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Theoretically assembling a solar laptop

Solar laptops are just starting to be released, such as the Samsung NC215 (~\$399 MSRP), but the charge times require more time of off-use than on, by a 2:1 ratio. The quickest and most ideal electronics to utilize solar, yet absent from popular technology discourse are the amorphous silicon panels that charge 4-function and scientific calculators such as the TI-30XA-Solar, which were tools I used for math classes as a former student. What makes solar power interesting again, is the ability to have a computer or smart phone with a likewise low energy usage such as to allow real-time solar charging and running of the device.

I will skip over smartphones and tablets for now to review a full-featured PC modification & assembly using two kits being sold that together, might offer one of the lowest-power options to solar computing.

The first device is a PC running linux with an ARM board and an e-ink display, presumably one of the earlier e-ink models, since it is listed as a Vizplex (which E-ink has since replaced with Pearl displays, which have higher refresh rates). This laptop's most significant convenience is the fact that it can be powered under 5v at 500mA, signifying the Bootstrapsolar is capable of charging it. The only other cable/peripherals needed to run this would be a keyboard, mouse, and a USB to 5V DC adapter, which can be purchased on Amazon for \$2-3.



The CFA-910 costs about \$422 and is not really a huge deal despite the fact that it can be combined with a truly convenient \$70-\$80 solar power kit, but this article is also to theorize a proof of concept first and the amount of time I spent reaching this conclusion has saved much of the workload (which previously involved looking for internal adapters to assemble an e-ink display myself, which is still on the table, just not literally- but possibly soon). Crystal Fontz also released their CFA-910 almost a year ago and their page already announces a newer version with a faster screen will be available (as for a faster ARM processor and more RAM than 128mb, that is also yet to be seen).

The least expensive option would be to buy something like the Raspberry Pi (a \$25 PC) and have an HDMI-to-LVDS/eDP/DSI adapter (if they exist) to the E-ink display, along with using one of the Bootstrap's 2 USB ports to power the display, as the Rasp Pi can't power it via usb alone. A nother option is a Beagleboards, but that too requires separate powering cables and runs at \$150 just for the motherboard. Finding a 6-7" e-ink Pearl display opened from one of those new \$79 Kindles, but I've found barebone displays sold alone for \$50/\$45 bulk on some sites. If i can find the link I'll include it. The Rasp Pi is listed to have a 4-lane DSI header. I will look into figuring out more what that means in terms of what kind of LCD panels can be connected to it. Edit: This site sells TFTs, some of which appear to use DSI connectors:

http://www.newhavendisplay.com/index.php?main_page=index&cPath=1_593

Thus, there most certainly will be vendors that likely integrate many of these new low-voltage technologies towards a long lasting (or a daylight-lasting) solar-powered computer, but until then, the combination of these two devices offers a provoking solution to off-grid linux (Fedora, Debian, etc) devices running fully featured operating system devices that are not just iOS-based or Android forks. More to come, while in the meantime I will search for some e-ink displays that require little to no soldering to retrofit existing netbooks, such as the Pixel Qi, and casing shells that would allow me to put most of these devices together in some supra-assembly box, though the bootstrap solar seems already enclosed well enough to remain separate. The large size of the solar panels compared to the CFA-910 also means I might want to look for a folder- or briefcase-like portfolio for those panels along with a mini-keyboard and mouse for the PC.

11-04-2012: A newer summary of potential components:

http://elinux.org/RaspberryPi_Laptop and another person's assembly (non-solar):

<http://liliputing.com/2012/11/lappi-project-transforms-a-raspberry-pi-into-a-laptop-in-a-briefcase.html>

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