Hack It Better: Apple Extended Keyboard II

WRITTEN BY SCOTTV

I'm lucky enough to own an Apple Extended Keyboard II, which belongs to my Macintosh SE. Unfortunately, it wasn't doing much good connected to my rarely-used SE. So, I figured it would find a better home on my desk at

work, where I spend the day pounding away on a crummy keyboard anyway.

The Apple Extended Keyboard II is a dream to type on because it uses mechanical switches. And I lucked out: Apple made a lot of revisions of this keyboard with cheap switches, but it turns out that I got one of the good ones. Mine is a USA model with authentic Alps Cream key switches.

The biggest stumbling block to the project was the computer's interface. The Apple Extended Keyboard II is from the days of ADB, or Apple Desktop Bus. The internet revealed two possible solutions: An expensive and sometimes-hard-to-find adapter by Griffin, or a $16 microcontroller and some DIY elbow grease. Naturally, I chose the latter.

Building It

All that's in this project is a Teensy 2.0 microcontroller and the keyboard. The process is as simple as connecting the proper 3 pins to your ADB keyboard and then programming the microcontroller. I chose to enclose the entire converter inside my keyboard, as I didn't want a little dongle hanging out to break and I also didn't have the proper connecters to mate with the keyboard's.

The most technical step is to compile and install the firmware. A simple task; though on my Mac I had to install CrossPack to compile for the

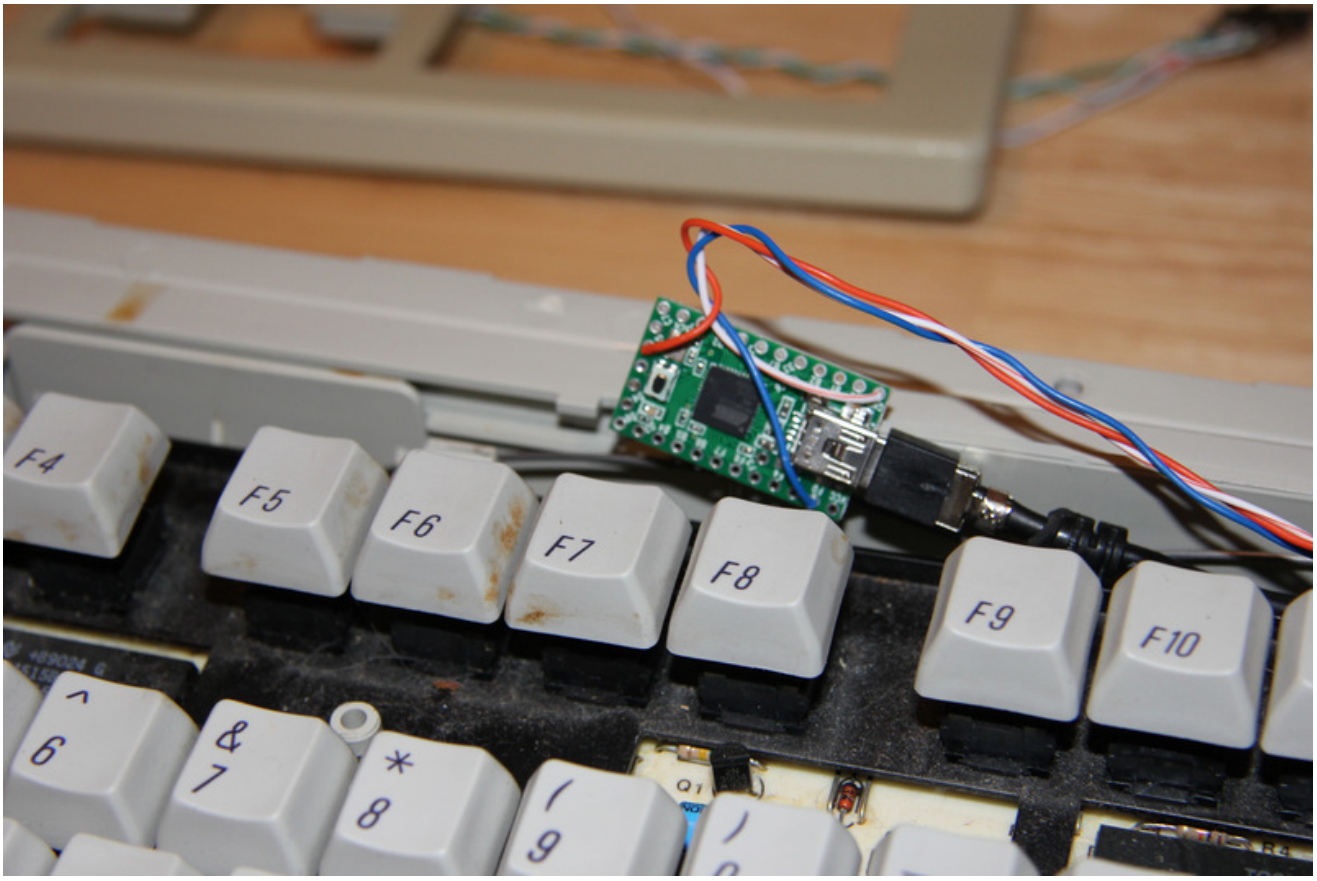
Teensy and TeensyLoader to flash code to it. Here I must give a shout out to the awesome folks who developed the code – they also have support for a bunch of keyboard types.

```
~$ git clone git://github.com/tmk/tmk_keyboard.git
~$ cd tmk_keyboard/converter/adb_usb
~$ make
```

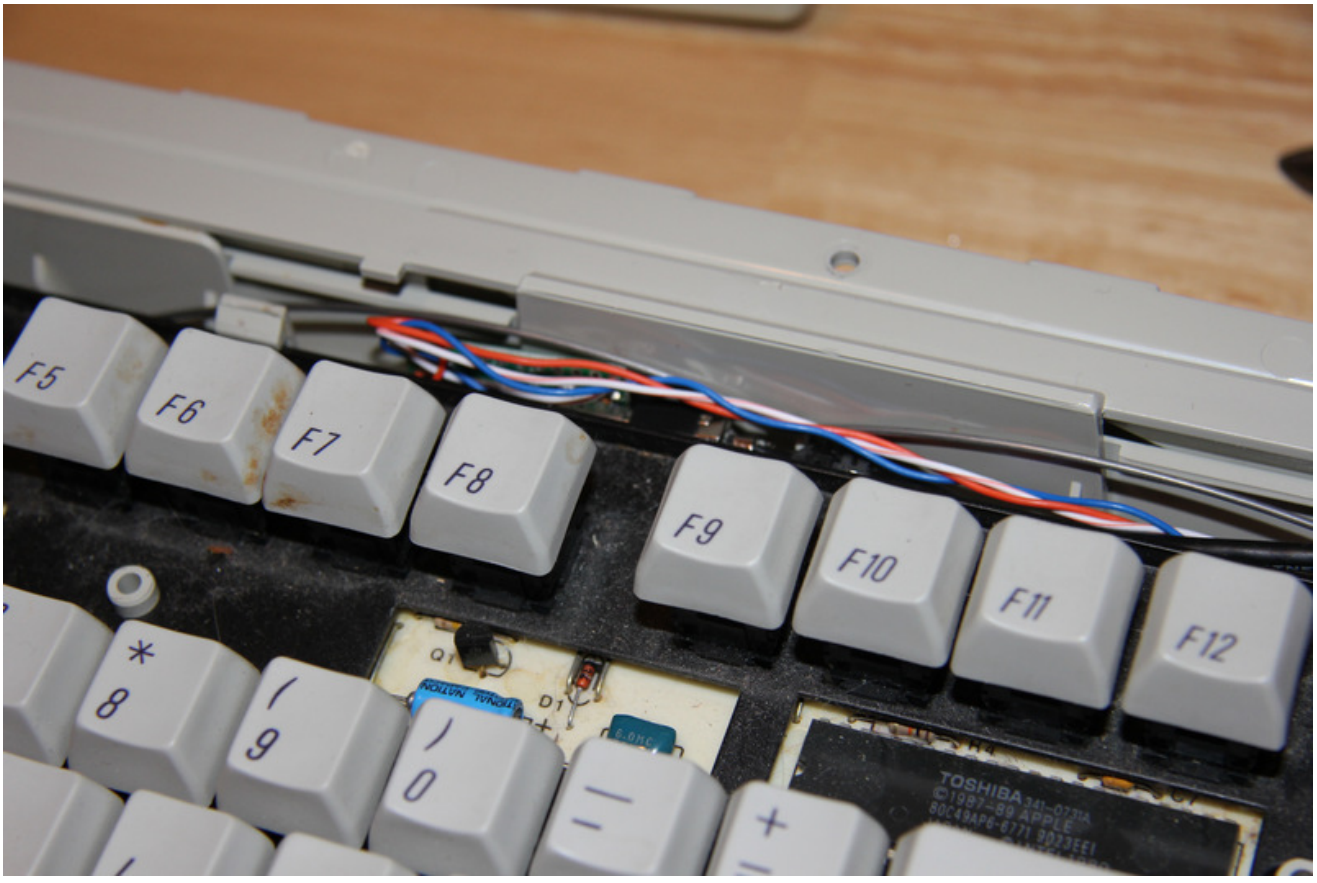
Then use the TeensyLoader app to flash the .hex image onto the microcontroller.

Connect ADB pin 1 (data) to Teensy pin F0, pin 3 to Teensy vcc (5v), and pin 4 to Tesny gnd (ground). You could wire up a DIN-4 ("s-video") connector if you wanted (female to use an authentic Apple cable, male to make your own cable), or you could completely enclose the Teensy into the keyboard like I did.

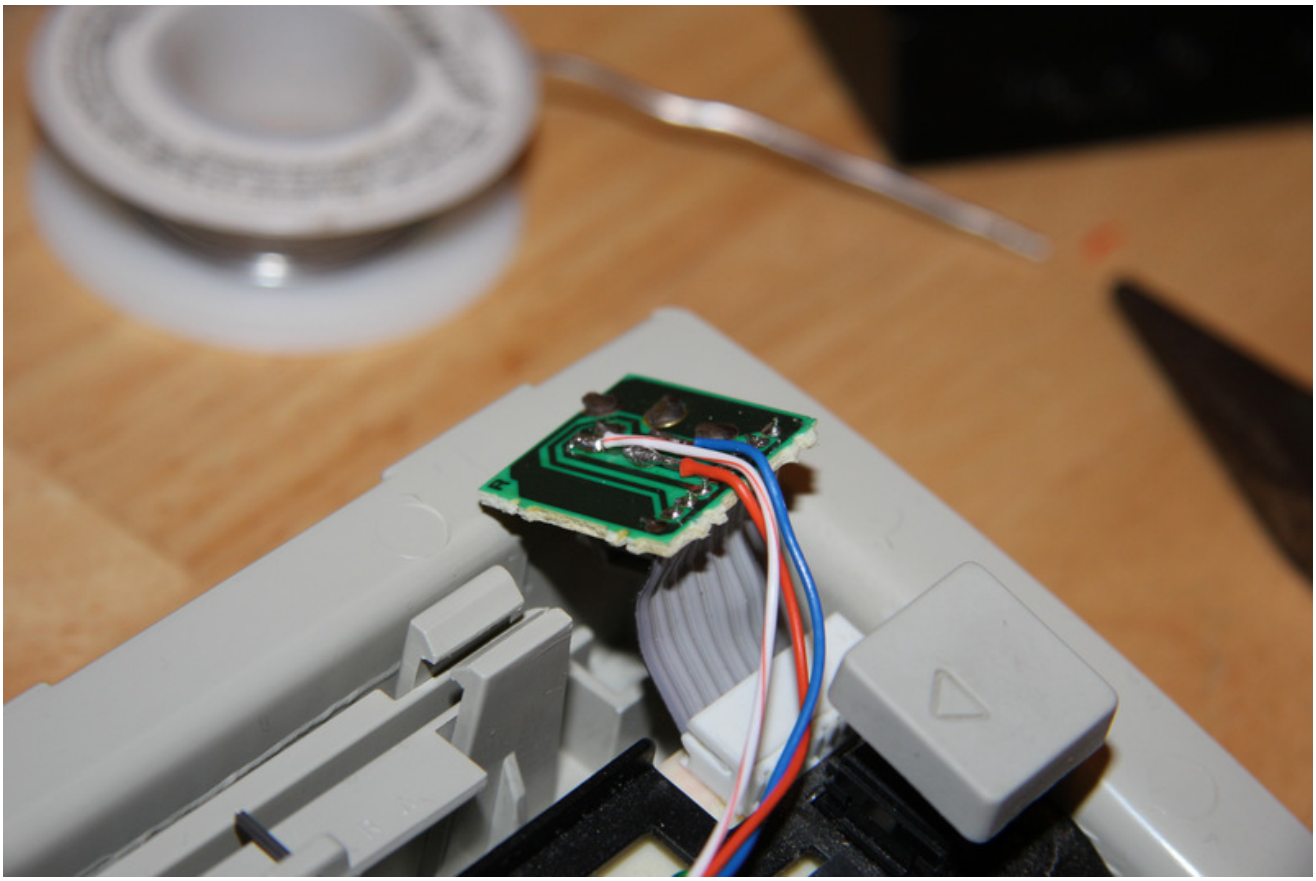
Here's a gallery:



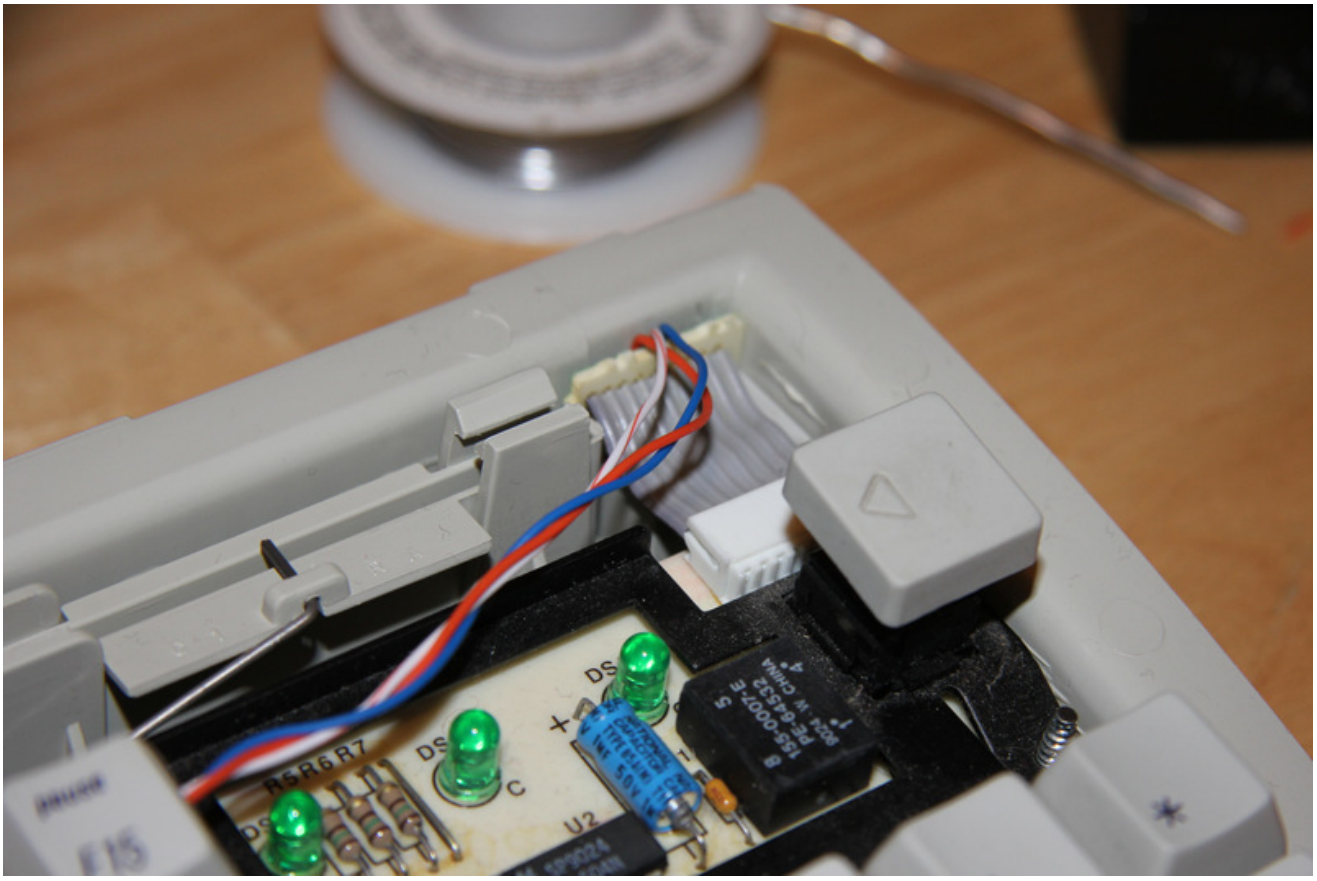
The microcontroller, soldered up and connected to a mutilated mini-USB cable. I have since thoroughly cleaned the keys. They were pretty dirty, as you can see!



The microcontroller is all tucked in, out of the way.

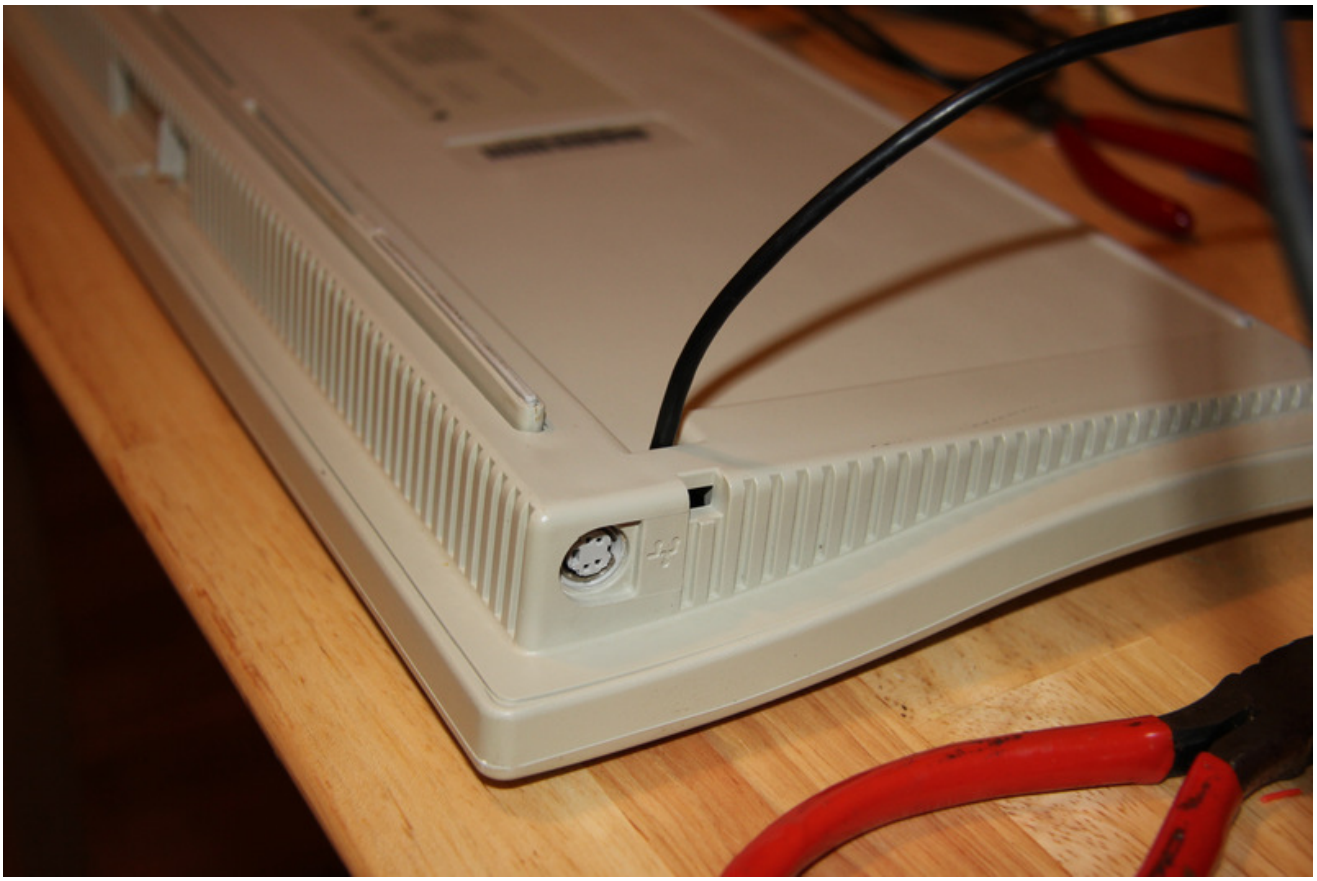


I tacked wires onto the existing ADB solder joints so I can still use the keyboard with ADB macs.



The connector fits neatly back into place.

All done, ready to be buttoned up.



The USB cable comes in through a slightly widened existing hole in the case. It passes out on the inside of the edge, so the cable just seems to appear.

The ADB ports are still there, ready to be used. The USB cable comes out from under the raised keyboard.

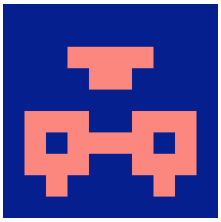
The end result: It works great with my MacBook Air.

This article was also published on Scott's blog, Scott the Robot.

APRIL 9, 2013 WRITTEN BY SCOTTV IN HACKING

PREVIOUS POST
The Serious Downside to Slim Design

NEXT POST
Oculus Rift Teardown



SCOTTV

6 COMMENTS ON "HACK IT BETTER: APPLE EXTENDED KEYBOARD II"

Thomas Carlson

APRIL 9, 2013 AT 3:23 PM

I love this site. What do you folks do for your day jobs?

Jeff

APRIL 10, 2013 AT 10:49 AM

Nice hack! That keyboard is a prime candidate for the Retr0Bright treatment now!

expensive?!

APRIL 10, 2013 AT 3:53 PM

Expensive and hard to find? There are tons on eBay.. But heck, if you want to build & sell these (for something close to $16), great! I only have one iMate at the moment (using with an Apple Keyboard).

Yours unfortunately has the control key in the wrong place, so I dunno why you want to use it!

Chris

APRIL 10, 2013 AT 8:39 PM

@ Thomas Carlson, well it seems like this kind of work is their “day job.” Finding new ways to keep power in the consumer’s hands. Step by step tutorials and selling tools to aide the process is just a side benefit of that.

Feldor

APRIL 12, 2013 AT 10:29 PM

And I bet you don’t have a single clue how the firmware works, or the MCU or anything about the ADB protocol.

gregg

JANUARY 17, 2015 AT 7:56 PM

re knowing – uh how many devices you use every day? good luck keeps Ng up with all the protocols firmware etc. #car #phone #laptop #ipod #atm

Comments are closed.