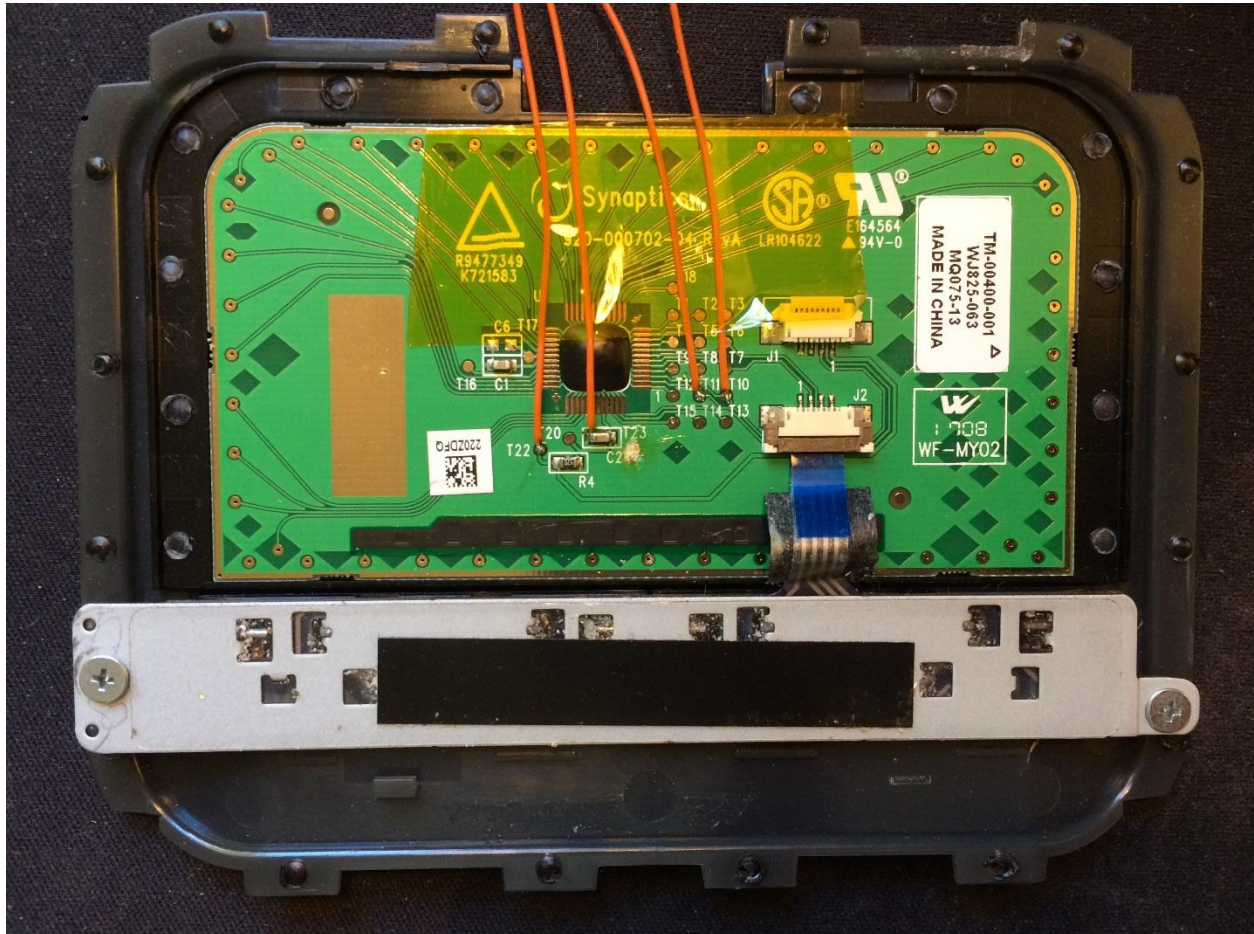


This document will describe how to Interface a Teensy with a PS/2 laptop touchpad and send results over USB to a PC. The touchpad is from an HP Pavilion DV9000 laptop and is marked with part number 920-000702-04 Rev A. The following picture shows the touchpad with wires soldered to 5 volts, ground, clock, and data.



Wires connected between the touchpad and Teensy 3.2 are detailed below:

- T22 = 5V wired to the Teensy Vin pin
- T23 = Ground wired to the Teensy Ground pin It's hard to solder to T23 so I soldered to the ground side of bypass cap C2.
- T10 = Clock wired to Teensy I/O 30
- T11 = Data wired to Teensy I/O 27

I initially thought I needed to add pull up resistors on the clock and data signals because they measure open with an ohm meter. Once the touchpad is powered, the signals were pulled to 5 volts by active pull ups within the touchpad controller chip.

The PS/2 signals are at 5 volts from the touchpad to the Teensy 3.2. Luckily the 3.2 is 5 volt tolerant so it can receive 5 volt signals. The touchpad works fine with 3.3 volt signals from the Teensy 3.2.

A Teensy LC is not 5 volt tolerant so a level translator is needed for the clock and data signals.

The PS/2 code was written using the PJRC USB Mouse functions. I've found that the PS/2 clock edge from the touchpad can be missed if the Teensy is interrupted by I2C or USB traffic. A missed clock will cause the "while loop" that is waiting for the edge to hang so I there are watchdog timers to break out of every while loop.

The standalone touchpad code is at my [Github repo](#).

The touchpad code integrated into the Dell D630 keyboard code is at my [Github repo](#).

In order to load and compile the touchpad code, do the following:

In the Arduino IDE under "tools", select board: Teensy 3.2/3.1.

Also under "tools", select USB type: Keyboard + Mouse + Joystick.