Oscilloscope Hacks and Links #2

Dan Romanchik - August 02, 2011

Here's the second installment of Oscilloscope Hacks & Links, a collection of Web resources that will help you make better scope measurements, do more with scopes, and just plain amuse you.

Display Graphics on an Analog Scope
Hacker Andrew Rossignoll and a friend came up with a way to display graphics on an analog oscilloscope (http://gtabfans.com/~andrew/homepage/oscilloscope.html). Basically, they wrote a program that outputs a voltage wherever there was a non-white pixel in a png image. The program includes delays between pixels that varied depending on how bright the pixel was to be. This approach allowed them to display ten shades of gray.

You can turn your old analog scope into a clock using a simple microcontroller circuit.

There are several circuits out there that will turn an analog scope into a clock. Perhaps the coolest is the AVR Oscilloscope Clock. This circuit uses an Atmel microcontroller to generate the clock image. Plans are available (http://www.dutchtronix.com/ScopeClock.htm) to build your own, or you can purchase a fully-assembled version (http://www.sparkfun.com/products/9306).

Build Your Own GHz Probe
Engineer Douglas Smith shows you how to build a DC - 1 GHz probe (http://emcesd.com/1ghzprob.htm) that he claims works as well as commercial probes costing hundreds of dollars. The Web page includes step-by-step instructions on how to build the probe as well as a theory of operation. Be sure to check out the rest of Douglas's website, which includes a number of podcasts on various other electrical engineering topics.

Straighten Bent Oscilloscope Probes
As the author of this EDN article
(
http://www.edn.com/article/471873-Pointy_tips_How_to_straighten_bent_oscilloscope_probe_tips.php
), Howard Johnson, points out, some high-speed oscilloscope probes come with tips so pointy that they require very little pressure to make good contact. The flip side to this, of course, is that it's easy to bend the tips.

To straighten the tips, Johnson details a simple procedure using a drill-press vise and a hardened steel screwdriver. Once you've straightened the probes, Johnson recommends dressing them with a little #600 sandpaper glued to the end of a stick. This removes some of the oxide on the tip, meaning the probe needs less pressure to make good contact, and using less pressure reduces the chance that you'll bend the tip again.

Turn a 50-MHz Scope Into a 100 MHz Scope?
This hack
(
http://www.eevblog.com/2010/03/31/eevblog-70-turn-your-rigol-ds1052e-oscilloscope-into-a-100mhz-ds1102e/) shows you how to turn a Rigol DS1052E 50 MHz oscilloscope into a DS1102E 100 MHz oscilloscope. This is accomplished by giving it a command via the scope's serial port. The command simply tells the scope that it's a 100 MHz scope instead of a 50-MHz scope. The scope's analog circuitry has the bandwidth necessary to support this.

There are a couple of cautions. First, doing this will void any warranties. Second, this won't work if your scope has the latest version of firmware. You can, however, downgrade the firmware to version 2.01, perform the hack, and then upgrade again to the latest firmware.