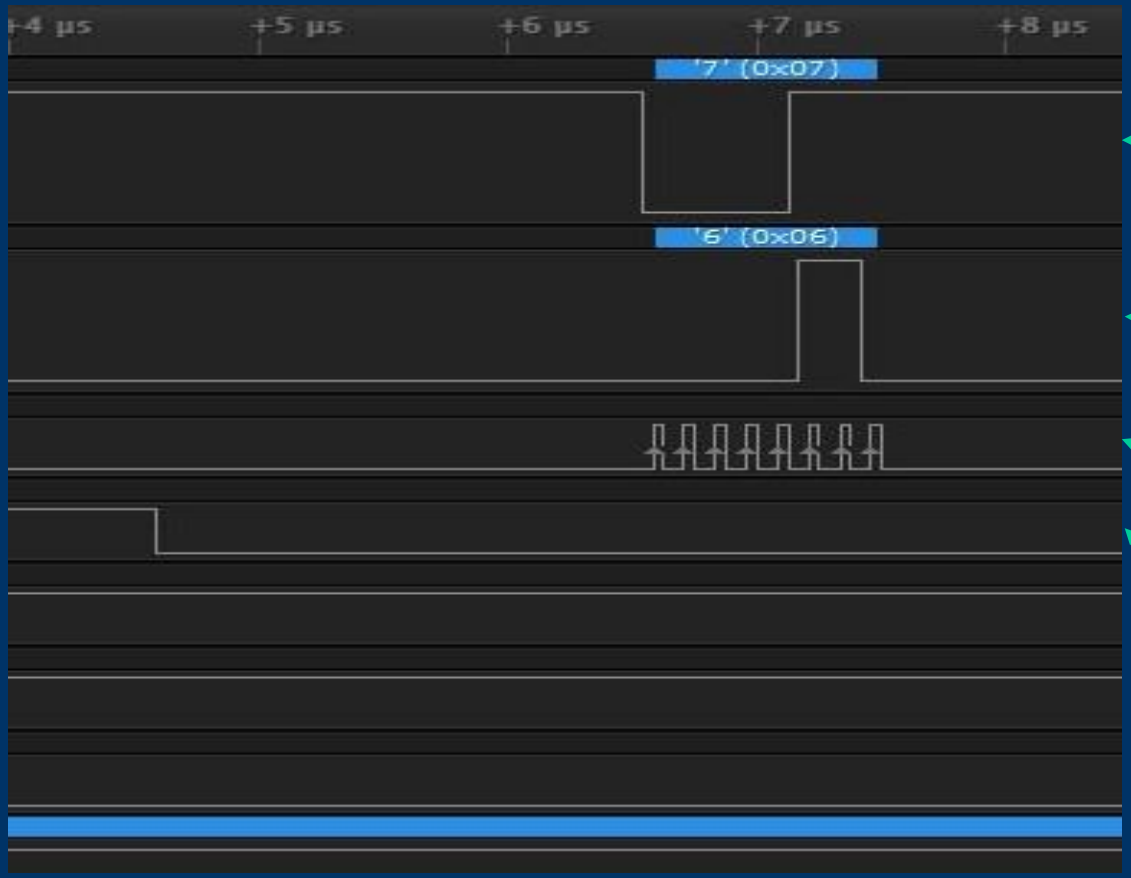
serieel

9600 Baud

SPI

clock op 8 MHz

Het SPI Signaal



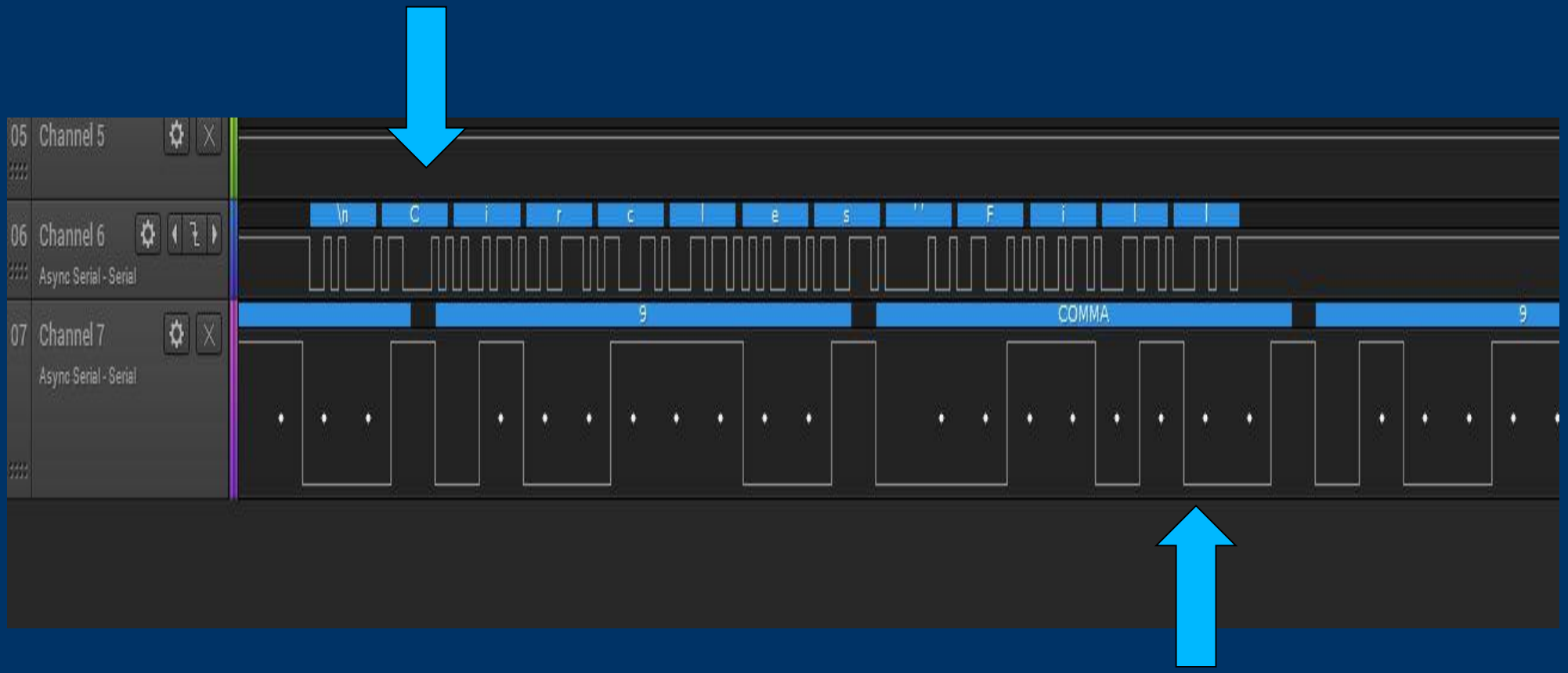
Mosi

Miso

Seriel Clock
Op 8 MHz

Slave select

Serieel signaal 1 op kanaal 6 incl. de Data “Circles” 57600 baud.



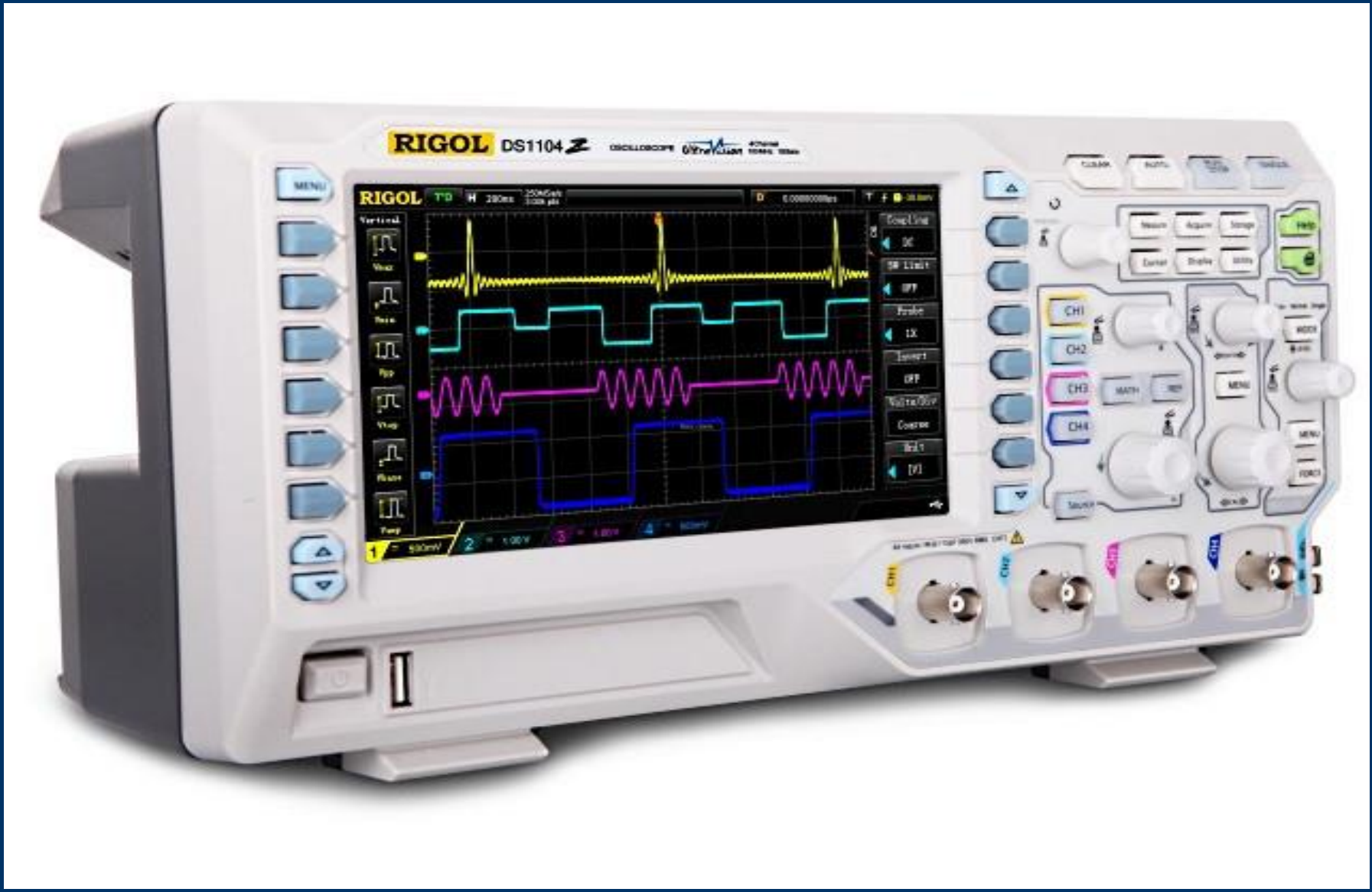
Serieel signaal 2 op kanaal 7 incl. de Data “9,9” op 9600 baud.
Deel van het GPS signaal.

Het meten van de analoge signalen.

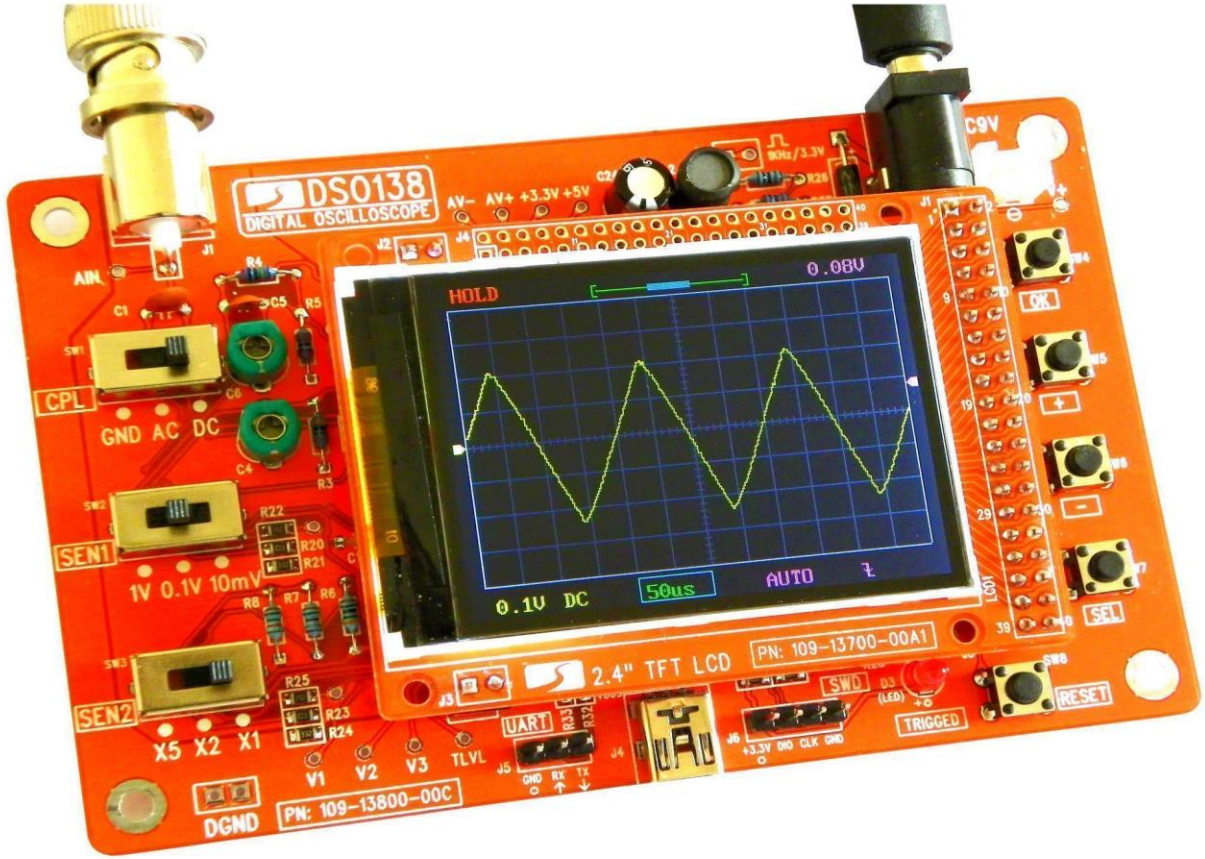
Heeft een nadeel het is zijn moment opnames.

Je wil meer zien van de het analoge signaal.

Dan wordt het al snel een oscilloscoop.



Ook dit kan anders met een DSO138



Channels 1 analog
Max input voltage 50 Vrms
Bandwidth 200 kHz
Sampling rate 1 MSa/s
Time base
10 us/div to 500 s/div
Memory depth 1 kpts
Vertical resolution 12 bit
Vertical scale 10 mV/div to 5 V/div CH1
Input coupling DC, AC, GND
Input impedance 1 MΩ, 20 pF

Wordt verkocht als bouwpakket of als afgebouwd set.
Een opvallend goede beschrijving.

20. Test signal ring

1) Make a small ring with a lead cut-off.

2) Solder the ring to the two holes of J2 (as shown in the photo).

21. JP3

Short JP3 with solder

22. LCD Board

Note: Install to the side opposite to LCD panel.

☐ J1 : 2 X 20 pin

☐ J2, J3 : 1 X 2 pin

The assembly should look like after you have finished all part

Step 2 Test and Use

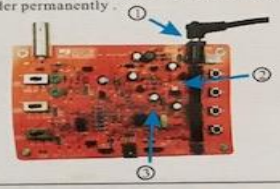
NOTE: You need a 9V DC power supply (at least 200mA capacity) to run the scope. This power supply is not included in the kit.

A. Check voltages

① Apply 9V power to J10 (or J9).

② Check voltage at TP22. It should be around +3.3V.

③ If voltage at TP22 is good disconnect power. Short JP4 with solder permanently .



B. Attach LCD board

Plug LCD board into the female headers J3, J7, and J8 on the main board.

C. Verify

① Connect power supply again. You should see LCD lights up and oscilloscope panel displayed.

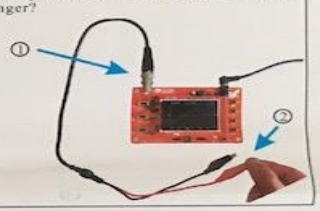
② Press various buttons and move switches to verify their functions.

"Trigger" LED blinking twice indicates booting-up is good.

A. Use

① Attach probe clips to J1.

② Touch the red clip with your finger. Do you see signal from your finger?



Troubleshooting

LCD Dark (No backlight)

- Is voltage at V+ good? — No → Check power supply
- Yes → Is R36 value correct and soldered good? — No → Fix R36
- Yes → Do you get about 3V between J1 pin 16 & 18 on LCD board? — No → Check R36 and power again
- Yes → Check LCD board

No Display

- Short JP4 if it has not been done. See Step 2 above.
- Press SW8. Does LED blink? — No → ▶ Check +3.3V voltage ▶ Check Y1, C12, C13 ▶ Check LED installation
- Yes → ▶ Check J3 soldering for possible opens or shorts ▶ Check J1 soldering on LCD board for possible opens or shorts (use Test Mode)

No Trace

- Are the values of AV+ and AV- correct? — No → Visit forum for detailed troubleshooting guide
- Yes → Set CPL switch to GND and measure V1 and V2. Are they correct? — No → Check U2B, U2C and related parts around these two amplifiers
- Yes → Check R12 and C8

NOTE 1: The voltages in the photo are for reference only. The voltages on your board could be different. But they should be close to the values shown.

NOTE 2: LED will be blinking constantly if MCU (U1) can not detect valid LCD controller. Check LCD pin-header soldering.

NOTE 3: Make sure U1 and LED working (you see LED blinks twice at pressing RESET) before using Test Mode.

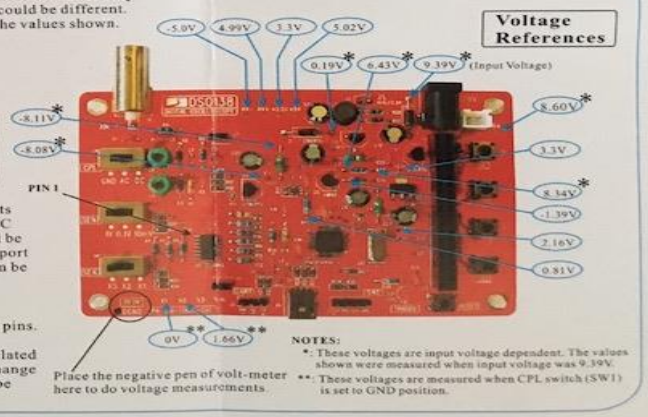
Test Mode

What it is and how it works

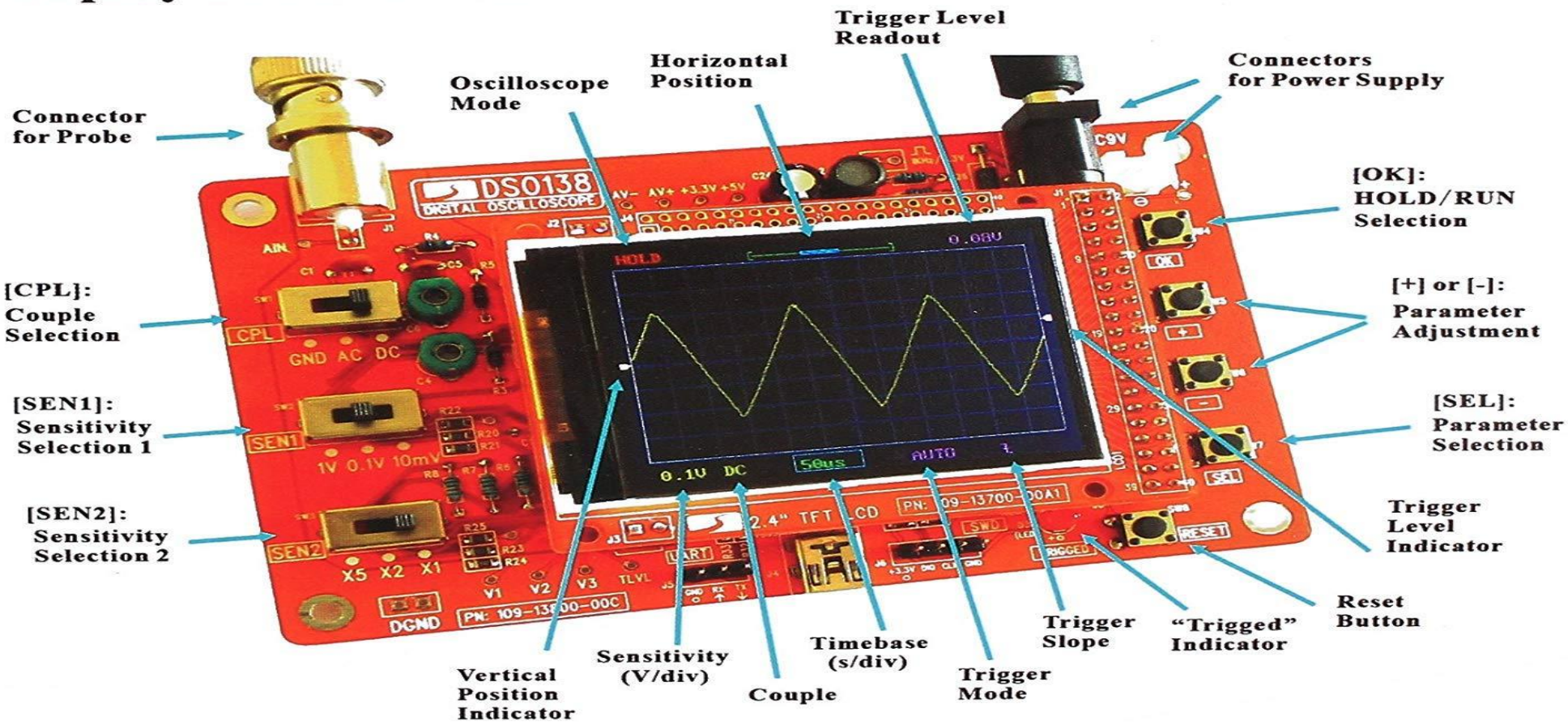
Test Mode is used to find out possible opens (for all port pins) and shorts (for pins PB0 - 15 and PC13-15). When entered it first checks PB and PC pins with special patterns to find out possible shorts. If found LED will be fast blinking. Otherwise, it generate 3.3V and 0V alternatively at each port pins (PA, PB, PC and PD) in cycle of about 4 seconds. These signals can be used to check for opens.

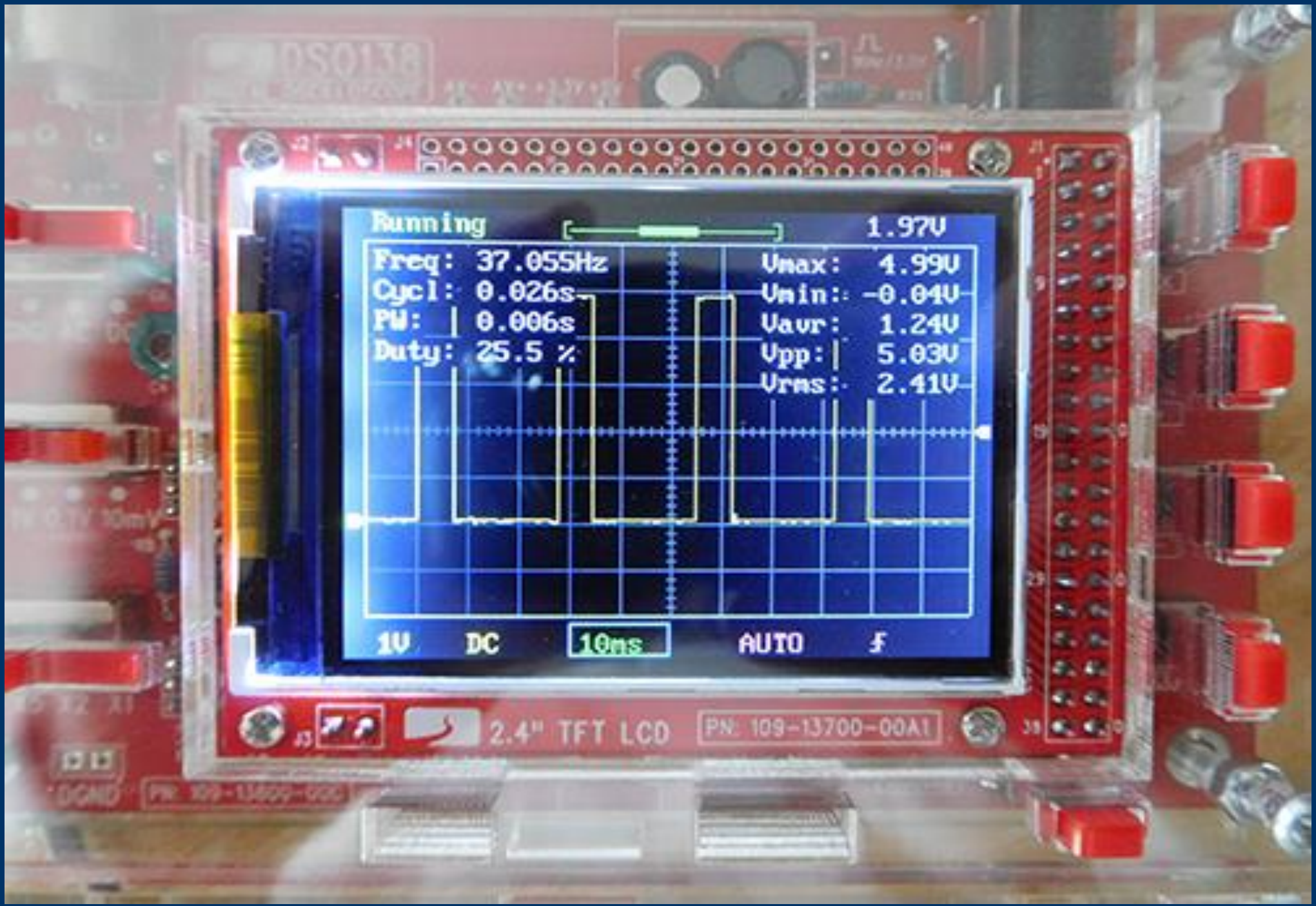
How to use

1. Hold down SW4 and press RESET to enter Test Mode.
2. If you see LED fast blinking that means there are shorts on PB or PC pins. You need to find out the shorts first.
3. If you see LED slowly blinking use a volt-meter to check each pin related connections that are suspected open. When you don't see voltage change at a spot which is supposed being connected to a port pin there may be open between the spot and the port pin.

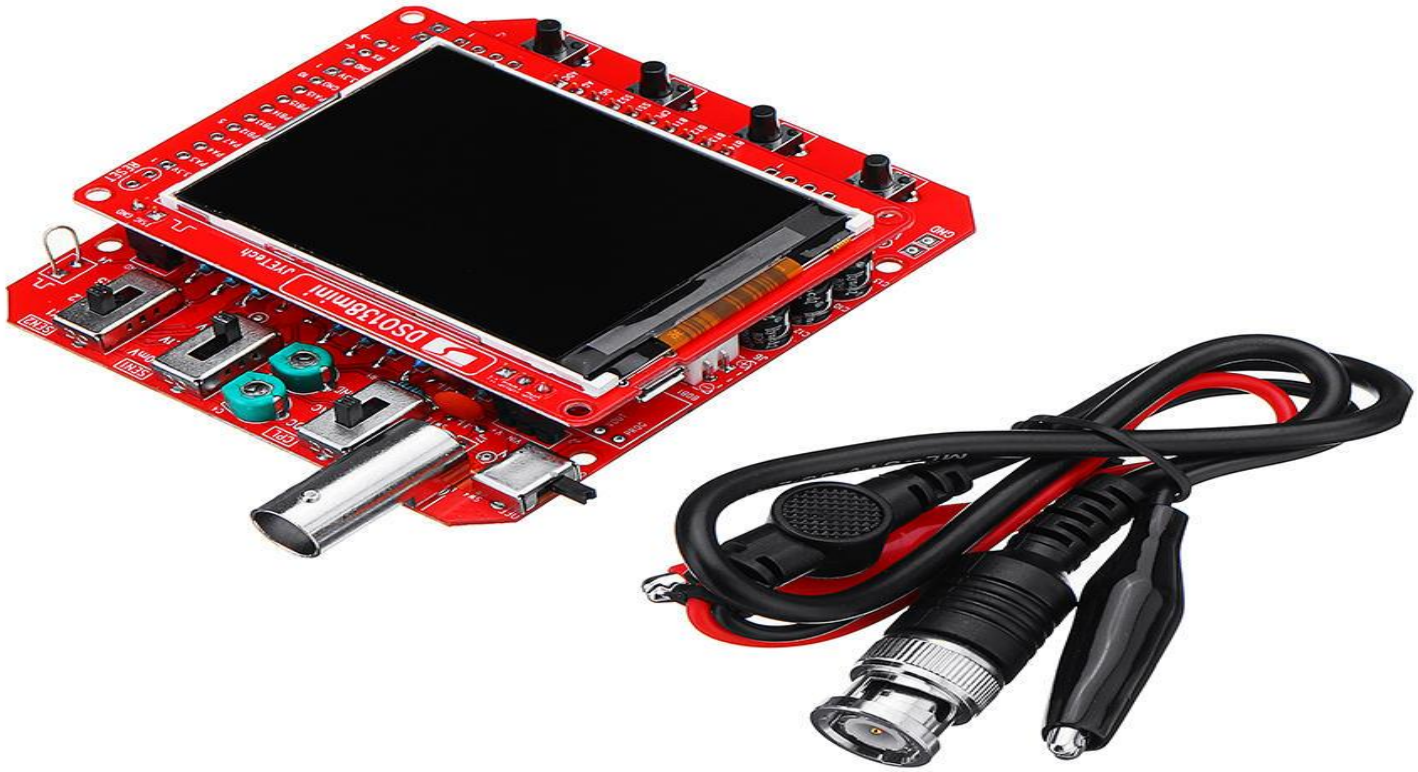


Display and Controls




Running
1.97V
Freq: 37.055Hz
Cycl: 0.026s
PW: 0.006s
Duty: 25.5 %
Vmax: 4.99V
Vmin: -0.04V
Vavr: 1.24V
Vpp: 5.03V
Vrms: 2.41V
1V
DC
10ms
AUTO
2.4" TFT LCD
PN: 109-13700-00A1

Maar er is zelf een Mini versie de DSO138 mini



Vragen

Ja: De 16 kanaals Dolch logic analyzer is te koop.

Wat kost de Saleae 8 Ch logic probe ? 5 euro.

Wat kost de DSO138 (mini) ? 10 Euro
behuizing 4 Euro.

Nog meer vragen ?

MVG Rens Wilde PE1LGW