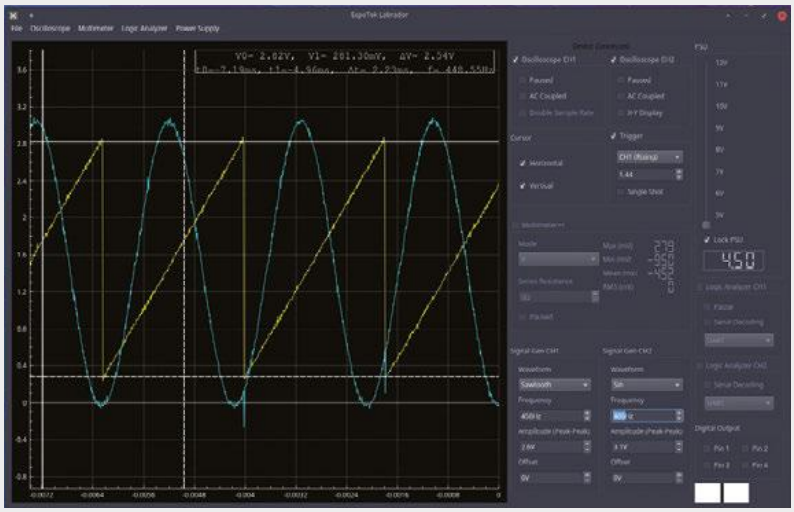
EspoTek Labrador

$29 | espotek.com



An oscilloscope displays variations in a voltage over time, usually within a two-dimensional plot. Back in the '70s, '80s and '90s, they were huge and heavy and the two-dimensional plot was beamed onto a CRT screen, set alongside chunky knobs to dial in a suitable set of values. Size and weight changed dramatically when LCD replaced CRT, and they're changing again with computers replacing the screen, the knobs, and the logic circuitry.

EspoTek's Labrador is one such device, only it's not just a dual-channel oscilloscope, but also a logic analyser, multimeter, power supply, and waveform generator built from a handful of surface-mount components sitting atop a 35 mm × 37 mm PCB. It's about the same size and weight as a pastry canapé, and metaphorically speaking, tastes just as good.

SIMPLE SOFTWARE

Getting started is as simple as downloading, installing and running the accompanying software, followed by connecting a micro-USB cable (included) between the PCB and your computer. The application software is available for Linux, Windows, Mac OS and Android, and like the hardware, it's 100% open source.

With the PCB connected, a red LED flickers into life and the main output area within the application will update to show random noise going from the oscilloscope input channels. You can test everything is working correctly by connecting the DC output from channel 1 of the signal generator to the DC input of channel 1 of the oscilloscope. As soon as you ramp up the amplitude in the signal generator section of the software interface, the random noise will transform itself into your chosen waveform.

The application itself is easy to use and well designed, especially if you've not used an oscilloscope or made electronic measurements before. It doesn't fill the screen with too many details, and limits settings and configuration options to the most useful and common. However, it's also capable of some serious circuit and microcontroller analytics; various trigger values can be used to synchronise waveforms, serial messages can be decoded in real time from the logic analyzer, and grabbed values can be saved as a CSV text file.

Labrador's PCB is designed to be connected to a breadboard. The ten pins beneath the long header will fit nicely into the tenth column of a standard board, enabling the horizontally oriented power supply pins to connect to the negative and positive rails running the length of most boards. These rails can then be used to power your own components, from 4.5 volts to 12 volts, in 50 millivolts increments, which is brilliant for powering devices such as an Arduino. When tested with a multimeter, the output was also reasonably accurate, going from 4.67 V to 12.13 V. The long header provides convenient access to the four digital outputs (3.3 V), great for turning on LEDS, alongside the signal generator and the separate 3.3 V output. Not all of these functions can be used at once, such as the multimeter and the oscilloscope, but many can be. The only thing really missing is PCB annotations, but creating your own solution with a breadboard is perfectly in fitting with both the device and its remarkable price. ◻

Above
The accompanying software is well designed, quick, and easy to use

Below
Yes, that is a Labrador dog on the back of the PCB

VERDICT

Tiny and inexpensive, the Labrador really is an 'electronics lab in your pocket'.

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